

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

In the Matter of)	
)	
Service Rules for Advanced Wireless Services in the 2000-2020 MHz and 2180-2200 MHz Bands)	WT Docket No. 12-70
)	
Fixed and Mobile Services in the Mobile Satellite Service Bands at 1525-1559 MHz and 1626.5- 1660.5 MHz, 1610-1626.5 MHz and 2483.5-2500 MHz, and 2000-2020 MHz and 2180-2200 MHz)	ET Docket No. 10-142
)	
Service Rules for Advanced Wireless Services in the 1915-1920 MHz, 1995-2000 MHz, 2020-2025 MHz and 2175-2180 MHz Bands)	WT Docket No. 04-356
)	

NOTICE OF PROPOSED RULEMAKING AND NOTICE OF INQUIRY

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I. INTRODUCTION

1. In this *Notice of Proposed Rulemaking*, we propose to increase the Nation's supply of spectrum for mobile broadband by removing unnecessary barriers to flexible use of spectrum currently assigned to the Mobile Satellite Service (MSS) in the 2 GHz band. This proposal would carry out a recommendation in the *National Broadband Plan* that the Commission enable the provision of stand-alone terrestrial services in this spectrum.¹ We do so by proposing service, technical, assignment, and licensing rules for this spectrum. These proposed rules are designed to provide for flexible use of this spectrum, to encourage innovation and investment in mobile broadband, and to provide a stable regulatory environment in which broadband deployment could develop. Additionally, in our *Notice of Inquiry*, we seek comment on potential ways to free up additional valuable spectrum to address the Nation's growing demand for mobile broadband spectrum.

2. With this proceeding we intend to fulfill the Commission's previously stated plan to create a solid and lasting foundation for the provision of terrestrial services in 40 megahertz of spectrum in the 2 GHz band. As indicated in the *National Broadband Plan*, each MSS band is differently situated and therefore merits a band-specific approach to the expansion of terrestrial use.² For example, the 2 GHz MSS band, unlike other MSS bands, has terrestrial Fixed and Mobile allocations and is comprised of large, contiguous blocks of spectrum. This *Notice of Proposed Rulemaking* directly follows on the *2 GHz Band Co-Allocation Order*, in which the Commission laid the predicate for full terrestrial use of the 2 GHz MSS band.³ The *Order* further expressed our intent to provide for additional terrestrial use of the 2 GHz band via rulemaking,⁴ and we initiate that rulemaking here. Due to the unique characteristics of each band, we intend to address the Commission's Ancillary Terrestrial Component (ATC) rules for Big LEO and L-band MSS separately.

II. BACKGROUND

A. MSS/ATC and the 2 GHz Band

3. In 1997, the Commission reallocated 70 megahertz of spectrum in the 2 GHz band from a Fixed and Mobile allocation that was licensed for fixed microwave use to Mobile Satellite Service (MSS).⁵ MSS is a radiocommunication service involving transmission between mobile earth stations and one or more space stations.⁶ The Commission intended for MSS to provide communications in areas where it is difficult or impossible to provide communications coverage via terrestrial base stations, such

¹ See *infra* ¶ 13 below.

² *Id.*

³ See Fixed and Mobile Services in the Mobile Satellite Service Bands at 1525-1559 MHz and 1626.5-1660.5 MHz, 1610-1626.5 MHz and 2483.5-2500 MHz, and 2000-2020 MHz and 2180-2200 MHz, ET Docket No. 10-142, *Report and Order*, 26 FCC Rcd 5710 (2011) (*2 GHz Band Co-Allocation Report and Order*).

⁴ See *infra* ¶ 14 below.

⁵ 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, *First Report and Order and Further Notice of Proposed Rule Making*, 12 FCC Rcd 7388, 7391, 7395 ¶¶ 5-6, 14 (1997).

⁶ See 47 C.F.R. § 2.1(c).

as remote or rural areas and non-coastal maritime regions, and at times when coverage may be unavailable from terrestrial-based networks, such as during natural disasters.⁷

4. The Commission adopted MSS rules for the 2 GHz band in 2000.⁸ In 2001, the International Bureau authorized eight satellite operators to provide MSS in the 2 GHz band.⁹ By February 2003, the International Bureau cancelled three MSS authorizations for failure to meet their milestones for system implementation.¹⁰ Contemporaneously, responding to the growth in terrestrial wireless services, the Commission reallocated 30 megahertz of MSS spectrum for terrestrial Fixed and Mobile use and reduced the spectrum allocated to MSS to 40 megahertz.¹¹

5. Concurrently with this action, the Commission established ancillary terrestrial component (ATC) rules, which allowed authorized MSS operators to augment their satellite services with terrestrial facilities.¹² ATC consists of terrestrial base stations and mobile terminals that re-use frequencies assigned for MSS operations.¹³ To ensure that ATC would be ancillary to the provision of MSS, the Commission determined that ATC authority would be limited to MSS operators who met specific “gating” criteria.¹⁴ The Commission required as a predicate for ATC that an MSS operator provide “substantial satellite service.”¹⁵ To meet the substantial service requirement, an MSS operator must provide continuous satellite service in specified geographic areas,¹⁶ maintain one or more spare satellites,¹⁷ and make MSS

⁷ See Flexibility for Delivery of Communications by Mobile Satellite Service Providers in the 2 GHz Band, the L-Band, and the 1.6/2.4 GHz Bands, IB Docket No. 01-185, ET Docket No. 95-18, *Notice of Proposed Rulemaking*, 16 FCC Rcd 15532, 15532 ¶ 1 (2001).

⁸ Establishment of Policies and Service Rules for the Mobile Satellite Service in the 2 GHz Band, IB Docket No. 99-81, *Report and Order*, 15 FCC Rcd 16127 (2000).

⁹ Third Report and Analysis of Competitive Market Conditions with Respect to Domestic and International Satellite Communications Services, Report and Analysis of Competitive Market Conditions with Respect to Domestic and International Satellite Communications Services, IB Docket Nos. 09-16, IB Docket No. 10-99, *Third Report*, 26 FCC Rcd 17284, 17310 ¶ 56 (2011) (*Third Satellite Competition Report*).

¹⁰ Mobile Communications Holdings, Inc. and ICO Global Communications (Holdings) Limited for Transfer of Control, *Memorandum Opinion and Order*, 18 FCC Rcd 1094, 1099-1103 ¶¶ 15-24 (2003); Application of Globalstar, L.P. for Modification of License for a Mobile-Satellite Service System in the 2 GHz Band, *Memorandum Opinion and Order*, 18 FCC Rcd 1249, 1251-55 ¶¶ 6-15 (2003).

¹¹ Amendment of Part 2 of the Commission’s Rules to Allocate Spectrum Below 3 GHz for Mobile and Fixed Services to Support the Introduction of New Advanced Wireless Services, including Third Generation Wireless Systems, ET Docket No. 00-258, IB Docket No. 99-81 RM-9911, RM-9498, RM-10024, *Third Report and Order*, *Third Notice of Proposed Rulemaking and Second Memorandum Opinion and Order*, 18 FCC Rcd 2223, 2238-40 ¶¶ 28-32 (2003) (*AWS Third Report and Order*).

¹² See Flexibility for Delivery of Communications by Mobile Satellite Service Providers in the 2 GHz Band, the L-Band, and the 1.6/2.4 GHz Bands, IB Docket Nos. 01-185, 02-364, *Report and Order and Notice of Proposed Rulemaking*, 18 FCC Rcd 1962, 1964 ¶ 1 (2003) (*ATC Report and Order*).

¹³ See *2 GHz Band Co-Allocation Report and Order*, 26 FCC Rcd at 5711-12 ¶ 5.

¹⁴ *ATC Report and Order*, 18 FCC Rcd at 1990-95, 2068-71 ¶¶ 47-55, 221-26; see *ATC Report and Order*, 18 FCC Rcd at 1999-2011 ¶¶ 66-93 (gating criteria).

¹⁵ *ATC Report and Order*, 18 FCC Rcd at 2001-08 ¶¶ 72-86.

¹⁶ 47 C.F.R. § 25.149(b)(1).

¹⁷ 47 C.F.R. § 25.149(b)(2).

commercially available throughout the required coverage area.¹⁸ The Commission also determined that any ATC operations should be “integrated” with the underlying satellite service.¹⁹ Finally, the Commission mandated that a MSS/ATC operator must satisfy the gating criteria “for each spectrum band in which it wishes to provide ATC.”²⁰

6. Notably, the Commission determined that only existing MSS operators would be permitted to receive ATC authority. The Commission found that:

[S]haring between MSS and terrestrial mobile services is neither advisable, nor practical. Revocation of the authority of operational MSS systems and those MSS licenses that have met their implementation milestones in good faith is unreasonable and unwarranted. And our detailed technical analyses demonstrate that a third party cannot operate in the licensed MSS spectrum without compromising the operations of existing and future MSS licensees.²¹

Further, “based on the record and our detailed technical analysis, . . . granting shared usage of the same MSS frequency band to separate MSS and terrestrial operators would likely compromise the effectiveness of both systems.”²² Therefore, the Commission decided against adopting a licensing framework that would result in an auction to resolve mutually exclusive applications and instead concluded that ATC authority would be granted through a license modification.²³

7. Despite the efforts of the Commission to promote MSS, another three 2 GHz MSS satellite operators—Boeing, Iridium, and Celsat—surrendered their licenses in early 2005.²⁴ This left only two satellite operators, DBSD (then known as ICO) and TerreStar (then known as TMI), with spectrum reserved to provide MSS in the 2 GHz band. In December 2005, the Commission reassigned the spectrum formerly assigned to Boeing, Iridium, and Celsat to DBSD and TerreStar.²⁵ As a result, the two remaining licensees each had access to 20 megahertz of spectrum in the 2 GHz MSS band.²⁶

8. DBSD launched its satellite in April 2008 and met its operational milestone in May 2008.²⁷ TerreStar launched its satellite in July 2009 and met its operational milestone in August 2009.²⁸

¹⁸ 47 C.F.R. § 25.149(b)(3).

¹⁹ 47 C.F.R. § 25.149(b)(4); *ATC Report and Order*, 18 FCC Rcd at 2008-09 ¶¶ 87-88; Flexibility for Delivery of Communications by Mobile Satellite Service Providers in the 2 GHz Band, the L-Band, and the 1.6/2.4 GHz Bands, IB Docket No. 01-185, *Memorandum Opinion and Order and Second Order on Reconsideration*, 20 FCC Rcd 4616, 4625-26 ¶¶ 24-27 (2005) (*ATC Second Reconsideration Order*).

²⁰ *ATC Second Reconsideration Order*, 20 FCC Rcd at 4628 ¶ 34.

²¹ *ATC Report and Order*, 18 FCC Rcd at 1999 ¶ 65.

²² *Id.* at 1965 ¶ 2; *see also id.* at 1993 ¶ 52.

²³ *See ATC Report and Order*, 18 FCC Rcd at 2068-69 ¶ 221.

²⁴ *Third Satellite Competition Report*, 26 FCC Rcd at 17310 ¶ 56.

²⁵ *See Use of Returned Spectrum in the 2 GHz Mobile Satellite Service Frequency Bands*, IB Docket Nos. 05-220, 05-221, *Order*, 20 FCC Rcd 19696, 19697-98 ¶¶ 2 (2005).

²⁶ Prior to this action, DBSD and TerreStar shared this spectrum allocation equally with the other MSS operators. *See id.* at 19707 ¶¶ 26 (2005).

²⁷ Improving Public Safety Communications in the 800 MHz Band, WT Docket No. 02-55, ET Docket No. 00-258, ET Docket No. 95-18, *Fifth Report and Order*, *Eleventh Report and Order*, *Sixth Report and Order*, and *Declaratory Ruling*, 25 FCC Rcd 13874, 13877 ¶ 7 (2010) (*2010 BAS Ruling*).

²⁸ *Id.*

Subsequently, DBSD and TerreStar received ATC authority in 2009 and 2010, respectively.²⁹ Despite having MSS and MSS/ATC authority and an orbiting satellite, DBSD has yet to offer either commercial satellite or terrestrial service and TerreStar has offered a small amount of satellite service (partnering with AT&T to offer a non-ATC satellite/terrestrial service using AT&T terrestrial spectrum and TerreStar satellite spectrum) but not MSS/ATC service.³⁰ To date there remains little commercial use of this spectrum for MSS and none for terrestrial (ATC) service.³¹

9. Both TerreStar and DBSD are currently in bankruptcy.³² In 2011, DISH Network Corporation (DISH) received approval from the United States Bankruptcy Court for the Southern District of New York to acquire both TerreStar and DBSD out of bankruptcy. DISH filed an application with the Commission for approval to transfer control of the TerreStar and DBSD licenses to DISH.³³ Simultaneous with the DISH/DBSD and the DISH/TerreStar transfer of control submissions, DBSD and TerreStar filed requests to modify their respective ATC authority, including for waiver of certain ATC technical and non-technical rules.³⁴ On March 2, 2012, the International Bureau granted the applications for transfer of control of the DBSD and TerreStar licenses to DISH, denied the non-technical rule waiver requests, and noted that the technical rule waivers would be addressed separately.³⁵

B. The Growing Spectrum Demands of Mobile Broadband Services

10. The rapid adoption of smartphones and tablet computers, combined with deployment of high-speed 3G and 4G technologies, is driving more intensive use of America's mobile networks. According to Cisco Systems, North American mobile Internet traffic more than doubled in 2011 and is

²⁹ New ICO Satellite Services G.P., Application for Blanket Authority to Operate Ancillary Terrestrial Component Base Stations and Dual-mode MSS/ATC Mobile Terminals in the 2 GHz MSS Bands, *Order and Authorization*, 24 FCC Rcd 171 (2009) (*ICO Waiver Order*); TerreStar Networks Inc., Application for Blanket Authority to Operate Ancillary Terrestrial Component Base Stations and Dual-Mode MSS/ATC Mobile Terminals in the 2 GHz MSS Bands, *Order and Authorization*, 25 FCC Rcd 228 (2010) (*TerreStar Waiver Order*).

³⁰ Implementation of Section 6002(b) of the Omnibus Budget Reconciliation Act of 1993, Annual Report and Analysis of Competitive Market Conditions With Respect to Mobile Wireless, Including Commercial Mobile Services, WT Docket No. 10-133, *Fifteenth Report*, 26 FCC Rcd 9664, 9701 ¶ 38 n.98 (*Fifteenth Mobile Wireless Competition Report*).

³¹ See Fixed and Mobile Services in the Mobile Satellite Service Bands at 1525-1559 MHz and 1626.5-1660.5 MHz, 1610-1626.5 MHz and 2483.5-2500 MHz, and 2000-2020 MHz and 2180-2200 MHz, ET Docket No. 10-142, *Notice of Proposed Rulemaking and Notice of Inquiry*, 25 FCC Rcd 9481, 9483 ¶ 6 (2010) (*MSS Fixed and Mobile Allocation NPRM*) (“The deployment of MSS and ATC in the 2 GHz band has been a slow process.”); Connecting America: The National Broadband Plan at 87-88 (2010) (*National Broadband Plan*), available at http://hraunfoss.fcc.gov/edocs_public/attachmatch/DOC-296935A1.pdf (last visited Mar. 19, 2012).

³² See DISH Network Corporation Files to Acquire Control of Licenses and Authorizations Held By New DBSD Satellite Services G.P., Debtor-in-Possession and TerreStar License Inc., Debtor-in-Possession, IB Docket No. 11-150, *Public Notice*, 26 FCC Rcd 13018 (2011) (*DBSD and TerreStar Transfer of Control Public Notice*).

³³ *Id.* at 13020, 13021 (2011).

³⁴ New DBSD Satellite Service G.P., Debtor-in-Possession, and TerreStar Licensee Inc., Debtor-In-Possession, Request For Rule Waivers And Modified Ancillary Terrestrial Component Authority, IB Docket No. 11-149, *Public Notice*, 26 FCC Rcd 13011 (2011). See 47 C.F.R. §§ 25.149(b)(4), 25.252.

³⁵ New DBSD Satellite Service G.P., Debtor-in-Possession, and TerreStar Licensee Inc., Debtor-In-Possession, Request for Rule Waivers and Modified Ancillary Terrestrial Component Authority, IB Docket Nos. 11-149, 11-150, *Order*, DA 12-332, ¶¶ 1, 13, 29, 31, 33-34 (Mar. 2, 2012) (*DISH Transfer Order*).

expected to grow over 15-fold in the next five years.³⁶ This explosive growth is creating an urgent need for more network capacity and, in turn, for suitable spectrum. In a 2010 study, FCC staff concluded that “[e]ven with substantial investment, it is likely that mobile data demand will exhaust spectrum resources within the next five years.”³⁷ A more recent study by the Council of Economic Advisors (CEA) similarly found that “the spectrum currently allocated to wireless is not sufficient to handle the projected growth in demand, even with technological improvements allowing for more efficient use of existing spectrum and significant investment in new facilities.”³⁸ The CEA further concluded: “[t]he only feasible way to realize the full potential of wireless broadband is to make new spectrum available for wireless services.”³⁹

11. Responding to this demand for additional spectrum, the *National Broadband Plan* recommended the Commission undertake to make 500 megahertz of spectrum available for broadband use within ten years.⁴⁰ The *National Broadband Plan* also recommended that 300 megahertz of this spectrum should be made available for mobile use within five years.⁴¹ Similarly, the Administration has also recognized the need to make more spectrum available for broadband. In 2010, the President directed the National Telecommunications and Information Administration (NTIA) to collaborate with the Commission to “make available a total of 500 MHz of Federal and nonfederal spectrum over the next 10 years, suitable for both mobile and fixed wireless broadband use.”⁴²

12. The widely-acknowledged need for more broadband spectrum has spurred several initiatives across the U.S. government. The Commission has launched several proceedings to facilitate bringing spectrum suitable for wireless broadband to the commercial marketplace.⁴³ NTIA undertook a “fast-track” review of several bands that could be reallocated to mobile use,⁴⁴ and continues to examine additional bands. Most recently, Congress passed the Middle Class Tax Relief and Job Creation Act of

³⁶ Cisco Visual Networking Index: Global Mobile Data Traffic Forecast Update, 2011-2016 at 7-8 (Feb. 14, 2012), available at http://www.cisco.com/en/US/solutions/collateral/ns341/ns525/ns537/ns705/ns827/white_paper_c11-520862.html (*Cisco Study*) (last visited Mar. 19, 2012); see also *National Broadband Plan* at 76; see also Remarks of Chairman Genachowski, The White House (Apr. 6, 2011), available at <http://www.fcc.gov/document/chairman-discusses-spectrum-needs-white-house-remarks> (last visited Mar. 19, 2012).

³⁷ Federal Communications Commission, Staff Technical Paper, Mobile Broadband: The Benefits of Additional Spectrum, at 26 (Oct. 2010) available at http://hraunfoss.fcc.gov/edocs_public/attachmatch/DOC-302324A1.pdf (last visited Mar. 19, 2012).

³⁸ Council of Economic Advisors, The Economic Benefits of New Spectrum for Wireless Broadband at 5 (Feb. 2012), available at <http://www.whitehouse.gov/administration/eop/cea/factsheets-reports> (last visited Mar. 19, 2012).

³⁹ *Id.*

⁴⁰ *National Broadband Plan*, Recommendation 5.8 at 84-85.

⁴¹ *Id.*

⁴² Memorandum of June 28, 2010—Unleashing the Wireless Broadband Revolution, 75 Fed. Reg. 38387 (July 1, 2010).

⁴³ See, e.g., Amendment of Part 27 of the Commission’s Rules to Govern the Operation of Wireless Communications Services in the 2.3 GHz Band, WT Docket No. 07-293, IB Docket No. 95-91, GEN Docket No. 90-357, RM-8610, *Report and Order and Second Report and Order*, 25 FCC Rcd 11710 (2010).

⁴⁴ See U.S. Department of Commerce, *An Assessment of the Near-Term Viability of Accommodating Wireless Broadband Systems in the 1675-1710 MHz, 1755-1780 MHz, 3500-3650 MHz, and 4200-4220 MHz, 4380-4400 MHz Bands* (Oct. 2010), available at http://www.ntia.doc.gov/reports/2010/FastTrackEvaluation_11152010.pdf (“*NTIA Fast Track Report*”) (last visited Mar. 19, 2012).

2012, which grants the Commission new authority to conduct “voluntary incentive auctions,” a key pillar of the *National Broadband Plan’s* roadmap to bring more spectrum online for broadband.⁴⁵

C. Enabling Terrestrial Use of the 2 GHz MSS Band

13. The *National Broadband Plan* also recommended that the FCC “accelerate terrestrial deployment in 90 megahertz” of MSS spectrum.⁴⁶ The *National Broadband Plan* proposed different approaches to expanding terrestrial services in different MSS bands.⁴⁷ For the 2 GHz MSS band – the focus of this NPRM – the Plan recommended that the “FCC should add a primary ‘mobile’ (terrestrial) allocation to the S-Band, consistent with the international table of allocations, which will provide the option of flexibility to licensees to provide stand-alone terrestrial services using the spectrum.”⁴⁸ Additionally, the Plan recommended that “[e]xercise of this option should be conditioned on construction benchmarks, participation in an incentive auction, or other conditions designed to ensure timely utilization of the spectrum for broadband and appropriate consideration for the step-up in the value of the affected spectrum.”⁴⁹

14. In July 2010, the Commission issued a Notice of Proposed Rulemaking proposing to add Fixed and Mobile allocations to the 2000-2020 MHz and 2180-2200 MHz bands.⁵⁰ The Commission adopted this proposal in April 2011, thereby establishing the predicate for more flexible use of the band for terrestrial mobile broadband services.⁵¹ The Commission also stated that, “having added co-primary Fixed and Mobile allocations to the 2 GHz band, we anticipate issuing a notice of proposed rulemaking on subjects raised in the MSS NOI, including possible service rule changes that could increase investment and utilization of the band in a manner that further serves the public interest.”⁵² The Commission added: “We expect the staff will take advantage of industry technical expertise as it develops options, which may include potential synergies with neighboring bands, to inform our decision making process going forward.”⁵³

15. In January, 2011, the International Bureau granted a waiver of the MSS/ATC “integrated services” rule to LightSquared Subsidiary LLC (LightSquared), conditioned on protection of Global Positioning System (GPS) services. This order made clear “that the waiver is predicated on the specific combination of facts and circumstances before us. As such . . . we limit the scope of this conditional waiver to LightSquared in its use of MSS L-band spectrum.” On February 15, 2012, the International

⁴⁵ Middle Class Tax Relief and Job Creation Act of 2012, Pub. L. No. 112-96, § 6402.

⁴⁶ *National Broadband Plan*, Recommendation 5.8.4 at 87-88.

⁴⁷ *Id.* at 88.

⁴⁸ *Id.*, Recommendation 5.8.4 at 87-88.

⁴⁹ *Id.*

⁵⁰ Fixed and Mobile Services in the Mobile Satellite Service Bands at 1525-1559 MHz and 1626.5-1660.5 MHz, 1610-1626.5 MHz and 2483.5-2500 MHz, and 2000-2020 MHz and 2180-2200 MHz, ET Docket No. 10-142, *Notice of Proposed Rulemaking and Notice of Inquiry*, 25 FCC Rcd 9481 (2010) (*MSS Fixed and Mobile Allocation NPRM*).

⁵¹ *2 GHz Band Co-Allocation Report and Order*, 26 FCC Rcd at 5710 ¶ 2.

⁵² *Id.* at 5716 ¶ 13.

⁵³ *Id.*

Bureau proposed to modify LightSquared's satellite license "to suspend indefinitely LightSquared's underlying ATC authorization, first granted in 2004."⁵⁴

16. In May 2011, the Commission's Spectrum Task Force issued a public notice requesting technical input on approaches to encourage the growth of terrestrial mobile broadband services in the 2 GHz spectrum range that is allocated for fixed and mobile use. Specifically, the Spectrum Task Force sought information on "developing a cohesive approach that maximizes the terrestrial mobile broadband potential of this spectrum."⁵⁵ The public notice specifically focused on the 2 GHz MSS band and neighboring Advanced Wireless Services (AWS) blocks, including the AWS-2 Upper "H" block spectrum at 1995-2000 MHz, the AWS-2 paired "J" block spectrum at 2020-2025 MHz and 2175-2180 MHz; and the AWS-3 spectrum at 2155-2175 MHz.⁵⁶ In response, several parties offered comments on potential changes to the existing 2 GHz MSS band plan.⁵⁷

III. NOTICE OF PROPOSED RULEMAKING: AWS-4

17. In this *Notice of Proposed Rulemaking (AWS-4 Notice)*, we build on the Commission's recent actions to enable the provision of terrestrial mobile broadband service in up to 40 megahertz of spectrum in the 2000-2020 MHz and 2180-2200 MHz spectrum bands. We propose terrestrial service rules for these spectrum bands that would generally follow the Commission's Part 27 rules, modified as necessary to account for issues unique to the 2000-2020 MHz and 2180-2200 MHz spectrum bands. Given the proximity of these spectrum bands to spectrum bands previously identified as AWS, in our proposal we refer to these spectrum bands as "AWS-4" or "AWS-4 spectrum."⁵⁸ We are mindful that this spectrum is now allocated on a co-primary basis for Mobile Satellite and for terrestrial Fixed and Mobile services and that MSS licensees already have authorizations to provide service in the band. Accordingly, as explained below, we seek comment on a proposal that AWS-4 terrestrial service rules will need to

⁵⁴ International Bureau Invites Comment on NTIA Letter Regarding LightSquared Conditional Waiver, IB Docket No. 11-109, *Public Notice*, DA 12-214 at 4 (Feb. 15, 2012).

⁵⁵ Spectrum Task Force Invites Technical Input on Approaches to Maximize Broadband Use of Fixed/Mobile Spectrum Allocations in the 2 GHz Range, ET Docket No. 10-142, WT Docket Nos. 04-356, 07-195, *Public Notice*, 26 FCC Rcd 7587 (2011) (*2 GHz Public Notice*). The Middle Class Tax Relief and Job Creation Act of 2012 contains provisions requiring the FCC to auction some of these blocks by a date certain. See Middle Class Tax Relief and Job Creation Act of 2012, Pub. L. No. 112-96, § 6401(b).

⁵⁶ *2 GHz Public Notice*.

⁵⁷ See, e.g., Comments of TerreStar Networks Inc., ET Docket No. 10-142, WT Docket Nos. 04-356, 07-195, (July 8, 2011);

⁵⁸ The 2000-2020 MHz and 2180-2200 MHz bands are the fourth spectrum bands that the Commission is proposing to make available for AWS use. The Commission assigned licenses for the 1710-1755 MHz and 2110-2155 MHz bands (AWS-1) in 2003. Service Rules for Advanced Wireless Services in the 1.7 GHz and 2.1 GHz Bands, WT Docket No. 02-353, *Report and Order*, 18 FCC Rcd 25162 (2003) (*AWS-1 Report and Order*); modified by Service Rules for Advanced Wireless Services In the 1.7 GHz and 2.1 GHz Bands, WT Docket No. 02-353, *Order on Reconsideration*, WT Docket No. 02-353, 20 FCC Rcd 14058 (2005). The Commission proposed licensing as AWS spectrum the following bands: AWS-2 (H block: 1915-1920 MHz and 1995-2000 MHz; and J block: 2020-2025 MHz and 2175-2180 MHz) in 2004; AWS-3 (2155-2180 MHz) in 2007, Service Rules for Advanced Wireless Services in the 1915-1920 MHz, 1995-2000 MHz, 2020-2025 MHz and 2175-2180 MHz Bands, WT Docket No. 04-356, Service Rules for Advanced Wireless Services in the 1.7 GHz and 2.1 GHz Bands, WT Docket No. 02-353, *Notice of Proposed Rulemaking*, 19 FCC Rcd 19263 (2004) (*AWS-2 NPRM*); Service Rules for Advanced Wireless Services in the 2155-2175 MHz Band, WT Docket No. 07-195, *Notice of Proposed Rulemaking*, 22 FCC Rcd 17035 (2007) (*AWS-3 NPRM*), respectively. The Commission has yet to assign licenses for the AWS-2 and AWS-3 bands.

provide for the protection of 2 GHz MSS systems from harmful interference caused by AWS-4 systems.⁵⁹ Finally, for each of the issues identified below, we seek comment on the most efficient manner to address the issue. If a party believes any of these issues would be more properly resolved in another Commission proceeding, we request that the party identify those issues and the relevant Commission proceeding.

18. In the sections that follow, we seek comment on a number of parameters governing the licensing, use, and assignment of the spectrum, including their costs and benefits. We ask that commenters take into account only those costs and benefits that directly result from the implementation of the particular rules that could be adopted, including any proposed requirement or potential alternative requirement. Commenters should identify the various costs and benefits associated with a particular proposal. Further, to the extent possible, commenters should provide specific data and information, such as actual or estimated dollar figures for each specific cost or benefit addressed, including a description of how the data or information was calculated or obtained, and any supporting documentation or other evidentiary support.

A. AWS-4 Band Plan

19. We begin by proposing a band plan for the AWS-4 spectrum. Establishing the band plan is critical for the use of the spectrum by the existing 2 GHz MSS licensee, by any AWS-4 licensee, and in the event the Commission needs to re-assign spectrum that returns to the Commission. In establishing a band plan, the Commission adopts specific spectrum block(s) and geographic sizes that allow parties seeking licenses to optimize their individual service needs. The Commission also endeavors to permit parties to adjust their licenses through secondary market mechanisms such as combining or alternatively, partitioning and disaggregation, if such fine-tuning is necessary. In this section, we make two overarching proposals to establish the AWS-4 band plan. First, we propose to pair the two AWS-4 spectrum bands. Second, we propose block sizes and a geographic area licensing scheme to define license boundaries.

1. Paired Spectrum (uplink/downlink)

20. As discussed herein, the spectrum in the 2000-2020 MHz and 2180-2200 MHz bands is presently licensed as paired spectrum for mobile satellite use. The 2000-2020 MHz band serves as an uplink band and 2180-2200 MHz band serves as a downlink band.⁶⁰ We propose to pair the AWS-4 blocks, consistent with the existing 2 GHz MSS licenses and the Commission's treatment of other bands used for mobile wireless and broadband service, AWS and PCS. We seek comment on this proposal. We also seek comment on whether we should take any action to ensure that equipment for the AWS-4 band is interoperable across both paired blocks.

21. Specifically, we propose to adopt the same uplink and downlink pairing designations for provision of terrestrial service as presently exists for satellite service in this spectrum: 2000-2020 MHz would serve as an uplink band; 2180-2200 MHz would serve as a downlink band. Adopting the same uplink/downlink pairing approach for AWS-4 as for 2 GHz MSS may facilitate the continued use of the

⁵⁹ See *infra* Section III.C (Protection of MSS Operations).

⁶⁰ The Commission allocated the uplink and downlink bands for the 2 GHz MSS spectrum in a companion item to the Commission's decision to permit MSS providers with the flexibility to integrate ATC into their MSS networks. See *Flexibility for Delivery of Communications by Mobile Satellite Service Providers in the 2 GHz Band, the L-Band, and the 1.6/2.4 GHz Bands and Review of the Spectrum Sharing Plan Among Non-Geostationary Satellite Orbit Mobile Satellite Service Systems in the 1.6/2.4 GHz Bands*, IB Docket Nos. 01-185, 02-364, *Report and Order and Notice of Proposed Rulemaking*, 18 FCC Rcd 11030 n.1 (2003) *citing AWS Third Report and Order*; see also *2 GHz Public Notice* (seeking comment on whether to pair this spectrum and, if so, the appropriate designation of uplink and downlink bands for possible wireless terrestrial use in this spectrum, including on whether to adopt uplink and downlink designations opposite of those currently specified for 2 GHz MSS).

existing satellites for MSS. Figure 1, below, illustrates the existing band plan and Figure 2 illustrates the proposed band plan for AWS-4 spectrum. We seek comment on the above proposals and proposed AWS-4 band plan. We also seek comment on two alternative possibilities, in which the uplink band would be shifted up 5 megahertz to 2005-2025 MHz or up 10 megahertz and compressed to 2010-2025 MHz, as described in paragraphs 42-43, below.

Figure 1: Existing 2 GHz Band Plan

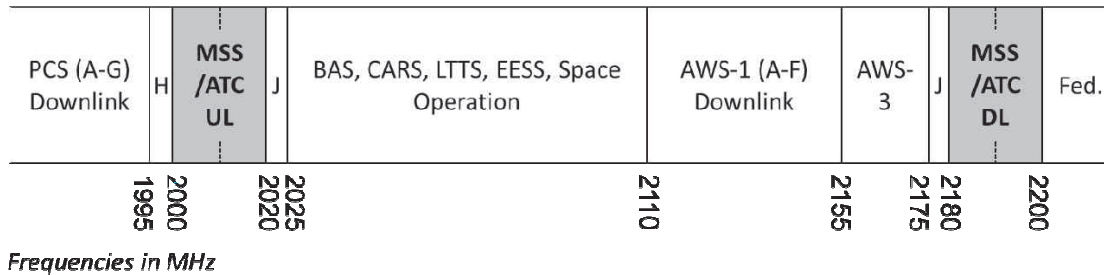


Figure 2: Proposed AWS-4 Band Plan



2. Spectrum Block Size

22. We also propose to license the spectrum in paired 10-megahertz blocks for each license area. Currently, the 2 GHz MSS spectrum is assigned as two paired blocks: Block A pairs 2000-2010 MHz with 2190-2200 MHz and Block B pairs 2010-2020 MHz with 2180-2190 MHz. We observe, however, that the 3rd Generation Partnership Project (3GPP) standards organization is in the process of examining whether to change the duplex spacing for Band 23, which includes this spectrum, from a spacing that corresponds to the existing duplex spacing to one that would remove the variable duplex spacing.⁶¹ We seek comment on which pairing approach to apply. We ask commenters to discuss the affect the ongoing 3GPP process should have on our decision. In addition, commenters seeking

⁶¹ Compare LTE RF standard for user equipment, 3GPP TS 36.101 R10.5.0, at 26, available at http://www.3gpp.org/ftp/Specs/archive/36_series/36.101/36101-a50.zip (last visited March 19, 2012) (*LTE RF standard for UE*) with 3GPP RAN Working Group 4 change request, R4-120615, at 1-2, available at (http://www.3gpp.org/ftp/tsg_ran/WG4_Radio/TSGR4_62/Docs/R4-120615.zip) (last visited Mar. 19, 2011) and 3GPP RAN Working Group 4 meeting #62 meeting report, R4-12xxxx, at 37-38, available at http://www.3gpp.org/ftp/tsg_ran/WG4_Radio/TSGR4_62/Report/R4-12xxxx_Draft_Report_RAN4%2362_EOM.zip (last visited Mar. 19, 2011).

alternative spectrum block sizes should support their recommendations with evidence that these alternative schemes will promote greater efficiency and more flexible use of the bands than the proposed approach. Commenters also should discuss and quantify any associated costs or benefits of implementing the proposals discussed above or any alternative schemes.

23. Our proposal to license AWS-4 spectrum in paired 10-megahertz blocks reflects several considerations. First, the MSS band is currently licensed as paired 10-megahertz blocks. Issuing AWS-4 licenses with equivalent bandwidth would facilitate coordination between the two services. Second, establishing paired 10-megahertz blocks strikes a balance between potentially enabling multiple licensees in any given geographical area (*i.e.*, different licensees in each 10 + 10 block pair) and allowing the use of newer high-bandwidth technologies. We seek comment on these approaches.

24. We also seek comment on adopting a flexible paired single block option that, in the event a single licensee holds both the A and B Blocks, would allow that entity to combine them into one paired 20-megahertz block and use these contiguous spectrum blocks seamlessly with flexibility to design its network and respond effectively to any business and technical needs. Alternatively, if we were to adopt a licensing mechanism that allows AWS-4 spectrum licensees to be held by entities other than the existing 2 GHz MSS licensees, we seek comment on whether this spectrum should be licensed in smaller block sizes.

3. Geographic Area Licensing

25. We propose to license the AWS-4 band using a geographic area licensing approach, and we seek comment on this proposal. A geographic licensing area approach is well suited for the types of fixed and mobile services that would likely be deployed in this band. Additionally, geographic licensing is consistent with the Commission's licensing approach adopted for the AWS-1 bands, and proposed for both the AWS-2 and the AWS-3 bands.⁶² In the event that interested parties do not support geographic licensing for the AWS-4 spectrum, those commenters should explain their position and identify the costs and benefits associated with an alternative licensing proposal and what type of licensing scheme it supports.

26. Assuming that we utilize a geographic area approach for licensing these bands, we must determine the appropriate size(s) of service areas on which licenses should be based. In previous AWS service rule proceedings the Commission has sought to balance policy goals of fostering service to rural areas and tribal lands, and promoting investment in and rapid deployment of new technologies and services consistent with its obligations under Section 309(j) of the Communications Act.⁶³ To do that, the Commission, among other things, established spectrum blocks in three geographic area sizes.⁶⁴ In regard to the AWS-4 spectrum, however, we propose to apply a single size geographic area. We propose that any new AWS-4 licenses should be assigned on an Economic Area (EA) basis.⁶⁵ Assigning AWS-4 in EA geographic areas would allow AWS-4 licensees to make adjustments to suit their individual needs. EA license areas are small enough to provide spectrum access opportunities for smaller carriers. EA license areas also nest within and may be aggregated up to larger license areas that have been used by the Commission for other services, such as Major Economic Areas (MEAs) and Regional Economic Area Groupings (REAGs) for those seeking to create larger service areas. Depending on the licensing mechanism we adopt, licensees may aggregate or otherwise adjust their geographic coverage through

⁶² See *AWS-1 Report and Order*, 18 FCC Rcd at 25174 ¶ 30 (2003); *AWS-2 NPRM*, 19 FCC Rcd at 19271-72 ¶ 18 (2004); *AWS-3 NPRM*, 22 FCC Rcd at 17050 ¶ 31 (2007).

⁶³ See, e.g., *AWS-1 Report and Order*, 18 FCC Rcd at 25715-25716 ¶ 35 (2003); see also 47 U.S.C. § 309(j).

⁶⁴ See *AWS-1 Report and Order*, 18 FCC Rcd at 25716 ¶ 36.

⁶⁵ See 47 C.F.R. 27.6.

auction or through secondary markets. We seek comment on this approach. We ask commenters to discuss and quantify the economic, technical, and other public interest considerations of any particular geographic scheme for this particular band, as well as the impact that any such scheme would have on rural service and competition.

27. We also seek comment on including the Gulf of Mexico in our licensing scheme for these bands. We question whether to include it as part of larger service areas, as we did for the Upper 700 MHz band, or whether we should separately license a service area or service areas to cover the Gulf of Mexico. Commenters who advocate a separate service area or areas to cover the Gulf of Mexico should discuss what boundaries should be used, and whether special interference protection criteria or performance requirements are necessary due to the unique radio propagation characteristics and antenna siting challenges that exist for Gulf licensees.

B. Technical Issues

28. When the Commission adopted the MSS/ATC regime in 2003, it addressed intra-service and adjacent-band interference concerns, and enacted unique MSS/ATC technical rules in Part 25 of the Commission's rules, which did not fully align with the technical rules for similar terrestrial operations in other bands.⁶⁶ Subsequently, in addressing requests for ATC authority by the two 2 GHz MSS authorization holders, ICO and TerreStar, the Commission granted them waivers of several of the Part 25 ATC interference rules.⁶⁷ In general, these waivers resulted in aligning the terrestrial requirements for the 2 GHz MSS band operators more closely with the Part 27 technical rules that apply to AWS-1 license holders. Based on review of current interference possibilities, we propose an approach that would permit deployment under the current rules and waivers by proposing that the technical rules and license conditions applicable today to the provision of terrestrial services in the 2 GHz MSS bands should generally apply to the AWS-4 bands.

29. In general, our aim in establishing technical rules is to maximize the flexible use of spectrum while appropriately protecting incumbent operations in neighboring bands. The technical rules we propose below are based on the rules for AWS-1 spectrum, with specific additions or modifications designed to protect broadband PCS services operating in the 1930-1995 MHz band, as well as future services operating in the 1995-2000 MHz band, from harmful interference from AWS-4 mobile devices operating in the 2000-2020 MHz band. Any rules would also address protection of Federal operations in the 2200-2290 MHz band from harmful interference from AWS-4 base stations operating in the 2180-2200 MHz band. We also seek comment on whether modifications to these rules might be warranted in order to provide for more flexible use of AWS-4 spectrum, while at the same time protecting other spectrum uses from interference.

1. OOB Limits

30. In the proposed band plan, AWS-4 spectrum would be issued in paired 10-megahertz blocks, using Economic Area licenses.⁶⁸ Therefore, interference must be considered between AWS-4 blocks and adjacent bands, between different blocks within the AWS-4 band, and between different geographic area licenses within the AWS-4 band.

⁶⁶ The ATC interference rules for the 2 GHz MSS band are contained in rule 25.252. See 47 C.F.R. § 25.252; *ATC Report and Order*, 18 FCC Rcd at 2020-2030 ¶¶ 109-127.

⁶⁷ See *ICO Waiver Order*, 24 FCC Rcd at 183-197 ¶¶ 35-64, 68-69; *TerreStar Waiver Order*, 25 FCC Rcd at 235-237 ¶¶ 20-27, 239-240 ¶¶ 33-34.

⁶⁸ See *supra* Section III.A (AWS-4 Band Plan).

a. Interference Between Adjacent Block AWS-4 Licensees

31. *Emissions limits.* To minimize harmful interference, the Commission's rules often limit the amount of RF power that may be emitted outside of the assigned block of an RF transmitter. The Commission has previously concluded that attenuating base station out-of-band emissions (OOBE) by $43+10*\log_{10}(P)$ dB at the edge of an assigned block, where P is the transmit power in watts, is appropriate to minimize harmful electromagnetic interference between terrestrial operations in the 2180-2190 MHz and 2190-2200 MHz blocks.⁶⁹ Similarly, the Commission has previously found that attenuating terrestrial mobile emissions by $43+10*\log_{10}(P)$ dB outside the assigned block will minimize interference within the 2000-2020 MHz band.⁷⁰ Furthermore, when the Commission created the service rules for AWS-1, it concluded that this level of attenuation is appropriate for protecting wireless systems that will operate in the AWS bands.⁷¹ At the time, the Commission noted that this limit is commonly employed in other wireless services, and it has generally been found to be adequate in preventing adjacent channel interference.⁷² This level of attenuation is now established in the Commission's rules for the AWS band, both for both mobile station and base station emissions.⁷³

32. *Measurement procedure.* To fully define an emissions limit, the Commission's rules generally specify details of how to measure the power of the emissions, such as the measurement bandwidth. The Part 25 ATC rules determine mobile station compliance with the OOBE limit based on a measurement bandwidth of 1 MHz or greater.⁷⁴ For AWS-1, the measurement bandwidth used to determine compliance with this limit for both mobile stations and base stations is generally 1 MHz, with some modification within the first 1 MHz.⁷⁵ Previously, the Commission concluded the AWS-1 measurement procedure was also appropriate for mobile stations operating in 2000-2020 MHz.⁷⁶ At that time the Commission did not address the measurement procedure for base stations operating in 2180-2200 MHz.⁷⁷ However, as mentioned above, in the AWS-1 band this procedure applies to mobile and base transmissions. We believe that it is similarly reasonable to apply this procedure to both mobile and base transmissions in the AWS-4 band.

33. *Proposal.* To address potential harmful electromagnetic interference within the AWS-4 band, we propose that Section 27.53(h) of the Commission's rules, which includes OOBE attenuation of $43+10*\log_{10}(P)$ dB and the associated measurement procedure, should be expanded to apply to AWS-4 operations in the 2000-2020 MHz and 2180-2200 MHz bands. We seek comment on this proposal.

⁶⁹ See *ICO Waiver Order*, 24 FCC Rcd at 187 ¶ 44.

⁷⁰ See *id.* at 194 ¶ 62.

⁷¹ *AWS-1 Report and Order*, 18 FCC Rcd at 25198 ¶ 92.

⁷² *Id.* at 25198 ¶ 91.

⁷³ See 47 C.F.R. § 27.53(h). This OOBE limit also applies in the broadband PCS band, see 47 C.F.R. § 24.238.

⁷⁴ See 47 C.F.R. § 25.252(c)(4).

⁷⁵ See 47 C.F.R. § 27.53(h)(1).

⁷⁶ See *ICO Waiver Order*, 24 FCC Rcd at 194-195 ¶¶ 63-64.

⁷⁷ This has been noted by DBSD and TerreStar, both of whom suggested that the mobile measurement procedure be used for base stations as well. See New DBSD Satellite Services G.P., Debtor-in-Possession, Application for Modification of Ancillary Terrestrial Component Authority, IB Docket No. 11-149, at 8-9 (Aug. 22, 2011); TerreStar License Inc., Debtor-in-Possession, Application for Modification of Ancillary Terrestrial Component Authority, IB Docket No. 11-149, at 12 n.23 (Aug. 22, 2011) (*TerreStar Waiver Request*).

Commenters should discuss and quantify the costs and benefits of this proposal and any proposed alternative approaches.

b. Interference with Services in Adjacent and Other Bands

34. After considering interference between adjacent blocks within the AWS-4 band in the previous section, we next examine the adjacent and nearly adjacent bands outside the AWS-4 band. In so doing, we seek to establish rules that permit flexible use of the AWS-4 band, while effectively protecting operations in adjacent bands from harmful interference. We begin our examination of adjacent band interference by considering whether attenuation greater than $43+10*\log_{10}(P)$ dB—a level the Commission frequently applies to adjacent band operations—is needed to prevent harmful electromagnetic interference from the AWS-4 band to other bands.⁷⁸

35. *Interference with operations below 1995 MHz.* The AWS-4 uplink band at 2000-2020 MHz is 5 megahertz from the broadband PCS downlink band at 1930-1995 MHz. To protect PCS mobile receivers from harmful electromagnetic interference from mobile stations transmitting in the 2000-2020 MHz band, the ATC rules specify an attenuation of $70+10*\log_{10}(P)$ dB below 1995 MHz.⁷⁹ We propose that this emission limit should continue to apply to terrestrial operations in the 2000-2020 MHz band, and that a rule should be added to Part 27 that fixed and mobile transmitters operating in 2000-2020 MHz must attenuate emissions below 1995 MHz by $70+10*\log_{10}(P)$ dB. We further propose that this attenuation should be measured using the existing measurement procedure of Section 27.53(h) discussed above. We seek comment on these proposals. Commenters should discuss and quantify the costs and benefits of this proposal and any proposed alternative approaches.

36. *Interference with operations in 1995-2000 MHz.* The Part 25 ATC technical rules also include a linear interpolation of OOB attenuation between $70+10*\log_{10}(P)$ dB at 1995 MHz and $43+10*\log_{10}(P)$ dB at 2000 MHz.⁸⁰ However, recently enacted legislation directs the Commission to allocate the 1995-2000 MHz band (AWS-2 Upper H block) for commercial use, and to auction and grant new initial licenses for the use of this spectrum under flexible-use service rules.⁸¹ Given this statutory directive and considering that the 1995-2000 MHz block is adjacent to existing broadband PCS downlink operations, it is likely that this block will be used for terrestrial downlink operations.⁸² This will exacerbate the existing potential for harmful interference between downlink operations below 2000 MHz and uplink operations above 2000 MHz. For example, commenters to the *2 GHz Public Notice* have suggested that a guard band of 5 MHz or more would be necessary to prevent interference between

⁷⁸ Although the previous section only discussed $43+10*\log_{10}(P)$ for interference within the band, that attenuation applies to all transmissions outside the assigned block, including emissions in other bands.

⁷⁹ See 47 C.F.R. § 25.252(c)(2). This value was not waived or requested to be waived during any of the ATC designation or other MSS/ATC related procedures.

⁸⁰ See 47 C.F.R. § 25.252(c)(2).

⁸¹ Middle Class Tax Relief and Job Creation Act of 2012, Pub. L. No. 112-96, § 6401(b).

⁸² The statute further directs that if the Commission determines that 1995-2000 MHz cannot be used without causing harmful interference to commercial mobile service licensees in the 1930-1995 MHz band then the Commission may not allocate 1995-2000 MHz for commercial use or grant licenses for it by auction. Middle Class Tax Relief and Job Creation Act of 2012, Pub. L. No. 112-96, § 6401(b)(4). The statute contains similar provisions for 1915-1920 MHz, which, in 2004 and 2008, the Commission proposed to pair with the 1995-2000 MHz band, and which may interfere with PCS operations in the 1930-1995 MHz band. Nothing in this item is intended to prejudice whether to pair 1995-2000 MHz with 1915-1920 MHz, and we observe that the statute does not require this pairing. For example, 1995-2000 MHz could be auctioned as a downlink expansion band.

downlink operations in 1930-1995 MHz and uplink operations in 2000-2020 MHz.⁸³ To address this apparent tension, we seek comment on three alternative proposals for OOB limits in 1995-2000 MHz.⁸⁴

37. First, we could maintain the existing linear interpolation. However, this would offer the 1995-2000 MHz block less protection than the existing PCS blocks, which as discussed above is $70+10*\log_{10}(P)$ dB below the transmit power. In addition, meeting this limit may have a negative impact on mobile transmitters in 2000-2020 MHz, as the mobile station components, such as power amplifiers and filters, may not have sharp enough roll off characteristics to meet this limit when operating in the lower parts of the band, particularly when operating at the maximum power level supported. In this regard, we observe that, in standardizing the 2000-2020 MHz and 2180-2200 MHz bands as Band 23, 3GPP has allowed for up to 12 dB of additional power reduction below the maximum transmit power for mobile stations in 2000-2010 MHz to meet the Commission's current rules.⁸⁵ As the mobile transmit power affects the ability of the mobile station to reach the base station, this reduction of power would appear to have a significant impact on cell coverage, uplink throughput, and ultimately the usability of this spectrum.

38. Second, we could require that fixed and mobile transmitters operating in 2000-2020 MHz attenuate emissions below 2000 MHz by $70+10*\log_{10}(P)$ dB, consistent with the emissions limit below 1995 MHz. We note, however, that this level may be difficult to meet for mobile transmitters in 2000-2020 MHz, as it requires even sharper roll off from mobile stations than the previous alternative.

39. Third, we could require that fixed and mobile transmitters operating in 2000-2020 MHz attenuate emissions below 2000 MHz by $43+10*\log_{10}(P)$ dB, symmetric with existing limits for PCS emissions in 2000-2020 MHz and broadly consistent with Commission rules as discussed above.⁸⁶ In this case, if future service rules for 1995-2000 MHz have the same requirement, then the licensees above and below 2000 MHz would be placed on a more equal footing, and could determine among themselves if there is a need for any stricter limits.

40. We seek comment on each of these alternatives. For each alternative, we ask commenters to address whether the proposal is adequate to protect expected uses of the 1995-2000 MHz band. Commenters should address and quantify the magnitude and effect of any possible harmful

⁸³ See e.g., Comments of Ericsson, ET Docket No. 10-142, WT Docket Nos. 04-356, 07-195, at 9 (July 8, 2011) (*Ericsson 2 GHz Public Notice Comments*).

⁸⁴ We also observe that future operations in the 1995-2000 MHz band could result in harmful interference into the 2000-2020 MHz band. The Commission has previously, in an open proceeding on AWS-2 spectrum, sought comment on whether base stations transmitting in the 1995-2000 MHz band are likely to cause harmful interference to operations in the 2000-2020 MHz band, and if so, what special measures might be needed to prevent such interference. See *AWS-2 NPRM*, 19 FCC Red at 19300 ¶¶ 94-95. Similarly, we note that in the standardization of Band 23 in 3GPP, base station receivers operating in the 2000-2010 MHz band receive a protection level of only -30 dBm/MHz from PCS base stations in the 1930-1995 MHz band (Bands 2 and 25), rather than the common level of -49 dBm/MHz. This indicates both that base stations in the 2000-2010 MHz band may receive high levels of interference from PCS base stations, which may significantly limit their coverage area and throughput, and that it may be difficult to design PCS base stations to meet a tighter limit. See LTE RF standard for base stations, 3GPP TS 36.104, R10.5.0 at 44, available at http://www.3gpp.org/ftp/Specs/archive/36_series/36.104/36104-a50.zip (last visited Mar. 3, 2012) (*LTE RF standard for BS*). This potential issue and any appropriate limitations on emissions for transmitters in the 1995-2000 MHz band would be addressed in any future service rules for the 1995-2000 MHz band.

⁸⁵ Specifically, the standard specifies less than or equal to 12 dB of "A-MPR", additional maximum power reduction, see *LTE RF standard for UE* at 33.

⁸⁶ See 47 C.F.R. § 24.238. See *supra* ¶ 31.

interference, such as the impact on link budgets or coverage areas. Commenters should also address the amount of spectrum that may be unusable or partially usable in either band. For each alternative, we also seek comment on the impact on operations in the 2000-2020 MHz band, including whether mobile stations will be able to utilize the entire 2000-2020 MHz band while meeting the proposed limit, and if not, the amount of spectrum that may be unusable or usable only at a reduced power, as well as the extent of any such power reductions.

41. For all three alternatives, we propose that the attenuation should be measured using the existing measurement procedure of Section 27.53(h) discussed above.⁸⁷ We seek comment on this proposal.

42. Finally, in the event that the record shows none of these three proposals sufficiently addresses issues of interference with 1995-2000 MHz, we seek comment on two additional proposals. First, we seek comment on an alternative proposal to shift the uplink band up 5 megahertz from 2000-2020 MHz to 2005-2025 MHz, including the lower portion of the AWS-2 “J” Block at 2020-2025 MHz. This concept was part of Ericsson’s proposal in its comments in response to the *2 GHz Public Notice*.⁸⁸ Would this shift proposal better mitigate interference with the AWS-2 Upper H block and PCS downlink bands, increasing the value of the spectrum for mobile broadband and other uses? Further, would this alternative approach allow for more productive use of the “stranded” lower portion of the AWS-2 J Block (2020-2025 MHz) should the Commission eventually decide to auction the upper portion of the J Block as part of an extended AWS-3 band? Second, we seek comment on an alternative proposal to shift the uplink band up 10 megahertz, while compressing the band from 20 to 15 megahertz, resulting in an uplink band of 2010-2025 MHz. For this alternative, in light of the interference issues that may impact the terrestrial use of 2000-2005 MHz, we seek comment on whether shifting the spectrum to a 15 megahertz band at 2010-2025 MHz would result in the actual loss of spectrum usable for terrestrial broadband service.

43. For both spectrum shift alternatives, we propose that the shift apply to the lower end of the band for both terrestrial and satellite service. Shifting the satellite service out of the 2000-2005 MHz or the 2000-2010 MHz blocks (in a manner consistent with the terrestrial service) would mitigate against the possibility of mobile satellite devices causing harmful interference into the 1995-2000 MHz block. The 2020-2025 MHz block is not presently allocated for satellite service.⁸⁹ We do not intend to shift the satellite service into this block. We seek comment on this proposal including its costs and benefits. Lastly, in considering the spectrum shift alternatives, we seek comment on how each might affect all of the applicable proposals contained in this *AWS-4 Notice*, including without limitation the technical protections discussed in this section, the assignment proposals, and relocation and cost sharing proposals discussed below in Sections III.D (Assignment of AWS-4 License(s)) and III.G (Relocation and Cost Sharing).

44. *Interference with operations in 2020-2025 MHz.* The AWS-4 uplink band will be adjacent to the AWS-2 Lower J block, 2020-2025 MHz. Although the Part 25 ATC rules adopted in 2003 originally attenuated the mobile station emissions in this range by a linear interpolation from $43+10*\log_{10}(P)$ dB at 2020 MHz to $70+10*\log_{10}(P)$ dB at 2025 MHz,⁹⁰ the Commission separately

⁸⁷ 47 C.F.R. § 27.53(h).

⁸⁸ *Ericsson 2 GHz Public Notice Comments* at 9.

⁸⁹ 47 C.F.R. § 2.106.

⁹⁰ *See* 47 C.F.R. § 25.252(c)(2).

proposed in 2004 to apply a standard of $43+10*\log_{10}(P)$ to the AWS-2 J block.⁹¹ In 2009, in the *ICO Waiver Order*, the Commission waived the Part 25 ATC rules and instead applied the $43+10*\log_{10}(P)$ to OOB in 2020-2025 MHz from transmitters operating in 2000-2020 MHz.⁹² We propose that no additional attenuation beyond $43+10*\log_{10}(P)$ dB is needed to protect services in the 2020-2025 MHz band. We seek comment on this approach. Commenters should discuss and quantify the costs and benefits of this proposal and any proposed alternative approaches.

45. *Interference with operations above 2025 MHz.* The AWS-4 uplink band is 5 megahertz from the 2025-2110 MHz band, which includes broadcast auxiliary service (BAS) and cable television service (CARS) operations, as well as certain Federal government operations. Although the ATC rules originally limited the mobile emissions to $70+10*\log_{10}(P)$ above 2025 MHz,⁹³ in 2009, the Commission waived the Part 25 ATC rule and instead applied the $43+10*\log_{10}(P)$ standard.⁹⁴ As the interference potential between these bands has not changed significantly since then, we propose that no additional attenuation beyond $43+10*\log_{10}(P)$ dB is needed to protect operations above 2025 MHz. We seek comment on this approach. Commenters should discuss and quantify the costs and benefits of this proposal and any proposed alternative approaches.

46. *Interference with operations below 2180 MHz.* The AWS-4 downlink band, 2180-2200 MHz, is adjacent to the AWS-2 Upper J block, 2175-2180 MHz, which is itself adjacent to the AWS-3 band, 2155-2175 MHz. The Commission has previously proposed that an attenuation of $43+10*\log_{10}(P)$ dB is an appropriate base station emission limit to prevent harmful electromagnetic interference in the AWS-2 and AWS-3 bands.⁹⁵ As the circumstances have not changed significantly since that attenuation level was proposed, we propose that no additional attenuation beyond $43+10*\log_{10}(P)$ dB is needed below 2180 MHz. We seek comment on this approach. Commenters should discuss and quantify the costs and benefits of this proposal and any proposed alternative approaches.

47. *Interference with operations above 2200 MHz.* The proposed AWS-4 downlink band, 2180-2200 MHz, is adjacent to Federal operations in 2200-2290 MHz. Federal operations in the band 2200-2290 MHz consist mainly of space, airborne telemetry, and fixed point-to-point microwave radio relay communications. The space communications in the band consist of the tracking, telemetry, scientific data communications, and control of U.S. spacecraft. The band is used by these agencies to operate space research, space operations, and Earth exploration-satellites for space-to-Earth communications, and in the case of NASA for space-to-space communications through their Tracking and Data Relay Satellite System (TDRSS). Federal agencies use this band for research; law enforcement video surveillance; control of robotic systems for explosive neutralization and disposal; and the testing of robotic ground vehicles.⁹⁶

⁹¹ *AWS-2 NPRM*, 19 FCC Rcd at 19301 ¶ 98.

⁹² *See ICO Waiver Order*, 24 FCC Rcd at 193-194 ¶ 61.

⁹³ *See* 47 C.F.R. § 25.252(c)(2).

⁹⁴ *See ICO Waiver Order*, 24 FCC Rcd at 193-194 ¶ 61.

⁹⁵ *See, e.g.*, Service Rules for Advanced Wireless Services in the 2155-2175 MHz Band, Service Rules for Advanced Wireless Services in the 1915-1920 MHz, 1995-2000 MHz, 2020-2025 MHz and 2175-2180 MHz Bands, WT Docket No. 07-195, WT Docket No. 04-356, *Further Notice of Proposed Rulemaking*, 23 FCC Rcd 9859, 9860, 9877 ¶ 3, App. A (proposed revision to 27.53(h)(1)) (2008) (*AWS-3 Further Notice*).

⁹⁶ An Assessment of the Viability of Accommodating Wireless Broadband in the 1755-1850 MHz Band, U.S. Department of Commerce (forthcoming). The 2200-2290 MHz Band is identified by NTIA as one of the (continued....)

48. The Commission's Part 25 ATC rules require strict emissions limitations (-100.6 dBW / 4 kHz) in the 2180-2200 MHz band, and prohibit the location of base stations within 820 meters of a Federal earth station operating in the 2200-2290 MHz band.⁹⁷ In 2009, the Commission waived the Part 25 emissions limit rule for MSS/ATC operator ICO, replacing it with the standard emission limit of $43+10*\log_{10}(P)$ dB.⁹⁸ Specific to emissions limits and restrictions on base station locations with respect to the 2200-2290 MHz band, the waiver order required that ICO follow an operator-to-operator agreement that ICO had reached with several Federal agencies.⁹⁹ Finally, TerreStar also requested a waiver of the Part 25 emission limit rules to the extent granted ICO, and is discussing an operator-to-operator agreement with Federal agencies.¹⁰⁰ In summary, as it stands, ATC base stations in the 2190-2200 MHz block must meet -100.6 dBW / 4 kHz in 2200-2290 MHz throughout the licensed areas, while ATC base stations in 2180-2190 MHz must meet the limits set forth in the *ICO-Federal Agreement*. If the Commission adopts the proposals contained in this *AWS-4 Notice*, we expect that licensees will construct extensive cellular systems in this band. We seek comment on whether such deployments would represent a material change in the expected density of deployment in the band. If so, we seek comment on the advantages and disadvantages of such a change.

49. We seek comment on the appropriate emissions limits to protect Federal operations in the 2200-2290 MHz band in light of the current state of affairs. We observe that the emissions limit of -100.6 dBW / 4 kHz EIRP is considerably more stringent than the standard OOB limit of $43+10*\log_{10}(P)$ dB and may limit flexible use of the AWS-4 band.¹⁰¹ We seek comment on whether licensees would be able to use their entire spectrum block for commercial terrestrial broadband base stations while meeting this limit, or, if not, how much spectrum would be unusable or usable only at a reduced power level (that is, would effectively become a guard band), as well as the extent of any such power reductions. We also seek comment on whether current, state-of-the-art base station filter design would feasibly be able to meet the OOB limit of -100.6 dBW / 4 kHz in any portion of the 2200-2290 MHz band, and the practicality, including the costs, of commercially deploying such filters. We seek comment on whether any internal guard band would affect the band plan proposal made in the previous section that guard bands would have on the band plan proposal.¹⁰² Finally, we seek comment on whether to carry forward the existing waivers of the Part 25 emissions limits into the Part 27 regime (e.g., pursuant to the Commission's license

(Continued from previous page) _____

comparable bands into which to relocate some Federal systems from the 1755-1850 MHz band so that band can be used for terrestrial wireless broadband. *Id.* at Sections 3-4, App. D.

⁹⁷ See 47 C.F.R. §§ 25.252(a)(1), (a)(6).

⁹⁸ See *ICO Waiver Order*, 24 FCC Rcd at 187 ¶ 44.

⁹⁹ Letter from Karl B. Nebbia, Associate Administrator, Office of Spectrum Management, National Telecommunications and Information Administration, to Julius Knapp, Chief, Office of Engineering and Technology, Federal Communications Commission, File No. SES-LIC-20071203-01646, SES-AMD-20080118-00075, SES-AMD-20080219-00172, Call Sign: E070272, Attachment at 2 (Jan. 6, 2009). We will refer to the attached Operator-to-Operator Agreement between ICO Global Communications and United States Federal Government Agencies Operating Earth Stations in the 2200-2290 MHz Band as the *ICO-Federal Agreement*.

¹⁰⁰ See, e.g., *TerreStar Waiver Request* at 9 n.21.

¹⁰¹ The limit of $43+10*\log_{10}(P)$ means that the transmit power must be -13 dBm/MHz or less. The limit of -100.6 dBW / 4 kHz EIRP, assuming an antenna gain of 17 dBi, is equivalent to -64 dBm/MHz. That is, it represents an additional 51 dB of attenuation.

¹⁰² See *supra* Section III.A (AWS-4 Band Plan).

modification authority under Section 316 of the Communications Act)¹⁰³. Commenters should discuss the costs and benefits of their proposals.

50. We seek comment on whether to prohibit the location of AWS-4 base stations within 820 meters of existing Federal earth stations, consistent with both the current Part 25 rule and the *ICO-Federal Agreement*.¹⁰⁴ Commenters should discuss and quantify the costs and benefits of their proposals.

51. We also seek comment on whether there are any other Part 25 MSS/ATC technical rules that we should incorporate into the AWS-4 technical rules.

52. *Other alternative approaches.* We also seek comment on any other alternative approaches to protecting Federal stations above 2200 MHz while maximizing the usability of AWS-4 spectrum. Commenters should discuss and quantify the costs and benefits of any proposed alternative approaches.

53. *PFD limits for protection of operations above 2200 MHz.* We seek comment on an alternative approach of specifying an aggregate power flux density (PFD) that must be met at the protected site, which would enable the AWS-4 licensee to operate as long as this limit is met. We seek comment on what PFD limit will prevent harmful interference, what methods can be used to determine that such a limit is met (*e.g.*, engineering studies), and the degree to which this approach would increase flexibility in the AWS-4 band while protecting Federal operations in the 2200 MHz band.

54. *Sliding scale for protection of operations above 2200 MHz.* The emissions limit in the *ICO-Federal Agreement* changes from an emissions limit of $43+10*\log_{10}(P)$ dB of attenuation of the transmit power beyond a specified distance from the protected site to an EIRP limit of -100.6 dBW / 4 kHz within the specified distance. However, the attenuation needed and therefore the necessary emissions limit is a function of the isolation provided by the geographic separation of the protected site and the terrestrial base station, and therefore follows a curve as a function of the distance from the protected site. Therefore, we seek comment on an alternative approach where the OOB limit is an interpolation between $43+10*\log_{10}(P)$ dB and -100.6 dBW / 4 kHz as a function of distance. In this case it may be necessary for the interpolation to be linear in the logarithm of the distance.¹⁰⁵

55. *Global Positioning System (GPS).* We note that the MSS/ATC rules contain provisions regarding interference with GPS systems operating at 1559-1610 MHz.¹⁰⁶ We further note that different MSS/ATC bands are differently situated in terms of frequency separation from the GPS band. We request comment on whether any special interference rules protecting GPS are warranted for the 2 GHz band if we implement the AWS-4 proposals. We ask that commenters provide technical analysis supporting their views. We also seek comment on the costs and benefits associated with their proposals.

2. Receiver Performance

56. We invite comment on any potential for receiver overload interference between AWS-4 operations and operations above 2200 MHz, below 2180 MHz, above 2020 MHz, and below 2000 MHz. If such a risk exists, we request that parties provide whatever information may be available about the characteristics of the receivers operating in these frequencies, potential solutions to overload interference, and an assessment of the impact this might have on deployment of AWS-4 service. We also invite

¹⁰³ See *infra* Section III.D.1 (Section 316 License Modification).

¹⁰⁴ See 47 C.F.R. § 25.252(a)(6).

¹⁰⁵ Propagation path loss is often linear in the log of the distance, rather than linear in the distance itself, so this may be an appropriate interpolation method.

¹⁰⁶ See 47 C.F.R. §§ 252(a)(7), (b)(3).

comment on any other receiver issues that should be considered in this proceeding that could affect the potential for harmful interference and usability of the AWS-4 spectrum.

3. Power Limits

57. We seek comment on appropriate power limits for terrestrial operations in the AWS-4 band. Specifically, as described below, we propose to apply existing AWS power limits to the AWS-4 band. We seek comment on this proposal, including the costs and benefits of the proposal.

58. *Base Stations.* The MSS/ATC rules limit ATC base station transmit power to 27 dBW EIRP in 1.23 MHz.¹⁰⁷ The current AWS-1 rules limit base station power in non-rural areas to 1640 watts EIRP for emission bandwidths less than 1 MHz and to 1640 watts per MHz EIRP for emission bandwidths greater than 1 MHz, and double these limits (3280 watts EIRP) in rural areas.¹⁰⁸ The Commission has previously concluded that a power limitation of 32 dBW / MHz EIRP is appropriate for base stations in the 2180-2190 MHz band,¹⁰⁹ and that a power limitation of 32 dBW EIRP is appropriate for base stations in the 2190-2200 MHz band.¹¹⁰ Although neither of these limits aligns exactly with the AWS-1 rules, the 32 dBW EIRP level was specifically chosen because it approximates the 1640 watt EIRP limit of AWS-1 specified in 27.50(d).¹¹¹ The Commission did not consider whether the higher power level of 3280 watts EIRP allowed for rural AWS-1 base stations is appropriate for 2180-2200 MHz.¹¹² Although not fully aligned with AWS-1, the current power limits are very similar. The 32 dBW EIRP limit is the same as the AWS-1 limit of 1640 watts EIRP for emissions under 1 MHz, but is more burdensome for larger bandwidths. Similarly, the 32 dBW/MHz EIRP limit is the same as the AWS-1 limit of 1640 watts / MHz EIRP for emission over 1 MHz, but is more burdensome for emissions under 1 MHz. Changing both limits to the existing AWS-1 rule of 1640 watts EIRP for emissions less than 1 MHz and 1640 watts/MHz EIRP for emissions over 1 MHz would best allow flexibility for the use of various bandwidths in the AWS-4 spectrum.

59. Furthermore, allowing the increase of these power levels to the current AWS-1 rules of 3280 watts EIRP for emissions less than 1 MHz and 3280 watts/MHz EIRP for emissions over 1 MHz in rural areas may promote the Commission's goals of furthering rural deployment of broadband services. Therefore, we propose that 27.50(d)(1-2), which sets the AWS-1 power limits for base stations, should also apply to AWS-4. We seek comment on this proposal, including the costs and benefits of the proposal.

60. The current AWS-1 rules also require that base stations with transmit power above 1640 watts EIRP and 1640 watts / MHz EIRP must coordinate with licensees in adjacent AWS blocks located within 120 kilometers, BRS licensees in the 2155-2160 MHz band located within 120 kilometers, and satellite entities in the 2025-2110 MHz band.¹¹³ As AWS-4 is not adjacent to the 2155-2160 MHz and 2025-2110 MHz bands, we do not see a need to carry these requirements over to AWS-4. Therefore, we propose only that AWS-4 base stations with transmit power above 1640 watts EIRP and 1640 watts /

¹⁰⁷ See 47 C.F.R. § 25.252(a)(2).

¹⁰⁸ See 47 C.F.R. § 27.50(d).

¹⁰⁹ See *ICO Waiver Order*, 24 FCC Rcd at 188 ¶ 47.

¹¹⁰ See *TerreStar Waiver Order*, 25 FCC Rcd at 235-236 ¶ 23-24.

¹¹¹ See *ICO Waiver Order*, 24 FCC Rcd at 188 ¶ 47; *TerreStar Waiver Order*, 25 FCC Rcd at 236 ¶ 24.

¹¹² These relaxed limitations for large bandwidths and rural areas were not considered because they were not requested in the waivers, and in some cases not present in the rules at the time of the waiver request.

¹¹³ See 47 C.F.R. § 27.50(d)(3).

MHz EIRP be required to coordinate with users in adjacent AWS blocks located within 120 kilometers. We seek comment on this proposal, including the costs and benefits of the proposal.

61. *Mobile Stations.* The Part 25 ATC rules set a power limit of 1 dBW (1.25 watts) EIRP in a bandwidth of 1.23 MHz for mobiles operating in 2000-2020 MHz.¹¹⁴ The existing AWS-1 rules set a power limit of 1 watt EIRP for mobiles operating in AWS-1,¹¹⁵ which is somewhat more restrictive. In the interest of harmonizing the AWS rules, and given the similarity of these two limits, we propose that the more restrictive limit of 27.50(d)(4), which is 1 watt EIRP, should apply to AWS-4. We seek comment on this proposal, including the costs and benefits of the proposal.

4. Antenna Height Restrictions

62. We propose that the flexible antenna height rules that apply to AWS-1 should also apply to AWS-4. We seek comment on this proposal, including the costs and benefits of the proposal.

63. *Base stations.* Specific antenna height restrictions for AWS-1 base stations are not set forth in Part 27 of our rules. However, all Part 27 services are subject to Section 27.56, which prevents antenna heights that would be a hazard to air navigation.¹¹⁶ Furthermore, the limitations of field strength at the geographical boundary of the license discussed below also effectively limit antenna heights.¹¹⁷ We propose that no unique antenna height limits are needed for AWS-4 facilities; rather, we believe that the general height restrictions are sufficient. We seek comment on this proposal, including the costs and benefits of the proposal.

64. *Fixed stations.* Section 27.50(d)(4) specifies a height restriction of 10 meters for fixed stations operating in AWS-1 spectrum.¹¹⁸ Given the similarity of the proposed AWS-4 use to AWS-1 use, we propose that this rule should be expanded to apply to AWS-4, as well. We seek comment on this proposal, including the costs and benefits of the proposal.

5. Co-Channel Interference Among AWS-4 Systems

65. If we ultimately decide to license the AWS-4 bands on the basis of geographic service areas that are less than nationwide, we will have to ensure that such licensees do not cause interference to co-channel systems operating along common geographic borders.¹¹⁹ The current rules for AWS-1 address the possibility of harmful co-channel interference between geographically adjacent licenses by setting a field strength limit of 47 dB μ V/m at the edge of the license area.¹²⁰ Due to the similarities between AWS-1 and AWS-4 spectrum use, we propose that this same signal strength limit is appropriate for AWS-4, and therefore that Section 27.55(a)(1) should be expanded to include the 2180-2200 MHz band. We seek comment on this proposal, including the costs and benefits of the proposal.

¹¹⁴ See 47 C.F.R. § 25.252(b)(1).

¹¹⁵ See 47 C.F.R. § 27.50(d)(4).

¹¹⁶ See 47 C.F.R. § 27.56.

¹¹⁷ See *infra* Section III.B.5 (Co-Channel Interference Among AWS-4 Systems).

¹¹⁸ 47 C.F.R. § 27.50(d).

¹¹⁹ If we authorize a single licensee in these bands, it will not be necessary to adopt co-channel interference protection criteria. Our co-channel protection rules would, however, apply to any partitioned portions of a nationwide license. See 47 C.F.R. § 27.55.

¹²⁰ See 47 C.F.R. § 27.55(a)(1).

6. Canadian and Mexican Coordination

66. Section 27.57(c) of our rules indicates that AWS-1 operations are subject to international agreements with Mexico and Canada.¹²¹ Until such time as any adjusted agreements between the United States, Mexico and/or Canada can be agreed to, operations must not cause harmful interference across the border, consistent with the terms of the agreements currently in force. We note that further modification (of the proposed rules) might be necessary in order to comply with any future agreements with Canada and Mexico regarding the use of these bands. We seek comment on this issue, including the costs and benefits of alternative approaches to this issue.

7. Other Technical Issues

67. There are several additional technical rules applicable to all Part 27 services. Specifically, these are: 27.51 Equipment authorization, 27.52 RF safety, 27.54 Frequency stability, 27.56 Antennas structures; air navigation safety, and 27.63 Disturbance of AM broadcast station antenna patterns.¹²² As AWS-4 will be a Part 27 service, we propose that all of these rules should apply to all AWS-4 licensees, including licensees who acquire their licenses through partitioning or disaggregation. We seek comment on this approach, including the costs and benefits of this approach.

C. Protection of MSS Operations

68. We propose to adopt a rule requiring an AWS-4 licensee to protect the incumbent 2 GHz MSS licensee from harmful interference. As set forth above, the 2000-2020 MHz band was allocated to MSS in 1997; fourteen years later the Commission added the current co-primary terrestrial Fixed and Mobile allocations.¹²³ In adding the co-primary Fixed and Mobile allocations in 2011, the Commission explained that “MSS remains co-primary in the 2 GHz MSS band.”¹²⁴ The Commission further explained that the addition of the new allocation “will not result in harmful interference, and would not inevitably lead to uses that would result in harmful interference,” impliedly because (other than the pre-existing MSS/ATC rules) no terrestrial service rules yet existed for the band.¹²⁵ As we are now proposing service rules for the AWS-4 band, we propose to codify the determination that “adding co-primary Fixed and Mobile allocations in this band will not result in harmful interference”¹²⁶ by requiring that AWS-4 licensees protect the 2 GHz MSS licensee from harmful interference. We seek comment on this proposal, including the costs and benefits of the proposal.

D. Assignment of AWS-4 License(s)

69. As discussed above, the Commission concluded in 2003 that it would grant additional ATC authority to the MSS incumbents. The Commission reasoned that separately controlled MSS and terrestrial mobile operations (*i.e.*, two ubiquitous mobile services) in the same band would be “impractical and ill-advised” because the parties would not be able to overcome the technical hurdles to reach a workable sharing arrangement.¹²⁷ In particular, the Commission stated:

¹²¹ 47 C.F.R. § 27.57(c).

¹²² 47 C.F.R. §§ 27.51, 27.52, 27.54, 27.56, 27.63.

¹²³ See *supra* ¶¶ 3, 14.

¹²⁴ *2 GHz Band Co-Allocation Order*, 26 FCC Rcd at 5715 ¶10.

¹²⁵ *Id.* at 5716 ¶ 13.

¹²⁶ *Id.*

¹²⁷ *ATC Report and Order*, 18 FCC Rcd at 1991 ¶ 49.

While . . . it may be theoretically possible for two different firms to own and operate the satellite and terrestrial portions of a single system, we believe that, in reality, no two operators are likely to succeed in organizing themselves to manage the highly complex coordination process required between both the MSS and the terrestrial component at the same time in the same band in the same region. To optimally balance the frequency usage of the terrestrial and satellite portions of the system, the ATC portion must be operated in a manner that controls the ATC terminal-to-MSS uplink interface while still providing ATC service.¹²⁸

Based on its technical analyses, the Commission also concluded that “we cannot grant to a third party the right to use licensed MSS spectrum for terrestrial use without impacting the rights of the existing satellite licensees.”¹²⁹

70. In the ATC proceeding, the Commission adopted a blanket authorization process to implement geographic area licensing of ATC base station facilities operating in the U.S. coverage of the MSS space segment, *i.e.*, all 50 states and the U.S. territories and possessions.¹³⁰ As noted above, DBSD and TerreStar received ATC authority in 2009 and 2010, respectively,¹³¹ allowing for the deployment of terrestrial base stations and collectively up to three million dual-mode MSS/ATC user terminals in the United States. Thus, in considering the impact that AWS-4 operations would have on the existing 2 GHz MSS licensee, we also consider the impact on the MSS licensee’s significant, albeit ancillary, authority to operate terrestrial stations in the 2 GHz band throughout the nation.

71. Taken together, the above concerns appear to present strong reasons that lead us to propose that AWS-4 licenses in this band should be assigned to the incumbent MSS licensee. First, the complexities of coordination between MSS and terrestrial uses that the Commission identified in 2003 in the *ATC Report and Order* suggest that assignment of terrestrial licenses to an entity other than the incumbent MSS licensee remains impractical. Second, we expect that the interference problems associated with two or more distinct terrestrial licensees in the same band (*i.e.*, distinct co-channel ATC and Part 27 licensees) point to assigning the AWS-4 licenses to the incumbent MSS licensee. Third, we observe that this result would not diminish the MSS licensee’s existing ability to provide terrestrial service in the band.

72. We seek comment on these issues. In particular, commenters should address whether there have been technological advances or other developments since 2003 that would either reinforce or alter these points and provide detailed technical analysis supporting any information provided.¹³² Should the record show, contrary to our expectations, that same-band, separate-operator sharing is possible—between AWS-4 licensees and an MSS licensee’s satellite and ATC operations—then we seek comment on alternative approaches to licensing the new service under the Communications Act that would achieve our goal of making additional spectrum available for terrestrial mobile broadband use. In addition, we

¹²⁸ *Id.* at 1993 ¶ 52.

¹²⁹ *Id.* at 1973 ¶ 18; *see also supra* ¶ 6.

¹³⁰ *ATC Report and Order*, 18 FCC Rcd at 2077 ¶ 240.

¹³¹ *ICO Waiver Order, TerreStar Waiver Order*.

¹³² *See generally*, Commission Staff Invites Technical Comment on the Certain Proposals to Permit Flexibility in the Delivery of Communications by Mobile Satellite Service Providers in the 2 GHz Band, the L-Band, and the 1.6/2.4 GHz Band, IB Docket No. 01-185, ET Docket No. 95-18, *Public Notice*, 17 FCC Rcd 4418 (2002).

seek comment on what effect the spectrum shift alternatives proposed above would have on assigning AWS-4 licenses.¹³³

73. We further seek comment on the impact, including the quantification of the costs and benefits that any method for assigning licenses would have on innovation, investment, and competition.

1. Section 316 License Modification

74. Based on our expectation that the Commission's earlier technical findings are still sound, and mindful of the 2 GHz MSS license holder's existing rights to operate MSS in the AWS-4 band and our proposal, above, to require protection of MSS uses, we propose to grant terrestrial authority to operate in the AWS-4 band to the current 2 GHz MSS licensee. We believe this would serve the public interest, convenience and necessity by making more spectrum available for broadband use and avoiding harmful electromagnetic interference.

a. Legal Authority

75. Under Section 316, the Commission has the authority to modify a station license if "in the judgment of the Commission such action will promote the public interest, convenience, and necessity,"¹³⁴ As the D.C. Circuit explained in *California Metro Mobile Communications v. FCC*, "Section 316 grants the Commission broad power to modify licenses; the Commission need only find that the proposed modification serves the public interest, convenience and necessity."¹³⁵ For example, in that case, the court found that the Commission's modification served the public interest, even though it was based on an analysis of potential rather than actual interference, and the modification could cause a minor disruption in the licensee's operations.¹³⁶ Here, we propose that, once the AWS-4 service rules are effective, we would issue an Order of Proposed Modification, under Section 316 of the Communications Act, to modify the existing 2 GHz MSS licensee's authority to operate in the 2000-2020 MHz and 2180-2200 MHz bands by adding Part 27 terrestrial authority and obligations, which would apply to all the AWS-4 service areas in these bands.¹³⁷ We seek comment on this proposed approach, including the costs and benefits of the proposal.

¹³³ See *supra* ¶¶ 42-43.

¹³⁴ 47 U.S.C. § 316 (a)(1).

¹³⁵ *California Metro Mobile Communications v. FCC*, 365 F.3d 38, 45 (D.C. Cir.2004) (*CMCC*). In *CMCC*, the court upheld the authority of the Commission to modify *CMCC*'s license by deleting a frequency, which had the potential to cause interference to an existing licensee. The Commission undertook the action to correct an error of a frequency coordinator, who recommended that the Commission grant *CMCC* a license after the coordinator had incorrectly determined that the requested frequencies would not cause interference to any existing licensee. Among other things, the court found that Section 316 is not unambiguous and therefore deferred to the Commission's interpretation that Section 316 "contains no limitation on the time frame within which it may act to modify a license and that its action under the section is not subject to the limitations on revocation, modification or reconsideration imposed by [s]ection 405." *Id.* at 45 (*citations omitted*).

¹³⁶ *CMCC*, 365 F.3d at 46.

¹³⁷ For example, if the Commission adopts its current proposal to license the 2000-2020 MHz and 2180-2200 MHz bands in paired 10 + 10 megahertz blocks by EA, the MSS licensee's modified license would include the 352 new service areas (the 176 EAs in each of the paired spectrum blocks). As such, the 2 GHz MSS licensee would have authority nationwide to provide full terrestrial services in the 2000-2020 MHz and 2180-2200 MHz band.

b. Public Interest Considerations

76. As noted above, the incumbent MSS licensee holds exclusive authority to operate terrestrial base stations in the AWS-4 band nationwide.¹³⁸ And existing Commission rules permit the MSS licensee to enter into spectrum manager leasing arrangements with spectrum lessees.¹³⁹ We believe that modifying the 2 GHz MSS licensee's authority as described herein, to have 2 GHz terrestrial operations governed under Part 27, would remove outdated regulatory barriers that have frustrated the Commission's goal of having the 2 GHz band used for terrestrial mobile broadband. Additionally, if the record developed in this proceeding confirms that current technology will not permit separate MSS and terrestrial mobile licensees, the envisioned Section 316 license modification would serve the public interest, convenience and necessity, by: (1) making more spectrum available for broadband use, and (2) avoiding harmful electromagnetic interference. We seek comment on this proposal, including the costs and benefits of the proposal.

77. *Making More Spectrum Available for Broadband Use.* As discussed above, the availability and quality of wireless broadband services will likely become constrained if additional spectrum does not become available to enable network expansion and technology upgrades.¹⁴⁰ This could result in higher prices, poor service quality, an inability for the U.S. to compete effectively on an international basis, depressed demand and, ultimately, a drag on innovation.¹⁴¹ As noted above, to address the need for broadband spectrum, the Commission has endeavored to promote the use of the 2 GHz MSS band, but there is virtually no current commercial use of this spectrum.¹⁴²

78. We believe that modifying the 2 GHz MSS licensee's authority as described herein would enhance the licensee's ability to offer high-quality, affordable terrestrial wireless broadband services, while retaining the right to offer MSS using the same spectrum; spectrum that is already licensed nationwide on an exclusive, primary basis for MSS. Thus, we propose that authorizing terrestrial operations will provide the 2 GHz MSS licensee with the possibility of achieving greater usage of the 2000-2020 MHz and 2180-2200 MHz bands than are possible under the current regulations. We seek comment on this proposal. We also seek comment on the extent that this proposal would increase innovation and investment in mobile broadband use of this spectrum. Commenters should discuss and quantify the costs and benefits of the proposal.

79. *Eliminating Harmful Interference.* The Commission may also modify licenses to achieve the public interest purpose of avoiding harmful interference.¹⁴³ In 2003, the Commission concluded that separately controlled MSS and terrestrial operations (*i.e.*, two ubiquitous mobile services) in the same band would be "impractical and ill-advised" because the parties would not be able to overcome the technical hurdles to reach a workable sharing arrangement.¹⁴⁴ If the record developed in this proceeding confirms that allowing terrestrial operations in the 2000-2020 MHz and 2180-2200 MHz bands independent from the MSS licensee would likely substantially compromise the effectiveness of both the mobile satellite and terrestrial services, we propose that the public interest would be best served by modifying the license to operate in the 2 GHz MSS band, as contemplated herein, rather than making the

¹³⁸ See *supra* ¶ 70.

¹³⁹ See 47 C.F.R. § 1.9020 (Spectrum manager leasing arrangements).

¹⁴⁰ See *supra* Section II.B (The Growing Spectrum Demands of Mobile Broadband Services).

¹⁴¹ See *National Broadband Plan* at 77.

¹⁴² See *supra* ¶ 8.

¹⁴³ See *CMCC*, 365 F.3d at 45-46.

¹⁴⁴ *ATC Report and Order*, 18 FCC Rcd at 1991 ¶ 49.

band available for initial terrestrial licenses under a sharing regime with MSS. We seek comment on this proposal and its effect on interference. Commenters should discuss and quantify the costs and benefits of this proposal on eliminating harmful interference.

2. Other Assignment Approaches

80. If, contrary to our expectations, the record developed in this proceeding reflects that it is now possible for separately authorized, independent AWS-4 licensees to protect MSS including ATC operations, then we seek comment on other approaches to authorizing terrestrial use, upon creation of the new AWS-4 service. These other approaches may include the assignment of new initial licenses via competitive bidding, if mutually exclusive applications are received, under Section 309(j) of the Communications Act.¹⁴⁵ Commenters should be mindful that existing MSS licensees would still retain MSS licenses and, therefore, any new terrestrial licensees would have to protect the incumbent 2 GHz MSS licensee from harmful interference. Commenters should discuss and quantify and costs and benefits associated with any alternative approaches.

3. Applications for Any AWS-4 Licenses Returned to the Commission

81. There is a potential, under proposals discussed herein or otherwise, for AWS-4 licenses to be terminated automatically or otherwise to become a part of the Commission's spectrum inventory.¹⁴⁶ Under such a scenario, we would resolve any mutually exclusive applications for such AWS-4 licenses using competitive bidding. We seek comment on the appropriate competitive bidding procedures below.

4. Procedures for Any AWS-4 Licenses Subject to Assignment by Competitive Bidding

82. Some of the scenarios on which we seek comment in this *Notice* could result in the acceptance of mutually exclusive applications for licenses that would be resolved by competitive bidding.¹⁴⁷ Accordingly, we seek comment on a number of proposals relating to competitive bidding for licenses for spectrum in the AWS-4 band.

a. Application of Part 1 Competitive Bidding Rules

83. We propose that the Commission would conduct any auction for AWS-4 licenses in conformity with the general competitive bidding rules set forth in Part 1, Subpart Q, of the Commission's rules, and substantially consistent with the competitive bidding procedures that have been employed in previous auctions.¹⁴⁸ Specifically, we propose to employ the Part 1 rules governing competitive bidding design, designated entity preferences, unjust enrichment, application and payment procedures, reporting requirements, and the prohibition on certain communications between auction applicants.¹⁴⁹ Under this

¹⁴⁵ 47 U.S.C. §309(j).

¹⁴⁶ See, e.g., *infra* Sections III.E (Performance Requirements) and F.4 (License Term, Renewal Criteria, and Permanent Discontinuance of Operations).

¹⁴⁷ See, e.g., *infra* Sections III.E (Performance Requirements) and F.4 (License Term, Renewal Criteria, and Permanent Discontinuance of Operations).

¹⁴⁸ See 47 C.F.R. §§ 1.2101-1.2114.

¹⁴⁹ See, e.g., Amendment of Part 1 of the Commission's Rules—Competitive Bidding Procedures, WT Docket No. 97-82, *Order, Memorandum Opinion and Order and Notice of Proposed Rule Making*, 12 FCC Rcd 5686 (1997); *Third Report and Order and Second Further Notice of Proposed Rule Making*, 13 FCC Rcd 374 (1997) (*Part 1 Third Report and Order*); *Order on Reconsideration of the Third Report and Order, Fifth Report and Order, and Fourth Further Notice of Proposed Rule Making*, 15 FCC Rcd 15293 (2000), *aff'd in part and modified in part, Second Order on Reconsideration of the Third Report and Order, and Order on Reconsideration of the Fifth Report and Order*, 18 FCC Rcd 10180 (2003); *Seventh Report and Order*, 16 FCC Rcd 17546 (2001); *Eighth Report and* (continued....)

proposal, such rules would be subject to any modifications that the Commission may adopt for its Part 1 general competitive bidding rules in the future. In addition, consistent with our long-standing approach, auction-specific matters such as the competitive bidding design and mechanisms, as well as minimum opening bids and/or reserve prices, would be determined by the Wireless Telecommunications Bureau pursuant to its delegated authority.¹⁵⁰ We seek comment on this approach, including the costs and benefits of this approach. We also seek comment on whether any of our Part 1 rules would be inappropriate or should be modified for an auction of licenses in the AWS-4 bands.

b. Small Business Provisions for Terrestrial Geographic Area Licenses

84. In authorizing the Commission to use competitive bidding, Congress mandated that the Commission “ensure that small businesses, rural telephone companies, and businesses owned by members of minority groups and women are given the opportunity to participate in the provision of spectrum-based services.”¹⁵¹ In addition, Section 309(j)(3)(B) of the Communications Act provides that, in establishing eligibility criteria and bidding methodologies, the Commission shall promote “economic opportunity and competition . . . by avoiding excessive concentration of licenses and by disseminating licenses among a wide variety of applicants, including small businesses, rural telephone companies, and businesses owned by members of minority groups and women.”¹⁵² One of the principal means by which the Commission fulfills this mandate is through the award of bidding credits to small businesses.

85. In the *Competitive Bidding Second Memorandum Opinion and Order*, the Commission stated that it would define eligibility requirements for small businesses on a service-specific basis, taking into account the capital requirements and other characteristics of each particular service in establishing the appropriate threshold.¹⁵³ Further, in the *Part 1 Third Report and Order*, the Commission, while standardizing many auction rules, determined that it would continue a service-by-service approach to defining small businesses.¹⁵⁴

86. In the event that the Commission assigns exclusive geographic area licenses for terrestrial use of the AWS-4 band, we believe that this spectrum would be employed for purposes similar to those

(Continued from previous page)

Order, 17 FCC Rcd 2962 (2002); *Second Order on Reconsideration of the Part 1 Fifth Report and Order*, 20 FCC Rcd 1942 (2005); Implementation of the Commercial Spectrum Enhancement Act and Modernization of the Commission’s Competitive Bidding Rules and Procedures, WT Docket 05-211, *Report and Order*, 21 FCC Rcd 891 (2006) (*CSEA/Part 1 Report and Order*), *recons. pending*; *Second Report and Order and Second Further Notice of Proposed Rule Making*, 21 FCC Rcd 4753 (2006) (*CSEA/Part 1 Designated Entity Second Report and Order and Second FNPRM*), *recons. pending*; *Order on Reconsideration of the Second Report and Order*, 21 FCC Rcd 6703 (2006) (modified by *Erratum and Notice of Office of Management and Budget Approval of Information Collections*, 21 FCC Rcd 6622 (WTB 2006)), *petition for review dismissed sub nom. Council Tree Communications, Inc. v. FCC*, 503 F.3d 284 (3d Cir. 2007); *Second Order on Reconsideration of the Second Report and Order*, 23 FCC Rcd 5425 (2008), *vacated in part, Council Tree Communications, Inc. v. FCC*, 619 F.3d 235 (3d Cir. 2010); *Order*, FCC 12-12 (Feb. 1, 2012).

¹⁵⁰ See 47 C.F.R. §§ 0.131 (c), 0.331; see also, Amendment of Part 1 of Commission’s Rules – Competitive Bidding Procedures, *Third Report and Order and Second Further Notice of Proposed Rule Making*, WT Docket No. 97-82, 13 FCC Rcd 374, 448-49, 454-55 (1997) (directing the Bureau to seek comment on specific mechanisms relating to auction conduct pursuant to the BBA) (*Part 1 Third Report and Order*).

¹⁵¹ 47 U.S.C. § 309(j)(4)(D).

¹⁵² 47 U.S.C. § 309(j)(3)(B).

¹⁵³ Implementation of Section 309(j) of the Communications Act—Competitive Bidding, PP Docket No. 93-253, *Second Memorandum Opinion and Order*, 9 FCC Rcd 7245, 7269 ¶ 145 (1994) (*Competitive Bidding Second Memorandum Opinion and Order*); 47 C.F.R. § 1.2110(c)(1).

¹⁵⁴ *Part 1 Third Report and Order*, 13 FCC Rcd at 388 ¶ 18; 47 C.F.R. § 1.2110 (c)(1).

for which the AWS-1 band is used. We therefore propose to establish the same small business size standards and associated bidding credits for the AWS-4 bands as the Commission adopted for the AWS-1 band.¹⁵⁵ Thus, we propose to define a small business as an entity with average annual gross revenues for the preceding three years not exceeding \$40 million, and a very small business as an entity with average annual gross revenues for the preceding three years not exceeding \$15 million.¹⁵⁶ We seek comment on this proposal, including the costs and benefits of the proposal.

87. We propose to provide small businesses with a bidding credit of 15 percent and very small businesses with a bidding credit of 25 percent, as set forth in the standardized schedule in Part 1 of our Rules.¹⁵⁷ We seek comment on the use of these standards and associated bidding credits, with particular focus on the appropriate definitions of small businesses and very small businesses as they may relate to the size of the geographic area to be served and the spectrum allocated to each license. Commenters should discuss and quantify any costs or benefits associated with these standards and associated bidding credits as they relate to the proposed geographic areas. In discussing these issues, commenters are requested to address and quantify the expected capital requirements for services in these bands and other characteristics of the service. Commenters are also invited to use comparisons with other services for which the Commission has already established auction procedures as a basis for their comments and any quantification of costs and benefits regarding the appropriate small business size standards.

88. In establishing the criteria for small business bidding credits, we acknowledge the difficulty in accurately predicting the market forces that will exist at the time these frequencies are licensed. Thus, our forecasts of types of services that will be offered over these bands may require adjustment depending upon ongoing technological developments and changes in market conditions.

89. Finally, we seek comment on whether to use a different approach to bidding credits. To the extent commenters support a different approach to bidding credits than those discussed here, they should support their proposals with relevant information, including costs and benefits of their alternative proposals on the types of system architecture that are likely to be deployed in these bands, the availability of equipment, market conditions, and other factors that may affect the capital requirements of the types of services that may be provided.

E. Performance Requirements

90. The Commission establishes performance requirements to promote access to spectrum and the provision of service, including to rural areas. Over the years the Commission has applied different performance and construction requirements to different spectrum bands. For example, for licensees operating in the 2.3 GHz Wireless Communications Services (WCS) band, the Commission adopted performance requirements, which include population-based construction requirements (40 percent of the license area's population within three-and-a-half (3.5) years and 75 percent within six (6) years) and reporting requirements.¹⁵⁸

91. We propose to establish performance requirements for AWS-4 licensees. Our proposal is informed by proposals made in the proceeding on DISH's request for waiver of certain ATC rules for the

¹⁵⁵ See 47 C.F.R. § 24.720 (1994); *AWS-1 Report and Order*, 18 FCC Rcd at 25220 ¶ 149.

¹⁵⁶ We are coordinating these proposed small business size standards with the U.S. Small Business Administration.

¹⁵⁷ In the *Part 1 Third Report and Order*, the Commission adopted a standard schedule of bidding credits, the levels of which were developed based on our auction experience. *Part 1 Third Report and Order*, 13 FCC Rcd at 403-04 ¶ 47; see also 47 C.F.R. § 1.2110(f)(2).

¹⁵⁸ See 47 C.F.R. § 27.14(p).

2000-2020 MHz and 2180-2200 MHz bands.¹⁵⁹ Specifically, DISH proposed a buildout schedule based on “the buildout principles established in the Sprint/Nextel and Sprint/Clearwire transaction decisions” and “keyed to commercial availability of the LTE Advanced standard.”¹⁶⁰ The Sprint/Nextel build-out requirements were to offer service to a population of 15 million within four years and 30 million within 6 years;¹⁶¹ the Sprint/Clearwire build-out requirement is to “cover 140 million people by the end of 2010,” slightly more than two years after the adoption of the order.¹⁶² Alternatively, AT&T proposes that the Commission impose the build out conditions consistent with the March 2010 Harbinger/SkyTerra transfer of control.¹⁶³ In approving that transfer, the Commission required Harbinger (now operating as LightSquared) to build out its 4G terrestrial network according to Harbinger’s proposed build-out schedule of providing coverage to at least 100 million people in the United States by the end of 2012 (21 months after the transfer order), to at least 145 million people by the end of 2013 (33 months), and to at least 260 million people in the United States by the end of 2015 (57 months).¹⁶⁴

92. *Build-Out Requirements.* Building off of these approaches and in light of the unique circumstances of the AWS-4 band, including its interplay with the 2 GHz MSS band located in the same frequencies, we propose to adopt a middle ground between these two proposals. We seek comment on the following build-out requirements for AWS-4 spectrum:

- AWS-4 Interim Build-out Requirement: Within three (3) years, an AWS-4 licensee shall provide signal coverage and offer service to at least thirty (30) percent of their total AWS-4 population. A licensee’s total AWS-4 population shall be calculated by summing the population of each of its license authorizations in the AWS-4 band.
- AWS-4 Final Build-out Requirement: Within seven (7) years, an AWS-4 licensee shall provide signal coverage and offer service to at least seventy (70) percent of the population in each of its license authorization areas.

93. We propose these performance requirements in an effort to foster timely deployment in the AWS-4 band for the provision of wireless, terrestrial broadband service, and to enable the Commission to take appropriate corrective action should such deployment fail to occur. Specifically, the

¹⁵⁹ See *supra* ¶ 9.

¹⁶⁰ DISH, DBSD, TerreStar Consolidated Opposition to Petitions to Deny and Response to Comments, IB Docket Nos. 11-149, 11-150, at 31 (Oct. 27, 2011) (internal citations omitted).

¹⁶¹ Applications of Nextel Communications, Inc. and Sprint Corporation For Consent to Transfer Control of Licenses and Authorizations, WT Docket No. 05-63, *Memorandum Opinion and Order*, 20 FCC Rcd 13967, 14028 ¶¶ 164-65 (2005) (the build-out requirements contain additional details on how the BTA-based build-out would occur).

¹⁶² Sprint Nextel Corporation and Clearwire Corporation Applications for Consent to Transfer Control of Licenses, Leases, and Authorizations, WT Docket No. 08-94, *Memorandum Opinion and Order*, 23 FCC Rcd 17570, 17617 ¶ 119 (2008) (*Sprint-Clearwire Merger Order*).

¹⁶³ Letter from Joan Marsh, Vice President – Federal Regulatory, AT&T Services, Inc, to Marlene H. Dortch, Sec’y, Federal Communications Commission, Docket Nos. 11-149, at 2 (Jan. 26, 2012).

¹⁶⁴ SkyTerra Communications, Inc., Transferor, and Harbinger Capital Partners Funds, Transferee, Applications for Consent to Transfer of Control of SkyTerra Subsidiary, LLC, IB Docket No. 08-184, *Memorandum Opinion and Order and Declaratory Ruling*, 25 FCC Rcd 3059, 3085, 3088-89, 3098 at ¶¶ 56, 72, App. B at Att. 2, p.1 (2010). On February 15, 2012, the Commission proposed to modify LightSquared’s satellite license “to suspend indefinitely LightSquared’s underlying ATC authorization, first granted in 2004, to an extent consistent with the NTIA Letter.” International Bureau Invites Comment on NTIA Letter Regarding LightSquared Conditional Waiver, IB Docket No. 11-109, *Public Notice*, DA 12-214 at 4 (Feb. 15, 2012).

interim benchmark at three years would ensure that a licensee will begin deploying facilities quickly and thereby evidencing meaningful utilization of the spectrum. At the same time, by proposing a relatively low population threshold in the interim benchmark, we acknowledge that large-scale network deployment may ramp up over time as equipment becomes available and a customer base is established. In addition, by proposing a final build-out requirement timeline of seven years, we believe we allow a reasonable amount of time for any AWS-4 licensee to attain nationwide scale.¹⁶⁵ Further, we propose geographic area based (*i.e.* EA based) requirements for the final milestone in order to encourage deployment in all areas of the country. We seek comment on the proposed build-out requirements. We encourage comment on whether our proposals represent the appropriate balance between requirements that are too low as to not result in meaningful build-out and those that would be too high as to be unattainable. Would the DISH or AT&T proposals represent more appropriate requirements? Commenters should discuss and quantify how any supported buildout requirements will affect investment and innovation as well as discuss and quantify other costs and benefits associated with the proposal.

94. *Penalties for Failure to Meet Construction Requirements.* Again, building on what we have learned from other bands and on the unique characteristics of the AWS-4 bands, we propose and seek comment, including the costs and benefits, on the following penalties in the event an AWS-4 licensee fails to satisfy its build-out requirements:

- In the event an AWS-4 licensee fails to meet the AWS-4 Interim Build-out Requirement, *all* of the licensee's AWS-4 license authorizations shall terminate automatically without Commission action.
- In the event an AWS-4 licensee fails to meet the AWS-4 Final Build-out Requirement in any of its license authorizations, its AWS-4 license for each license authorization areas in which it fails to meet the build-out requirement shall terminate automatically without Commission action.

95. If the Commission assigns AWS-4 rights to the 2 GHz MSS licensee pursuant to a Section 316 license modification, the license would include both Part 27 terrestrial and Part 25 mobile satellite authorizations. In such a situation, we propose that the failure to satisfy a build-out requirement would trigger the automatic termination of the mobile satellite authorization in any area in which the terrestrial authorizations are terminated. Specifically, failure to meet the AWS-4 Interim Build-out Requirement would result in the AWS-4 and 2 GHz MSS licenses automatically terminating in all license areas (*i.e.*, nationwide). Failure to meet the AWS-4 Final Build-out Requirement would result in the AWS-4 and 2 GHz MSS licenses automatically terminating in those areas where the licensee fails to meet the requirement. This proposal appears consistent with the 2 GHz MSS licensee's assertion that the ability to offer stand-alone terrestrial service is critical to support the provision of MSS in this spectrum.¹⁶⁶ We similarly expect that failure to satisfy terrestrial build-out requirements would be accompanied by failure to provide meaningful MSS. We seek comment on whether the protection that is afforded to MSS operations under our proposed rules should be modified if the MSS licensee fails to meet

¹⁶⁵ The population of each EA can be dramatically different so we believe it is more appropriate to require the licensee to cover a certain percentage of the population in each EA rather than a certain number of people in each EA. See Metropolitan Area and BEA Economic Area Projections of Economic Activity and Population to the Year 2005, Survey of Current Business, 56, 64-72 (June 1996).

¹⁶⁶ Letter from Alison A. Minea, Corporate Counsel, DISH Network, to Marlene H. Dortch, Sec'y, Federal Communications Commission, Docket Nos. 11-149, 11-150, at 2 (Jan. 6, 2012) ("Without the [ATC] waivers [that would enable the provision of stand-alone terrestrial service], DISH believes it would be unable to compete in the U.S. wireless business. As a result we would need to evaluate the carrying value of these assets.").

the AWS-4 Final Build-out Requirement and the costs and benefits to any modification.¹⁶⁷ If so, to what extent should the interference protection be modified?

96. We further propose that, in the event that a licensee's authority to operate terminates, terrestrial spectrum rights would become available for reassignment pursuant to the competitive bidding provisions of Section 309(j).¹⁶⁸ Further, consistent with the Commission's rules for other spectrum bands, including AWS-1, 700 MHz, and Broadband Radio Service, we propose that any AWS-4 licensee who forfeits its license for failure to meet its performance requirements would be precluded from regaining it.¹⁶⁹ We observe that for AWS-4 spectrum assigned under Section 316, termination of individual AWS-4 area licenses for failure to satisfy the AWS-4 Final Build-out Requirement could result in an inability for the Commission to meaningfully reassign the spectrum rights should the Commission continue to require coordination of reassigned spectrum with the MSS operator. We request comment on the appropriate remedy in such circumstances, and commenters should discuss and quantify the costs and benefits or any proposed remedy. For example, should any subsequent Commission reassignment of the AWS-4 spectrum occur without a requirement to coordinate with, or protect MSS operations or should the MSS operations continue to receive interference protection?

97. *Compliance Procedures.* Consistent with Section 1.946(d) of the Commission's rules, we propose to require AWS-4 licensees to demonstrate compliance with the new performance requirements by filing a construction notification within 15 days of the relevant milestone certifying that they have met the applicable performance benchmark.¹⁷⁰ Further, we propose that each construction notification include electronic coverage maps and supporting documentation, which must be truthful and accurate and must not omit material information that is necessary for the Commission to determine compliance with its performance requirements.¹⁷¹

98. Electronic coverage maps must accurately depict the boundaries of each license area in the licensee's service territory. If a licensee does not provide reliable signal coverage to an entire license area, we propose that its map must accurately depict the boundaries of the area or areas within each license area not being served. Further, we propose that each licensee also must file supporting documentation certifying the type of service it is providing for each licensed area within its service territory and the type of technology used to provide such service. Supporting documentation must include the assumptions used to create the coverage maps, including the propagation model and the signal strength necessary to provide reliable service with the licensee's technology.

F. Regulatory Issues; Licensing and Operating Rules

99. We propose to provide AWS-4 licensees with the flexibility to provide any fixed or mobile service that is consistent with the allocations for this spectrum, as we have generally done with other spectrum allocated or designated for licensed fixed and mobile services, *e.g.*, AWS-1 spectrum. We also propose to license this spectrum under our market-oriented Part 27 rules. We seek comment on these proposals. In addition, we seek comment on the appropriate regulatory framework for AWS-4 licenses,

¹⁶⁷ See *supra* Section III.C (Protection of MSS Operations).

¹⁶⁸ See *supra* Section III.D.4 (Procedures for Any AWS-4 Licenses Subject to Assignment by Competitive Bidding).

¹⁶⁹ See, *e.g.*, 27 C.F.R. §§ 27.14(a), (j), (o).

¹⁷⁰ See 47 C.F.R. § 1.946(d) ("notification[s] must be filed with Commission within 15 days of the expiration of the applicable construction or coverage period").

¹⁷¹ See, *e.g.*, 47 C.F.R. § 1.17 (Truthful and accurate statements to the Commission); 47 C.F.R. § 1.917(c) ("Willful false statements . . . are punishable by fine and imprisonment, 18 U.S.C. 1001, and by appropriate administrative sanctions, including revocation of station license pursuant to 312(a)(1) of the Communications Act of 1934, as amended.").

the license term, criteria for renewal, and other licensing and operating rules pertaining to these bands. We also seek comment on the potential impact of all of our proposals on competition. Commenters should also comment on how any proposal that they support enhances competition and results in rapid provisioning of competitive mobile broadband services to consumers. Commenters also should discuss the costs and benefits of these proposals and any alternative proposals.

1. Flexible Use, Regulatory Framework, and Regulatory Status

a. Flexible Use

100. We propose service rules for the AWS-4 band that would permit a licensee to employ the spectrum for any terrestrial use permitted by the United States Table of Frequency Allocations contained in Part 2 of our rules (*i.e.*, fixed or mobile services).¹⁷² Congress recognized the potential benefits of flexibility in allocations of the electromagnetic spectrum and amended the Communications Act in 1999 to add Section 303(y). This section provides the Commission with authority to provide for flexibility of use if:

- (1) such use is consistent with international agreements to which the United States is a party; and (2) the Commission finds, after notice and an opportunity for public comment, that (A) such an allocation would be in the public interest; (B) such use would not deter investment in communications services and systems, or technology development; and (C) such use would not result in harmful interference among users.¹⁷³

101. We believe that our proposal for flexibility meets these Section 303(y) criteria. The public interest benefits of flexibility are manifold. The Commission has identified the establishment of maximum feasible flexibility in both allocations and service rules as a critical means of ensuring that spectrum is put to its most beneficial use. For example, in a 1999 *Policy Statement* on spectrum management, the Commission observed that “[i]n the majority of cases, efficient spectrum markets will lead to use of spectrum for the highest value end use,” and that “[f]lexible allocations may result in more efficient spectrum markets.”¹⁷⁴ We would expect these economic efficiencies to foster—not deter—technology development and investment in communications services and systems. And the technical rules we are proposing here should prevent harmful interference among users. In addition, as discussed above, flexible use would be subject to bilateral discussions commonly undertaken whenever spectrum is put to use in border areas, but is consistent with applicable international agreements.¹⁷⁵ Finally, in the *2 GHz Band Co-Allocation Order*, the Commission added co-primary Fixed and Mobile allocations, along with the pre-existing MSS allocation, in the 2 GHz band,¹⁷⁶ expressly “lay[ing] the foundation for more flexible use of the band [and] . . . promoting investment in the development of new services and additional innovative technologies.”¹⁷⁷

¹⁷² 47 C.F.R. § 2.106. Part 27 licensees must also comply with other Commission rules of general applicability. *See* 47 C.F.R. § 27.3. These service rule proposals cover only the terrestrial use of the spectrum in this band. MSS use in this spectrum will continue to be governed by Part 25.

¹⁷³ Balanced Budget Act of 1997, Pub. L. No. 105-33, 111 Stat. 251, 268-69; 47 U.S.C. § 303(y).

¹⁷⁴ *See* Principles for Reallocation of Spectrum to Encourage the Development of Telecommunications Technologies for the New Millennium, FCC 99-354, *Policy Statement*, 14 FCC Rcd 19868, 19870 ¶ 9 (1999).

¹⁷⁵ *See supra* Section III.B.6 (Canadian and Mexican Coordination).

¹⁷⁶ *2 GHz Band Co-Allocation Order*, 26 FCC Rcd at 5714-16 ¶¶ 8-13.

¹⁷⁷ *Id.* at 5716 ¶ 13.

102. We seek comment on our proposal to provide for flexible use of the AWS-4 band, especially in light of the Section 303(y) criteria noted above. If any restrictions are warranted, what should they be and why are they needed? Commenters should quantify the costs and benefits or any such restrictions. Are there trade-offs between flexibility and investment in technology and new services that we should consider? To the extent commenters believe flexibility will deter investment in these bands, they should also suggest specific restrictions on how spectrum should be used by a licensee, and provide detailed analysis and quantification of the economic tradeoffs between flexibility and investment that justify any particular recommended restriction on use. We also specifically seek comment on the types of uses that pose the greatest risk of interference to terrestrial or satellite use of this spectrum, and the quantification of these risks.¹⁷⁸

b. Regulatory Framework

103. Because we propose to permit flexible use of these bands, we also propose licensing the spectrum under the flexible regulatory framework of Part 27 of our rules.¹⁷⁹ Unlike other rule parts applicable to specific services, Part 27 does not prescribe a comprehensive set of licensing and operating rules for the spectrum to which it applies. Rather, for each frequency band under its umbrella, Part 27 defines permissible uses and any limitations thereon, and specifies basic licensing requirements. The licensing requirements for a number of spectrum bands, including the AWS spectrum at 1710-1755 MHz and 2110-2155 MHz¹⁸⁰ and the Upper and Lower 700 MHz bands,¹⁸¹ are contained in Part 27. In order to promote flexibility and permit market forces to determine what services are ultimately offered in these bands, we therefore seek comment on our proposal to license the AWS-4 band under Part 27 service and licensing rules, and any associated costs or benefits or doing so.

c. Regulatory Status

104. We propose to apply the regulatory status provisions of Section 27.10 of the Commission's Rules to licensees in the AWS-4 band. The Commission's current mobile service license application requires an applicant for mobile services to identify the regulatory status of the service(s) it intends to provide¹⁸² because service offerings may bear on eligibility and other statutory and regulatory requirements.¹⁸³ Under Part 27, the Commission permits applicants who may wish to provide both common carrier and non-common carrier services (or to switch between them) under a single license to request status as both a common carrier and a non-common carrier.¹⁸⁴ Thus, a Part 27 applicant is not required to choose between providing common carrier and non-common carrier services. We propose to

¹⁷⁸ In Section III.B we seek comment on appropriate technical rules for use of this spectrum.

¹⁷⁹ Part 27 licensees must also comply with other Commission rules of general applicability. *See* 47 C.F.R. § 27.3.

¹⁸⁰ *See AWS-1 Report and Order*.

¹⁸¹ *See* Amendment of the Commission's Rules to Establish Part 27, the Wireless Communications Service ("WCS"), GN Docket No. 96-228, *Report and Order*, 12 FCC Rcd 10785 (1997) (*Part 27 Report and Order*).

¹⁸² In the *LMDS Second Report and Order*, the Commission required applicants for fixed services to indicate if they planned to offer services as a common carrier, a non-common carrier, or both, and to notify the Commission of any changes in status without prior authorization. Rulemaking to Amend Parts 1, 2, 21, and 25 of the Commission's Rules to Redesignate the 27.5-29.5 GHz Frequency Band, to Reallocate the 29.5-30.0 GHz Frequency Band, to Establish Rules and Policies for Local Multipoint Distribution Service and for Fixed Satellite Services, CC Docket No. 92-297, *Second Report and Order, Order on Reconsideration, and Fifth Notice of Proposed Rulemaking*, 12 FCC Rcd 12545, 12636-38, 12644-45, 12652-54, ¶¶ 205-208, 225-226, 245-251 (1997) (*LMDS Second Report and Order*); *aff'd, Melcher v. FCC*, 134 F.3d 1143 (D.C. Cir. 1998).

¹⁸³ *See, e.g.*, foreign ownership requirements, discussed *infra* Section III.F.2.a.

¹⁸⁴ *See* 47 C.F.R. § 27.10. *Part 27 Report and Order*, 12 FCC Rcd at 10846-48 ¶¶ 119-122.

adopt this same approach here. Licensees in the AWS-4 band would be able to provide all allowable services anywhere within their licensed area at any time, consistent with their regulatory status.¹⁸⁵ We believe that this approach is likely to achieve efficiencies in the licensing and administrative process, and provide flexibility to the marketplace. We seek comment on this approach and the costs and benefits of this approach.

105. We further propose that applicants and licensees in the AWS-4 band be required to indicate a regulatory status for any services they choose to provide. Apart from this designation of regulatory status, we would not require applicants to describe the services they seek to provide.¹⁸⁶ We caution potential applicants that an election to provide service on a common carrier basis typically requires that the elements of common carriage be present,¹⁸⁷ otherwise the applicant must choose non-common carrier status.¹⁸⁸ If potential applicants are unsure of the nature of their services and their classification as common carrier services, they may submit a petition with their applications, or at any time, requesting clarification and including service descriptions for that purpose.¹⁸⁹ We propose to apply this framework to AWS-4 licensees and seek comment on this proposal, including the costs and benefits of this proposal.

106. We also propose that if a licensee were to change the service or services it offers such that its regulatory status would change, the licensee must notify the Commission.¹⁹⁰ A change in a licensee's regulatory status would not require prior Commission authorization, provided the licensee was in compliance with the foreign ownership requirements of Section 310(b) of the Communications Act that would apply as a result of the change, consistent with the Commission's rules for AWS-1 spectrum.¹⁹¹ Consistent with our Part 27 rules, we propose to require the notification within 30 days of a change made without the need for prior Commission approval, except that a different time period may apply where the change results in the discontinuance, reduction, or impairment of the existing service.¹⁹² We seek comment on this proposal, including the costs and benefits of this proposal.

¹⁸⁵ For instance, we note that to the extent a licensee provides a Commercial Mobile Radio Service, such service would be subject to the provisions of Part 20 of the Commission's rules, 47 C.F.R. Part 20; *see also infra* Section III.F.1.a (Flexible Use).

¹⁸⁶ *See Part 27 Report and Order* at 10848 ¶ 121; *see also LMDS Second Report and Order*, 12 FCC Rcd at 12644 ¶ 223; 47 C.F.R. § 101.1013.

¹⁸⁷ *See* 47 U.S.C. § 153(51) ("A telecommunications carrier shall be treated as a common carrier under this chapter only to the extent that it is engaged in providing telecommunication services"); *see also* 47 U.S.C. § 332(c)(1)(A) ("A person engaged in the provision of a service that is a commercial mobile service shall, insofar as such person is so engaged, be treated as a common carrier for purposes of this chapter.").

¹⁸⁸ *See Part 27 Report and Order*, 12 FCC Rcd at 10848 ¶¶ 121-22. The Commission examined services in the *LMDS Second Report and Order* and explained that any video programming service would be treated as a non-common carrier service. *LMDS Second Report and Order*, 12 FCC Rcd at 12639-42 ¶¶ 213-17.

¹⁸⁹ *Part 27 Report and Order*, 12 FCC Rcd at 10848 ¶ 121.

¹⁹⁰ *See* 47 C.F.R. § 27.10(d); *see also* 47 C.F.R. § 27.66.

¹⁹¹ 47 U.S.C. § 310(b); *see infra* Section III.F.2.a (Foreign Ownership).

¹⁹² *See* 47 C.F.R. § 27.66.

2. Ownership Restrictions

a. Foreign Ownership

107. We propose that the provisions of Section 27.12 of the Commission's rules should apply to applicants applying for licenses in the AWS-4 band.¹⁹³ Section 27.12 implements Section 310 of the Communications Act, as modified by the Telecommunications Act of 1996, imposing foreign ownership and citizenship requirements that restrict the issuance of licenses to certain applicants.¹⁹⁴ An applicant requesting authorization for services other than broadcast, common carrier, aeronautical en route, or aeronautical fixed services would be subject to Section 310(a), but not to the additional prohibitions of Section 310(b). An applicant requesting authorization for these particular services would be subject to both Sections 310(a) and 310(b). As applicable to these bands, we do not believe that common carriers and non-common carriers filing an application should be subject to varied reporting obligations. By establishing parity in reporting obligations, however, we do not propose a single, substantive standard for compliance. For example, we would be unlikely to deny a license to an applicant requesting authorization exclusively to provide services not enumerated in Section 310(b), solely because its foreign ownership would disqualify it from receiving a license if the applicant had applied for a license to provide the services enumerated in Section 310(b). We request comment on this proposal, including any costs or benefits of this proposal.

b. Eligibility

108. In recent years the Commission determined in a number of services that eligibility restrictions on licenses may be imposed only when open eligibility would pose a significant likelihood of substantial harm to competition in specific markets and when an eligibility restriction would be effective in eliminating that harm. This approach relies on market forces absent a compelling showing that regulatory intervention to exclude potential participants is necessary.¹⁹⁵

109. We propose not to apply any eligibility restrictions to AWS-4 licenses. We believe that open eligibility in the AWS-4 band would not pose a significant likelihood of substantial harm to competition in any specific markets, and thus an eligibility restriction in these bands is not warranted. We also believe that open eligibility in these bands is consistent with our statutory mandate to promote the development and rapid deployment of new technologies, products, and services; economic opportunity and competition; and the efficient and intensive use of the electromagnetic spectrum.¹⁹⁶ We seek comment on this approach. Commenters should discuss the costs and benefits of the open eligibility proposal on competition, innovation, and investment.

c. Spectrum Aggregation

110. Spectrum is an essential input for the provision of mobile telephony/broadband services, and a service provider, in order to compete effectively, must have access to adequate spectrum.¹⁹⁷ The Commission therefore closely examines the impact of spectrum aggregation on competition, innovation, and the efficient use of spectrum, generally on a case-by-case basis, upon establishing the relevant

¹⁹³ 47 C.F.R. § 27.12 (except as provided in §§ 27.604, 27.1201, and 27.1202, any entity other than those precluded by § 310 of the Communications Act is eligible to hold a license under Part 27).

¹⁹⁴ 47 U.S.C. §§ 310(a), (b).

¹⁹⁵ See, e.g., Service Rules for the 698-746, 747-762 and 777-792 MHz Bands, WT Docket No. 06-150, *Second Report and Order*, 22 FCC Rcd 15289, 15381, 15383-84 ¶¶ 253, 256 (2007); Allocations and Service Rules for the 71-76 GHz, 81-86 GHz and 92-95 GHz Bands, *Report and Order*, 18 FCC Rcd 23318, 23346-47 ¶ 70 (2003).

¹⁹⁶ 47 U.S.C. §§ 309(j)(3)(A), (B) & (D).

¹⁹⁷ *Fifteenth Mobile Wireless Competition Report*, 26 FCC Rcd at 9820-21 ¶ 266.

product and geographic markets.¹⁹⁸ For example, in analyzing transactions, the Commission identifies markets where the spectrum amounts held provide reason for further competitive analysis.¹⁹⁹ Thus, in this context, when evaluating the competitive effect of spectrum aggregation in bands that it has found available and suitable for the provision of mobile telephony/broadband services, the Commission conducts a market-by-market analysis of those markets identified by the initial screen to determine whether competitive harms would be likely to result.²⁰⁰ In addition, in 2008 the Commission determined that it would apply this standard competitive analysis to mobile spectrum acquired via competition bidding.²⁰¹

111. We seek comment on whether the acquisition of AWS-4 spectrum should be subject to the same general spectrum aggregation policies currently applicable to frequency bands that the Commission has determined to be available and suitable for mobile telephony/broadband services. Specifically, should the current spectrum screen for mobile telephony/broadband services be revised to include AWS-4 spectrum? Alternatively, depending on the specific rules and requirements that apply to AWS-4 spectrum, would there continue to be reasons to distinguish AWS-4 spectrum from other bands evaluated pursuant to the spectrum aggregation policies applicable to mobile telephony/broadband services? We seek comment generally on whether and how to address any spectrum aggregation concerns involving AWS-4 spectrum. Commenters should discuss and quantify any costs and benefits associated with alternative proposals on spectrum aggregation policies for AWS-4 spectrum on competition, innovation and investment.

3. Secondary Markets

a. Partitioning and Disaggregation

112. The Commission's Part 27 rules generally allow for geographic partitioning and spectrum disaggregation.²⁰² Geographic partitioning refers to the assignment of geographic portions of a license to another licensee along geopolitical or other boundaries. Spectrum disaggregation refers to the assignment of discrete amount of spectrum under the license to another entity. Disaggregation allows for multiple transmitters in the same geographic area operated by different companies on adjacent frequencies in the

¹⁹⁸ See Application of AT&T Inc. and Qualcomm Incorporated For Consent to Assign Licenses and Authorizations, Order, 26 FCC Rcd 17589, 17602 ¶ 31-32 (2011) (*AT&T-Qualcomm Order*).

¹⁹⁹ See, e.g., Applications of AT&T Inc. and Cellco Partnership d/b/a Verizon Wireless For Consent To Assign or Transfer Control of Licenses and Authorizations and Modify a Spectrum Leasing Arrangement, WT Docket No. 09-104, *Memorandum Opinion and Order*, 25 FCC Rcd 8704, 8720-8721 ¶ 32 (2010) (*AT&T-Verizon Wireless Order*); Applications of AT&T Inc. and Centennial Communications Corp. For Consent to Transfer Control of Licenses, Authorizations, and Spectrum Leasing Arrangements, WT Docket No. 08-246, *Memorandum Opinion and Order*, 24 FCC Rcd 13915, 13935 ¶ 43 (2009); Applications of Cellco Partnership d/b/a Verizon Wireless and Atlantis Holdings LLC For Consent to Transfer Control of Licenses, Authorizations, and Spectrum Manager and *De Facto* Transfer Leasing Arrangements, WT Docket No. 08-95, *Memorandum Opinion and Order and Declaratory Ruling*, 23 FCC Rcd 17444, 17468-69 ¶ 41 n.193 (2008); *Sprint-Clearwire Merger Order*, 23 FCC Rcd at 17583-17584 ¶ 26; Applications of AT&T Wireless Services, Inc. and Cingular Wireless Corporation For Consent to Transfer Control of Licenses and Authorizations, WT Docket Nos. 04-70, 04-254, 04-323, *Memorandum Opinion and Order*, 19 FCC Rcd 21522, 21552 ¶ 58 (2004) (*Cingular-AT&T Wireless Order*).

²⁰⁰ See, e.g., *AT&T-Qualcomm Order*, 26 FCC Rcd at 17602 ¶ 31, *AT&T-Verizon Wireless Order*, 25 FCC Rcd at 8720-8721 ¶ 32; *Cingular-AT&T Wireless Order*, 19 FCC Rcd at 21552 ¶ 58.

²⁰¹ Union Telephone Company, Cellco Partnership d/b/a Verizon Wireless, Applications for 700 MHz Band Licenses, Auction No. 73, File Nos. 0003371176, 0003382435, 0003382444, *Memorandum Opinion and Order*, 23 FCC Rcd 16787, 16791-92 ¶ 9 (2008).

²⁰² See 47 CFR § 27.15.

same band. As the Commission noted when first establishing partitioning and disaggregation rules, allowing such flexibility could facilitate the efficient use of spectrum by providing licensees with the flexibility to make offerings directly responsive to market demands for particular types of services, increase competition by allowing market entry by new entrants, and expedite provision of services that might not otherwise receive service in the near term.²⁰³

113. We seek comment on allowing licensees in the AWS-4 band to partition their service areas or to disaggregate their spectrum into new licenses. Part 27 rules for terrestrial wireless service provide that licensees may apply to partition their licensed geographic service areas or disaggregate their licensed spectrum at any time following the grant of their licenses.²⁰⁴ The Commission's rules also set forth the general requirements that apply with regard to approving applications for partitioning or disaggregation, as well as other specific requirements (e.g., performance requirements) that would apply to licensees that hold licenses created through partitioning or disaggregation. We seek comment on applying these general procedures and requirements to any permissible partitioning or disaggregation of AWS-4 licenses. In particular, we seek comment on the performance requirements that would apply to any license created through partitioning or disaggregation. To ensure that the public interest would be served if partitioning or disaggregation is allowed, we propose requiring each AWS-4 licensee who is a party to a partitioning, disaggregation or combination of both to independently meet the applicable performance and renewal requirements. We believe this approach would facilitate efficient spectrum use, while enabling service providers to configure geographic area licenses and spectrum blocks to meet their operational needs.²⁰⁵ We seek comment on these proposals. Commenters should discuss and quantify the costs and benefits of these proposals on competition, innovation, and investment.

114. We acknowledge, however, that there may be technical impediments to partitioning or disaggregating satellite spectrum and service. As noted above, we seek comment on the Commission's earlier conclusion that the complexities of coordination between MSS and terrestrial operations render impractical assignment of terrestrial licenses to an entrant other than the incumbent MSS licensee(s). Further, we seek comment on whether the actual capabilities of existing or future satellites make partitioning or disaggregation of spectrum difficult or problematic. We also acknowledge that Part 25 of the Commission's rules do not contain provisions governing the partition or disaggregation of MSS.²⁰⁶ We seek comment on the affect the answers to these questions should have on whether we should permit disaggregation or partition of AWS-4 spectrum or licenses. Would an affirmation of the Commission's prior finding require us to not permit disaggregation or partition here? Conversely, if we find same-band, separate operator sharing possible and in the public interest, should that lead us apply the Part 27 rules governing disaggregation and partition to AWS-4 spectrum and licensees. In the event that we apply rule 27.15 to AWS-4 licensees (or otherwise permit partitioning or disaggregation for AWS-4 licensees), we seek comment on whether the Part 25 rules should be amended to address partition and disaggregation of 2 GHz MSS spectrum by its licensees. Similarly, if we permit partitioning or disaggregation, should we require that any such arrangement apply to both the terrestrial and mobile satellite authorizations, but not

²⁰³ Geographic Partitioning and Spectrum Disaggregation by Commercial Mobile Radio Service Licensees, WT Docket No. 96-148 *Report and Order and Further Notice of Proposed Rulemaking*, 11 FCC Rcd 21831, 21833 ¶ 1 (1996).

²⁰⁴ See *Part 27 Report and Order*, 12 FCC Rcd at 10836-39 ¶¶ 96-103.

²⁰⁵ See generally Amendment of Parts 1, 22, 24, 27, 74, 80, 90, 95, and 101 To Establish Uniform License Renewal, Discontinuance of Operation, and Geographic Partitioning and Spectrum Disaggregation Rules and Policies for Certain Wireless Radio Services, WT Docket No. 10-112, *Notice of Proposed Rulemaking and Order*, 25 FCC Rcd 6996, 6998-99, 7029-33 ¶¶ 5, 91-97 (2010) (*WRS Renewals NPRM and Order*); see *supra* Section III.E (Performance Requirements).

²⁰⁶ See 47 C.F.R. Part 25.

to only one set of such authorizations? Should such a requirement only apply in the case where the AWS-4 authorizations are assigned to the same entity that holds the 2 GHz MSS rights? Commenters should discuss and quantify the costs and benefits of allowing partitioning and disaggregating AWS-4 spectrum.

115. We also seek comment on whether the Commission should adopt additional or different mechanisms to encourage partitioning and/or disaggregation of AWS-4 band spectrum and the extent to which such policies ultimately may promote more service, especially in rural areas. Commenters should discuss and quantify the costs and benefits of promoting more service using mechanisms to encourage partitioning and disaggregation AWS-4 spectrum, including the effects of the proposal on competition, innovation, and investment.

b. Spectrum Leasing

116. In 2003, in order to promote more efficient use of terrestrial wireless spectrum through secondary market transactions, while also eliminating regulatory uncertainty, the Commission adopted a comprehensive set of policies and rules to govern spectrum leasing arrangements between terrestrial licensees and spectrum lessees.²⁰⁷ These policies and rules enabled terrestrially-based Wireless Radio Service licensees holding “exclusive use” spectrum rights to lease some or all of the spectrum usage rights associated with their licenses to third party spectrum lessees, which then would be permitted to provide wireless services consistent with the underlying license authorization.²⁰⁸ Through these actions, the Commission sought to promote more efficient, innovative, and dynamic use of the terrestrial spectrum, expand the scope of available wireless services and devices, enhance economic opportunities for accessing spectrum, and promote competition among terrestrial wireless service providers.²⁰⁹ In 2004, the Commission built upon this spectrum leasing framework by establishing immediate approval procedures for certain categories of terrestrial spectrum leasing arrangements and extending the spectrum leasing policies to additional Wireless Radio Services.²¹⁰ Since then, the Commission has added more terrestrial services to this spectrum leasing framework, including the Advanced Wireless Services in 2003 (when the service rules were adopted for this new service)²¹¹ and the Broadband Radio Services and Educational Broadband Services in 2004 (when the rebanding plan for these services in the 2.5 GHz band was adopted).²¹² Most recently, in 2011 in the *2 GHz Band Co-Allocation Order*, the Commission extended the Commission’s secondary market spectrum leasing policies, procedures, and rules to

²⁰⁷ Promoting Efficient Use of Spectrum Through Elimination of Barriers to the Development of Secondary Markets, WT Docket No. 00-230, *Report and Order and Further Notice of Proposed Rulemaking*, 18 FCC Rcd 20604 (2003) (*Secondary Markets First Report and Order*), *Erratum*, 18 FCC Rcd 24817 (2003).

²⁰⁸ *Secondary Markets First Report and Order*, 18 FCC Rcd at 20609-13, 20648-49 ¶¶ 8-9, 12-13, 91-92. Wireless Radio Services do not include satellite services. 47 C.F.R. § 1.907. Under these secondary market policies and rules, the service rules and policies applicable to the licensee under its license authorization – including all technical, interference, and operational rules – apply to the spectrum lessee as well. *Secondary Markets First Report and Order*, 18 FCC Rcd at 20648-49 ¶¶ 91-92; see 47 C.F.R. §§ 1.9020(c)-(d), 1.9030 (c)-(d), 1.9035(c)-(d). The rules and procedures for spectrum leasing arrangements are set forth in Part 1, Subpart X. 47 C.F.R. §§ 1.9001 *et seq.*

²⁰⁹ See *Secondary Markets First Report and Order*, 18 FCC Rcd at 20607 ¶ 2.

²¹⁰ Promoting Efficient Use of Spectrum Through Elimination of Barriers to the Development of Secondary Markets, WT Docket No. 00-230, *Second Report and Order, Order on Reconsideration, and Second Further Notice of Proposed Rulemaking*, 19 FCC Rcd 17503 (2004) (*Secondary Markets Second Report and Order*).

²¹¹ *AWS-1 Report and Order*.

²¹² Amendment of Parts 1, 21, 73, 74 and 101 of the Commission’s Rules to Facilitate the Provision of Fixed and Mobile Broadband Access, Educational and Other Advanced Services in the 2150-2162 and 2500-2690 MHz Bands, WT Docket Nos. 03-66, 03-67, 02-68, 00-230, MM Docket No. 97-217, *Report and Order and Further Notice of Proposed Rulemaking*, 19 FCC Rcd 14165, 14232-34 ¶¶ 177-181 (2004).

MSS/ATC spectrum and licenses for spectrum manager lease arrangements; the Commission did not extend the secondary market regime to MSS/ATC *de facto* transfer lease arrangements because that would have been inconsistent with the need to have the same entity control both the terrestrial and satellite operations.²¹³

117. We now seek comment on the extent to which we should extend the Commission's secondary markets spectrum leasing policies and rules to AWS-4 spectrum. For the reasons articulated in the *2 GHz Band Co-Allocation Order*, we propose to extend spectrum manager lease arrangements to AWS-4 spectrum. With regard to *de facto* transfer lease arrangements, we propose to permit them only to the extent that we permit the disaggregation and partitioning of AWS-4 spectrum and licenses. To the extent that we find that the Commission's earlier conclusion that the complexities of coordination between MSS and terrestrial operations renders impractical assignment of terrestrial licenses to an entrant other than the incumbent MSS licensee(s), we propose to not allow *de facto* transfer lease arrangements for AWS-4 spectrum or licenses. Alternatively, if the record we develop reflects that same-band, separate terrestrial and mobile operator sharing is possible and would benefit the public interest, we propose to permit *de facto* transfer lease arrangements for AWS-4 spectrum and licenses. We seek comment on these proposals. Commenters should discuss the costs and benefits of extending the Commission's secondary spectrum leasing policies and rules to AWS-4 spectrum on competition, innovation, and investment.

4. License Term, Renewal Criteria, and Permanent Discontinuance of Operations

a. License Term

118. We propose to establish a 10-year term for licenses in the AWS-4 band. The Communications Act does not specify a term limit for AWS band licenses.²¹⁴ The Commission has adopted 10-year license term for most wireless radio services licenses.²¹⁵ We propose that in the AWS-4 band the license term similarly be 10 years. We seek comment on this proposal, including any costs and benefits of the proposal.

119. We also seek comment on whether a license term longer than 10 years would better serve the public interest. We note that in the *AWS-1 Report and Order*, we established an initial license term in the 1710-1755 MHz and 2110-2155 MHz bands of 15 years and subsequent renewal terms of 10 years because of the relocation and band clearance issues that were associated with those bands.²¹⁶ Commenters who favor a different license term for the AWS-4 band should specify a reasonable license term and the bases for the period proposed. Commenters should also address whether it would be possible to have different license terms, depending on the type of service offered by the licensee, including the costs and benefits of an alternative proposal. We seek comment on how we would administer such an approach, particularly if licensees provide more than one service in their service area,

²¹³ *2 GHz Band Co-Allocation Order*, 26 FCC Rcd at 5716-19 ¶¶ 14-19. Additionally, as explained in the *MSS NPRM*, the application of the secondary market rules to MSS/ATC spectrum does not apply to the BAS and FSS operations currently in the 2 GHz band or to MSS leasing arrangements (*e.g.*, transponder leases) that do not involve spectrum associated with terrestrial operations. *MSS Fixed and Mobile Allocation NPRM*, 25 FCC Rcd at 9488-92 ¶¶ 17-25.

²¹⁴ The only statutory limit on license terms is eight years for licenses in the broadcast services. *See* 47 U.S.C. § 307(c)(1); *see also* 47 C.F.R. § 73.1020(a). The Table of Allocations does not permit broadcast use of the AWS-4 band.

²¹⁵ *See, e.g.*, 47 C.F.R. §§ 24.15, 27.13(a).

²¹⁶ *AWS-1 Report and Order*, 18 FCC Rcd at 25190 ¶ 70.

or decide to change the type of service they plan to offer. We also seek comment on whether we should match the license term to the 15-year term of the satellite licenses. How would this be accomplished given that the term of the two 2 GHz MSS licenses have different expiration dates, and what are the costs and benefits of this proposal?

120. Under our license term proposal, if a license in these bands is partitioned or disaggregated, any partitionee or disaggregatee would be authorized to hold its license for the remainder of the partitioner's or disaggregator's original license term.²¹⁷ This approach is similar to the partitioning provisions the Commission adopted for BRS,²¹⁸ for broadband PCS licensees,²¹⁹ for the 700 MHz band licensees,²²⁰ and for AWS-1 licenses at 1710-1755 MHz and 2110-2155 MHz.²²¹ We emphasize that nothing in our proposal is intended to enable a licensee, by partitioning or disaggregation, to be able to confer greater rights than it was awarded under the terms of its license grant; nor would any partitionee or disaggregatee obtain rights in excess of those previously possessed by the underlying Commission licensee. We seek comment on these proposals, including the cost and benefits of these proposals.

b. Renewal Criteria

121. Pursuant to Section 308(b) of the Communications Act, the Commission may require renewal applicants to "set forth such facts as the Commission by regulation may prescribe as to the citizenship, character, and financial, technical, and other qualifications of the applicant to operate the station" as well as "such other information as it may require."²²² We propose to adopt AWS-4 license renewal requirements consistent with those adopted in the *700 MHz First Report and Order* and which form the basis of the renewal paradigm proposed in our recent *Wireless Radio Services Renewal NPRM*.²²³ We emphasize that, as the Commission made clear in both of these items, a licensee's performance showing and its renewal showing are two distinct showings. Broadly speaking, a performance showing provides a snapshot in time of the level of a licensee's service. By contrast, a renewal showing provides information regarding the level and types of the licensee's service offered over its entire license term.

²¹⁷ "Partitioning" is the assignment of geographic portions of a license along geopolitical or other boundaries. "Disaggregation" is the assignment of discrete portions of "blocks" of spectrum licensed to a geographic licensee or qualifying entity. Disaggregation allows for multiple transmitters in the same geographic area operated by different companies on adjacent frequencies (thus increasing the possibility of harmful interference). Section III.F.3.a, *supra*, discusses partitioning and disaggregation in further detail.

²¹⁸ See Amendment of Parts 21 and 74 of the Commission's Rules With Regard to Filing Procedures in the Multipoint Distribution Service and in the Instructional Television Fixed Service, MM Docket No. 94-131, PP Docket No. 93-253, *Report and Order*, 10 FCC Rcd 9589, 9614 ¶¶ 46 (1995).

²¹⁹ See Geographic Partitioning and Spectrum Disaggregation by Commercial Mobile Radio Services Licensees, WT Docket No. 96-148, GN Docket No. 96-113, *Report and Order and Further Notice of Proposed Rulemaking*, 11 FCC Rcd 21831, 21870 ¶¶ 76-77 (1996).

²²⁰ See Service Rules for the 746-764 and 776-794 MHz Bands, and Revisions to Part 27 of the Commission's Rules, WT Docket No. 99-168, *First Report and Order*, 15 FCC Rcd 476, 506-08 ¶¶ 74-78 (2000); Reallocation and Service Rules for 698-746 MHz Spectrum Band (Television Channels 52-59), GN Docket No. 01-74, *Report and Order*, 17 FCC Rcd 1022, 1079-81 ¶¶ 152-157 (2002).

²²¹ *AWS-1 Report and Order*, 18 FCC Rcd at 25193-95 ¶¶ 81-83.

²²² 47 U.S.C. § 308(b).

²²³ See Service Rules for the 698-746, 747-762 and 777-792 MHz Bands, WT Docket Nos. 06-150, 01-309, 03-264, 06-169, 96-86, CC Docket No. 94-102, PS Docket No. 06-229, *Report and Order and Further Notice of Proposed Rulemaking* 22 FCC Rcd 8064, 8093-94 ¶¶ 75-77 (2007) (*700 MHz First Report and Order*); *WRS Renewals NPRM and Order*, 25 FCC Rcd at 6997-98, 7002-09 ¶¶ 2, 16-32.

122. We propose that applicants for renewal of AWS-4 licenses file a “renewal showing,” in which they demonstrate that they have and are continuing to provide service to the public, and are compliant with the Commission’s rules and policies and [with] the Communications Act.²²⁴ In the *700 MHz First Report and Order*, the Commission explained that in the renewal context, the Commission considers “a variety of factors including the level and quality of service, whether service was ever interrupted or discontinued, whether service has been provided to rural areas, and any other factors associated with a licensee’s level of service to the public.”²²⁵ The *WRS Renewals NPRM and Order* also proposed to consider the extent to which service is provided to qualifying tribal lands.²²⁶ We propose that these same factors should be considered when evaluating renewal showings for the AWS-4 band and seek comment on this approach. Commenters should discuss and quantify the costs and benefits of this approach on competition, innovation, and investment.

123. As explained above, today we are proposing that AWS-4 licensees meet three and seven-year performance obligations. We therefore seek comment on whether the public interest would be served by awarding AWS-4 licensees renewal expectancies where they maintain the level of service demonstrated at the seven year performance benchmark through the end of their license term, provided that they have otherwise complied with the Commission’s rules and policies and the Communications Act during their license term. We also seek comment on whether AWS-4 licensees should obtain a renewal expectancy for subsequent license terms, if they continue to provide at least the level of service demonstrated at the seven year performance benchmark through the end of any subsequent license terms. Commenters should discuss and quantify the costs and benefits of this approach on competition, innovation, and investment.

124. Finally, consistent with the *700 MHz First Report and Order* and the *WRS Renewals NPRM and Order*, we propose to prohibit the filing of mutually exclusive renewal applications,²²⁷ and that if a license is not renewed, the associated spectrum would be returned to the Commission for reassignment.²²⁸ We seek comment on these proposals, including the costs and benefits of these proposals.

c. Permanent Discontinuance of Operations

125. We also request comment on the Commission’s rules governing the permanent discontinuance of operations, which are intended to afford licensees operational flexibility to use their spectrum efficiently while ensuring that spectrum does not lay idle for extended periods.²²⁹ Under Section 1.955(a)(3), an authorization will automatically terminate, without specific Commission action, if service is “permanently discontinued.”²³⁰ For the AWS-4 band, we propose to define “permanently discontinued” as a period of 180 consecutive days during which a licensee does not operate and does not serve at least one subscriber that is not affiliated with, controlled by, or related to the provider. We believe this definition strikes an appropriate balance between our twin goals of providing licensees operational flexibility while ensuring that spectrum does not lie fallow. Licensees would not be subject to

²²⁴ See *WRS Renewals NPRM and Order*, 25 FCC Rcd at 6997-98, 7002-09 ¶¶ 2, 16-32.

²²⁵ *700 MHz First Report and Order*, 22 FCC Rcd at 8093 ¶ 75.

²²⁶ *WRS Renewals NPRM and Order*, 25 FCC Rcd at 7043 App. A (proposed rule 1.949(c)(4)).

²²⁷ *Id.* at 6998, 7012-13 ¶¶ 3, 40-42; *700 MHz First Report and Order*, 22 FCC Rcd at 8093-8094 ¶¶ 76-77.

²²⁸ *WRS Renewals NPRM and Order*, 25 FCC Rcd at 6998, 7013-14 ¶¶ 3, 43-44; *700 MHz First Report and Order*, 22 FCC Rcd at 8093 ¶ 76.

²²⁹ See *WRS Renewals NPRM and Order*, 25 FCC Rcd at 7017 ¶ 49-50.

²³⁰ 47 C.F.R. § 1.955(a)(3).

this requirement until the date of the first performance requirement benchmark, which is proposed as 3 years from the license grant, so they will have adequate time to construct their terrestrial network. In addition, consistent with Section 1.955(a)(3) of the Commission's rules, we propose that, if an AWS-4 licensee permanently discontinues service, the licensee must notify the Commission of the discontinuance within 10 days by filing FCC Form 601 or 605 and requesting license cancellation. An authorization will automatically terminate without specific Commission action if service is permanently discontinued even if a licensee fails to file the required form.

5. Other Operating Requirements

126. Even though licenses in the AWS-4 band may be issued pursuant to one rule part, licensees in this band may be required to comply with rules contained in other parts of the Commission's rules by virtue of the particular services they provide. For example:

- Applicants and licensees would be subject to the application filing procedures for the Universal Licensing System, set forth in Part 1 of our rules.²³¹
- Licensees would be required to comply with the practices and procedures listed in Part 1 of our rules for license applications, adjudicatory proceedings, etc.
- Licensees would be required to comply with the Commission's environmental provisions, including Section 1.1307.²³²
- Licensees would be required to comply with the antenna structure provisions of Part 17 of our rules.
- To the extent a licensee provides a Commercial Mobile Radio Service, such service would be subject to the provisions of Part 20 of the Commission's rules, including 911/E911 and hearing aid-compatibility (HAC) requirements, along with the provisions in the rule part under which the license was issued.²³³ Part 20 applies to all CMRS providers, even though the stations may be licensed under other parts of our rules.²³⁴
- The application of general provisions of Parts 22, 24, 27, or 101 would include rules related to equal employment opportunity, *etc.*

127. We seek comment generally on any provisions in existing service-specific rules that may require specific recognition or adjustment to comport with the supervening application of another rule part, as well as any provisions that may be necessary in this other rule part to fully describe the scope of covered services and technologies. We seek comment on applying these rules to the spectrum that is the subject of this *AWS-4 Notice*, and specifically on any rules that would be affected by our proposal to apply elements of the framework of these parts, whether separately or in conjunction with other requirements.

128. We also seek comment generally on whether any conditions should govern the operation of a provider's network if it is granted a license to operate in these bands. What are the potential

²³¹ See 47 C.F.R. Part 1, Subpart F.

²³² 47 C.F.R. § 1.1307.

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

²³⁴ *See, e.g.,* Service Rules for the 698-746, 747-762 and 777-792 MHz Bands, WT Docket No. 06-150, *Second Report and Order*, 22 FCC Rcd 15289, 15478-79 ¶¶ 550-53 (2007) (*700 MHz Second Report and Order*).

problems that may be associated with the Commission's adoption of any of these potential requirements, and how do they compare to the potential benefits?

6. Facilitating Access to Spectrum and the Provision of Service to Tribal Lands

129. The Commission currently has under consideration various provisions and policies intended to promote greater use of spectrum over Tribal lands.²³⁵ We propose to extend any rules and policies adopted in that proceeding to any licenses that may be issued through competitive bidding in this proceeding. We seek comment on this proposal, including any costs and benefits of this proposal.

G. Relocation and Cost Sharing

1. Emerging Technologies Policies

130. Our Emerging Technologies (ET) procedures represent a broad set of tools that the Commission has used to aid the process of making spectrum available for new uses.²³⁶ Generally speaking, ET procedures are used when the Commission has made the decision that it is necessary to relocate incumbent licensees to introduce new services into a frequency band. The Commission sets a "sunset date" – a date by which incumbent licensees may not cause interference to new band entrants. Prior to the sunset date, the new entrants may negotiate with incumbents to gain early entry into the band and, if necessary, may relocate the incumbents to comparable facilities. Because new entrants may have to relocate incumbents from a larger frequency range or greater geographic area than where the new entrants will operate, the Commission also typically establishes a companion set of cost sharing procedures. These procedures allow new entrants to be reimbursed a portion of their relocation expenses from other new entrants that benefit from the spectrum clearance. The specific relocation process we establish under the ET framework has varied for each frequency band, and has been based on the types of incumbent licensees and particular band characteristics.²³⁷ We discuss, below, the particular relocation and cost sharing procedures for the 2000-2020 MHz and 2180-2200 MHz bands.

2. Relocation and Cost-Sharing for 2000-2020 MHz

131. The lower portion of AWS-4 (2000-2020 MHz) is part of the 1990-2025 MHz band that the Commission reallocated from the Broadcast Auxiliary Service (BAS) to emerging technologies such as PCS, AWS, and MSS.²³⁸ Consistent with the relocation principles first established in the Commission's *Emerging Technologies* proceeding, each new entrant had an independent responsibility to relocate incumbent BAS licensees.²³⁹ Sprint Nextel (Sprint), which is licensed for 1990-1995 MHz,

²³⁵ Improving Communications Services for Native Nations by Promoting Greater Utilization of Spectrum over Tribal Lands, WT Docket 11-40, *Notice of Proposed Rulemaking*, 26 FCC Rcd 2623 (2011).

²³⁶ See Redevelopment of Spectrum to Encourage Innovation in the Use of New Telecommunications Technologies, ET Docket No. 92-9, *First Report and Order and Third Notice of Proposed Rule Making*, 7 FCC Rcd 6886 (1992); *Second Report and Order*, 8 FCC Rcd 6495 (1993); *Third Report and Order and Memorandum Opinion and Order*, 8 FCC Rcd 6589 (1993); *Memorandum Opinion and Order*, 9 FCC Rcd 1943 (1994); *Second Memorandum Opinion and Order*, 9 FCC Rcd 7797 (1994); *aff'd Association of Public Safety Communications Officials-International, Inc. v. FCC*, 76 F.3d 395 (D.C. Cir. 1996) (collectively, "*Emerging Technologies* proceeding").

²³⁷ See Amendment of Part 2 of the Commission's Rules to Allocated Spectrum Below 3 GHz for Mobile and Fixed Services to Support the Introduction of New Advanced Wireless Services, including Third Generation Wireless Systems, ET Docket No. 00-258, WT Docket No. 02-353, *Ninth Report and Order and Order*, 21 FCC Rcd 4473, 4479 ¶ 11 n.35 (2006).

²³⁸ See 47 C.F.R. § 74.690.

²³⁹ 2010 *BAS Ruling*, 25 FCC Rcd at 13876 ¶ 5.

completed the BAS transition in 2010.²⁴⁰ Cost-sharing disputes between Sprint and the MSS licensees (for Sprint's clearing of 2000-2020 MHz) have been settled privately.²⁴¹ In light of this, if the Commission assigns terrestrial licenses under Part 27, do any relocation and cost-sharing issues for the 2000-2020 MHz band remain? In addition, should the Commission adopt either of the spectrum shift approaches that would include the 2020-2025 MHz block, we seek comment on any additional relocation or cost-sharing issues including this spectrum block would raise.

3. Relocation and Cost-Sharing for 2180-2200 MHz

132. *Relocation.* The upper portion of AWS-4 (2180-2200 MHz) is part of the 2160-2200 MHz band that the Commission reallocated from the Fixed Microwave Services (FS) to emerging technologies.²⁴² Our licensing records show approximately 700 active FS licenses in this band. Most of these incumbents appear to be state or local governmental entities, utilities, railroads, and other businesses with FS links licensed in the Microwave Public Safety Pool (MW) or the Microwave Industrial/Business Pool (MG) for private, internal communication. FS links in the 2180-2200 MHz band typically are paired, for two-way operation, with FS links in the 2130-2150 MHz band. The Commission previously adopted relocation and cost-sharing rules for AWS-1 licensees in the 2110-2155 MHz band and we now propose to extend these rules to AWS-4 as discussed below.

133. Prior to initiating operations from any base or fixed station, AWS-1 licensees are required to coordinate their frequency usage with all co-channel and adjacent channel incumbents.²⁴³ If interference would occur,²⁴⁴ the AWS-1 licensee can initiate a mandatory negotiation period (two-years for non-public safety, three-years for public safety) during which each party must negotiate in good faith for the purpose of agreeing to terms under which the FS licensees would: (1) relocate their operations to other fixed microwave bands or other media; or alternatively (2) accept a sharing arrangement with the AWS-1 licensee that may result in an otherwise impermissible level of interference to the FS operations.²⁴⁵ If no agreement is reached during the mandatory negotiation period, the AWS-1 licensee can initiate involuntary relocation procedures.²⁴⁶ We propose to revise these rules to apply them to AWS-4.

134. Under the emerging technologies policies, the Commission sunsets the relocation obligation owed by new licensees in the band to the incumbents. For example, MSS/ATC relocation obligations to FS in the 2180-2200 MHz band will sunset in December 2013 (ten years after the

²⁴⁰ Letter from Brett S. Haan, 800 MHz Transition Administrator, LLC, to David L. Furth, Deputy Chief, Public Safety and Homeland Security Bureau, Federal Communications Commission (May 13, 2011), at 2, *citing* Letter from Robert H. McNamara, Sprint Nextel Corporation, to Marlene H. Dortch, Secretary, Federal Communications Commission dated July 15, 2010 (WT Docket No. 02-55).

²⁴¹ *See* Applications of New DBSD Satellite Services G.P., Debtor-in-Possession, and TerreStar Licensee Inc., Debtor-in-Possession, *Withdrawal of Petition to Condition Approval of Sprint Nextel Corporation*, IB Docket No. 11-149 (Nov. 3, 2011) (informing the Commission that Sprint Nextel had reached an agreement with DISH to settle its outstanding disputes).

²⁴² *See* 47 C.F.R. § 101.69.

²⁴³ 47 C.F.R. § 27.1131. "Coordination shall be conducted in accordance with the provisions of [47 C.F.R.] § 24.237." *Id.*

²⁴⁴ 47 C.F.R. §§ 27.1131, 27.1160, 101.82.

²⁴⁵ 47 C.F.R. §§ 101.69, 101.73.

²⁴⁶ *See* 47 C.F.R. § 101.75.

mandatory negotiation period began for MSS/ATC operators).²⁴⁷ Similarly, for the 2110–2150 MHz, 2160–2175 MHz and 2175–2180 MHz bands, the sunsets occur “ten years after the first ET license is issued in the respective band.”²⁴⁸ Thus, for AWS-1 licenses in the 2110-2155 MHz band, which were first-issued in 2006, the sunset for relocation obligations for FS incumbents in the 2130-2150 MHz band will occur in 2016. For AWS-4, we propose to sunset AWS-4 relocation obligations ten-years after the first AWS-4 license is issued in the band. We recognize that the 2013 sunset date applies to 2180-2200 MHz for MSS/ATC but under our proposal to issue full-terrestrial licenses under Part 27, we believe it is appropriate to treat the AWS-4 band the same as other AWS bands by setting the sunset ten-years after we issue the first license in the band. Thus, we propose to revise Section 101.79(a)(2)²⁴⁹ to include Part 27 sunset rules in the 2180-2200 MHz band. Under this proposal, should the 2 GHz MSS licensee receive full terrestrial authority under Part 27 of the Commission’s rules, it would become the AWS-4 licensee responsible for relocating incumbent FS in the 2180-2200 MHz band. We seek comment on these proposals, including the costs and benefits of these proposals. We also propose to delete the reference to all Fixed and Mobile facilities operating on a secondary basis not later than December 9, 2013, in footnote NG168 in the U.S. Table of Frequency Allocations.²⁵⁰ Specifically, this would clarify that after the applicable sunset date grandfathered fixed microwave systems will be governed by the procedures in Section 101.79. We seek comment on this proposal.

135. *Cost sharing.* As noted above, FS links in the 2180-2200 MHz band typically are paired, for two-way operation, with FS links in the 2130-2150 MHz band. The Commission previously established a cost-sharing plan for MSS, MSS/ATC, and AWS-1 licensees in these paired bands.²⁵¹ Briefly, for terrestrial stations (AWS and MSS/ATC), cost-sharing obligations are governed by §§27.1160 through 27.1174 except that MSS/ATC operators are not obligated to reimburse voluntarily relocating fixed microwave service incumbents in the 2180–2200 MHz band while AWS reimbursement and cost-sharing obligations relative to voluntarily relocating FMS incumbents are governed by § 27.1166. The cost-sharing plan is administered by AWS clearinghouses selected by the Commission’s Wireless Telecommunications Bureau under delegated authority.²⁵² We propose to extend to the AWS-4 band the

²⁴⁷ 47 C.F.R. § 101.79(a)(2).

²⁴⁸ 47 C.F.R. § 101.79(a)(1).

²⁴⁹ See App. A, proposed 47 C.F.R. § 101.79.

²⁵⁰ NG168 states that “Except as permitted below, the use of the 2180-2200 MHz band is limited to the MSS and ancillary terrestrial component offered in conjunction with an MSS network, subject to the Commission’s rules for ancillary terrestrial components and subject to all applicable conditions and provisions of an MSS authorization. In the 2180-2200 MHz band, where the receipt date of the initial application for facilities in the fixed and mobile services was prior to January 16, 1992, said facilities shall operate on a primary basis and all later-applied-for facilities shall operate on a secondary basis to the mobile-satellite service (MSS); and not later than December 9, 2013, all such facilities shall operate on a secondary basis.”

²⁵¹ 47 C.F.R. § 101.82. Most MSS/ATC relocation and cost-sharing obligations are governed by the same Part 27 rules that govern AWS.

²⁵² 47 C.F.R. § 27.1162. Under AWS cost sharing rules, the clearinghouses use a Proximity Threshold Test to determine cost sharing obligations. See 47 C.F.R. § 27.1168. Simply put, if a proposed base station is located inside a rectangular area drawn around a relocated FS link, the proposed base station triggers a cost-sharing obligation that is calculated using the formula set forth in 47 C.F.R. § 27.1164. See also Amendment to the Commission’s Rules Regarding a Plan for Sharing the Costs of Microwave Relocation, WT Docket No. 95-97, RM-8643, *First Report and Order and Further Notice of Proposed Rule Making*, 11 FCC Rcd 8825, 8893, App. A ¶ 33 (1996) (The Proximity Threshold Test is a bright-line test that does not require extensive engineering studies or analyses, and it yields consistent, predictable results by eliminating the variations – and thus disputes – which can be associated with the use of interference standards such as the TIA TSB 10-F.).

cost-sharing rules adopted for AWS-1 licensees. Under this proposal, the cost-sharing plan will sunset for AWS-4 licensees on the same date on which the relocation obligation sunsets.²⁵³ We also propose conforming amendments to Parts 27 and 101 to include AWS-4 under the relocation and cost-sharing rules generally and to delete references to MSS/ATC.²⁵⁴ We seek comment on these proposals, including the costs and benefits of these proposals.

H. Ancillary Terrestrial Components in the 2 GHz MSS Band

136. In order to provide more efficient and intensive use of the 2 GHz MSS band, we are proposing herein to authorize terrestrial operations under Part 27 of the Commission's rules for the AWS-4 band. If we ultimately adopt this proposal, we must consider the disposition of the current ATC regulations and authorizations in this band. We believe that, if we assign Part 27 rights pursuant to a license modification under Section 316 of the Communications Act, authorizing both terrestrial operations and ATC operations in the 2 GHz MSS band would be redundant and confusing to operators. With changing circumstances in the 2 GHz MSS band, we believe that the ATC regulations would no longer be the best framework for development of terrestrial mobile broadband in this band. Accordingly, we believe that eliminating the ATC rules for this band will best encourage terrestrial broadband deployment in the 2 GHz MSS band. We therefore propose to eliminate the ATC regulations in the 2 GHz MSS band and request comment on this proposal, including associated costs and benefits. In addition, because we are proposing to eliminate the ATC regulations in the 2 GHz band, we propose to delete footnote NG168 from the U.S. Table of Frequency Allocations.²⁵⁵ We seek comment on this proposal. Finally, we observe that we intend to address issues pertaining to the ATC rules for the Big LEO and the L-band in one or more separate proceedings at a later date.

IV. NOTICE OF INQUIRY: 2 GHz EXTENSION BAND CONCEPT

137. In this *Notice of Inquiry (NOI)*, we seek comment on a variation of the band plan proposed above. This alternative approach poses greater complexities with respect to coordination among existing users and any new licensees. However, provided these barriers could be overcome, it could release a greater quantity of usable spectrum into the marketplace, reduce the need for guard bands to protect against harmful interference, and extend the existing PCS and AWS bands. We therefore invite comment on this alternative band plan and its associated coordination and license assignment challenges. Because we do not intend that this *Notice of Inquiry* should impede the timely implementation of the proposed AWS-4 service, we also invite comment as to whether this alternative band plan could be realized as a subsequent step to that proposal.

138. For purposes of facilitating discussion, and to avoid confusion with the foregoing AWS-4 proposal, we refer to this alternative as the "2 GHz Extension Band Concept." The concept incorporates the NTIA proposal to reallocate the 1695-1710 MHz band from Federal to commercial use.²⁵⁶ It also builds upon the record generated in the Spectrum Task Force's comprehensive examination of opportunities to make additional spectrum available for mobile broadband use in the 2 GHz band.²⁵⁷

²⁵³ See 47 C.F.R. § 27.1174.

²⁵⁴ See App. A (proposed rules).

²⁵⁵ See *supra* footnote 250.

²⁵⁶ See *supra* ¶ 12.

²⁵⁷ See, e.g., 2 GHz Public Notice.

139. Several assumptions inform the 2 GHz Extension Band Concept:

- The proposed “fast track” reallocation band (1695-1710 MHz) could become an extension to the existing AWS uplink band, although without a readily-available downlink pairing candidate.
- Together, AWS-3 and the upper portion of the AWS-2 J block (2155-2170 MHz) could become an extension to the existing AWS downlink band.
- The existing MSS downlink band (2180-2200 MHz) could further extend the existing AWS downlink band.
- The existing MSS uplink band requires separation from the PCS downlink band to prevent uplink/downlink interference issues between the MSS band and broadband PCS spectrum. This “zoning issue” currently hinders use of the upper portion of the AWS-2 H block (1995-2000 MHz),²⁵⁸ as well as a portion of the MSS uplink band itself (*e.g.*, 2000-2010 MHz).²⁵⁹
- Extension of existing bands (*i.e.*, PCS and AWS) may enable greater economies of scale—and therefore lower costs, increased interoperability, and greater technology availability—as compared to the creation of an all-new terrestrial band (*i.e.*, AWS-4).

We seek comment on the validity of these assumptions, and any associated costs and benefits. We emphasize that these are assumptions only for purposes of exploring the 2 GHz Extension Band Concept. The Commission has not made any determination of fact, one way or the other, with regard to these assumptions.

140. The 2 GHz Extension Band Concept would involve the creation of two new blocks of spectrum, PCS-Extension and AWS-Extension, totaling 65 megahertz of usable bandwidth. A 35 megahertz AWS-Extension block would consist of the existing MSS downlink band at 2180-2200 MHz paired on the uplink with the NTIA fast track band at 1695-1710 MHz. A 30 megahertz PCS-Extension block (which could be subdivided into smaller blocks) would consist of the existing MSS uplink band at 2000-2020 MHz, combined with the lower portion of the AWS-2 J block at 2020-2025 MHz and the upper portion of the AWS-2 H block at 1995-2000 MHz, all of which would be converted to downlink use. We note that the AWS-Extension would abut the 2155-2180 MHz frequencies (AWS-3 and the upper portion of AWS-2 J block) and would not affect their disposition from a licensing and auction perspective. Figures 3 and 4, below, depict the current band plan and the 2 GHz Extension Band Concept. We seek comment on the technical viability and the economic costs and benefits of this Concept as presented or with modifications as commenters deem appropriate.

²⁵⁸ See, *e.g.*, Comments of CTIA – The Wireless Association, ET Docket No. 10-142, at 12 (Jul. 8, 2011); Comments of T-Mobile USA, Inc., ET Docket No. 10-142, at 11 (Jul. 8, 2011).

²⁵⁹ For example, the 3GPP specifications for the 2000-2020 MHz and 2180-2200 MHz bands, Band 23, place significant limitations on both mobile transmissions and base station reception in the 2000-2010 MHz band. Mobile station maximum transmit power in this band may be attenuated by up to 12 dB to aid in meeting regulatory emissions limits, *see LTE RF standard for UE* at 33. As the mobile transmit power affects the ability of the mobile station to reach the base station, this reduction of power would appear to have a significant impact on cell coverage, uplink throughput, and ultimately the usability of this spectrum. Base station reception in this band is protected -30 dBm/MHz from PCS base stations in the 1930-1995 MHz band (Bands 2 and 25), rather than the common level of -49 dBm/MHz. This indicates both that base stations in the 2000-2010 MHz band may receive high levels of interference from PCS base stations, which may significantly limit their coverage area and throughput, and that it may be difficult to design PCS base stations to meet a tighter limit. *See LTE RF standard for BS* at 44.

Figure 3: Existing Band Plan

Fed	AWS -1 UL	Federal	PCS (A-G) Uplink	PCS (A-G) Downlink	MSS/ATC	BAS, CARS, LTTS, EESS, Space Operation	AWS -1 DL	AWS-3	MSS/ATC	Fed
1710	1755	1850	1915	1930	1995	2025	2110	2155	2190	2200

Frequencies in MHz

Figure 4: 2 GHz Extension Band Concept

Fed	AWS Exp. UL	AWS -1 UL	Federal	PCS (A-G) Uplink	PCS (A-G) Downlink	Expansion DL	PCS	BAS, CARS, LTTS, EESS, Space Operation	AWS -1 DL	AWS-3	AWS Exp. DL	Fed
1695	1710	1755	1850	1915	1930	1995	2025	2110	2155	2175	2190	2200

Frequencies in MHz

141. The 2 GHz Extension Band Concept would necessitate severing the existing 2000-2020 MHz pairing from 2180-2200 MHz, spectrum for which there is an existing licensee. It may be appropriate, therefore, to consider moving that existing licensee from its currently assigned uplink spectrum in the 2000-2020 MHz band to 1695-1710 MHz. The resulting license would contain paired terrestrial spectrum of 1695-1710 MHz and 2180-2200 MHz. This would, however, likely result in the 2 GHz MSS licensee forgoing the mobile uplink portion of its existing satellite spectrum and thus converting its satellite spectrum to a one-way, satellite transmit, system (or needing to launch another satellite to provide MSS using 1695-1710 MHz (depending in part, on how the 1695-1710 MHz band is allocated)). We seek comment on this aspect of the Concept and the costs and benefits of this Concept on competition, innovation, and investment.

142. On June 28, 2010, a Presidential Memorandum was issued directing the Department of Commerce, working with the Commission, to identify and make available 500 megahertz of spectrum over the next ten years for expanded wireless broadband use.²⁶⁰ NTIA performed a technical study and determined that the 1695-1710 megahertz band, with a limited number of exclusion zones to protect Federal meteorological satellite receive Earth stations, could be made available for wireless broadband.²⁶¹

²⁶⁰ Memorandum for the Heads of Executive Departments and Agencies, Unleashing the Wireless Broadband Revolution, (Presidential Memorandum), released June 28, 2010, 75 Fed. Reg. 38387 (July 1, 2010), available at <http://www.whitehouse.gov/the-press-office/presidential-memorandum-unleashing-wireless-broadband-revolution>.

²⁶¹ See An Assessment of the Near-Term Viability of Accommodating Wireless Broadband Systems in the 1675-1710 MHz, 1755-1780 MHz, 3500-3650 MHz, and 4200-4220 MHz, 4380-4400 MHz Bands, U.S. Department of Commerce, 3-1 to 3-25, 5-1 to 5-2, and H-1 to H-5 (October 2010). Maps in appendix H show exclusions zones and the percentage of the population affected; see also Spectrum Task Force Requests Information on Frequency Bands (continued....)

The 1695-1710 megahertz band has incumbent Federal and non-Federal users.²⁶² We observe that the Middle Class Tax Relief and Job Creation Act of 2012 requires (1) that the Administration, within three years, “begin the process of withdrawing or modifying the assignment” to Federal stations operating within 15 megahertz between 1675 and 1710 MHz,²⁶³ and (2) that the Secretary of Commerce, within one year, “submit to the President a report identifying 15 megahertz of spectrum between 1675 megahertz and 1710 megahertz for reallocation from Federal use to non-Federal use.”²⁶⁴ We seek comment on how incumbent users might affect implementation of the 2 GHz Extension Band Concept and what steps, if any, might be taken to expedite availability of the band.

143. The 30 megahertz PCS-Extension block would be unpaired downlink spectrum. We seek comment on whether this spectrum could be paired with a matching uplink block. We also seek comment on the utility of licensing the spectrum as an unpaired downlink block. Commenters should discuss and quantify the costs and benefits for any approaches.

144. We seek comment on assignment procedures that could effectuate the 2 GHz Extension Band Concept. One possibility, as was suggested in the *2 GHz Public Notice*, might be to conduct an incentive auction for the MSS uplink band.²⁶⁵ However, the recently enacted Middle Class Tax Relief and Job Creation Act of 2012 appears to require that a reverse auction for spectrum (the first step in an incentive auction) involve at least two “competing licensees,”²⁶⁶ whereas, following the *DISH Transfer Order* there is only one licensee in the 2 GHz MSS band.²⁶⁷ We seek comment on whether an incentive auction could be used to effectuate the 2 GHz Extension Band Concept.

145. Another possibility might be to relocate the existing MSS uplink into the 1695-1710 MHz band and to auction the resulting PCS-Extension band. Would an auction of 30 megahertz of downlink spectrum in an extended PCS band create more value than an auction of 15 megahertz of uplink spectrum adjacent in an extended AWS band? Commenters should quantify the value of this proposal. We note that the Middle Class Tax Relief and Job Creation Act of 2012 mandates an auction of 15 megahertz of spectrum in the 1675-1710 MHz band (to be identified by NTIA within one year).²⁶⁸ Does this provision preclude implementation of a “swap” with the 2 GHz MSS licensee?

146. Alternatively, we seek comment on any other assignment or license modification approaches to enabling the 2 GHz Extension Band Concept. Could the Commission implement the Concept as a Section 316 license modification or pursuant to Section 309 or other existing assignment authority?

147. Finally, were the Commission to implement the 2 GHz Extension Band Concept, it would result in leaving a single five megahertz block of former AWS-2 spectrum unpaired and unassigned—the

(Continued from previous page) _____

Identified By NTIA As Potential Broadband Spectrum, ET Docket No. 10-123, *Public Notice*, 24 FCC Rcd 3486 (2011).

²⁶² See *NTIA Fast Track Report* at 3-1 to 3-25, 5-1 to 5-2, and H-1 to H-5. Maps in appendix H show exclusions zones and the percentage of the population affected; see also Spectrum Task Force Requests Information on Frequency Bands Identified By NTIA As Potential Broadband Spectrum, ET Docket No. 10-123, *Public Notice*, 24 FCC Rcd 3486 (2011).

²⁶³ See Middle Class Tax Relief and Job Creation Act of 2012, Pub. Law 112-96, § 6401(a)(1)(A).

²⁶⁴ See *id.* at § 6401(a)(3).

²⁶⁵ See *2 GHz Public Notice*, 26 FCC Rcd at 7589-7590; see also *Ericsson 2 GHz Public Notice Comments* at 2.

²⁶⁶ See Middle Class Tax Relief and Job Creation Act of 2012, Pub. Law 112-96, § 6402.

²⁶⁷ *DISH Transfer Order*.

²⁶⁸ See Middle Class Tax Relief and Job Creation Act of 2012, Pub. Law 112-96, § 6401.

AWS-2 lower H block at 1915-1920 MHz. We seek comment on the disposition of this spectrum block under this scenario. We observe that the Middle Class Tax Relief and Job Creation Act of 2012 requires the Commission to allocate this spectrum for commercial use and grant flexible use licenses through a system of competitive bidding unless the Commission determines that this spectrum band “cannot be used without causing harmful interference to commercial mobile service licensees in the frequencies between 1930 megahertz and 1995 megahertz.”²⁶⁹ We seek comment on whether we would need to auction the AWS-2 lower H block or whether its use as a licensed band would lead to harmful interference in the upper PCS band. We observe that the record in response to the AWS-2 NPRM indicated raised concerns about harmful interference between the AWS-2 lower H block and the PCS band.²⁷⁰ Should the Commission conclude that the band “cannot be used without causing harmful interference,” the statute prohibits us from “allocate[ing] such band for commercial use . . . or . . . grant[ing] licenses . . . for the use of such band.”²⁷¹ In such an instance, we seek comment on whether the Commission should convert the 1915-1920 MHz band to unlicensed use, perhaps by adding it to the existing UPCS band. Unlicensed use, among other things, might provide additional capacity for devices using the ETSI DECT standard, including cordless phones and wireless microphones.²⁷² What would be the most effective and efficient use of the “orphaned” five megahertz block? Commenters should discuss and quantify the costs and benefits of alternative proposals for the AWS-2 lower H block.

V. PROCEDURAL MATTERS

A. *Ex Parte* Presentations

148. The proceedings this *AWS-4 Notice* and *NOI* initiate shall be treated as a “permit-but-disclose” proceeding in accordance with the Commission’s *ex parte* rules.²⁷³ Persons making *ex parte* presentations must file a copy of any written presentation or a memorandum summarizing any oral presentation within two business days after the presentation (unless a different deadline applicable to the Sunshine period applies). Persons making oral *ex parte* presentations are reminded that memoranda summarizing the presentation must (1) list all persons attending or otherwise participating in the meeting at which the *ex parte* presentation was made, and (2) summarize all data presented and arguments made during the presentation. If the presentation consisted in whole or in part of the presentation of data or arguments already reflected in the presenter’s written comments, memoranda or other filings in the proceeding, the presenter may provide citations to such data or arguments in his or her prior comments, memoranda, or other filings (specifying the relevant page and/or paragraph numbers where such data or arguments can be found) in lieu of summarizing them in the memorandum. Documents shown or given to Commission staff during *ex parte* meetings are deemed to be written *ex parte* presentations and must be filed consistent with rule 1.1206(b). In proceedings governed by rule 1.49(f) or for which the Commission has made available a method of electronic filing, written *ex parte* presentations and memoranda summarizing oral *ex parte* presentations, and all attachments thereto, must be filed through the electronic comment filing system available for that proceeding, and must be filed in their native

²⁶⁹ *Id.* at §§ 6401(b)(2)(A), (b)(4).

²⁷⁰ *See, e.g.*, Joint Comments of Sprint Corporation and Verizon Wireless, WT Docket No. 04-356 at 10-11 (Dec. 8, 2004), Comments of T-Mobile USA, Inc., WT Docket No. 04-356 at 4-10 (Dec. 8, 2004), and Comments of CTIA-The Wireless Association, WT Docket No. 04-356 at 14-26 (Dec. 8, 2004).

²⁷¹ Middle Class Tax Relief and Job Creation Act of 2012, Pub. Law 112-96, §§ 6401(b)(2)(A), (b)(4).

²⁷² *See* ETSI DECT standard, available at <http://www.etsi.org/WebSite/Technologies/DECT.aspx>; (last visited Mar. 19, 2012) *see also* Press Release, SiTel single-chip DECT IC delivers outstanding audio in Revolabs HD Wireless Microphones (May 10, 2011) available at <http://www.dect.org/news.aspx?id=59> (last visited Mar. 19, 2012).

²⁷³ 47 C.F.R. §§ 1.1200 *et seq.*

format (e.g., .doc, .xml, .ppt, searchable .pdf). Participants in this proceeding should familiarize themselves with the Commission's *ex parte* rules.

B. Comment Period and Filing Procedures

149. Pursuant to Sections 1.415 and 1.419 of the Commission's rules, 47 CFR §§ 1.415, 1.419, interested parties may file comments and reply comments on or before the dates indicated on the first page of this document. Comments may be filed using the Commission's Electronic Comment Filing System (ECFS). See *Electronic Filing of Documents in Rulemaking Proceedings*, 63 FR 24121 (1998).

- Electronic Filers: Comments may be filed electronically using the Internet by accessing the ECFS: <http://fjallfoss.fcc.gov/ecfs2/>.
- Paper Filers: Parties who choose to file by paper must file an original and one copy of each filing. If more than one docket or rulemaking number appears in the caption of this proceeding, filers must submit two additional copies for each additional docket or rulemaking number.

Filings can be sent by hand or messenger delivery, by commercial overnight courier, or by first-class or overnight U.S. Postal Service mail. All filings must be addressed to the Commission's Secretary, Office of the Secretary, Federal Communications Commission.

- All hand-delivered or messenger-delivered paper filings for the Commission's Secretary must be delivered to FCC Headquarters at 445 12th St., SW, Room TW-A325, Washington, DC 20554. The filing hours are 8:00 a.m. to 7:00 p.m. All hand deliveries must be held together with rubber bands or fasteners. Any envelopes and boxes must be disposed of before entering the building.
- Commercial overnight mail (other than U.S. Postal Service Express Mail and Priority Mail) must be sent to 9300 East Hampton Drive, Capitol Heights, MD 20743.
- U.S. Postal Service first-class, Express, and Priority mail must be addressed to 445 12th Street, SW, Washington DC 20554.

150. People with Disabilities: To request materials in accessible formats for people with disabilities (braille, large print, electronic files, audio format), send an e-mail to fcc504@fcc.gov or call the Consumer & Governmental Affairs Bureau at 202-418-0530 (voice), 202-418-0432 (tty).

151. *Availability of Documents.* Comments, reply comments, and *ex parte* submissions will be available for public inspection during regular business hours in the FCC Reference Center, Federal Communications Commission, 445 12th Street, S.W., CY-A257, Washington, D.C., 20554. These documents will also be available via ECFS. Documents will be available electronically in ASCII, Microsoft Word, and/or Adobe Acrobat.

C. Initial Regulatory Flexibility Analysis

152. As required by the Regulatory Flexibility Act,²⁷⁴ the Commission has prepared an Initial Regulatory Flexibility Analysis ("IRFA") of the possible significant economic impact on small entities of the policies and rules addressed in this NPRM. The IRFA is set forth in Appendix B. Written public comments are requested on the IRFA. These comments must be filed in accordance with the same filing

²⁷⁴ See 5 U.S.C. § 603.

deadlines for comments on the NPRM, and should have a separate and distinct heading designating them as responses to the IRFA.

D. Paperwork Reduction Act Analysis

153. This document contains proposed new or modified information collection requirements. The Commission, as part of its continuing effort to reduce paperwork burdens, invites the general public and the Office of Management and Budget (OMB) to comment on the information collection requirements contained in this document, as required by the Paperwork Reduction Act of 1995, Public Law 104-13. In addition, pursuant to the Small Business Paperwork Relief Act of 2002, Public Law 107-198, see 44 U.S.C. 3506(c)(4), we seek specific comment on how we might further reduce the information collection burden for small business concerns with fewer than 25 employees.

E. Further Information

154. For additional information on this proceeding, contact Kevin Holmes of the Broadband Division, Wireless Telecommunications Bureau, at (202) 418-BITS.

VI. ORDERING CLAUSES

155. Accordingly, IT IS ORDERED, pursuant to Sections 1, 2, 4(i), 201, 301, 302, 303, 307, 308, 309, 310, 316, 319, 324, 332 and 333 of the Communications Act of 1934, as amended, 47 U.S.C. §§ 151, 152, 154(i), 201, 301, 302, 303, 307, 308, 309, 310, 316, 319, 324, 332, and 333 that this Notice of Proposed Rulemaking and Notice of Inquiry are hereby ADOPTED.

156. IT IS FURTHER ORDERED that NOTICE IS HEREBY GIVEN of the proposed regulatory changes described in the *AWS-4 Notice*, and that comment is sought on these proposals.

157. IT IS FURTHER ORDERED that the Initial Regulatory Flexibility Analysis IS ADOPTED.

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

FEDERAL COMMUNICATIONS COMMISSION

Marlene H. Dortch
Secretary

APPENDIX A**Proposed Rules**

For the reasons discussed in the preamble, the Federal Communications Commission proposes to amend 47 CFR parts 1, 2, 25, 27, 101 as follows:

PART 1— PRACTICE AND PROCEDURE

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

Authority: 15 U.S.C. 79 et seq.; 47 U.S.C. 151, 154(i), 154(j), 155, 157, 225, 303(r), and 309.

2. Section 1.949 is amended by adding paragraph (c) as follows:

§ 1.949 Application for renewal of license.

(c) **Renewal Showing.** An applicant for renewal of a geographic-area authorization in the 2000-2020 MHz and 2180-2200 MHz service bands must make a renewal showing, independent of its performance requirements, as a condition of renewal. The showing must include a detailed description of the applicant's provision of service during the entire license period and address:

- (1) The level and quality of service provided by the applicant (e.g., the population served, the area served, the number of subscribers, the services offered);
- (2) The date service commenced, whether service was ever interrupted, and the duration of any interruption or outage;
- (3) The extent to which service is provided to rural areas;
- (4) The extent to which service is provided to qualifying tribal land as defined in § 1.2110(f)(3)(i); and
- (5) Any other factors associated with the level of service to the public.

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

3. The authority citation for part 2 continues to read as follows:

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

4. Section 2.106, the Table of Frequency Allocations, is amended as follows:

a. Page 36 is revised

b. In the list of non-Federal Government (NG) Footnotes, footnote NG168 is removed.

§ 2.106 Table of Frequency Allocations.

The revision reads as follows:

1980-2010 FIXED MOBILE MOBILE-SATELLITE (Earth-to-space) 5.351A 5.388 5.389A 5.389B 5.389F		1980-2025		NG177 2000-2020 FIXED MOBILE MOBILE-SATELLITE (Earth-to-space)
2010-2025 FIXED MOBILE 5.388A 5.388B	2010-2025 FIXED MOBILE MOBILE-SATELLITE (Earth-to-space)	2010-2025 FIXED MOBILE 5.388A 5.388B		2020-2025 FIXED MOBILE
5.388	5.388 5.389C 5.389E	5.388		NG177
2025-2110 SPACE OPERATION (Earth-to-space) (space-to-space) EARTH EXPLORATION-SATELLITE (Earth-to-space) (space-to-space) FIXED MOBILE 5.391 SPACE RESEARCH (Earth-to-space) (space-to-space)		2025-2110 SPACE OPERATION (Earth-to-space) (space-to-space) EARTH EXPLORATION-SATELLITE (Earth-to-space) (space-to-space) SPACE RESEARCH (Earth-to-space) (space-to-space)		2025-2110 FIXED NG118 MOBILE 5.391
5.392		5.391 5.392 US90 US222 US346 US347 US393		5.392 US90 US222 US346 US347 US393
2110-2120 FIXED MOBILE 5.388A 5.388B SPACE RESEARCH (deep space) (Earth-to-space)		2110-2120		2110-2120 FIXED MOBILE
5.388		US252		US252
2120-2170 FIXED MOBILE 5.388A 5.388B	2120-2160 FIXED MOBILE 5.388A 5.388B Mobile-satellite (space-to-Earth) 5.388	2120-2170 FIXED MOBILE 5.388A 5.388B	2120-2200	2120-2180 FIXED MOBILE
5.388	2160-2170 FIXED MOBILE MOBILE-SATELLITE (space-to-Earth)	5.388		
5.388	5.388 5.389C 5.389E	5.388		
2170-2200 FIXED MOBILE MOBILE-SATELLITE (space-to-Earth) 5.351A 5.388 5.389A 5.389F				NG153 NG178 2180-2200 FIXED MOBILE MOBILE-SATELLITE (space-to-Earth)

PART 25— SATELLITE COMMUNICATIONS

5. The authority citation for part 25 continues to read as follows:

Authority: 47 U.S.C. 701-744. Interprets or applies Sections 4, 301, 302, 303, 307, 309 and 332 of the Communications Act, as amended, 47 U.S.C. Sections 154, 301, 302, 303, 307, 309 and 332, unless otherwise noted.

6. Section 25.143 is amended by revising paragraphs (i) and (k) to read as follows:

§ 25.143 Licensing provisions for the 1.6/2.4 GHz mobile-satellite service and 2 GHz mobile-satellite service.

(i) Incorporation of ancillary terrestrial component base stations into a 1.6/2.4 GHz mobile-satellite service network. Any licensee authorized to construct and launch a 1.6/2.4 GHz system may construct ancillary terrestrial component (ATC) base stations as defined in §25.201 at its own risk and subject to the conditions specified in this subpart any time after commencing construction of the mobile-satellite service system.

(k) Aircraft. ATC mobile terminals must be operated in accordance with 25.136(a). All portable or hand-held transceiver units (including transceiver units installed in other devices that are themselves portable or hand-held) having operating capabilities in the 1610–1626.5 MHz/2483.5–2500 MHz bands shall bear the following statement in a conspicuous location on the device: “This device may not be operated while on board aircraft. It must be turned off at all times while on board aircraft.”

7. Section 25.149 is amended by revising the section heading, revising paragraph (a)(1), removing and reserving paragraphs (a)(2)(i), (b)(1)(i), and (b)(5)(i), and revising paragraphs (d) and (e), to read as follows:

§ 25.149 Application requirements for ancillary terrestrial components in the mobile-satellites service networks operating in the 1.5/1.6 GHz and 1.6/2.4 GHz mobile-satellite service.

(a) ***

(1) ATC shall be deployed in the forward-band mode of operation whereby the ATC mobile terminals transmit in the MSS uplink bands and the ATC base stations transmit in the MSS downlink bands in portions of the 1626.5–1660.5 MHz/1525–1559 MHz bands (L-band) and the 1610–1626.5 MHz/2483.5–2500 MHz bands (Big LEO band).

(d) Applicants for an ancillary terrestrial component authority shall demonstrate that the applicant does or will comply with the provisions of §1.924 of this chapter and 25.203(e) through 25.203(g) and with §25.253 or §25.254, as appropriate, through certification or explanatory technical exhibit.

(e) Except as provided for in paragraph (f) of this section, no application for an ancillary terrestrial component shall be granted until the applicant has demonstrated actual compliance with the provisions of paragraph (b) of this section. Upon receipt of ATC authority, all ATC licensees must ensure continued compliance with this section and §25.253 or §25.254, as appropriate.

§25.252 [Removed and Reserved].

8. Remove and Reserve 25.252.

9. Section 25.255 is amended by revising the section heading as follows:

§ 25.255 Procedures for resolving harmful interference related to operation of ancillary terrestrial components operating in the 1.5/1.6 GHz and 1.6/2.4 GHz bands.

PART 27—MISCELLANEOUS WIRELESS COMMUNICATIONS SERVICES

10. The authority citation for part 27 continues to read as follows:

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

11. Section 27.1 is amended by adding paragraph (b)(10) to read as follows:

§ 27.1 Basis and purpose.

(b) ***

(10) 2000-2020 MHz and 2180-2200 MHz.

12. Section 27.2 is amended by revising paragraph (a) and adding paragraph (d) to read as follows:

§ 27.2 Permissible uses.

(a) Miscellaneous wireless communications services. Except as provided in paragraph (b) or (d) of this section and subject to technical and other rules contained in this part, a licensee in the frequency bands specified in §27.5 may provide any services for which its frequency bands are allocated, as set forth in the non-Federal Government column of the Table of Allocations in §2.106 of this chapter (column 5).

(d) 2000-2020 MHz and 2180-2200 MHz bands. Operators in the 2000-2020 MHz and 2180-2200 MHz bands may not provide the mobile-satellite service under the provisions of this part; rather, mobile-satellite service shall be provided in a manner consistent with part 25 of this chapter.

13. Section 27.4 is amended by revising the paragraph titled Advanced wireless service (AWS) to read as follows:

§ 27.4 Terms and definitions.

Advanced Wireless Service (AWS). A radiocommunication service licensed pursuant to this part for the frequency bands specified in § 27.5(h) or § 27.5(j).

14. Section 27.5 is amended by adding paragraph (j) to read as follows:

§ 27.5 Frequencies.

(j) 2000-2020 MHz and 2180-2200 MHz bands. The following frequencies are available for licensing pursuant to this part in the 2000-2020 MHz and 2180-2200 MHz (AWS-4) bands:

(1) Two paired channel blocks of 10 megahertz each are available for assignment as follows:

Block A: 2000-2010 MHz and 2190-2200 MHz; and

Block B: 2010-2020 MHz and 2180-2190 MHz.

(2) Reserved.

15. Section 27.6 is amended by adding paragraph (i) to read as follows:

§ 27.6 Service areas.

(i) 2000-2020 MHz and 2180-2200 MHz bands. AWS service areas for the 2000-2020 MHz and 2180-2200 MHz bands are based on Economic Areas (EAs) as defined in paragraph (a) of this section.

16. Section 27.13 is amended by adding paragraph (i) to read as follows:

§ 27.13 License period.

(i) 2000-2020 MHz and 2180-2200 MHz bands. Authorizations for the 2000-2020 MHz and 2180-2200 MHz bands will have a term not to exceed ten years from the date of issuance or renewal.

17. Section 27.14 is amended by revising the first sentence of paragraphs (a), (f), and (k), and adding paragraph (q) to read as follows:

§ 27.14 Construction requirements; Criteria for renewal.

(a) AWS and WCS licensees, with the exception of WCS licensees holding authorizations for Block A in the 698–704 MHz and 728–734 MHz bands, Block B in the 704–710 MHz and 734–740 MHz bands, Block E in the 722–728 MHz band, Block C, C1, or C2 in the 746–757 MHz and 776–787 MHz bands, Block D in the 758–763 MHz and 788–793 MHz bands, Block A in the 2305–2310 MHz and 2350–2355 MHz bands, Block B in the 2310–2315 MHz and 2355–2360 MHz bands, Block C in the 2315–2320 MHz band, and Block D in the 2345–2350 MHz band, and with the exception of AWS licensees holding authorizations in the 2000-2020 MHz and 2180-2200 MHz bands, must, as a performance requirement, make a showing of “substantial service” in their license area within the prescribed license term set forth in §27.13. ***

(f) Comparative renewal proceedings do not apply to WCS licensees holding authorizations for the 698–746 MHz, 747–762 MHz, and 777–792 MHz bands and AWS licensees holding authorizations for the 2000-2020 MHz and 2180-2200 MHz bands. ***

* * * * *

(k) WCS and AWS licensees holding authorizations in the spectrum blocks enumerated in paragraphs (g), (h), (i), or (q) of this section, including any licensee that obtained its license pursuant to the procedures set forth in paragraph (j) of this section, shall demonstrate compliance with performance requirements by filing a construction notification with the Commission, within 15 days of the expiration of the applicable benchmark, in accordance with the provisions set forth in §1.946(d) of this chapter. ***

* * * * *

(q) The following provisions apply to any AWS licensee holding an authorization in the 2000-2020 MHz and 2180-2200 MHz bands (an “AWS-4 licensee”):

(1) An AWS-4 licensee shall provide signal coverage and offer service within three (3) years from the date of the initial license to at least thirty (30) percent of the total population in the aggregate service areas that it has licensed in the 2000-2020 MHz and 2180-2200 MHz bands (“AWS-4 3-Year Buildout Requirement”). For purposes of this subpart, a licensee’s total population shall be calculated by summing the population of each license authorization that a licensee holds in the 2000-2020 MHz and 2180-2200 MHz bands; and

(2) An AWS-4 licensee shall provide signal coverage and offer service within seven (7) years from the date of the initial license to at least to at least seventy (70) percent of the total population in each of its licensed areas (“AWS-4 7-Year Buildout Requirement”).

(3) If any AWS-4 licensee fails to establish that it meets the AWS-4 3-Year Buildout Requirement, all of the licensee’s 2000-2020 MHz and 2180-2200 MHz band license authorizations, including, if the AWS-4 license was assigned pursuant to a license modification, any licensed under part 25 or any other part of these regulations, shall terminate automatically without Commission action.

(4) If any AWS-4 licensee fails to establish that it meets the AWS-4 7-Year Buildout Requirement for a particular license within seven (7) years of the date on which the original license was issued, that licensee's authorization for the entire EA shall terminate automatically without Commission action, and the license will become available for reassignment by the Commission.

(5) To demonstrate compliance with these performance requirements, licensees shall use the most recently available U.S. Census Data at the time of measurement and shall base their measurements of population served on areas no larger than the Census Tract level. The population within a specific Census Tract (or other acceptable identifier) will only be deemed served by the licensee if it provides signal coverage to and offers service within the specific Census Tract (or other acceptable identifier). To the extent the Census Tract (or other acceptable identifier) extends beyond the boundaries of a license area, a licensee with authorizations for such areas may only include the population within the Census Tract (or other acceptable identifier) towards meeting the performance requirement of a single, individual license.

(6) Failure by any AWS-4 licensee to meet the performance requirements in this paragraph (q) will result in forfeiture of the license and the licensee will be ineligible to regain it.

18. Section 27.15 is amended by revising paragraph (d)(1)(i); adding paragraph (d)(1)(iii); revising paragraph (d)(2)(i), and adding paragraph (d)(2)(iii) to read as follows:

§ 27.15 Geographic partitioning and spectrum disaggregation.

(d) ***

(1) ***

(i) Except for WCS licensees holding authorizations for Block A in the 698–704 MHz and 728–734 MHz bands, Block B in the 704–710 MHz and 734–740 MHz bands, Block E in the 722–728 MHz band, Blocks C, C1, or C2 in the 746–757 MHz and 776–787 MHz bands, or Block D in the 758–763 MHz and 788–793 MHz bands; and for licensees holding authorizations in the 2000-2020 MHz and 2180-2200 MHz bands; the following rules apply to WCS and AWS licensees holding authorizations for purposes of implementing the construction requirements set forth in §27.14. Parties to partitioning agreements have

two options for satisfying the construction requirements set forth in §27.14. Under the first option, the partitioner and partitionee each certifies that it will independently satisfy the substantial service requirement for its respective partitioned area. If a licensee subsequently fails to meet its substantial service requirement, its license will be subject to automatic cancellation without further Commission action. Under the section option, the partitioner certifies that it has met or will meet the substantial service requirement for the entire, pre-partitioned geographic service area. If the partitioner subsequently fails to meet its substantial service requirement, only its license will be subject to automatic cancellation without further Commission action.

(iii) For AWS-4 licensees holding authorizations in the 2000-2020 MHz and 2180-2200 MHz bands, the following rules apply for purposes of implementing the construction requirements set forth in §27.14. Each party to a geographic partitioning must individually meet any service-specific performance requirements (i.e., construction and operation requirements). If a licensee, including a partitionee, fails to meet any service-specific performance requirements on or before the required date, its authorization will terminate automatically on that date without further Commission action pursuant to § 27.14(q)

(2) ***

(i) Except for WCS licensees holding authorizations for Block A in the 698–704 MHz and 728–734 MHz bands, Block B in the 704–710 MHz and 734–740 MHz bands, Block E in the 722–728 MHz band, Blocks C, C1, or C2 in the 746–757 MHz and 776–787 MHz bands, or Block D in the 758–763 MHz and 788–793 MHz bands; and for licensees holding authorizations in the 2000-2020 MHz and 2180-2200 MHz bands; the following rules apply to WCS and AWS licensees holding authorizations for purposes of implementing the construction requirements set forth in §27.14. Parties to disaggregation agreements have two options for satisfying the construction requirements set forth in §27.14. Under the first option, the disaggregator and disaggregatee each certifies that it will share responsibility for meeting the substantial service requirement for the geographic service area. If the parties choose this option and either party subsequently fails to satisfy its substantial service responsibility, both parties' licenses will be

subject to forfeiture without further Commission action. Under the second option, both parties certify either that the disaggregator or the disaggregatee will meet the substantial service requirement for the geographic service area. If the parties choose this option, and the party responsible subsequently fails to meet the substantial service requirement, only that party's license will be subject to forfeiture without further Commission action.

(iii) For AWS licensees holding authorizations in the 2000-2020 MHz and 2180-2200 MHz bands, the following rules apply for purposes of implementing the construction requirements set forth in §27.14. Each party to a spectrum disaggregation must individually meet any service-specific performance requirements (*i.e.*, construction and operation requirements). If a licensee, including a disaggregatee, fails to meet any service-specific performance requirements on or before the required date, its authorization will terminate automatically on that date without further Commission action pursuant to § 27.14(q).

19. Section 27.17 is added to read as follows:

§ 27.17 Discontinuance of Service in the 2000-2020 MHz and 2180-2200 MHz bands.

(a) Termination of Authorization. A licensee's authorization in the 2000-2020 MHz and 2180-2200 MHz bands will automatically terminate, without specific Commission action, if it permanently discontinues service after meeting the AWS-4 3-Year Buildout Requirement as specified in § 27.14 of the Commission's rules.

(b) Permanent discontinuance of service is defined as 180 consecutive days during which an AWS-4 licensee does not operate or, in the case of a commercial mobile radio service provider, does not provide service to at least one subscriber that is not affiliated with, controlled by, or related to the providing carrier.

(c) Filing Requirements. A licensee of the 2000-2020 MHz and 2180-2200 MHz bands that permanently discontinues service as defined in this section must notify the Commission of the discontinuance within 10 days by filing FCC Form 601 or 605 requesting license cancellation. An authorization will

automatically terminate, without specific Commission action, if service is permanently discontinued as defined in this section, even if a licensee fails to file the required form requesting license cancellation.

20. Section 27.50 is amended by revising paragraphs (d), (d)(1) introductory text, (d)(2) introductory text, and (d)(4) and adding paragraph (d)(7) to read as follows:

§ 27.50 Power Limits and Duty Cycle.

(d) The following power and antenna height requirements apply to stations transmitting in the 1710–1755 MHz, 2110–2155 MHz, 2000–2020 MHz, and 2180–2200 MHz bands:

(1) The power of each fixed or base station transmitting in the 2110–2155 MHz or 2180–2200 MHz bands and located in any county with population density of 100 or fewer persons per square mile, based upon the most recently available population statistics from the Bureau of the Census, is limited to:

(2) The power of each fixed or base station transmitting in the 2110–2155 MHz or 2180–2200 MHz bands and situated in any geographic location other than that described in paragraph (d)(1) is limited to:

(4) Fixed, mobile, and portable (hand-held) stations operating in the 1710–1755 MHz and 2000–2020 MHz bands are limited to 1 watt EIRP. Fixed stations operating in these bands are limited to a maximum antenna height of 10 meters above ground. Mobile and portable stations operating in these bands must employ a means for limiting power to the minimum necessary for successful communications.

(7) A licensee operating a base or fixed station in the 2180–2200 MHz band utilizing a power greater than 1640 watts EIRP and greater than 1640 watts/MHz EIRP must be coordinated in advance with all AWS licensees authorized to operate on adjacent frequency blocks in the 2180–2200 MHz band.

21. Section 27.53 is amended by revising paragraph (h) introductory text to read as follows:

§ 27.53 Emission limits.

(h) Except as provided in section 27.1134(e) for the 2180-2200 MHz band, for operations in the 1710–1755 MHz, 2110–2155 MHz, 2000-2020 MHz, and 2180-2200 MHz bands, the power of any emission outside a licensee’s frequency block shall be attenuated below the transmitter power (P) by at least $43 + 10 \log_{10}(P)$ dB. For operations in the 2000-2020 MHz band, the power of any emissions between 1995 MHz and 2000 MHz shall be attenuated below the transmitter power (P) by at least a value as determined by linear interpolation from $70 + 10 \log_{10}(P)$ dB at 1995 MHz to $43 + 10 \log_{10}(P)$ dB at 2000 MHz.

22. Section 27.55 is amended by revising paragraph (a)(1) to read as follows:

§ 27.55 Power strength limits.

(a)***

(1) 2110–2155, 2180-2200, 2305–2320 and 2345–2360 MHz bands: 47 dB μ V/m.

23. Section 27.57 is amended by revising paragraph (c) to read as follows:

§ 27.57 International Coordination.

(c) Operation in the 1710-1755 MHz, 2110-2155 MHz, 2000-2020 MHz, and 2180-2200 MHz bands is subject to international agreements with Mexico and Canada.

24. Amend part 27 by revising the heading of subpart to read as follows:

Subpart L—1710-1755 MHz, 2110-2155 MHz, 2000-2020 MHz, and 2180-2200 MHz bands

25. Section 27.1103 is added to read as follows:

§ 27.1103 2000-2020 MHz and 2180-2200 MHz bands subject to competitive bidding.

Mutually exclusive initial applications for 2000-2020 MHz and 2180-2200 MHz band licenses are subject to competitive bidding. The general competitive bidding procedures set forth in 47 CFR part 1, subpart Q will apply unless otherwise provided in this subpart.

26. Section 27.1104 is added to read as follows:

§ 27.1104 Designated Entities in the 2000-2020 MHz and 2180-2200 MHz bands.

Eligibility for small business provisions:

(a)(1) A small business is an entity that, together with its affiliates, its controlling interests, the affiliates of its controlling interests, and the entities with which it has an attributable material relationship, has average annual gross revenues not exceeding \$40 million for the preceding three years.

(2) A very small business is an entity that, together with its affiliates, its controlling interests, the affiliates of its controlling interests, and the entities with which it has an attributable material relationship, has average annual gross revenues not exceeding \$15 million for the preceding three years.

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

27. Revise § 27.1131 to read as follows:

§ 27.1131 Protection of Part 101 operations.

All AWS licensees, prior to initiating operations from any base or fixed station, must coordinate their frequency usage with co-channel and adjacent channel incumbent, Part 101 fixed-point-to-point microwave licensees operating in the 2110–2155 MHz and 2180-2200 MHz bands. Coordination shall be conducted in accordance with the provisions of §24.237 of this chapter.

28. Section 27.1134 is amended by adding paragraph (e) as follows:

§ 27.1134 Protection of Federal Government operations.

(e) Protection of Federal operations in the 2200-2290 MHz band.

(1) [Reserved.]

(2) [Reserved.]

29. Add § 27.1136 to read as follows:

§ 27.1136 Protection of Mobile Satellite Services in the 2000-2020 MHz and 2180-2200 MHz bands.

An AWS licensee of the 2000-2020 MHz and 2180-2200 MHz bands must accept any interference received from duly authorized mobile satellite service operations in these bands. Any such AWS licensees must protect mobile satellite service operations in these bands from harmful interference.

30. Revise the first sentence of § 27.1160 to read as follows:

§ 27.1160 Cost-sharing requirements for AWS.

Frequencies in the 2110–2150 MHz and 2160–2200 MHz bands listed in §101.147 of this chapter have been reallocated from Fixed Microwave Services (FMS) to use by AWS (as reflected in §2.106) of this chapter. ***

31. Section 27.1166 is amended by revising paragraphs (a)(1), (b) introductory text, (b)(2), and (f) to read as follows:

§ 27.1166 Reimbursement under the Cost-Sharing Plan.

(a) ***

(1) To obtain reimbursement, an AWS relocater must submit documentation of the relocation agreement to the clearinghouse within 30 calendar days of the date a relocation agreement is signed with an incumbent. In the case of involuntary relocation, an AWS relocater must submit documentation of the relocated system within 30 calendar days after the end of the relocation.

(b) Documentation of expenses. Once relocation occurs, the AWS relocater, or the voluntarily relocating microwave incumbent, must submit documentation itemizing the amount spent for items specifically listed in §27.1164(b), as well as any reimbursable items not specifically listed in §27.1164(b) that are directly attributable to actual relocation costs. Specifically, the AWS relocater, or the voluntarily relocating microwave incumbent must submit, in the first instance, only the uniform cost data requested

by the clearinghouse along with a copy, without redaction, of either the relocation agreement, if any, or the third party appraisal described in (b)(1), if relocation was undertaken by the microwave incumbent. AWS relocators and voluntarily relocating microwave incumbents must maintain documentation of cost-related issues until the applicable sunset date and provide such documentation upon request, to the clearinghouse, the Commission, or entrants that trigger a cost-sharing obligation. If an AWS relocator pays a microwave incumbent a monetary sum to relocate its own facilities, the AWS relocator must estimate the costs associated with relocating the incumbent by itemizing the anticipated cost for items listed in §27.1164(b). If the sum paid to the incumbent cannot be accounted for, the remaining amount is not eligible for reimbursement.

(2) Identification of links. The AWS relocator, or the voluntarily relocating microwave incumbent, must identify the particular link associated with appropriate expenses (i.e., costs may not be averaged over numerous links). Where the AWS relocator, or voluntarily relocating microwave incumbent relocates both paths of a paired channel microwave link (e.g., 2110–2130 MHz with 2160–2180 MHz and 2130–2150 MHz with 2180–2200 MHz), the AWS relocator, or voluntarily relocating microwave incumbent must identify the expenses associated with each paired microwave link.

(f) Reimbursement for Self-relocating FMS links in the 2130–2150 MHz and 2180–2200 MHz bands. Where a voluntarily relocating microwave incumbent relocates a paired microwave link with paths in the 2130–2150 MHz and 2180–2200 MHz bands, it may not seek reimbursement from MSS operators, but is entitled to partial reimbursement from the first AWS beneficiary, equal to fifty percent of its actual costs for relocating the paired link, or half of the reimbursement cap in §27.1164(b), whichever is less. This amount is subject to depreciation as specified §27.1164(b). An AWS licensee who is obligated to reimburse relocation costs under this rule is entitled to obtain reimbursement from other AWS beneficiaries in accordance with §§27.1164 and 27.1168. For purposes of applying the cost-sharing formula relative to other AWS licensees that benefit from the self-relocation, the fifty percent attributable

to the AWS entrant shall be treated as the entire cost of the link relocation, and depreciation shall run from the date on which the clearinghouse issues the notice of an obligation to reimburse the voluntarily relocating microwave incumbent. The cost-sharing obligations for MSS operators in the 2180–2200 MHz band are governed by §101.82 of this chapter.

32. Section 27.1168 is amended by revising paragraphs (a) introductory text, (a)(1) through (a)(3) introductory text, (a)(3)(ii), and (b) to read as follows:

§ 27.1168 Triggering a Reimbursement Obligation.

(a) The clearinghouse will apply the following test to determine when an AWS entity has triggered a cost-sharing obligation and therefore must pay an AWS relocater, MSS relocater, or a voluntarily relocating microwave incumbent in accordance with the formula detailed in §27.1164:

(1) All or part of the relocated microwave link was initially co-channel with the licensed AWS band(s) of the AWS entity or the selected assignment of the MSS operator that seeks and obtains ATC authority (see §25.149(a)(2)(i) of this chapter);

(2) An AWS relocater, MSS relocater or a voluntarily relocating microwave incumbent has paid the relocation costs of the microwave incumbent; and

(3) The AWS or MSS entity is operating or preparing to turn on a fixed base station at commercial power and the fixed base station is located within a rectangle (Proximity Threshold) described as follows:

(ii) If the application of the Proximity Threshold Test indicates that a reimbursement obligation exists, the clearinghouse will calculate the reimbursement amount in accordance with the cost-sharing formula and notify the AWS entity of the total amount of its reimbursement obligation.

(b) Once a reimbursement obligation is triggered, the AWS entity may not avoid paying its cost-sharing obligation by deconstructing or modifying its facilities.

33. Revise § 27.1170 to read as follows:

§ 27.1170 Payment Issues.

Prior to initiating operations for a newly constructed site or modified existing site, an AWS entity is required to file a notice containing site-specific data with the clearinghouse. The notice regarding the new or modified site must provide a detailed description of the proposed site's spectral frequency use and geographic location, including but not limited to the applicant's name and address, the name of the transmitting base station, the geographic coordinates corresponding to that base station, the frequencies and polarizations to be added, changed or deleted, and the emission designator. If a prior coordination notice (PCN) under §101.103(d) of this chapter is prepared, AWS entities can satisfy the site-data filing requirement by submitting a copy of their PCN to the clearinghouse. AWS entities that file either a notice or a PCN have a continuing duty to maintain the accuracy of the site-specific data on file with the clearinghouse. Utilizing the site-specific data, the clearinghouse will determine if any reimbursement obligation exists and notify the AWS entity in writing of its repayment obligation, if any. When the AWS entity receives a written copy of such obligation, it must pay directly to the relocater the amount owed within 30 calendar days.

34. Revise § 27.1174 to read as follows:

§ 27.1174 Termination of Cost-Sharing Obligations.

The cost-sharing plan will sunset for all AWS and MSS entities on the same date on which the relocation obligation for the subject AWS band (i.e., 2110–2150 MHz, 2160–2175 MHz, 2175–2180 MHz, 2180–2200 MHz) in which the relocated FMS link was located terminates. AWS or MSS entrants that trigger a cost-sharing obligation prior to the sunset date must satisfy their payment obligation in full.

PART 101— FIXED MICROWAVE SERVICES

35. The authority citation for part 101 continues to read as follows:

Authority: 47 U.S.C. 154, and 303 unless otherwise noted.

36. Section 101.69 is amended by revising paragraph (e) introductory text to read as follows:

§ 101.69 Transition of the 1850–1990 MHz, 2110–2150 MHz, and 2160–2200 MHz bands from the fixed microwave services to personal communications services and emerging technologies.

(e) Relocation of FMS licensees by Mobile-Satellite Service (MSS) licensees will be subject to mandatory negotiations only.

37. Section 101.73 is amended by revising paragraphs (a) and (d) introductory text to read as follows:

§ 101.73 Mandatory negotiations.

(a) A mandatory negotiation period may be initiated at the option of the ET licensee. Relocation of FMS licensees by Mobile Satellite Service (MSS) operators and AWS licensees in the 2110–2150 MHz and 2160–2200 MHz bands will be subject to mandatory negotiations only.

(d) Provisions for Relocation of Fixed Microwave Licensees in the 2110–2150 and 2160–2200 MHz bands. A separate mandatory negotiation period will commence for each FMS licensee when an ET licensee informs that FMS licensee in writing of its desire to negotiate. Mandatory negotiations will be conducted with the goal of providing the FMS licensee with comparable facilities defined as facilities possessing the following characteristics:

38. Section 101.79 is amended by revising paragraphs (a) introductory text and (a)(2) to read as follows:

§ 101.79 Sunset provisions for licensees in the 1850–1990 MHz, 2110–2150 MHz, and 2160–2200 MHz bands.

(a) FMS licensees will maintain primary status in the 1850–1990 MHz, 2110–2150 MHz, and 2160–2200 MHz bands unless and until an ET licensee requires use of the spectrum. ET licensees are not required to pay relocation costs after the relocation rules sunset. Once the relocation rules sunset, an ET licensee may require the incumbent to cease operations, provided that the ET licensee intends to turn on a system

within interference range of the incumbent, as determined by TIA TSB 10-F (for terrestrial-to-terrestrial situations) or TIA TSB 86 (for MSS satellite-to-terrestrial situations) or any standard successor. ET licensee notification to the affected FMS licensee must be in writing and must provide the incumbent with no less than six months to vacate the spectrum. After the six-month notice period has expired, the FMS licensee must turn its license back into the Commission, unless the parties have entered into an agreement which allows the FMS licensee to continue to operate on a mutually agreed upon basis. The date that the relocation rules sunset is determined as follows:

(2) For the 2180–2200 MHz band, for MSS/ATC December 8, 2013 (i.e., ten years after the mandatory negotiation period begins for MSS/ATC operators in the service), and for ET licensees authorized under Part 27 ten years after the first Part 27 license is issued in the band.

39. Section 101.82 is amended by revising paragraphs (a) and (d) to read as follows:

§ 101.82 Reimbursement and relocation expenses in the 2110–2150 MHz and 2160–2200 MHz bands.

(a) Reimbursement and relocation expenses for the 2110–2130 MHz and 2160–2200 MHz bands are addressed in §§27.1160–27.1174.

(d) Cost-sharing obligations among terrestrial stations. For terrestrial stations (AWS), cost-sharing obligations are governed by §§27.1160 through 27.1174 of this chapter; provided, however, that MSS operators are not obligated to reimburse voluntarily relocating FMS incumbents in the 2180–2200 MHz band. (AWS reimbursement and cost-sharing obligations relative to voluntarily relocating FMS incumbents are governed by §27.1166 of this chapter).

APPENDIX B

Initial Regulatory Flexibility Act Analysis

1. As required by the Regulatory Flexibility Act of 1980, as amended (RFA),¹ the Commission has prepared this present Initial Regulatory Flexibility Analysis (IRFA) of the possible significant economic impact on a substantial number of small entities by the policies and rules proposed in this *Notice of Proposed Rulemaking and Notice of Inquiry (NPRM and NOI)*. Written public comments are requested on this IRFA. Comments must be identified as responses to the IRFA and must be filed by the deadlines specified in the *NPRM and NOI* for comments. The Commission will send a copy of the *NPRM and NOI*, including this IRFA, to the Chief Counsel for Advocacy of the Small Business Administration (SBA).² In addition, the *NPRM and NOI* and IRFA (or summaries thereof) will be published in the Federal Register.³

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

2. The rapid adoption of smartphones and tablet computers, combined with deployment of high-speed 3G and 4G technologies, is driving more intensive use of America's mobile networks. This explosive growth is creating an urgent need for more network capacity and, in turn, for suitable spectrum. Responding to this demand for additional spectrum, the National Broadband Plan recommended the Commission undertake to make 500 megahertz of spectrum available for broadband use within ten years.⁴ The National Broadband Plan also recommended that 300 megahertz of this spectrum should be made available for mobile use within five years.⁵ The Commission has launched several proceedings to facilitate bringing spectrum suitable for wireless broadband to the commercial marketplace.⁶ More recently, Congress passed the Middle Class Tax Relief and Job Creation Act of 2012, which grants the Commission new authority to conduct "voluntary incentive auctions," a key pillar of the National Broadband Plan's roadmap to bring more spectrum online for broadband.⁷

3. In this *NPRM and NOI*, we seek to increase the nation's supply of spectrum for mobile broadband by removing unnecessary barriers to flexible use of spectrum currently assigned to the Mobile Satellite Service (MSS) in the 2 GHz band. This *NPRM and NOI* directly follows on the 2 GHz Band Co-Allocation Order, in which the Commission laid the predicate for full terrestrial use of the 2 GHz MSS band.⁸ In proposing terrestrial service rules for the band, which include technical rules to protect against

¹ See 5 U.S.C. § 603. The RFA, see 5 U.S.C. § 601-612, has been amended by the Small Business Regulatory Enforcement Fairness Act of 1996, (SBREFA) Pub. L. No. 104-121, Title II, 110 Stat. 857 (1996).

² See 5 U.S.C. § 603(a).

³ See *id.*

⁴ Connecting America: The National Broadband Plan, Recommendation 5.8, at 84-85 (2010) (*National Broadband Plan*).

⁵ *National Broadband Plan*, Recommendation 5.8.

⁶ See, e.g., Amendment of Part 27 of the Commission's Rules to Govern the Operation of Wireless Communications Services in the 2.3 GHz Band, WT Docket No. 07-293, IB Docket No. 95-91, GEN Docket No. 90-357, RM-8610, *Report and Order and Second Report and Order*, 25 FCC Rcd 11710 (2010).

⁷ Middle Class Tax Relief and Job Creation Act of 2012, Pub. L. No. 112-96, § 6402.

⁸ See Fixed and Mobile Satellite Service Bands at 1525-1559 MHz and 1626.5-1660.5 MHz, 1610-1626.5 MHz and 2483.5-2500 MHz, and 2000-2020 MHz and 2180-2200 MHz, ET Docket No. 10-142, *Report and Order*, 26 FCC Rcd 5710 (2011) (*2 GHz Band Co-Allocation Report and Order*).

harmful interference, licensing rules to establish geographic license areas and spectrum block sizes, and performance requirements to promote robust buildout, we advance toward enabling widespread deployment in the band. We do so by proposing service, technical, assignment, and licensing rules for this spectrum that generally follow the Commission's Part 27 rules that generally govern flexible use terrestrial wireless service. These proposals are designed to provide for flexible use of this spectrum by allowing licensees to choose their type of service offerings, to encourage innovation and investment in mobile broadband use in this spectrum, and to provide a stable regulatory environment in which broadband deployment would be able to develop through the application of standard terrestrial wireless rules. Additionally, the Notice of Inquiry seeks input on potential ways to free up additional valuable spectrum to address the Nation's growing demand for mobile broadband spectrum.

B. Legal Basis

4. The proposed action is authorized pursuant to sections 1, 2, 4(i), 201, 301, 302, 303, 307, 308, 309, 310, 316, 319, 324, 332 and 333 of the Communications Act of 1934, as amended, 47 U.S.C. §§ 151, 152, 154(i), 201, 301, 302, 303, 307, 308, 309, 310, 316, 319, 324, 332, and 333.

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

5. The RFA directs agencies to provide a description of, and, where feasible, an estimate of the number of small entities that may be affected by the proposed rules and policies, if adopted.⁹ The RFA generally defines the term "small entity" as having the same meaning as the terms "small business," "small organization," and "small governmental jurisdiction."¹⁰ In addition, the term "small business" has the same meaning as the term "small business concern" under the Small Business Act.¹¹ 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 SBA.¹²

6. *Small Businesses, Small Organizations, and Small Governmental Jurisdictions.* Our action may, over time, affect small entities that are not easily categorized at present. We therefore describe here, at the outset, three comprehensive, statutory small entity size standards.¹³ First, nationwide, there are a total of approximately 27.5 million small businesses, according to the SBA.¹⁴ In addition, a "small organization" is generally "any not-for-profit enterprise which is independently owned and operated and is not dominant in its field."¹⁵ Nationwide, as of 2007, there were approximately 1,621,315 small organizations.¹⁶ Finally, the term "small governmental jurisdiction" is defined generally

⁹ 5 U.S.C. § 603(b)(3).

¹⁰ 5 U.S.C. § 601(6).

¹¹ 5 U.S.C. § 601(3) (incorporating by reference the definition of "small-business concern" in the Small Business Act, 15 U.S.C. § 632). Pursuant to 5 U.S.C. § 601(3), 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 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." *Id.*

¹² 15 U.S.C. § 632.

¹³ See 5 U.S.C. §§ 601(3)–(6).

¹⁴ See SBA, Office of Advocacy, "Frequently Asked Questions," web.sba.gov/faqs (last visited May 6, 2011; figures are from 2009).

¹⁵ 5 U.S.C. § 601(4).

¹⁶ INDEPENDENT SECTOR, THE NEW NONPROFIT ALMANAC & DESK REFERENCE (2010).

as “governments of cities, towns, townships, villages, school districts, or special districts, with a population of less than fifty thousand.”¹⁷ Census Bureau data for 2011 indicate that there were 89,476 local governmental jurisdictions in the United States.¹⁸ We estimate that, of this total, as many as 88,506 entities may qualify as “small governmental jurisdictions.”¹⁹ Thus, we estimate that most governmental jurisdictions are small.

7. *Satellite Telecommunications and All Other Telecommunications.* Two economic census categories address the satellite industry. The first category has a small business size standard of \$15 million or less in average annual receipts, under SBA rules.²⁰ The second has a size standard of \$25 million or less in annual receipts.²¹

8. The category of Satellite Telecommunications “comprises establishments primarily engaged in providing telecommunications services to other establishments in the telecommunications and broadcasting industries by forwarding and receiving communications signals via a system of satellites or reselling satellite telecommunications.”²² Census Bureau data for 2007 show that 512 Satellite Telecommunications firms operated for that entire year.²³ Of this total, 464 firms had annual receipts of under \$10 million, and 18 firms had receipts of \$10 million to \$24,999,999.²⁴ Consequently, the Commission estimates that the majority of Satellite Telecommunications firms are small entities that might be affected by our action.

9. The second category, *i.e.* “All Other Telecommunications,” comprises “establishments primarily engaged in providing specialized telecommunications services, such as satellite tracking, communications telemetry, and radar station operation. This industry also includes establishments primarily engaged in providing satellite terminal stations and associated facilities connected with one or more terrestrial systems and capable of transmitting telecommunications to, and receiving telecommunications from, satellite systems. Establishments providing Internet services or voice over

¹⁷ 5 U.S.C. § 601(5).

¹⁸ U.S. CENSUS BUREAU, STATISTICAL ABSTRACT OF THE UNITED STATES: 2011, Table 427 (2007).

¹⁹ The 2007 U.S. Census data for small governmental organizations indicate that there were 89,476 “Local Governments” in 2007. (U.S. CENSUS BUREAU, STATISTICAL ABSTRACT OF THE UNITED STATES 2011, Table 428). The criterion by which the size of such local governments is determined to be small is a population of 50,000. However, because the Census Bureau does not specifically apply that criterion, it cannot be determined with precision how many of such local governmental organizations are small. Nonetheless, the inference seems reasonable that a substantial number of these governmental organizations have a population of less than 50,000. To look at Table 428 in conjunction with a related set of data in Table 429 in the Census’s Statistical Abstract of the U.S., that inference is further supported by the fact that in both Tables, many entities that may well be small are included in the 89,476 local governmental organizations, *e.g.*, county, municipal, township and town, school district and special district entities. Measured by a criterion of a population of 50,000, many specific sub-entities in this category seem more likely than larger county-level governmental organizations to have small populations. Accordingly, of the 89,746 small governmental organizations identified in the 2007 Census, the Commission estimates that a substantial majority are small.

²⁰ 13 C.F.R. § 121.201, North American Industry Classification System (“NAICS”) code 517410.

²¹ 13 C.F.R. § 121.201, NAICS code 517919.

²² U.S. Census Bureau, 2007 NAICS Definitions, “517410 Satellite Telecommunications.”

²³ See http://factfinder.census.gov/servlet/IBQTable?_bm=y&-geo_id=&-_skip=900&-ds_name=EC0751SSSZ4&-_lang=en.

²⁴ See http://factfinder.census.gov/servlet/IBQTable?_bm=y&-geo_id=&-_skip=900&-ds_name=EC0751SSSZ4&-_lang=en

Internet protocol (VoIP) services via client-supplied telecommunications connections are also included in this industry.²⁵ For this category, Census Bureau data for 2007 show that there were a total of 2,383 firms that operated for the entire year.²⁶ Of this total, 2,347 firms had annual receipts of under \$25 million and 12 firms had annual receipts of \$25 million to \$49,999,999.²⁷ Consequently, the Commission estimates that the majority of All Other Telecommunications firms are small entities that might be affected by our action.

10. *Satellite Telecommunications/Mobile Satellite Service Licensees.* Neither the Commission nor the U.S. Small Business Administration has developed a small business size standard specifically for mobile satellite service licensees. The appropriate size standard is therefore the SBA standard for Satellite Telecommunications, which provides that such entities are small if they have \$15 million or less in annual revenues.²⁸ This industry comprises establishments primarily engaged in providing telecommunications services to other establishments in the telecommunications and broadcasting industries by forwarding and receiving communications signals via a system of satellites or reselling satellite telecommunications.²⁹ Currently, the Commission's records show that there are 31 entities authorized to provide voice and data MSS in the United States. The Commission does not have sufficient information to determine which, if any, of these parties are small entities. The Commission notes that small businesses are not likely to have the financial ability to become MSS system operators because of high implementation costs, including construction of satellite space stations and rocket launch, associated with satellite systems and services.

11. However, the U.S. Census publishes data about Satellite Telecommunications generally, and this data may well be relevant to the estimate of the number of voice and data MSS. Census data for 2007 indicate that 512 satellite telecommunications firms operated during that year. Of that 512, 290 received annual receipts of \$10.0 million or less. 18 firms received annual receipts of between \$10.0 million and \$24,999,999 and 30 received annual receipts of \$25.0 million or more. Since the Census data does not distinguish between MSS and other types of satellite communications companies, it cannot be known precisely, based on Census data, how many of the 31 authorized MSS firms are small.³⁰ However, since the majority of all satellite telecommunications companies were small under the applicable standard, a limited inference is possible that some of the 31 MSS firms are small. Since it is possible that some MSS companies are small entities affected by this Notice of Proposed Rulemaking and Notice of Inquiry, we therefore include them in this section of the IFRFA.

12. *Wireless Telecommunications Carriers (except satellite).* The NPRM and NOI proposes to apply various Commission policies and rules to terrestrial service in the MSS bands. We cannot predict who may in the future become a licensee or lease spectrum for terrestrial use in these bands. In general, any wireless telecommunications provider would be eligible to become an Advanced Wireless Service licensee or lease spectrum from the MSS or AWS licensees. This industry comprises establishments engaged in operating and maintaining switching and transmission facilities to provide

²⁵ <http://www.census.gov/cgi-bin/sssd/naics/naicsrch?code=517919&search=2007%20NAICS%20Search>

²⁶ http://factfinder.census.gov/servlet/IBQTable?_bm=y&-geo_id=&-_skip=900&-ds_name=EC0751SSSZ4&-_lang=en.

²⁷ http://factfinder.census.gov/servlet/IBQTable?_bm=y&-geo_id=&-_skip=900&-ds_name=EC0751SSSZ4&-_lang=en.

²⁸ 13 C.F.R. § 121.201, NAICS code 517410.

²⁹ <http://www.census.gov/cgi-bin/sssd/naics/naicsrch>

³⁰ http://factfinder2.census.gov/faces/tableservices/jsf/pages/productview.xhtml?pid=ECN_2007_US_51SSSZ4&prodType=table

communications via the airwaves. Establishments in this industry have spectrum licenses and provide services using that spectrum, such as cellular phone services, paging services, wireless Internet access, and wireless video services.³¹ The appropriate size standard under SBA rules is for the category Wireless Telecommunications Carriers. The size standard for that category is that a business is small if it has 1,500 or fewer employees.³² Under the present and prior categories, the SBA has deemed a wireless business to be small if it has 1,500 or fewer employees.³³ For this category, census data for 2007 show that there were 1,383 firms that operated for the entire year.³⁴ Of this total, 1,368 firms had employment of 999 or fewer employees and 15 had employment of 1000 employees or more.³⁵ Similarly, according to Commission data, 413 carriers reported that they were engaged in the provision of wireless telephony, including cellular service, Personal Communications Service (PCS), and Specialized Mobile Radio (SMR) Telephony services.³⁶ Of these, an estimated 261 have 1,500 or fewer employees and 152 have more than 1,500 employees.³⁷ Consequently, the Commission estimates that approximately half or more of these firms can be considered small. Thus, using available data, we estimate that the majority of wireless firms can be considered small.

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

13. The projected reporting, recordkeeping, and other compliance requirements resulting from the *NPRM* will apply to all entities in the same manner. The Commission believes that applying the same rules equally to all entities in this context promotes fairness. The Commission does not believe that the costs and/or administrative burdens associated with the rules will unduly burden small entities. The revisions the Commission adopts should benefit small entities by giving them more information, more flexibility, and more options for gaining access to valuable wireless spectrum.

14. Applicants for AWS-4 licenses will be required to file license applications using the Commission's automated Universal Licensing System (ULS). ULS is an online electronic filing system that also serves as a powerful information tool that enables potential licensees to research applications, licenses, and antennae structures. It also keeps the public informed with weekly public notices, FCC rulemakings, processing utilities, and a telecommunications glossary. AWS-4 licensees must submit long-form license applications through ULS using Form 601,³⁸ FCC Ownership Disclosure Information for the Wireless Telecommunications Services using FCC Form 602, and other appropriate forms.³⁹

³¹ <http://www.census.gov/cgi-bin/sssd/naics/naicsrch?code=517210&search=2007%20NAICS%20Search>

³² 13 C.F.R. § 121.201, NAICS code 517210.

³³ 13 C.F.R. § 121.201, NAICS code 517210. The now-superseded, pre-2007 C.F.R. citations were 13 C.F.R. § 121.201, NAICS codes 517211 and 517212 (referring to the 2002 NAICS).

³⁴ U.S. Census Bureau, Subject Series: Information, Table 5, "Establishment and Firm Size: Employment Size of Firms for the United States: 2007 NAICS Code 517210" (issued Nov. 2010).

³⁵ *Id.* Available census data do not provide a more precise estimate of the number of firms that have employment of 1,500 or fewer employees; the largest category provided is for firms with "100 employees or more."

³⁶ See *Trends in Telephone Service* at Table 5.3.

³⁷ See *id.*

³⁸ 47 C.F.R. § 1.913(a)(1).

³⁹ 47 C.F.R. § 1.2107

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

15. The RFA requires an agency to describe any significant, specifically small business, alternatives that it has considered in reaching its proposed approach, which may include the following four alternatives (among others): “(1) the establishment of differing compliance or reporting requirements or timetables that take into account the resources available to small entities; (2) the clarification, consolidation, or simplification of compliance and reporting requirements under the rule for such small entities; (3) the use of performance rather than design standards; and (4) an exemption from coverage of the rule, or any part thereof, for such small entities.”⁴⁰

16. The proposal to license the AWS-4 bands under Economic Areas (EA) geographic size licenses will provide regulatory parity with other AWS bands that are licensed on an EA basis, such as AWS-1 licenses. Additionally, assigning AWS-4 in EA geographic areas would allow AWS-4 licensees to make adjustments to suit their individual needs. EA license areas are small enough to provide spectrum access opportunities for smaller carriers. EA license areas also nest within and may be aggregated up to larger license areas that have been used by the Commission for other services, such as Major Economic Areas (MEAs) and Regional Economic Area Groupings (REAGs) for those seeking to create larger service areas. Depending on the licensing mechanism we adopt, licensees may adjust their geographic coverage through auction or through secondary markets. This proposal should enable AWS-4 providers, or any entities, whether large or small, providing service in other AWS bands to more easily adjust their spectrum to build their networks pursuant to individual business plans.

17. This *NPRM and NOI* makes several proposals to protect entities operating in nearby spectrum bands from harmful interference, which may include small entities. The technical rules proposed in Section III.B of the *NPRM and NOI* are based on the rules for AWS-1 spectrum, with specific additions or modifications designed to protect broadband PCS services operating in the 1930-1995 MHz band, as well as future services operating in the 2020-2025 MHz band, and to protect Federal operations in the 2200-2290 MHz band from harmful interference from AWS-4 base stations. The technical analyses contained in the Section III.B of the *NPRM and NOI* also proposes that no additional rule modifications to protect other spectrum bands are necessary, which may help minimize the impact on any small entities – both existing and potential small entities that may seek to provide services using AWS-4 spectrum – by streamlining regulations for operations in these spectrum bands.⁴¹

18. The *NPRM and NOI* proposals pertaining to how AWS-4 licenses will be assigned includes a focus on the cost and benefits such proposals would have on innovation, investment, and competition. While recognizing the 2 GHz MSS license holder’s existing rights, the *NPRM and NOI* proposes to grant terrestrial authority to operate in the AWS-4 band to the current 2 GHz MSS licensee pursuant to a license modification. The *NPRM and NOI* further proposes that in certain alternative scenarios the Commission would allow the filing of applications for the terrestrial rights to the 2000-2020 MHz and 2180-2200 MHz band. In the event mutually exclusive applications were accepted, the Commission would use competitive bidding to assign terrestrial rights, as required by Section 309(j) of the Communications Act of 1934, as amended. To assist small entities in competitive bidding, the *NPRM and NOI* proposes to employ Part 1 rules such as governing competitive bidding design, designated entity preferences, and unjust enrichment. Furthermore, the *NPRM and NOI* proposes to assign exclusive geographic area licenses for terrestrial use of the AWS-4 band, and that this spectrum would be used for purposes similar to those for which the AWS-1 band is used. As such, the *NPRM and NOI* proposes to establish small business size standards and bidding credits that were adopted in the AWS-1 band.

⁴⁰ 5 U.S.C. § 603(c)(1) – (c)(4).

⁴¹ See *supra* Section III.B.

Specifically, the *NPRM and NOI* proposes to define a small business as an entity with average annual gross revenues for the preceding three years not exceeding \$40 million, and a very small business as an entity with average gross revenues for the preceding three years not exceeding \$15 million. Additionally, the *NPRM and NOI* proposes bidding credits for both small and very small businesses, as set forth in the standardized schedule in Part 1 of the Commission's rules. Providing small businesses and very small businesses with bidding credits may help such entities acquire spectrum. In addition, included in the *NPRM and NOI* is a proposal that, in the event a licensee's authority to operate terminates, terrestrial spectrum rights would become available for reassignment of any AWS-4 spectrum through the competitive bidding process. We believe these proposals will provide an economic benefit to small entities by making it easier for small entities to acquire spectrum or access to spectrum in these bands.

19. The *NPRM and NOI* also proposes to provide AWS-4 licensees with the flexibility to provide any fixed or mobile service that is consistent with the allocations for this spectrum, which is consistent with other spectrum allocated or designated for licensed fixed and mobile services, *e.g.*, AWS-1. The *NPRM and NOI* further proposes to license this spectrum under the Commission's market-oriented Part 27 rules. These proposals include applying the Commission's secondary market policies and rules to all transactions involving the use of AWS-4 bands for terrestrial services, which will provide greater predictability and regulatory parity with bands licensed for terrestrial mobile broadband service. This proposal should make it easier for AWS-4 providers to enter secondary market arrangements involving terrestrial use of their spectrum. The secondary market rules apply equally to all entities, whether small or large. As a result, we believe that this proposal will provide an economic benefit to small entities by making it easier for entities, whether large or small, to enter into secondary market arrangements for AWS-4 spectrum.

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

20. None.

**STATEMENT OF
CHAIRMAN JULIUS GENACHOWSKI**

Re: *Service Rules for Advanced Wireless Services in the 2000-2020 MHz and 2180-2200 MHz Bands, WT Docket No. 12-70; Fixed and Mobile Services in the Mobile Satellite Service Bands at 1525-1559 MHz and 1626.5-1660.5 MHz, 1610-1626.5 MHz and 2483.5-2500 MHz, and 2000-2020 MHz and 2180-2200 MHz, ET Docket No. 10-142; Service Rules for Advanced Wireless Services in the 1915-1920 MHz, 1995-2000 MHz, 2020-2025 MHz and 2175-2180 MHz Bands, WT Docket No. 04-356.*

For the past three years, this Commission has pushed relentlessly to free up spectrum for broadband. We have been working to address the spectrum crunch, and to enable the continued acceleration of the mobile revolution that is driving economic growth, investment, and valuable new services for consumers and businesses.

With this item, we are moving to free up 40 MHz of 2 GHz spectrum for mobile broadband – a significant step in the Commission’s spectrum agenda.

How much is 40 megahertz? Consider that the 700 MHz auction in conjunction with the DTV transition freed up about 70 MHz for broadband. So we’re talking about more than half as much spectrum as that important digital dividend. It’s at a different place on the spectrum chart, but it’s a significant amount.

Today’s NPRM proposes freeing up spectrum by removing regulatory barriers and providing for flexible use of MSS spectrum. The specific barriers we propose to remove are rules that have limited this spectrum to satellite use. This effort is part of the Commission’s broad commitment to allow flexible use of spectrum. Because of the international allocation for mobile broadband and the large blocks of contiguous spectrum in the 2 GHz band, the National Broadband Plan recommended that we remove regulatory barriers to flexible use in this band through a rulemaking.

Addressing the growing demand for spectrum use is hard work, and freeing up spectrum for broadband isn’t easy, and that is why we must pursue multiple strategies to unleash spectrum for broadband.

Removing outdated rules to free up spectrum is one of many the Commission has been and will continue to use. In addition to freeing up spectrum for licensed use, we have also, by removing unnecessary regulatory barriers, freed up “white spaces” spectrum – the largest release of unlicensed spectrum in 25 years. And we work to maximize the potential of traditional Wi-Fi.

Another strategy: incentive auctions, a market-based mechanism to reallocate spectrum for flexible use. And Congress of course recently gave the FCC authority to conduct the world’s first incentive auctions.

We are also committed to removing barriers to the buildout of mobile broadband infrastructure. We have taken many steps. This past August, for example, we adopted an order to remove barriers to use of spectrum for wireless backhaul, which will help accelerate the deployment of 4G networks across the country.

We are also encouraging the rapid deployment of new infrastructure and device technologies that increase efficient spectrum use and help address the demand curve, such as small cell networks and software defined radio.

We are working with NTIA and our federal partners to free up more government spectrum for flexible commercial use, and enable spectrum sharing.

Today, the Commission builds on this work, and reasserts our unanimous commitment to freeing up spectrum for mobile broadband to grow our economy and enhance our global competitiveness.

We aim to bring this proceeding to a close expeditiously. I look forward to working with my colleagues and all stakeholders inside and outside government to get this spectrum in use quickly.

I want to thank the many FCC staff who have worked on this item for their fast and excellent work.

**STATEMENT OF
COMMISSIONER ROBERT M. McDOWELL**

Re: *Service Rules for Advanced Wireless Services in the 2000-2020 MHz and 2180-2200 MHz Bands, WT Docket No. 12-70; Fixed and Mobile Services in the Mobile Satellite Service Bands at 1525-1559 MHz and 1626.5-1660.5 MHz, 1610-1626.5 MHz and 2483.5-2500 MHz, and 2000-2020 MHz and 2180-2200 MHz, ET Docket No. 10-142; Service Rules for Advanced Wireless Services in the 1915-1920 MHz, 1995-2000 MHz, 2020-2025 MHz and 2175-2180 MHz Bands, WT Docket No. 04-356.*

As we all know, Americans are consuming more of the airwaves than ever before through powerful new mobile broadband devices. Our appetite for spectrum seems insatiable. Today, the FCC takes a small but important step toward satisfying that hunger.

With mobile broadband in mind, since my arrival at the Commission I have advocated for more flexible use standards when adopting spectrum policy. The Commission has a checkered past of micromanaging spectrum use only to find years later that technical innovation and market demands have evolved past the government's myopic view. Exploring ways to allow for dynamic uses of valuable frequencies while preventing harmful interference to other licensees and users is a laudable goal. Our notice of proposed rulemaking liberating the 2 GHz Band, rebranded today as "AWS-4," for possible terrestrial broadband use is a step in the right direction. I commend Chairman Genachowski for bringing forward this comprehensive, deregulatory and broadly-applicable proposal.

But he didn't stop there. He has also put forth today's notice of inquiry on a proposed "2 GHz Extension Band Concept," which incorporates an idea from the National Telecommunications and Information Administration to reallocate 1695-1710 MHz from federal to commercial use. I look forward to learning from all interested parties on these timely proposals. And, I thank the folks in the Wireless Telecommunications and International bureaus, as well as our friends at NTIA, for your thoughtful and creative work.

**STATEMENT OF
COMMISSIONER MIGNON L. CLYBURN**

Re: *Service Rules for Advanced Wireless Services in the 2000-2020 MHz and 2180-2200 MHz Bands, WT Docket No. 12-70; Fixed and Mobile Services in the Mobile Satellite Service Bands at 1525-1559 MHz and 1626.5-1660.5 MHz, 1610-1626.5 MHz and 2483.5-2500 MHz, and 2000-2020 MHz and 2180-2200 MHz, ET Docket No. 10-142; Service Rules for Advanced Wireless Services in the 1915-1920 MHz, 1995-2000 MHz, 2020-2025 MHz and 2175-2180 MHz Bands, WT Docket No. 04-356.*

By adopting this Notice for Proposed Rulemaking and Notice of Inquiry, the Commission makes substantial progress towards allocating up to 40 megahertz of spectrum for commercial mobile broadband services. I commend Rick Kaplan, John Leibovitz, and the staffs of the Wireless Telecommunications Bureau and International Bureau, for presenting an item with such a careful examination of the technical issues relevant to repurposing this satellite spectrum. The NPRM contains detailed rule proposals about the band plan, spectrum block size, and technical service requirements. Although this item will likely require review and input from the industry over the next few months, these detailed proposals should help the Commission move quicker towards adopting rules in this proceeding.

This item asks several important questions about how to allocate the spectrum to promote competition, and facilitate entry by small businesses, in the mobile broadband services market. I am grateful to the other Offices for agreeing with my request to seek comment about how the Commission can ensure interoperability within the AWS-4 band. I am interested in hearing from the commenters if the small business bidding credits, proposed in the NPRM, are sufficient to facilitate new entities entering the mobile wireless service industry. I also encourage parties to tell me what service rules for this spectrum could have the greatest beneficial impact on rural service.

Another important feature of the NPRM is the proposal to provide AWS-4 licensees with flexibility to provide any fixed or mobile service that is consistent with the allocations for this spectrum. I support giving licensees the dexterity to adjust to market conditions. This principle serves the public interest when licensees use this flexibility, in order to provide consumers with greater competition, more products and services, and lower prices. If we need to adopt additional rules to sufficiently foster competition, please let us know.