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

2001 NOV -7 A 10: 18

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| In the Matter of | ) | |
| | ) | |
| Redesignation of the 17.7-19.7 GHz Frequency | ) | |
| Band, Blanket Licensing of Satellite | ) | IB Docket No. 98-172 |
| Earth Stations in the 17.7-20.2 GHz and | ) | RM-9005 |
| 27.5-30.0 GHz Frequency Bands, | ) | RM-9118 |
| and the Allocation of Additional Spectrum | ) | |
| in the 17.3-17.8 GHz and 24.75-25.25 GHz | ) | |
| Frequency Bands for Broadcast | ) | |
| Satellite-Service Use | ) | |

EIVED

# FIRST ORDER ON RECONSIDERATION

Adopted: October 31, 2001 Released: November 1, 2001

By the Commission:

## TABLE OF CONTENTS


| | | | Paragraph |
|---|---|---|---|
| I. | INTRODUCTION | | 1 |
| II. | BACKGROUND | | 3 |
| III. | DISCUSSION | | 21 |
| | A. | 18 GHz Band Plan | 21 |
| | | 1. Status of the Fixed Service in 19.26-19.3 GHz | 21 |
| | | 2. Channelization of Fixed Service bands | 26 |
| | | 3. Secondary Satellite Designations | 27 |
| | | 4. Secondary Designation for BSS at 17.7-17.8 GHz | 30 |
| | | 5. Low Power Terrestrial Operations in Satellite Bands | 32 |
| | B. | Legacy List | 42 |
| | C. | Licensing Issues | 48 |
| | | 1. Technical Corrections | 48 |
| | | 2. Satellite pfds | 51 |
| | D. | Relocation Issues | 54 |
| | | 1. Comparable Facilities | 54 |
| | | 2. Definition of Throughput | 56 |

| | | | |
|---|---|---|---|
| | 3. | Alternative Media | 60 |
| | 4. | Cut-off Dates | 62 |
| | 5. | Negotiation Periods | 65 |
| | 6. | Right to Return to Original Spectrum | 68 |
| | 7. | Assignments and Transfers | 72 |
| | 8. | Measure and Mitigation of Relocation Costs | 75 |
| IV. | CONCLUSION | | 81 |
| V. | ORDERING CLAUSES | | 86 |
| APPENDIX A: | FINAL RULES | | |
| APPENDIX B: | FINAL REGULATORY FLEXIBILITY ANALYSIS | | |
| APPENDIX C: | LIST OF COMMENTS AND REPLY COMMENTS | | |


## I. INTRODUCTION

1. In this First Order on Reconsideration we grant in part and deny in part the petitions for reconsideration of the *18 GHz Order*[1] filed by Hughes Electronics Corporation (Hughes), the Fixed Wireless Communications Coalition (FWCC) and Winstar Communications, Inc. (Winstar).[2] We defer for action in a future Commission order certain issues raised by Hughes relating to the band plan adopted in the *18 GHz Order* and blanket licensing. We also address a number of issues raised by Teledesic Corporation (Teledesic) in its letter to the Commission and its request for judicial review of the rules adopted by the Commission in the *18 GHz Order*.[3]

2. Specifically, we change the power flux-density (pfd) value for the 18.3-18.8 GHz frequency band to the values in section 25.208(c) to be consistent with the pfd limit in the Radio Regulations of the International Telecommunications Union and we delete section 25.208(d), which previously contained pfd limits for the 18.3-18.8 GHz

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[1] *Redesignation of the 17.7-19.7 GHz Frequency Band, Blanket Licensing of Satellite Earth Stations in the 17.7-20.2 GHz and 27.5-30.0 GHz Frequency Bands, and the Allocation of Additional Spectrum in the 17.3-17.8 GHz and 24.75-25.25 GHz Frequency Bands for Broadcast Satellite-Service Use*, Report and Order, IB Docket No. 98-172, 15 FCC Rcd 13430 (rel. June 22, 2000) (*18 GHz Order*).

[2] *See* Hughes Electronics Corporation, Petition for Partial Reconsideration, IB Docket No. 98-172 (filed Oct. 6, 2000) (Hughes petition); Fixed Wireless Communications Coalition, Petition for Reconsideration, IB Docket No. 98-172 (filed Sept. 29, 2000) (FWCC petition); Winstar Communications, Inc., *Petition for Clarification and Reconsideration*, IB Docket 98-172 (filed Oct. 10, 2000) (Winstar petition).

[3] *See* Letter from Samuel L. Feder, Harris, Wiltshire & Grannis, to Steven D. Selwyn, International Bureau, Federal Communications Commission (September 27, 2000) (*Teledesic Letter*). *See also Teledesic LLC v. FCC*, Petition for Review, Case No. 00-1466 (D.C. Cir. filed November 6, 2000) (*Teledesic Petition*)

frequency band. We also determine that the pfd level in section 25.138(a)(6) of -118 dBW/m$^2$/MHz should apply to all Geostationary Satellite Orbit/Fixed Satellite Service (GSO/FSS) downlink bands in which the Commission permits blanket licensing. We amend section 101.97 to clarify that an incumbent Fixed Service (FS) licensee retains primary status notwithstanding a change in ownership or control. Further, we clarify that an incumbent licensee is entitled to a 12-month trial period after relocation to test the new facilities. We also conclude that existing terrestrial services operating in the 19.26-19.3 GHz band will continue to be allowed to recover relocation reimbursement, but this reimbursement will now be subject to the 10-year sunset period applicable to other FS operations in the 18 GHz band. In response to Teledesic, we take the following additional steps in order to better reconcile the competing interests of the new satellite entrants and the low-power terrestrial operators in the 18.82-18.87 GHz and 19.16-19.21 GHz bands: 1) we cut-off any further low-power applications under section 101.147(r)(10) as of April 1, 2002 (the *18 GHz Order* already cut off applications for outdoor use); and 2) we permit low-power services authorized pursuant to section 101.147(r)(10) to continue to operate on a co-primary basis for a period of ten years, subject to reimbursed relocation at the request of the satellite provider. Finally, we delete section 25.145(i) of our rules and reverse the Legacy List policy that we adopted in the *18 GHz Order*; thus, we will no longer require the use of the Legacy List coordination process by an FSS space station licensee to alleviate interference to a terrestrial fixed station.

## II. BACKGROUND

3. On September 18, 1998, the Commission released a Notice of Proposed Rulemaking (*18 GHz NPRM*)[4] in this proceeding that sought public comment on several proposed plans to redesignate the 17.7-19.7 GHz band (the 18 GHz band) among the various allocated services in order to make more efficient and better use of this portion of the radio spectrum. In the *18 GHz NPRM*, we stated that the existing terrestrial services currently operating in the 18 GHz band serve a variety of important communications needs, and that the satellite services licensed to operate in this band have the potential to provide consumers with several new services.[5]

4. Prior to the *18 GHz Order*, the 18 GHz band was allocated on a shared, co-primary basis for use by the terrestrial fixed service (FS), the Fixed-Satellite Service (FSS), and the Mobile-Satellite Service.[6] Terrestrial FS operators using the 18 GHz band include Private Cable Operators/Cable Television Relay Service (PCO/CARS), auxiliary broadcasting, local television transmission, fixed point-to-point and low power point-to-multipoint service. Mobile-Satellite Service operations were limited to Feeder Links

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[4] *Redesignation of the 17.7-19.7 GHz Frequency Band, Blanket Licensing of Satellite Earth Stations in the 17.7-20.2 GHz and 27.5-30.0 GHz Frequency Bands, and the Allocation of Additional Spectrum in the 17.3-17.8 GHz and 24.75-25.25 GHz Frequency Bands for Broadcast Satellite-Service Use*, Notice of Proposed Rulemaking, IB Docket No. 98-172, 13 FCC Rcd 19923 (rel. June 22, 2000) (*18 GHz NPRM*).

[5] *Id.* at 19929-30, paras. 8, 9.

[6] *Id.* at 19928-29, para. 7.

(MSS/FL). These services meet a variety of important communications needs, including remote monitoring of gas and petroleum pipelines, public safety links, video distribution links and point-to-point data links.[7]

5. Satellite services licensed to operate in this band include the GSO/FSS, the Non-geostationary Satellite Orbit FSS (NGSO/FSS) and the MSS/FL. The Commission has granted thirteen GSO/FSS licenses and one NGSO/FSS license in the 18 GHz band.[8] The satellite systems licensed in this band have the potential to provide global Internet access, two-way digital communications, videoconferencing, interactive multimedia, telemedicine, and residential voice and data communications services.[9] The satellite licensees intend to make these services available to millions of business and residential consumers in the United States using ubiquitously deployed small antenna satellite earth stations.

6. In the *18 GHz NPRM,* the Commission stated that it was concerned about the continued feasibility of sharing between the terrestrial and satellite licensees in the 18 GHz band because non-government FSS licensees plan to deploy potentially millions of small antenna earth stations in this band.[10] In response to the *18 GHz NPRM*, we received many comments and reply comments from entities representing a broad cross-section of the telecommunications industry.[11] Based on the extensive record in the proceeding, on June 8, 2000, the Commission adopted the *18 GHz Order* that made several important decisions with the goal of permitting more efficient use of the radio spectrum for existing and future operators and facilitating deployment of new services in the band.

7. In the *18 GHz Order*, the Commission concluded that the public interest required separating terrestrial fixed service operations from ubiquitously deployed FSS earth stations through dedicated sub-bands and made several decisions to effect this goal.[12] As discussed in further detail below, in the *18 GHz Order*, the Commission, among other things: (a) adopted an 18 GHz band plan designating how the FS, GSO/FSS, NGSO/FSS and MSS/FL licensees will use the band; (b) established a Legacy List to identify FS receivers operating in the 18.3-18.8 GHz band pointing within two degrees of the geostationary satellite orbit that must be protected from harmful interference from the FSS; (c) adopted rules governing the relocation of terrestrial facilities operating in satellite-primary bands; (d) authorized the blanket licensing of satellite earth stations in the bands where GSO/FSS and NGSO/FSS are the sole primary

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7 In the *18 GHz Order*, we stated that there are currently approximately 179,000 terrestrial fixed links in the 18 GHz band. *18 GHz Order* at 13435-36, para. 11.

8 The 18 GHz band comprises a portion of the Ka-band for satellite services. The Ka-band refers to the space-to-Earth or downlink frequencies in the 17.7-20.2 GHz band along with the corresponding Earth-to-space or uplink frequencies at 27.5-30.0 GHz (the 28 GHz band).

9 *18 GHz NPRM* at 19929-30, para. 9.

10 *Id.* at 19925, para. 1.

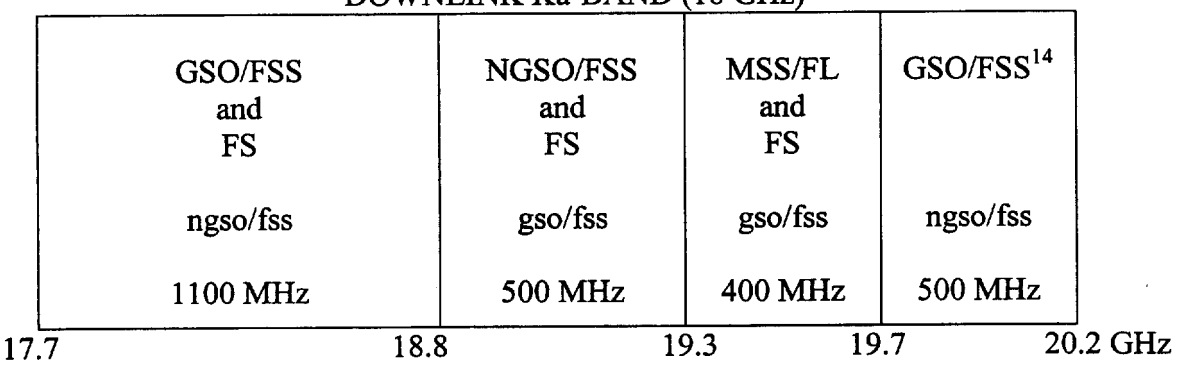
11 There are over 300 filings in the docket.

12 *18 GHz Order* at 13431-32, para. 2.

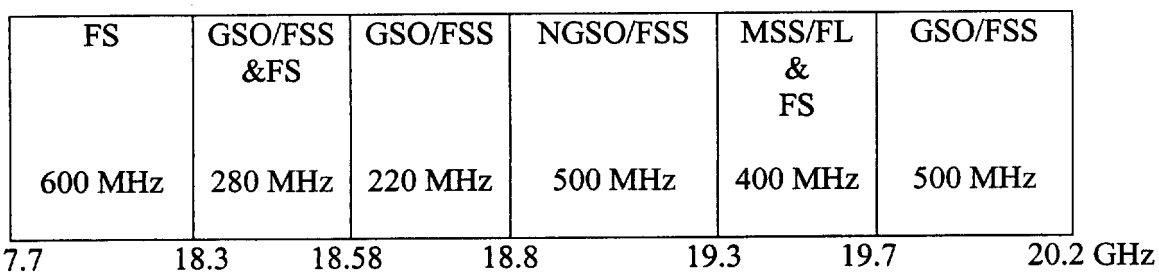
designations; and (e) allocated the 17.3-17.7 GHz band to the Broadcasting-Satellite Service (BSS) and the 24.75-25.25 GHz band to the FSS for BSS feeder links.

(a) 18 GHz Band Plan. At the time the *18 GHz NPRM* was released, the 18 GHz band plan was as follows:

DOWNLINK Ka-BAND (18 GHz)[13]




In the *18 GHz Order*, the Commission found that co-frequency sharing between the terrestrial fixed service and ubiquitously deployed FSS earth stations in the 18 GHz band is generally not feasible.[15] The Commission, therefore, concluded that separation of these operations into dedicated sub-bands would resolve many anticipated coordination problems.[16] To achieve this goal in the *18 GHz Order*, the Commission adopted the following band plan and amended the Table of Frequency Allocations:




Under this new band plan, the Commission designated a total of 1280 MHz of spectrum for the FS as follows: 600 MHz of spectrum in the 17.7-18.3 GHz band for primary use by the FS, 280 MHz of spectrum in the 18.3-18.58 GHz band, designated for co-primary use by the FS and the GSO/FSS, 400 MHz of spectrum in the 19.3-19.7 GHz band, designated for co-primary use by the FS and the MSS/FL.[17] The Commission has designated a total of 1000 MHz of downlink spectrum for the GSO/FSS as follows: 220

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[13] Capital letters identify services designated for primary domestic licensing priority, while lower case letters identify services designated for secondary domestic licensing priority.

[14] The 19.7-20.2 GHz band appears here merely to show the total spectrum available to the GSO/FSS.

[15] *18 GHz Order* at 13435-36, para. 11.

[16] *Id.* at 13438-39, para. 17.

[17] *Id.* at 13443-44, para. 28.

MHz in the 18.58-18.8 GHz band for exclusive primary use by the GSO/FSS, 280 MHz in the 18.3-18.58 GHz band, designated for co-primary use with the FS, in addition to existing designation of 500 MHz in the 19.7-20.2 GHz band for primary use by the GSO/FSS.[18] The Commission designated 500 MHz of spectrum to the NGSO/FSS in the 18.8-19.3 GHz band for primary use.[19] Finally, the Commission retained the existing designation of 400 MHz of spectrum in the 19.3-19.7 GHz band to the MSS/FL, which is shared on a co-primary basis with the FS.[20]

(b) The Legacy List. The *18 GHz Order* addressed concerns raised regarding unacceptable levels of interference that may be experienced by terrestrial fixed station receivers that are pointed directly at FSS satellite stations in the geostationary satellite orbit.[21] The Commission adopted a coordination process to accommodate the small number of terrestrial FS stations with receivers pointing within two degrees of the geostationary satellite orbit.[22] The Commission referred to the list of these FS licensees as the Legacy List.[23] The Legacy List coordination process requires the GSO/FSS space station licensee, whose satellite causes interference to the terrestrial fixed service station, to alleviate the interference.[24]

(c) Relocation. In the *18 GHz Order*, the Commission granted rights to the FS licensees currently operating in bands now designated on a primary basis to the satellite services to continue to operate existing facilities, subject to the right of a satellite operator to relocate the FS facility to a different frequency within the radio spectrum.[25] The Commission refers to this process as relocation, although it does not typically involve physical relocation of the facility. Under the rules adopted in the *18 GHz Order*, with the exception of the 19.26-19.3 GHz band where the right to compensation for expenses related to relocation is permanent, a relocated FS licensee is entitled to such compensation from the new FSS entrant for a period of ten years from June 8, 2000, which is the adoption date of the *18 GHz Order*.[26]

(d) Blanket Licensing. Blanket licensing refers to a procedure that allows Ka-band FSS satellite earth stations to operate under a single system-wide license for all stations rather than individually licensing and coordinating each satellite earth station. The *18 GHz Order* authorized a blanket licensing regime for satellite earth stations for those segments of the Ka-band (both downlink at 17.7-20.2 GHz and uplink at 27.5-30.0 GHz) that are not subject to sharing with other services.[27] Specifically, the Commission stated that we would accept applications for blanket licensing in the following bands:

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18 *Id.*, *see also id.* at 13443, para. 28 n.61.
19 *Id.* at 13443-44, para. 28.
20 *Id.*
21 *Id.* at 13451, para. 43.
22 *Id.* at 13451-52, para. 44.
23 *Id.* at 13452-53, para. 46.
24 *Id.*
25 *Id.* at 13460-61, para. 63.
26 *Id.* at 13463-65, paras. 69-71.
27 *Id.* at 13467-68, para. 77.

18.58-18.8 GHz, 18.8-19.3 GHz, 19.7-20.2 GHz, 28.35-28.6 GHz, 28.6-29.1 GHz and 29.5-30.0 GHz.[28] The blanket licensing rules adopted in the *18 GHz Order* contain specific technical parameters for the bands designated for GSO systems within which satellite earth stations may be operated under a blanket license in order to minimize potential interference on both an intra- and inter-service basis.[29]

(e) Allocation to the BSS and the GSO/FSS. In the *18 GHz Order*, the Commission allocated 400 MHz of spectrum at 17.3-17.7 GHz for primary use by the BSS, effective April 1, 2007.[30] In addition, the Commission allocated the 24.75-25.05 GHz band on a primary basis to the FSS (Earth to space), limited to BSS feeder links.[31] The Commission also allocated the 25.05-25.25 GHz band for co-primary use between the 24 GHz Fixed Service, formerly known as Digital Electronic Messaging Service (DEMS), and the FSS (Earth to space), limited to BSS feeder links.[32]

8. We received petitions for reconsideration and/or clarification of the *18 GHz Order* from Hughes, FWCC and Winstar, and a letter from Teledesic Corporation (Teledesic).[33] Teledesic is also seeking judicial review of the rules adopted by the Commission in the *18 GHz Order*.[34]

9. Hughes's petition raises a number of arguments regarding the 18 GHz band plan, the Legacy List policy, the deletion of secondary satellite designations and blanket licensing. We address certain of these issues in this Order. With respect to the Legacy List policy, Hughes argues that the policy departs from FCC rules because the pfd limits set forth in section 25.208 of the Commission's Rules were adopted as explicit sharing criteria in order to avoid interference between FS and GSO/FSS.[35] Hughes states that the pfd limit in the 18 GHz band has been in place since at least 1983 and was designed to pre-coordinate spacecraft transmissions and terrestrial FS receivers, regardless of the elevation angle and azimuth of the terrestrial receiver.[36] Consequently, Hughes argues that although there is no explicit restriction on 18 GHz terrestrial operators pointing at the geostationary satellite orbit, the sharing regime imposed by section 25.208 requires terrestrial operators to bear the burden of interference from satellite downlinks that comply with section 25.208(c).

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28 *Id.*

29 *Id.* at 13474, para. 93.

30 *Id.* at 13475-77, para. 96; *see also 18 GHz NPRM* at 19959 n.116. This allocation was made in conformity with the corresponding ITU Region 2 allocation, although the Commission allocated only 400 MHz to the BSS whereas the Region 2 allocation is for 500 MHz. *See also* ITU Radio Regulations Footnote S5.517

31 *18 GHz Order* at 13479, para. 102.

32 *Id.* at 13479-80, para. 102-106.

33 *See* Hughes petition, FWCC petition and Winstar petition, n.2 *supra*; *see also Teledesic Letter.*

34 *See* Teledesic has also filed a petition for review of the *18 GHz Order* in the U.S. Court of Appeals for the District of Columbia Circuit. *See Teledesic Petition.*

35 *Id.* at 12.

36 *Id.* at 13.

10. Hughes also contends that the Legacy List policy was adopted without adequate notice and comment as required by the Administrative Procedures Act (APA).[37] Hughes contends the APA was violated because the *18 GHz NPRM* did not discuss the terms or substance of any proposal that deviated from the Commission's long-standing interpretation of the existing pfd limits in section 25.208.[38] Hughes also states that the Commission failed to address Hughes's argument that any such potential interference experienced by terrestrial operators was solely due to the failure of terrestrial fixed operators to design their systems to take into account the satellite-terrestrial sharing rules.[39]

11. Hughes also argues that the *18 GHz Order* arbitrarily deleted the secondary designations for NGSO/FSS in the 18.3-18.8 GHz band and the secondary designation for GSO/FSS in the 18.8-19.3 GHz band, contrary to the rationale in the *28 GHz Order*.[40] Hughes argues that the Commission did not adequately explain why it changed the inter-satellite rules in the downlink band but not the uplink band.[41] Hughes states that it does not necessarily disagree that deleting the secondary designations established in the *28 GHz Order* may be ultimately correct, but that the Commission should deal with the issue comprehensively by issuing a Further Notice of Proposed Rule Making.[42]

12. Hughes also argues that the Commission should reconsider or correct several technical aspects of the Ka-band licensing rules regarding pfd limits, including sections: 25.208(c), 25.138(a)(6) and 25.138(b). Hughes states that the Commission did not adequately explain why it changed the longstanding pfd limit in section 25.208(c) from -115 dBW/m$^2$/MHz to -118 dBW/m$^2$/MHz. Hughes contends that the Commission's new rules irrationally apply a different pfd standard to the GSO/FSS service in the 18.3-18.8 GHz band from that applied to the NGSO/FSS at 18.8-19.3 GHz and to NGSO/MSS Feeder Links at 19.3-19.7 GHz. Hughes also argues that the new 25.208(d) limit is inconsistent with the coordination threshold approach in sections 25.138(a) and (b).[43]

13. Hughes contends the pfd limit of -118 dBW/m$^2$/MHz in section 25.138(a)(6) should apply to all GSO/FSS downlink bands in which the Commission permits blanket licensing. According to Hughes, the Commission incorrectly omits the 18.58-18.8 GHz downlink band from section 25.138(a)(6). Hughes states that the current section 25.138(a)(6) allows for routine processing of a blanket license application that contemplates a higher pfd in the 18.58-18.8 GHz band than -118 dBW/m$^2$/MHz, for

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37 *See* 5 U.S.C. § 553(b)(3) (requiring agencies to provide adequate notice of and a meaningful opportunity to comment on proposed rules being considered).

38 Hughes petition at 15.

39 *Id.* at 16.

40 *Id.*

41 *Id.* at 17.

42 *Id.*

43 *Id.* at 20-22.

example, and this would cause disruption to the industry consensus reached on this issue.[44]

14. Finally, Hughes argues that the Commission incorrectly omitted the word "blanket" before "earth station license" in section 25.138(b), and that the Commission's action is contrary to the proposal of the Blanket Licensing Working Group.[45] Hughes contends that this omission was done with no explanation, and could have unintended negative consequences.[46] According to Hughes, the rule could be interpreted to require individually licensed earth stations, even after they are coordinated, to power down to accommodate new operations at any of the six orbital locations within six degrees.[47] Hughes states that the proposal of the Blanket Licensing Working Group (BLWG) was intended to apply only to blanket-licensed earth terminals.[48]

15. There are several issues that Hughes raises in its petition upon which we defer action to a further Commission order. For example, with regard to the 18 GHz band plan, asks the Commission to reconsider its decision to designate only 220 MHz of additional Ka-band downlink spectrum for ubiquitously-deployed earth stations. According to Hughes, the Commission's decision is based on two flawed arguments: (1) that the Commission designated only 750 MHz of unshared primary uplink spectrum to GSO/FSS in the *28 GHz First Report and Order*,[49] and that therefore a similar designation of downlink spectrum is appropriate; and (2) that the Commission's overall band plan for 18 GHz is a balanced accommodation of the various uses of the band.[50] Hughes also argues that the *18 GHz Order* disproportionately burdened the GSO/FSS industry by failing to meet adequately its needs for spectrum while providing more fully for the needs of other industry operators, such as PCO/CARS and the NGSO/FSS.[51] Hughes states that the Commission did not address its proposal that the Commission accommodate PCO/CARS operators in the 12.7-13.2 GHz and/or 21.2-23.6 GHz bands. Hughes also states that the Commission's decision in the *18 GHz Order* ignores the decision in the 28 GHz *Order* that GSO/FSS systems warranted the designation of 1000 MHz for ubiquitous earth stations.[52] Finally, Hughes contends that the Commission should permit either blanket licensing of GSO/FSS earth stations in the satellite-only band of 29.25-29.5 GHz or streamlined registration of receive-only earth stations in the

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44 *Id.* at 22-23.

45 *Id.* at 23-25.

46 *Id.* at 24.

47 *Id.*

48 *Id.* at 23-25.

49 *See Rulemaking to Amend Parts 1, 2, 21, and 25 of the Commission's Rules to Redesignate the 27.5-29.5 GHz Frequency Band, to Reallocate the 29.5-30.0 GHz Frequency Band, to Establish Rules and Policies for Local Multipoint Distribution Service and for Fixed Satellite Service*, First Report and Order and Fourth Notice of Proposed Rulemaking, CC Docket No. 92-297, 11 FCC Rcd 19005 (1996) (*28 GHz First Report and Order*). The *28 GHz First Report and Order* established a band plan for the Ka-band.

50 Hughes petition at 5-6.

51 *Id.* at 9.

52 *Id.* at 10.

18.3-18.58 GHz band.[53] Hughes argues that the Commission gave no rationale for its refusal to establish blanket licensing in the 29.25-29.5 GHz band and its decision to defer action on the 18.3-18.58 GHz band to a future proceeding. Hughes contends that the record in the 28 GHz proceeding is clear that the parties in that proceeding intended that the shared use of the 29.25-29.5 GHz band between the GSO/FSS and NGSO/MSS feeder links would not prevent deployment of ubiquitous GSO/FSS earth stations.

16. FWCC filed a petition for reconsideration asking that the Commission restore sole primary status to the FS in 19.26-19.3 GHz.[54] FWCC also expressed concern that the Commission has not yet taken action to rechannelize a portion of the 17.7-18.14 and 19.26-19.7 GHz bands for low capacity systems.[55] One of the results of the *18 GHz Order* is that the point-to-point fixed microwave licensees in this band (17.7-19.7 GHz) no longer have access to channels that are 5 MHz wide and only shared access to channels that are 6 MHz wide. The remaining channels are 10 MHz wide, or wider. This channelization can create inefficient use of the spectrum or increased costs for licensees whose traffic needs do not require such large bandwidths. FWCC argues that the Commission's decision to designate 19.26-19.3 GHz on a primary basis to the NGSO/FSS was based on an historical study by Comsearch, which indicated that the remaining paired bands designated on a primary basis to the FS (17.74-18.14 and 19.3-19.7 GHz) would be adequate to accommodate FS needs.[56] FWCC argues that there has been significant growth and activity in this band by FS operators and the bands currently designated for the FS are insufficient to accommodate them; therefore, the Commission should restore the 19.26-19.3 GHz band to the FS.[57]

17. Winstar filed a petition for reconsideration asking for clarification of two issues and reconsideration of four others. Winstar requests that the Commission clarify that incumbent licensees are not required to move if no comparable facilities are offered and that assignments and transfers of control by incumbent licensees will not result in loss of primary status.[58] Winstar requests that the Commission reconsider the decision that upon relocation an FSS licensee need only provide the FS licensee with adequate throughput to satisfy the FS licensee's actual use at the time of relocation, rather than the total capacity of the FS system.[59] Winstar argues that the Commission should also reconsider the decision to permit an FSS licensee to make an FS provider whole through the provision of alternative media.[60] Winstar argues that the Commission should reconsider its decision to not permit incumbent licensees to return to previous facilities if

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53 *Id.* at 18.

54 FWCC petition at 1.

55 *Id.* at 1-2. Channelization refers to the process of subdividing bandwidth into smaller increments. *See Newton's Telecom Dictionary*, 15th edition at 168. Channelization allows applicants to apply only for the spectrum they actually need, and therefore can promote more efficient spectrum use.

56 *Id.* at 4.

57 *Id.*

58 Winstar petition at 6-8.

59 *Id.* at 10-11.

60 *Id.* at 12-14.

relocation is unsuccessful.[61] Finally, Winstar argues that the Commission should reconsider its decision to not permit a voluntary negotiation period in 18 GHz relocation proceedings.[62]

18. Teledesic, in response to the *18 GHz Order*, filed a letter with the Commission claiming that the Commission made errors in stating the cut-off dates for grandfathering pending terrestrial fixed station applications in the 18.58-18.8 and 18.8-19.3 GHz bands.[63] Teledesic also filed a petition in the U.S. Court of Appeals for the District of Columbia Circuit, seeking court review of the *18 GHz Order*. Teledesic's court brief raises four principal arguments: (1) the Commission used an incorrect methodology for compensating incumbent 18 GHz users that are required to relocate to different spectrum; (2) the Commission failed to consider adequately measures to mitigate the cost of relocation; (3) the Commission should not have permanently grand-fathered low-power terrestrial stations in the 18.8-19.3 GHz band allocated on a primary basis to the NGSO/FSS; and (4) the Commission should not have granted a permanent right to compensation for relocated terrestrial operators in the 19.26-19.3 GHz band.[64]

19. The Commission received ten comments, seven reply comments, and one late-filed reply comment in response to the petitions and the *ex parte* letter discussed above.[65]

20. With a few exceptions, in this Order we address all of the issues noted above, including those raised by Teledesic. In finding that it is appropriate to address the issues raised by Teledesic, we note that it is well established that the Commission has authority in a rulemaking proceeding to address an issue *sua sponte*, regardless of whether any pending petition raises the issue.[66] We will address the remaining issues in a future Order.

## III. DISCUSSION

### A. 18 GHz Band Plan

21. ***Status of the Fixed Service in 19.26-19.3 GHz.*** We reject the argument advanced by FWCC to restore primary status for the terrestrial fixed services in the 19.26-19.3 GHz band. FWCC argues that the Commission's decision was erroneously based in part on a historical study suggesting that other FS-primary bands (*e.g.*, 17.74-18.14 GHz and 19.3-19.7 GHz) could accommodate the expected significant growth in

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61 *Id.* at 16-18.

62 *Id.* at 18-19.

63 Teledesic letter at 1.

64 *See Teledesic Petition.*

65 *See* Appendix C.

66 *See Central Florida Enterprises v. FCC*, 598 F.2d 37, 48 n.51 (D.C. Cir. 1978), *cert. dismissed*, 441 U.S. 957 (1979) (holding that the filing of a petition for reconsideration tolls the normal 30-day limit on Commission action to reconsider a decision *sua sponte*).

the Fixed Service and relocation.[67] We find that, although the study was historical, in the course of the proceeding the Commission had the opportunity to consider the present level of growth in the FS, as well as other issues relating to relocation.[68] We are also aware of FWCC's projections for growth in the FS. We agree, however, with Astrolink that FWCC's proposal to redesignate this band would be detrimental to NGSO/FSS use of the band.[69] We find that this allocation was made based on the Commission's assessment of the relative needs of the competing services. Furthermore, we agree with Teledesic that there is no other suitable spectrum available for NGSO/FSS services in the Ka-band.[70]

22. We recognize, as we did in the *18 GHz Order*, the unique international status of the 18.8-19.3 band and that NGSO/FSS systems are likely to need the entire 500 megahertz of spectrum. We find that in the *18 GHz Order*, the Commission designated the 18.8-19.3 GHz band to the NGSO/FSS service on a primary basis, in part to preserve decisions made at the 1995 and 1997 World Radiocommunication Conferences (WRCs)[71] to allocate internationally the 18.8-19.3 GHz band to the NGSO/FSS service.[72] We note that in the original proceeding, terrestrial fixed operators had requested that the Commission maintain the 19.26-19.3 GHz band for terrestrial fixed service use in order to maintain the existing paired channel in the 17.7-17.74 GHz band.[73] Teledesic placed on the record a statement showing that its proposed NGSO/FSS system would suffer unacceptable interference from fixed stations operating anywhere in the 18.8-19.3 GHz band.[74] We acknowledge that there is growth in the demand for spectrum among FS operators. We conclude, however, that current operators can be accommodated through the policies adopted in the *18 GHz Order*.

23. We reconsider our decision to grant permanent co-primary status to existing terrestrial fixed stations in the 19.26-19.3 band, and we hereby establish a sunset provision for these existing terrestrial service operations. We find compelling the suggestion made by Teledesic in its brief on appeal that we treat FS licensees in the 19.26-19.3 GHz band the same as other FS licensees operating in the 18 GHz band.[75] We find that such treatment would better address the needs of the parties and ensure more efficient and equitable use of the radio spectrum in those bands that are shared on a co-primary basis by the FSS and FS. Accordingly, we adopt a ten-year sunset provision for

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67 FWCC petition at 4-5.

68 *18 GHz Order* at 13455-56, para. 52.

69 *See* Astrolink comment at 9-10.

70 *See* Teledesic opposition at 2.

71 WRC's are regular international conferences held under the auspices of the International Telecommunications Union (ITU), headquartered in Geneva, Switzerland. The ITU is the specialized agency of the United Nations dealing with international telecommunications matters.

72 *See* Teledesic reply comments at 9-10, IB Docket 98-172 (filed December 21, 1998).

73 *See* TIA-Fixed Section comments at 3-4, IB Docket 98-172 (filed November 19, 1998).

74 *See* Letter from Mark A. Grannis on behalf of Teledesic to Donald S. Abelson, Chief, International Bureau, FCC, IB Docket 98-172, (November 30, 1999).

75 *Teledesic LLC v. FCC*, Brief for Petitioner Teledesic, Case No. 00-1466 (D.C. Cir. filed April 30, 2001) (*Teledesic Brief*) at 45-46.

existing terrestrial services operating in this segment, and apply the same rules relating to relocation of existing users, *including* the right to compensation for relocation of both parts of a channel pair.

24. We find that this treatment of FS licensees in the 19.26-19.3 GHz band is supported by our findings in the *18 GHz Order* concerning the unique circumstances surrounding FS operations in the 19.26-19.3 and 17.7-17.74 GHz bands.[76] In the *18 GHz Order* we concluded that existing terrestrial fixed services operating in the 19.26-19.3 GHz band, which was redesignated to reflect primary status for FSS operations, would be grandfathered on a permanent basis because, "the channels in this band are paired with channels that are being retained for primary terrestrial fixed use at 17.7-17.74 GHz, thus magnifying the impact of this redesignation on the fixed service."[77] The *18 GHz Order* explained that:

> [i]f we were to impose a ten year sunset period, users of these pairings would likely be required because of equipment availability to relocate not only their transmissions in the 19.26-19.30 GHz band but also their paired transmissions in the 17.7-17.74 GHz even though the 17.7-17.74 GHz transmissions are not in a band that would be shared with FSS operations. Because of the significant impact on terrestrial fixed licensees, and since there are few existing fixed stations in this band, we do not believe it is appropriate to sunset the co-primary status, and associated relocation reimbursement rights, of existing terrestrial stations in this band.[78]

25. Upon reconsideration, however, we conclude that the best way to resolve the issues surrounding shared use and relocation of FS operations in the 19.26-19.3 GHz band is to treat such operations in the same manner as other operations in the 18 GHz band. We find that such equal treatment necessarily includes the right to compensation for relocation of those parts of a channel pair that might be located in the 17.7-17.74 GHz band, even though we did not redesignate the 17.7-17.74 band for FSS use. We find that there is nothing inherent in the 19.26-19.3 GHz band that would dictate that there be a transition period longer than ten years, but there is an inherent need to have both sides of paired frequencies be addressed and relocated. We also find that requiring FSS operators to compensate fully FS operators in the 19.26-19.3 GHz band for relocation of channels in both this band and the paired 17.7-17.74 GHz band, and subjecting these rights to the standard ten-year sunset period are more narrowly tailored and directly related to the unique circumstances in these bands than our decision in the *18 GHz Order* to extend permanent relocation reimbursement rights for FS operations in the 19.26-19.3 GHz band. Accordingly, we find that the public interest would be better served by giving FSS operators the flexibility of undertaking the expense of relocating existing terrestrial fixed service providers in the subject band under the same terms and conditions discussed in

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[76] *18 GHz Order* at 13463-64, para. 69.

[77] *Id.*

[78] *Id.*

the Relocation section of the *18 GHz Order* applicable to all other FS licensees.[79] We conclude that existing terrestrial services operating in the 19.26-19.3 GHz band will not be allowed to recover relocation reimbursement on a permanent basis and will be subject to the ten-year sunset period applicable to other FS operations in the 18 GHz band. We conclude, however, that the ten-year sunset period for existing terrestrial services operating in the 19.26-19.3 GHz band will begin from the adoption date of this Order.

26. ***Channelization of Fixed Service bands.*** We agree with FWCC and Teledesic that there is a need to rechannelize the 17.7-18.14 GHz and 19.3-19.7 GHz bands, and we plan to address channelization of these bands in a future rulemaking. This is because we expect that as noted by FWCC, as a result of the *18 GHz Order*, many FS licensees will migrate from the 18.58-18.82 GHz and 18.92-19.16 GHz bands that are designated on a primary basis only to satellite services.[80] We agree with FWCC and Teledesic that we will need to find other suitable channel pairings for the continued operation of these fixed service operators. We find that rechannelization of Fixed Service bands has the potential to facilitate the relocation of these FS operators. Therefore, the Commission intends to open a new proceeding to rechannelize the 17.7-18.14 GHz and 19.3-19.7 GHz bands, and we will transfer FWCC's proposed band plan to that docket for further consideration.[81]

27. ***Secondary Satellite Designations.*** We reaffirm our finding that secondary satellite designations should not be made in bands designated on a primary basis solely to the Fixed Service.[82] We also affirm our finding that the Fixed Service should not have a secondary designation in bands allocated on a primary basis solely to the NGSO or GSO/FSS.[83] In the *18 GHz NPRM*, the Commission proposed allowing secondary use of the entire 18 GHz band by FS, GSO/FSS, and NGSO/FSS operators in bands where the particular service was neither primary nor co-primary, to provide flexibility throughout the band.[84] After reviewing the comments filed on the issue, the Commission decided in the *18 GHz Order* that secondary use of the band is not viable because it would unreasonably inhibit ubiquitous deployment of the new satellite services and limit the use of spectrum by primary operators of the band.[85]

28. Hughes and Astrolink argue that the Commission acted arbitrarily in removing the secondary designations for NGSO/FSS in the 18.3-18.8 GHz GSO/FSS co-primary and primary bands, and the secondary designations for GSO/FSS in the 18.8-19.3 GHz NGSO/FSS primary band.[86] Hughes and Astrolink further claim that the

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79 *18 GHz Order* at 13467-70, paras. 76-84.

80 FWCC petition at 5-6.

81 *See* Fixed Wireless Communications Coalition, *Ex parte* Presentation, IB Docket 98-172, (July 27, 2001).

82 *18 GHz Order* at 13459, para.58.

83 *Id.* at 13457-58, para. 56.

84 *18 GHz NPRM* at 19939, para. 33.

85 *18 GHz Order* at 13459, para. 58.

86 Hughes petition at 16-17; Astrolink opposition and comments at 8.

Commission failed to provide an explanation for its decision in the *18 GHz Order*.[87] According to Hughes, the Commission's decision is inconsistent with treatment of secondary satellite designations in the corresponding uplink band segments in the 28 GHz band.[88] Hughes indicates that it "does not necessarily disagree with the Commission that deleting the secondary satellite designations that were established in the 28 GHz Order in the satellite-primary bands ultimately may be sensible." Hughes, however, argues that "adopting this policy in a haphazard and piecemeal way without an adequate record makes no sense."[89] Hughes, Astrolink, and GE Americom argue that the Commission should issue a Further Notice of Proposed Rulemaking and comprehensively address the issue for both the Ka-band uplink and downlink bands in a new proceeding, where the results of WRC-2000 could be considered.[90]

29. We find the record in this proceeding to be insufficient to determine whether and how GSO/FSS systems can operate on a secondary basis in NGSO/FSS bands, and whether and how NGSO/FSS systems can operate on a secondary basis in GSO/FSS primary bands. We find that by removing secondary operations in these bands, the Commission has lessened the potential for harmful interference to the primary service in each band and avoided disruptions that could occur to users of secondary services.[91] Moreover, we find that detailed service rules would have to be developed and adopted before secondary operations could be authorized in primary satellite bands. We find that these rules would be necessary to ensure that the primary service is adequately protected from harmful interference, and that operators of secondary service have a reasonable expectation of being able to provide service. We note that while we lack sufficient information to address this issue at this time, we welcome the provision of additional information or petitions that may be used to initiate a new rulemaking proceeding to address this issue.

30. ***Secondary Designation for BSS at 17.7-17.8 GHz.*** We disagree with Pegasus's argument that, pending the Commission's future re-examination of the status of the 17.7-17.8 GHz band, the Commission should adopt a secondary allocation to BSS in this band.[92] In the *18 GHz Order*, we allocated 400 MHz of spectrum at 17.3-17.7 GHz for primary BSS use, 300 MHz of spectrum at 24.75-25.05 GHz for primary FSS Earth to space use that is limited to feeder links for the BSS and 200 MHz of spectrum at 25.05-25.25 GHz for co-primary use between the Fixed Service and the GSO/FSS service

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87 *Id.*

88 Hughes petition at 16-17.

89 *Id.*

90 Hughes petition at 16-18; Astrolink opposition and comments at 8; GE Americom comments at 5.

91 *18 GHz Order* at 13459, para. 58.

92 *See* Comments and Opposition to Petition for Clarification and Reconsideration of Pegasus Development Corporation, November 13, 2000 (Pegasus opposition). We note that Pegasus's arguments with respect to the 17.7-17.8 GHz band were not raised in a timely filed petition for reconsideration, but rather in objections/comments to timely filed petitions in this proceeding, and thus are not properly before the Commission. Nevertheless, to ensure that all possible issues in the 18 GHz band are resolved, the Commission on its own motion considers the issues raised by Pegasus.

that is limited to BSS feeder links.[93] In the *18 GHz Order*, we recognized the importance of preserving terrestrial fixed service operations in the 17.7-17.8 GHz band.[94] We found in the *18 GHz Order* that the ubiquitous nature of BSS services precludes successful coordination with similarly widespread terrestrial services.[95] Although we decided not to designate the 17.7-17.8 GHz band for BSS use in the *18 GHz Order,* we noted that we may re-examine the availability of this spectrum in the future, depending on the outcome of the ongoing terrestrial fixed service relocation efforts.[96]

31. Pegasus argues that a secondary designation for the BSS in the 17.7-17.8 GHz is appropriate because BSS downlinks in the band will not cause interference to FS operations, and that secondary status in the band will allow Pegasus to provide service in areas where there are no FS operations.[97] We find that BSS is a consumer service and it would be unreasonable to subject consumers to the risk of experiencing service interruption each time a new terrestrial fixed service link is introduced in the area. We also find that, at this time, it would create uncertainty in this band to provide a secondary allocation to BSS. Accordingly, we conclude that the Commission may re-examine this issue in the future when the needs of operators are clearer. Given that we have little more information than we did at the time that we issued the *18 GHz Order*, we find no reason to deviate from it at this time. We, therefore, reaffirm our decision to consider BSS service rules in the 17.3-17.7 GHz band in a future proceeding.

32. ***Low Power Terrestrial Operations in Satellite Bands.*** While we continue to believe that the potential for harmful interference to FSS operations from low-power terrestrial fixed stations in the 18.82-18.87 GHz and 19.16-19.21 GHz bands is minimal, we recognize that our prior decision did not provide NGSO/FSS operators with adequate certainty in the 18.8-19.3 GHz band. Therefore, upon reconsideration, we conclude that, instead of permanently permitting co-primary operation of these low-power fixed service stations, they should be treated like other fixed service stations operating in 18 GHz bands that were designated for exclusive FSS use.

33. We find merit in some of the concerns expressed by Teledesic in its brief to the U.S. Court of Appeals regarding the continued licensing and operation of low-power terrestrial fixed systems in the 18.82-18.87 GHz and 19.16-19.21 GHz bands pursuant to section 101.147(r)(10) of our rules.[98] In the *18 GHz NPRM*, we proposed to permit low-power fixed systems to continue to operate in the 18.82-18.87 GHz and 19.16-19.21 GHz bands on a primary basis.[99] In its comments in response to the *18 GHz NPRM*, Teledesic suggested that the Commission not leave these low-power fixed service stations in these bands on a permanent co-primary basis, based on the possibility that

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93 *18 GHz Order* at 13475-77, para. 96.
94 *18 GHz Order* at 13477-78, paras. 97-99.
95 *18 GHz Order* at 13477, para. 98.
96 *18 GHz Order* at 13477-78, para. 99.
97 Pegasus opposition at 8-9.
98 *See Teledesic Brief* at 38-39.
99 *See 18 GHz NPRM* at 19943, para. 42.

these stations could cause harmful interference to an NGSO/FSS terminal located up to two km away.[100] Teledesic proposed that the Commission refuse to accept any new applications for these low-power stations and halt the deployment of additional stations under existing licenses.[101] Teledesic also proposed that existing stations be permitted to continue operating for the full term of their licenses, or until January 1, 2003, whichever is earlier.[102] In response to the concerns raised by Teledesic, the Commission decided in the *18 GHz Order* that:

> [r]egarding the low power fixed systems mentioned in the *NPRM*, in the 18.82-18.87 and 19.16-19.21 GHz bands, such stations have been licensed on a primary basis and will continue to be so licensed, given the proposal in the *NPRM* and the lack of significant comments. They will not be subject to the same transition rules as the full power stations in their band. In addition, they will not be subject to the same relocation requirement, since they will be co-primary with the FSS. They will be permitted to continue to operate, and new stations will be licensed subject only to the limitation that they operate indoors. The restriction to indoor use will, of necessity, place some signal-attenuating barrier between low power fixed stations and FSS earth stations, which are always located outdoors. While interference could still be possible, the probability of interference is significantly, and acceptably, reduced as the interfering signal is so diminished.[103]

34. In its reply brief, Teledesic argues that "The Commission did not explain how its 'indoor only' restriction on new licensees would in any way reduce interference from existing licensees, yet the consequence of the Commission's decision is that NGSO/FSS licensees such as Teledesic have no right to relocate those incumbent outdoor providers."[104] Furthermore, Teledesic questions how much less interference can be expected from indoor as compared to outdoor stations.[105]

35. We emphasize that it was our intent in the *18 GHz Order* to facilitate the deployment of new services in the 18 GHz band. We note that it was also our intent to provide reasonable accommodation for the continued operation of existing terrestrial fixed services in 18 GHz bands that were designated exclusively for FSS use. In the *18 GHz Order*, the Commission designated the 18.8-19.3 GHz band on a primary basis for the deployment of new NGSO/FSS earth stations.[106] For most other terrestrial fixed service operations in this band, the Commission decided to: 1) cease licensing additional terrestrial fixed stations; 2) permit existing terrestrial fixed stations to continue operating on a co-primary basis for a ten-year period, subject only to the right of FSS

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100 *See* Teledesic comments at 6, IB Docket 98-172 (filed November 19, 1998) (*Teledesic Comments*).

101 *Id.*

102 *Id.*

103 *See 18 GHz Order* at 1347-58, para. 56.

104 *See Teledesic LLC v. FCC*, Reply Brief, No. 00-1466 (D.C. Cir. filed xx date) (*Teledesic Reply Brief*) at 19.

105 *See Teledesic Reply Brief* at 20.

106 *18 GHz Order* at 13432, para. 4.

providers to require them to relocate; and 3) require satellite providers to pay for all necessary relocation costs.[107]

36. We now conclude that a similar approach should be taken regarding low-power fixed terrestrial stations. We find that such an approach would give NGSO/FSS operators the ability to control the amount of harmful interference they are willing to accept in the 18.8-19.3 GHz band, and also give them the ability to relocate interfering terrestrial fixed stations if necessary. We find that this approach also provides certainty to low-power terrestrial fixed service operators regarding how long they can expect to continue to be licensed and operate on a co-primary basis in this band. We further find that this approach would enable low-power terrestrial fixed service operators to receive comparable facilities at no cost to the fixed operator if they are required to relocate their systems within a ten-year period.

37. We continue to believe that the risk of interference is not significant. This is in part because we find that there are likely to be relatively few existing low-power transmitters operating in this band and that each transmitter is likely to cause harmful interference to NGSO/FSS earth stations only over a relatively small geographic area. The Commission's records reflect that there are currently less than 120 low-power licenses in this band. Each license permits multiple transmitters to be operated within 28 km from specified center reference coordinates.[108] We share Teledesic's understanding that "the chief proponent of the technology is no longer promoting it."[109] However, it is not clear precisely how many actual low-power transmitters are currently operating in this band because of the nature of the licensees' authority to deploy transmitters without notifying the Commission. It would also appear that each transmitter is likely to cause harmful interference over a relatively small area, particularly if the transmitter is located indoors. As mentioned previously, Teledesic claims that outdoor low-power transmitters could cause harmful interference to an NGSO/FSS terminal located up to 2 km away. Furthermore, we note that Teledesic does not appear to challenge the Commission's assertions in the *18 GHz Order* that limiting the licensing of these low-power systems to indoor use would reduce the distance at which interference could be expected.[110] This is because signals emitted by devices operating indoors will experience significant building attenuation that substantially reduces the risk of interference to systems outside the building. We recognize, however, that no information on building attenuation in the 18 GHz band has been submitted in the record in this proceeding.

38. Although we believe the potential for low power transmitters to cause harmful interference to NGSO/FSS earth stations is small, we find that our decision in the *18 GHz Order* does not give NGSO/FSS licensees the ability to address harmful interference that could occur. We find that the only possible remedy that an NGSO/FSS licensee could have to address interference is the ability to relocate incumbent

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107 *See 18 GHz Order* at 13460-61, para. 63.

108 47 C.F.R. § 101.147(r)(10).

109 *See Teledesic Comments.*

110 *See Teledesic Reply Brief* at 20.

transmitters that cause interference. We find that because our decision in the *18 GHz Order* indicates that the low-power transmitters are not subject to our transition and relocation rules, the ubiquitous deployment of NGSO/FSS earth stations in this band could be hindered if we do not take further action.

39. Based on the comments filed in this proceeding and our judgment on how to best to reconcile the competing arguments explained above, we are taking the following additional actions in this Order. First, we will cut off any further low-power applications under section 101.147(r)(10) as of April 1, 2002 (outdoor applications have already been cut off in the *18 GHz Order*). Second, we will permit low-power services authorized pursuant section 101.147(r)(10) to continue to operate on a co-primary basis for a period of ten years from the effective date of this Order, subject to the right of satellite providers to require them to relocate. After this date, such low-power terrestrial fixed stations can be compelled to relocate in accordance with the relocation rules we adopted previously in the *18 GHz Order*. During the ten year co-primary status period, the satellite provider requiring relocation must pay for all relocation costs, as was required for other terrestrial fixed service operations in the *18 GHz Order*.[111]

40. We recognize that, if it is necessary to relocate the existing low-power terrestrial fixed services, this decision places new cost burdens on the NGSO/FSS operators. We find, however, that given the low-power and relatively limited deployment of these systems, this burden is quite limited. We also find that this burden is completely optional to the NGSO/FSS operators and only applies when the NGSO/FSS operator determines that relocation is necessary or warranted.

41. A number of options may be available to re-accommodate existing users. We note, for example, that there are a number of unlicensed bands that can be used under Part 15 of our Rules to deploy low-power fixed wireless services. For example, section 15.247[112] permits operations in three bands generally at comparable power levels to those permitted under section 101.147(r)(10). These bands might be suitable for relocation of some or all of the 18 GHz low-power fixed service operations, but may raise comparability questions. Part 15 operations are subject to the conditions that no harmful interference is caused and that interference must be accepted that may be caused by the operation of other radio transmitters and devices.[113] Alternatively, arrangements could be made to employ services offered by commercial wireless operators, such as multipoint distribution service in the 2500-2690 MHz band. There are, however, no other bands identified in the rules at this time that provides for the licensing of systems limited to low power operations. We emphasize that existing low-power operations are subject to relocation for a ten-year period, only if the FSS party requesting relocation provides comparable facilities at no cost to the low-power fixed operator. Finally, we will cut off any further applications for low-power transmitters as of April 1, 2002. This cut-off date will provide adequate time for the Commission and interested parties to consider

111 *18 GHz Order* at 13460-61, 13464-70, paras. 63, 70-84.

112 47 C.F.R § 15.247.

113 *See* 47 C.F.R. § 15.5(b).

alternative arrangements for future low-power fixed operations. Also, we find this cut off date is appropriate and consistent with Teledesic's current service deployment plans.

## B. The Legacy List

42. We are persuaded by Hughes and several commenters to reverse the Legacy List policy that we adopted in the *18 GHz Order;* thus, we will no longer require the use of the Legacy List coordination process by a GSO/FSS space station licensee to alleviate interference to a terrestrial fixed station. Similarly, we reverse our decision to require licensees of NGSO/FSS systems in the 18.8-19.3 GHz band to provide protection to fixed stations beyond that provided by our satellite pfd limits. In light of our reconsideration of this issue, we find that it would serve no useful purpose to address the arguments made by Hughes, GE Americom, Astrolink, and SIA that the Legacy List policy violates the Administrative Procedure Act.

43. The *18 GHz Order* addressed concerns raised regarding the unacceptable levels of interference that may be experienced by terrestrial fixed station receivers that are pointed at FSS satellite stations in the geostationary satellite orbit.[114] Specifically, the Commission adopted a coordination process to accommodate the small number of terrestrial FS stations with receivers pointing within two degrees of the geostationary satellite orbit.[115] The Commission referred to the list of these FS licensees as the Legacy List.[116]

44. Hughes argues that the Commission's pfd limits, which have been in place since at least 1983, establish sharing criteria between satellite transmissions and terrestrial fixed service receivers, and consequently the Commission should not have granted additional consideration to terrestrial operators in the bands but required them to accept any interference resulting from satellites operating at or below the power limits.[117] Hughes argues that the Commission's terrestrial licensing rules make clear that the band is shared with satellite systems.[118] Astrolink further asserts that the pfd limits in former section 25.208(c) are internationally recognized and avoid the need for FS/FSS coordination, regardless of the azimuth and elevation angle of the FS receiver.[119] SIA argues that terrestrial operators were on notice of the impending satellite use of the band since 1995, when the Commission placed Ka-band satellite applications on public notice.[120]

45. We agree with Hughes and several commenters that the pfd values in place before we adopted the *18 GHz Order* were already designed to "pre-coordinate"

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114 *18 GHz Order* at 13451, para. 43.
115 *Id.* at 13451-52, para. 44.
116 *Id.* at 13452-53, para. 46.
117 Hughes petition at 13-14.
118 *Id.*
119 Astrolink opposition and comments at 10-11.
120 SIA comments at 2.

spacecraft transmissions, and terrestrial fixed service receivers regardless of the elevation angle and azimuth of the terrestrial receiver.[121] We find that the pfd limit set in the 17.7-19.7 GHz band had been internationally adopted since September 6, 1983 to protect Fixed Service operations, and to avoid the need for Fixed Service / Fixed Satellite Service coordination. While we noted in the *18 GHz Order* that the Commission has adopted no rule limiting terrestrial systems operating above 15 GHz from pointing at the geostationary-satellite arc, the limitation that applies below 15 GHz applies to terrestrial transmitters for the purpose of protecting FSS space station receivers, and not for the protection of terrestrial receivers from the transmissions of space stations. Therefore, we find that our comparison in the *18 GHz Order* to the rules for operation below 15 GHz is inappropriate.[122]

46. We find that a fundamental purpose of satellite power flux density limits, in bands shared with terrestrial services, is to define the sharing environment so that both services may operate with minimal constraint. We note that, given that FS operators have known the maximum allowed pfd levels from the GSO satellites, FS operators could have effectively designed their point-to-point links to avoid receiving unacceptable interference from satellites using the geostationary orbit. We find that even though there are no non-government geostationary orbit satellites currently operating in the 17.7-19.7 GHz band, the rules clearly provide for such service. Moreover, we find that terrestrial fixed service licensees, through those rules, have had ample notice of such a possibility.

47. Similarly, for the 8.8-19.3 GHz NGSO/FSS bands, the *18 GHz Order* adopted pfd limits for NGSO/FSS satellites. The limits adopted were those adopted at the ITU WRC-2000 conference for NGSO satellites in the 17.7-19.7 GHz band. That conference recognized that the satellite pfd limits adopted were sufficient to protect terrestrial FS receivers in those bands. Accordingly, on reconsideration we find that section 25.145(i) of the rules is neither necessary nor appropriate, and we hereby delete section 25.145(i) from our rules.

## C. Licensing Issues

48. ***Technical Corrections.*** We deny Hughes's request to modify section 25.138(b) of the Commission's rules to limit the rule's application to blanket-licensed earth stations. Section 25.138 establishes guidelines for Ka-band earth station operations.[123] It also requires licensees of non-compliant stations to coordinate with affected Ka-band satellite operators, and bear the burden of coordinating with future applicants and licensees.[124] Hughes argues that modification is warranted because the Commission improperly omitted the word "blanket" before the phrase "earth station

121 Hughes petition at 12; SIA opposition and comments at 5.
122 *See 18 GHz Order* at 13451-52, para. 44.
123 47 C.F.R. § 25.138.
124 *See* 47 C.F.R. § 25.138(c).

license" in 25.138(b), and failed to explain the basis for the omission.[125] According to Hughes, the rule is the result of a proposal of an industry-working group, and the industry-working group only intended it to apply to blanket-licensed earth terminals.[126] Hughes argues that in its current state the rule could be incorrectly interpreted to require individually licensed earth stations, even after they are coordinated, to power down to accommodate new operations at any of the six orbital locations within six degrees.[127]

49. We decline to make the change sought by Hughes because we agree with Astrolink, Pegasus, and Lockheed Martin that section 25.138(b), as adopted in the *18 GHz Order*, properly articulates the procedure to license earth stations with higher uplink power densities or downlink pfd levels than used by satellite operators to provide service to blanket licensed terminals. Astrolink asserts that section 25.138(b) applies the same guidelines to all earth stations operating in the band as it does in the Ku-band, and does nothing more than extend to the Ka-band the FCC's licensing practice with respect to non-compliant Ku-band earth stations.[128] Astrolink also argues that the explanation that the Commission provided for its omission of the word "blanket" was adequate because paragraph 43 of the *18 GHz NPRM* discussed the proposal to extend to the Ka-band the Commission's previous licensing approach to non-compliant GSO/FSS earth station applications.[129] Pegasus and Astrolink both argue that granting Hughes's request would eliminate any applicable operational parameters for individually licensed Ka-band earth stations, remove the requirement to coordinate individually licensed earth station operations in excess of applicable power levels with affected Ka-band satellite operators, and contravene longstanding FCC policy.[130] Lockheed Martin argues that the Commission should retain the current language of section 25.138 of our rules because to do otherwise would jeopardize the blanket-licensing regime and associated policy objectives.[131] Lockheed Martin further argues that the approach set forth ensures that all existing and future Ka-band satellite licensees have the opportunity to deploy ubiquitous terminals for new satellite-based broadband services, and that interference from non-conforming earth stations would undermine the ability of other licensees to operate compliant earth stations.[132] According to Lockheed Martin, requiring non-compliant earth stations to coordinate with subsequently deployed compliant earth stations prevents one competitor from foreclosing competition in any given geographic area from either existing licensees or future licensees, such as second-round Ka-band applicants and licensees, including Lockheed Martin.[133]

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125 Hughes petition at 24.

126 *Id.*

127 GE Americom supports Hughes's request for modifications to the technical rules. GE Americom comments at 7-8.

128 Astrolink opposition and comments at 15.

129 Astrolink reply at 4-6.

130 Pegasus comment and reply at 1-2, Astrolink opposition and comments at 15.

131 Lockheed Martin comments at 2-3.

132 *Id.*

133 *Id.*

50. As noted above, we agree with Astrolink, Pegasus, and Lockheed Martin that section 25.138(b), as adopted in the *18 GHz Order*, correctly establishes the procedure to license non-compliant earth stations on both a blanket and individual basis. We find that section 25.138(c) was, among other things, intended to preserve the bands designated only for GSO/FSS for such licensing. Consequently, we find that section 25.138(c) properly places the coordination burden on the operator of the non-compliant terminals, appropriately considering the type of GSO/FSS usage for these frequency bands. We find that this procedure makes additional spectrum available with fewer constraints on those satellite operators that plan to operate at those levels established for blanket licensing. Furthermore, for those operators that chose to operate blanket- or individually-licensed earth stations within the unshared GSO/FSS bands at levels beyond those established for blanket licensing, we adopt a flexible coordination approach in section 25.138(c) to accommodate such applications. Individually-licensed non-complaint earth stations, e.g., TT&C stations, are not precluded from operating in the unshared GSO/FSS bands. However, the risk of additional future operating constraints must be assessed by the applicant and the non-compliant operations must be coordinated with existing and future compliant operations in the unshared GSO/FSS bands. In this manner, continued orbit spectrum utilization efficiency will be assured.

51. ***Satellite pfds.*** We agree with Hughes, GE Americom,[134] Astrolink, [135] and SIA[136] that the pfd limits specified for the 18.3-18.8 GHz band should be consistent with the current pfd limits set out in the ITU Radio Regulations. Specifically, Hughes argues that the current section 25.138(a)(6) allows for routine processing of a blanket license application that contemplates a higher pfd in the 18.58-18.8 GHz band than, for example, -118 dBW/m$^2$/MHz, and this is contrary to the industry consensus on this issue.[137] According to SIA, the new section 25.208(d) imposes a more stringent pfd limit at certain angles of arrival than the prior rule and this precludes the ability to coordinate inter-satellite operations at downlink power levels in excess of the thresholds set forth in 25.138(a) over certain ranges of elevation angles.[138] SIA argues that the pfd limit should be returned to its original value so as not to prohibit coordinated, higher-power operations from many orbital positions over a range of angles of arrival.[139]

52. We find that the pfd limits specified in section 25.208(c) should apply to the 18.3-18.8 GHz band, where satellite and terrestrial/grandfathered terrestrial operators still share the band. We agree with the petitioner and commenters that the pfd values in place were already designed to "pre-coordinate" spacecraft transmissions and terrestrial fixed service receivers regardless of the elevation angle and azimuth of the terrestrial receiver. We note that the pfd limit set in the 17.7-19.7 GHz band had been internationally adopted since September 6, 1983, to protect FS operations and to avoid

134 GE Americom comments at 7-8.
135 Astrolink opposition and comments at 12-17.
136 SIA comments at 5.
137 Hughes petition at 22-23; SIA comments at 5.
138 SIA comments at 5.
139 SIA comments at 5.

the need for FS/FSS coordination. We find that GSO/FSS operations in the 17.8-20.2 GHz band, in accordance with footnote US334 of the United States Table of Frequency Allocations, permit FSS sharing with the FS in those bands using the same pfd limits specified in section 25.208(c). Accordingly, we delete section 25.208(d), and amend the rules to apply the pfd values in section 25.208(c) to the 18.3-18.8 GHz frequency band. Only sections 25.208(e) and 25.208(f) therefore remain, and are accordingly re-lettered within section 25.208.

53. We also agree with Hughes that the pfd level in section 25.138(a)(6) of -118 dBW/m$^2$/MHz should apply to all GSO/FSS downlink bands in which the Commission permits blanket licensing.[140] Specifically, Hughes contends that the Commission incorrectly omitted the 18.58-18.8 downlink band from section 25.138(a)(6).[141] We find that the pfd value in section 25.138(a)(6) should apply as a coordination threshold in each GSO/FSS downlink band in which blanket earth station licensing is permitted. In paragraph 87 of the *18 GHz Order*, the Commission adopted the blanket licensing procedure for GSO/FSS earth stations in the unshared 18.58-18.8 GHz, 19.7-20.2 GHz, 28.35-28.6 GHz, and 29.5-30 GHz bands.[142] Therefore, we find that despite the fact that there is no reference to the 18.58-18.8 GHz band in section 25.138(a)(6), the blanket licensing text in the *18 GHz Order* is applicable to the 18.58-18.8 GHz band. In an effort to make the rules consistent, we hereby delete reference to the 19.7-20.2 GHz band in section 25.138(a)(6) of our rules, and conclude that the pfd requirement will be applicable to all frequencies listed under section 25.138.

## D. Relocation Issues

54. ***Comparable Facilities.*** We deny Winstar's request that the Commission clarify through a modification of its rules that if an incoming licensee is unable or unwilling to provide an incumbent licensee with comparable facilities, the incumbent licensee will not be subject to mandatory relocation. Teledesic disagrees with Winstar's request for clarification, claiming that it is an attempt to bait the Commission into stating that facilities must be perfect in every respect before relocation will be required.[143] According to Teledesic, sometimes it is necessary to make post-installation adjustments to facilities after the switchover has occurred, and it would be unreasonable to state otherwise by way of clarification.[144] We find that, as noted by Astrolink[145] and Teledesic,[146] modification of the Commission's rules is unnecessary because the *18 GHz Order* states that incumbents need not relocate until alternative facilities are available for a reasonable time. Specifically, we note that the rule adopted in the *18 GHz Order* states "[n]egotiations will be conducted with the goal of providing the FS licensee with

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140 Hughes petition at 23.
141 *Id.*
142 *18 GHz Order* at 13471, para. 87.
143 Teledesic opposition at 3.
144 *Id.*
145 Astrolink opposition and comments at 6.
146 Teledesic opposition at 9.

comparable facilities," and that "comparable facilities" are defined as facilities comparable with respect to measurable criteria that include throughput, reliability, and operating costs.[147] We find that the *18 GHz Order* sufficiently establishes that an FS licensee is not required to relocate until the alternative facilities are available to the FS licensee for a reasonable time to make adjustments, determine comparability, and ensure a seamless handoff. We note that, according to the relocation rules, if the FS licensee demonstrates to the Commission that the new facilities are not comparable to the former facilities, the Commission can require the FSS licensee to modify further or replace the FS licensee's equipment.

55. We also disagree with Astrolink that there is a need to clarify that an FSS licensee may come to the Commission to invoke mandatory relocation if an FS operator refuses to accept comparable facilities.[148] We find that the rule is sufficiently clear in establishing that replacement facilities must be comparable, and an FSS licensee may invoke involuntary relocation where no agreement is reached during the negotiations period.

56. ***Definition of Throughput.*** We decline to modify the rules to permit throughput to be determined by total capacity of the licensed spectrum, rather than the FS licensee's actual use at the time of relocation.[149] We are not persuaded by Winstar's argument that the Commission failed to acknowledge the explosive growth in the FS market, and failed to provide reasonable accommodation for that growth.[150] Winstar bases its claim on the fact that the *18 GHz Order* decided that incumbents need only receive enough throughput to satisfy their actual use.[151] Specifically, the *18 GHz Order* states that when an FSS licensee is relocating an FS licensee, the FS licensee must be provided with "comparable facilities."[152] The *18 GHz Order* establishes that the new facility must, among other things, provide communications throughput that is comparable to the previous facility.[153] The *18 GHz Order* defines "communications throughput" as "the amount of information transferred within a system in a given time,"[154] and notes that the FSS licensee must provide the FS licensee with enough throughput to satisfy the FS licensee's system use at the time of relocation, rather than requiring FSS licensees to match the total capacity of the FS system.[155]

147 *See* 47 C.F.R. § 101.89.

148 Astrolink opposition and comments at 6-7.

149 Winstar petition at 11.

150 Winstar petition at 9-10.

151 *Id.*

152 *See* 47 C.F.R. § 101.89(d) ("Negotiations will be conducted with the goal of providing the FS licensee with comparable facilities.").

153 *See 18 GHz Order* at para. 82 n.167.

154 *See* 47 C.F.R. § 101.89(d)(1).

155 *See* 47 C.F.R. § 101.91(b)(1).

57. These basic relocation principles, which we reaffirm in this order, were originally drawn from the *2 GHz Relocation Order*.[156] In the *2 GHz Relocation Order*, the Commission determined that an incumbent needs to receive only enough throughput to satisfy its needs at the time of relocation.[157] In the *2 GHz Relocation Order*, the Commission noted that it selected this amount of throughput to prevent inefficient use of the spectrum, which could occur if an incumbent were relocated to a system with capacity that exceeds its current needs.[158] For example, the Commission would not require that a 2 GHz incumbent that has 5 MHz of bandwidth be relocated to a similar-size location when its current needs only justify a 1.25 MHz bandwidth system.[159] In the *18 GHz Order*, the Commission likewise required that relocated incumbents be provided only "with enough throughput to satisfy the FS licensee's system use at the time of relocation, not match the total capacity of the FS system."[160]

58. We conclude that in the *18 GHz Order*, the Commission properly invoked the policy of preventing spectrum warehousing and promoting more efficient use of spectrum by incumbents and new entrants alike by compensating incumbents only for the spectrum that they are actually using at the time of relocation.[161] We are not persuaded that Winstar's effort to distinguish factually the *18 GHz Order* from the *2 GHz Relocation Order* warrants a different conclusion. Specifically, Winstar argues that in the *2 GHz Relocation Order*, incumbents could be relocated to different spectrum, whereas here the Commission has not identified any new spectrum for relocation.[162] We find that it is not necessary for the facts to be identical in order for the rationale for the decision in the *2 GHz Relocation Order* to be applicable to the situation at hand.

59. Moreover, we agree with the majority of commenters. For example, Astrolink argues that the Commission properly required FSS licensees to provide FS operators with replacement throughput to satisfy actual use at time of relocation, not total capacity, because relocation will only be performed on a link-by-link basis.[163] Hughes argues that the Commission's decision to limit the "throughput" of the relocated FS systems to the capacity actually in use was correct because this ensures that grandfathered FS licensees do not warehouse spectrum during the transition period in the hope of receiving a windfall of capacity upon relocation by a satellite licensee and also recognizes that FS licensees will have additional growth opportunities in the 17.7-18.3 GHz band.[164] Pegasus argues that the Commission properly took account of the expected growth of both satellite and terrestrial services in its order and rationally concluded that

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156 *See Amendment to the Commission's Rules Regarding a Plan for Sharing the Costs of Microwave Relocation*, 11 FCC Rcd 8825, 8840-41 (1996) (*2 GHz Relocation Order*), at para. 28 (addressing relocation of microwave facilities operating in the 1850 to 1990 MHz or "2 GHz" band.).

157 *Id.* at para. 29.

158 *Id.* at para. 29.

159 *Id.*

160 *See* 47 C.F.R. §101.89(d)(1), as adopted in the *18 GHz Order*.

161 *See 18 GHz Order* at 13437, para. 14 n.27.

162 Winstar petition at 11.

163 Astrolink opposition and comments at 3.

164 Hughes opposition at 4-5.

the public interest in efficient market entry of FSS licensees outweighed the competing interest in FS growth.[165] Teledesic argues that the goal of the relocation rules should be to move usage toward conformity with the Commission's band plan quickly and with the least social cost possible.[166] According to Teledesic, a facility using an over-sized 40 MHz channel pair that has customer requirements for only a 20 MHz pair is made whole by receiving only a 20 MHz pair.[167] Teledesic argues that requiring the new entrant to build a 40 MHz facility that will remain underused is inefficient and will result in spectrum warehousing.[168]

60. ***Alternative Media.*** We deny the request by Winstar and FWCC to clarify through modification of our rules that an FS provider is not required to accept fiber or other bands as an alternative media. Winstar and FWCC argue that such clarification is necessary because fiber networks and certain other options may not be reasonable or logical because they may not be cost-effective or available.[169] Winstar argues that fiber is generally much more expensive than microwave, usually not available outside business-dense urban areas, and has a lengthy construction time.[170] Winstar also argues that other non-fiber forms of media have similar problems because higher frequency bands such as 23 GHz require multiple relay links with 1-2 mile hops (due to propagation characteristics) and are, therefore, more expensive, spectrally inefficient, and cumbersome to use.[171] According to Winstar, there are no lower frequency bands currently available with sufficient bandwidth to meet its hub interconnection capacity requirements.[172]

61. We generally agree with Astrolink, [173] Hughes, SIA,[174] and Teledesic, [175] and thus we conclude that in evaluating possible relocation options for FS providers, the

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165 Pegasus opposition at 5-6.

166 Teledesic opposition at 11.

167 *Id.*

168 *Id.*

169 FWCC comments at 2; Winstar petition at 12.

170 Winstar petition at 13.

171 *Id.*

172 Winstar petition at 13-14.

173 Astrolink opposition/comments at 4. Astrolink argues that if other media are not available or otherwise inappropriate, then they obviously cannot be substituted as replacement facilities. Therefore, Winstar's concern is unfounded because a relocated FS operator will either obtain comparable facilities, as defined by the Commission, or continue to use its existing facilities. Astrolink argues the Commission should permit all potential replacement facility options to be explored and utilized, so long as they are comparable, rather than arbitrarily exclude certain options from the outset, as proposed by Winstar. *Id.*

174 Hughes opposition at 5; SIA comments at 7-8. Hughes and SIA argue that alternative media, such as fiber, wireline or even satellite networks will provide the necessary flexibility in the relocation process. According to Hughes, to foreclose the option to relocate existing licensees to comparable facilities in alternative media would force the Commission into the position of choosing between competing but comparable technologies. Hughes and SIA argue that as long as the alternative media facilities are "comparable" under the Commission's rules, licensees have no basis for concern. Hughes argues that the alternative media simply need to meet the Commission's tests for throughput, reliability and operating cost, the same as a terrestrial fixed wireless relocation option.

key test should be whether the alternative facilities are comparable under the applicable Commission rules. The relocation rules adopted in the *18 GHz Order* states in part that: "FSS licensees may negotiate with FS licensees authorized to use frequencies in the 18.58-19.30 band for the purpose of agreeing to terms under which the FS licensees would . . . [r]elocate their operations to other fixed microwave bands or other media."[176] We find that this provision provides flexibility to incumbents and new entrants in the relocation process to be able to use whatever comparable facilities are available, including alternative media. We find that, as long as the alternative medium is comparable, in terms of throughput, operating costs, and reliability, it should not be ruled out as a possible option for relocation. We note, however, that with respect to fiber optic facilities, the receiving fees for the lease of such lines would be considered a valid "operating cost" and must be considered as a factor in any comparability analysis. We also note that our rules provide that a terrestrial fixed licensee will be given a "reasonable" amount of time to test the new facilities to ensure comparability.[177] Accordingly, we conclude that there is no need for further clarification of this issue.

62. ***Cut-Off Dates.*** The cut-off dates in the *18 GHz Order* address two specific and different situations. The first situation involves the identification of terrestrial fixed stations that are entitled to compensation from a satellite licensee that wishes to relocate the fixed stations to a new frequency band or alternative media. The second situation involves identification of terrestrial fixed stations that are entitled to protection from interference from satellite stations. Although we agree with Teledesic that the *18 GHz Order* might not have been clear in distinguishing between the right to operate, the right to compensation, and the right to protection from interference, we find that the rules adopted in the Order are clear and correct.

63. With respect to the identification of terrestrial fixed station that are entitled to compensation from a satellite licensee that wishes to relocate the fixed station, in the 18.58-18.8 GHz band, stations licensed or with applications pending as of the adoption date of the *18 GHz Order* (June 8, 2000) are entitled to compensation for the relocation of their facilities for a period of ten years from the adoption date of the *18 GHz Order.*[178] In the 18.8-19.3 GHz band, stations licensed or with applications pending as of September 18, 1998, are also entitled to compensation for the relocation of their facilities for a period of ten years from the adoption date of the *18 GHz Order.*[179] These provisions are reflected in sections 21.901, 74.502, 74.602, 78.18, and 101.147(r) of our rules, and we affirm them.

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175 Teledesic opposition at 11-12. Teledesic argues that fiber networks and other options may sometimes be a reasonable relocation option and therefore should be considered. Teledesic further argues that where fiber is not cost-effective, the new entrant is unlikely to suggest it since the new entrant will be paying for it. *Id.*

176 *18 GHz Order* at 13466, para. 73, Appendix A, Section 101.85(a).

177 *See* 47 C.F.R. § 101.91(c).

178 *See 18 GHz Order* at 13464-65, paras. 71-72.

179 *Id.*

64. With respect to identification of a terrestrial fixed stations that are entitled to protection from interference from the satellite stations, we have reconsidered our decision to adopt Legacy List procedures for fixed service receivers that point within two degrees of an FSS satellite. Specifically, upon further consideration, we have determined that the power flux-density limits adopted for both the GSO and NGSO satellites in the 17.7-19.7 GHz band are sufficient to protect the fixed service receivers.[180] With the elimination of the Legacy List procedures and the acceptance of the section 25.208 Power Flux-Density Limits as the sole protection criteria for terrestrial fixed stations from FSS satellites in the 17.7-19.7 GHz band, we see no need for a cut-off date for the protection of terrestrial fixed stations. Accordingly, we delete section 25.145(i) from our rules.

65. ***Negotiation Periods.*** We reaffirm the decision to require a two-year mandatory negotiation period for non-public safety and a three-year mandatory negotiation period for public safety incumbents and new entrants to negotiate and reach agreement on relocation, before the new entrants can begin involuntary relocation proceedings. Although Winstar argues that the Commission should provide for a voluntary negotiation period that would precede these mandatory negotiation periods, we find that the *18 GHz Order* struck the right balance in providing specific mandatory periods for incumbents to negotiate in good faith. We agree with Astrolink[181] that a mandatory negotiation period provides a stronger incentive to incumbents than a voluntary negotiation period.

66. We reject Winstar's arguments that the Commission incorrectly assumed that many of the existing 18 GHz terrestrial fixed stations will likely be able to relocate elsewhere in the 18 GHz band. As the Commission noted in the *18 GHz Order*, relocation is not required until such time as comparable facilities are located and tested for the incumbent.[182]

67. In addition, we find that, as noted by Astrolink,[183] Hughes, and Teledesic,[184] adding an involuntary negotiation period in this case would be inconsistent with the effort to provide the expedited access required by the FSS operators. We are not persuaded by Winstar's argument that the Commission incorrectly assumed that FSS licensees would roll out nation-wide service rapidly. We find, as we did in the *18 GHz Order*, that satellite licensees will likely roll out their service on a nation-wide basis, at one time, to ubiquitously deployed user terminals. This situation necessitates expedited

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180 *See* paras. 49-51 *supra*.

181 Astrolink opposition and comments at 5-6.

182 *See 18 GHz Order* at 13469-50, para. 82.

183 *Id.*

184 Hughes opposition at 8-9. Hughes further argues that Winstar seeks solely to delay the relocation process, increasing its bargaining leverage with satellite licensees. *Id.* According to Hughes, adding to the current two-year mandatory negotiation period simply increases the time terrestrial fixed operators have to operate until subject to involuntary relocation. *Id.* Hughes and Teledesic argue that voluntary periods allow incumbents to refuse to negotiate unless new entrants pay a premium, and this has happened to those involved with relocation pursuant to the *2 GHz Relocation Order*. Hughes opposition at 8-9; Teledesic opposition at 8.

access to this spectrum, which we believe will be promoted by our current relocation rules.

68. ***Right to Return to Original Spectrum.*** We conclude that the Commission properly determined that, even if the relocation is unsuccessful, an incumbent licensee should not have the right to return to previous facilities. Winstar argues the Commission should reconsider this and establish a 12-month trial period based on the same principles and logic employed in the *2 GHz Relocation Order.*[185] Winstar argues that this change is necessary to provide a "safety valve" to ensure that licensees negotiate in good faith towards a shared goal of effective relocation.[186] Winstar further argues that without such a 12-month trial period, there is no motivation for incoming licensees to pursue the availability of comparable facilities for incumbents, and they may be tempted to "buy time" by placing incumbent licensees in inadequate facilities.[187] Winstar also asserts that the Commission's petition process for dissatisfied incumbents is hardly sufficient because it leads to a slow, agonizing, and generally unsatisfactory resolution of the problem.[188]

69. We find, as noted by Astrolink, Teledesic, Hughes, and TRW that giving incumbents the right to return to their previous facilities would be unworkable and cause uncertainty and disruption to FSS deployment in the band.[189] Specifically, Hughes and TRW argue that a right of return would be unworkable because in the 18 GHz band the service will be rolled out immediately on a nation-wide basis, rather than phased in as it was in the 2 GHz band.[190] TRW urges the Commission not to apply the right of return decision from the *2 GHz Relocation Order* because the more appropriate analogous situation to the present one is the one involving relocation of terrestrial facilities above 2 GHz to make room for 2 GHz MSS systems.[191] TRW notes that in that case the Commission rejected a right of return for terrestrial incumbents, finding such an approach infeasible, due to the disruptive impact on region-wide or global satellite systems.[192]

70. We agree with Hughes, Astrolink[193] and Pegasus[194] that a right of return period is not necessary because the Commission's 18 GHz relocation rules provide that

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185 Winstar petition at 16-18. The *2 GHz Relocation Order* provides that if a new facility was not found to be comparable during the first twelve months of operation, the PCS licensee must either cure the problem, restore the incumbent to its original frequency, or relocate it to an equivalent 2 GHz frequency. *2 GHz Relocation Order* at para. 44.

186 Winstar petition at 17.

187 *Id.* at 18.

188 *Id.* at 16-18.

189 Teledesic opposition at 10-11; Astrolink opposition and comments at 4-5.

190 Hughes opposition at 5-8, TRW opposition at 5-6.

191 TRW opposition at 5-6.

192 *Id.*

193 Astrolink opposition and comments at 4-5.

194 Pegasus opposition at 6-8. Pegasus further argues that the Commission denied a right of return specifically to provide FSS licensees flexibility to develop their operations in a timely and economic manner, due the disruption it would cause to national, regional and global satellite systems for the benefit of relatively few terrestrial fixed incumbents. Pegasus argues that a right of return is not necessary in light of the Commission's other procedural safeguards, such as the rules requiring the FSS licensee pay all

involuntary relocation occurs only when a satellite licensee has built and tested a comparable facility for the relocated licensee prior to relocation.[195] Moreover, we find that, as noted by these parties and SIA, the FS licensee has the ability to contest comparability if there has been inadequate testing, and the Commission may order the satellite licensee to take additional measures to ensure comparability after the relocation.[196] Our rules provide that the fixed licensee be given "a reasonable time" to conduct such tests,[197] and we amend section 101.91(c) to clarify that the fixed licensee may take up to twelve months to complete such testing, to make adjustments, and ensure compatibility.

71. In sum, we conclude that, given the elaborate procedural safeguards accorded to terrestrial fixed 18 GHz incumbents, and the nature of the service being introduced by the 18 GHz new entrants, it is not in the public interest to permit involuntarily relocated 18 GHz incumbents to return to previous facilities in bands designated on a sole primary basis to the FSS. We believe that the combination of the 12-month trial period afforded to incumbents to examine and test the new facilities, before having to surrender their old facilities, along with the petition process set forth in the *18 GHz Order*, will provide adequate relief in the event that the relocated incumbent finds during the trial period that the facilities are deficient. We note that our rules permit incumbents to seek further modifications to the new facilities from new entrants to ensure comparability.[198]

72. ***Assignments and Transfers.*** We agree with Winstar that the adoption of section 1.929 of our rules requires that we clarify section 101.97 with regard to the transfer of control and assignments by incumbent 18 GHz licensees. The issue that Winstar presents arises because section 101.97 does not explicitly address whether a transfer of control or assignment of an FS license by an incumbent is considered a major or minor modification. Winstar points out that in the *ULS Order*,[199] the Commission adopted section 1.929 of our rules, which is entitled "Classification of filings as major or minor." Section 1.929 states in part as follows: "Applications and amendments to applications for stations in the wireless radio services are classified as major or minor. ... For all stations in all Wireless Radio Services ... the following actions are classified as major: ... Any substantial change in ownership or control."[200] Winstar and API are concerned that a literal reading of section 101.97 together with section 1.929 will result in

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relocation costs and complete all necessary activities for implementing replacement facilities, including testing and a reasonable time to ensure a seamless handoff. *Id.*

195 *See* 47 C.F.R. §§ 101.91(a)(1)-(3) (providing that the FSS licensee must, *inter alia*, guarantee payment of relocation costs, complete all activities necessary for implementing the replacement facilities and build the replacement facilities and test it for comparability).

196 SIA comments at 8, Hughes opposition at 5-8

197 *See* 47 C.F.R. § 101.91(c).

198 *See* 47 C.F.R. § 101.91(d).

199 *See Biennial Regulatory Review -- Amendment of Parts 0, 1, 13, 22, 24, 26, 27, 80, 87, 90, 95, 97 and 101 of the Commission's Rules to Facilitate the Development and Use of the Universal Licensing System in the Wireless Telecommunications Services*, Report and Order, WT Docket No. 98-20, 13 FCC Rcd 21027 (1998) (*ULS Order*).

200 47 C.F.R. § 1.929.

a new owner of a facility being denied the primary status that the incumbent seller had when the incumbent seller owned the facility.[201] Winstar and API argue that, although the *18 GHz Order* intended to allow an incumbent to retain primary status even after a change in ownership or control, the Commission failed to codify this aspect of the decision in the amended rules, and a literal reading of the rules will lead to the opposite result.[202] Therefore, Winstar requests that the Commission clarify section 101.97 to make it consistent with the *18 GHz Order*, *i.e.*, to state explicitly that changes of ownership or control are granted with primary status, unless the Commission determines that doing so would increase the relocation costs or that the transaction involves an attempt to abuse the Commission's relocation policies.[203]

73. We amend section 101.97 of our rules to state that incumbent FS licensees will maintain primary status notwithstanding a change in ownership or control. We find that section 1.929 is intended to classify filings as major or minor for procedural purposes only with respect to whether or not such a filing is considered newly filed, and was not intended to modify the rule at section 101.97, which was adopted in the *18 GHz Order*. We note that section 101.97 addresses the issue of modifications and extensions to existing FS systems in the 18.58-19.30 GHz band, which the *18 GHz Order* designated on a primary basis to the NGSO/FSS. We also note that section 101.97 states that "major" modifications and extensions to an existing FS station would cause the FS system to lose primary status and render the modified FS license secondary to FSS operations.[204] Section 101.97 also lists eight specific technical modifications that do not result in an incumbent FS licensee losing its primary status.[205] Section 101.97 states that any other modification would cause the modified FS license to become secondary to FSS operations, unless the incumbent: (1) affirmatively justifies retaining primary status, and (2) establishes that the modification would not add to the relocation costs for FSS licensees.[206]

74. We clarify that, notwithstanding the transfer of control or assignment of an FS license by an incumbent, the license will retain primary status. As noted by API, this policy is consistent with long-standing Commission policy with respect to license assignments and transfers of control in the 2 GHz relocation proceedings.[207] We agree

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201 Winstar petition at 7, API reply at 4.

202 *Id.*

203 Winstar petition at 6-7.

204 *See* 47 C.F.R. § 101.97(a).

205 *See* 47 C.F.R. § 101.97(a)(1)-(8).

206 47 C.F.R. § 101.97(a).

207 *See* 47 C.F.R. § 101.81. The language in section 101.97 parallels the language adopted in section 101.81, the rule that dealt with the same issue for fixed microwave users in the *2 GHz Relocation Order*. *Id.* In the 2 GHz proceeding, the Commission noted that, "existing 2 GHz fixed facilities licensed before January 16, 1992, are permitted to make modifications and minor extensions and retain their primary status" and listed modifications in "ownership or control" among the acceptable modifications that warrant continued primary status. *Redevelopment of Spectrum to Encourage Innovation in the Use of New Telecommunications Technologies*, Third Report and Order, ET Docket No. 92-9, 8 FCC Rcd 6589, 6611 (*Emerging Technologies Third Report and Order*) at paras. 53-54.

with API[208] that a contrary policy would likely seriously impair the marketability of the licenses in question and cause significant harm to the existing investments made by 18 GHz incumbents, whereas allowing incumbents the opportunity to retain primary status would cause little or no harm because it would not likely increase terrestrial use of the band or relocation costs. API correctly notes that assignees and transferees will be limited to the same scope of operations as their predecessors, and that the majority of transfers will involve either *pro forma* reorganizations or sale of an entire business.[209] For these reasons, we reject the argument by Teledesic that the Commission should treat the transfer of control or assignment of an incumbent license as an opportunity to reduce the number of FS licensees operating in the band, by not permitting the transferee or assignee to retain primary status. We are not persuaded by Teledesic's argument that denying the new owner the benefit of primary status will promote band segmentation while lowering the total social cost of the transition because it would not involve relocation.[210]

75. ***Measure and Mitigation of Relocation Costs.*** We reaffirm our decision to adopt the relocation rules codified in sections 101.89 and 101.91 because we conclude that it is appropriate to apply in this band the established policy that we have employed in other similar circumstances. In so doing, we reject Teledesic's proposal that the Commission use other approaches to relocation that are plainly inconsistent with the Commission's goal of enabling an incumbent that is required to relocate to construct a comparable replacement system without the additional burden of undue costs. Contrary to Teledesic, we find that new entrants benefit from our policy of seeking to ensure that incumbents have every possible reasonable incentive to relocate promptly and voluntarily.

76. We find that the relocation rules in the *18 GHz Order* struck the correct balance between the new entrants' immediate need for spectrum and the need of the incumbents to cover the costs associated with the early move out of the band. It did so by providing a framework that encouraged voluntary negotiations between the parties. That is, we continue to believe that the fact that an incumbent that is subject to relocation will have the entire relocation cost paid by the new applicant, will encourage the incumbent to negotiate voluntarily with the new applicant, and further the interest of clearing incumbent operations as promptly as possible from any portion of the band allocated for use by the new entrants.

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[208] API reply at 1-5. Specifically, API argues that its industry relies heavily on private microwave facilities to provide important safety-related functions, and that they have been experiencing a high level of mergers and acquisitions that may result in license assignments or transfers. *Id.* API further argues that if these transactions lead to a loss of the right to relocation compensation, it will impair the marketability and/or market value of these companies, as well as other 18 GHz FS incumbents, and may impede the ability of these companies to continue to maintain the microwave facilities needed to conduct their operations safely and efficiently. *Id.*

[209] API reply at 6-7. API also argues that, in the latter case, in the rare event that a particular applications appears to involve trafficking in a license itself or sale of a license no longer needed, it would be within the Commission's discretion to condition grant on the acceptance of secondary status. *Id.*

[210] Teledesic opposition at 6.

77. In addition, we are not convinced by Teledesic's argument that the requirement for a comparable facility is a windfall; rather we are convinced that anything less will discourage incumbents from relocating. This is because as we noted in the *18 GHz Order*, comparable facilities must be equal to or superior to existing facilities.[211] It stands to reason, therefore, that anything less than a comparable facility is an inferior facility. We find Teledesic's effort to reduce its potential costs to relocate existing terrestrial operators is an inadequate basis for putting an incumbent in a worse position than it would have been before the relocation. Indeed, as we have previously stated, we believe that compensating licensees merely for the depreciated value of their equipment is insufficient to enable incumbents to construct comparable facilities, and, thus, to remain in full operation, in replacement spectrum.[212]

78. In any event, we note that the *18 GHz Order* properly left it up to the parties to determine whether the new entrant replaces the old equipment with new equipment.[213] That is, we find that, as we explained in the *Emerging Technologies Third Report & Order*, whether the incumbent receives a windfall is largely a question of whether the new entrant agrees to it.[214] In the Emerging Technologies proceeding, the Commission faced a similar situation, where circumstances required the modification of existing spectrum allocations to make new communications services possible in an already-occupied band. The Commission there, as here, imposed upon the new entrant the responsibility to "guarantee payment of all relocation costs" for comparable alternative facilities.[215] In that proceeding, the Commission considered the issue of the appropriate standard for determining the level of costs and rejected a depreciated value standard in favor of the cost of comparable facilities.[216] In the *Emerging Technologies Third Report and Order*, the Commission specifically rejected the argument that Teledesic seeks to advance in the petition for review that is pending in the United States Court of Appeals: that requiring new entrants to pay the full cost of relocation to comparable facilities amounts to an inequitable windfall for existing operators.[217]

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211 *See 18 GHz Order* at 13468, para. 78. To determine comparability we would consider, *inter alia*, system reliability, capability, speed, bandwidth, throughput, overall efficiency, bands authorized for such services, and interference protection. *See* 47 C.F.R. § 101.89(d)(1)-(3).

212 *See e.g., MSS Allocation*, 15 FCC Rcd 12352-53, paras. 111-112, 118 ("[A]ny further relief from relocation costs for MSS licensees, such as allowing them to pay only the depreciated value of the equipment operated by incumbents, would be contrary to the policies we established in our Emerging Technologies proceeding, and would threaten the integrity and continuity of the services provided to the public by incumbent 2 GHz licensees. ... Relocation is not a question of compensation, but rather a requirement that the new technology licensees take upon themselves the burden of all actions necessary to provide incumbents with comparable facilities."); Amendment of the Rules Regarding Sharing the Costs of Microwave Relocation, 11 FCC Rcd 8825, 8844 at para. 34 (1996) ("[C]ompensation for the depreciated value of the old equipment would not enable [incumbents] to construct a comparable replacement system without imposing costs on the incumbent, which would be inconsistent with our relocation rules.")

213 *18 GHz Order* at 13468, para. 78.

214 *Emerging Technologies Third Report and Order* at 6603-04 paras. 36-38.

215 *Id.*

216 *See* 47 C.F.R. § 101.91(a)(1), *see also Emerging Technologies Third Report and Order* at 6603-04 paras. 36.

217 *18 GHz Order* at para. 78.

Instead, in the *Emerging Technologies Third Report & Order* the Commission declined to adopt a specific definition of comparable facilities and allowed the parties in each case to negotiate mutually agreeable terms for determining comparability.[218] The Commission further noted in the *Emerging Technologies Third Report & Order* that, in any case brought to the Commission for resolution we will use as our benchmark that comparable facilities must be equal to or superior to existing facilities.[219] However, the Commission stated in the *Emerging Technologies Third Report & Order* that to determine comparability we would consider, *inter alia*, system reliability, capability, speed, bandwidth, throughput, overall efficiency, bands authorized for such services, and interference protection.[220] The *18 GHz Order* properly cited the *Emerging Technologies Third Report & Order* to explain its conclusions.

79. Similarly, in its recent *MSS Allocation* proceeding, the Commission adopted the same approach requiring new entrants to pay the entire costs to relocate existing operators. The Commission explained further the balance that it struck in the *Emerging Technologies* proceeding with respect to relocation costs, which it applied with some modifications in the *MSS Allocation* Proceeding. Citing the *Emerging Technologies Third Report & Order* in the *MSS Allocation Order* the Commission noted that:

> "[t]hroughout this proceeding we have recognized the important and essential functions, such as public safety and utility management communications, that 2 GHz fixed microwave operations now provide and indicated our intention to minimize the impact of our spectrum redevelopment plan on those services." At the same time, we provide motivation to incumbents to negotiate and relocate expeditiously by providing for comparable facilities, and by providing a sunset date after which new licensees are no longer required to relocate incumbents (see above). The two features of comparable facilities and a sunset date act to encourage incumbents to vacate the reallocated spectrum quickly, thus providing early access for new technology licensees.[221]

80. We again find it appropriate to encourage incumbents to relocate expeditiously. As we explained above, in the *18 GHz Order*, the Commission was not changing policy with respect to relocation occasioned by spectrum allocations, but applying an established policy that it has employed in other similar circumstances.[222] Therefore, notwithstanding the differences between this proceeding and the *Emerging*

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218 *See Emerging Technologies Third Report and Order* at 6603-04 paras. 36.

219 *Id.*

220 *Id.*

221 *See Amendment of Section 2.106 of the Commission's Rules to Allocate Spectrum at 2 GHz for Use by the Mobile-Satellite Service*, ET Docket No. 95-18, 15 FCC Rcd 12315, para. 109 (2000).

222 *See Hall v. McLaughlin*, 864 F.2d at 872{ TA \s "Hall v. McLaughlin" }.

*Technologies* proceeding, we reaffirm the adoption in the *18 GHz Order* of the measure of relocation costs derived from the Emerging Technologies proceeding.[223]

## IV. CONCLUSION

81. In this First Order on Reconsideration we addressed issues raised by Hughes, FWCC, Winstar, and Teledesic in petitions to the Commission for reconsideration, and a petition to the United States Court of Appeals for the District of Columbia for judicial review of the *18 GHz Order*. The issues generally fall into one of four groups: 18 GHz band plan, licensing, Legacy List, and relocation.

82. With regard to the 18 GHz band plan, this Order gives the NGSO/FSS operators increased flexibility in relocating interfering terrestrial fixed stations by terminating after ten years the co-primary status of existing terrestrial fixed stations in the 19.26-19.3 GHz band, and low-power terrestrial fixed service stations in the 18.8-19.3 GHz band. This Order finds that it is appropriate to treat such operations in the same manner as other operations in the 18 GHz band, and that such treatment necessarily includes the right to compensation for relocation of both parts of a channel pair. Thus, this Order provides that, where it becomes necessary during the ten years to relocate an existing terrestrial fixed station in the 19.26-19.3 GHz band, or low-power terrestrial fixed service station in the 18.8-19.3 GHz band, the FS operator will be able to receive comparable facilities at no cost to the fixed operator.

83. We are persuaded by Hughes and several commenters to reverse the Legacy List policy that we adopted in the *18 GHz Order*. As a result, this Order deletes section 25.145(i) of our rules and the requirement for a GSO/FSS space station licensee to use of the Legacy List coordination process to alleviate interference to a terrestrial fixed station.

84. This Order also generally affirms our basic findings in the *18 GHz Order* with regard to the blanket licensing rules. It changes, however the power flux-density (pfd) value for the 18.3-18.8 GHz frequency band to the values in section 25.208(c) to be consistent with the pfd limit in the Radio Regulations of the International Telecommunication Union and deletes section 25.208(d). We also determine that the pfd level in section 25.138(a)(6) of -118 dBW/m2/MHz should apply to all Geostationary Satellite Orbit/Fixed Satellite Service (GSO/FSS) downlink bands in which the Commission permits blanket licensing. We amend section 101.97 to clarify that an incumbent Fixed Service (FS) licensee retains primary status notwithstanding a change in ownership or control. Further, we clarify that an incumbent licensee is entitled to a 12-month trial period after relocation to test the new facilities.

85. Finally, this Order generally denies the requests to reconsider the relocation issues, and reaffirms the Commission decision to adopt the relocation rules

223 *See, e.g., 18 GHz Order* at 13468, para. 80.

codified in sections 101.89 and 101.91. This is in part because we find that it is appropriate to apply in the 18 GHz band the established policy that the Commission has employed in other similar circumstances. In addition, we find that it is Commission policy to enable an incumbent, that is required to relocate, to construct a comparable replacement system without the additional burden of undue costs. Moreover, this Order finds that the alternative proposals offered by Teledesic for measuring relocation costs are plainly inconsistent with this Commission goal. We further find that, contrary to the allegations made by Teledesic, new entrants benefit from the Commission policy of seeking to ensure that incumbents have every possible reasonable incentive to relocate promptly and voluntarily.

## V. ORDERING CLAUSES

86. IT IS ORDERED that, pursuant to sections 1, 4(i), 4(j), 301, 302, 303(c), 303(e), 303(f), 303(r) and 403 of the Communications Act of 1934, as amended, 47 U.S.C. sections 151, 154(i), 154(j), 301, 302, 303(c), 303(e), 303(f), 303(r), and 403, this *Order* IS ADOPTED.

87. IT IS FURTHER ORDERED that the Regulatory Flexibility Analysis, as required by section 604 of the Regulatory Flexibility Act and as set forth in Appendix B, IS ADOPTED.

88. IT IS FURTHER ORDERED that the Commission's Consumer Information Bureau SHALL SEND a copy of this *Order*, including the Final Regulatory Flexibility Analysis to the Chief Counsel for Advocacy of the Small Business Administration.

FEDERAL COMMUNICATIONS COMMISSION

Magalie Roman Salas

Magalie Roman Salas
Secretary

## APPENDIX A: Final Rules

### Rule Changes

For the reasons set forth in the preamble, parts 25, and 101 of title 47 of the Code of Federal Regulations are amended as follows

## PART 25--SATELLITE COMMUNICATIONS

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

AUTHORITY: 47 U.S.C. 701-744. Interprets or applies sec. 303, 47 U.S.C. 303. 47 U.S.C. sections 154, 301, 302, 303, 307, 309 and 332, unless otherwise noted.

1. Section 25.138 is amended to read as follows:

§ 25.138 Blanket licensing provisions of GSO FSS Earth Stations in the 18.58-18.8 GHz (space-to-Earth), 19.7–20.2 GHz (space-to-Earth), 28.35-28.6 GHz (Earth-to-space) and 29.5–30.0 GHz (Earth-to-space) bands.

* * * * *

(a)(6) Power flux-density (PFD) at the Earth's surface produced by emissions from a space station for all conditions, including clear sky, and for all methods of modulation shall not exceed a level of –118 dBW/m$^2$/MHz, in addition to the limits specified in paragraph 25.208 (d) of this Part.

* * * * *

2. Section 25.145 is amended by revising paragraph (h) to read as follows, and by deleting paragraph (i).

**§ 25.145 Licensing Conditions for the Fixed-Satellite Service in the 20/30 GHz Bands**

* * *

(h) Policy governing the relocation of terrestrial services from the 18.58 to 19.3 GHz band: Frequencies in the 18.58-19.3 GHz band listed in Parts 21, 74, 78, and 101 of this chapter have been reallocated for primary use by the Fixed-Satellite Service, subject to various provisions for the existing terrestrial licenses. Fixed-Satellite Service operations are not entitled to protection from the co-primary operations until after the period during which terrestrial stations remain co-primary has expired. (see §§ 21.901(e), 74.502(c), 74.602(g), 78.18(a)(4), and 101.147(r)).

3. Section 25.202(a)(1) is amended by modifying note 7 to read as follows:

**§ 25.202 Frequencies, frequency tolerance and emission limitations.**

(a)(1) Frequency bands. * * *

* * *

[7] The band 18.8-19.3 GHz is shared co-equally with terrestrial radiocommunications services until June 8, 2010.

* * * * *

4. Section 25.208 is revised and reordered to read as follows:

**§ 25.208 Power flux-density limits.**

* * * * *

(c) In the 18.3-18.8 GHz, 19.3-19.7 GHz, 22.55-23.00 GHz, 23.00-23.55 GHz, and 24.45-24.75 GHz frequency bands, the power flux-density at the Earth's surface produced by emissions from a space station for all conditions and for all methods of modulation shall not exceed the following values:

(1) -115 dB ($W/m^2$) in any 1 MHz band for angles of arrival between 0 and 5 degrees above the horizontal plane.

(2) -115+0.5 (d-5) dB ($W/m^2$) in any 1 MHz band for angles of arrival d (in degrees) between 5 and 25 degrees above the horizontal plane.

(3) -105 dB ($W/m^2$) in any 1 MHz band for angles of arrival between 25 and 90 degrees above the horizontal plane.

(d) In addition to the limits specified in paragraph 26.138 of this Part, the power flux-density across the 200 MHz band 18.6-18.8 GHz produced at the Earth's surface by emissions from a space station under assumed free-space propagation conditions shall not exceed -95 dB($W/m^2$) for all angles of arrival. This limit may be exceeded by up to 3 dB for no more than 5% of the time.

(e) In the 18.8-19.3 GHz frequency band, the power flux-density at the Earth's surface produced by emissions from a space station for all conditions and for all methods of modulation shall not exceed the following values:

| | |
|---|---|
| $-115 - X$ dB($W/m^2 \cdot MHz$) | for $0° \le \delta < 5°$ |
| $-115 - X + ((10 + X)/20)(\delta - 5)$dB($W/m^2 \cdot MHz$) | for $5° \le \delta < 25°$ |
| -105 dB($W/m^2 \cdot MHz$) | for $25° \le \delta < 90°$ |

Where:

$\delta$: is the angle of arrival above the horizontal plane and

X is defined as a function of the number of satellites in the non-GSO FSS constellation, n, as follows:

| | |
|---|---|
| for $n \le 50$ | $X = 0$ (dB) |
| for $50 < n \le 288$ | $X = (5/119)(n - 50)$ (dB) |
| for $n > 288$ | $X = (1/69)(n + 402)$ (dB) |

## PART 101—FIXED MICROWAVE SERVICES

The authority citation for Part 101 continues to read as follows:

AUTHORITY: 47 U.S.C. 154, and 303.

5. Section 101.85 is amended by revising paragraph (b) to read as follows:

**§ 101.85 Transition of the 18.58-19.3 GHz band from the terrestrial fixed services to the fixed-satellite service (FSS)**

* * *

(b) FS operations in the 18.58-19.30 GHz band that remain co-primary under the provisions of §§ 21.901(e), 74.502(c), 74.602(d), 78.18(a)(4), and 101.147(r) will continue to be co-primary with the FSS users of this spectrum until June 8, 2010 or until the relocation of the fixed service operations, whichever occurs sooner, except for operations in the band 19.26-19.3 GHz and low power systems operating pursuant to section 101.47(r) (10), which shall operate on a co-primary basis until **(10 years after adoption of this First Report and Order on Reconsideration)**. If no agreement is reached during the negotiations, an FSS licensee may initiate relocation procedures. Under the relocation procedures, the incumbent is required to relocate, provided that the FSS licensee meets the conditions of Sec. 101.91.

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6. Section 101.91(c) is amended by adding an additional sentence to the end of the paragraph to read as follows:

**§ 101.91 Involuntary relocation procedures**

* * *

(c) * * * The FS licensee may take up to 12 months to make such adjustments and perform such testing..

* * * * *

7. Section 101.95 is amended by revising the title to read as follows:

**§ 101.95 Sunset provisions for licensees in the 18.58-19.30 GHz band.**

* * * * *

8. Section 101.97 is revised by adding an additional sub-paragraph (a)9 as follows:

**§ 101.97 Future licensing in the 18.58-19.30 GHz band.**

* * * * *

a(9) Changes in ownership or control.

9. Section 101.147(r) is amended to read as follows:

**§ 101.147 Frequency assignments**

* * * * *

(r) *17,700 to 19,700 and 24,250 to 25,250 MHz*: Stations operating on the following frequencies in the band 18.58-18.8 GHz that were licensed or had applications pending before the Commission as of June 8, 2010 may continue those operations on a shared co-primary basis with other services under Parts 21, 25, and 74 of the Commission's rules until June 8, 2010, except for operations in the band 19.26-19.3 GHz and low power systems operating pursuant to section 101.47(r) (10), which shall operate on a co-primary basis until **(10 years after adoption of this First Report and Order on Reconsideration)**. Those stations operating on the following frequencies in the band 18.8-19.3 GHz that were licensed or had applications pending before the Commission as of September 18, 1998 may continue those operations on a shared co-primary basis with other services under Parts 21, 25, and 74 of the Commission's rules until June 8, 2010. After this date, operations in the 18.58-19.30 GHz band are not entitled to protection from fixed-satellite service operations and must not cause unacceptable interference to fixed-satellite service station operations. No new Part 101 licenses will be granted in the 18.58-19.3 GHz band after June 8, 2010, except for certain low power operations authorized under Sec. 101.147(r)(10), which may continue to be licensed until April 1, 2002. Licensees may use either a two-way link or one frequency of a frequency pair for a one-way link and must coordinate proposed operations pursuant to the procedures required in Sec. 101.103. (Note, however, that stations authorized as of September 9, 1983, to use frequencies in the band 17.7-19.7 GHz may, upon proper application, continue to be authorized for such operations, consistent with the above conditions related to the 18.58-19.3 GHz band.)

* * * * *

10. Section 101.147(r)(10) is amended by adding a new subsection (iv) to read as follows:

**§ 101.147 Frequency assignments**

* * * * *

(r) (10) * * * * *

* * * * *

(iv) Low power stations authorized in the bands 18.82-18.87 GHz and 19.16-19.21 GHz after June 8, 2000 are restricted to indoor use only. No new licenses will be authorized for applications received after April 1, 2002.

## APPENDIX B

### Supplemental Final Regulatory Flexibility Analysis

As required by the Regulatory Flexibility Act (RFA),[224] an Initial Regulatory Flexibility Analysis (IRFA) of the possible significant economic impact on small entities was incorporated in the *18 GHz NPRM*.[225] The Commission sought written public comments on the proposals in the *18 GHz NPRM* including comment on the IRFA. This Supplemental Final Regulatory Flexibility Analysis (FRFA) conforms to the RFA.[226]

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

In this First Order on Reconsideration, the Commission changes the pfd value for the 18.3-18.8 GHz frequency band to the values in section 25.208(c) to be consistent with the pfd limit in the Radio Regulations of the International Telecommunications Union and delete section 25.208(d). This First Order on Reconsideration also determines that the pfd level in section 25.138(a)(6) of -118 dBW/m$^2$/MHz should apply to all Geostationary Satellite Orbit/Fixed Satellite Service (GSO/FSS) downlink bands in which the Commission permits blanket licensing. It amends section 101.97 to clarify that an incumbent Fixed Service (FS) licensee retains primary status notwithstanding a change in ownership or control. Further, this First Order on Reconsideration clarifies that an incumbent licensee is entitled to a twelve-month trial period after relocation to test the new facilities. Upon reconsideration, this First Order on Reconsideration also concludes that existing terrestrial services operating in the 19.26-19.3 GHz band will not be allowed to recover relocation reimbursement on a permanent basis, and will be subject to the ten year sunset period applicable to other FS operations in the 18 GHz band. This First Order on Reconsideration also takes the following steps to better reconcile the competing interests of the new entrants and the low-power terrestrial fixed service operators in satellite bands: 1) cuts off any further low-power fixed service applications under section 101.147(r)(10) as of April 1, 2002 (outdoor applications were already cut off in the *18 GHz Order*); and 2) permits low-power services authorized pursuant section 101.147(r)(10) to continue to operate on a co-primary basis for a period of ten years, subject to the right of satellite providers to require low-power operators to relocate. Finally, this First Order on Reconsideration deletes section 25.145(i) of our rules and

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

[225] *See Redesignation of the 17.7-19.7 GHz Frequency Band, Blanket Licensing of Satellite Earth Stations in the 17.7-20.2 GHz and 27.5-30.0 GHz Frequency Bands, and the Allocation of Additional Spectrum in the 17.3-17.8 GHz and 24.75-25.25 GHz Frequency Bands for Broadcast Satellite-Service Use*, Notice of Proposed Rulemaking, IB Docket No. 98-172, 13 FCC Rcd 19923 (1998) (*18 GHz NPRM*). at Appendix B.

[226] 5 U.S.C. § 604.

reverses the Legacy List policy that the Commission adopted in the *18 GHz Order*; thus, the Commission will no longer require the use of the Legacy List coordination process by an FSS space station licensee to alleviate interference to a terrestrial fixed station.

## B. Summary of Significant Issues Raised by Public Comments in Response to the IRFA

No comments were submitted in direct response to the IRFA.

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

The RFA directs agencies to provide a description of and, where feasible, an estimate of the number of small entities that may be affected by the adopted rules.[227] The RFA generally defines the term "small entity" as having the same meaning as the terms "small business," "small organization," and "small governmental jurisdiction."[228] In addition, the term "small business" has the same meaning as the term "small business concern" under the Small Business Act.[229] A small business concern is one which: (1) is independently owned and operated; (2) is not dominant in its field of operation; and (3) satisfies any additional criteria established by the Small Business Administration (SBA).[230] A small organization is generally "any not-for- profit enterprise which is independently owned and operated and is not dominant in its field."[231] Nationwide, as of 1992, there were approximately 275,801 small organizations.[232] "Small governmental jurisdiction" generally means "governments of cities, counties, towns, townships, villages, school districts, or special districts, with a population of less than 50,000."[233] As of 1992, there were approximately 85,006 such jurisdictions in the United States.[234] This number includes 38,978 counties, cities, and towns; of these, 37,566, or 96 percent, have populations of fewer than 50,000.[235] The Census Bureau estimates that this ratio is approximately accurate for all governmental entities. Thus, of the 85,006 governmental entities, we estimate that 81,600 (91 percent) are small entities. Below, we further

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[227] 5 U.S.C. § 603(b)(3).
[228] *Id.* § 601(6).
[229] 5 U.S.C. § 601(3). (incorporating by reference the definition of "small business concern" in 15 U.S.C. § 632). Pursuant to the RFA, the statutory definition of a small business applies "unless an agency, after consultation with the Office of Advocacy of the Small Business Administration and after the opportunity for public comment, establishes one or more definitions of such term which are appropriate to the activities of the agency and publishes such definition(s) in the Federal Register." 5 U.S.C. § 601(3).
[230] Small Business Act, 15 U.S.C. § 632 (1996).
[231] 5 U.S.C. § 601(4).
[232] 1992 Economic Census, U.S. Bureau of the Census, Table 6 (special tabulation of data under contract to Office of Advocacy of the U.S. Small Business Administration).
[233] 5 U.S. C. § 601(5).
[234] U.S. Dept. of Commerce, Bureau of the Census, *1992 Census of Governments*.
[235] *Id.*

describe and estimate the number of small entity licensees that may be affected by the adopted rules.

1. International Services. The Commission has not developed a definition of small entities applicable to licensees in the international services. Therefore, the applicable definition of small entity is generally the definition under the SBA rules applicable to Communications Services, Not Elsewhere Classified (NEC).[236] This definition provides that a small entity is one with $11.0 million or less in annual receipts.[237] According to the Census Bureau, there were a total of 848 communications service providers, NEC, in operation in 1992, and a total of 775 had annual receipts of less than $9.999 million.[238] The Census report does not provide more precise data.

2. Fixed Satellite Transmit/Receive Earth Stations. Currently there are no operational fixed satellite transmit/receive earth stations authorized for use in the 17.7-20.2 GHz and 27.5-30 GHz band. However, with 12 GSO/FSS licensees and 1 NGSO/FSS licensee, and our decision to adopt blanket licensing, we expect applications for FSS earth station licenses to be filed in the near future. We do not request or collect annual revenue information, and thus are unable to estimate the number of earth stations that would constitute a small business under the SBA definition.

3. Mobile Satellite Earth Station Feeder Links. We have granted one license for MSS earth station feeder links. We do not request or collect annual revenue information, and thus are unable to estimate of the number of mobile satellite earth stations that would constitute a small business under the SBA definition.

4. Space Stations (Geostationary). Commission records reveal that there are 12 space station licensees. We do not request nor collect annual revenue information, and thus are unable to estimate of the number of geostationary space stations that would constitute a small business under the SBA definition, or apply any rules providing special consideration for Space Station (Geostationary) licensees that are small businesses.

5. Space Stations (Non-Geostationary). There is one Non-Geostationary Space Station licensee and that licensee is operational. We do not request or collect annual revenue information, and thus are unable to estimate of the number of non-geostationary space stations that would constitute a small business under the SBA definition.

6. Direct Broadcast Satellites. Because DBS provides subscription services, DBS falls within the SBA definition of Cable and Other Pay Television Services (SIC 4841). This definition provides that a small entity is expressed as one with $11.0 million or less in annual receipts. As of December 1996, there were eight DBS licensees. However, the Commission does not collect annual revenue data for DBS and, therefore, is unable to

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[236] An exception is the Direct Broadcast Satellite Service (DBS), *infra*.

[237] 13 C.F.R. § 120.121, SIC code 4899.

[238] 1992 Economic Census Industry and Enterprise Receipts Size Report, Table 2D, SIC code 4899 (U.S. Bureau of the Census data under contract to the Office of Advocacy of the Small Business Administration).

ascertain the number of small DBS licensees that could be impacted by these proposed rules. Although DBS service requires a great investment of capital for operation, we acknowledge that there are several new entrants in this field that may not yet have generated more than $11 million in annual receipts, and therefore may be categorized as a small business, if independently owned and operated.

7. Auxiliary, Special Broadcast and other program distribution services. This service involves a variety of transmitters, generally used to relay broadcast programming to the public (through translator and booster stations) or within the program distribution chain (from a remote news gathering unit back to the station). At the frequencies under consideration in this proceeding there are no transmissions of this type directly to the public. The Commission has not developed a definition of small entities applicable to broadcast auxiliary licensees. Therefore, the applicable definition of small entity is the definition under the Small Business Administration (SBA) rules applicable to radio broadcasting stations (SIC 4832) and television broadcasting stations (SIC 4833). These definitions provide, respectively, that a small entity is one with either $5.0 million or less in annual receipts or $10.5 million in annual receipts. 13 C.F.R. § 121.201, SIC CODES 4832 and 4833. The numbers of these stations are very small. The FCC does not collect financial information on any broadcast facility and the Department of Commerce does not collect financial information on these auxiliary broadcast facilities. We believe, however, that by themselves most, if not all, of these auxiliary facilities could be classified as small businesses. We also recognize that most of these types of services are owned by a parent station which, in some cases, would be covered by the revenue definition of small business entity discussed above. These stations would likely have annual revenues that exceed the SBA maximum to be designated as a small business (as noted, either $5 million for a radio station or $10.5 million for a TV station). Furthermore, they do not meet the Small Business Act's definition of a "small business concern" because they are not independently owned and operated.

8. Microwave Services. Microwave services includes common carrier, private operational fixed, and broadcast auxiliary radio services. At present, there are 22,015 common carrier licensees, approximately 61,670 private operational fixed licensees and broadcast auxiliary radio licensees in the microwave services. Inasmuch as the Commission has not yet defined a small business with respect to microwave services, we will utilize the SBA's definition applicable to radiotelephone companies -- i.e., an entity with no more than 1,500 persons. 13 C.F.R. § 121.201, SIC CODE 4812. We estimate, for this purpose, that all of the Fixed Microwave licensees (excluding broadcast auxiliary licensees) would qualify as small entities under the SBA definition for radiotelephone companies.

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

The Commission has adopted rules in this First Order on Reconsideration that involve no reporting requirements.

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

The changes made by this First Order on Reconsideration do not affect small entities disproportionately and it is likely no additional outside professional skills will be necessary to comply with the rules and requirements here listed. The *18 GHz NPRM* solicited comment on several alternatives for spectrum sharing blanket licensing, and band segmentation. This First Order on Reconsideration considered comments offering alternatives, and has acted in response to stated concerns and suggestions, particularly those representing significant agreement or consensus by commenters. The decisions of this First Order on Reconsideration should positively impact both large and small businesses by providing a faster, more efficient, and less economically burdensome coordination and licensing procedure.

## F. Report to Congress

The Commission will send a copy of this First Order on Reconsideration including this Supplemental FRFA, in a report to be sent to Congress pursuant to the Small Business Regulatory Enforcement Fairness Act of 1966, *see* 5 U.S.C. § 801 (a)(1)(A). In addition, the Commission will send a copy of this First Order on Reconsideration, including this Supplemental FRFA, to the Chief Counsel for Advocacy of the Small Business Administration. A copy of this First Order on Reconsideration and Supplemental FRFA (or summaries thereof) will also be published in the Federal Register. *See* 5 U.S.C. § 604(b).

## APPENDIX C

### List of Oppositions/Comments and Reply Comments

Oppositions/Comments:

Astrolink
American Petroleum Institute (API)
Fixed Wireless Communications Coalition (FWCC)
GE Americom
Hughes Electronics Corporation (Hughes)
Independent Cable and Telecommunications Association (ICTA)
Pegasus
Satellite Industry Association (SIA)
Teledesic
TRW
Winstar

Reply Comments:

Astrolink
American Petroleum Institute (API)
Fixed Wireless Communications Coalition (FWCC)
Hughes Electronics Corporation (Hughes)
Lockheed Martin
Pegasus
Winstar

Late-Filed Reply Comments:

Fixed Wireless Communications Coalition