

**Before the  
FEDERAL COMMUNICATIONS COMMISSION  
Washington, D.C.**

In the Matter of	)	
	)	
Rulemaking to Amend Parts 1, 2, 21, and 25	)	CC Docket No. 92-297
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	)	PP-22
Preference	)	

**THIRD NOTICE OF PROPOSED RULEMAKING  
AND  
SUPPLEMENTAL TENTATIVE DECISION**

Adopted: July 13, 1995

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By the Commission:

**TABLE OF CONTENTS**

Paragraph

I.	Introduction .....	1
II.	Background .....	7
	A. Specific Satellite Proposals .....	17
	1. Geostationary Fixed Satellite Service Proposals .....	19
	2. Non-Geostationary Fixed Satellite Service Proposals .....	23
	3. Non-Geostationary/Mobile Satellite Services Feeder Links.....	25
	B. Specific LMDS Proposals .....	27
	1. CellularVision's System .....	29
	2. Texas Instruments' System.....	31
	3. Video/Phone's System.....	32
III.	Band Splitting Proposal.....	33
	A. Co-Frequency Sharing.....	39
	B. Commission Proposal.....	44
	1. Primary LMDS Spectrum .....	47
	2. Primary GSO/FSS Spectrum.....	54
	3. Primary NGSO/FSS Spectrum.....	56
	4. Primary MSS Feeder Link Spectrum .....	59
	a. 29.1 to 29.25 GHz .....	60
	b. 29.25 to 29.50 GHz .....	64
	c. Uplinks for MSS Feeder Links and Downlinks for NGSO and GSO FSS Systems in the 19.3-19.7 GHz Band .....	65
	d. Effect of Decisions at WRC-95 on the Band Segmentation Plan.....	66
	5. Other Allocations in the 28 GHz Band .....	67
	6. Supplemental Tentative Decision on CellularVision's Pioneer Preference Application.....	68
IV.	Local Multipoint Distribution Service .....	74
	A. Spectrum Licensing .....	75
	B. Geographic Service Areas .....	82
	C. LMDS Services and Regulation .....	92
	D. Eligibility .....	97

1.	Telephone Companies .....	98
2.	Commercial Mobile Radio Service Providers .....	102
3.	Cable Television Companies .....	103
4.	Multichannel Multipoint Distribution Service Licensees .....	107
5.	Transfer of Control and Assignment of Licenses .....	108
E.	Regulation of Common Carriers/Preemption .....	109
F.	Construction Requirements .....	113
G.	Technical Rules Proposal .....	118
1.	Frequency Coordination.....	119
2.	Equivalent Isotropically Radiated Power (EIRP) .....	122
3.	Spectral Efficiency .....	124
V.	Satellite Services .....	125
VI.	Competitive Bidding Procedures .....	129
A.	Competitive Bidding .....	129
B.	Determining Mutual Exclusivity .....	134
C.	Competitive Bidding Issues.....	137
1.	Competitive Bidding Design.....	137
a.	General Competitive Bidding Principles.....	137
b.	Competitive Bidding Methodology for LMDS Licensees .....	139
c.	GSO/FSS Auction Proposals.....	143
d.	NGSO/FSS Auction Proposals.....	145
e.	MSS/Feeder Links .....	146
f.	Bidding Procedures .....	148
2.	Procedural and Payment Issues.....	166
a.	Upfront Payments.....	167
b.	Down Payment and Full Payment for Licenses Awarded by Competitive Bidding.....	168
c.	Bid Withdrawal, Default, and Disqualification.....	170
3.	Regulatory Safeguards .....	172
a.	Unjust Enrichment Provisions.....	172
b.	Performance Requirements .....	173
c.	Rules Prohibiting Collusion .....	174

4.	Treatment of Designated Entities.....	176
a.	Introduction .....	176
b.	Installment Payments.....	186
c.	Bidding Credits.....	190
d.	Rural Telephone Companies .....	194
e.	Additional Special Provisions .....	195
VII.	Procedural Matters .....	197
A.	Ex Parte Rules -- Non-Restricted Proceeding .....	197
B.	Initial Regulatory Flexibility Analysis .....	198
C.	Comment Dates .....	205
VIII.	Ordering Clauses .....	207
Appendix A	List of Participants on the LMDS/FSS 28 GHz Band Negotiated Rulemaking Committee	
Appendix B	Proposed Rule Amendments	

## I. INTRODUCTION

1. This is the Third Notice of Proposed Rulemaking in our proceeding to establish Local Multipoint Distribution Service (LMDS) in the 27.5 - 29.5 GHz (28 GHz) frequency band.<sup>1</sup> In this Notice, we propose a band segmentation plan that we tentatively conclude will permit both LMDS and Fixed Satellite Service (FSS) systems to operate in the 28 GHz frequency band. We also propose to accommodate feeder links for certain Mobile Satellite Service (MSS) systems in this band.

2. The proposal ensures the rapid dissemination of innovative communications services by facilitating the entry of multiple providers into the market. New providers will offer facilities-based competition to each other and traditional cable and telephone carriers -- greatly enhancing customer choice. A wealth of innovative services will include two-way video, teleconferencing, telemedicine, telecommuting, data services and global networks. Flexible

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<sup>1</sup> *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)(hereinafter ``*First NPRM*"), recon. pending; Second Notice of Proposed Rulemaking, 9 FCC Rcd 1394 (1994)(hereinafter ``*Second NPRM*").

service rules will also promote the efficient use of scarce spectrum by allowing providers to adjust and respond to changes in technology and market demand.

3. Developers of LMDS fixed microwave service propose to offer broadband two-way video communications, including video distribution, teleconferencing, telemedicine, telecommuting, and data services using a cellular system design to establish communications links with subscribers. LMDS proponents hope to provide high quality competition to cable operators and local exchange carriers. LMDS' cellular-like capabilities enable it to offer diverse services within the same region.

4. FSS systems, using state of the art technology, propose to offer a range of domestic and international services, including telephone, video, teleconferencing, and interactive data services. The proposal will provide bandwidth to connect seamlessly satellites and terrestrial fiber networks. Feeder links for MSS systems operate in the FSS frequency bands, and are needed to complete the transmission paths to enable these services to be available to mobile users.

5. In this Notice we propose the use of competitive bidding to choose among mutually exclusive LMDS and FSS applicants. We are also addressing the 29.5-30.0 GHz band in this docket. It is necessary to consider this band segment simultaneously with the 27.5 - 29.5 GHz band because our band segmentation proposal for the latter band anticipates providing spectrum for geostationary FSS at 29.5 - 30.0 GHz.

6. Finally, we are supplementing our earlier Tentative Decision on CellularVision's request for a Pioneer Preference. This supplement to our earlier proposal is necessitated by events occurring since the issuance of our First Notice of Proposed Rulemaking.

## **II. BACKGROUND**

7. The 27.5 - 29.5 GHz frequency band is currently allocated for fixed, fixed-satellite uplinks, and mobile services. 47 C.F.R. ' 2.106. Part 21 of the Code of Federal Regulations permits fixed point-to-point use, and Part 25 of the Code of Federal Regulations permits fixed satellite services in this band. Except for experimental work in this band conducted by the predecessor-in-interest of CellularVision of New York, L.P., (hereinafter ``CellularVision"), which began in 1986,<sup>2</sup> very little fixed demand for the spectrum existed prior to 1991. Similarly, except for NASA's experimental Advanced Communications Technology Satellite (ACTS) and Norris Satellite Communications's (Norris) 1990 application, little demand for fixed-satellite uplinks appeared to exist.

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<sup>2</sup> Experimental Radio Station KA2XLG; *See also* Comments, Suite 12 Group, at page 50, filed March 16, 1993.

8. In 1990, Motorola Satellite Communications, Inc. (Motorola) applied for feeder links for its non-geostationary mobile satellite (Big-LEO) system in this band. On July 16, 1990, Norris filed an application to provide satellite services in the 29.5-30.0 GHz band. In January, 1991, the Commission granted the application of CellularVision's predecessor-in-interest, Hye Crest, Inc., for a license to provide LMDS in the 27.5 - 28.5 GHz frequency band covering the New York City Primary Metropolitan Statistical Area (NYPMSA).<sup>3</sup> The application was granted pursuant to waiver of the point-to-point rules in Part 21 in order to allow a fixed cellular point-to-multipoint operation for video distribution (wireless cable).<sup>4</sup> The CellularVision system is operating in the Brighton Beach area of the NYPMSA, and CellularVision has requested authority to expand within its assigned service area. The licensee is also planning to implement telecommunications service. Approximately 975 applications similar to that of Hye Crest's were filed between February, 1991 and October, 1992 requesting waiver of the point-to-point rules so that point-to-multipoint service could be offered.<sup>5</sup> The Commission implemented a freeze on new applications for the Common Carrier Point-to-Point Service in the band 27.5 - 29.5 GHz in October, 1992.<sup>6</sup> The freeze was intended to stop the filing of waiver applications, and it remains in effect.

9. NASA has invested nearly one billion dollars in the in-orbit NASA Advanced Communications Technology Satellite (ACTS) system. The project has demonstrated it is feasible to provide a variety of fixed-satellite services in the Ka-band, including integrated services digital networks (ISDN), supercomputer access, and rural electric power monitoring and operations. Specifically, the ACTS system has provided the opportunity for the Mayo Clinic to diagnose patients in remote locations and the opportunity for the U.S. military to conduct

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<sup>3</sup> *Hye Crest Management, Inc.*, 6 FCC Rcd 332 (1991).

<sup>4</sup> The licensee was granted waivers of Sections 21.108 (directionalization and bandwidth requirements) and 21.700 (status eligibility).

<sup>5</sup> The Commission denied the waiver requests and dismissed the applications in the *First NPRM*. Reconsideration petitions of this action are pending.

<sup>6</sup> *In the Matter of Petitions for Redesignation of the Common Carrier Point-to-Point Microwave Radio Service Frequency Band 2.5 GHz - 29.5 GHz*, Order, 7 FCC Rcd 7201 (CCB 1992).

overseas communications during Operation Uphold Democracy in Haiti. NASA is operating ACTS under a frequency usage support agreement from National Telecommunications and Information Administration (NTIA). The agreement is accorded experimental status by the Federal Communications Commission.

10. This rulemaking proceeding was preceded by three petitions for rulemaking concerning the 28 GHz band. Harris Corp-Farion Div. filed a petition for rulemaking requesting that the Commission channelize the 28 GHz band so that manufacturers of point-to-point equipment could standardize their systems. CellularVision filed a petition for rulemaking to change the point-to-point rules in a manner consistent with its waiver so that point-to-multipoint video distribution service could be offered on a regular basis in the band. In response to CellularVision's petition, Video/Phone Systems, Inc. (Video/Phone) filed a petition for rulemaking proposing a broadband-on-demand video telecommunications service.

11. The *First NPRM* was released January 11, 1993. 8 FCC Rcd. 557. In it, the Commission considered the three petitions for rulemaking. The Commission tentatively concluded that redesignation of the fixed point-to-point use of the band to fixed point-to-multipoint could stimulate greater use of the 27.5 - 29.5 GHz frequency band, and proposed detailed rules (other than technical requirements) for implementation of a Local Multipoint Distribution Service. The Commission did not specify what type of service would have to be offered, preferring that the marketplace decide the best use of the spectrum.

12. The Commission proposed two blocks of 1000 MHz each for Local Multipoint Distribution Service. This proposal was based on CellularVision's existing technology.<sup>7</sup> However, because the 27.5 - 29.5 GHz frequency band is allocated on a co-primary basis with the Fixed Satellite Service for uplinks, the Commission also requested comment from satellite entities regarding the effect of redesignation and the proposed rules on any proposed satellite use of the band.

13. In response to the *First NPRM*, a number of different uses were proposed for terrestrial and satellite licensing. The Commission considered the various proposals for the 28 GHz band and released the *Second NPRM* on February 14, 1994 (9 FCC Rcd 1391). In it, the Commission found that the majority of commenters and reply commenters supported the Commission's finding of widespread interest in point-to-multipoint uses of the 28 GHz band, but also found significant interest on the part of the satellite industry in the band. Accordingly, the Commission tentatively concluded that the best interests of the public would be to allow both terrestrial and satellite providers to co-exist in the 28 GHz band, and decided to begin a

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<sup>7</sup> CellularVision, by virtue of its license pursuant to waiver of the existing point-to-point rules, is the only operator licensed to provide LMDS in the United States; it is operating a system in Brighton Beach, New York City. CellularVision and Texas Instruments have operating systems in other countries. Other LMDS developers are testing prototypes and components. A number of LMDS developers have experimental licenses.

negotiated rulemaking procedure to develop technical rules for sharing the band. After public notice and opportunity to comment, and with the approval from the Office of Management and Budget and the General Services Administration, the Commission established the LMDS/FSS 28 GHz Band Negotiated Rulemaking Committee (NRMC).

14. The LMDS/FSS 28 GHz Band Negotiated Rulemaking Committee met between July 26, 1994 and September 23, 1994; the Report of the Committee, dated September 23, 1994, was presented to the Commission and is included in the docket of this proceeding.

15. The results of the Committee's work indicate that LMDS and FSS service uplinks (*i.e.*, the ubiquitous subscriber transceivers) are not technically able at this time to reasonably share the same spectrum. However, CellularVision and Motorola were able to reach agreement on technical parameters allowing LMDS and feeder links to non-geostationary satellites operating in the Mobile-Satellite Service to share the same spectrum, subject to feasible sharing criteria. There was some indication that limited sharing could be achieved between FSS gateway stations<sup>8</sup> (either non-geostationary or geostationary orbit) and LMDS.

16. In the following text, we describe the characteristics of the particular systems proposed. Each of these systems has particular technical characteristics which may render it more suitable for some types of uses or services than other systems. Each also is, in our view, a potentially critical component of both the national and global information infrastructure. Each system description should be read bearing in mind that our ultimate goal is to accommodate the strengths of systems so that, through private investment, competition and ubiquitous service result.

#### **A. Specific Satellite Proposals**

17. Permitting satellites to operate in the 28 GHz band will contribute to the national and global information infrastructure by modernizing existing communications infrastructures of local telephone service, providing enhanced wide-area mobile services and access to advanced, digital, broadband communications and video services. These advanced services can potentially be provided to every person in the world, whether in an urban or remote location. As a consequence, satellites have significant potential to stimulate economic growth in the United States and abroad. The United States has led the world in developing and implementing satellite technology and the satellite proposals before us represent an opportunity for the United States to continue its leadership role through enhanced communications infrastructures and services.

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<sup>8</sup> Gateways are earth stations generally larger than user terminals that support multiple carriers. These stations provide interconnection with the terrestrial Public Switched Network. By their nature, they are not deployed in the same ubiquitous way as the user transceivers.



18. Three types of satellite system uses have been proposed for the 28 GHz frequency bands. First, the Commission has received applications for geostationary fixed satellite service (GSO/FSS) licenses. Second, the Commission has received one application for a non-geostationary fixed satellite service (NGSO/FSS) system. Finally the Commission has multiple requests for the assignment of feeder links to be used in conjunction with non-geostationary mobile satellite service (NGSO/MSS) systems, including specific requests for assignment of frequencies in the 28 GHz band, as well as conditional requests that 28 GHz frequencies be made available for feeder links in the event feeder link assignments cannot be made in other bands. We address each of these types of satellite uses.

1. *Geostationary Fixed-Satellite Service Proposals*<sup>9</sup>

19. Hughes Communications Galaxy, Inc. ("Hughes") submitted an application in December 1993 to construct, launch and operate two domestic fixed-satellites to operate in the Ka-band, a system which it calls "Spaceway." Hughes later amended this application to expand the system to 17 interconnected satellites with global coverage. Four of these satellites are proposed to serve the United States. These four satellites serving the U.S. would use 1000 MHz of spectrum at 29.0 - 30.0 GHz for uplinks.<sup>10</sup> Hughes proposes to provide low-cost, ubiquitous, high-speed data, video, and videotelephony communications services. Spaceway proposes to offer United States domestic service, domestic service within other countries, intra-regional service, and global international services. The services will be available "on demand" with an estimated domestic satellite capacity of 21,650 simultaneous duplex 384 Kbs channels and 92,000 such channels system wide. The first satellites in the Spaceway network are scheduled to be operational in 1998.

20. Hughes proposes to co-locate two of the four domestic satellites at 101 degrees W.L. and the other two at 99 degrees W.L. Hughes plans to operate each of the co-located satellites over 500 MHz of spectrum, with one operating in the 29.0-29.5 GHz band and the other in the 29.5-30.0 GHz band. Each proposed satellite will incorporate forty-eight 120 MHz spot beams for uplink and downlink communications, twenty-four in each polarization direction.

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<sup>9</sup> *The Commission issued Norris Satellite Communications, Inc. ("Norris") authority in July 1992, to construct, launch and operate a fixed-satellite service system in the 29.5-30.0 GHz band. See Norris Satellite Communications, Inc., 7 FCC Rcd 4289 (1992). In granting Norris's application, we waived our financial qualification standard in light of the facts that no other application was then pending for use of the 28 GHz band, and that Norris's satellite would not preclude other uses of the band, since "the entire orbital arc remains available for future applicants." 7 FCC Rcd at 4290. We also imposed construction milestones and indicated they would not be routinely extended. The milestones require Norris to begin construction of a satellite by July 1993, complete construction by September 1996, and launch the satellite by January 1997.*

<sup>10</sup> Hughes proposes to use frequencies from 19.2 to 20.2 GHz for downlinks in the U.S.

By proposing multiple satellites at each of the orbital locations, Hughes represents the Spaceway network will be able to use power levels that will allow customers to use small, inexpensive earth terminals. By proposing two satellites at two locations, instead of one satellite at four different locations, more geostationary satellites will be accommodated and spectrum efficiency is enhanced.

21. Loral Aerospace Holdings, Inc. ("LAHI") filed an application in April 1995, requesting authority to construct, launch, and operate a Ka-band geostationary fixed satellite, "CyberStar." CyberStar would use 1250 MHz at 28.75 GHz to 30.0 GHz for satellite uplinks, to serve the contiguous United States, Alaska, and Hawaii.<sup>11</sup> LAHI proposes to locate Cyberstar at 110 degrees W.L. LAHI's proposed system will consist of 20 regional high-powered spot beams with cross-polarization, each of which is individually designed for efficient coverage and minimal signal degradation due to rain attenuation. The proposed satellite is specifically designed to provide compressed high data rate digital signals in the Ka-band frequency to both commercial and residential users. Proposed services include video telephony and videoconferencing, medical and technical tele-imaging, computer aided design/computer aided manufacturing (CAD/CAM) data, and image transmission.

22. In April 1995, PanAmSat Licensee Corporation ("PanAmSat"), filed an amendment to its application to construct, launch, and operate a new hybrid geostationary fixed-satellite, PAS-9, as part of its separate international communications satellite system. In this amendment, PanAmSat requests 2500 MHz of the Ka-band, at 27.5-30.0 GHz for satellite uplinks, as a component of its proposed system.<sup>12</sup> PAS-9, which PanAmSat proposes to operate at 58 degrees W.L., is to serve the United States and other countries through movable Ka-band spot beams. Services provided by PAS-9 would include two-way Direct-to-Home (DTH) and other advanced VSAT services to small antenna networks.<sup>13</sup>

## 2. *Non-Geostationary Fixed Satellite Service Proposals*

23. Teledesic Corporation filed an application in March 1994 for authority to construct, launch, and operate a constellation of low-Earth orbit (LEO) satellites in the fixed-satellite service. An amendment to that application was also filed in December 1994. Teledesic proposes to operate a constellation of 840 satellites, with 40 active satellites evenly spaced in each of 21 orbital planes in the 28 GHz band. The system will provide "constant" coverage to over 95% of the Earth's surface through a fixed grid of approximately 20,000 160km squares or "super cells."

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<sup>11</sup> LAHI proposes to use 18.95 to 20.20 GHz frequency bands for its downlinks.

<sup>12</sup> PanAmSat proposes to operate its downlinks in the 17.7 to 20.2 GHz frequency band.

<sup>13</sup> We also note that on July 12, 1995 Ka-Star Satellite Communications Corporation filed an application for a geostationary fixed satellite system.

Teledesic requests authority to operate using 400 MHz for service links, 800 MHz for gateway-to-satellite feeder links, and 100 MHz for mobile services.<sup>14</sup>

24. Teledesic's proposed services include: providing universal access, at a cost that is independent of location; ISDN; voice; facsimile; two-way digital data; videoconferencing; interactive multi-media; and other broadband types of services which allow the user to access only the amount of bandwidth needed for a particular application ("Bandwidth on Demand"). Teledesic offers to dedicate some of the capacity of the Teledesic global satellite system on a non-profit basis for developing countries' needs, such as education and health care.<sup>15</sup>

### 3. *Non-Geostationary/ Mobile Satellite Services (NGSO/MSS) Feeder Links*

25. Big LEO systems are satellite systems capable of providing on a global basis both voice and data mobile satellite services using handheld terminals. The communications link between the satellite and these mobile terminals is referred to as the service link. Another and integral part of a Big LEO system is its feeder links. These are the transmission links to and from the satellite to a central earth station. The feeder link is needed to interconnect the mobile satellite system with other communications networks or with other user transceivers. Without this link, Big LEO systems will not be able to initiate service.

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<sup>14</sup> Teledesic proposes to use frequencies from 17.8 GHz to 18.6 GHz and 18.8 GHz to 19.2 GHz for its downlinks.

<sup>15</sup> By non-profit, Teledesic means it will not seek to generate revenue from these services. Teledesic's Chairman made this announcement at the G-7 Ministerial Conference in Brussels, on February 24, 1995.

26. Since the *Second NPRM*, the Commission has licensed three Big LEO systems.<sup>16</sup> The Commission also found that two other applicants needed additional time to establish they were financially qualified, and deferred further consideration of their applications until January 31, 1996.<sup>17</sup> Another applicant elected to defer its financial showing until January 31, 1996. Two of the licensees proposed to locate feeder links in the Ka-Band, and were granted authority to construct satellites, at their own risk, with feeder links in the band.<sup>18</sup> Specifically, Motorola was conditionally authorized to construct feeder uplinks in the 29.1-29.3 GHz band, and feeder downlinks in the 19.4-19.6 GHz band. Motorola's licensed Big LEO system, Iridium, is under construction and is scheduled for launch in 1996. TRW, another Big LEO licensee, was conditionally authorized to construct feeder uplinks in the 29.7-30.0 GHz portion of the band, and feeder downlinks in the 19.8-20.1 GHz frequency bands. Although proposed as a band for MSS feeder links in the ITU Study Group Process, this band was not listed as a potential MSS feeder link band in subsequent preparations for the WRC-95.<sup>19</sup> Therefore, we are considering

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<sup>16</sup> See *Loral/Qualcomm Partnership, L.P.*, 10 FCC Rcd 2333 (Int'l. Bur. 1995); *Motorola Satellite Communications, Inc.*, 10 FCC Rcd 2268 (Int'l. Bur. 1995); *TRW Inc.*, 10 FCC Rcd 2263 (Int'l. Bur. 1995). These orders are each subject to a petition for reconsideration or an application for review.

<sup>17</sup> *Constellation Communications, Inc.*, 10 FCC Rcd 2258 (Int'l. Bur. 1995); *Mobile Communications Holdings, Inc.*, 10 FCC Rcd 2274 (Int'l. Bur. 1995). These orders are each subject to a petition for reconsideration or an application for review.

<sup>18</sup> The licensing orders indicated that authority to launch and operate a system using the conditionally authorized feeder links would be withheld until sufficient spectrum is available to satisfy the feeder link requirements of all licensed Big LEO systems. *Motorola Satellite Communications, Inc.*, 10 FCC Rcd 2268, at para. 17 (Int'l. Bur. 1995); *TRW Inc.*, 10 FCC Rcd 2263, at para. 15 (Int'l. Bur. 1995).

<sup>19</sup> See *CPM Report on Technical Operational and Regulatory/ Procedural Matters to be Considered*

other segments of the Ka band as candidates to accommodate TRW's proposal.<sup>20</sup> Other licensees and applicants have also asked for feeder link spectrum outside the Ka-Band, but have indicated that, depending on the availability of that spectrum worldwide, they may wish to modify their proposals.

## **B. Specific LMDS Proposals**

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*by the 1995 World Radio Communication Conference, (CPM Report), Table 15 (Geneva 1995).*

<sup>20</sup> See *infra*, n. 61 and accompanying text for a discussion of "reverse band working" in the 19.4 - 19.7 GHz band.

27. LMDS may provide services that compete with local exchange carriers in the provision of local exchange service, and with cable operators in the provision of video programming. LMDS developers and manufacturers, especially CellularVision, have provided for the record complete system designs and descriptions of their proposed services and the projected consumer interest in these services. Very high subscriber capacity for two-way video telecommunications is available through technology developed for use in this frequency band. Hub transceivers create small cells, typically of six miles diameter, which transmit to subscriber locations, and which can receive subscriber transmissions on a return path. Because the cells are small, and arranged in a typical cellular pattern, a very high level of frequency reuse is possible. This pattern, combined with the availability of broadband microwave spectrum, results in sufficient capacity in the proposed LMDS system designs to provide wireless competition to local exchange carriers or cable television systems even in urban areas. Service in competition to cable television providers is now being offered in the Brighton Beach area of New York City, pursuant to a license to CellularVision, Inc. A single cell of six miles diameter is serving 1700 subscribers.<sup>21</sup>

28. LMDS, as developed since the *First NPRM* was released, joins services traditionally provided by separate communications service providers, such as cable television, telephony, video communications, data transfers, and interactive transactions of all types. In addition, based on the interest generated in LMDS by entrepreneurs in this country, LMDS has attracted attention and support from both developed and developing countries around the world. LMDS manufacturers CellularVision and Texas Instruments have begun video and telephony services in other countries using LMDS technology. At least seven other countries, including Canada and Mexico, have licensed LMDS on an experimental or permanent basis in the 28 GHz band.<sup>22</sup> LMDS developers offer the prospect for modern wireless telephone systems, video distribution, and other communications services to developing countries which do not have a wireline or cable infrastructure.

### *1. CellularVision's System*

29. CellularVision states that the technology it proposes is ``capable of immediately providing interactive high quality video, voice, and data services. . . ."<sup>23</sup> It argues that LMDS will help meet the public demand for additional multichannel video programming and for two-way voice and data service. CellularVision argues that the public will benefit from having an

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<sup>21</sup> *Ex parte* notice letter, Michael Gardner, P.C., to William Caton, Acting Secretary, Federal Communications Commission, June 26, 1995.

<sup>22</sup> *Ex parte* notice letter, Michael Gardner, P.C., to William Caton, Acting Secretary, Federal Communications Commission, February 16, 1995; *ex parte* notice letter, Texas Instruments, Inc., to William Caton, June 1, 1995.

<sup>23</sup> *Petition for Rulemaking*, Suite 12 Group; see *First NPRM*, 8 FCC Rcd at 558.

``innovative and competitive two-way interactive communications system" capable of providing the equivalent of fiber cable service without the need to wire a community,<sup>24</sup> and that LMDS is capable of providing simultaneous telephone service to 75% - 90% of the population of the United States.<sup>25</sup> CellularVision also states that its system is capable of incorporating future technological advances such as high definition television and two-way digital communications.<sup>26</sup>

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<sup>24</sup> *Id.*

<sup>25</sup> *Ex parte* notice letter, Michael Gardner, P.C., to William Caton, Acting Secretary, Federal Communications Commission, March 16, 22, and 28, 1995, attachment, page 2.

<sup>26</sup> *Petition for Rulemaking*, Suite 12 Group; see also 8 FCC Rcd at 558.



30. CellularVision has stated that its requirement to compete successfully with cable operators is 1 gigahertz of contiguous spectrum. CellularVision's analog system is a multicell configured distribution system with a return path capability. The video channels (20 MHz) are transmitted over 1 gigahertz of spectrum with the same polarization. Two-way communication channels are inserted between the video channels and are transmitted with opposite polarity. The system uses an omni-directional antenna to transmit from the node, or center of the cell. The subscriber's receiver antenna uses a narrow beamwidth to eliminate multipath reception and to obtain sufficient link margin for service. Each cell is designed to be between 6 to 12 miles in diameter, and shadowed areas are served with a repeater or reflector. The system avoids interference between adjacent cells by cross-polarizing the signals and by taking advantage of the discrimination provided by the subscriber receiving antenna. CellularVision states that its system makes exceptionally efficient use of the frequency spectrum.<sup>27</sup>

### *2. Texas Instruments' System*

31. The Texas Instruments LMDS system is a two-way digital system providing video, data and telephony services. The Texas Instruments system is designed to operate using 1 gigahertz, and the company believes that it requires 1 gigahertz of spectrum to be competitive with landline facilities; however, this spectrum need not be contiguous. The system design consists of hubs, customer premise equipment and central office servers for video and data. The system is based on a cellular design with a typical cell size of 3 miles capable of serving 16,000 subscribers. Each hub employs several sector wide-beam antennas and provides 1,000 simultaneous two-way voice channels, 56 video broadcast channels, and 200 video on demand channels per sector. Each subscriber location employs a highly directional antenna and, in addition to its video capability, will have a 64 kbps data port and two telephone lines. Isolation between hub transmissions in adjacent cells is achieved by the directionality of the antennas and cross-polarization isolation.

### *3. Video/Phone's System*

32. Video/Phone believes that its system also requires 1 gigahertz of spectrum to be viable. The record does not contain a statement of whether Video/Phone's technology requires contiguous spectrum. Its architecture incorporates optional modulation techniques to provide a variety of one-way and two-way voice, data and video services. Video/Phone plans new two-way broadband applications such as distance learning, telecommuting, telemedicine, videoconferencing at high-speed data rates, business and professional television, half-duplex database services, and metropolitan area LAN interconnection. Hub density, intended cell coverage radius (0.5 mile), the degree of cell sectorization, Equivalent Isotropic Radiated Power (EIRP) levels, and other parameters in a typical Video/Phone deployment will vary according to service demand and interference environment conditions. The system may also employ hub

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<sup>27</sup> *Id.*

diversity in some configurations to allow users to orient antennas toward multiple hub locations, as well as dynamic channel assignment and other operational capabilities.

### **III. BAND SPLITTING PROPOSAL**

33. In the Second Notice of Proposed Rulemaking, the Commission found that if parties were unable to find a technical solution to sharing the 28 GHz band in the Negotiated Rulemaking Committee, the Commission would propose a band plan for public comment.<sup>28</sup>

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<sup>28</sup> See *Second NPRM*, 9 FCC Rcd 1394 (1994).

34. In this Notice, we propose a band segmentation plan. This plan is based on the filings in the proceeding and meetings with individual parties to this proceeding. Furthermore, we have attempted to design a band segmentation plan that will meet our goal, stated in the *Second NPRM*, of accommodating all the types of proposed services for this frequency band. Although we stated that goal in the context of seeking a technical sharing solution to the different services proposed, we are convinced that denying one or the other of the proposed services is not in the public interest.<sup>29</sup> Both terrestrial and satellite services bring the promise of competition and new services to the nation's communications infrastructure.

35. In the *Second NPRM* we stated that we could make our selection among service proposals on the basis of certain factors. Among these factors were economic growth potential and public interest concerns that may not be readily calculable in economic terms. Accordingly, if any party believes that its service requirements are not adequately satisfied by our proposed band segmentation plan, it should also address the factors stated in the *Second NPRM*.<sup>30</sup> In addition, any commenter asserting that the plan does not provide sufficient capacity for its system, must specify the minimum spectrum required to support its system, supporting this assertion with a concrete technical and economic analysis, and must propose a plan that accommodates the reasonable requirements of all qualified applicants.

36. The Commission contemplated different options for licensing the band and analyzed various sharing proposals submitted in developing our plan. One of the options proposed by parties was to move one service to the 40 GHz band and allow the other service to use the 28 GHz band. The United Kingdom's Radiocommunications Agency believes: "[t]hat the market conditions and technological developments for MVDS [Multipoint Video Distribution Service] are ripe for deployment at 40 GHz, which is a frequency band clear of other spectrum resource pressures internationally."<sup>31</sup> However, we tentatively conclude that the 40 GHz band is not suitable for LMDS as proposed in this docket. Internationally and in the United States the 40.5 to 42.5 GHz band is allocated for fixed services on a secondary basis to broadcast satellite services. In addition, LMDS proponents CellularVision, Texas Instruments and Pacific Telesis state that moving LMDS to the 40 GHz band will result in delays in deployment of LMDS of 12-18 months.<sup>32</sup> These parties also stated that the cost of moving LMDS operations to the 40 GHz band would result in a cost increase sufficient to make LMDS not commercially viable.

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<sup>29</sup> *Id.* at 1397.

<sup>30</sup> *Id.* at 1401.

<sup>31</sup> *See ex parte* filing in CC Docket No. 92-297 and ET Docket 94-124, by the Radiocommunications Agency, May 12, 1995.

<sup>32</sup> *See ex parte* filing of Pacific Telesis in ET Docket No. 94-124 and CC Docket No. 92-297 (March 20, 1995), and *ex parte* filing of CellularVision in ET Docket No. 92-124 and CC Docket No. 92-297 (April 18, 1995).

37. Likewise, we tentatively conclude that the 40.5 to 42.5 GHz band is not suitable for the satellite systems as proposed in this docket. This band is not internationally or domestically allocated for fixed satellite service operation. Satellite proponents were also concerned that moving their particular service to 40 GHz would delay implementation of their service since technologies have not been fully developed and tested at 40 GHz, as they have been at 28 GHz. We recognize these concerns.

38. Since our proposal accommodates both services at 28 GHz, we need not decide which service would be better suited for operating at 40 GHz. This does not preclude any future determination to allocate spectrum for either service at 40 GHz.<sup>33</sup>

### **A. Co-Frequency Sharing**

39. As mentioned previously,<sup>34</sup> we established a Negotiated Rulemaking Committee, with representatives from each proposed service, and the Commission participating, to try to develop a sharing plan that would accommodate LMDS systems, FSS systems, and feeder links for MSS systems.<sup>35</sup> After two months, the negotiations ended without consensus on a technical sharing arrangement that would accommodate all. The Committee concluded that it was not feasible for LMDS stations and the ubiquitous FSS user transceivers to share the same frequencies.<sup>36</sup> There was also an indication that limited sharing could be achieved between gateway access to the FSS (either NGSO or GSO) and LMDS.<sup>37</sup> In addition, Motorola, CellularVision, and Texas Instruments developed a technical sharing agreement allowing LMDS and MSS feeder links to share the same spectrum with certain constraints.<sup>38</sup>

40. Bell Communications Research (Bellcore) and Geowave each submitted studies, after the conclusion of the meetings held by the Negotiated Rulemaking Committee, that they

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<sup>33</sup> See *In the Matter of Amendment of Parts 2, 15, and 21 of the Commission's Rules to Permit Use of Radio Frequencies Above 40 GHz for New Radio Applications*, ET Docket No. 94-124.

<sup>34</sup> See discussion in the Background section regarding the Negotiated Rulemaking Committee.

<sup>35</sup> See Appendix A for a list of participants on the Negotiated Rulemaking Committee.

<sup>36</sup> See "Report of the LMDS/FSS 28 GHz Band Negotiated Rulemaking Committee" (September 23, 1994) at 85.

<sup>37</sup> See Letter from W. Luther, FCC Industry Advisory Committee Facilitator, to K. Wallman, Chief, Common Carrier Bureau, FCC, Sept. 23, 1994.

<sup>38</sup> *Id.* at Appendix 7, p. 2 and discussion on LMDS and MSS feeder link sharing at paras. 60 - 63, *infra*.

contend demonstrate that co-frequency sharing between LMDS and FSS systems is possible.<sup>39</sup> Bellcore concluded that co-frequency sharing was feasible with a 99.9% availability for both services, if (1) LMDS systems were modified to increase their interference tolerances; and (2) if the LMDS and FSS operators used a spectrum assignment protocol in which assignments were based upon LMDS operator preferences.

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<sup>39</sup> See "Interference Analyses for Co-Frequency Sharing of the 28 GHz Band by the Local Multipoint Distribution Service (LMDS) and the Fixed Satellite Service (FSS)" ("Bellcore Study"), April 1995.

41. MITRE Corporation and NASA submitted filings disputing Bellcore's methodology. Both concluded that sharing is not, in fact, feasible.<sup>40</sup> MITRE and NASA argue that Bellcore's study did not consider, among other things, LMDS systems besides CellularVision and Texas Instruments; FSS systems besides Teledesic and Spaceway; the aggregate interference potential of Teledesic and Spaceway; interference from satellite services into the LMDS subscriber-to-headend link, and interference into adjacent LMDS cells.<sup>41</sup> They also contend that Bellcore's approach obscures the effects of interference on specific LMDS subscribers<sup>42</sup> and appears to be based on "best-case" values, not "worst-case" as described. Both are also concerned about the impracticality of the proposed spectrum protocol.<sup>43</sup> We tentatively conclude that these concerns are valid.

42. In its study, Geowave proposes a sharing protocol under which digital LMDS hubs activate only when a satellite is not transmitting to that area.<sup>44</sup> According to Geowave, this can be accomplished by including a synchronization mechanism on the LMDS hub transmitters. The timing mechanism would "turn off" the LMDS hub when satellite earth stations in the cell area were transmitting to the satellite. This study has been the subject of criticism on the grounds that it has not addressed all interference scenarios, nor does it take into account analog LMDS systems. The sharing methodology, for example, is specific to the Teledesic "grid" system. In order to work, the United States would need to be divided into "cells" that are an exact match to those being projected on the Earth by Teledesic. Further, LinCom Corporation, in its review of the GeoWave proposal states that adjacent cell interference into LMDS subscribers has not been taken into account.<sup>45</sup>

43. Based on the existing record, we tentatively conclude that co-frequency sharing between NGSO/FSS or GSO/FSS systems and LMDS systems is not feasible at this time. We further tentatively conclude that Bellcore and Geowave studies do not provide a basis for

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<sup>40</sup> See *ex parte* filing by the SBCA, "Critique of the Bellcore Report," filed June 9, 1995. The MITRE Corporation's report was prepared under contract with the Satellite Broadcasting and Communications Association ("SBCA"), and was submitted on behalf of the Global Satellite Communications Coalition. See also NASA *ex parte* filing on June 7, 1995.

<sup>41</sup> See Critique of the Bellcore Report at viii.

<sup>42</sup> See *ex parte* filing of NASA filed June 7, 1995.

<sup>43</sup> *Id.*

<sup>44</sup> See *ex parte* filing of Geowave "Spectrum Sharing at 28 GHz Using Spatial and Temporal Synchronization and a New Digital LMDS System," February 23, 1995.

<sup>45</sup> See *ex parte* filing of LinCom Corporation, "Review of GeoWave Proposal for the Co-Frequency Sharing of the 28 GHz Band by the Local Multipoint Distribution Service (LMDS) and the Fixed Satellite Service (FSS)," June 28 1995.

rejecting the conclusion of the Negotiated Rulemaking Committee regarding the infeasibility of sharing. For example, among the issues raised concerning the Bellcore study, we are particularly concerned about whether the study deals adequately with potential interference cases and with the workability of spectrum assignments that may need to accommodate large numbers of LMDS operators and FSS transmitters. We seek comment on these tentative conclusions. Based on these tentative conclusions, we propose in this Notice a band segmentation plan that divides the 27.5-29.5 GHz frequency band into discrete spectrum segments with each segment designated to FSS, MSS feeder links or LMDS, on a primary or co-primary basis.

**B. Commission Proposal**

44. We propose a segmentation scheme for the 28 GHz band that we believe is equitable, allows licensees to operate viable systems, promotes competition within the band, allows the public to receive service as soon as possible, and provides for future growth of both satellite and terrestrial services. The plan also supports the NII and GII, creates competition to cable, LECs, cellular, and PCS, and continues to promote the U.S. as a leader in satellite technology. We believe this spectrum band plan accommodates the expected needs of all of the parties, although it does not reflect their exact requests. We maintain that each proponent can still develop and operate viable systems within the band, and initiate competitive services. Moreover, this proposal allows both terrestrial LMDS and satellite industries to implement services in the near term.

45. Our proposed plan is depicted graphically as follows:<sup>46</sup>

**PROPOSED BAND SEGMENTATION PLAN**

27.5	28.35	28.60	29.1	29.25	29.5	30.0 GHz
LMDS fss  850 MHz	GSO/FSS ngso/fss  250 MHz	NGSO/FSS gso/fss  500 MHz	MSS FEEDER LINKS & LMDS  150 MHz	MSS FEEDER LINKS & GSO/FSS  250 MHz	GSO/FSS ngso/fss  500 MHz	

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<sup>46</sup> Primary services are listed in capital letters. Lower-case letters indicate secondary services. Primary services in a particular frequency band have equal rights to any other services operating in the same band. Stations operating in primary services are protected against interference from stations of "secondary" services. Moreover, stations operating in a secondary service cannot claim protection from harmful interference from stations of a primary service. 47 C.F.R. §§ 2.104(d) and 2.105(c).

46. In proposing this plan, we recognize that proponents submitted other band segmentation plans. Although we do not propose to adopt any of these specific plans, each plan was analyzed and considered in developing our proposal. For example, a group of LMDS proponents submitted a revised plan which proposed co-primary sharing between LMDS and NGSO/FSS systems in 150 MHz of the band.<sup>47</sup> We do not propose FSS systems sharing on a co-primary basis with LMDS systems for reasons discussed more fully in connection with the discussion on the Bellcore study.<sup>48</sup> We also note that no service was placed as a secondary user in the 400 MHz of MSS feeder link spectrum due to the co-primary allocations there. Other plans fail to provide adequately for the operational needs of one or more of the proposed systems. For example, a plan submitted by TRW designates 925 MHz to LMDS (200 co-primary with MSS feeder links), 400 MHz to NGSO/FSS, and 875 MHz to GSO/FSS systems, respectively. We do not believe this is sufficient to support either the LMDS or NGSO services, as discussed below.<sup>49</sup> Similarly, a plan proposed by satellite proponents and one LMDS proponent designates 1000 MHz for LMDS services using two non-contiguous 500 MHz blocks, which may increase the cost of some analog LMDS system designs.<sup>50</sup> We do not believe this adequately supports LMDS systems.<sup>51</sup>

### *1. Primary LMDS Spectrum*

47. First, we propose to designate 850 MHz at 27.5 GHz to 28.35 GHz to LMDS, on a primary basis. GSO/FSS or NGSO/FSS systems would be permitted on a secondary basis, with the purpose of providing limited "gateway" type services. We also propose to designate to LMDS 150 MHz of bandwidth on a co-primary basis with MSS feeder links, at 29.1 to 29.25

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<sup>47</sup> See Revised band segmentation plan filed on May 31, 1995 by Philips Electronics, AEL Industries, Inc., mm-Tech, Inc., Darrin Technologies, CellularVision Technology & Telecommunications, L.P., M/A-COM, Inc., Titan Information Systems, Logimetrics, CTA Partners, Bell Atlantic Corporation, RioVision of Texas, Inc., International CellularVision, and CellularVision of New York ("The Joint Parties"). The first plan submitted by The Joint Parties on May 11, 1995, included frequencies that are not now allocated for commercial satellite services. Our proposed plan only includes spectrum that is allocated to the proponents involved so that service to the public will not be delayed.

<sup>48</sup> See also discussion on downlink pairings at para. 58, *infra*.

<sup>49</sup> Spectrum Proposal for 27.5 - 30.0 GHz, filed by TRW, Inc., May 18, 1995.

<sup>50</sup> But see *ex parte* filing of Hughes dated July 3, 1995.

<sup>51</sup> On May 12, 1995, Boeing Company, Hughes Communications, Inc., Teledesic Corporation, and Texas Instruments, Inc., ("The Parties") proposed a spectrum allocation plan. This plan was also supported by NASA, Lockheed Martin, and Hewlett Packard.



GHz.<sup>52</sup> We believe the planned LMDS services can be supported within this 1000 MHz of spectrum.

48. We have proposed to designate LMDS to the lowest portion of the 28 GHz band because CellularVision is operating a cell at 27.5-28.5 GHz and because LMDS equipment is already manufactured to operate in this frequency range. In doing so, we recognize that some LMDS proponents planning to implement 20 MHz type analog systems sought 1000 MHz of contiguous spectrum at 27.5 to 28.5 GHz. However, Texas Instruments and Hewlett Packard, both LMDS equipment manufacturers, note that a non-contiguous assignment could be used to meet LMDS operators' separate inbound and outbound spectrum needs. Further, we are concerned that designating LMDS more than 850 MHz of contiguous spectrum would not leave sufficient spectrum for other services in the band.

49. Further, although 150 MHz of the 1000 MHz designated for LMDS on a primary basis is shared with MSS feeder links on a co-primary basis, we believe that such co-frequency operations are feasible, as evidenced in part by the fact that parties to the Negotiated Rulemaking Committee were able to reach agreement on sharing between such services.<sup>53</sup>

50. The location of the 150 MHz shared portion, at 29.1 to 29.25 GHz, is dictated by the proposed frequency for Motorola's feeder links. Because we tentatively conclude that we cannot designate more than 850 MHz of contiguous spectrum to LMDS at the low end of the band, we believe that designating the additional 150 MHz requested by LMDS applicants at 29.1 to 29.25 GHz is a reasonable compromise.

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<sup>52</sup> See discussion relating to sharing between LMDS and MSS feeder links, paras. 60 - 63, *infra*.

<sup>53</sup> *Id.*

51. Harris Corporation-Farion Division (Harris) and Digital Microwave Corporation (Digital) filed a Petition for Rulemaking "In the Matter of Amendment of Parts 2, 21 and 94 of the Commission's Rules Concerning Channel Assignments in the 27.5 - 29.5 GHz Band." Harris and Digital were represented on the Negotiated Rulemaking Committee and have participated in the entire proceeding of this docket, including the discussions on the band segmentation issues. Harris and Digital have been concerned that the Commission adopt a channelization plan for the 28 GHz band, and that the band be available under Part 94 of the Commission's rules (for private carriers) in addition to its current availability under Part 21 (for common carriers).<sup>54</sup> As noted in the *First NPRM*, Harris filed a previous rulemaking petition to make that request. The Commission did not propose to specify any channelization plan in the first NPRM, nor did it propose to maintain any of the spectrum solely for point-to-point use; instead, it proposed to redesignate the 28 GHz band, to the extent that it is used for terrestrial services, for point-to-multipoint services.

52. In this Notice we again decline to dedicate part or all of the 28 GHz band solely to point-to-point services, as requested by Harris and Digital. At this time we believe it is in the public interest to provide terrestrial licensees in the 28 GHz band with the flexibility to offer a variety of services and to develop innovative new services. Harris and Digital have not demonstrated that the public interest in point-to-point services is greater than the interest in the myriad LMDS services proposed by other manufacturers and developers during the course of this proceeding.

53. Entities interested in providing point-to-point services may apply for LMDS spectrum themselves, they may seek geographic partitioning and/or spectrum disaggregation opportunities to the extent that these options are adopted in final LMDS rules, or they may lease spectrum from LMDS operators, to the extent permitted by our rules. Finally, we believe that we have made sufficient point-to-point spectrum available for support of wired and wireless telecommunications systems for the present.<sup>55</sup>

*b. Primary GSO/FSS Spectrum*

54. Next, we propose to designate 1000 MHz of spectrum on a primary basis to GSO/FSS systems from 28.35 to 28.60 GHz and 29.25 to 30.0 GHz. We also propose to allow NGSO/FSS systems to operate on a secondary basis to GSO/FSS systems in these bands and to allow MSS feeder links to operate on a co-primary basis in the 29.25 to 29.5 GHz band.<sup>56</sup> This

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<sup>54</sup> If the Commission's proposal in WT Docket No. 94-148 to merge Part 94 and some of Part 21 into a new Part 101 is adopted, Harris and Digital argue that the 28 GHz band should be incorporated into Subparts H and J of the new Part 101.

<sup>55</sup> *Hye Crest Management, Inc.* 6 FCC Rcd 332, para. 23 (1991).

<sup>56</sup> See discussion at para. 64, *infra*.

matches the request submitted by Hughes for 1000 MHz for operation of Spaceway, its proposed GSO/FSS system. It is, however, less than the amount of spectrum proposed by two other applicants, specifically PanAmSat and Loral. PanAmSat requests 2500 MHz of spectrum for operation of its proposed satellite, PAS-9, which will also operate in the C and Ku bands, and Loral requests 1250 MHz of spectrum for operation of its satellite system, CyberStar. Moreover, this plan assumes GSO/FSS systems and MSS feeder links can operate in the same band.

55. Several factors contribute to designating 1000 MHz of spectrum for the GSO/FSS systems. First, U.S. satellites currently providing fixed-satellite services in the C (4/6 GHz) and Ku (12/14 GHz) frequency bands are required, for spectrum efficiency, to use full frequency reuse, and to operate across the entire 500 MHz of each frequency band in each transmission direction. In response to the increased demand for satellite services, most FSS systems being built today are hybrid satellites, that is, they operate in both the C and Ku bands, thus utilizing 1000 MHz. Currently, the C and Ku bands are heavily utilized. Second, the GSO/FSS systems proposed for operation in the Ka band are proposing broadband applications. Broadband applications require more bandwidth than current data operations. We therefore believe that 1000 MHz of spectrum is needed to support multiple Ka-band GSO/FSS systems. Further, 250 MHz of this 1000 MHz of spectrum will be shared on a co-primary basis between GSO/FSS systems and MSS feeder links, as explained in more detail below.<sup>57</sup>

### 3. Primary NGSO/FSS Spectrum

56. We propose to designate 500 MHz of spectrum on a primary basis, at 28.60 to 29.1 GHz, to NGSO/FSS systems. We also propose to allow GSO/FSS systems to operate in this segment on a secondary basis. Teledesic has requested 1200 MHz of spectrum for its system. It proposes to operate user terminals over 400 MHz of spectrum and its gateway or high data rate (GigaLink) terminals over 800 MHz of spectrum.<sup>58</sup> Various technical analyses, submitted to the Commission and to industry preparatory groups for WRC-95, have demonstrated that the ubiquitous deployment of user terminals for a NGSO/FSS system, such as Teledesic's, will receive and cause unacceptable amounts of interference to other satellite users in the frequency band. These same analyses also conclude that the gateway terminals pose fewer problems for coordination than do the user terminals. This means that the user terminals are prime candidates to operate on a primary non-shared basis, and the gateway terminals are prime candidates to operate, for the most part, on a secondary basis in other bands. In particular, we propose secondary NGSO/FSS operations in the 750 MHz of spectrum in the 28.35 to 28.60 GHz and 29.5 to 30.0 GHz bands.<sup>59</sup>

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<sup>57</sup> *Id.*

<sup>58</sup> See Teledesic's application at 2.

<sup>59</sup> See paras. 54 - 55, *supra*.

57. We believe designating NGSO/FSS systems to only 400 MHz of primary spectrum, however, could call into question the system's operational ability. Relegating all gateway terminals to secondary status may lead to operational uncertainty. Not only would the gateway terminals bear the burden of coordinating with domestic GSO system operations, but they would be subject to the International Telecommunication Union Radio Regulation 2613, which requires NGSO systems to cease operations if they cause unacceptable interference into a GSO system.<sup>60</sup> Consequently, we propose to designate NGSO/FSS systems 500 MHz on a primary basis. The additional 100 MHz will ensure that at least some spectrum could be used for gateway terminals, and not be subject to secondary user constraints and RR 2613.

58. Furthermore, the location of the 500 MHz for NGSO/FSS system uplinks at 28.6 to 29.1 GHz is dictated in part by the location of the downlink frequencies contemplated for use. Downlinks at lower frequencies may prove unworkable. Specifically, the downlink spectrum conventionally paired with the 200 MHz immediately below 28.6 GHz, *i.e.* 28.4 to 28.6 GHz, is 18.6 to 18.8 GHz. The 18.6 to 18.8 GHz band is currently being used by space science systems which cannot easily co-exist with a NGSO satellite system. However, the downlink spectrum conventionally paired with the frequency band 28.6 to 29.1 GHz is at 18.8 to 19.2 GHz, which is proposed for NGSO/FSS primary operation. Consequently we propose to designate NGSO/FSS in a frequency band with a conventionally paired downlink.

#### 4. *Primary MSS Feeder Link Spectrum*

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<sup>60</sup> See ITU Radio Regulation 2613. The Commission has proposed that the ITU eliminate NGSO's secondary status, *see* WRC Preparatory Report, FCC 95-256 (released June 15, 1995) at paras. 59-68.

59. We propose to designate MSS feeder links and LMDS systems on a co-primary basis in the 29.1 to 29.25 GHz band segment and MSS feeder links and GSO/FSS systems to operate on a co-primary basis at 29.25 to 29.5 GHz. We also propose that MSS feeder links be authorized on a "reverse band working"<sup>61</sup> basis in the 19.4 to 19.7 GHz band.<sup>62</sup> Motorola has applied for 200 MHz of feeder link spectrum at 29.1 to 29.3 GHz for its Iridium system and TRW has applied for 300 MHz of Ka-band spectrum for its Odyssey system. It may be necessary to accommodate MSS feeder links for more than one system in the Ka-band. We propose to accommodate two systems in the band, and rely on other frequency bands to satisfy the requirements of any additional systems.<sup>63</sup> Time sharing arrangements and geographic diversity, among other mechanisms, could eliminate potential intra-service interference situations.

*a. 29.1 to 29.25 GHz (150 MHz)*

60. The only agreement reached with respect to frequency sharing during the Negotiated Rulemaking included Motorola, CellularVision, and Texas Instruments.<sup>64</sup> These parties agreed that MSS feeder links and LMDS hub stations and subscriber receivers can operate on the same frequencies subject to certain operating restrictions. The agreement provided that subscriber transceivers would not be permitted to transmit in this shared band. It also permitted the MSS licensee to operate feeder link earth stations in up to eight designated metropolitan statistical areas (MSAs) without further coordination. These feeder link stations

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<sup>61</sup> "Reverse band working" involves authorizing satellite communications links in a direction opposite to the direction for which the band is allocated. Thus, in the 19.4-19.7 GHz bands, which are allocated for downlinks, uplinks should operate on a "reverse band working" basis. See CPM Report at Chapter 2, Section 1, Part C, ' 3.2.5.

<sup>62</sup> This proposal would accommodate TRW's request for 300 MHz of feeder link spectrum for the Odyssey system.

<sup>63</sup> See discussion *infra* on effect of decisions at WRC-95 on the band segmentation plan.

<sup>64</sup> See Report of the LMDS/FSS 28 GHz Band Negotiated Rulemaking Committee, Addenda.

would be afforded a protection zone within the specified MSA and up to 75 nautical miles from its boundary. That is, 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 within its boundary. We use this agreement as the basis for our co-frequency sharing plan between these services. Also we request comment on how this band sharing plan would be affected if the Commission adopts its proposal to use BTAs, rather than MSA/RSAs, for LMDS licensing.

61. Because Motorola requested 200 MHz of spectrum for Iridium's feeder links, the agreement envisioned 200 MHz of shared spectrum. Our band plan proposes that only 150 MHz of spectrum, between 29.1 and 29.25 GHz, will be shared by MSS feeder links and LMDS systems. If the MSS operator ultimately assigned to operate in this band requires more than 150 MHz of spectrum, those requirements can be satisfied in another band as proposed below.

62. We specifically propose to limit MSS uplinks in the 29.1-29.25 GHz band to eight feeder link earth stations complexes. We propose to require that these feeder link earth station complexes be identified at least 45 days prior to the commencement of any LMDS auctions by submission of a list of the geographic coordinates of protected feeder link earth station complexes.<sup>65</sup> These sites must be chosen in accordance with the following requirements: (1) none of the feeder link earth station complexes may be located in any of the top eight MSAs, ranked by population, as defined by the Office of Management and Budget as of June 1993, using estimated population as of December 1992, (2) two feeder link complexes may be located in MSAs 9 through 25, one of which is in Chandler, AZ, (3) two feeder link complexes may be located in MSAs 26 to 50, and (4) two feeder link complexes may be located in MSAs 51 to 100. The two remaining feeder link sites must be at least 75 miles outside the boundaries of an MSA. The additional technical details of the sharing plan are set out in Appendix B of this Notice.

63. Further, while we do not propose it here, we believe it may be possible to permit LMDS subscriber traffic in the 150 MHz of shared spectrum under certain operating conditions. For example, Texas Instruments says that various methods can be used to reduce interference potential, including designing LMDS customer transceivers to terminate transmissions if not properly oriented or if not signalled by the LMDS hub.<sup>66</sup> Another method to help reduce interference potential may be to require MSS feeder link stations to operate at a minimum elevation angle of 7 or 8 degrees, rather than the 5 degree elevation angle proposed by Motorola. We request comment on whether, and the extent to which, these sharing methods and others may be used to permit two-way LMDS operations in the frequency band shared with MSS feeder

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<sup>65</sup> As proposed in the Negotiated Rulemaking Committee agreement, a "feeder link earth station complex" may include up to three earth stations, with each earth station having up to four antennas.

<sup>66</sup> Texas Instruments also believes that LMDS subscriber link transmissions can also be facilitated by using polling algorithms that do not allow transceivers to transmit independent of node communication, using active power control to compensate for rain attenuation, and lowering transceiver power at short ranges to nodes.

links. Commenters should support their comments with a complete technical analysis and any economic or operational consequences of this alternative proposal.

*b. 29.25 to 29.50 GHz (250 MHz)*

64. We propose to designate 250 MHz for use on a co-primary basis by MSS feeder links and GSO/FSS satellites, in order to allow MSS feeder link operations in 200 MHz of contiguous spectrum from 29.1 to 29.3 MHz, and to potentially accommodate a second MSS system's feeder links. We request comment on this issue. There may still be the need for coordination between the GSO/FSS systems and the MSS feeder link earth stations in this band. Coordination will be implemented on a first-come-first-served basis. It should be noted that eight feeder link complex locations,<sup>67</sup> in the 28 GHz band, will be identified before any competitive bidding procedures begin. Based on applicants' stated plans, these complexes are likely to specify 50 MHz of spectrum at 29.25-29.3 GHz.

*c. Uplinks for MSS feeder Links and Downlinks for NGSO and GSO FSS Systems in the 19.3-19.7 GHz Band*

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<sup>67</sup> See definition of "feeder link earth station complex," *supra* at note 65.

65. The downlink spectrum conventionally paired with the satellite allocation in the 27.5-29.5 GHz band is at 17.7-20.2 GHz. The conventionally paired downlink spectrum associated with the MSS feeder link uplink spectrum at 29.1-29.5 GHz is at 19.3-19.7 GHz. The Commission has developed proposals concerning both the 29.1-29.5 GHz and 19.3-19.7 GHz band as part of the preparations for the upcoming World Radiocommunication Conference (WRC-95).<sup>68</sup> In addition to proposing regulatory changes necessary to facilitate NGSO downlink operations for MSS feeder links in the 19.3-19.7 GHz band, the Commission has also proposed changes to the international allocation at 19.4-19.7 GHz that would facilitate NGSO MSS feeder uplink operations.<sup>69</sup> If this proposal is adopted at WRC-95, co-frequency sharing between NGSO and GSO operations will be considerably more complicated within this band.<sup>70</sup> In order to address this possibility, we specifically seek comment on whether we should designate the 18.3-18.55 GHz downlink band for pairing with the GSO uses for which the 29.25-29.5 GHz uplink band is designated. We also seek comment on another alternative of pairing such GSO uplinks with downlinks at 19.3-19.425 and 19.575-19.7 GHz, and designating the entire 19.3-19.7 GHz for NGSO MSS feeder links. We also seek comment on any other issues concerning downlink operations which may affect the workability of the band segmentation plan.

*d. Effect of Decisions at WRC-95 on the Band Segmentation Plan*

66. The FCC's recommended proposals for the WRC-95 include proposals designed to eliminate a principle regulatory obstacle to NGSO service -- ITU Radio Regulation 2613 -- from applying in Ka-Band uplink and downlink spectrum.<sup>71</sup> The proposals, if adopted at WRC-95, would facilitate the implementation of the band segmentation plan we propose. However,

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<sup>68</sup> See WRC Preparatory Report, FCC 95-256 (released June 15, 1995).

<sup>69</sup> See WRC Preparatory Report at Appendix 1, Proposals USA/ /28-31. The proposal for MSS feeder uplinks at 19.4-19.7 GHz is intended to be paired with MSS feeder downlinks at 15.45-15.65 GHz. *Id.* at Appendix 1, Proposals USA//21-26.

<sup>70</sup> See CPM Report at Chapter 2, Section 1, Part C, ' 3.2.5.

<sup>71</sup> *WRC Preparatory Report* at paras. 59-68.



adoption of different provisions at the WRC-95 could affect the ability to implement the plan. Accordingly, we request comment on what, if any, contingency plans may be appropriate at this stage, and on any other information that develops from the WRC-95 Preparatory process that may be relevant to implementation of the proposed plan.

#### 5. *Other Allocations in the 28 GHz band*

67. We also recognize that the MSS is allocated on a co-primary basis to the FSS in the 29.5 to 30.0 GHz band. Currently there are no MSS systems operating in the band. However, 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 GHz band.<sup>72</sup> It does not appear that FSS and MSS systems can share the same frequencies. We do not believe Norris's plans to implement MSS in this band should prevent consideration of other proposed systems from going forward and providing the public with needed services as quickly as possible. We request comment on whether we should eliminate the allocation for MSS at 29.5-30.0 GHz or whether to modify the MSS allocation as a secondary allocation to FSS systems at 29.5 - 30.0 GHz.

#### 6. *Supplemental Tentative Decision on CellularVision's Pioneer's Preference Application*

68. In the Tentative Decision on CellularVision's request for a pioneer's preference, the Commission found that CellularVision is the innovator of LMDS technology. Accordingly, it tentatively found that CellularVision should be awarded a pioneer's preference. CellularVision's specific pioneer's preference request was for the Los Angeles MSA -- it argued that the service it was providing in New York was substantially different from the service for which it requested a pioneer's preference in Los Angeles. The Commission disagreed, however, and determined not to award a pioneer's preference for LMDS in more than one service area. Accordingly, the Commission stated that if a pioneer's preference to CellularVision were to be awarded, that it would ``modify the authorization to [CellularVision] to meet the service area, frequency, and other technical rules developed in this proceeding for the area encompassing [CellularVision's] New York PMSA authorization."<sup>73</sup> However, the Commission further stated that if CellularVision were to inform the Commission that it prefers Los Angeles, and if it were to surrender its New York license, the Commission would grant its pioneer's preference for Los Angeles.<sup>74</sup>

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<sup>72</sup> See n. 9 *supra*. Norris however has not implemented its system and we will be reviewing its milestone schedule.

<sup>73</sup> *First NPRM, supra*, at para. 64.

<sup>74</sup> *First NPRM, supra*, 8 FCC Rcd at 566, paras. 63-65.

69. CellularVision filed comments to the *Tentative Decision* in which it argued that it was entitled to a pioneer's preference in the Los Angeles area without its affiliate Hye Crest being forced to surrender its New York license. Specifically, CellularVision argued that: a) Hye Crest was licensed prior to the adoption of the pioneer's preference rules; b) the proposed 28 GHz service rules are an outgrowth of the work commenced by CellularVision after Hye Crest was authorized and the pioneer's preference rules were adopted; and, c) the service provided by Hye Crest is different than the service for which CellularVision seeks a pioneer's preference.

70. A number of parties supported CellularVision's pioneer's preference arguments in comments and reply comments to the *Tentative Decision*. However, we note that all of these filings were made prior to the Commission being granted competitive bidding authority by Congress in August 1993.<sup>75</sup> Due to the fact such authority has drastically altered the pioneer's preference rules by requiring payment from pioneers, and due to the unique circumstances discussed below, we find no further need to consider whether CellularVision is entitled to a preference in Los Angeles. Rather, we propose to change our earlier tentative decision, and grant CellularVision a preference for that portion of the New York BTA (or other geographic service area ultimately adopted) which includes the New York PMSA. The pioneer's preference, covering the portion of the BTA lying outside the PMSA, would be for the portion of the 28 GHz band proposed to be available for LMDS in the Commission's band splitting plan, *infra, i.e.*, 27.5 - 28.35 GHz and 29.1 - 29.25 GHz (or whatever band plan is ultimately adopted by the Commission). We seek comment on these proposals. We note that if a pioneer's preference is awarded for the remainder of the BTA, Section 309(j)(13)(B) of the Communications Act, requiring an 85 percent payment of the value of the pioneer's preference license, would apply only to the portion of the New York BTA not covered by CellularVision's existing license for the PMSA. We seek comment on this tentative conclusion. We also clarify that the rules governing our evaluation of CellularVision's pioneer's preference request are those that were in effect when the *Tentative Decision* was adopted.<sup>76</sup>

71. Since our tentative decision on its pioneer's preference request in the *First NPRM*, CellularVision has begun serving a significant number of customers within its New York license area. Therefore, we do not believe it is in the public interest for us to continue proposing, in the context of a pioneer's preference award, that CellularVision voluntarily discontinue service in New York and turn in its license. Moreover, we believe that CellularVision has made a commitment to providing service in New York, as evidenced by the fact that it has applied for additional cell sites to cover the remainder of the PMSA. We have held that the choice of which

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<sup>75</sup> See *Omnibus Budget Reconciliation Act of 1993*, Pub. L. No. 103-66, Title VI, Section 6002, 107 Stat. 387, enacted August 10, 1993.

<sup>76</sup> When we adopted amendments to our pioneer's preference evaluation criteria in 1994, we explicitly held that they would not apply to proceedings in which tentative decisions had been issued, such as this one, see *In the Matter of Review of the Pioneer's Preference Rules*, First Report and Order, 9 FCC Rcd 605, para. 9 (1994).

geographic area to be awarded as the pioneer's preference license will be the licensee's.<sup>77</sup> CellularVision's circumstances are unique, however, in that the original license was granted before we established an LMDS service category and adopted regulations to govern the service. Further, the license was granted pursuant to waiver, prior to our adoption of the pioneer's preference rules, and for reasons that are consistent with the underlying objectives of those rules.<sup>78</sup> These unique circumstances, in our view, warrant our tentative decision to waive our rules on our own motion to the extent they would afford CellularVision the opportunity to choose the geographic area to be awarded as the pioneer's preference license. We seek comment on this proposed approach. We also note, of course, that CellularVision would have the opportunity (as would any interested party) to participate in any competitive bidding procedures we may establish in this proceeding for purposes of licensing LMDS service in the Los Angeles area.

72. It is our intention to accommodate CellularVision's operations within the New York PMSA to the maximum extent possible, while minimizing adverse effects of its operations in the 28.35 - 28.5 frequency band on eventual GSO licensees. We propose, if we take favorable

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<sup>77</sup> *Report and Order*, GEN Docket No. 90-217, 6 FCC Rcd 3488, 3495, paras. 53-54, *recon. denied*, 7 FCC Rcd 1808, 1802, paras. 28-29.

<sup>78</sup> A pioneer's preference was intended to ensure that innovators have an opportunity to participate in new services that they take a lead in developing. In addition, pioneer's preferences were intended to speed the development of new services and improve existing services. *In the Matter of Establishment of Procedures to Provide a Preference to Applicants Proposing an Allocation for New Services*, 6 FCC Rcd 3488 (1991). In *Hye Crest*, *supra*, the Commission found that granting CellularVision's waiver application was the most efficient and expeditious means for accommodating Section 7 of the Communications Act of 1934, as amended, 47 U.S.C. ' 157, which charges the Commission to "encourage the provision of new technologies." Further, the Commission found that public benefits such as increased competition and greater diversity would be realized for the video marketplace, *Hye Crest Management, Inc.*, *supra*, paras. 18, 24, thus speeding the development of new services and improving existing services through competition.

action on any renewal application CellularVision files pursuant to its existing license (such a filing would be due in January 1996), to include as a condition of the PMSA license a provision permitting CellularVision to operate on the contiguous 1 GHz for which it is presently licensed for a period of time sufficient to accommodate its operations within the New York PMSA without adversely affecting the eventual GSO licensee. We tentatively conclude that a grandfathering period of 36 months following the release date of the First Report and Order in this proceeding, or until the first GSO satellite is successfully launched, whichever occurs later, is appropriate. We seek comment on this tentative conclusion. We tentatively intend to instruct the Wireless Telecommunications Bureau to condition any such renewed license with a provision specifying that, after the end of the grandfathering period we adopt, the CellularVision license would become subject to our generally applicable rules for the provision of LMDS service. Thus, if the proposed band is adopted, at the end of the grandfathering period CellularVision would be required to cease operation on the 150 MHz allocated for GSO/FSS operations 36 months after release of the First Report and Order in this proceeding or until the first GSO satellite is launched, whichever is later. Simultaneously, CellularVision would be permitted to operate on a co-primary basis on the 150 MHz at 29.1-29.25 GHz. We seek comment on this proposal.

73. Finally, we seek comment on whether it would be appropriate to place conditions on any pioneer's preference license issued to CellularVision, similar to those we placed on other pioneer's preference licensees in PCS. Section 1.402(e) of our rules states that

As a condition of its license grant, a pioneer's preference grantee will be required to construct a system that substantially uses the design and technologies upon which its pioneer's preference award is based within a reasonable time, as determined by the Commission, after receiving its license. Failure to comply with this provision will result in revocation of the pioneer grantee's license, and transfer of the license will be prohibited until this requirement is met.

For the pioneer's preference licenses we have heretofore granted, we placed a condition on the broadband and narrowband PCS licenses that required that they be held for three years or until the construction requirements applicable to the five-year build-out period have been met, whichever is earlier.<sup>79</sup> We request comment on whether we should place similar restrictions on CellularVision in connection with its proposed pioneer's preference license.

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<sup>79</sup> *Third Report and Order*, GEN Docket No. 90-314, 9 FCC Rcd 1337, 1339, para. 9 (1994) (broadband PCS); 9 FCC Rcd 1309, 1319, para. 72 (1994) (narrowband PCS). This condition was, however, subject to waiver if there were an overriding national objective that could be thwarted, *Third Report and Order*, note 11.

#### IV. LOCAL MULTIPOINT DISTRIBUTION SERVICE

74. The portion of the 28 GHz band dedicated to LMDS will provide 1 GHz of spectrum for fixed microwave services proposed by LMDS developers. Most of that spectrum will be licensed exclusively for LMDS on a primary basis but 150 MHz is proposed to be licensed on a co-primary basis with MSS feeder links. Herein, we propose service rules based on the record developed in this proceeding, as well as rules for auctioning licenses in instances where there are mutually exclusive applications.

##### A. Spectrum Licensing

75. LMDS developers and/or manufacturers participating in the Negotiated Rulemaking Committee proposed system plans based on 1 gigahertz of spectrum. LMDS equipment developers have designed and built systems operable on 1 gigahertz of spectrum. In *ex parte* meetings with staff, these LMDS parties, such as CellularVision, Texas Instruments, and several Bell Operating Companies, have stated that without 1 gigahertz of spectrum, LMDS service is not economically viable.

76. Two LMDS parties stated that for their purposes, less than 1 gigahertz of spectrum is adequate. The University of Texas-Pan American, which hopes to implement distance learning capability to the economically depressed area of the Rio Grande Valley, has indicated that 600 MHz of spectrum dedicated exclusively for distance learning will meet their projected needs. In addition, Gigahertz Equipment Company, which has not developed a discrete technology for use in the 28 GHz Band, but which was an active participant in the Negotiated Rulemaking Committee, has offered a partial band segmentation proposal which, assuming two licensees per geographic service area, requested 1500 MHz of spectrum for LMDS. We appreciate the wide variety of plans for service being made by potential LMDS service providers. The University of Texas-Pan American is not contemplating direct commercial service, however. Under Gigahertz Equipment Company's proposal, the total spectrum availability for LMDS, and hence the services available, would be greater in the aggregate than the proposal we make herein, however, individual licensees would be more restricted. We request comment from these and other parties on the number and size of licenses which we should make available and on the amount of spectrum each licensee should have, see *infra*, paras. 78-80, and whether our geographic partitioning and spectrum disaggregation proposals will help meet the needs of parties requiring less than 1 GHz.

77. To the extent LMDS systems are used to provide video services, we tentatively conclude that LMDS will be competing in a multichannel video programming distribution ("MVPD") market, which includes, *inter alia*, cable operators, DBS providers, wireless cable systems, satellite master antenna television systems, and video dialtone systems. We seek comment on that conclusion. As the Commission recognized last year in its Annual Report on the status of competition in this market, "cable television remains the dominant medium for

providing consumers with multichannel video programming."<sup>80</sup> On the other hand, the Commission observed that competitive entry of alternative distribution technologies in the coming months and years should significantly affect this market.<sup>81</sup>

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<sup>80</sup> *Annual Assessment of the Status of Competition in the Market for the Delivery of Video Programming*, First Report, 9 FCC Rcd 7442, para. 201 (1994).

<sup>81</sup> *Id.* at para. 246.

78. Against this backdrop, we seek comment on whether it is advisable, from a competitive standpoint, to license more than one LMDS operator per market and on any competitive concerns raised by the grant of a 1000 MHz block to a single LMDS licensee in each market. While allowing one LMDS provider per market may help ensure the competitive viability of this fledgling service, and thereby maximize the ability of LMDS licensees to provide significant competition to other services, we recognize that digital LMDS is being developed that has the potential to greatly increase the capacity of LMDS systems. For example, Texas Instruments, whose digital LMDS system is being manufactured for use in other countries, estimates that 16,000 telephony subscribers per LMDS cell (of three miles radius) could be served concurrently with about 200 video-on-demand channels.<sup>82</sup> We seek comment on when digital LMDS technology will be commercially available in this country and the extent to which digital technology will expand the capacity of LMDS systems. We also seek comment on whether the increased capacity associated with digital technology should affect our ultimate decision about the minimum amount of spectrum needed to operate a competitively viable system and the number of LMDS licenses that should be made available in a single market.

79. Possible schemes include issuing only one license per market for the entire 1000 MHz; issuing two licenses, one for the 850 MHz contiguous band of spectrum and one for the 150 MHz co-primary portion; and issuing three licenses, two for 425 MHz and one for the 150 MHz co-primary segment. We seek comment on each of these licensing schemes. If the licensing scheme which we ultimately adopt includes more than one license per market, we seek comment on whether to permit aggregation of licenses within the same geographic service area.

80. Whatever our decision on the final number of LMDS licenses per market, we are aware that continued improvements in technology may eventually make it possible for individual licensees to reduce the amount of spectrum they need for the types of services they propose to provide. Accordingly, we propose to permit spectrum disaggregation of spectrum by LMDS licensees. Commenters favoring disaggregation should address how a licensee would accomplish such disaggregation and what procedural and substantive rules the Commission should promulgate for licensing disaggregated licenses. In addition, we request comment on whether designated entity licensees that received bidding credits or permission to make installment payments should be allowed to disaggregate spectrum.

81. Finally, we have noted, *supra*, para. 77, that there may be significant competition facing LMDS service providers from providers of other services. Accordingly, while we do not propose a restriction on the amount of spectrum which may be held by one licensee, we request comment on the advisability of implementing such a restriction on LMDS licensees, and what form that restriction would take.

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<sup>82</sup> Texas Instruments letter notice of *ex parte* communication, June 6, 1995.

## B. Geographic Service Areas

82. In the *First NPRM*, we proposed to use the Rand McNally Commercial Atlas and Marketing Guide Basic Trading Areas (BTAs), which are areas, defined by counties, in which the residents purchase goods. We also asked for comment on whether other geographic areas should be used. A number of parties commenting on the *First NPRM* suggested that MSA<sup>83</sup> and RSA<sup>84</sup> licensing would be preferable to BTAs.<sup>85</sup> They argued variously that the MSA/RSA definitions are well understood by the Commission and the communications industry, that smaller and medium-sized businesses will have more opportunities to participate if the service areas are smaller than BTAs, that transaction costs are lower for smaller areas, that smaller geographic areas are more conducive to the Commission's proposal to have a short build-out time for LMDS, and that the smaller areas will promote diverse locally-oriented service offerings and expanded rural service options.

83. Other parties commenting on the *First NPRM* supported the use of BTAs,<sup>86</sup> arguing that the larger area would result in economies of scale, foster participation by the most providers, facilitate addressing local government concerns in a cohesive manner, lower the cost of interference coordination among LMDS licensees, and increase the potential for larger capital returns due to the larger customer base.

84. Parties disagreed on whether MSA/RSA or BTA licensing is better for speeding service to rural areas. Parties supporting BTA licensing indicate that, with an urban infrastructure, the marginal cost to supply LMDS to the rural portion of a BTA would be much less than if that were the only service area.<sup>87</sup> Others argued that larger areas would necessarily result in delayed service, and that the speediest service would be provided by licensing smaller areas.

85. One party, UTC, argued that the Commission should use local access and transport areas (LATAs), for administrative convenience, and to match more closely customers' perception of their communities of interest. UTC stated that the growing perception of regionalism is

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<sup>83</sup> Metropolitan Statistical Area, as defined by the Census Bureau.

<sup>84</sup> Rural Service Areas, as defined in 60 RR 2d at 1035, FCC 86-302, July 18, 1986. MSAs and RSAs are generally much smaller than BTAs.

<sup>85</sup> See, for example, *Comments* of United States Telephone Association, BellSouth, GTE Service Corporation, M3 Illinois Telecommunications Corporation, NYNEX, and Sprint Corporation.

<sup>86</sup> See, for example, *Comments* of Suite 12 Group, Bell Atlantic, Ameritech, Cellular Television Associates, and RSW Communications, Ltd.

<sup>87</sup> Suite 12 *Reply Comments* to the *First NPRM*.



evident by the increasing number of requests to state public utility commissions by LECs to increase their service areas to more closely correspond with customers' perceptions of their interest areas.

86. We have not proposed the larger MTA licensing area because few parties commenting on the *First NPRM* believed that areas larger than BTAs would be appropriate for licensing. For this reason, we also are not proposing Basic Economic Areas (BEAs), which are smaller than MTAs but larger than BTAs. Finally, we believe using MSA/RSAs are inappropriate for LMDS because RSAs tend not to have significant commercial centers. We request comment on these conclusions.

87. We continue to believe that BTAs are the best geographic area for licensing LMDS.<sup>88</sup> We believe that, based on the record submitted thus far in this proceeding, there is a reasonable likelihood that services provided through use of the LMDS spectrum will have a local focus. BTA service areas, we tentatively conclude, will best approximate the likely scope of the service areas for these services.

88. In the *1995 Commercial Atlas and Marketing Guide*, published by Rand McNally, there are 487 Basic Trading Areas listed, which include the 50 States. We propose to use these BTAs, except for the New York BTA. We note that we have already granted a license in the New York PMSA to CellularVision, pursuant to a waiver. Therefore, instead of issuing a license for the New York BTA we propose to issue a license for the geographic area encompassed by the New York BTA minus the New York PMSA. As explained above, if we take favorable action on a CellularVision license renewal application for the New York PMSA, we have proposed to condition the renewed license to ensure that it conforms to our final band plan. In addition, we propose to add individually as additional areas for licensing, the United States territories and possessions over which the FCC has jurisdiction: the Virgin Islands, American Samoa, Guam, Puerto Rico, and the Commonwealth of Northern Marinas.

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<sup>88</sup> Rand McNally is the copyright owner of the MTA/BTA Listings, which list the BTAs contained in each MTA and the counties within each BTA, as embodied in Rand McNally's Trading Area System MTA/BTA Diskette, and geographically represented in the map contained in Rand McNally's Commercial Atlas & Marketing Guide. The conditional use of Rand McNally's copyrighted material by interested persons is authorized under a blanket license agreement dated February 10, 1994, and covers use by LMDS applicants. This agreement requires authorized users of the material to include a legend on reproductions (as specified in the license agreement) indicating Rand McNally's ownership.

89. We have undertaken an examination of geographic partitioning in other proceedings, and we wish to consider that issue in this proceeding as well. As used herein, geographic partitioning is the assignment by the licensee of its license in a portion of its service area. We propose that partitioning would be treated as any other assignment situation: the parties would be required to file an application containing the appropriate information for a licensing decision, and the Commission would, upon review, either grant or deny the application.<sup>89</sup> In the case of broadband PCS licenses, for example, we decided to permit geographic partitioning only for rural telephone companies for purposes of expediting the provision of service in rural areas.<sup>90</sup> Geographic partitioning is a method for the original licensee to recoup some of its initial licensing and construction costs, while providing a method for entities with specific local concerns or insufficient capital to purchase rights on the entire service area to acquire a portion of the geographic area originally licensed. At the same time, the public, particularly in rural areas, is served sooner than it might otherwise have been if all build-out in a particular geographic area is the responsibility of one licensee.

90. Some aspects of LMDS distinguish it from most PCS services. Construction costs for LMDS may be greater than for PCS; LMDS is not as far developed as is PCS as a service or in equipment capabilities; the higher frequency band in which LMDS operates makes a much shorter transmission path; and the fixed nature of the proposed services limits LMDS customers to those residing within the reach of cell hub transmitters. For these reasons, we tentatively conclude that geographic partitioning for any part of the license area may be appropriate for LMDS licensees.

91. Accordingly, we seek comment on whether the most rapid build-out of LMDS would occur if we permit partitioning of the license pursuant to eligibility and other rules adopted for this service. We seek comment regarding whether geographic partitioning should be established in the case of LMDS licenses, and on the manner in which our proposed build-out requirement would be applied to a partitioned license.

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<sup>89</sup> See, e.g., 47 U.S.C. § 22.947(b).

<sup>90</sup> See Implementation of Section 309(j) of the Communications Act -- Competitive Bidding, PP Docket No. 93-253, Fifth Report and Order, -- FCC Rcd --- (1994) (*Auctions Fifth Report and Order*), reconsideration, Implementation of Section 309(j) of the Communications Act -- Competitive Bidding, PP Docket No. 93-253, Fifth Memorandum Opinion and Order, -- FCC Rcd --- (1994) (*Auctions Fifth Memorandum Opinion and Order*).

### C. LMDS Services and Regulation

92. In the *First NPRM*, we proposed to allow licensees to determine what services they want to offer. We further suggested in the *First NPRM* that parties be able to choose whether they wanted to offer common carrier or private carrier services on a channel-by-channel, cell-by-cell basis.<sup>91</sup> Many commenters encouraged the Commission to keep as much flexibility as possible for licensees to determine what category of services they would like to offer. Many also suggested that the Commission should ensure that licensees were operating in a manner consistent with their claimed regulatory status. Telephone companies in particular argued that there should be parity with regard to regulatory status of telecommunications services providers. Several parties pointed out that private carriers are barred from offering local exchange service. However, TDS proposed that the Commission have a presumption of common carrier status for LMDS licensees, and make a determination of private carrier status on a case-by-case basis.

93. Based on the system and service descriptions received in the record during this proceeding, especially the Negotiated Rulemaking proceeding, we can predict more accurately than before the *First NPRM* the types of services likely to be offered in this band. Current proposals for LMDS include video distribution, broadband video telecommunications, and two-way data and voice subscriber-based services. We note that LMDS, when used for video distribution, would not generally be regulated as a cable system under Title VI of the Communications Act, except in certain limited circumstances.<sup>92</sup> For example, the Commission has held where wires are used to connect buildings that are not under common ownership, control or management the facility will be deemed a "cable system" for purposes of the Act.<sup>93</sup>

94. We request comment on three alternatives for regulating LMDS licensees. One option is that licensees would be presumed to be common carriers subject to Title II regulation to the extent the system is used to provide two-way data, voice, and other telecommunications services, and in the absence of evidence demonstrating that they provide only private carriage. In support of this option, we would find that the core Title II provisions, prohibiting unreasonable discrimination, and unjust and unreasonable rates, and imposing an obligation to serve on reasonable request, serve the public interest by promoting broad availability of services at reasonable and non-discriminatory rates. Under this option, licensees interested in applying for consideration as a private carrier would be required to file a motion with the Commission, setting forth the justification for such treatment. Private wireless service providers would be subject to statutory requirements pertaining to private wireless services, and common carrier

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<sup>91</sup> *First NPRM*, 8 FCC Rcd at 561.

<sup>92</sup> *In the Matter of Definition of Cable Television System, aff'd sub nom., FCC v. Beach Communications, Inc.*, \_\_\_ U.S. \_\_\_, 113 S.Ct 2096 (1993).

<sup>93</sup> *Id.*, 5 FCC Rcd at 7640, paras. 14-15.

providers would be regulated under Title II common carrier rules. We seek comment on the extent to which an LMDS licensee should be subject to Title II regulation, assuming we were to adopt this option, in circumstances where its system is used to distribute video programming. Commenters should address whether the capacity or technical characteristics of a video distribution system or the extent to which capacity is made available to unaffiliated programmers impact whether an LMDS licensee should be considered a common carrier.

95. The second option we will consider is the same one set forth in the *First NPRM*.<sup>94</sup> In their applications, successful bidders would specify the types of services they expect to offer and indicate the regulatory status under which those services would be offered. Licensees would be required to describe their proposed service in sufficient detail for the Commission to confirm that their requested status complies with relevant judicial and/or statutory standards. The Commission would retain oversight of the parties' compliance with the statutory and judicial standards for status based on the type of service offered. *See, e.g., National Association of Regulatory Utility Commissioners v. FCC*, 525 F.2d 630 (D.C. Cir.) *cert. denied* 425 US 999 (1976)(NARUC I).

96. The third option we will consider for LMDS licensees is to treat them similarly to the way in which MMDS licensees are treated. MMDS licensees are permitted to provide service as common carriers or private carriers. Under the MMDS rules, however, licensees operating as private carriers must comply with common carriage rules, except for the tariffing requirement. At least to the extent that licensees provide video distribution services, this option would permit LMDS licensees, although presumptively common carriers, to file a notification of intent to operate as a private carrier.

#### **D. Eligibility**

97. In the first NPRM, we proposed not to adopt restrictions on the ownership of LMDS licenses. We requested comments on interpretation of the Cable Act with regard to the participation of telephone companies and cable companies in LMDS. In this Notice, we seek additional comment on these issues.

##### *1. Telephone Companies*

98. In comments to the *First NPRM*, parties disagreed on whether the Commission should permit local exchange carriers (LECs) to be LMDS licensees. Parties in favor of allowing telephone company participation said, *inter alia*, that telephone companies should be given the opportunity to integrate LMDS into their operations; that LECs do not possess any monopoly power with regard to LMDS and that they would have no bottleneck market power through provision of LMDS; that current statutes and regulations do not bar LEC participation;

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<sup>94</sup> 8 FCC Rcd 557, 561, paras. 25-26.

that LECs have resources, expertise and public service commitment that would benefit LMDS; and that imposing restrictions would be "overreaching" by the Commission.<sup>95</sup>

99. Those opposed to permitting LEC participation said that LECs would misuse their resources and market power to preempt competition in both video and telecommunications services; and that the Cable Act bars LECs from being licensed to provide LMDS.<sup>96</sup>

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<sup>95</sup> See, for example, *Comments* of GTE Service Corporation, Sprint Corporation, Telephone and Data Systems, Inc., U S WEST, Leaco Rural Telephone Cooperative, and (filing jointly) Rock Hill Telephone Company, Fort Mill Telephone Company, and Lancaster Telephone Company.

<sup>96</sup> See, for example, *Comments* of Cellular Television Associates, Inc. , Coalition for Wireless Cable, M3 Illinois Telecommunications Corporation, and Wireless Cable Association International, Inc.

100. Currently, there are no statutory or regulatory restrictions that prohibit a local exchange carrier from holding an interest in a wireless cable operator or LMDS licensee that does not otherwise meet the statutory definition of a cable system. The statutory cable-telephone cross-ownership restriction, prohibiting LEC provision of "video programming" to subscribers within its service area, has been construed to apply *only* to a LEC's provision of video programming through a wired cable system.<sup>97</sup> In a 1990 order, the Commission determined that the structure of the statute and its legislative history indicated that Congress intended only to prohibit a LEC's distribution of video programming over a cable system, and that the term "cable system," as used in the 1984 Cable Act, encompassed only "video delivery systems that employ cable, wire or other physically closed or shielded transmission paths." The Commission held that typically, wireless cable systems did not constitute such a system within the meaning of the Act.<sup>98</sup> The Commission's decision that the cable-telco ban does not extend to a telephone company's acquisition of wireless cable facilities was recently upheld by the Court of Appeals for the D.C. Circuit.<sup>99</sup> Thus, to the extent that telephone companies acquiring LMDS spectrum use that spectrum to provide video programming to subscribers within a BTA, they would not be subject to the telco-cable cross-ownership ban. We seek comment on this conclusion.

101. We also seek further comment on competitive issues associated with acquisition of a BTA service area by telecommunications providers operating in the same area, assuming that spectrum in the 28 GHz band may be used to provide telephone service. For example, does the potential control by a LEC of 1000 MHz of spectrum in its service area raise competitive concerns? To what extent can this spectrum be used to provide service that is competitive with local telephone service, particularly the provision of access services to residential and business subscribers? Would allowing a LEC to acquire LMDS licenses in its service area eliminate a potential and important new source of competition in the local exchange market? Given the LECs' current monopoly status with regard to the provision of local exchange service, would LECs be likely to acquire LMDS spectrum as a means of forestalling competitive entry into the local exchange market, for example, by warehousing spectrum or diverting it to less optimal uses? Would our proposed buildout requirements discussed in paras. 113-116, *infra*, address this concern? How should any elimination of this potential source of competition to LECs be addressed by the Commission? In particular, should the Commission limit LMDS spectrum that can be acquired by a LEC in its service areas? In addition, given announced LEC plans to offer

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<sup>97</sup> *In the Matter of Definition of a Cable Television System, Report & Order*, 5 FCC Rcd 7638 (1990).

<sup>98</sup> *Id.*

<sup>99</sup> *American Scholastic TV Programming Foundation v. FCC*, No. 93-1652 (D.C. Cir. Feb. 10, 1995).

video service to their telephone subscribers over their wired plant, we seek comment on any competitive issues raised by the acquisition of LMDS spectrum.

## *2. Commercial Mobile Radio Service Providers*

102. We also seek comment on whether we should limit the extent to which an existing Commercial Mobile Radio Service (CMRS) provider can acquire LMDS spectrum in its service area. We tentatively conclude, based on the record in this proceeding, that using current technology, LMDS spectrum cannot be used to provide mobile radio services. Acquisition of LMDS spectrum by a CMRS provider would not affect horizontal concentration or otherwise raise competitive concerns even in a broadly-defined market including all CMRS services. For similar reasons, we see no need to include the acquisition of LMDS spectrum in the Commission's CMRS spectrum caps, which place limits on the amount of spectrum that can be controlled by a carrier in any particular market.<sup>100</sup> We seek comment on these conclusions.

## *3. Cable Television Companies*

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<sup>100</sup> See *Amendment of the Commission's Rules to Establish New Personal Communications Services*, Memorandum Opinion & Order, 9 FCC Rcd 4957, 4983-86 (1994) ("PCS MO&O"); *Amendment of the Commission's Rules to Establish New Personal Communications Services*, Second Report & Order, 8 FCC Rcd 7700, 7728; *Implementation of Sections 3(n) and 332 of the Communications Act - Regulatory Treatment of Mobile Services*; *Amendment of Part 90 of the Commission's Rules to Facilitate Future Development of Specialized Mobile Radio Systems in the 800 MHz Frequency Band*; *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 935-940 MHz Band Allotted to the Specialized Mobile Radio Pool*, Third Report & Order, 9 FCC Rcd 7988, 8109-10, para. 263.

103. Parties commenting in response to the *First NPRM* disagreed on whether cable television companies should be permitted to participate in LMDS. Some argue that to permit cable television companies to acquire a potentially powerful competitor would deter competition in video services.<sup>101</sup> Others argue that the Cable Act prohibits licensing cable companies in wireless cable services.<sup>102</sup> Parties in favor of permitting cable companies to obtain LMDS licenses argue that a cross-ownership ban unfairly would foreclose cable operators from participation in LMDS in areas much larger than their cable franchises; and that the Cable Act prohibits cable television companies from owning licenses in the Multichannel Multipoint Distribution Service (MMDS), but not in any other wireless cable service, such as LMDS.<sup>103</sup>

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<sup>101</sup> See, for example, comments of Cellular Television Associates, Coalition for Wireless Cable, M3 Illinois Telecommunications Corporation, and the Wireless Cable Association International, Inc.

<sup>102</sup> See *Comments* of GTE Service Corporation and Sprint Corporation.

<sup>103</sup> See *Comments* of Cole, Raywid and Braverman, and (filing jointly) Comcast Corporation, Jones Intercable, Inc., and Cablevision Industries Corporation.



104. We tentatively agree with those commenters who observe that there are presently no statutory or regulatory restrictions that prohibit a cable operator from holding an interest in an LMDS licensee. While Section 613 of the Communications Act does prohibit a cable operator from holding an MMDS license in any portion of the franchise area served by that cable operator's cable system, the language of that provision is limited, on its face, to MMDS.<sup>104</sup> On the other hand, we note that some of the same policy reasons that might justify imposition of a cable-LMDS cross ownership ban formed the basis for Congress' imposition of the cable-MMDS ban.<sup>105</sup> We seek comment on our tentative conclusion regarding the scope of the cable-MMDS ban.

105. As we recognized above, however, cable operators continue to dominate the market for multichannel video distribution, and LMDS represents an important new source of competition in that market. Accordingly, we continue to have concerns about cable operator acquisition of this spectrum within the LMDS geographic service area encompassing its cable franchise region, and seek additional comment on whether cable operators should be prohibited from acquiring LMDS licensees for BTAs that cover a cable operator's franchise area. For example, would cable operators acquiring LMDS licenses 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? Or, given that a cable operator's franchise areas might be significantly smaller than LMDS BTA service areas, would prohibiting a cable operator from holding an LMDS license that covers a larger region than its franchise area be justified? In addition, we request comment on whether we should adopt rules similar to our cellular-PCS cross-ownership rules to address the ownership of LMDS licenses by cable operators.<sup>106</sup>

106. We also note, on the other hand, that cable operators are emerging as a potentially significant source of competition to LECs in the provision of local telephone services. We seek comment on whether LMDS spectrum might be an important adjunct to cable operator facilities

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<sup>104</sup> This conclusion is further supported by the fact that in addition to the cable-MMDS cross-ownership ban enacted as part of the 1992 Cable Act, the Senate Bill, S.12, contained a cable-DBS cross-ownership ban, as well. The cable-DBS cross-ownership ban, however, was deleted at Conference "in view of the fact that there [were] no DBS systems operating in the United States at [that] time" and adoption of limitations would therefore be "premature." See H.R. No. 102-862, 102d Cong., 2d. Sess., 82 (1992). The Commission granted Cellularvision's predecessor a license to provide LMDS service in January 1991. As is the case with DBS, had Congress intended to bring LMDS within the purview of a cable cross ownership ban, it could have enacted specific language to do so.

<sup>105</sup> See S. Rep. No. 102-92, 102d Cong., 1st Sess. 47 (1991)(existing cross-ownership rules "enhance competition" and purpose of proposed cable-MMDS rule is to "prevent cable from warehousing its potential competition").

<sup>106</sup> See 47 C.F.R. ' 24.204.

that can be used in the provision of local telephone services in competition with LECs. Under those circumstances, while prohibiting cable operators from acquiring LMDS licenses might increase competition in the MVPD market, would it also impede competitive entry into local telephony? Would our proposed buildout requirements address this concern? We seek comment on how to balance these competing public interest concerns, and on whether and to what extent cable operators should be permitted to acquire LMDS licenses.

#### 4. *Multichannel Multipoint Distribution Service Licensees*

107. We also seek comment on whether MMDS licensees should be prohibited from acquiring an LMDS license within their service areas. Our recent order establishing MMDS licensees in BTAs and making other changes to the MMDS processing rules are intended to enable these licensees to compete successfully against cable operators. Like cable operators, however, MMDS licensees may find the two-way capacity of LMDS services appropriate for the provision of local telephone services in competition with LECs. Thus, we are reluctant to propose that MMDS licensees be barred from LMDS. However, we request comment on this issue and on the advisability of permitting one licensee to hold two licenses for a significant amount of scarce spectrum in the same service area. In particular, we request parties' comments on whether antitrust issues would be raised by the same entity holding both types of licenses capable of providing wireless cable competition.

#### 5. *Transfer of Control and Assignment of Licenses*

108. In the *First NPRM* in this docket, before the Commission obtained the authority to utilize competitive bidding procedures in the case of mutually exclusive applications, we proposed that transfer or assignment of LMDS licenses would not be permitted until the LMDS system had been constructed and was serving the public. Our reason for this proposal was to dissuade insincere applicants. However, unlike a lottery system, the auction process discourages insincere applicants. Thus, since we are proposing the use of competitive bidding to award LMDS licenses,<sup>107</sup> we withdraw our proposal to limit transfer or assignment of LMDS licenses, except in the case of licenses awarded to designated entities. Because of the special consideration accorded designated entities in the auction process, we propose that such licenses be restricted in a manner similar to that proposed for Specialized Mobile Radio licenses.<sup>108</sup> A designated entity would be prohibited from voluntarily assigning or transferring control of its license to any other entity during the three years after license grant. In the fourth and fifth years of the license term, the designated entity would only be able to assign or transfer control of its

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<sup>107</sup> See paras. 132-133, *infra*.

<sup>108</sup> *In the Matter of Amendment of Parts 2 and 90 of the Commission Rules to Provide for the Use of 200 Channels. . .*, PR Docket No. 89-553, Second Report and Order and Second Further Notice of Proposed Rulemaking, 3 FCC Rcd. --- (1995), FCC 95-159, (released April 17, 1995) paras. 141-143 (*900 MHz Second Report and Order*).

license to another qualified designated entity, and no unjust enrichment could be gained through the transfer. We request comment on this proposal.

### **E. Regulation of Common Carriers/Preemption**

109. Although we proposed in the *First NPRM* to forbear from regulating rates of LMDS licensees if regulated as common carriers, subsequent judicial interpretation of the Communications Act forecloses this approach to the extent that LMDS providers operate as common carriers. *AT&T v. FCC*, 978 F.2d 727 (D.C. Cir. 19 ), *Southwestern Bell Corp. v. FCC*, 43 F.3d 1515 (D.C. Cir. 1995)<sup>109</sup> Accordingly, we believe that, to the extent LMDS licensees offer services which are categorized as common carrier offerings that are not within the definition of Commercial Mobile Radio Services (CMRS), we have no alternative but to impose all statutory requirements pertaining to common carriers. In the case of filings required under Section 214 of the Act, we seek comment regarding whether we should consider the development of streamlined filing provisions in the case of LMDS service providers.

110. In the *First NPRM*, we tentatively concluded that state entry and rate regulation should be preempted for LMDS licensees providing video distribution service on a private carrier basis. We requested comment on whether state regulation of LMDS licensees offering other types of service as private carriers, such as private telecommunications or data services, should also be preempted.

111. With regard to common carriers, we tentatively found in the *First NPRM* that any video distribution service would be inherently interstate in nature, and hence potentially subject to preemption. We noted that for telecommunications services, we have jurisdiction over interstate portions of those services, and over mixed intrastate and interstate services to the extent that "intrastate services are not severable from the interstate services, and the state regulations thwart or impede federal law and policies." 8 FCC Rcd at 562. We found that the record did not support a determination of whether interstate and intrastate services could be severed, nor whether any particular state regulatory policies would thwart or impede the Commission's efforts to establish the new service.

112. We reiterate our conclusion that we cannot make a determination at this time that preemption of state regulation of common carrier aspects of LMDS is appropriate. However, with regard to private carriage video distribution service, we retain our tentative proposal of the *First NPRM*. With regard to all other preemption issues, we propose to defer such issues for future consideration as they arise on a case by case basis. We request comment on this proposal.

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<sup>109</sup> The Court found that the Commission is mandated by statute to require all telephone common carriers, regardless of size or market power, to file "schedules showing all charges."

## **F. Construction Requirements**

113. In the *First NPRM*, we proposed that LMDS licensees be required to cover 90 percent of their licensed geographic service area within three years. The majority of parties opposed this requirement. They argued, *inter alia*, that this "aggressive" build-out requirement would be impossible to meet because of the time required for the equipment manufacturing process, that at the time there was only one manufacturer of LMDS equipment, and that diversity of technological choices will require more development time. Parties also argued that the size of the proposed geographic service area would make coverage of extensive geographic areas within the short amount of time proposed more difficult.

114. It appears, from the record, that the only potential delays in bringing LMDS services to the public are due to the need to produce the necessary equipment. While some companies have completed much of their research and development processes, it may take time to produce the amount of hub and subscriber equipment needed for LMDS to meet the construction requirement we proposed.

115. It is our intention to foster the most diversity in services and technology possible in provision of LMDS. We are persuaded by parties' arguments that strict build-out requirements may hamper this development by driving licensees to the few existing manufacturers and not allowing room for additional technological development. At the same time, we believe that it may be necessary to ensure that rural areas receive the benefits of LMDS services.

116. The auction procedure may make the need for build-out requirements less necessary. We are aware that equipment prices would be driven up, possibly to an uneconomic level, if we were to require too rapid a build-out. At the same time, the value of the LMDS spectrum might be adversely affected if applicants faced an uneconomic buildout.

117. Accordingly, we tentatively conclude that some build-out requirement is necessary for LMDS, but one which is more moderate than was proposed in our *First NPRM*. We propose to require licensees to have made service available to a minimum of one-third of the population of their geographic areas within five years from license grant. We propose that licensees will have made service available to a minimum of two-thirds of the population of their geographic areas within ten years from license grant. We request comment on these proposals.

## **G. Technical rules proposal**

118. In the *First NPRM*, we noted our belief that only limited technical regulations may be needed to ensure adequate interference control and coordination of services at the boundaries of adjacent service areas within each block of spectrum. Thus, we requested specific proposals for power, modulation requirements, channelization, bandwidth, emission characteristics,

frequency stability, antenna characteristics, *e.g.*, gain, beamwidth, height and polarization, and spectrum utilization. Commenters requested that we not establish standards for modulation requirements, channelization and bandwidth. They believe imposition of standards for these parameters would hamper the development of LMDS for system designs that are still evolving. Evidence of this was displayed during the Negotiated Rulemaking Committee meetings. During efforts to determine the interference levels between LMDS and satellite systems, LMDS proponents presented a variety of system designs and indicated that other formats are being considered. We tentatively conclude that we need only adopt standards that will facilitate coordination between geographically adjacent LMDS systems and between LMDS and MSS feeder link facilities where they share spectrum. We seek comment on the technical proposals herein.

### *1. Frequency Coordination*

119. Under our proposed regulatory scheme, each licensee will have control over its own facilities within its designated service area and therefore be responsible for minimum service performance and interference levels within its system. We recognize, however, that each licensee may need to coordinate its operation with other entities licensed to provide service in geographically adjacent service areas to avoid interference situations. In other services authorized under Part 21, applicants are required to coordinate frequencies with licensees and other applicants whose facilities are likely to be impacted by the new proposals. This process has proven to be extremely beneficial to the common carrier point-to-point microwave industry and the Commission. Given the success of the process in these other cases, it appears that a similar process would benefit LMDS.

120. As one option, we propose to require that applicants coordinate frequencies among themselves at their service areas boundaries.<sup>110</sup> We believe that this process will be highly efficient, provide LMDS operators sufficient system engineering flexibility, and result in fewer interference problems. Alternatively, we could set a maximum power flux density (PFD) level at the service area boundaries. In establishing this limit, we would also include a provision permitting parties to exceed this level should they come to an agreement with geographically adjacent licensees. Through this process parties could resolve interference problems without the Commission's involvement, thereby enabling the introduction of services more expeditiously. We request comment on a reasonable PFD in the event that we decide to adopt this alternative.

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<sup>110</sup> 47 C.F.R. ' 21.100(d).

121. Another measure that might advance the coordination process would be a requirement that LMDS operators employ only orthogonally-polarized signals. Such signals are achievable by using vertical and horizontal polarized antennas. Depending upon the antenna configurations, adjacent LMDS systems configured to use opposite polarized signals can realize cross-polarization isolation levels of at least 20 dB.<sup>111</sup> If operators were permitted to employ other types of polarizations, *e.g.*, circular, the level of isolation would be significantly less or nil.

Theoretically, the isolation between a circular polarized signal and an orthogonal one is 3 dB, although this becomes even less when the signals are depolarized. In the event LMDS and satellite systems are ultimately able to co-frequency share this band, this proposal to limit LMDS to the use of orthogonal polarization, we believe, may be one of the mitigating factors that facilitate co-frequency sharing between LMDS and satellite systems. We request comment on this conclusion. Moreover, in our view, permitting operators to employ other types of polarization would impose some geographical separation requirements on LMDS systems, potentially reducing the size of LMDS service areas and the number of customers who could be served. Our goal is to adopt rules that will maximize LMDS service. Therefore, we request comment on restricting LMDS signal polarizations to vertical and horizontal at the border of each service area.

## 2. *Equivalent Isotropically Radiated Power (EIRP)*

122. We note that during the Negotiated Rulemaking Committee, proponents of LMDS described their system characteristics for use in analyzing interference between LMDS and satellite systems. This data revealed differences in LMDS proponents' strategies and system designs, including power levels. For the 28 GHz band, our current rules limit the maximum EIRP to -18 dBW/Hz based on a bandwidth of 20 MHz.<sup>112</sup> Although this amount of power should increase path reliability, none of the system designs on record contemplates a level of this magnitude. The maximum proposed by any LMDS proponent is -52 dBW/Hz. Perhaps this is an indication that -18 dBW/Hz far exceed the power requirements of LMDS systems and therefore should be reduced to a more reasonable level. LMDS system designs are still evolving, but we recognize that two of the three known designs require power levels substantially less than -52 dBW/Hz. Imposing an EIRP limit more in line with today's designs should reduce the probability of intersystem interference, cause future systems to be more homogenous with today's technology, and improve the chances of future co-frequency sharing

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<sup>111</sup> "Frequency Reuse in the Cellular LMDS," Suite 12 Group, filed January 6, 1994.

<sup>112</sup> The 28 GHz band is presently designated, terrestrially, for fixed point-to-point microwave use and this power limit reflects this type of radio system. For the LMDS point-to-point intercell connecting links that will operate in the 27.5 - 28.35 GHz band, we do not propose to reduce the power level below that of other fixed point-to-point links. Any such links designed to operate in the 29.1 GHz - 29.25 GHz band will be required to comply with the terms of the sharing agreement discussed in paras. 60-63, *infra*.

agreements which LMDS and satellite licensees in the 27.5 GHz - 28.35 GHz band may choose to undertake.<sup>113</sup>

123. Therefore, in conjunction with our proposal to require LMDS licensees to coordinate frequencies, we also propose to set the maximum EIRP for LMDS at -52 dBW/Hz for systems that will operate in the 27.5 GHz - 28.35 GHz band. For those systems designed to operate in the LMDS allocation at 29.1 GHz - 29.25 GHz the proposed hub limits are specified in proposed rules ' ' 21.1020 and 21.1021 contained in Appendix 1. These levels are based on the analyses conducted in the NRMC, that demonstrated interference between LMDS systems and MSS feeder links is less likely if LMDS systems maintain an output power within those limits. Based on the present record in this proceeding, we believe these limits provide LMDS systems operators sufficient flexibility and adequate power to meet their needs. No limit is proposed for maximum transmitter output power. This is consistent with our proposal in WT Docket No. 94-148, wherein we proposed to eliminate the limitation on maximum transmitter power and to express power limits in terms of EIRP. In addition, we propose to adopt a 0.001% frequency tolerance for LMDS equipment. We believe that this frequency stability will maximize the use of this spectrum, is within the current state-of-the-art, and can be achieved without significant costs. We request comment on these proposals.

### 3. *Spectral Efficiency*

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<sup>113</sup> Our proposal for power output of consumer equipment is less than what is currently permitted for equipment in this band. See ANSI/IEEE C95.1-1992, *Safety Levels with Respect to Human Exposure to Radiofrequency Electromagnetic Fields, 3 KHz - 300 GHz*, approved Sept. 26, 1991, published Apr. 27, 1992, by IEEE; see also *Guidelines for Evaluating Environmental Effects of Radiofrequency Radiation*, ET Docket No. 93-62.

124. Even though we propose to adopt a flexible policy that would allow system designers to subdivide assigned spectrum in a manner that is best for accommodating their service requirements, we seek comment regarding whether there is a need for a measure of modulation spectral efficiency. Currently, the rules require digital modulated systems to comply with a spectral efficiency of 1.0 bps/hz. This standard was adopted many years ago and represented the state-of-the-art at that time. Over the years advanced modulation techniques have been developed and will continue to do so. In light of these developments, we seek comment regarding whether meeting this standard would present any problems to equipment manufacturers. We are aware that the measure represents only one aspect of spectral efficiency of a system. However, our experiences with systems operating in other bands show that it is a reasonable measure and is not an administrative burden. Recognizing that methods of measuring system performance and efficiency standards have advanced along with system designs, we seek comment on whether there is a better gauge of spectral efficiency that would not pose enforcement problems for the Commission. In particular, we request comment on whether the efficiency standards we adopted for Private Land Mobile Radio Services refarming efforts would be appropriate here.<sup>114</sup>

## V. SATELLITE SERVICES

125. Given the wide variety of services Ka-band satellites will provide, we seek to license systems as expeditiously as possible. We also seek to encourage multiple entry, as has been our policy in other satellite services.<sup>115</sup>

126. We have existing rules for the GSO/FSS systems in place in Part 25 of the Commission's rules.<sup>116</sup> These include technical rules, such as 2N orbital spacing and full frequency reuse, and licensee qualification rules, for example, a rigorous financial qualification standard. We propose to apply these rules to GSO/FSS systems that will use the 27.5- 30.0 GHz band. We request comment on this. We also request comment on whether specific rules, such as the financial qualification requirement, should be altered and whether any additional rules should be created. We request specific comment on any technical standards that will facilitate sharing under our band segmentation plan.

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<sup>114</sup> *In the Matter of Replacement of Part 90 by Part 88 to Revise the Private Land Mobile Radio Services and Modify the Policies Governing Them*, Report and Order and Further Notice of Proposed Rulemaking, PR Docket No. 92-235, -- FCC Rcd. --, FCC 95-255, released June 23, 1995, para. 97.

<sup>115</sup> *See, e.g., Radiodetermination Satellite Service*, 104 FCC 2d 650 (1986); *Amendment of the Commission's Rules to Establish Rules and Policies Pertaining to a Mobile Satellite Service in the 1610-1626.5/2483.5-2500 MHz Frequency Bands*, Report and Order, CC Docket No. 92-166, FCC 94-261, released Oct. 14, 1994.

<sup>116</sup> *See* 47 C.F.R. §§ 25.114, 25.140, and 25.210.



127. We also request comment on what sort of rules should be created for the NGSO/FSS systems. For example, what sort of financial qualifications should we adopt for these systems? Should spectrum efficiency or service availability standards be adopted? We request specific comment on any technical standards that should be adopted for NGSO/FSS systems that will facilitate sharing under our band segmentation plan.

128. Satellite Licensing Procedures. Following the release of this Notice, we will place the pending satellite applications on separate Public Notice, and will establish cut-off periods for both the GSO/FSS and NGSO/FSS applications to be considered concurrently with these.<sup>117</sup> If all qualified applicants in the processing group cannot be accommodated, we propose to use competitive bidding as the procedure to choose among the mutually exclusive applications to provide domestic service within the United States.<sup>118</sup> We are not auctioning access rights to other countries from either NGSO/FSS or GSO/FSS systems. We are also auctioning access rights to serve the U.S. market only from certain orbit locations for specific frequency bands. We briefly discuss proposals for auctions for GSO/FSS and NGSO/FSS systems. By doing so, we will be in a position to implement an auction as quickly as possible, should we be faced with a mutually exclusive situation, and to ensure that service to the public is not delayed.

## VI. COMPETITIVE BIDDING PROCEDURES

### A. Competitive Bidding

129. Section 309(j)(1) of the Communications Act, as amended, 47 U.S.C. § 309(j)(1), permits auctions only where mutually exclusive applications for initial licenses or construction permits are accepted for filing by the Commission and where the principal use of the spectrum will involve or is reasonably likely to involve the receipt by the licensee of compensation from subscribers in return for enabling those subscribers to receive or transmit communications signals.<sup>119</sup>

130. The Commission has previously determined that auctions are permissible if at least a majority of the use of the spectrum would be for service to subscribers. In making this

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<sup>117</sup> All applicants would have to pay the filing fees set out in our rules, for applications for authority to construct launch and operate a satellite in the FSS.

<sup>118</sup> In general, the Commission considers two or more applications to be "mutually exclusive" if their conflicts are such that the grant of one application would effectively preclude, by reason of harmful electrical interference, the grant of one or more of the other applications. See 47 C.F.R. § 25.155(a).

<sup>119</sup> As discussed *infra*, the LMDS services proposed to date all appear to be subscriber-based services. However, we are aware that interest in the use of this spectrum has been demonstrated by two entities interested in manufacturing point-to-point equipment (Digital Corporation and Harris Corp. - Farinon Div.) which is unlikely to be subscriber-based.

determination, we looked to classes of licenses and permits rather than to individual licenses.<sup>120</sup> Based on the service proposals in the extensive record developed in this proceeding to date, we believe that the principal use of the LMDS spectrum will meet these requirements.

131. With respect to the NGSO and GSO FSS applicants, we tentatively conclude that the principal use of the spectrum will be to provide subscription based services,<sup>121</sup> even though certain portions of the spectrum will be used for large bandwidth applications through gateway terminals. We request comment on these tentative conclusions, including information from any potential LMDS or satellite applicants on the type of service they contemplate offering.

132. In addition, we tentatively conclude that the use of competitive bidding to award LMDS and satellite licenses will promote the objectives described in Section 309(j)(3) of the Communications Act. These objectives are:

- (A) the development and rapid deployment of new technologies, products, and services for the benefit of the public, including those residing in rural areas, without administrative or judicial delays;
- (B) promoting economic opportunity and competition and ensuring that new and innovative technologies are readily accessible to the American people 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 minority groups and women;
- (C) recovery for the public of a portion of the value of the public spectrum made available for commercial use and avoidance of unjust enrichment through the methods employed to award uses of that resource; and
- (D) efficient and intensive use of the electromagnetic spectrum.

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<sup>120</sup> *Second Report and Order, supra*, n. 79 at 2354.

<sup>121</sup> *See* First Report and Order and Second Notice of Proposed Rulemaking in ET Docket No. 94-32, FCC 95-47, 60 Fed. Reg. 13102 (March 10, 1995) at 33.

133. First, based on our experience conducting PCS auctions, we believe that the use of competitive bidding to award GSO/FSS and NGSO/FSS and LMDS licenses, as compared with other licensing methods, will speed the development and deployment of new technologies, products and services to the public with minimal administrative or judicial delay, and will encourage efficient use of the spectrum as required by Sections 309(j)(3)(A) and (D). Second, use of auctions to assign LMDS and satellite licenses will clearly advance the goals of Section 309(j)(3)(C) by enabling us to recover for the public a portion of the value of the public spectrum.<sup>122</sup> By using a licensing methodology which ensures that licenses are assigned to those who value them most highly, it follows that such licensees can be expected to make the most efficient and intensive use of the spectrum. Finally, we believe that using auctions will meet the objectives of Section 309(j)(3)(B) because we propose to adopt competitive bidding rules that foster economic opportunity and the distribution of licenses among a wide variety of applicants including small businesses, rural telephone companies and businesses owned by women and minorities (collectively referred to as "designated entities") who might otherwise face entry barriers.

### **B. Determining Mutual Exclusivity**

134. As noted above, one of the prerequisites for use of the auction procedures is that applications must be mutually exclusive. The Communications Act states that "[n]othing in [Section 309(j)], or in the use of competitive bidding, shall . . . be construed to relieve the Commission of the obligation in the public interest to continue to use engineering solutions, negotiation, threshold qualifications, service regulations, and other means in order to avoid mutual exclusivity in application and licensing proceedings. . . ." 47 U.S.C. § 309(j)(6)(E). With respect to LMDS, we propose to use discrete geographic service areas and spectrum blocks, thus avoiding the possibility of "daisy chain" mutual exclusivity among applications. However, because of the great interest shown in LMDS in this proceeding to date, we anticipate that there will be multiple applications filed for each geographic area. Moreover, we tentatively conclude that it would not serve the public interest for the Commission to avoid mutual exclusivity altogether because doing so would greatly circumscribe the geographic service areas and would defeat the Commission's ability to determine the applicants who would put the spectrum to its highest valued use.

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<sup>122</sup> *Id.*

135. We propose to determine mutual exclusivity based on the FCC Form 175 application for LMDS licenses. If more than one application is filed for the same LMDS frequency in the same geographic area then mutual exclusivity would be established and the license will be auctioned. As we indicated in the *Second Report and Order*, if the Commission receives only one application that is acceptable for filing for a particular license, and thus there is no mutual exclusivity, the Commission by Public Notice will cancel the auction for this license and establish a date for the filing of a long-form application, the acceptance of which will trigger the procedures permitting petitions to deny.<sup>123</sup> We seek comment on this proposal, particularly whether some other type of filing method would be more appropriate for determining whether initial applications are mutually exclusive.

136. With respect to GSO/FSS service and NGSO/FSS systems, it is premature to determine whether mutual exclusivity will occur. We intend to open a new filing period permitting additional parties to apply for this spectrum. If additional entities file applications during this filing period, it is possible, given the limited amount of spectrum available, that we may not be able to accommodate all of the applicants' proposals. Under these circumstances the Commission proposes to award these licenses by auction. We seek comment on this proposal.

### **C. Competitive Bidding Issues**

#### *1. Competitive Bidding Design*

##### *(a) General Competitive Bidding Principles*

137. The *Competitive Bidding Second Report and Order*,<sup>124</sup> as modified by the *Competitive Bidding Reconsideration Order*,<sup>125</sup> established the criteria to be used in selecting which auction design method to use for each particular auctionable service. Generally, we

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<sup>123</sup> See *Second Report and Order* at para. 165.

<sup>124</sup> *Implementation of Section 309(j) of the Communications Act - Competitive Bidding*, Second Report and Order, PP Docket No. 93-253, 9 FCC Rcd 2348, para. 69 (1994)(Competitive Bidding Second Report and Order).

<sup>125</sup> *Competitive Bidding Reconsideration Order*, 9 FCC Rcd at 7249 - 50.

concluded that awarding licenses to those parties who value them most highly will foster the statutory policy objectives. In this regard, we noted that since a bidder's ability to introduce valuable new services and to deploy them quickly, intensively, and efficiently increases the value of a license to that bidder, an auction design that awards licenses to those bidders with the highest willingness to pay tends to promote the development and rapid deployment of new services and the efficient and intensive use of the spectrum.<sup>126</sup>

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<sup>126</sup> See *Competitive Bidding Second Report and Order*, 9 FCC Rcd at 2360-61, para. 70.

138. Based on the foregoing, we concluded that where the licenses to be auctioned are interdependent and their value is expected to be high, simultaneous multiple round auctions would best achieve the Commission's goals for competitive bidding.<sup>127</sup> We also noted, however, that simultaneous multiple round auctions may not be appropriate for all licenses. For example, where there is less interdependence among licenses, there is less benefit to auctioning them simultaneously. Similarly, we explained that when the values of particular licenses to be auctioned are low relative to the costs of conducting a simultaneous multiple round auction, we may consider auction designs that are relatively simple, with low administrative costs and minimal costs to the auction participants.<sup>128</sup>

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<sup>127</sup> See 9 FCC Rcd at 2367, paras. 109-111.

<sup>128</sup> See *id.* at 2367, paras. 112-113.

*(b) Competitive Bidding Methodology for LMDS Licenses*

139. Simultaneous Multiple Round Bidding. We believe that simultaneous multiple round bidding should be the preferred method for licensing LMDS spectrum blocks. Based on the record in this proceeding and our successful experience conducting simultaneous multiple round auctions for narrowband and broadband PCS licenses, we believe that this auction design is the most appropriate for auctioning LMDS licenses. First, we believe that for certain bidders the value of these licenses will be significantly interdependent because of the desirability of aggregation across geographic regions and because, if the Commission provides for more than one license in each geographic service area, licenses within the same area would likely be close substitutes or strong complements. As indicated above, under these circumstances, simultaneous multiple round bidding will generate more information about license values during the course of the auction and provide bidders with more flexibility to pursue back-up strategies than if these licenses are auctioned separately. Simultaneous multiple round bidding is therefore most likely to award licenses to the bidders who value them the most highly and to provide bidders with the greatest likelihood of obtaining the license combinations which best satisfy their service needs. Finally, we expect the value of these licenses to be sufficiently high to warrant the use of simultaneous multiple round auctions. Therefore, we intend to use simultaneous multiple round bidding to award LMDS licenses. We ask commenters to address this tentative conclusion and whether any other competitive bidding designs would be more appropriate for the licensing of this spectrum.

140. Grouping of Licenses. Assuming we use simultaneous multiple round auctions for LMDS licenses, we also seek comment on which blocks should be auctioned together, and the sequencing of each auction. The importance of the choice of license groupings increases with the degree of interdependence among the individual licenses or groups of licenses to be auctioned. Grouping interdependent licenses together and putting them up for bid at the same time will facilitate awarding licenses to bidders who value them the most highly by providing bidders with information about the prices of complementary and substitutable licenses during the course of the auction. Based on the foregoing, we propose to auction all LMDS licenses together in one simultaneous multiple round auction because of the expected value and significant interdependence of the licenses. We seek comment on this tentative analysis and on possible alternative license groupings.

141. Combinatorial Bidding. Another issue for consideration in auction design is whether to permit combinatorial bidding. In general terms, combinatorial bidding allows bidders to bid for multiple licenses as all-or-nothing packages (*e.g.*, all licenses nationwide on a particular spectrum block, with the licenses awarded as a package if the combinatorial bid is greater than the sum of the high bids on the individual licenses in the package).<sup>129</sup>

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<sup>129</sup> In combinatorial bidding, if a bid for a group of licenses exceeds the sum of the highest bids for the individual licenses that comprise the package, then the package bid would win. In the Second Report and

Combinatorial bidding can be implemented with either simultaneous or sequential auction designs. At this time, we do not plan to use combinatorial bidding in LMDS licensing because although we recognize that there may be significant benefits associated with combinatorial bidding, especially in terms of efficient aggregation of licenses, we tentatively conclude that simultaneous multiple round auctions offer many of the same advantages without the same degree of administrative and operational complexity and without biasing auction outcomes in favor of combination bids. We seek comment on the specific combinatorial bidding procedures that should be adopted if combinatorial bidding is used.

142. Alternatively, we may consider modifying the auction rules to directly limit the risk associated with bid withdrawal for those seeking nationwide aggregations. For example, we might cap the bid withdrawal payment (discussed below) for nationwide bidders at five percent of the withdrawn bids. To discourage those who do not truly seek nationwide aggregations of taking advantage of the limitations on bid withdrawal payments and to speed up the auction, nationwide bidders might be subject to the requirement that they be active (defined below) on all license on each nationwide aggregation on which they bid. To ensure adequate competition for licenses which are reoffered after a nationwide withdrawal we might also modify the activity rules (discussed below) so that if any bidder withdraws a bid, the eligibility of all other bidders will be increased by the amount of the withdrawn bid up to each bidder's initial maximum eligibility. We seek comment on this alternative method of facilitating efficient nationwide aggregations.

*(c) GSO/FSS Auction Proposals*

143. In the event a competitive bidding approach is adopted to award GSO/FSS and NGSO/FSS licenses, we emphasize that we would be auctioning *access to the United States only* for use of specific frequency bands within the U.S. Any international access by the satellite users depends on the rules of that particular country. To afford licensees some flexibility in designing their systems and to allow for the uncertainties of the international coordination process, we propose to allow applicants to bid on the total amount of spectrum designated for GSO/FSS and NGSO/FSS services, respectively, set out in the band segmentation plan.

144. As we discussed earlier, it is premature for us to determine whether there will be mutually exclusive applications for GSO/FSS licenses in the band. Applications for GSO/FSS licenses would be mutually exclusive if we do not have a sufficient number of orbit locations to accommodate all qualified applicants. We request comment, with accompanying justification, from applicants and potential applicants, on how many users, within our two degree spacing rule,

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Order we also indicated that if we were to utilize combinatorial bidding we might institute a premium so that the combinatorial bid would win only if it exceeded the sum of the bids for individual licenses by a set percentage. *See* Second Report and Order at para. 114. NTIA is the main advocate of combinatorial bidding. *See* comments of NTIA, and *ex parte* submission of NTIA in PP Docket No. 93-253, Feb. 28, 1994.



they believe can be supported in the GSO/FSS segments to provide service to the continental United States (CONUS), without causing harmful interference. If a mutually exclusive situation should arise, we propose to auction the GSO/FSS spectrum at each orbit location in two paired, uplink and downlink, 500 MHz blocks, allowing applicants to bid for up to two blocks. We believe 500 MHz blocks are the smallest spectrum blocks feasible to support a viable FSS system at 28 GHz. We request comment on whether this amount of spectrum is sufficient. If auctions are used to award GSO/FSS licenses, we propose to use a simultaneous multiple round bidding, which will enable bidders to express the value interdependencies between the two blocks. We request comment on whether simultaneous multiple round bidding procedures are appropriate for this spectrum or whether other bidding procedures would better serve the statutory goals.

*(d) NGSO/FSS Auction Proposals*

145. The band segmentation plan designates 500 MHz of unrestricted contiguous spectrum to NGSO/FSS systems. Our preliminary technical analysis indicates that 500 MHz is the minimum amount of spectrum required to implement a viable system offering NGSO/FSS services. For NGSO/FSS systems, a mutually exclusive situation will arise if all qualified applicants are unable to share the spectrum. If mutually exclusive applications are received, we propose to use competitive bidding to award a single license. If competitive bidding is used to award such a license, we propose to conduct a multiple round auction for the entire 500 MHz block of spectrum. This multiple round auction may be either oral or electronic. We request comment from NGSO/FSS applicants and potential applicants on this proposal. Specifically we ask commenters to address the specific application and auction procedures that should be used.

*(e) MSS Feeder Links*

146. We are not proposing competitive bidding rules for MSS feeder links. In the *Second Report and Order* in the Competitive Bidding Rulemaking Proceeding, the Commission decided not to auction intermediate links, including feeder links in the Mobile Satellite Services (MSS).<sup>130</sup> We reasoned that before employing competitive bidding, the Commission is required to determine that mutually exclusive applications are likely to be filed and that such bidding would promote the objectives of Section 309(j)(3)(A) through (D) of the Communications Act. With regard to mutual exclusivity, we noted that in those frequency bands most often utilized as intermediate links, mutual exclusivity is usually avoided by employing a frequency coordination process for each intermediate link prior to the time an application is granted. With regard to the objectives of Section 309(j)(3)(A) through (D), we concluded that auctioning intermediate links could significantly delay the development and rapid deployment of new technologies, products and services for the benefit of the public, that auctions for these links could impose significant

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<sup>130</sup> See *Implementation of Section 309(j) of the Communications Act - Competitive Bidding*, PP Docket No.93-253, Second Report and Order, 9 FCC Rcd. 2348, 2355-56 n. 30 (1994).

administrative costs on licensees and the Commission, and that it was unclear whether competitive bidding for intermediate links would recover for the public a significant portion of the value of the spectrum, prevent unjust enrichment or promote efficient and intensive use of the spectrum.<sup>131</sup>

147. We tentatively conclude that FSS spectrum used for MSS feeder links should be excluded from competitive bidding. We base this tentative conclusion on the finding that auctions for MSS feeder links would not achieve the public interest objectives in Section 309(j)(3). The feeder links are an integral part of the MSS systems and the systems would be unable to operate without them. Three MSS systems have also already been licensed and auctioning the feeder links would only delay implementation of service to the public.

*(f) Bidding Procedures*

148. If we use simultaneous multiple round auctions, we generally propose to use bidding procedures similar to those used for broadband PCS.<sup>132</sup> We seek comment, however, on whether any variations on these procedures should be adopted for LMDS or FSS licenses.

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<sup>131</sup> *Id.* at 2355, para. 43.

<sup>132</sup> *Fifth Report and Order* in PP Docket No. 93-253, 9 FCC Rcd 5532 (1994) (*Fifth Report and Order*), recon. granted in part, *Fifth Memorandum Opinion and Order*, 10 FCC Rcd 403 (1995) (*Fifth Memorandum Opinion and Order*).

149. Bid Increments and Tie Bids. In using simultaneous multiple round auctions to award licenses, it is important to specify minimum bid increments. The bid increment is the amount or percentage by which the bid must be raised above the previous round's high bid in order to be accepted as a valid bid in the current bidding round. The application of a minimum bid increment speeds the progress of the auction and, along with activity and stopping rules, helps to ensure that the auction comes to closure within a reasonable period of time. Establishing an appropriate minimum bid increment is especially important in a simultaneous auction with a simultaneous closing rule. In that case, all markets remain open until there is no bidding on any license, and a delay in closing one market will delay the closing of all markets. As we recognized in the *Second Report and Order* in the competitive bidding docket, it is important in establishing the amount of the minimum bid increment to express such increment as the greater of a percentage and fixed dollar amount.<sup>133</sup> This will ensure a timely completion of the auction even if bidding begins at a very low dollar amount. Accordingly, we propose to impose a minimum bid increment equal to some percentage of the high bid from the previous round or a dollar amount per MHz per pop, whichever is greater where multiple round bidding is used.

150. We propose to announce by public notice prior to auction the specific bid increment that generally will be used. We anticipate using large bid increments early in the auction and reducing the increments as bidding activity falls. We note, however, that the Commission proposes to retain the discretion to set and, by announcement before or during the auction, vary the minimum bid increments for individual licenses or groups of licenses over the course of an auction.<sup>134</sup>

151. Where a tie bid occurs, we propose that the high bidder be determined by the order in which the bids were received by the Commission.<sup>135</sup>

152. Stopping Rules. When simultaneous multiple round auctions are used, a stopping rule must be established for determining when the auction is over. In simultaneous multiple round auctions, bidding may close separately on individual licenses, simultaneously on all licenses, or a hybrid approach may be used. Under an individual, license-by-license approach, bidding closes on each license after one round passes in which no new acceptable bids are submitted for that particular license. With a simultaneous stopping rule, bidding generally remains open on all licenses until there is no new acceptable bid on any license. This approach has the advantage of providing bidders full flexibility to bid for any license as more information becomes available during the course of the auction, but it may lead to very long auctions, unless

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<sup>133</sup> See *Second Report and Order*, *supra*, at para. 126.

<sup>134</sup> In oral or electronic sequential auctions the auctioneer may within his or her sole discretion establish and vary the amount of the minimum bid increment in each round of bidding.

<sup>135</sup> See *Second Report and Order* at 2369.

an activity rule (*see* discussion *infra*, paras. 157 *ff*) is imposed. A hybrid approach combines the first two stopping rules. For example, we may use a simultaneous stopping rule (along with an activity rule designed to expedite closure for licenses subject to the simultaneous stopping rule) for the higher value licenses. For lower value licenses, where the loss from eliminating some back-up strategies is less, we may use simpler license-by-license closings. In the *Competitive Bidding Second Report and Order* we recognized that such a hybrid approach might simplify and speed up the auction process without significantly sacrificing efficiency or expected revenue.<sup>136</sup>

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<sup>136</sup> *Id.*

153. For LMDS and FSS auctions, we propose to use a simultaneous stopping rule. Under this proposal, bidding will remain open on all licenses in an auction until bidding stops on every license. We propose that the auction will close after one round passes in which no new valid bids or proactive activity rule waivers (as defined below in the section on activity rules) are submitted. The Commission proposes to retain the discretion, however, to keep the auction open even if no new valid bids and no proactive waivers are submitted. In the event that the Commission exercises this discretion, the effect would be the same as if a bidder had submitted a proactive waiver.<sup>137</sup> Since we intend to impose an activity rule (as discussed below), we believe that allowing simultaneous closing for all licenses will afford bidders flexibility to pursue back-up strategies without running the risk that bidders will hold back their bidding until the final rounds.

154. In addition, we propose to retain the discretion to declare after forty rounds that the auction will end after some specified number of additional rounds. If this option were used, we propose to only accept bids on licenses where the high bid had increased in at least one of the last three rounds. We seek comment on our proposed use of a simultaneous stopping rule and ask commenters to indicate whether an alternative stopping rule would be more appropriate.

155. Duration of Bidding Rounds. In simultaneous multiple round auctions, bidders may need a significant amount of time to evaluate back-up strategies and develop their bidding plans. We seek comment on the appropriate duration of the bidding rounds as well as the interval between bidding rounds. We propose to retain the discretion to establish the duration and frequency of bidding rounds by public notice before each auction. We also propose to announce any changes to the duration of or intervals between bidding rounds either by public notice prior to the auction, or announcement during the auction. We request comment on this proposal.

156. Bid Withdrawals. We propose to permit a high bidder to withdraw one or more of its high bids during the bid withdrawal period in each round subject to the bid withdrawal payments specified below. If a high bid is withdrawn, we propose that the license be offered in the next round at the second highest bid price. The Commission may at its discretion adjust the offer price in subsequent rounds until a valid bid is received on the license. In addition, to prevent a bidder from strategically delaying the close of the auction, we propose that the FCC

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<sup>137</sup> This will help ensure that the auction is completed within a reasonable period of time, because it will enable the Commission to utilize larger bid increments, which speed the pace of the auction, without risking premature closing of the auction. See *Memorandum Opinion and Order* in PP Docket No. 93-253, 9 FCC Rcd 7684-7685 (1994).

retain the discretion to limit the number of times that a bidder may re-bid on a license from which it has withdrawn a high bid.

157. Activity Rules. In the *Second Report and Order*, we adopted the Milgrom-Wilson activity rule as our preferred activity rule where a simultaneous stopping rule is used. See *Second Report and Order* at paras. 144-145. The Milgrom-Wilson approach encourages bidders to participate in early rounds by limiting their maximum participation to some multiple of their minimum participation level. Bidders are required to declare their maximum eligibility in terms of MHz-pops, and make an upfront payment proportional to that eligibility level.<sup>138</sup> (See discussion of upfront payments *infra*, para. 167.) That is, in each round, bidders will be limited to bidding on licenses encompassing no more than the number of MHz-pops covered by their upfront payment. Licenses on which a bidder is the high bidder at the end of the bid withdrawal period in the previous round count against this bidding limit. Under this approach, bidders have the flexibility to shift their bids among any licenses for which they have applied so long as, within each round, the total MHz-pops encompassed by those licenses does not exceed the total number of MHz-pops on which they are eligible to bid. Under this approach, to preserve their maximum eligibility, bidders are required to maintain a certain level of bidding activity during each round of the auction. The auction is divided into three stages with increasing levels of bidding activity required in each stage of the auction. A bidder is considered active on a license in the current round if the bidder has submitted an acceptable bid for that license in the current round, or has the high bid for that license at the end of the bid withdrawal period in the previous round, in which case, the bidder does not need to bid on that license in the current round to be considered active on that license. A bidder's activity level in a round is the sum of the MHz-pops associated with licenses on which the bidder is active.

158. We tentatively conclude that the Milgrom-Wilson activity rule should be used in conjunction with the proposed simultaneous stopping rule for LMDS and FSS auctions. We believe that the Milgrom-Wilson approach will best achieve the Commission's goals of affording bidders flexibility to pursue backup strategies, while at the same time ensuring that simultaneous auctions are concluded within a reasonable period of time.

159. Under the Milgrom-Wilson proposal, the minimum activity level, measured as a fraction of the bidder's eligibility in the current round, will increase during the course of the auction. Milgrom and Wilson divide the auction into three stages. We propose to establish the following minimum required activity levels for each stage of the auction: In each round of *Stage One* of the auction, a bidder who wishes to maintain its current eligibility is required to be active on licenses encompassing at least 60% of the MHz-pops for which it is currently eligible. Failure to maintain the requisite activity level will result in a reduction in the amount of MHz-

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<sup>138</sup> The number of "MHz-pops" is calculated by multiplying the population of the license service area by the amount of spectrum authorized by the license. We use the terms "per MHz-pop" and "per MHz per pop" interchangeably.

pops upon which a bidder will be eligible to bid in the next round of bidding (unless an activity rule waiver, as defined below, is used). During Stage One, if activity is below the required minimum level, eligibility in the next round will be calculated by multiplying the current round activity by five-thirds (5/3). Eligibility for each applicant in the first round of the auction is determined by the amount of the upfront payment received and the licenses identified in its auction application. In each round of the *Stage Two*, a bidder who wishes to maintain its current eligibility is required to be active on 80% of the MHz-pops for which it is eligible in the current round. During the second stage, if activity is below the required minimum level, eligibility in the next round will be calculated by multiplying the current round activity by five-fourths (5/4). In each round of *Stage Three*, a bidder who wishes to maintain its current eligibility is required to be active on licenses encompassing 95 percent of the MHz-pops for which it is eligible in the current round. In Stage Three, if activity in the current round is below 95 percent of current eligibility, eligibility in the next round will be calculated by multiplying the current round activity by twenty-nineteenths (20/19). We note, however, that the Commission proposes to retain the discretion to set and, by announcement before or during the auction, vary the required minimum activity levels (and associated eligibility calculations) for each auction stage. Retaining this flexibility will improve the Commission's ability to control the pace of the auction and help ensure that the auction is completed within a reasonable period of time.

160. In the PCS auctions, we specified transition guidelines for deciding when the auction would move from Stage One to Stage Two to Stage Three. Those guidelines are based on the "auction activity level," the sum of the MHz-pops of PCS licenses for which the high bid increased in the current round as a percentage of the total MHz-pops of all licenses offered in the auction.<sup>139</sup> However, we also retained the discretion to move the PCS auctions from one stage to another at a rate different from that set out in the guidelines.<sup>140</sup>

161. For the LMDS and FSS auctions, we propose to use the following transition guidelines: The auction will begin in Stage One and move from Stage One to Stage Two when the auction activity level is below ten percent for three consecutive rounds in Stage One. The auction will move from Stage Two to Stage Three when the auction activity level is below five percent for three consecutive rounds in Stage Two. In no case can the auction revert to an earlier stage. We propose, however, that the Commission retain the discretion to determine and announce during the course of an auction when, and if, to move from one auction stage to the next, based on a variety of measures of bidder activity, including, but not limited to, the auction activity level as defined above, the percentage of licenses (measured in terms of MHz-pops) on which there are new bids, the number of new bids, and the percentage increase in revenue.

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<sup>139</sup> See, e.g., *Fifth Report and Order* at 5555.

<sup>140</sup> See *Fourth Memorandum Opinion and Order* in PP Docket No. 93-253, 9 FCC Rcd 6858, 6860 (1994).

162. To avoid the consequences of clerical errors and to compensate for unusual circumstances that might delay a bidder's bid preparation or submission in a particular round, we propose to provide bidders with a limited number of waivers of the above-described activity rule. We believe that some waiver procedure is needed because the Commission does not wish to reduce a bidder's eligibility due to an accidental act or circumstances not under the bidder's control.<sup>141</sup>

163. We propose to provide bidders five activity rule waivers that may be used in any round during the course of the auction.<sup>142</sup> If a bidder's activity level is below the required activity level, a waiver will automatically be applied. That is, if a bidder fails to submit a bid in a round, and its activity level from any standing high bids (high bids at the end of the bid withdrawal period in the previous round) falls below its required activity level, a waiver will be automatically applied. A waiver will preserve current eligibility in the next round.<sup>143</sup> An activity rule waiver applies to an entire round of bidding and not to a particular BTA service area.

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<sup>141</sup> See *Second Report and Order* at 2372.

<sup>142</sup> See *Second Report and Order* at 2373.

<sup>143</sup> An activity rule waiver cannot be used to correct an error in the amount bid.



164. Bidders will be afforded an opportunity to override the automatic waiver mechanism when they place a bid if they intentionally wish to reduce their bidding eligibility and do not want to use a waiver to retain their eligibility at its current level.<sup>144</sup> If a bidder overrides the automatic waiver mechanism, its eligibility will be permanently reduced (according to the formulas specified above), and it will not be permitted to regain its bidding eligibility from a previous round. An automatic waiver invoked in a round in which there are no new valid bids will not keep the auction open. Bidders will have the option of proactively entering an activity rule waiver during the bid submission period.<sup>145</sup> If a bidder submits a proactive waiver in a round in which no other bidding activity occurs, the auction will remain open.

165. The Commission proposes to retain the discretion to issue additional waivers during the course of an auction for circumstances beyond a bidder's control. We also propose to retain the flexibility to adjust by public notice prior to an auction the number of waivers permitted, or to institute a rule that allows one waiver during a specified number of bidding rounds or during specified stages of the auction.<sup>146</sup> We request comment on these proposals.

## 2. *Procedural and Payment Issues*

166. In the *Competitive Bidding Second Report and Order*, as modified by the *Competitive Bidding Reconsideration Order*, the Commission established general procedural and payment rules for auctions, but also stated that such rules may be modified on a service-specific basis.<sup>147</sup> As discussed below, we generally propose to follow the procedural and payment rules established in Subpart Q of Part 1 of the Commission's Rules, but seek comment on whether any service-specific modifications of these rules are needed based on the particular characteristics of LMDS services.

### (a) *Upfront Payments*

167. As in the case of other auctionable services, we propose to require participants in the LMDS and FSS auctions to tender to the Commission in advance of the auction, a substantial upfront payment. We have previously determined that a substantial upfront payment requirement is necessary to ensure that only serious, qualified bidders participate in auctions and to ensure that sufficient funds are available to satisfy any bid withdrawal or default payments

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<sup>144</sup> See *Fourth Memorandum Opinion and Order* in PP Docket No. 93-253, 9 FCC Rcd 6858, 6861 (1994).

<sup>145</sup> Thus, a "proactive" waiver, as distinguished from the automatic waiver described above, is one requested by the bidder.

<sup>146</sup> See *Second Report and Order* at 2373.

<sup>147</sup> 9 FCC Rcd at 7249-50, paras. 23-26.

(discussed *infra*) that may be incurred. We seek comment on the appropriate amount of such upfront payments for LMDS and satellite auctions. In the PCS auctions the upfront payments was established based on a formula of \$0.02 per pop per MHz for the largest combination of MHz-pops a bidder anticipates being active in any single round of bidding. This upfront payment was designed to require an upfront payment representing approximately 5 percent of the expected value of such licenses. We seek comment on what the appropriate upfront payment price per MHz-pop should be for LMDS and satellite licenses. We also seek comment on whether we should establish a minimum upfront payment for applications and if so what the amount of that minimum upfront should be. In the *Competitive Bidding Second Report and Order*, we established a minimum upfront payment of \$2,500, but we also indicated that the minimum amount could be modified on a service-specific basis.<sup>148</sup> With respect FSS auctions, we seek comment on whether a fixed upfront payment would be more appropriate, and if so, what the amount of that upfront should be.

*(b) Down Payment and Full Payment for Licenses Awarded by  
Competitive Bidding*

168. The *Competitive Bidding Second Report and Order* generally established a 20 percent down payment requirement for winning bidders to discourage default between the auction and licensing and to ensure payment if such default occurs. We concluded that a 20 percent down payment was appropriate to ensure that auction winners have the necessary financial capabilities to complete payment for the license and to pay for the costs of constructing a system, while at the same time not being so onerous as to hinder growth or diminish access.

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<sup>148</sup> 9 FCC Rcd at 2379, para. 180.

169. We similarly propose to require all winning bidders in LMDS, GSO\FSS and NGSO\FSS auctions to supplement their upfront payments with a down payment sufficient to bring their total deposits up to 20 percent of their winning bid(s).<sup>149</sup> Under this approach, winning bidders would be required to submit the required down payment by cashier's check or wire transfer to our lock-box bank by a date to be specified by Public Notice, generally within five (5) business days following the close of bidding. All auction winners would generally be required to make full payment of the balance of their winning bids within five (5) business days following notification by the Commission that it was prepared to award the license. The license would then be granted after this payment was received. We seek comment on whether this is an appropriate requirement for licensing of these services, and whether 20 percent represents an appropriate level of payment. In addition, as discussed more fully below, we ask commenters to address whether any special payment provisions, for example a reduced down payment, should be adopted for designated entities, and if so, for which specific categories of designated entities and why.

(c) *Bid Withdrawal, Default, and Disqualification*

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<sup>149</sup> If the upfront payment already tendered by a winning bidder, after deducting any bid withdrawal and default payments due, amounts to 20 percent or more of its winning bids, no additional deposit will be required. If the upfront payment amount on deposit is greater than 20 percent of the winning bid amount after deducting any bid withdrawal and default payments due, the additional monies will be refunded. If a bidder has withdrawn a bid or defaulted but the amount of the payment cannot yet be determined, the bidder will be required to make a deposit of 20 percent of the amount bid on such licenses. When it becomes possible to calculate and assess the additional payment, any excess deposit will be refunded. Upfront payments will be applied to such deposits and to bid withdrawal and default payments due before being applied toward the bidder's down payment on licenses the bidder has won and seeks to acquire.

170. As we discussed in the *Second Report and Order*, it is important to the success of our system of competitive bidding that potential bidders understand that there will be a substantial payment assessed if they withdraw a high bid, are found not to be qualified to hold licenses or default on payment of a balance due. Accordingly, we propose to use the bid withdrawal, default and disqualification rules contained Sections 1.2104(g) and 1.2109 of the Commission's Rules for LMDS, GSO\FSS and NGSO\FSS auctions. Pursuant to these rules, any bidder who withdraws a high bid during an auction before the Commission declares bidding closed will be required to reimburse the Commission in the amount of the difference between its high bid and the amount of the winning bid the next time the license is offered by the Commission, if this subsequent winning bid is lower than the withdrawn bid.<sup>150</sup> No withdrawal payment will be assessed if the subsequent winning bid exceeds the withdrawn bid. After bidding closes, a defaulting auction winner (*i.e.*, a winner who fails to remit the required down payment within the prescribed time, fails to pay for a license, or is otherwise disqualified) will be assessed an additional payment of three percent of the subsequent winning bid or three percent of the amount of the defaulting bid, whichever is less.<sup>151</sup> The additional three percent payment is designed to encourage bidders who wish to withdraw their bids to do so before bidding ceases. We propose to hold deposits made by defaulting or disqualified auction winners until full payment of the additional amount.<sup>152</sup> We believe that these additional payments will adequately discourage default and ensure that bidders have adequate financing and that they meet all eligibility and qualification requirements. In the case of defaults, we also propose to retain discretion to offer a license to the next highest bidder at its final bid price if the default occurs within five business days after the close of bidding. We seek comment on these proposed procedures.

171. In addition, if a default or disqualification involves gross misconduct, misrepresentation or bad faith by an applicant, we propose to retain the option to declare the applicant and its principals ineligible to bid in future auctions, or take any other action we deem

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<sup>150</sup> If a license is re-offered by auction, the "winning bid" refers to the high bid in the auction in which the license is re-offered. If a license is re-offered in the same auction, the winning bid refers to the high bid amount, made subsequent to the withdrawal, in that auction. If the subsequent high bidder also withdraws its bid, that bidder will be required to pay an amount equal to the difference between its withdrawn bid and the amount of the subsequent winning bid the next time the license is offered by the Commission. If a license which is the subject of withdrawal or default is not re-auctioned, but is instead offered to the highest losing bidders in the initial auction, the "winning bid" refers to the bid of the highest bidder who accepts the offer. Losing bidders would not be required to accept the offer, *i.e.*, they may decline without additional payment. We wish to encourage losing bidders in simultaneous multiple round auctions to bid on other licenses, and therefore we will not hold them to their losing bids on a license for which a bidder has withdrawn a bid or on which a bidder has defaulted.

<sup>151</sup> See 47 C.F.R. §§ 1.2104(g) and 1.2109.

<sup>152</sup> In rare cases in which it would be inequitable to retain a down payment, we will entertain requests for waiver of this provision.

necessary, including institution of proceedings to revoke any existing licenses held by the applicant.<sup>153</sup>

### 3. *Regulatory Safeguards*

#### (a) *Unjust Enrichment Provisions*

172. The Budget Act directs the Commission to "require such transfer disclosures and anti-trafficking restrictions and payment schedules as may be necessary to prevent unjust enrichment and as a result of the methods employed to issue licenses and permits." We therefore propose to adopt the transfer disclosure requirements contained in Section 1.2111(a) of our rules for all LMDS, GSO\FSS and NGSO\FSS licenses obtained through the competitive bidding process. In addition, we propose specific rules governing unjust enrichment by designated entities, which are discussed below. Generally, applicants transferring their licenses within three years after the initial license grant will be required to file, together with their transfer application, the associated contracts for sale, option agreements, management agreements, and all other documents disclosing the total consideration received in return for the transfer of their licenses. We seek comment on these proposals.

#### (b) *Performance Requirements*

173. The Budget Act requires the Commission to "include performance requirements, such as appropriate deadlines and penalties for performance failures, 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 of new technologies and services." 47 U.S.C. § 309(j)(4)(B). In the *Competitive Bidding Second Report and Order*, we determined that it was unnecessary and undesirable to impose additional performance requirements, beyond those already provided in the service rules, for all auctionable services. Our proposed LMDS service rules [and GSO\FSS and NGSO\FSS service rules] contain specific performance requirements, such as the requirement to construct and provide service within a specific period of time. Thus, we do not propose to adopt any additional performance requirements for competitive bidding purposes. We seek comment on this tentative conclusion.

#### (c) *Rules Prohibiting Collusion*

174. In the Competitive Bidding docket, we adopted special rules prohibiting collusive conduct in the context of competitive bidding. We indicated that such rules would serve the objectives of the Budget Act by preventing parties, especially the largest firms, from agreeing in advance to bidding strategies that divide the market according to their strategic interests and that

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<sup>153</sup> See *Second Report and Order* at para. 198.

disadvantage other bidders. We propose to apply these rules to LMDS, GSO\FSS and NGSO\FSS auctions. Pursuant to these rules, from the time the short-form applications are filed until a winning bidder has made its required down payment, all bidders will be prohibited from cooperating, collaborating, discussing or disclosing in any manner the substance of their bids or bidding strategies with other bidders, unless such bidders are members of a bidding consortium or other joint bidding arrangement identified on the bidder's short-form application. In addition, bidders are required by Section 1.2105(a)(2) of the Commission's Rules to identify on their Form 175 applications all parties with whom they have entered into any consortium arrangements, joint ventures, partnerships or other agreements or understandings which relate to the competitive bidding process. Bidders will also be required to certify that they have not entered and will not enter into any explicit or implicit agreements, arrangements or understandings with any parties, other than those identified, regarding the amount of their bid, bidding strategies or the particular properties on which they will or will not bid.

175. We also propose to require winning bidders, pursuant to Section 1.2107 of the Commission's Rules, to attach as an exhibit to their license application a detailed explanation of the terms and conditions and parties involved in any bidding consortium, joint venture, partnership, or other agreement or arrangement they had entered into relating to the competitive bidding process prior to the close of bidding. All such arrangements must have been entered into prior to the filing of short-form applications. In addition, where specific instances of collusion in the competitive bidding process are alleged during the petition to deny process, the Commission may conduct an investigation or refer such complaints to the United States Department of Justice for investigation. Bidders who are found to have violated the antitrust laws or the Commission's rules in connection with participation in the auction process may be subject to forfeiture of their down payment or their full bid amount and revocation of their license(s), and they may be prohibited from participating in future auctions. We seek comment on these proposals.

#### *4. Treatment of Designated Entities*

##### *(a) Introduction*

176. 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." 47 U.S.C. § 309(j)(4)(D). The statute requires the Commission to "consider the use of tax certificates, bidding preferences, and other procedures" in order to achieve this Congressional goal. In addition, Section 309(j)(3)(B) 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 minority groups and women." Finally, Section 309(j)(4)(A) provides that to promote these objectives, the Commission shall consider alternative payment schedules including installment payments.

177. In instructing the Commission to ensure the opportunity for designated entities to participate in auctions and spectrum-based services, Congress was well aware of the problems that designated entities would have in competing against large, well-capitalized companies in auctions and the difficulties they encounter in accessing capital. For example, the legislative history accompanying our grant of auction authority states generally that the Commission's regulations "must promote economic opportunity and competition," and "[t]he Commission will realize these goals by avoiding excessive concentration of licenses and by disseminating licenses among a wide variety of applicants, including small businesses and businesses owned by members of minority groups and women."<sup>154</sup> The House Report states that the House Committee was concerned that, "unless the Commission is sensitive to the need to maintain opportunities for small businesses, competitive bidding could result in a significant increase in concentration in the telecommunications industries."<sup>155</sup> More specifically, the House Committee was concerned that adoption of competitive bidding should not have the effect of "excluding" small businesses from the Commission's licensing procedures, and anticipated that the Commission would adopt regulations to ensure that small businesses would "continue to have opportunities to become licensees."<sup>156</sup> On the other hand, the House Report also states that "the characteristics of some services are inherently national in scope, and are therefore ill-suited for small businesses."<sup>157</sup>

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<sup>154</sup> H.R.Rep. No. 111, 103d Cong., 1st Sess. 254 (1993).

<sup>155</sup> *Id.*

<sup>156</sup> *Id.* at 255.

<sup>157</sup> *Id.* at 254.

178. Consistent with Congress's concern that auctions not operate to exclude small businesses, the provisions relating to installment payments were intended to assist small businesses. The House Report states that these related provisions were drafted to "ensure that all small businesses will be covered by the Commission's regulations, including those owned by members of minority groups and women."<sup>158</sup> It also states that the provisions in section 309(j)(4)(A) relating to installment payments were intended to promote economic opportunity by ensuring that competitive bidding does not inadvertently favor incumbents with "deep pockets" over new companies or start-ups."<sup>159</sup>

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<sup>158</sup> *Id.*

<sup>159</sup> *Id.*



179. In addition, with regard to access to capital, Congress had made specific findings in the Small Business Credit and Business Opportunity Enhancement Act of 1992, that "small business concerns, which represent higher degrees of risk in financial markets than do large businesses, are experiencing increased difficulties in obtaining credit."<sup>160</sup> As a result of these difficulties, Congress resolved to consider carefully legislation and regulations "to ensure that small business concerns are not negatively impacted" and to give priority to passage of "legislation and regulations that enhance the viability of small business concerns."<sup>161</sup> In the Competitive Bidding Second Report and Order, we also indicated that special measures may not be appropriate in all circumstances.

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<sup>160</sup> Small Business Credit and Business Opportunity Enhancement Act of 1992, ' 331(a) (3), Pub. Law 102-366, Sept. 4, 1992.

<sup>161</sup> *Id.* ' 331(b)(2)-(3).

180. We have employed a wide range of special provisions and eligibility criteria designed to meet the statutory objectives of providing opportunities to designated entities in other spectrum-based services. For instance, we determined that minority-owned and women-owned businesses in the nationwide narrowband PCS auction would receive a 25 percent bidding credit on certain channels;<sup>162</sup> in the regional narrowband PCS auction women-owned and minority-owned businesses would receive a 40 percent bidding credit on certain channels and small businesses would be eligible for installment payments on all channels;<sup>163</sup> in the broadband PCS auction, on separate entrepreneurs' blocks, the bidding credits would vary according to the type of qualifying designated entity that applied,<sup>164</sup> and all entrepreneurs' block licensees would be eligible for installment payments.<sup>165</sup> For the Multipoint Distribution Service ("MDS") we adopted a 15 percent bidding credit, reduced upfront payments and installment payments for small businesses, including those owned by members of minority groups and women.<sup>166</sup> In satellite services, we have not proposed or adopted specific measures for designated entities.<sup>167</sup>

181. The measures considered thus far for each service were established after closely examining the specific characteristics of the service and determining whether any particular barriers to accessing capital stood in the way of designated entity opportunities. After examining the record in the competitive bidding proceeding in PP Docket 93-253, we established provisions necessary to enable designated entities to overcome the barriers to accessing capital in each

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<sup>162</sup> *Auctions Third Report and Order* at para. 72.

<sup>163</sup> *Id.* at para. 87. See implementation of Section 309(j) of the Communications Act - Competitive Bidding, PP Docket No. 93-253, *Third Memorandum Opinion and Order and Further Notice of Proposed Rulemaking*, 10 FCC Rcd 175, para. 58 (1994).

<sup>164</sup> *Auctions Fifth Report & Order* at para. 133; *Auctions Fifth Memorandum Opinion & Order* at para. 99; see also *Further Notice of Proposed Rulemaking*, FCC 95-263 (released June 23, 1995).

<sup>165</sup> *Auctions Fifth Memorandum Opinion & Order* at para. 103.

<sup>166</sup> *Report and Order*, MM Docket No. 94-131 and PP Docket 93-253, FCC 95-230 (adopted June 15, 1995).

<sup>167</sup> See *Rules and Policies Pertaining to a Mobile Satellite Service in the 1610-1626.5/2483.5-2500 MHz Frequency Bands*, Report and Order, CC Docket No. 92-166, 9 FCC Rcd 5936, 5969-70 (1994); *Establishment of Rules and Policies for the Digital Audio Radio Satellite Service in the 2310-2360 MHz Frequency Band*, Notice of Proposed Rulemaking, IB Docket No. 95-91, paras. 107-108, FCC 95-229 (released June 15, 1995).

particular service. Moreover, the measures we adopted also were designed to increase the likelihood that designated entities who win licenses in the auctions become strong competitors in the provision of wireless services.

182. As in other auctionable services, we fully intend in services using the 28 GHz band to meet the statutory objectives of promoting economic opportunity and competition, of avoiding excessive concentration of licenses, and of ensuring access to new and innovative technologies by disseminating licenses among a wide variety of applicants, including small businesses, rural telephone companies, and businesses owned by members of minority groups and women. At the same time, we must be cautious and deliberative in our selected approach in light of the auction statute's directive to avoid judicial delays<sup>168</sup> and the substantial legal risks involved with providing preferential treatment on the basis of race or gender. In this regard, on June 12, 1995, the Supreme Court ruled in *Adarand Constructors v. Peña*<sup>169</sup> that measures adopted by the federal government awarding preferential treatment on the basis of race are subject to strict scrutiny.<sup>170</sup> To pass muster under that standard, such measures must be narrowly tailored to further compelling government interests.<sup>171</sup>

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<sup>168</sup> 47 U.S.C. § 309(j)(3)(A).

<sup>169</sup> 63 U.S.L.W. 4523 (U.S. June 12, 1995).

<sup>170</sup> *Id.*, 63 U.S.L.W. at 4530.

<sup>171</sup> *Id.*

183. *Adarand* thus introduces an additional level of complexity in implementing Congress' mandate to ensure that businesses owned by minorities and women are provided "the opportunity to participate in the provision of spectrum-based services."<sup>172</sup> Although *Adarand* did not address gender-based preferences, we have included them here in an effort to seek the broadest possible comment. We welcome comment as to the appropriateness of our approach. Accordingly, we seek comment on how we can best promote opportunities for businesses owned by minorities and women in the provision of LMDS and satellite services in light of *Adarand*. We seek the broadest possible comments including, but not limited to, responses to the following questions:

- (1) Does the Commission have a compelling interest in establishing opportunity-enhancing measures in the provision of LMDS and satellite services specifically for minority- and women-owned businesses? If so, what is that compelling interest? Would the goal of assuring a "diversity of voices" in the provision of LMDS and satellite services suffice as a compelling interest?<sup>173</sup>
- (2) What evidence (statistical, documentary, anecdotal or otherwise) can be marshalled to support the proposed compelling interest?
- (3) What techniques could the Commission employ that would be narrowly tailored to further the proposed compelling interest? Would such techniques include bidding credits and installment payments? Are race-conscious or gender-conscious measures necessary, or are there race- or gender-neutral measures that would be effective?

Commenters are encouraged to provide the Commission as much evidence as possible with regard to past discrimination, continuing discrimination, discrimination in access to capital, underrepresentation and other significant barriers facing businesses owned by minorities and women in satellite services, services similar to LMDS, and in licensed communications services generally.

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<sup>172</sup> 47 U.S.C. § 309(j)(4)(D).

<sup>173</sup> We suggest "diversity of voices" as a possible compelling interest because LMDS is likely to be used as a "medium of mass communication" similar to other multipoint distribution services. See 47 U.S.C. § 309(i)(3)(C)(i). In *Metro Broadcasting v. F.C.C.*, the Supreme Court upheld the Commission's minority preference programs in the awarding of broadcast licenses because they served the "important" governmental interest of promoting diversity in broadcast programming. *Metro Broadcasting v. F.C.C.*, 497 U.S. 547, 566-68 (1990). While *Adarand* overrules *Metro*, to the extent that *Metro* applied "intermediate scrutiny," *Adarand* did not reject the diversity interest; rather, it simply held that the diversity interest must be "compelling."

184. In the Competitive Bidding docket, we established eligibility criteria and general rules that would govern the award of special provisions for small businesses, rural telephone companies, and minority- and women-owned businesses (collectively, "designated entities"). We also established a menu of possible special provisions that could be awarded to designated entities in particular services, including installment payments, spectrum set-asides, bidding credits, and tax certificates.<sup>174</sup> In addition, we set forth rules to prevent unjust enrichment by designated entities seeking to transfer licenses obtained through use of one of these special provisions.

185. In keeping with the general parameters set forth in the Competitive Bidding docket, we propose specific measures and eligibility criteria for designated entities who seek to obtain spectrum to provide LMDS and satellite services, designed to ensure that such entities are given the opportunity to participate both in the competitive bidding process and in the provision of these services. We seek comment on these proposals, and specifically on identifying special provisions that are tailored to the unique characteristics of the LMDS and satellite services and that will create meaningful incentives and opportunities for designated entities.

*(b) Installment Payments*

186. We propose to adopt installment payments for small businesses bidding for LMDS licenses. The record in the Competitive Bidding proceeding suggests that the most significant barrier for small business participation in the auctioning of LMDS spectrum will be access to adequate private financing to ensure their ability to compete against larger firms in the competitive bidding process. In the *Competitive Bidding Second Report and Order*, we concluded that a reduced down payment requirement coupled with installment payments is an effective means to address the inability of small businesses bidding for PCS licenses. We seek comment on our proposal to use this same approach in the LMDS auctions, and on whether any additional or alternative special provisions should be provided for small businesses bidding on LMDS spectrum. We also seek comment on whether installment payments are appropriate to encourage small businesses participation in the provision of satellite services.

187. To ensure that large businesses do not become the unintended beneficiaries of installment payment provisions meant for small businesses, we also propose to make the unjust

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<sup>174</sup> Congress has now repealed the tax credit program in the Communications Act, except with respect to fixed microwave licenses not at issue here. 109 Stat. 93 (1995), P.L. 104-7, April 11, 1995.

enrichment provisions adopted in the *Competitive Bidding Second Report and Order* applicable to installment payments by small business applicants. Specifically, if a small business making installment payments seeks to transfer a license to a non-small business entity during the term of the license, we propose to require payment of the remaining principle balance and accrued interest as a condition of the license transfer. We seek comment on this proposal including whether additional unjust enrichment provisions are necessary for LMDS licensing. We also seek comment on whether these unjust enrichment would be appropriate if installment payments are also adopted for small businesses participating in satellite auctions.

188. Eligibility Criteria. We propose to define a small business as an entity that, together with affiliates and attributable investors, has average gross revenues for the three preceding years of less than \$40 million. We believe this standard is appropriate for LMDS service because build-out costs are likely to be significant. Additionally, the cost of acquiring a license is likely to be higher than for other services. We also seek comment on whether this definition is appropriate for small businesses in the context of satellite auctions.

189. Commenters should address whether this is this an appropriate threshold given the expected cost associated with the provision of LMDS and satellite services. Should it be higher or lower, based on the types of companies that are likely to benefit from the special provisions proposed here? We also propose not to attribute the gross revenues of investors that hold less than 25 percent interest in the applicant, but we will include the gross revenues of the applicant's affiliates and investors with ownership interests of 25 percent or more in the applicant in determining whether an applicant qualifies as a small business. Is a different attribution threshold warranted for LMDS or for satellite services? We seek comment on these issues.

*(c) Bidding Credits*

190. Specific Special Provisions. Based on the list of special provisions for designated entities established in the *Competitive Bidding Second Report and Order*, we propose to utilize bidding credits for small businesses participating in LMDS or FSS auctions. We tentatively conclude that affording such businesses bidding credits and installment payments is the most cost-effective and efficient means of achieving Congress' objective of ensuring an opportunity for these designated entities to participate in the provision of LMDS service, while preserving the advantages of competitive open bidding. We seek comment on this proposal.

191. We request comment on how we should determine the appropriate amount of the bidding credit. Our analysis of the telecommunications industry suggests the possibility that incumbent telecommunications providers may be able to utilize existing infrastructure and thus enjoy economies of scope in the provision of many of the services that may develop in LMDS. Therefore, these incumbents may have the ability to bid more than first-time operators.

192. We propose a bidding credit of 25 percent that would be available on one of the proposed spectrum blocks. We seek comment on the appropriateness of the proposed bidding credits for LMDS and FSS auctions.

193. To prevent unjust enrichment by small businesses trafficking in licenses acquired through the use of bidding credits, we propose imposition of a payment requirement on transfers of such licenses to entities that are not owned by small businesses. Small businesses seeking to transfer a license to an entity that does not meet the eligibility criteria for a small business would be required to reimburse the Government for the amount of the bidding credit, plus interest at the rate imposed for installment financing at the time the license was awarded, before the transfer will be permitted. The amount of the penalty would be reduced over time so that a transfer in the first two years of the license term would result in a payment of 100 percent of the value of the bidding credit; in year three of the license term the payment would be 75 percent; in year four the penalty would be 50 percent and in year five the payment would be 25 percent, after which there would be no payment. We seek comment on these proposals.

*(d) Rural Telephone Companies*

194. We seek comment on whether we should provide bidding credits or other special provisions for rural telephone companies. In addition, the vast majority of rural telephone companies will qualify as small businesses and thus will receive installment payment options. Because many of the specific uses proposed for LMDS, including wireless cable and video telecommunications, may be of interest to rural telephone companies, such entities may be interested in bidding for LMDS spectrum. However, we are unable to determine with any certainty the potential prices these services may bring in rural areas. If service prices in such areas are low, acquiring a license should not present significant barriers to rural telephone companies. Also, under one possible approach, the degree of flexibility we would afford in the use of this spectrum, including provisions for partitioning or leasing spectrum, should assist in satisfying the spectrum needs of rural telephone companies at low cost. Finally, as with other incumbent providers of telecommunications services, rural telephone companies may be able to benefit from the use of their existing infrastructure in the provision of some services. Such economies of scale would give rural telephone companies an advantage in the bidding for such licenses. For these reasons, we do not believe that special preferences are needed to ensure adequate participation by rural telephone companies in the provision of services in this spectrum. However, comments on this analysis are requested.

*(e) Additional Special Provisions*

195. In addition to the special provisions proposed above for the various classes of designated entities, we seek comment on whether additional special provisions should be adopted that would enhance our goal of ensuring their participation in the competitive bidding process for LMDS and satellite licenses. We request that commenters give particular attention to the alternatives described below.

196. Reduced Upfront Payments. In the *Competitive Bidding Second Report and Order*, we concluded that upfront payment requirements would ensure that bidders are qualified and serious and would provide the Commission with a source of funds in the event of default or bid withdrawal. 9 FCC Rcd at 2377, 2379, paras. 169, 176. We also noted that reduced upfront payments may be particularly appropriate for auctions of spectrum specifically set aside for designated entities as a means of encouraging participation in the auctions, particularly by all eligible designated entities.<sup>175</sup> We seek comment on whether there should be a similar reduction in upfront payments for small businesses or any other designated entities applying for LMDS or satellite licenses. In addition, we ask commenters to address the costs and benefits with respect to auction administration and designated entity participation associated with a reduced upfront payment for licenses in LMDS [or satellite services in the absence of a spectrum set-aside.

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<sup>175</sup> *Competitive Bidding Fifth Report and Order*, 9 FCC Rcd at 5599-5600, para. 154.



## VII. PROCEDURAL MATTERS

### A. Ex Parte Rules -- Non-Restricted Proceeding

197. The rulemaking portion of this proceeding is a non-restricted notice and comment rulemaking proceeding. *Ex parte* presentations are permitted, except during the Sunshine Agenda period, provided they are disclosed as provided in Commission Rules. *See generally*, 47 C.F.R. ' ' 1.1202, 1.1203, and 1.1206(a). The pioneer's preference portion of this proceeding is restricted. *Ex parte* presentations concerning any formally opposed preference request are prohibited. 47 CFR ' 1.1208.

### B. Initial Regulatory Flexibility Analysis

198. Reason for action. The purposes of this NPRM are four-fold; first, to obtain comment on the Commission's designation proposal for the 27.5 - 29.5 GHz frequency band; second, to obtain comment on the Commission's proposal for a reallocation pertaining to the 29.5 - 30.0 GHz frequency band; third, to obtain comment on proposed service rules for LMDS and FSS; and fourth, to obtain comment on the Commission's supplemental tentative decision to grant CellularVision a Pioneer's Preference.

199. Objectives. The objective of this Notice is to request public comment on the proposals made herein for the efficient licensing of services in the 27.5 - 30.0 GHz band, for the development and implementation of a new technology to provide innovative telecommunications services to the public.

200. Legal basis. The authority for this action is the Administrative Procedure Act, 5 U.S.C. ' 553; and sections 4(i), 4(j), 301, 303(r) of the Communications Act of 1934 as amended, 47 U.S.C. ' ' 145, 301, and 303(r).

201. Reporting, recordkeeping and other compliance requirements. Reporting requirements are proposed to ensure that the spectrum, if redesignated for these new uses, is used to serve the public's need for communications services.

202. Federal rules which overlap, duplicate or conflict with these rules. None.

203. Description, potential impact and number of small entities involved. Any rule changes in this proceeding could affect MMDS licensees, the majority of which are small businesses. These entities may have some additional competition from video programming service which could be provided by Suite 12's multicell technology. In addition, rule changes could affect rural telephone companies, to the extent that any are considered small businesses.

These entities may have competition to their local exchange service; alternatively, these entities may be considered designated entities and given bidding and other benefits. After evaluating the comments in this proceeding, the Commission will further examine the impact of any rule changes on small entities and set forth our findings in the Final Regulatory Flexibility Analysis.

204. Significant Alternatives. While there are alternative methods to provide the services proposed by LMDS and FSS parties, we find that the services proposed will provide significant competition to existing service providers, thus bringing the benefits of competition to the public.

### **C. Comment Dates**

205. Pursuant to applicable procedures set forth in Sections 1.415 and 1.419 of the Commission's Rules, 47 C.F.R. §§ 1.415 and 1.419, interested parties may file comments on or before August 28, 1995, and reply comments on or before September 18, 1995. To file formally in this proceeding, you must file an original and five copies of all comments, reply comments, and supporting comments. If you want each Commissioner to receive a personal copy of your comments, you must file an original plus nine copies. You should send comments and reply comments to Office of the Secretary, Federal Communications Commission, Washington, D.C. 20554. Comments and reply comments will be available for public inspection during regular business hours in the FCC Reference Center of the Federal Communications Commission, 1919 M Street, N.W., Room 239, Washington, D.C. 20554.

206. For further information, contact Ms. Susan Magnotti, at (202) 418-0871, Private Wireless Division, Wireless Telecommunications Bureau, or Ms. Donna Bethea, at (202) 739-0728, Satellite and Radiocommunication Division, International Bureau.

## **VIII. ORDERING CLAUSES**

207. Accordingly, IT IS ORDERED That the Notice of Proposed Rulemaking is hereby adopted with proposed rules in Appendix B.

208. IT IS FURTHER ORDERED That the Petition for Rulemaking filed by Harris Corporation-Farinon Division and Digital Equipment Company is DENIED.

209. IT IS FURTHER ORDERED That CellularVision, the successor-in-interest to Suite 12 Group, is tentatively granted a pioneer's preference in accordance with the discussion in paragraphs 68-73 of this Supplemental Tentative Decision.

210. IT IS FURTHER ORDERED That the Acting Secretary shall mail a copy of this document to the Chief Counsel for Advocacy, Small Business Administration.

FEDERAL COMMUNICATIONS COMMISSION

William F. Caton  
Acting Secretary

## APPENDIX A

### **PARTICIPANTS IN THE LMDS/FSS 28 GHZ BAND NEGOTIATED RULEMAKING COMMITTEE:**

Ameritech  
AMSC Subsidiary Corp.  
Andrew Corporation  
Avoca Laboratories, Inc.  
Bell Atlantic Enterprises International  
BellSouth  
Constellation Communications, Inc.  
Digital Microwave Corp.  
Endgate Technology Corporation  
Ellipsat Corporation  
Federal Communications Commission  
GE American Communications, Inc.  
GHz Equipment Co., Inc.  
Harris Corporation - - FARINON Division;  
Hughes Space and Communications Co.  
International CellularVision Association  
International Communications Engineering Group, Inc.  
LDH International  
Loral/QUALCOMM Partnership, L.P  
Martin Marietta Astro Space  
MCI Telecommunications Corporation  
mm-Tech, Inc.  
Motorola Satellite Communications, Inc.  
National Aeronautics and Space Administration  
NYNEX Corporation  
Pacific Telesis Group  
Public Interest Parties<sup>176</sup>

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<sup>176</sup> The "Public Interest Parties" are a group comprised of the following entities: Association of America's Public Television Stations; Public Broadcasting Service; Organization of State Broadcasting Executives; American Council on Education; Commission on Information Technologies of the National Association of State Universities and Land Grant Colleges; Instructional Telecommunications Consortium of the American Association of Community Colleges; Arizona Board of Regents for Benefit of the University of Arizona; Alliance for Higher Education; Iowa Public Broadcasting Board; University of Maine of Augusta; University of Wisconsin System; Washington State University; South Carolina Educational Television Commission; Ana G. Mendez Educational Foundation; Western Cooperative for Educational Telecommunications; California State Polytechnic University, Pomona; California State University, Sacramento; University of Arizona; Northern Arizona University; University of Washington; University of Hawaii System; University of California System; Alliance for Distance Education in California; Troy State University in Montgomery.

RioVision of Texas, Inc.  
Suite 12 Group/CellularVision  
Teledesic Corporation  
Texas Instruments, Inc.  
TRW, Inc.  
University of Texas System  
Video/Phone Systems, Inc.  
U S WEST, Inc.

**APPENDIX B**

**Proposed Rule Amendments to 47 C.F.R. Part 21 and Part 25 of the Commission's rules**

1. Section 21.2 is proposed to be amended by adding new paragraphs, in alphabetical order, to read as follows:

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*Local Multipoint Distribution Service Hub Station.* A fixed point-to-multipoint radio station in a Local Multipoint Distribution Service System that provides one-way or two-way communication with Local Multipoint Distribution Service Subscriber Stations.

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*Local Multipoint Distribution Service System.* A fixed point to-multipoint radio system consisting of Local Multipoint Distribution Service Hub Stations and their associated Local Multipoint Distribution Service Subscriber Stations.

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*Local Multipoint Distribution Service Subscriber Station.* Any one of the fixed microwave radio stations located at users' premises, lying within the coverage area of a Local Multipoint Distribution Service Hub Station, capable of receiving one-way communications from or providing two-way communications with the Local Multipoint Distribution Service Hub Station.

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*Local Multipoint Distribution Service Backbone Link.* A point-to-point radio service link in a Local Multipoint Distribution Service System that is used to interconnect Local Multipoint Distribution Service Hub Stations with each other or with the public switched telephone network.

2. Section 21.107 is amended by revising paragraph (b) by deleting the Table entry for the frequency band 27,500 MHz to 29,500 MHz line in the Table, and adding a new line to the Table to read as follows:

**▸ 21.107 Transmitter power.**

\*\*\*\*\*

(b) \*\*\*

Frequency Band (MHz)	Fixed (W)	Mobile (W)	Fixed (dBW)	Mobile (dBW)
*****	*****	*****	*****	*****
27,500 MHz to 28,350 MHz			-52 dBW/Hz	
29,100 MHz to 29,250 MHz			5	

<sup>5</sup> This value is based on the value in ' ' 21.1018-21.1021.

3. Amend proposed rule section 21.1002 by adding new subsection (c) as follows:

▪ **21.1002 Frequencies**

(c) Special requirements for operations in the band 29.1-29.25 GHz

(1)(i) LMDS receive stations operating on frequencies in the 29.1- 29.25 GHz band within a radius of 75 nautical miles of the geographic coordinates provided by a non-GSO MSS licensee pursuant to subsections (c)(2) or (c)(3)(i) (the "feeder link earth station complex protection zone") shall accept any interference caused to them by such earth station complexes and shall not claim protection from such earth station complexes.

(ii) LMDS licensees operating on frequencies in the 29.1-29.25 GHz band outside a feeder link earth station complex protection zone shall cooperate fully and make reasonable efforts to resolve technical problems with the non-GSO MSS licensee to the extent that transmissions from the non-GSO MSS operator's feeder link earth station complex interfere with an LMDS receive station.

(2) At least 45 days prior to the commencement of LMDS auctions, feeder link earth station complexes shall be specified by a set of geographic coordinates in accordance with the following requirements: no feeder link earth station complex may be located in the top eight (8) metropolitan statistical areas ("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 through 25, one of which must be Phoenix, AZ (for a complex at Chandler, AZ); one (1) complex may be located in MSAs 26 to 50; three (3) complexes may be located in MSAs 51 to 100, one of which must be Honolulu, Hawaii (for a complex at Waimea); and the two (2) remaining complexes must be located at least 75 nautical 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.

(3)(i) Any non-GSO MSS licensee may at any time specify sets of geographic coordinates for feeder link earth station complexes with each earth station contained therein to be located at least 75 nautical miles from the borders of the 100 largest MSAs.

(ii) For purposes of subsection (c)(3)(i), non-GSO MSS feeder link earth station complexes shall be entitled to accommodation only if the affected non-GSO MSS licensee reapplies to the Commission for a feeder link earth station complex or certifies to the Commission within sixty days of receiving a copy of an LMDS application that it intends to file an application for a feeder link earth station complex within six months of the date of receipt of the LMDS application.

(iii) If said non-GSO MSS licensee application is filed later than six months after certification to the Commission, the LMDS and non-GSO MSS entities shall still cooperate fully and make reasonable efforts to resolve technical problems, but the LMDS licensee shall not be obligated to re-engineer its proposal or make changes to its system.

(4) LMDS licensees or applicants proposing to operate hub stations on frequencies in the 29.1-29.25 GHz band at locations outside of the 100 largest MSAs or within a distance of 150 nautical miles from a set of

geographic coordinates specified under subsection (c)(2) or (c)(3)(i) shall serve copies of their applications on all non-GSO MSS applicants, permittees or licensees meeting the criteria specified in 25.257(a). Non-GSO MSS licensees or applicants shall serve copies of their feeder link earth station applications on any LMDS applicant or licensee within a distance of 150 nautical miles from the geographic coordinates that it specified under subsection (c)(2) or (c)(3)(i). Any necessary coordination shall commence upon notification by the party receiving an application to the party who filed the application. The results of any such coordination shall be reported to the Commission within sixty days. The non-GSO MSS earth station licensee shall also provide all such LMDS licensees with a copy of its channel plan.

4. A new Section 21.1018 is proposed to read as follows:

▪ **21.1018 LMDS Single Station EIRP Limit.**

Point-to-point stations in the 29.1-29.5 GHz band for the LMDS backbone between LMDS hubs shall be limited to a maximum allowable EIRP density per carrier of 23 dBW/MHz in any one megahertz in clear air, and may exceed this limit by employment of adaptive power control in cases where link propagation attenuation exceeds the clear air value due to precipitation and only to the extent that the link is impaired.

5. A new Section 21.1019 is proposed to read as follows:

▪ **21.1019. LMDS Subscriber Transmissions.**

LMDS licensees shall not operate transmitters from subscriber locations in the 29.1-29.25 GHz band.

6. A new Section 21.1020 is proposed to read as follows:

▪ **21.1020 Hub Transmitter EIRP Spectral Area, Density Limit.**

(a) LMDS applicants shall demonstrate that, under clear air operating conditions, the maximum aggregate of LMDS transmitting hub stations in a Basic Trading Area in the 29.1-29.25 GHz band will not transmit a co-frequency hub-to-subscriber EIRP spectral area density in any azimuthal direction in excess of X dBW/(MHz-km<sup>2</sup>) when averaged over any 4.375 MHz band, where X is defined in Table 1. Individual hub stations may exceed their clear air EIRPs by employment of adaptive power control in cases where link propagation attenuation exceeds the clear air value and only to the extent that the link is impaired.

(b) The EIRP aggregate spectral area density is calculated as follows:

$$10\log \left[ \frac{1}{A} \sum_{i=1}^N p_i g_i \right] \text{dBW/MHz-km}^2$$

where:

N = number of co-frequency hubs in BTA



A = Area of BTA in km<sup>2</sup>  
 p<sub>i</sub> = spectral power density into antenna of i-th hub (in W/MHz)  
 g<sub>i</sub> = gain of i-th hub antenna at zero degree elevation angle  
 Each p<sub>i</sub> and g<sub>i</sub> are in the same 1 MHz

(c) The climate zones in Table 1 are defined for different geographic locations within the US as shown in Appendix 28 of the ITU Radio Regulations and Section 25.254 of the Commission's Rules.

Table 1\*

Climate Zone	EIRP Spectral Density (Clear Air) (dBW/MHz-km <sup>2</sup> )**
1	-23
2	-25
3,4,5	-26

\* LMDS system licensees in two or more BTAs may individually or collectively deviate from the spectral area density computed above by averaging the power over any 200 km by 400 km area, provided that the aggregate interference to the satellite receiver is no greater than if the spectral area density were as specified in Table 1. A showing to the Commission comparing both methods of computation is required and copies shall be served on any affected non-GSO MSS providers.

\*\* See Section 21.1007(c)(i) for the population density of the BTA

7. A new rule Section 21.1021 is proposed to read as follows:

**21.1021 Hub Transmitter EIRP Spectral Area Density Limit at Elevation Angles Above the Horizon.**

(a) LMDS applicants shall demonstrate that, under clear air operating conditions, the maximum aggregate of LMDS transmitting hub stations in a Basic Trading Area in the 29.1-29.25 GHz band will not transmit a co-frequency hub-to-subscriber EIRP spectral area density in any azimuthal direction in excess of X dBW/(MHz-km<sup>2</sup>) when averaged over any 5.375 MHz band where X is defined in Table 2. Individual hub stations may exceed their clear air EIRPs by employment of adaptive power control in cases where link propagation attenuation exceeds the clear air value and only to the extent that the link is impaired.

(b) The EIRP aggregate spectral area density is calculated as follows:

$$10 \log \left[ \frac{1}{A} \sum_{i=1}^N \text{EIRP}(a_i) \right] \text{ dBW/MHz-km}^2$$

where:

N = number of co-frequency hubs in BTA

A = Area of BTA in km<sup>2</sup>

EIRP(a<sub>i</sub>) = equivalent isotropic radiated spectral power density of the i-th hub (in W/MHz) at elevation angle a

Table 2\*

Elevation Angle (a)	Relative EIRP Density (dBW/MHz-km <sup>2</sup> )
0 <sup>N</sup> # a # 4.0 <sup>N</sup>	EIRP(a) = EIRP(0 <sup>N</sup> ) + 20 log (sinθx)(1/θx) where x = (a + 1)/7.5 <sup>N</sup>
4.0 < a # 7.7 <sup>N</sup>	EIRP(a) = EIRP(0 <sup>N</sup> ) - 3.85a + 7.7
a > 7.7 <sup>N</sup>	EIRP(a) = EIRP(0 <sup>N</sup> ) - 22

where a is the angle in degrees of elevation above horizon. EIRP(0E) is the hub EIRP area density at the horizon used in Section 21.1020. The nominal antenna pattern will be used for elevation angles between 0E and 8E, and average levels will be used for angles beyond 8E, where average levels will be calculated by sampling the antenna patterns in each 1E interval between 8E and 90E, dividing by 83.

\* LMDS system licensees in two or more BTAs may individually or collectively deviate from the spectral area density computed above by averaging the power over any 200 km by 400 km area, provided that the aggregate interference to the satellite receiver is no greater than if the spectral area density were as specified in Table 1. A showing to the Commission comparing both methods of computation is required and copies shall be served on any affected non-GSO MSS providers.

8. A new rule section 21.1022 as follows:

**21.1022 Power Reduction Techniques.**

LMDS hub transmitters shall employ methods to reduce average power levels received by non-GSO MSS satellite receivers, to the extent necessary to comply with Sections 21.1020 and 21.1021, by employing the methods set forth below:

(a) Alternate Polarizations. LMDS hub transmitters in the LMDS service area may employ both vertical and horizontal linear polarizations such that 50 percent (plus or minus 10 percent) of the hub transmitters shall employ vertical polarization and 50 percent (plus or minus 10 percent) shall employ horizontal polarization.

(b) Frequency Interleaving. LMDS hub transmitters in the LMDS service area may employ frequency interleaving such that 50 percent (plus or minus 10 percent) of the hub transmitters shall employ channel center frequencies which are different by one-half the channel bandwidth of the other 50 percent (plus or minus 10 percent) of the hub transmitters.

(c) Alternative Methods. As alternatives to (a) and (b) above, LMDS operators may employ such other methods as may be shown to achieve equivalent reductions in average power density received by non-GSO MSS satellite receivers.

### **Proposed Rule Amendments to 47 C.F.R. Part 25 of the Commission's Rules**

Part 25 of the Commission's Rules and Regulations (Chapter I of Title 47 of the Code of Federal Regulations) is proposed to be amended as follows:

1. A new Section 25.257 is proposed to read as follows:

▪ **Special requirements for operations in the band 29.1-29.25 GHz**

(a) Special requirements for operations in the band 29.1-29.25 GHz

(1) Non-geostationary mobile satellite service (non-GSO MSS) operators shall use the 29.1-29.25 GHz band for Earth-to-space transmissions from feeder link earth station complexes.

For purposes of this subsection, a "feeder link earth station complex" may include up to three (3) earth station groups, with each earth station group having up to four (4) antennas, located within a radius of 75 nautical miles of a given set of geographic coordinates provided by a non-GSO MSS operator pursuant to subsections (c)(5) or (c)(6)(i).

(2) A maximum of eight (8) feeder link earth station complexes in the contiguous United States, Alaska, and Hawaii may be operated concurrently in the band 29.1-29.25 GHz.

(b) Coordination of LMDS systems and geostationary fixed satellite systems in the band 29.1-29.25 must be done in accordance with the technical standards of ' ' 21.1018-21.1024.