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

In the Matter of	)	
	)	
Amendment of the Commission's Rules with Regard to Commercial Operations in the 1695-1710 MHz, 1755-1780 MHz, and 2155-2180 MHz Bands	)	GN Docket No. 13-185
Service Rules for Advanced Wireless Services in the 2155-2175 MHz Band	)	WT Docket No. 07-195 (Proceeding Terminated)
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 (Proceeding Terminated)
Applications for License and Authority to Operate in the 2155-2175 MHz Band	)	WT Docket No. 07-16 (Proceeding Terminated)
Petitions for Forbearance Under 47 U.S.C. § 160	)	WT Docket No. 07-30 (Proceeding Terminated)

NOTICE OF PROPOSED RULEMAKING AND ORDER ON RECONSIDERATION

Adopted: July 23, 2013 **Released: July 23, 2013**

Comment Date: September 18, 2013
Reply Comment Date: **October 16, 2013**

By the Commission: Acting Chairwoman Clyburn and Commissioner Rosenworcel issuing separate statements; Commissioner Pai approving in part, concurring in part and issuing a statement

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I. INTRODUCTION AND SUMMARY

1. Today we propose rules for spectrum in the 1695-1710 MHz, 1755-1780 MHz, 2020-2025 MHz, and 2155-2180 MHz bands that would make available significantly more commercial spectrum for Advanced Wireless Services ("AWS"). We will refer to these four bands collectively as "AWS-3."[1] The additional spectrum for mobile use will help ensure that the speed, capacity, and ubiquity

[1] The Commission has previously referred to the 2155-2175 MHz band as the "AWS-3 band." *See, e.g.*, 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) ("*2007 NPRM*"). We are revising this informal nomenclature: herein, "AWS-3" refers to the spectrum, separately and collectively, on which we seek comment in the instant NPRM (continued….)

of the nation's wireless networks keeps pace with the skyrocketing demand for mobile service. Consistent with the Spectrum Act and sound spectrum policy, our goal remains to clear and allocate spectrum in these bands for exclusive commercial use to the maximum extent feasible. Where clearing is not possible, this *Notice of Proposed Rulemaking* explores novel approaches to spectrum sharing between commercial and Federal operators. Today's action is another step in implementing the Congressional directive in Title VI of the Middle Class Tax Relief and Job Creation Act of 2012 ("Spectrum Act") to allocate for commercial use and grant new initial licenses for flexible use in certain bands.[2]

2. We propose to license the 2155-2180 MHz band for downlink/base station operations and to license the 2020-2025 MHz band for uplink/mobile operations. Both of these bands are currently allocated for non-Federal, commercial use and are in the Commission's inventory of bands available for licensing. We propose to license the 1755-1780 MHz band for uplink/mobile operations on a shared basis with Federal incumbents, if clearing is not feasible. We note that the record of the instant proceeding will be informed by recommendations of the National Telecommunications and Information Administration ("NTIA"), which has tasked the Commerce Spectrum Management Advisory Committee ("CSMAC") with studying the potential for Federal/non-Federal spectrum sharing. NTIA anticipates receiving final reports from CSMAC working groups shortly. If NTIA endorses these reports, we will add them to the record and anticipate that commenters will discuss NTIA's forthcoming recommendations in comments, reply comments, or *ex parte* presentations, as appropriate, depending on the timing. We also propose to allocate and license the 1695-1710 MHz band for uplink/mobile operations on a shared basis with Federal incumbents within specified Protection Zones recommended by NTIA, if clearing is not feasible. Commercial operation outside of these Protection Zones would not require coordination with Federal incumbents.

3. For all of the AWS-3 spectrum within the scope of this NPRM, *i.e.*, spectrum for which we seek comment regarding service rules for non-Federal use, we propose to assign licenses by competitive bidding, offering five megahertz blocks that can be aggregated using Economic Areas ("EAs") as the area for geographic licensing. We also seek comment on whether, and if so how, to pair any of the AWS-3 spectrum.

II. BACKGROUND

A. Demand for Mobile Spectrum

4. Wireless broadband represents a critical component of economic growth, job creation, and global competitiveness because consumers are increasingly using wireless broadband services to assist them in their everyday lives.[3] Demand for wireless broadband services and the network capacity associated with those services is surging, resulting in a growing demand for spectrum to support these services. Similarly, the number and type of devices being used by consumers to access content over

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regarding service rules for non-Federal use of spectrum, including the following bands: 1695-1710 MHz, 1755-1780 MHz, 2020-2025 MHz, and 2155-2180 MHz.

[2] *See* Middle Class Tax Relief and Job Creation Act of 2012, Pub. L. No. 112-96, 126 Stat. 156 (2012) ("Spectrum Act").

[3] 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. 11-186, *Sixteenth Report*, 28 FCC Rcd 3700, 3929-3931 ¶¶ 361-66 (2013) ("*Sixteenth Mobile Wireless Competition Report"*); *see also* Service Rules for the Advanced Wireless Services H Block—Implementing Section 6401 of the Middle Class Tax Relief and Job Creation Act of 2012 Related to the 1915-1920 MHz and 1995-2000 MHz bands, WT Docket No. 12-357, *Report and Order,* FCC 13-88 at ¶ 2 (rel. Jun. 13, 2013) ("*H Block R&O*"); Service Rules for Advanced Wireless Services in the 2000-2020 MHz and 2180-2200 MHz Bands, WT Docket Nos. 12-70, 04-356, ET Docket No. 10-142, *Report and Order and Order of Proposed Modification*, 27 FCC Rcd 16102, 16104 ¶ 3 (2012) ("*AWS-4 Service Rules R&O"*); Connecting America: The National Broadband Plan at 77-79 ("*National Broadband Plan*"), *available at* http://hraunfoss.fcc.gov/edocs_public/attachmatch/DOC-296935A1.pdf (last visited June 20, 2013).

wireless broadband networks has proliferated. For example, the total number of mobile wireless connections now exceeds the total U.S. population.[4] As of the second quarter of 2012, 55 percent of U.S. mobile subscribers owned smartphones, compared to 41 percent in July 2011.[5] Ownership of tablets, which were first introduced in the market in January 2010, nationwide, is also increasing.[6] Pew Internet research surveys, as of June 2013, show that 34 percent of American adults own a tablet computer, up from 18 percent in September 2010.[7] Tablets generated on average approximately 2.4 times the amount of mobile traffic as the average smartphone in 2012.[8] By 2017, just four years from now, Internet Protocol ("IP") traffic from wireless and mobile devices will likely exceed traffic from wired devices, according to some analyses. One forecast projects that wired devices will account for 45 percent of IP traffic, while Wi-Fi and mobile devices will account 55 percent of IP traffic.[9] Global mobile data traffic is anticipated to grow thirteen-fold between 2012 and 2017.[10] All of these trends are resulting in more demand for network capacity and for capital to invest in the infrastructure, technology, and spectrum to support this capacity.[11] The demand for increased wireless spectrum, moreover, is expected to continue increasing.[12] In response, the Commission continues to work to make available additional licensed and unlicensed spectrum to meet this growing demand.[13]

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[4] *See* CTIA – The Wireless Association® Wireless Industry Indices, Semi-Annual Data Survey Results, A Comprehensive Report from CTIA Analyzing the U.S. Wireless Industry, Mid-Year 2012 Top-of-the-Line Survey Results, Annualized Wireless Survey Results – Dec. 1985 to June 2012 ("CTIA Semi-Annual Data Survey Results") (estimating 321,716,905 total U.S. subscriber connections as of June 2012), *available at* http://files.ctia.org/pdf/CTIA_Survey_MY_2012_Graphics-_final.pdf (last visited June 20, 2013). According to the Bureau of the Census, the combined population of the fifty states, the District of Columbia, and Puerto Rico, as of July 1, 2012, was estimated to be 313.9 million. *See* U.S. Census Bureau, http://www.census.gov/popest/data/national/totals/2012/index.html (last visited June 20, 2013).

[5] Nielsen Newswire, The Nielsen Company, *Two Thirds of New Mobile Buyers Now Opting for Smartphones*, July 12, 2012, *available at* http://blog.nielsen.com/nielsenwire/online_mobile/two-thirds-of-new-mobile-buyers-now-opting-for-smartphones/ (last visited June 20, 2013).

[6] *See AWS-4 Service Rules R&O,* 27 FCC Rcd at 16104 ¶ 3 (2012); *Sixteenth Mobile Wireless Competition Report*, 28 FCC Rcd at 3711, 3862 ¶¶ 2, 255.

[7] *See* Kathryn Zickuhr, Pew Internet & American Life Project, "Tablet Ownership 2013" (June 10, 2013), *available at* http://www.pewinternet.org/Reports/2013/Tablet-Ownership-2013.aspx (last visited June 17, 2013).

[8] *See* Cisco White Paper, *Cisco Visual Networking Index: Global Mobile Data Traffic Forecast Update*, 2012-2017, Executive Summary at 2, February 6, 2013, ("*Data Traffic Forecast Update*") *available at* http://www.cisco.com/en/US/solutions/collateral/ns341/ns525/ns537/ns705/ns827/white_paper_c11-520862.pdf (last visited June 20, 2013).

[9] *See* Cisco White Paper, *Cisco Visual Networking Index: The Zettabyte Era Trends and Analysis*, at 2 May 29, 2013 ("*The Zettabyte Era,")* available at http://www.cisco.com/en/US/solutions/collateral/ns341/ns525/ns537/ns705/ns827/VNI_Hyperconnectivity_WP (last visited June 24, 2013).

[10] *See Data Traffic Forecast Update*, Executive Summary at 3.

[11] *See* CTIA Semi-Annual Data Survey Results (detailing growth in cumulative capital investment and cell sites).

[12] The Council of Economic Advisors has 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." Council of Economic Advisors, The Economic Benefits of New Spectrum for Wireless Broadband at 5 (Feb. 21, 2012), *available at* http://www.whitehouse.gov/administration/eop/cea/factsheets-reports (last visited June 20, 2013).

[13] *See, e.g.*, Expanding the Economic and Innovation Opportunities of Spectrum Through Incentive Auctions, GN Docket No. 12-268, *Notice of Proposed Rulemaking*, 27 FCC Rcd 12357 (2012) ("*Incentive Auctions NPRM"*) (proposing to hold the world's first incentive auction of repurposed television broadcast spectrum); *AWS-4 Service Rules R&O*, 27 FCC Rcd 16102 (making 40 megahertz of spectrum available for mobile broadband); Amendment of (continued….)

B. National Broadband Plan and Presidential Memoranda

5. Both Congress and the President have recognized the importance of wireless broadband to the national interest. In 2009, Congress directed the Commission to develop a National Broadband Plan to ensure that every American has access to broadband capability.[14] The National Broadband Plan, released in 2010, recommended that the Commission make 500 megahertz of spectrum newly available for broadband use within the next 10 years, of which 300 megahertz of spectrum between 225 MHz and 3.7 GHz should be made newly available for mobile use within five years.[15] The National Broadband Plan recognized that to achieve this goal some of this spectrum would come from spectrum allocated for Federal use.[16] It recommended that NTIA, in consultation with the Commission, conduct an analysis, of the possibility of reallocating a portion of the 1755-1850 MHz band, which is adjacent to the AWS-1 uplink/mobile band at 1710-1755 MHz and currently allocated for Federal use, to pair with the 2155-2175 MHz band, which is currently allocated for services that support commercial use.[17]

6. On June 28, 2010, the President released a memorandum entitled "Unleashing the Wireless Broadband Revolution."[18] The 2010 Presidential Memorandum stated that "America's future competitiveness and global technology leadership depend, in part, upon the availability of additional spectrum."[19] The memorandum stressed that there are few technological developments that hold as much potential to enhance America's economic competitiveness, create jobs, and improve the quality of our lives as wireless high-speed access to the Internet.[20] Expanded wireless broadband access will trigger the creation of innovative new businesses, provide cost-effective connections in rural areas, increase productivity, improve public safety, and allow for the development of mobile telemedicine, telework, distance learning, and other new applications that will transform American's lives.[21] The memorandum also stated that spectrum and the new technologies it enables are essential to the Federal Government, which relies on spectrum for important activities, such as emergency communications, national security, law enforcement, aviation, maritime, space communications, and numerous other Federal functions.[22] It further stated that spectrum is also critical for many state, local, and tribal government functions.[23] The

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Part 27 of the Commission's Rules to Govern the Operation of Wireless Communications Services in the 2.3 GHz Band; Establishment of Rules and Policies for the Digital Audio Radio Satellite Service in the 2310-2360 MHz Frequency Band, WT Docket No. 07-293, IB Docket No. 95-91, *Order on Reconsideration*, FCC 12-130, 27 FCC Rcd 13651 (2012) (acting to free up 30 megahertz of spectrum for mobile broadband); Amendment of the Commission's Rules with Regard to Commercial Operations in the 3550-3650 MHz Band, GN Docket No. 12-354, *Notice of Proposed Rulemaking and Order*, 27 FCC Rcd 15594 (2012) (pursuing opportunities for innovative sharing use of small cells in 100 megahertz of spectrum in the 3.5 GHz band); Revision of Part 15 of the Commission's Rules to Permit Unlicensed National Information Infrastructure (U-NII) Devices in the 5 GHz Band, ET Docket No. 13-49, *Notice of Proposed Rulemaking*, 28 FCC Rcd 1769 (2013) (examining the potential to free up 195 megahertz of spectrum in the 5 GHz band suitable for "Gigabit Wi-Fi").

[14] American Recovery and Reinvestment Act of 2009, 115 Stat. 115, 516, § 6001(k)(2), codified at 47 U.S.C. § 1305(k)(2).

[15] *See National Broadband Plan* at 76 and Recommendation 5.8 at 84-85 (Mar. 16, 2010.

[16] *National Broadband Plan* at 76 and Recommendation 5.8 at 86.

[17] *Id.* at 76 and Recommendation 5.8 at 84-87.

[18] Memorandum for the Heads of Executive Departments and Agencies, *Unleashing the Wireless Broadband Revolution* (rel. Jun. 28, 2010), published at 75 Fed. Reg. 38387 (Jul. 1, 2010) ("2010 Presidential Memorandum").

[19] 2010 Presidential Memorandum, 75 Fed. Reg. at 38387.

[20] *Id*.

[21] *Id*.

[22] *Id*.

[23] *Id*.

2010 Presidential Memorandum directed NTIA to collaborate with the Commission to "make available a total of 500 megahertz of Federal and non-Federal spectrum over the next ten years, suitable for both mobile and fixed wireless broadband use."[24]

7. On June 14, 2013, the President released another memorandum, "Expanding America's Leadership in Wireless Innovation" stating that although existing efforts will almost double the amount of spectrum available for wireless broadband, we must make available even more spectrum and create new avenues for wireless innovation.[25] The 2013 Memorandum further stated that where technically and economically feasible, spectrum sharing can and should be used to enhance efficiency among all users and to expedite commercial access to additional spectrum bands, subject to adequate interference protection for Federal users, especially users with national security, law enforcement, and safety-of-life responsibilities.[26]

C. NTIA Fast Track and 1755-1850 MHz Assessment Reports

8. In response to the 2010 Presidential Memorandum, NTIA undertook a "fast-track" review of several bands that could be reallocated to mobile use,[27] including the 1675-1710 MHz band and the 1755-1780 MHz band, and proposed exploring Federal/non-Federal sharing of the 1755-1850 MHz band.[28] NTIA recommended that the 1695-1710 portion of the 1675-1710 MHz band be made available for non-Federal wireless broadband systems, subject to geographic sharing requirements based on "Exclusion Zones" around specified Federal meteorological earth station sites.[29] NTIA deferred making recommendations concerning the 1755-1780 MHz band, however, because it could not complete its evaluation of the 1755-1780 MHz band by the October 2010 "fast track" deadline.[30] NTIA then invited Federal agencies with operations in the larger 1755-1850 MHz band to assess the feasibility of relocating from the 1755-1850 MHz band within ten years and to determine whether their respective systems could transition out of the 1755-1780 MHz band within five years, the conditions under which relocation could be accomplished, and the costs associated with the corresponding relocation.[31]

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[24] *Id*. at 38388.

[25] Memorandum for the Heads of Executive Departments and Agencies, Expanding America's Leadership in Wireless Innovation (rel. Jun. 14, 2013), published at 78 Fed. Reg. 37431 (June 20, 2013) ("2013 Presidential Memorandum").

[26] *Id*., 78 Fed. Reg. at 37431.

[27] *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, 4200-4220 MHz, and 4380-4400 MHz Bands (Oct. 2010) ("*NTIA Fast Track Report*") available at http://www.ntia.doc.gov/files/ntia/publications/fasttrackevaluation_11152010.pdf) (last visited Feb. 11, 2013). At the same time, NTIA issued a report that outlined the plans and milestones to achieve the President's 500 megahertz goal. *See* U.S. Department of Commerce, Plan and Timetable to Make Available 500 Megahertz of Spectrum for Wireless Broadband (Oct. 2010) available at http://www.ntia.doc.gov/files/ntia/publications/tenyearplan_11152010.pdf .

[28] *See id.* at 2-3-2-5.

[29] *See NTIA Fast Track Report* at 2-2-2-3. *See also* U.S. Department of Commerce, Identification of 15 Megahertz of Spectrum between 1675 and 1710 MHz for Reallocation from Federal Use to Non-Federal Use Pursuant to Section 6401(a) of the Middle Class Tax Relief and Job Creation Act of 2012 (Feb. 2013) ("*NTIA 1695-1710 Identification Report*") (available at http://www.ntia.doc.gov/files/ntia/publications/1675-1710_mhz_report_to_president_02192013.pdf) (last visited Feb. 20, 2013). In its final report on the 1695-1710 MHz band, "Exclusion Zones" were changed to "Protection Zones." *See infra* ¶ 15.

[30] *See id.* at 2-2-2-4.

[31] *See* U.S. Department of Commerce, An Assessment of the Viability of Accommodating Wireless Broadband in the 1755-1850 MHz Band at 2-3 (Mar. 2012) *("NTIA 1755-1850 MHz Assessment Report")* (available at (continued….)

9. Based on the assessments from these Federal agencies, NTIA concluded in March 2012, in the *NTIA 1755-1850 MHz Assessment Report*, that while it would be possible to repurpose all 95 megahertz of the 1755-1850 MHz band, a number of significant challenges would have to be met. These included the high cost and long timeline of repurposing 95 megahertz of spectrum, estimated at approximately $18 billion over 10 years, assuming relocation of most existing Federal users, not including costs to relocate incumbent non-Federal users in the Federal agencies' preferred destination bands.[32] In light of the critical challenges related to the estimated timelines, costs, and complexities of completely clearing Federal users currently in the 1755-1850 MHz band, NTIA proposed a new path forward for consideration "that relies on a combination of relocating Federal users and sharing spectrum between Federal agencies and commercial users while ensuring no loss to critical capabilities."[33] Additionally, NTIA states that a review of the agency evaluations indicates it is feasible to make the 1755-1780 MHz band available for commercial broadband wireless in five years—subject to exclusion zones and new allocations for Federal use of other spectrum bands, including 2025-2110 MHz and 5091-5250 MHz.[34] NTIA did not evaluate the possibility for exclusive non-Federal use of the 1755-1780 MHz band in the *NTIA 1755-1850 MHz Assessment Report*.[35]

D. Section 6401 of the Spectrum Act

10. In February 2012, Congress enacted Title VI of the Middle Class Tax Relief and Job Creation Act of 2012 (the "Spectrum Act").[36] The Spectrum Act includes several provisions designed to make more spectrum available for commercial use.[37] The Spectrum Act established, among other things, deadlines applicable to both the Secretary of Commerce and the Commission to identify, reallocate, auction, and license, under flexible use service rules, spectrum for commercial use.[38] Specifically, the Spectrum Act requires the allocation of spectrum in the following bands for services that support commercial use:

- 25 megahertz at 2155-2180 MHz;
- an additional contiguous 15 megahertz to be identified by the Commission;

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http://www.ntia.doc.gov/report/2012/assessment-viability-accommodating-wireless-broadband-1755-1850-mhz-band) (last visited June 20, 2013); Commerce Spectrum Management Advisory Committee, Working Group 2: 1755-1850 MHz Law Enforcement Surveillance, Explosive Ordnance Disposal, and other short links, *Final Report* (Jan. 2013) ("*WG2 Final Report*") (available at http://www.ntia.doc.gov/files/ntia/publications/csmac_wg-2_final_report_jan-4-2012.pdf) (last visited Apr. 10, 2013).

[32] *NTIA 1755-1850 MHz Assessment Report* at iii. NTIA relied on analysis performed by the various Federal agencies. *Id*. at 45.

[33] *See, e.g.*, U.S. Department of Commerce, National Telecommunications and Information Administration, *Third Interim Progress Report on the Ten-Year Plan and Timetable* at 5 (Nov. 2012) ("*NTIA Fast Track 3rd Interim Report*") (available at http://www.ntia.doc.gov/files/ntia/publications/third_interim_progress_report_final.pdf) (last visited Feb. 25, 2013). NTIA stated that this path seeks to optimize costs and speed implementation of commercial systems. *Id*.

[34] *NTIA 1755-1850 MHz Assessment Report* at 45-47. As a step toward overcoming these challenges, NTIA recommended that the affected Federal agencies engage with industry to identify potential solutions, including partial clearing scenarios and a phased approach to commercial auctions and entry. *Id*. at 50. NTIA also recommended that clear regulatory mechanisms for sharing be established to address potential interference issues from Federal operations to wireless broadband users during the transition period to ensure that Federal users are not required to assume the responsibility of mitigating such interference. *Id*.

[35] *WG2 Final Report* at 4.

[36] *See generally* Spectrum Act.

[37] *Id.* §§ 6001-6703.

[38] *See generally id*.

- 15 megahertz between 1675-1710 MHz, to be identified by NTIA by February 22, 2013;
- up to 10 megahertz at 1915-1920 MHz and 1995-2000 MHz, if the Commission finds no harmful interference into the neighboring Personal Communications Service ("PCS") band.[39]

The Spectrum Act states that the Commission shall grant new initial licenses for all of these bands by February 2015.[40] In June 2013 the FCC adopted service rules for certain bands listed above (1915-1920 and 1995-2000 MHz) in a separate FCC proceeding.[41]

11. The Spectrum Act also amended the Commercial Spectrum Enhancement Act ("CSEA").[42] In 2004, the CSEA created the Spectrum Relocation Fund ("SRF") to streamline the process by which Federal incumbents can recover the costs associated with relocating their spectrum-dependent systems from spectrum bands authorized to be licensed under the Commission's competitive bidding authority.[43] The Spectrum Act extended the CSEA cost reimbursement mechanism for Federal incumbents to include sharing as well as relocation costs, and to facilitate Federal incumbents sharing of spectrum with commercial users by expanding the types of expenditures that can be funded or reimbursed from the SRF.[44] These changes now permit agencies to receive funds associated with planning for Commission auctions and relocations, spectrum sharing, the use of alternative technologies, the replacement of existing government-owned equipment with state-of-the-art systems, and the research, engineering studies, and economic analyses conducted in connection with spectrum sharing arrangements, including coordination with auction winners.[45] The Spectrum Act also created a new category of allowable pre-auction costs that may, in certain circumstances, be funded before the start of a Commission auction of licenses for applicable eligible frequencies.[46] The Spectrum Act expresses Congress' priority for relocation over sharing, stating: "In evaluating a band of frequencies for possible reallocation for exclusive non-Federal use or shared use, the NTIA shall give priority to options involving reallocation of the band for exclusive non-Federal use and shall choose options involving shared use only when it determines, in consultation with the Director of the Office of Management and Budget, that relocation of a Federal entity from the band is not feasible because of technical or cost constraints."[47]

12. The conclusion of any auction of eligible frequencies reallocated from Federal use to non-Federal use or from Federal use to shared use, however, is contingent on the cash proceeds attributable to such spectrum reaching 110 percent of the total estimated relocation or sharing costs

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[39] *Id.* § 6401.

[40] *Id.* § 6401(b).

[41] *See H Block R&O. See also* Service Rules for the Advanced Wireless Services H Block – Implementing Section 6401 of the Middle Class Tax Relief and Job Creation Act of 2012 Related to the 1915-1920 MHz and 1995-2000 MHz Bands, WT Docket No. 12-357, *Notice of Proposed Rulemaking*, 27 FCC Rcd 16258 (2012) ("*H Block NPRM*").

[42] 47 U.S.C. §§ 309(j), 923.

[43] *Id*. § 309(j).

[44] *Id*. § 923(g)(3).

[45] *Id*.

[46] *Id*.

[47] Spectrum Act § 6701(a), codified at 47 U.S.C. § 923(j)(1). If NTIA determines that relocation of a Federal entity is not feasible, NTIA must notify the relevant Congressional committees of the "determination, including the specific technical or cost constraints on which the determination is based." *Id*. at § 923(j)(2).

provided to the Commission by NTIA.[48] Once the relocation and sharing costs of the Federal incumbents are covered, the remainder of the proceeds attributable to eligible Federal spectrum, as well as the proceeds attributable to the 2155-2180 MHz non-Federal band, must be deposited in the Public Safety Trust Fund and then used to fund the Nationwide Public Safety Broadband Network to be established by the First Responder Network Authority ("FirstNet").[49]

E. FCC CSEA Notification Letter and NTIA Response

13. The CSEA also requires the Commission to notify NTIA at least 18 months before the start of an auction of eligible frequencies and for NTIA to notify the Commission of estimated relocation and sharing costs, and timelines for such relocation or sharing, at least 6 months before the start of the auction.[50] Accordingly, on March 20, 2013, the Commission notified NTIA that it "plans to commence the auction of licenses in the 1695-1710 MHz band and the 1755-1780 MHz band as early as September 2014"[51] in order to satisfy the Spectrum Act licensing deadline of February 2015. On April 19, 2013, NTIA responded with several requests to the Commission. In particular, NTIA notes that the Department of Defense ("DoD") has identified the 2025-2110 MHz band as the preferred option to relocate most of its operations in the 1755-1850 MHz band and that the National Aeronautics and Space Administration ("NASA") and DoD identified the 5150-5250 MHz band as a comparable destination band for its aeronautical mobile telemetry systems.[52]

F. Commerce Spectrum Management Advisory Committee and Related Efforts

14. In May 2012, NTIA established five joint government/industry working groups within its Commerce Spectrum Management Advisory Committee ("CSMAC") to facilitate the implementation of services that support commercial wireless broadband in the 1695-1710 MHz and 1755-1850 MHz bands.[53] Working Group 1 was charged with addressing sharing issues related to the 1675-1710 MHz band,[54] while Working Groups 2-5 were charged with addressing sharing issues related to Federal

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[48] Spectrum Act § 6401(b)(3), codified at 47 U.S.C. § 1451(b)(3) (proceeds to cover 110 percent of Federal relocation or sharing costs) *citing* 47 U.S.C. § 309(j)(16)(B).

[49] *Id.* § 6401(c)(3), codified at 47 U.S.C. § 309(j)(8)(D)(ii).

[50] 47 U.S.C. § 923(g)(4).

[51] Letter from Julius Genachowski, Chairman, FCC, to Lawrence E. Strickling, Assistant Secretary for Communications and Information, U.S. Department of Commerce at 1 (Mar. 20, 2013) ("*FCC March 2013 Letter to NTIA*") (available at http://go.usa.gov/2VR5).

[52] Letter from Lawrence E. Strickling, Assistant Secretary for Communications and Information, U.S. Department of Commerce, to Julius Genachowski, Chairman, FCC at 3 (Apr. 19, 2013) ("*NTIA Recommendations Letter*"). *See infra* ¶ 38.

[53] *See* U.S. Department of Commerce, National Telecommunications and Information Administration, *Framework for Work within CSMAC* ("*NTIA Framework*") (available at http://www.ntia.doc.gov/files/ntia/meetings/framework_for_work_within_csmac_20120525.pdf) (last visited May 14, 2013). NTIA chartered the Commerce Spectrum Management Advisory Committee ("CSMAC") in 2004 to advise it on a range of spectrum policy issues. *See* http://www.ntia.doc.gov/category/csmac. In January 2011, NTIA amended CSMAC's Charter to permit CSMAC to focus on how best to execute the 2010 Presidential Memorandum and NTIA's Fast Track Plan. *See* U.S. Department of Commerce, *Charter of the Commerce Spectrum Management Advisory Committee* ("CSMAC Charter") (available at http://www.ntia.doc.gov/files/ntia/publications/csmac_charter_04012011.pdf) (last visited May 14, 2013). NTIA amended CSMAC's Charter again in 2013. *See* http://www.ntia.doc.gov/files/ntia/publications/csmac_2013_charter.pdf.

[54] NTIA charged WG1 with recommending proposals that would allow commercial use of the band while lowering any transfer costs and protecting incumbent Federal missions. In July 2012, WG1 began to meet extensively in order to:
(continued….)

operations in the 1755-1850 MHz band.[55] A critical decision for each working group, according to NTIA, was to determine whether incoming non-Federal licensees would be able to share use of the spectrum with particular incumbent Federal systems.[56] If a working group were to find that sharing is feasible, NTIA directed the group to explain the proposed manner of sharing in a way that could potentially be incorporated into service rules.[57]

15. *1695-1710 MHz*. Working Group 1 ("WG1") (Meteorological-Satellite) completed its final report in February 2013 and the full CSMAC adopted it on February 21, 2013.[58] The *WG1 Final Report* recommends that the Commission adopt a framework for reallocating the 1695-1710 MHz band for commercial use with "Protection Zones," rather than the "Exclusion Zones"[59] originally contemplated in the *NTIA Fast Track Report*.[60] Under this framework, commercial operations could be freely deployed outside of the "Protection Zones."[61] Operations inside the "Protection Zones," however, would require prior Federal coordination.[62] In February 2013, as required by the Spectrum Act, NTIA issued the *NTIA 1695-1710 MHz Identification Report*, in which it reaffirmed its recommendation that the Commission reallocate the 1695-1710 MHz segment of the 1675-1710 MHz band for wireless broadband use on a shared basis.[63] On April 19, 2013, NTIA recommended that the Commission use the *WG1 Final Report* recommendations in drafting proposed rules to implement shared use of the 1695-1710 MHz band.[64]

16. *1755-1850 MHz*. NTIA established CSMAC Working Groups 2-5, comprised of representatives and experts from industry and Federal agencies, to facilitate information sharing among

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> (1) provide refined Long-Term Evolution (LTE) system parameters that more accurately reflect real world deployment scenarios; (2) review operating parameters of Federal systems affected by commercial operations in the 1695-1710 MHz band; (3) modify the existing simulation model used by NTIA to reach the conclusions about use/sharing of the 1695-1710 MHz band; and (4) Identify areas for further consideration of possible alternatives that may maximize availability of the spectrum in major market areas.

The full CSMAC approved WG1's Final Report at its February 23, 2013, meeting. WG1 Final Report at 1.Commerce Spectrum Management Advisory Committee Final Report Working Group 1 — 1695-1710 MHz Meteorological-Satellite, *Final Report* at 1 ("*WG1 Final Report*") (available at http://www.ntia.doc.gov/other-publication/2013/csmac-wg-1-final-report-v2) (last visited May 14, 2013).

[55] *See NTIA Fast Track 3rd Interim Report* at 5-8.

[56] *NTIA Framework* at 3.

[57] *Id*. *See also* Keynote Address by Assistant Secretary Strickling at Silicon Flatirons Conference (Feb. 11, 2013) (available at: http://www.ntia.doc.gov/speechtestimony/2013/keynote-address-assistant-secretary-strickling-silicon-flatirons-conference) (last visited May 14, 2013).

[58] Minutes of the CSMAC Meeting on Feb. 21, 2013 at 42 ("*CSMAC Feb. 2013 Minutes*") (available at http://www.ntia.doc.gov/files/ntia/publications/0221ntia.pdf) (last visited June 20, 2013). CSMAC adopted version 2 of the *WG1 Final Report*, which, relative to the earlier version, had a "slight difference in Appendix 1 for the distances" that define the Protection Zones. *Id.*

[59] The adoption of "Exclusion Zones" would have prevented potential commercial operations within the zones. *See WG1 Final Report at 5.*

[60] *Id.* at 2, 5.

[61] *Id.* at 2.

[62] *Id*.

[63] *NTIA 1695-1710 Identification Report* at 1. *See also* Letter from Karl B. Nebbia, Associate Administrator, NTIA Office of Spectrum Management to Julius Knapp, Federal Communications Commission at 1 (dated Jan. 19, 2011).

[64] *NTIA Recommendations Letter* at 1-2. "NTIA endorses the recommendations contained in [the *WG1 Final Report]*," *id.* at 1. Accordingly, herein we refer to NTIA and *WG1 Final Report* recommendations interchangeably, with cites to the *WG1 Final Report* for convenient reference.

the interested stakeholders. In May 2012, NTIA asked each CSMAC working group to focus on the following tasks:

- Working Group 2 ("WG2") (Law Enforcement Surveillance, Explosive Ordnance Disposal ("EOD"), and other short distant links)—the correlation of agency city-by-city transition plans with industry implementation priorities, and prioritizing vacating the 1755-1780 MHz sub-band;
- Working Group 3 ("WG3") (Satellite Control and Electronic Warfare)—the definition and specification (including any interference acceptance rules) of zones around satellite sites, and coordination path rules for electronic warfare development and training;
- Working Group 4 ("WG4") (Tactical Radio and Fixed Microwave)—the definition and specification (including any interference acceptance rules) of zones around Department of Defense sites that require access, and relocation process of fixed microwave links starting from 1755-1780 MHz; and
- Working Group 5 ("WG5") (Airborne Operations (Air Combat Training System, Unmanned Aerial Vehicles, Precision-Guided Munitions, Aeronautical Telemetry))—the determination of protection requirements for Federal operations and understanding of the periodic nature of airborne operations and the impact to commercial wireless systems from government airborne operations.[65]

17. Of the four working groups concentrating on the 1755-1850 MHz band, only WG2 has issued a final report, which the full CSMAC adopted on February 21, 2013.[66] The *WG2 Final Report* found that Federal incumbents with video surveillance systems plan to transition operations from the 1755-1780 MHz band within five years, once funding and comparable spectrum is available.[67] WG2 also developed two lists of areas for agencies with transitioning video surveillance systems to consider based on priorities established by the wireless industry.[68] The first list addresses the 1755-1780 MHz band, while the second list addresses the 1780-1850 MHz band.[69] On April 19, 2013, NTIA endorsed the recommendations contained in the *WG2 Final Report*.[70]

18. In addition to the work of the CSMAC working groups, commercial wireless carriers are working with the Department of Defense ("DoD") to monitor and gather information about several systems identified in NTIA's *1755-1850 MHz Assessment Report* that appear to be the most difficult, costly, or time consuming to relocate.[71] The carriers also requested special temporary experimental authority from the Commission to conduct tests in the 1755-1780 MHz and 2155-2180 MHz bands for commercial mobile broadband services, and to examine technical co-existence with a limited number of incumbent Federal operations, in a defined number of geographic locations that may remain in the band

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[65] *NTIA Framework* at 3-4. *See also NTIA Fast Track 3rd Interim Report* at 5-8. *See generally NTIA 1755-1780 MHz Assessment Report* at 1-5; *NTIA Fast Track Report* at 2-3-2-4.

[66] *CSMAC Feb. 2013 Minutes* at 42-43.

[67] *WG2 Final Report* at 6.

[68] *Id.* at 4.

[69] *Id*.

[70] *NTIA Recommendations Letter* at 1-3. "NTIA endorses the recommendations contained in [the *WG2 Final Report]*," *id.* at 1. Accordingly, herein we refer to NTIA and *WG2 Final Report* recommendations interchangeably, with cites to the *WG2 Final Report* for convenient reference. NTIA clarifies that the prioritized list of EAs will serve as an input for consideration as the agencies develop their transition plans. *See* section III.E.2, *infra*.

[71] *NTIA Fast Track 3rd Interim Report* at 6.

indefinitely, consistent with the CSMAC working groups' efforts.[72] On August 14, 2012, the Commission announced that it had granted the first authorization of testing in the 1755-1780 MHz band.[73]

19. We are advancing proposals in today's NPRM in tandem with NTIA's work to ensure that the statutory deadline under Section 6401 of the Spectrum Act can be met, and in light of the importance of making needed spectrum available as soon as practicable. Today's proposals are subject to revision in light of the recommendations we receive from NTIA after its evaluation of the output of these working groups. We intend to incorporate NTIA's forthcoming recommendations into the record of this proceeding and anticipate that commenters will discuss NTIA's recommendations in comments, reply comments, or *ex parte* presentations, as appropriate, depending on the timing.

G. Additional Recent Developments

1. Developments Regarding the 2095-2110 MHz Band

20. *CTIA's Request to Auction 2095-2110 MHz.* As discussed above, the Spectrum Act requires the Commission to identify 15 megahertz of contiguous spectrum for commercial use.[74] On March 13, 2013, CTIA—The Wireless Association ("CTIA") urged the Commission to designate spectrum currently used for Broadcast Auxiliary Service ("BAS") at 2095-2110 MHz as the fifteen megahertz of contiguous spectrum required to be identified by the Commission under the Spectrum Act.[75] CTIA argues that the 2095-2110 MHz band is ideal for this purpose because it is a contiguous band with propagation characteristics ideally suited to mobile broadband and adjacent to current mobile broadband spectrum. These characteristics make it suitable for modern mobile broadband technologies, such as the Long-Term Evolution ("LTE") standard. CTIA states that the 2095-2110 MHz band can be paired with the 1695-1710 MHz band that NTIA identified for reallocation under the Spectrum Act and is likely to generate significant revenues through a competitive bidding process.[76] CTIA acknowledges that BAS currently uses the 2095-2110 MHz band and that, in addition to hosting BAS, the larger 2025-2110 MHz band is also home to the Federal space operation service, the earth exploration-satellite service, and the space research service.[77] CTIA notes that the Commission requires coordination between Federal and non-Federal users of the 2095-2110 MHz band and that terrestrial transmitters used for BAS not be high-

[72] *Id*.

[73] Statement of FCC Chairman Julius Genachowski on FCC Granting the First Authorization of Testing in the 1755-1780 MHz Band (dated Aug. 14, 2012) (available at http://www.fcc.gov/document/genachowski-fcc-granting-authorization-testing-1755-1780-mhz) (last visited June 20, 2013).

[74] *See supra* section II.D (Section 6401 of the Spectrum Act).

[75] Letter from Steve Largent, President, CTIA, to Julius Genachowski, Chairman, FCC, GN Docket No. 09-51, (dated Mar. 13, 2013) ("*CTIA Letter*") (attaching "Finding the FCC's 15 MHz Implementation of Section 6401(b)(2)(E) of the Middle Class Tax Relief and Job Creation Act of 2012 – Identification of 15 Megahertz of Contiguous Spectrum for Mobile Broadband") ("CTIA White Paper").

[76] CTIA White Paper at 2 and 9-12.

[77] CTIA notes that the Commission elevated these Federal systems to primary status in 2000 and that there are currently 11 locations in the United States where Federal satellite earth stations are permitted to operate on a co-primary basis with non-Federal operations. CTIA White Paper at 13-14 citing Mobile-Satellite Service, *Second Report and Order and Second Memorandum Opinion and Order*, 15 FCC Rcd 12315 ¶ 16 (2000).

density systems.[78] CTIA avers that issues between Federal and non-Federal users can be addressed by band clearing, sharing, and rule changes.[79]

21. *Federal and non-Federal Opposition to Commercial Wireless in 2095-2110 MHz* On July 22, 2013, NTIA transmitted to the Commission a Feasibility Assessment for accommodation of mobile broadband Long Term Evolution (LTE) systems in the 2025-2110 MHz band prepared by NASA and recently submitted by the United States to I International Telecommunications Union –Radio Telecommunications Sector Joint Task Group 4-5-6-7.[80] NTIA states that, recognizing the interest in the potential for use of the band for wireless broadband, NASA performed a compatibility study examining the potential for commercial broadband systems employing LTE technology on a shared basis with forward link transmissions from NASA geostationary Tracking and Data Relay Satellite System (TDRSS) satellites to some typical satellite users, which are in Low Earth Orbit.[81] NTIA states that the results of the study show that high-density terrestrial base stations or user equipment operating co-frequency in the 2025-2110 MHz band will exceed established protection criteria for the TDRSS spaceborne receivers by an average of 16.4dB to 40.7 dB and that analysis of sharing with satellite systems of other administrations will likely show similar results.[82] As requested by NTIA,[83] we are adding this assessment to the record of this proceeding and seeking comment on it. The Society of Broadcast Engineers (SBE) has also expressed opposition.[84] SBE states that allowing commercial use of 2095-2110 MHz, as CTIA suggests, would delete two of seven shared channels used heavily for BAS, LTTS, and CARS.[85] According to SBE, "there is simply not enough residual spectrum available between 2025 MHz and 2095 MHz to permit [Electronic News Gathering] to continue."[86] SBE opines that other sources of fifteen megahertz of contiguous spectrum should be studied such as portions of the 2360-2390 MHz band.[87]

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[78] *Id*., wherein the FCC adopted 47 C.F.R. § 2.106 n.US346, which prohibits high-density mobile systems under the non-Federal mobile allocation for the 2025-2110 MHz band. CTIA adds that n.US346 is the domestic version of international n.5.391, 47 C.F.R. § 2.106, n.5.391, which CTIA states came about as the result of ITU Recommendation ITU-R SA.1154, adopted at the World Radiocommunication Conference in 1995). *See id.* at 14.

[79] *Id.* at 13-14.

[80] Letter from Karl B. Nebbia, Associate Administrator, Office of Spectrum Management, NTIA, to Julius P. Knapp, Chief, Office of Engineering and Technology, FCC, at 1-2 (July 22, 2013) (GN Docket No. 09-51, ET Docket 10-123) ("*NTIA July 2013 Letter*"). *See also id.*, Enclosure 2 (United States of America, *Feasibility Assessment for Accommodation of* Mobile *Broadband Long Term Evolution (LTE) Systems in the 2 025-2 110 MHz Band*, Document 4-5-6-7/170-E (dated 16 July 2013)).

[81] *NTIA July 2013 Letter* at 2.

[82] *Id.*

[83] *Id.*

[84] Letter from Ralph Hogan, President, Society of Broadcast Engineers, Inc. to Julius Genachowski, Chairman, FCC, Robert McDowell, Commissioner FCC, Mignon Clyburn, Commissioner, FCC, Jessica Rosenworcel, Commissioner, FCC, and Ajit Pai, Commissioner, FCC, GN Docket No. 09-51, (dated Mar. 18, 2013) ("SBE Letter")

[85] SBE Letter at 3-4. SBE notes that the 2095-2110 MHz band is part of the larger 2025-2110 MHz band that consists of seven 12 megahertz channels shared by the Broadcast Auxiliary Service, the Local Television Transmission Service ("LTTS"), the Cable Television Relay Service ("CARS"), as well as NASA, the Department of Defense, and other cooperative sharing partners in this band. *Id.* at 2.

[86] *Id.* at 4.

[87] *Id.*

2. Developments Regarding 1755 MHz and Related Bands

22. *Industry Roadmap*. Recently, T-Mobile filed a wireless industry proposal (Industry Roadmap) for making the 1755-1780 MHz band available for commercial use in time to auction the band at the same time as the 2155-2180 MHz band, which the Spectrum Act requires to be auctioned and licensed by February 2015.[88] The Industry Roadmap assesses Federal operations in the 1.7 GHz band and proposes a combination of sharing, relocation, and channel prioritization for the majority of Federal operations in the 1755-1850 MHz band to provide industry early access to the 1755-1780 MHz portion of the band. The Industry Roadmap also acknowledges that additional study is necessary.

23. *DoD Alternative Proposal*. On July 22, 2013, NTIA transmitted to the Commission correspondence to NTIA from the Chief Information Officer of the DoD that outlines a proposal for making 1755-1780 MHz available for auction and licensing in the near term, while protecting critical DoD capabilities and preserving the necessary flexibility to address the long-term status of the 1780-1850 MHz portion of the band.[89] Among other things, DoD proposes to share the 2025-2110 MHz band, proposes not to seek access to the 5150-5250 MHz band for telemetry, and estimates the cost of implementing its proposal at $ 3.5 billion.[90]

III. DISCUSSION

A. Overview

24. First, we briefly describe spectrum bands that we could include in the group of AWS-3 bands and, where applicable, proposals or questions on which we are seeking comment. Next, we seek comment on configuration issues such as downlink/uplink designations, pairing, block size, and service areas for AWS-3. Because of the parallel CSMAC process, there are a number of different options for proceeding in a manner consistent with the Spectrum Act. For purposes of this notice, we have described the bands and configurations in a modular way. Commenters may put forward specific options that involve all or a subset of the bands described below, and may contemplate paired or unpaired bands. Because non-Federal use of the 1695-1710 MHz and 1755-1780 MHz bands is proposed on a shared basis with Federal users if clearing is not feasible, we also consider recommendations and issues related to Federal Band Reallocation, Sharing, and Coordination that aim to maximize commercial use of these bands.

25. For the 1695-1710 MHz band, we seek comment on NTIA's recommendations in the *WG1 Final Report*, which reflects the significant progress that was made "to refine interference analysis and develop a deeper understanding of the issues and options available for maximizing access to the spectrum for commercial services while protecting incumbent Federal operations in the 1695-1710 MHz and the adjacent 1675-1695 MHz bands."[91] We propose to adopt the sharing framework described in the *WG1 Final Report* including the recommended Protection Zones within which all non-Federal use must be coordinated successfully with Federal incumbents prior to operation. We also propose to adopt the

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[88] Letter from Steve Sharkey, T-Mobile U.S., Inc., to Marlene H. Dortch, Secretary, Federal Communications Commission, WT Docket Nos. 10-123, 07-195 (dated Jun. 24, 2013), at Attachment, *Industry Roadmap to Assessing the 1755-1850 MHz Band* (assesses the entire 1755-1850 MHz band in a manner that considers making the lower band (1755-1780 MHz) available first, but also addresses the rest of the band up to 1850 MHz in order to meet Federal agencies' concerns. The plan takes into account the NTIA instructions given to the CSMAC Working Groups, which were directed to consider a plan that lowers the repurposing costs and/or improves or facilitates industry access while protecting Federal operations from adverse impact. *See id.*, T-Mobile Letter, at 1.

[89] *NTIA July 2013 Letter* at 1. *See also id.*, Enclosure 1 (Letter from Teresa M. Takai, Chief Information Officer, DoD, to Lawrence E. Strickling, Assistant Secretary for Communications and Information, NTIA, U.S. Dept. of Commerce (July 17 2013).

[90] *NTIA July 2013 Letter*, Enclosure 1.

[91] *WG1 Final Report* at 1.

coordination methodology of the *WG1 Final Report*, including the recommendations to consider certain refinements to the methodology. Additionally, we seek comment on coordination procedures.

26. For the 1755-1780 MHz band, we anticipate the possibility of a "hybrid" recommendation, in which some operations would be relocated,[92] some would share the band with commercial licensees, and some would not share the band (in certain geographic protection zones or exclusion zones).[93] In light of that possibility, and assuming that NTIA may endorse the CSMAC recommendations, we seek comment on adopting Protection Zones, Exclusion Zones, and other sharing measures or alternatives. Finally, we seek comment on technical, licensing, and operational rules as well as regulatory issues.

27. Our proposals regarding the 1695-1710 MHz and 1755-1780 MHz bands incorporate the significant study and analysis conducted through the CSMAC's multi-stakeholder process. We reiterate the priority in the Spectrum Act for relocation over sharing, and our goal remains to clear and allocate spectrum for exclusive commercial use. In general, we seek comment on the potential for clearing (both in the short and long term) for each band and the extent to which the sharing approaches described in the CSMAC reports maximize commercial use of the spectrum.[94] We encourage commenters to suggest alternative approaches for maximizing the commercial use of these bands, to the extent technically and economically feasible.

28. In general, our discussion proceeds as follows. We first describe these proposed bands, configurations, sharing arrangements, and licensing and service rules. We then propose specific changes to our Table of Frequency Allocations for them, where necessary to implement the requirements of Section 6401 of the Spectrum Act. We seek comment on various considerations in the course of this discussion.

B. Proposed Bands for AWS-3 Service Rules

29. We begin our discussion by considering the various bands that might be subject to AWS-3 service rules and other bands that have been implicated by related discussions in CSMAC, through letters to the Commission, and other public fora.

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[92] "For some systems, traditional relocation will be the recommendation. Systems such as point-to-point microwave circuits are relatively straightforward to move and we have spectrum where these systems can be relocated." Keynote Address by Assistant Secretary Strickling at Silicon Flatirons Conference (Feb. 11, 2013) ("Silicon Flatirons Address").

[93] *Id.*

> In other cases such as satellite earth stations, defining geographic exclusion or coordination zones to protect the earth stations may then allow commercial entry in large parts of the country not affected by such zones. But in addition, we have added a third option to the discussions – the possibility that industry and the Federal agencies can both use spectrum in the same geographic area through the use of today's new technologies. If Federal systems and commercial operations can co-exist in the same spectrum band, the result will be more efficient use of that spectrum.

Id. Under this third option, CSMAC working groups are considering "the use of today's new commercial technologies, which possess flexibility, agility and growing acceptance by international standards development organizations such as the 3rd Generation Partnership Project (3GPP)." Testimony of Mr. Karl Nebbia, Associate Administrator, Office of Spectrum Management, NTIA (House Energy and Commerce Subcommittee on Communications and Technology, Hearing on "Creating Opportunities through Improved Government Spectrum Efficiency" held on September 13, 2012).

[94] *See supra* ¶ 11.

1. 2155-2180 MHz

30. The 2155-2180 MHz band is already allocated for exclusive non-Federal fixed and mobile use with a longstanding designation for emerging technologies such as AWS.[95] The band is immediately above the AWS-1 downlink band (2110-2155 MHz) and immediately below the AWS-4 downlink band (2180-2200 MHz). We are proposing downlink/base station use of 2155-2180 MHz under rules similar to the AWS-1 and AWS-4 rules. We tentatively find that having additional spectrum that is adjacent to that used for like services will promote efficiency in broadband deployment. As T-Mobile observed in an earlier proceeding, "the creation of an additional AWS allocation immediately adjacent to the current AWS-1 allocation will allow for more immediate equipment development and deployment."[96] We do not propose to modify the allocation for this band, but in (section III.I below), we do propose several changes to related footnotes in the Table of Frequency Allocations.

2. 1695-1710 MHz

31. NTIA identified 1695-1710 MHz for services that support commercial use in accordance with the Spectrum Act's mandate to identify new commercial spectrum for auction. The 1695-1710 MHz band is immediately below the AWS-1 uplink band at 1710-1755 MHz. The lower part of the band (1675-1700 MHz) is allocated to the meteorological aids service, restricted to radiosonde operation, and to the meteorological-satellite service, restricted to space-to-Earth operation, on a primary basis for Federal and non-Federal use.[97] The upper part of the band (1700-1710 MHz) is allocated to the meteorological-satellite service, restricted to space-to-Earth operation, on a primary basis for Federal and non-Federal use. The 1700-1710 MHz band is also allocated to the fixed service on a primary basis for Federal use and on a secondary basis for non-Federal use.[98] We discuss possible changes to these allocations in section III.I, below.

3. 1755-1780 MHz

32. Internationally, the 1755-1850 MHz band, which is part of the larger 1710-1930 MHz band, is allocated on a primary basis to the fixed and mobile services for all three International Telecommunication Union ("ITU") regions.[99] Domestically, the 1755-1850 MHz band is currently allocated to the fixed and mobile services on a primary basis for Federal use and assigned to a wide range of military and other government uses.[100] NTIA reports that the Federal government uses the entire 1755-

[95] 47 C.F.R. §§ 2.106, 101.69.

[96] Comments of T-Mobile USA, Inc., ET Docket No. 10-142 at 7-8 (filed Jul. 8, 2011) ("Current technology can more easily be extended to adjacent bands than to bands with different uplink/downlink separations."); *See also* Comments of AT&T Inc., ET Docket No. 10-142 at 4 (filed Jul. 8, 2011) ("placing new mobile broadband services in spectrum bands directly adjacent to existing mobile services can create efficiencies in developing infrastructure equipment and consumer devices that will speed deployment and adoption of new services."); Comments of Sprint Nextel Corporation, ET Docket No. 10-142 at 3 (filed Jul. 8, 2011) (noting that the proximity of 2 GHz spectrum to AWS and PCS spectrum means that "compatible handsets likely could be produced relatively quickly to support innovative wireless services").

[97] The 1660-1670 MHz band is allocated to the radio astronomy service on a primary basis. Footnote US211 states that, in the 1670-1690 MHz band, applicants for airborne or space station assignments are urged to take all practicable steps to protect radio astronomy observations in the adjacent bands from harmful interference.

[98] The use of the Federal fixed service allocation in this band is restricted by n.G118, which states that Federal fixed stations may be authorized in the 1700-1710 MHz band only if spectrum is not available in the 1755-1850 MHz band. 47 C.F.R. § 2.106, n.G118.

[99] *Id.* § 2.106.

[100] *Id. See NTIA 1755-1850 MHz Assessment Report* at 4. This band is also allocated to the space operation service, restricted to Earth-to-space operation, on a primary basis for Federal use, footnote G42 states that this allocation "is limited to the band 1761-1842 MHz, and is limited to space command, control, range, and range rate systems. 47 C.F.R. § 2.106, n.G42.

1850 MHz band across the nation and that the majority of Federal services that operate in the 1755-1780 MHz band also operate in the larger 1755-1850 MHz band.[101] In total, NTIA reports that over 20 agencies use more than 3100 individual frequency assignments in the band, many of which cover multiple systems and operating areas and that there are few bands to consider for repurposing and few comparable bands to which Federal agencies can relocate their operations.[102] Specifically, the Federal government uses the 1755-1850 MHz band for the following services: (1) conventional fixed point-to-point microwave communications systems; (2) military tactical radio relay systems; (3) air combat training systems; (4) precision guided munitions; (5) high-resolution video data links, and other law enforcement video surveillance applications; (6) tracking, telemetry, and command for Federal Government space systems; (7) data links for short-range unmanned aerial vehicles; (8) land mobile robotic video functions (*e.g*., explosive ordnance and hazardous material investigations and disposals); (9) control links for various power, land, water, and electric power management systems; and (10) aeronautical mobile telemetry.[103]

33. From a non-Federal, commercial perspective, the 1755-1780 MHz band holds potential as an extension to existing AWS spectrum. The band has several characteristics that make it especially appealing for commercial wireless use. First, it is located adjacent to the AWS-1 uplink/mobile band at 1710-1755 MHz and thus, offers the benefits of contiguous bands. Second, it is regionally and internationally harmonized for mobile broadband, raising the potential for commercial operators to benefit from economies of scale achieved by equipment manufacturers developing equipment for a global market.[104] Third, it could be paired with the 2155-2180 MHz band to symmetrically extend the AWS-1 band.[105] The National Broadband Plan favored pairing the 1755-1780 MHz band with the 2155-2180 MHz band for similar reasons."[106]

34. We propose uplink mobile use of 1755-1780 MHz under technical rules similar to AWS-1 uplinks in the adjacent 1710-1755 MHz band, subject to Federal requirements including coordination with incumbent Federal users, that emerge from the CSMAC process, if transmitted by NTIA. As mentioned above, however, CSMAC working groups 3-5 have not yet issued final reports for NTIA's consideration. We will consider CSMAC's recommendations, if NTIA accepts them, to inform the service rules for the 1755-1780 MHz band, including terms of sharing and required protections to the extent that relocation and clearing is not feasible. We intend to incorporate NTIA's forthcoming recommendations into the record of this proceeding and anticipate that commenters will discuss NTIA's recommendations in comments, reply comments, or written *ex partes*, as appropriate, depending on the timing. We discuss these issues in greater detail below in section III.E below (Federal/non-Federal Sharing and Coordination). Allocation issues are discussed in section III.I.

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[101] *NTIA Fast Track Report* at vi. *NTIA 1755-1850 MHz Assessment Report* at 4.

[102] *NTIA 1755-1850 MHz Assessment Report* at vi.

[103] *NTIA Fast Track Report* at vi-vii.

[104] Comments of the Telecommunications Industry Association, ET Docket No. 10-123 at 10 (filed Apr. 22, 2011); Comments of T-Mobile USA, Inc., ET Docket No. 10-123, at 7 (filed Apr. 22, 2011); Comments of CTIA—The Wireless Association, ET Docket No. 10-123 at 7 (filed Apr. 22, 2011) ("Comments of CTIA to ET Docket No 10-123"); Comments of 4G Americas, ET Docket No. 10-123 at 2 (filed Apr. 22, 2011). *See also NTIA 1755-1850 MHz Assessment Report* at 2-3.

[105] Comments of CTIA to ET Docket No. 10-123 at ii. As noted in the Commission's letter to NTIA in March 2013, the Commission included the 1755-1780 MHz band in the notification "to preserve the possibility of auctioning it with the 2155-2180 MHz band." *FCC March 2013 Letter to NTIA* at 1.

[106] *National Broadband Plan* at 86-87.

4. 2020-2025 MHz

35. The 2020-2025 MHz band is already allocated for the non-Federal fixed and mobile services and is part of the 35 megahertz (1990-2025 MHz) that the Commission repurposed in 2000 from BAS to emerging technologies such as Personal Communications Services ("PCS"), AWS, and Mobile Satellite Service ("MSS").[107] This repurposing was possible because BAS converted nationwide from seven analog channels (each 17-18 megahertz wide) to seven digital channels (each 12 megahertz wide). In 2004, the Commission proposed to license 2020-2025 MHz for uplink/mobile use paired with 2175-2180 MHz.[108] The Commission did not adopt this proposal and, in 2008 it proposed instead to combine 2175-2180 MHz and 2155-2175 MHz, to make a larger unpaired block at 2155-2180 MHz.[109] The Commission did not make a further proposal for the 2020-2025 MHz band immediately above the AWS-4 uplink band (2000-2020 MHz). Today, we propose uplink/mobile use of 2020-2025 MHz under rules similar to the AWS-4 rules. We do not propose to modify the allocation for this band but, as described in section III.I.2 below (Allocation Matters, 2020-2025 MHz, we propose changes to several related footnotes in the Table of Frequency Allocations.

C. Additional Bands, Including the Requirement to Identify 15 MHz of Contiguous Spectrum for Commercial Use

36. As discussed above, the Spectrum Act requires the Commission to identify an additional 15 megahertz of contiguous spectrum for commercial use. We seek comment on an appropriate candidate for that choice, including, for example, the 1755-1780 MHz band identified above. As an alternative, we also seek general comment on the allocation of other frequencies in order to meet or surpass this requirement of the Spectrum Act, and more specific comment on those listed below. Parties that advocate licensing any of the spectrum below or any alternative spectrum for wireless broadband should describe in detail the technical, operational, and licensing rules that we should apply. For example, could the service rules that we are proposing for 1695-1710 MHz, 1755-1780 MHz, 2020-2025 MHz, or 2155-2180 MHz, be applied? If so, would modifications be necessary to address issues related to specifically identified bands? Issues related to the need for changes to the Table of Allocations are treated separately in section III.I.

1. 1780-1850 MHz

37. The 1780-1850 MHz band, which is part of the larger 1755-1850 MHz band, is allocated to the fixed and mobile services on a primary basis for Federal use and assigned to a wide-range of military and other government uses.[110] As noted above, NTIA reports that the Federal government uses the entire 1755-1850 MHz band across the nation and that the majority of Federal services that operate in

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[107] *See* 47 C.F.R. § 74.690. Of the total 35 megahertz of spectrum, five megahertz was authorized for PCS and held by Sprint Nextel; 10 megahertz was authorized for AWS and to be auctioned and licensed as AWS-2; and 20 megahertz was authorized for MSS, though it is now part of the AWS-4 spectrum.

[108] *See* Service Rules for Advanced Wireless Services in the 1915-1920 MHz, 1995-2000 MHz, 2020-2025 MHz, and 2175-2180 MHz Bands; Service Rules for Advanced Wireless Services in the 1.7 GHz and 2.1 GHz Bands; WT Docket Nos. 04-356, 02-35, *Notice of Proposed Rulemaking*, 19 FCC Rcd 19263 (2004) ("*2004 NPRM*").

[109] *See* Service Rules for Advanced Wireless Services in the 2155-2175 MHz Band, WT Docket No. 07-195, 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, *Further Notice of Proposed Rulemaking*, 23 FCC Rcd 9859, 9860 ¶ 3 (2008) ("*2008 FNPRM*").

[110] *See NTIA 1755-1850 MHz Assessment Report* at 4. This band is also allocated to the space operation service, restricted to Earth-to-space operation, on a primary basis for Federal use, footnote G42 states that this allocation "is limited to the band 1761-1842 MHz, and is limited to space command, control, range, and range rate systems. 47 C.F.R. § 2.106, n.G42.

the 1755-1780 MHz band also operate in the larger 1755-1850 MHz band.[111] Although the commercial wireless industry appears primarily interested in the 1755-1780 MHz portion of the 1755-1850 MHz band to pair with the 2155-2180 MHz band, NTIA has been studying the entire 1755-1850 MHz band and industry has not entirely dismissed the possibility of seeking access to this spectrum in the long term.[112] NTIA reports that it appreciates the Commission's "recognition of the potential need to address rules to accommodate the phased relocation of the entire 95 megahertz of the 1755-1850 MHz band."[113]

38. Because of the commercial industry's focus on the 1755-1780 MHz band, NTIA makes several requests of the Commission.[114] First, NTIA requests consideration of the potential for a phased transition to facilitate commercial access to the 1755-1780 MHz band in a shorter timeframe while preserving longer-term repurposing and transition opportunities for the entire 1755-1850 MHz band.[115] Second, NTIA requests that if a Commission auction of the 1755-1780 MHz band results in the relocation of or sharing with Federal systems that currently have access to the entire 1755-1850 MHz band, agency transition plans for the lower 25 megahertz account for those systems, even if the Commission holds multiple auctions over time.[116] Third, NTIA requests that, if necessary, the Commission assist NTIA in identifying and reallocating replacement spectrum to accommodate displaced Federal operations unless these agencies can maintain comparable capability of systems via sharing or utilizing alternative technology.[117] We invite comment on the NTIA plan for ultimately making the entire 1755-1850 MHz band available for wireless broadband based on a phased transition. How could this spectrum be used in ways that would significantly answer the need for additional wireless spectrum? Should different portions of the band be made available with different service rules, including, for example, technical rules, and sharing/coordination provisions?

2. 2095-2110 MHz

39. As discussed above, CTIA recommends that the Commission consider identifying 2095-2110 MHz as the additional 15 megahertz for reallocation under this statutory provision.[118] We invite comment on CTIA's recommendation. We note that footnote 5.391 to the Table of Frequency Allocations states administrations shall not introduce high-density mobile systems into this band.[119] Parties that advocate licensing 2095-2110 for wireless broadband should explain how such use can be reconciled with the footnote 5.391, including the underlying need to protect U.S. and foreign space systems, and describe in detail the technical, operational, and licensing rules that we should apply. Commenters should also describe potential effects on incumbent BAS users and Federal users, particularly given that this proposal would appear to conflict with use of two of the seven BAS channels

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[111] *NTIA Fast Track Report* at vi. *NTIA 1755-1850 MHz Assessment Report* at 4.

[112] *NTIA Recommendations Letter* at 3.

[113] *Id.*

[114] *Id.*

[115] *Id.*

[116] *Id.*

[117] *NTIA Recommendations Letter* at 3 (noting that DoD identified the 2025-2110 MHz band as the preferred option to relocate most of its operations and that the National Aeronautics and Space Administration and DoD identified the 5150-5250 MHz band as a comparable destination band for its aeronautical mobile telemetry systems). *See also* Letter from Lawrence E. Strickling, Assistant Secretary for Communications and Information, U.S. Department of Commerce, to Julius Genachowski, Chairman, FCC at 1 (Feb. 19, 2013) (stating, that it may be necessary to relocate Federal aeronautical mobile telemetry systems from the 1755-1850 MHz band to the 5150-5250 MHz band and citing, at n.10, *NTIA 1755-1850 MHz Assessment Report* at 45).

[118] *See CTIA Letter*.

[119] 47 C.F.R. § 2.106, n.5.391. *See also id.* at US n.346.

available in the 2025–2110 MHz band. Additionally, as described above,[120] NASA appears to strongly oppose sharing this band with commercial cellular operations.[121] The Society of Broadcast Engineers ("SBE") also opposes CTIA's proposal.[122] We also observe that Federal agencies have identified the 2025–2110 MHz band as a potential relocation band for various Federal operations. We seek comment on these considerations.

3. Other Frequencies

40. We invite commenters to propose any other band that would meet the Spectrum Act's requirement for the Commission to identify 15 contiguous megahertz of spectrum. We encourage commenters to identify specific bands, to explain what the band is currently used for, and how it might be allocated and transitioned for commercial use under flexible use service rules for operations such as wireless broadband service.

D. Band-Use Configurations

1. Base vs. Mobile Transmissions

41. As discussed further below, we propose to allow the use of each AWS-3 band in a manner that is compatible with the use of adjacent bands. Doing so reduces the risk of harmful interference to co-channel or adjacent band operations or the need for highly restrictive technical limits that would leave some AWS-3 spectrum underutilized. We believe our band-use proposals maximize the potential usability of these bands. We seek comment on our proposals and invite commenters to propose alternatives.

a. Base Transmit

42. In 2008, the Commission proposed to allow base and mobile operations in the 2155-2180 MHz band to support Time Division Duplex ("TDD") operations. To protect base operations in the adjacent AWS-1 band from harmful interference due to mobile operations in the AWS-3 band, strict power and out-of-band-emission ("OOBE") limits were placed on AWS-3 mobiles. These measures included a slightly lower than normal mobile power limit and a mobile OOBE limit below 2155 MHz of $60 + 10 \log_{10}(P)$ dB.[123] Recently, in the AWS-4 proceeding, the Commission addressed a similar base/mobile adjacency scenario that was unavoidable because AWS-4 spectrum (2000-2020 MHz), which is next to the H Block downlink band (1995-2000 MHz), was already the Mobile Satellite Service ("MSS") uplink band (and thus could only be used for AWS-4 mobiles). The Commission concluded that certain assumptions underlying the $60 + 10 \log_{10}(P)$ dB proposal are outdated: to protect contemporary AWS uses, the Commission found that a $70 + 10 \log_{10}(P)$ dB OOBE limit is necessary along with significant power reductions in the first five megahertz of the uplink/mobile band[124] that significantly limit mobile operations to provide adequate isolation between adjacent mobile and base station operations.[125]

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[120] *See supra* ¶ 21.

[121] *Id.*

[122] *Id.*

[123] *2008 FNPRM*, 23 FCC Rcd at 9860 ¶ 3.

[124] *See AWS-4 Service Rules R&O*, 27 FCC Rcd 16102, 16127-16141 ¶¶ 64-88.") In reaching these conclusions, the Commission also noted that mobile broadband uses far more downlink than uplink spectrum, and therefore indicates greater demand for downlink spectrum.

[125] *Id.*, 27 FCC Rcd at 16135-41 ¶¶ 79-88, ¶¶ 136-148. In particular, the Commission noted that LTE mobiles cannot tolerate as much interference as the UMTS mobiles considered in deriving the 60 + 10 log10(P) dB limit. *Id.* at ¶ 88.

43. Unlike AWS-4, here we have the option to avoid designating uplink next to downlink, which in turn avoids the need for guard bands or significant technical limits that mitigate interference between uplink and downlink. As we recently concluded in connection with AWS-4, having mobiles (or base and mobile TDD transmissions) requires significant power reductions and OOBE limits to prevent harmful interference to adjacent bands. Allowing mobile transmit operations would appear to leave significant portions of the 2155-2180 MHz band underutilized.[126] Moreover, in addition to interference with adjacent AWS-1 and AWS-4 base station transmissions, allowing mobiles in the 2155-2180 MHz band appears to create the potential for harmful mobile-to-mobile interference among AWS-3 licensees with dissimilar operations in adjacent blocks or service areas.[127] Accordingly, we propose to allow base and fixed (downlink), but not mobile, operations in the 2155-2180 MHz band. Such operations are compatible with similar downlink operations in the adjacent AWS-1 band (2110-2155 MHz) and AWS-4 band (2180-2200 MHz). By designating downlink next to downlink, we avoid having to impose guard bands or significant technical limits between adjacent services, thereby increasing the amount of usable spectrum. We seek comment on this proposal. We invite commenters who disagree with this proposal to submit test data and specific technical analyses in support of the OOBE, power, and other technical limits they recommend. Commenters should discuss and quantify the costs and benefits of this proposal and any proposed alternative approaches.

b. Mobile Transmit

44. We propose to allow mobile transmit operations (but to prohibit high-power fixed and base station operations) in the 1695-1710 MHz, 1755-1780 MHz, and 2020-2025 MHz bands. Again, we intend to reduce the risk of harmful interference to adjacent band operations or the need for highly restrictive technical limits that could leave some AWS-3 spectrum underutilized. Each of these bands is adjacent, on one or both sides, to AWS uplink/mobile bands. The 1695-1710 MHz and 1755-1780 MHz bands are adjacent to the AWS-1 uplink/mobile band (1710-1755 MHz) and the 2020-2025 MHz band is adjacent to the AWS-4/MSS uplink/mobile band (2000-2020 MHz). Authorizing high-power base stations in these AWS-3 bands would appear to raise the potential for base-to-base interference to the adjacent band AWS-1 and AWS-4 services.[128] Possibly, base-to-base interference could be controlled by measures such as power limits, OOBE limits, siting restrictions, and coordination, but these measures would appear to be burdensome and might result in a less robust use of these AWS-3 bands.

45. Another potential impediment to high-power use of two of these bands—1695-1710 MHz and 1755-1780 MHz —arises because AWS-3 use might be shared with Federal services. NTIA's recommendations for sharing 1695-1710 MHz are predicated on the use of low-power AWS-3 mobiles, as is CSMAC's ongoing analysis of potential sharing of the 1755-1850 MHz band.[129] AWS-3 base stations in these Federal bands have not been analyzed, to date, and proposing such operations herein would appear to result in additional delay, costs, and the possibility of NTIA concluding that Federal/non-Federal sharing is impossible, or feasible only under severe restrictions on high-power AWS-3 use of these two bands.

46. For these reasons, we propose to permit only low-power, mobile-to-base transmissions in the 1695-1710 MHz, 1755-1780 MHz, and 2020-2025 MHz bands. We seek comment on this proposal. We invite commenters who disagree with this proposal to submit test data and specific technical analyses

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[126] *Id.*, 27 FCC Rcd at 16135 ¶ 80.

[127] We are proposing to license AWS-3 spectrum by geographic areas, using five-megahertz blocks. *See infra* ¶¶ 47-52. By comparison, the Commission's 2008 proposal involved a single nationwide license for all 25 megahertz. *2008 FNPRM*, 23 FCC Rcd at 9860 ¶ 3.

[128] Base-to-base interference occurs when transmissions from one base station interfere with another base station's reception of communications. High-power stations in the 2020-2025 MHz band would also increase the potential for interference to mobile BAS and CARS receivers in the 2025-2100 MHz band.

[129] *See supra* ¶¶ 14-19.

in support of the OOBE or other technical limits they recommend. Commenters should discuss and quantify the costs and benefits of this proposal and any proposed alternative approaches.

2. Spectrum Block Sizes

47. In determining the spectrum block sizes for the AWS-3 bands, we seek to maximize utility and allow for efficient use of these bands. We believe that a minimum bandwidth of five megahertz is required to accommodate the fullest range of wireless services.[130] Five-megahertz blocks can be used for new technologies and can be used for some data services, including broadband Internet access.[131] The Commission has also found that five-megahertz blocks would provide entry opportunities for small and rural service providers,[132] and can be aggregated to provide greater capacity where needed.[133] We therefore propose to license the AWS-3 spectrum in five-megahertz blocks, and seek comment on this proposal. Commenters should discuss and quantify the costs and benefits of this proposal and any proposed alternatives.

3. Spectrum Block Configuration

48. We have generally licensed other bands that support mobile broadband services on a paired basis, matching specific downlink and uplink bands.[134] We recognize that the new AWS bands proposed in this *NPRM* could be configured in any number of pairings or even auctioned on an unpaired basis. We therefore seek comment on a range of options. Should we pair any of the AWS-3 band segments discussed in this NPRM, and if so how should they be paired? Or should we not specify pairing? Are there likely to be competitive effects of our choice that we should consider? If we adopt the unpaired approach, are any administrative measures necessary to keep track of how spectrum blocks are being used? Additionally, if the unpaired spectrum is used to support asymmetrical downlink operations, are there particular bands with which carrier aggregation could most easily be accommodated? Are there bands with which carrier aggregation of AWS-3 spectrum is not advisable due to potential intermodulation or other interference? In any event, we seek comment on requiring uplink/mobiles in the 1695-1710 MHz and 1755-1780 MHz bands to transmit only when controlled by an associated base station whose location can be coordinated with relevant Federal users should they be required to implement Protection Zones described in section III.E below (Federal/non-Federal Sharing and Coordination).[135] We invite comment on what approach to take, and the costs and benefits of particular approaches.

4. Service Areas

a. Geographic Area Licensing

49. We propose to license all AWS-3 spectrum blocks using a geographic area licensing approach, and we seek comment on this proposal. A geographic licensing approach appears well suited for the types of fixed and mobile services that would likely be deployed in these bands. Additionally, geographic licensing appears consistent with the licensing approach adopted for other bands that support

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[130] *Incentive Auctions NPRM*, 27 FCC Rcd at 12403 ¶¶ 127-28.

[131] *See generally id.*

[132] *See, e.g.,* 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, 25178 ¶ 44 (2003) ("*AWS-1 Service Rules R&O*").

[133] *See Incentive Auctions NPRM*, 27 FCC Rcd at 12404 ¶ 130.

[134] *See, e.g.*, 47 C.F.R. § 27.5(h) (AWS-1).

[135] For example, the Protection Zones for the 1695-1710 MHz band are premised on the distance between the incumbent Federal operations and non-Federal base station(s) that will enable the AWS-3 uplink/mobile operations. Thus, even though the base station does not transmit in the 1695-1710 MHz band, its location inside a Protection Zone triggers the coordination requirement. *See infra* section III.E.1.a (Protection Zones for Incumbent Federal Operations).

mobile broadband services.[136] Moreover, adopting a geographic areas licensing approach would seem to allow the Commission to assign new initial licenses in these bands through a system of competitive bidding in accordance with the Spectrum Act. We seek comment on this approach, including the costs and benefits of adopting a geographic area licensing scheme. In the event that a party does not support using geographic licensing for a given band, it should explain its position, describe what type of licensing scheme it supports and identify the costs and benefits associated with its alternative licensing proposal. Commenters should also address how an alternative licensing approach would be consistent with the statutory requirement to assign licenses in these bands through a system of competitive bidding and the statutory objectives that the Commission is required to promote in establishing methodologies for competitive bidding.[137]

b. Service Area Size

50. If we use a geographic area approach for licensing these bands, we must determine the appropriate size(s) of service areas on which licenses should be based. We seek to adopt a service area for all bands that meets several statutory goals. These include facilitating access to spectrum by both small and large providers, providing for the efficient use of the spectrum, encouraging deployment of wireless broadband services to consumers, especially those in rural areas and tribal lands, and promoting investment in and rapid deployment of new technologies and services consistent with our obligations under Section 309(j) of the Communications Act.[138]

51. Of the various geographic areas we might adopt here, Economic Areas ("EAs") represent a natural market unit for local or regional service areas. The Bureau of Economic Analysis defines an EA as "one or more economic nodes—metropolitan areas or similar areas that serve as centers of economic activity—and the surrounding counties that are economically related to the nodes."[139] EAs nest within and may be aggregated up to larger license areas, such as Major Economic Areas ("MEAs") and Regional Economic Area Groupings ("REAGs") for operators seeking larger service areas.[140] EAs also represent a close match to the geographic licensing approach used for the AWS-1 and AWS-4 bands.[141] Given their spectral proximity, the AWS-1 and AWS-4 bands appear to be the most likely candidates for *ad hoc* operational consolidation with AWS-3 spectrum, in those cases where such consolidation may occur. Using a compatible geographic licensing approach may therefore result in more efficient opportunities for available spectrum to be put to use where needed.

52. We therefore propose to license the AWS-3 bands on an EA basis (176 EAs) and seek comment on this proposal and any alternatives. We ask commenters to discuss and quantify the economic, technical, and other public interest considerations of licensing on an EA or other basis. We also seek comment on whether there are costs and benefits to adopting our proposed EA licensing approach for bands shared with Federal users. For example, to what extent do the Protection Zones of incumbent Federal operations extend across EA boundaries and, if they do, is this a relevant factor to

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[136] *See, e.g.*, 47 C.F.R. § 27.6(h) and (i) (AWS-1 and AWS-4, respectively).

[137] *See* 47 U.S.C. § 309(j)(3)-(4).

[138] *See e.g.*, *AWS-1 Service Rules R&O*, 18 FCC Rcd 25162, 25174 ¶ 31 (2003); *see also* 47 U.S.C. § 309(j).

[139] Final Redefinition of the BEA Economic Areas, 60 Fed. Reg. 13,114 (Mar. 10, 1995). There are 172 EAs. In addition, the Commission separately licenses Guam and the Northern Mariana Islands, Puerto Rico and the United States Virgin Islands, American Samoa, and the Gulf of Mexico, which have been assigned Commission-created EA numbers 173-176, respectively. *See* 47 C.F.R. § 27.6(a).

[140] 47 C.F.R. § 27.6.

[141] The AWS-1 B and C blocks and AWS-4 are licensed on an EA basis, and the AWS-1 D, E and F blocks are licensed on an REAG basis. Only the AWS-1 A block is licensed on the smaller Metropolitan Statistical Area/Rural Service Area (MSA/RSA) basis, which uses geographic areas that do not nest with EA/MEA/REAG areas. *See* 47 C.F.R. § 27.6(h)(2), (i) (AWS-1 blocks licensed by EAs and AWS-4, respectively).

consider in adopting EA licensing? We seek comment on alternative geographic area sizes that could be used as the basis for licensing spectrum in these bands. Although we propose to separately license the Gulf of Mexico separately consistent with AWS-1, AWS-4, and H Block, all of which license the Gulf as a separate EA license,[142] we also invite comment on whether to include the Gulf of Mexico as part of larger service areas, as the Commission did for the Upper 700 MHz band.[143] 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.

E. Federal/non-Federal Sharing and Coordination

53. Several of the bands included in this *Notice of Proposed Rulemaking* are presently allocated for Federal use and are used by various Federal agencies to carry out their missions. Therefore, enabling commercial access to these bands, if clearing is not practicable, may require some combination of reallocation, relocation, sharing, and/or coordination. We seek comment on the most appropriate solutions for particular bands, including those specifically identified below, that maximize commercial access to these bands. These solutions may include clearing and reallocating, or where not feasible, facilitating shared access to the bands. As noted above, NTIA intends for its CSMAC process to generate actionable recommendations regarding non-Federal access to these bands. We intend to incorporate NTIA's forthcoming recommendations into the record of this proceeding and anticipate that commenters will discuss NTIA's recommendations, including corresponding rules and procedures the Commission should adopt to effectuate them, in comments, reply comments, or written *ex partes*, as appropriate, depending on the timing.

1. 1695-1710 MHz – Federal/non-Federal Sharing Framework

54. As noted above, in accordance with the Spectrum Act's mandate that NTIA identify 15 megahertz of spectrum for reallocation from Federal to non-Federal use, NTIA identified the 1695-1710 MHz band and recommended that the Commission reallocate it for commercial use.[144] In making this recommendation, NTIA cited conclusions in the *NTIA Fast Track Report*, as well as recommendations then being drafted by CSMAC Working Group 1 ("WG1"), that this band segment could be reallocated for commercial use subject to the sharing framework described further below.[145] On April 19, 2013, NTIA recommended that the Commission use the *WG1 Final Report* recommendations in drafting proposed rules to implement shared use of the 1695-1710 MHz band.[146] Accordingly, we propose that shared Federal and non-Federal use of the 1695-1710 MHz band follow the sharing framework recommended by NTIA. This approach allows for exclusive commercial operations outside predetermined Protection Zones without any Federal coordination, and for commercial operations inside the Protection Zones after coordination to protect incumbent Federal operations. We seek comment generally on the extent to which the proposed framework appropriately follows Congress' prioritization

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[142] *See id. See also* 47 C.F.R. § 27.6(j) (2013) (H Block); Service Rules for the 746-764 and 776-794 MHz Bands, WT Docket No. 06-150, *Report and Order and Further Notice of Proposed Rulemaking*, 22 FCC Rcd 8064, 8085 ¶ 49 (2007) (*700 MHz First Report and Order*).

[143] *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, 500 ¶ 56, n.137 (2000).

[144] *NTIA 1695-1710 MHz Identification Report* at 1. In making this recommendation to the Commission, NTIA recognized that, under Section 6401(b) of the Spectrum Act, the "FCC must allocate the spectrum identified in this report for commercial use, adopt flexible-use service rules, and grant new initial licenses through a system of competitive bidding no later than [February 22, 2015]. *Id*. at n.2 citing Spectrum Act § 6401(b), 126 Stat. 222-223.

[145] *See NTIA 1695-1710 MHz Identification Report* at 1-2.

[146] *See NTIA Recommendations Letter* at 1.

of relocation over sharing, except where technically or financially prohibitive.[147] We seek comment on more specific aspects of these recommendations below, as well as on any other sharing and coordination issues or alternative approaches that are outside the scope of CSMAC's analyses and recommendations.

55. The *WG1 Final Report* sets out a framework for sharing the band that protects both the polar-orbiting satellites ("POES") that operate in the 1695-1710 MHz band as well as the geostationary satellite earth stations that operate predominately in the adjacent 1675-1695 MHz band, but which overlap slightly with the 1695-1710 MHz band.[148] Additionally, WG1 established interference protection criteria defining the allowed Interference Power Spectral Density ("IPSD") levels, tailored to each receiver's RF characteristics. WG1 also refined the interference analysis methodology previously used for the *NTIA Fast Track Report* to more realistically model the operation of commercial LTE networks and draw the parameters of the Protection Zones. The methodology used to derive the Protection Zones is provided in Appendix 7 of the *WG1 Final Report*,[149] but more work is needed to create all of the methods and procedures necessary for the coordination process. As explained in the *WG1 Final Report*:

> Details of the coordination framework are outline[d] in [*WG1 Final Report*] Appendix 1. To create this coordination process, NTIA and FCC, in conjunction with the affected federal agencies, need to establish: 1) a nationally-approved interference prediction model, associated input parameters, and distribution of aggregate IPSD limit among commercial licensees; 2) coordination procedures, including an automated process, to the extent possible, to assess if the proposed commercial network will meet the IPSD limits, to facilitate coordination allowing commercial licensee operations within the Protection Areas; and 3) procedures for implementing on-going real-time monitoring to ensure IPSD limits are not being exceeded and that commercial operations can be adjusted immediately if they are. The framework stipulates that the criteria and procedures for coordination and operation within the Protection Zones, as well as enforcement mechanisms, must still be clearly defined and subsequently codified in the FCC rules and the NTIA manual, as appropriate.[150]

56. The Commission has implemented a number of different coordination approaches in other services with the aim of efficiently and expeditiously balancing access to spectrum against the need to prevent harmful interference. For example, in the non-voice, non-geostationary mobile-satellite service, prospective earth station licensees must coordinate with Federal government users prior to operating.[151] Similarly, our Part 101 rules for the Fixed Microwave Services set forth detailed frequency coordination procedures[152] and interference protection criteria.[153] As discussed in greater detail below,

[147] *See supra* ¶ 11.

[148] Existing POES satellites are expected to be at end of life by 2030 as a new generation of satellites (GOES-R and JPSS) are scheduled to be launched in 2016. Because the new satellites will operate outside of 1695-1720 MHz, it is anticipated that commercial operations will have greater access to the band in the future after the current generation of satellites is phased out. *WG1 Final Report* at 5 and App. 6 at 16.

[149] *See id.* at App. 7 (Analysis Methodology Used to Compute Protection Distances for Federal Meteorological Satellite Receivers).

[150] *Id.* at 2 and App. 1 (A Framework for Federal Spectrum Sharing Rules for the 1695-1710 MHz Band) at 1-1.

[151] *See* 47 C.F.R. § 25.142(b)(2); *see also* 47 C.F.R. § 25.279(b)(1).

[152] *See* 47 C.F.R. § 101.103.

[153] *See id.* § 101.105. Guidelines for applying the interference protection criteria are specified in the Telecommunications Industry Association's Telecommunications Systems Bulletin TSB 10, "Interference Criteria for Microwave Systems" (TSB 10). Other procedures that follow generally acceptable good engineering practices are also acceptable to the Commission. *See* 47 C.F.R. § 101.105(c).

our Part 27 rules for the Advanced Wireless Services outline a coordination process that permits both grandfathered Federal and non-Federal users to operate in the AWS-1 band.[154] In general, our coordination rules take as foundational that all parties subject to coordination will work in good faith to accurately assess the potential for interference. We aim to provide flexibility to the parties involved to conduct the interference analysis in an agreed-upon manner with an eye towards continually improving accuracy.[155]

57. Based on the Commission's experience with coordination, we tentatively agree with NTIA's sharing framework recommendation, which is premised on coordination (assuming sharing is necessary because relocation is not possible). In seeking comment on how to further develop and implement NTIA's recommended sharing framework, we recognize, as did NTIA's recommendation, that some criteria, procedures and mechanisms would be codified in the Commission's rules, while others would be codified in the NTIA manual.[156]

a. Protection Zones for Incumbent Federal Operations

58. The framework for Federal and non-Federal shared operations in the band is predicated on defined Protection Zones where commercial operations must meet strict coordination standards so as to protect incumbent co-channel Federal polar orbiting satellites and adjacent Federal geo-stationary operations in the 1675-1695 MHz band.[157] NTIA's earlier Fast Track report had identified the 1695-1710 MHz band for reallocation subject to 18 Exclusion Zones that covered larger geographic areas where non-Federal operations would be prohibited, thereby limiting commercial operations in the band.[158] WG1 conducted further analyses, and refined the technical parameters for conducting interference analyses, including LTE system parameters, propagation models, and Federal systems parameters to more accurately depict real world operation of LTE networks and their interaction with the incumbent systems. WG1's analysis also assumed that 1695-1710 MHz would be a mobile uplink band. Overall, the analysis resulted in a significant reduction in the anticipated distance at which an LTE system would potentially cause harmful interference to a Federal earth station receiver.[159] Additionally, given the wide range of measures that can be taken to further mitigate the potential interference, WG1 recommended the use of Protection Zones (coordination areas) rather than Exclusion Zones. The WG1 effort focused on the 18 sites identified in the *NTIA Fast Track Report* and some locations the *NTIA Fast Track Report* considered as single locations but included multiple antennas that are widely spaced.[160] With the reductions in the separation distances in the *NTIA Fast Track Report*, the *WG1 Final Report* notes that it may be necessary to list each of these antennas separately to ensure adequate protection.[161] Additionally, Government participants in WG1 identified additional sites that they believe warrant protection and stated that they

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[154] *See* discussion *infra* at ¶ 67 and 47 C.F.R. § 27.1134 (Protection of Federal Government Operations).

[155] *See WG1 Final Report* at 5 ("[t]hese results may be further refined on a case by case basis as transition discussions begin.")

[156] We also note that some matters may be appropriately addressed as part of the FCC-NTIA coordination process and/or in jointly released documents.

[157] *WG1 Final Report* at 2. The GOES satellites, though primarily operating in spectrum adjacent to 1695-1710 MHz, overlap with the 1695-1710 MHz band by 250 kilohertz. For purposes of the interference analysis, they are treated as co-channel. *See also WG1 Final Report,* Appendix 1 (A Framework for Federal Spectrum Sharing Rules for the 1695-1710 MHz Band).

[158] *NTIA Fast Track Report* at 2-1.

[159] *WG1 Final Report* at 3-4.

[160] *Id.* at 4.

[161] *Id.*

intend to raise the issue with NTIA.[162] The agencies identified an additional 22 sites operating in and adjacent to the 1695-1710 MHz band. On June 18, 2013, WG1 reported to the CSMAC that it completed its analysis to compute protection distances for the new sites and consolidated sites with overlapping zones, reducing the number of new sites to nine for a total of 27 sites that require protection.[163] Although the full CSMAC and NTIA have not yet approved the revised list, our proposal below assumes that CSMAC and NTIA will approve/endorse a final list of Protection Zones substantially as recommended by Working Group 1 but interested parties should be aware that neither assumption can be guaranteed, in which case the final list of Protection Zones could differ from the proposal below.

59. As previously stated, reflecting WG1's latest analysis, we are proposing to allow uplink/mobile and low power fixed operations in this band when enabled by a base station(s) that is (1) not located within a Protection Zone, or (2) located within a Protection Zone and successfully coordinated with Federal incumbents.[164] These Protection Zones are depicted in Table 1 below, which provide maximum protection distances that we propose to adopt. We seek comment on this proposal.

[162] *Id.* at 4, n.4.

[163] CSMAC Working Group 1 Report, 1695-1710 MHz Meteorological-Satellite (draft, June 18, 2013), available at http://www.ntia.doc.gov/other-publication/2013/csmac-working-group-1-wg-1-report-18-june-2013.

[164] Such base stations would not transmit in the 1695-1710 MHz band. Rather, these stations would enable uplink/mobiles within range to transmit in the 1695-1710 MHz band.

Fast Track Report Sites				
Earth Station Location	**Latitude**	**Longitude**	**Maximum Protection Distance (km)**	**Population Impacted (%)**
Wallops Island, Virginia	375645 N	752745 W	30	0.0088
Fairbanks, Alaska	645822 N	1473002 W	20	0.0329
Suitland, Maryland	385107 N	765612 W	98	3.129
Miami, Florida	254405 N	800945 W	51	1.5114
Hickam AFB, Hawaii	211918 N	1575730 W	28	0.3866
Sioux Falls, South Dakota	434409 N	963733 W	42	0.0874
Cincinnati, Ohio	390610 N	843035 W	32	0.5041
Rock Island, Illinois	413104 N	903346 W	19	0.1180
St. Louis, Missouri	383526 N	901225 W	34	0.6650
Vicksburg, Mississippi	322047 N	905010 W	16	0.0119
Omaha, Nebraska	412056 N	955734 W	30	0.2596
Sacramento, California	383550 N	1213234 W	55	0.9022
Elmendorf AFB, Alaska	611408 N	1495531 W	98	0.1664
Andersen AFB, Guam	133452 N	1445528 E	42	0.0683
Monterey, California	363534 N	1215120 W	76	0.3294
Stennis Space Center, Mississippi	302123 N	893641 W	57	0.2465
Twenty-Nine-Palms, California	341746 N	1160944 W	80	0.2191
Yuma, Arizona	323924 N	1143622 W	95	0.1321
				8.78
New Sites				
Barrow, Alaska	711922 N	1563641 W	35	0.00183
Boise, Idaho	433542 N	1161349 W	39	0.20683
Boulder, Colorado	395926 N	1051551W	2	0.0001
Columbus Lake, Mississippi	333204 N	883006 W	3	0.0001
Fairmont, West Virginia	392602 N	801133 W	4	0.00210
Guaynabo, Puerto Rico	182526 N	660650 W	48	0.6169
Kansas City, Missouri	391640 N	943944 W	40	0.4799
Knoxville, Tennessee	355758 N	835513 W	50	0.1679
Norman, Oklahoma	351052 N	972621 W	3	0.0001
				1.48
			Total	**10.26**

Table 1. Protection Zones for Federal Earth Stations

b. Coordination Interference Analysis; Potential Refinements

60. As noted above, to create this coordination process for Federal Earth Stations, NTIA and the FCC in conjunction with the affected Federal agencies, need to establish a nationally-approved interference prediction model, associated input parameters, and distribution of aggregate IPSD limits among commercial licensees.[165] WG1 established interference protection criteria (defined as IPSD limits), setting permitted power spectral density levels at the inputs to the protected meteorological satellite receivers.[166] WG1 adopted an interference-based approach to coordination, requiring that the commercial operator not be allowed to operate within the defined Protection Zones unless an engineering analysis demonstrated that the proposed operations would not cause interference in excess of the prescribed power spectral density limits. The Protection Zones themselves were developed based on an interference analysis of a theoretical grid-based network of base stations, according to the methodology

[165] *See* quotation in ¶ 55, *infra*.

[166] *See, e.g., WG1 Final Report*, App. 2.

documented in the report. NTIA recognized that some of the initial technical parameters and techniques that WG1 developed were conservative, but adequate for providing a first order estimation of potential interference sufficient for triggering coordination.[167] Potential refinements include interference protection criteria, application thereof where multiple operators may coexist with a single Federal receiver, refinement of the propagation model, and use of clutter and terrain.[168] We therefore seek general comment on the interference analysis described in the *WG1 Final Report*, including potential clarifications or solutions to unresolved issues identified in the report. We also seek comment on potential refinements to this methodology.

61. WG1 placed particular emphasis on the interference prediction model to be used for the analysis as a critical area in need of improvement.[169] There was considerable discussion on the appropriate propagation model to incorporate in the analysis. The central issues raised in determining the appropriate propagation model were how to account for clutter losses and time variability of interference, and predicting the impact of the length of the transmission paths.[170] With respect to the proper propagation modeling to be used, the *WG1 Final Report* noted that "differences in propagation models and application of terrain and clutter losses has a dramatic impact on results and can vary results by as much as 40 dB."[171] Incorporation of appropriate improvements in the methodology and the accuracy of the technical parameters used could free up substantial proportions of the Protection Zones for commercial operations. Ultimately, the propagation model used to determine the distances for the Protection Zones was the point-to-point Irregular Terrain Model ("ITM").[172] WG1 was unable to agree upon the incorporation of clutter losses in the ITM model and concluded that "the analysis results would be accurate enough for the intended purpose of recommending Protection Zones."[173] Is the ITM model, configured as described in the *WG1 Final Report*, sufficient for the purposes of coordination? How should clutter be addressed? What other propagation models, as defined by standards bodies or other organizations, are appropriate for use in coordination? Can measurement data be used in place of predictions for particular sites or situations? Are there other commercial software products that would be more suitable to conduct the interference analyses required? A number of concerns about the propagation model are noted in the discussion in Appendix 7, particularly concerns from the Federal users about long term fading effects and atmospheric ducting which may under predict interference in some of the models proposed by industry. We seek comment on these issues and encourage proponents of any particular propagation model(s) to specifically address any concerns previously raised by Federal or non-Federal users, as applicable.

62. WG1 adopted interference protection criteria based on an interference-to-noise ratio ("I/N") of -10 dB. In its report, WG1 identified that further consideration was needed regarding the application of the criteria. The interference protection criterion WG1 developed for its analysis is fairly well-defined in the report. Specifically, the total power level of acceptable interference to government receivers was limited to 10 dB below the protected receiver's effective system noise floor as measured at the receiver IF stage.[174] The *WG1 Final Report* specifically raised the question of whether a 10 dB I/N

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[167] *Id.* at 4. "[I]it was determined that the analysis results would be accurate enough for the intended purpose of recommending Protection Zones and that further refinement of the interference analysis was not necessary *at this time*." *Id*. (emphasis added).

[168] *See generally id.* at 2.

[169] *Id.*.

[170] *Id*, Appendix 7 at 5-6.

[171] *Id.* at 4.

[172] *Id.*, Appendix 7 at 5.

[173] *Id.* at 4, also noting "and that further refinement of the interference analysis was not necessary at that time."

[174] *Id.*, Appendix 7 at 9. *See also WG1 Final Report* at 2 and Appendix 2 (Calculation of IPSD).

target would be sufficient in the presence of multiple commercial operators.[175] One case where this may occur is when a protected receiver is located near the geographic boundary between two commercial operators where the interference could aggregate from multiple service providers.[176] Should the interference levels provided in Table 4 of Appendix 7[177] of the *WG1 Final Report* be adopted as the required protection criteria for a single commercial operator?[178] That is, a request for coordination would not be rejected as long as the predicted aggregate interference from that operator fell below the levels in Table 4. Alternatively, should an I/N of -10 dB be applied to the total interference from all operators whose base stations lie within the protection zone? If so, how should the interference be apportioned among multiple operators? We seek comment on the appropriate interference criteria. We also seek comment on how to apply these interference criteria in the case of multiple operators.

63. The *WG1 Final Report* recommended that coordination within the Protection Zones address both in-band and adjacent band interference issues but did not clearly identify requirements for the protection of adjacent operations. We believe that clarifying this recommendation would be helpful to both Federal and non-Federal operators. For example, should protection distances or interference criteria be different for adjacent channel operations versus co-channel operations? The only mention of adjacent channel operations refers to the GOES satellite earth stations. It is clear, that not only must the POES systems operating in the 1695-1710 MHz band be protected, but also the GOES systems operating primarily in the 1675-1695 MHz band. While WG1 categorized the GOES system as an adjacent band operation, some of the operations are actually co-channel. The emission of GOES systems overlaps into the 1695-1710 MHz band by 250 kilohertz. The methodology used in the interference analysis accounts for both the selectivity of the satellite receivers and the out-of-band emission levels of the mobiles operating outside of the earth station's operating band. Thus, there are existing mechanisms in the methodology that can address adjacent channel concerns. There is a question as to whether purely adjacent channel operations could exist. For example, are there cases where GOES and POES receivers are not co-located or all POES carriers are not in use at a particular site and thus may not be co-channel to a particular commercial operator using one of the three 5 megahertz blocks proposed under the band plan? Are further refinements to the methodology needed to account for adjacent channel scenarios? We propose that all commercial operators within the specified protection distance of a protected receiver, whether they are co-channel or adjacent channel (operating within the 1695-1710 MHz band) coordinate with the Federal users in the band. Should this proceeding be used to establish Protection Zones and guidelines for adjacent channel operations as well?

64. One example of an expected change to the methodology is the commercial system base station configuration. In developing the interference calculation methodology for coordination, WG1 performed a basic analysis using a network of base stations placed along a uniform grid. However, it is expected that any coordination will use the actual site locations for planned base station deployments. This raises the question of whether other modifications of the methodology may be needed to provide a more realistic assessment of the interference calculation. With the goal of facilitating a fair and equitable coordination process, should the Commission jointly establish with NTIA minimum requirements for the interference analysis and/or a set of best practices for conducting the engineering analysis? If so, what requirements are needed? Are there additions or improvements to these parameters that should be considered? Are there any other technical requirements or techniques that should be set in this proceeding? Are there established models and methodologies in existing standards or regulatory bodies that could be adopted? Commenters are asked to discuss the pros and cons of the recommended

[175] *Id.*, Appendix 1-1 (NTIA and FCC, in coordination with the affected Federal agencies, will establish acceptable methods for distribution of the aggregate IPSD limits among commercial wireless licensees).

[176] *Id.*, Appendix 1-1.

[177] *Id.*, Appendix 7 at 9. *See also WG1 Final Report* at 2 and Appendix 2.

[178] *See Id.,* Appendix 7 Table 4. *See also WG1 Final Report* at 2 and Appendix 2 (IPSD calculation).

methodology, and provide detailed arguments on any improvements that can be made to the recommended analysis.

c. Coordination Procedures

65. We seek comment on what coordination procedures would best effectuate the recommendations of the *WG1 Final Report*. As noted above, the Commission has employed a variety of coordination models in different wireless and satellite services. We seek comment on whether any existing coordination models – or elements of those coordination models – may be applicable to the 1695-1710 MHz band. To the extent that existing models do not or only partially apply, we seek comment on other approaches that address the unique circumstances surrounding Federal/non-Federal sharing in this band. We especially seek comment on any and all issues related to coordination that are expressly mentioned in the *WG1 Final Report.*

66. *Process Initiation*. We ask commenters to propose methods by which a licensee can initiate the coordination process. Should we provide any guidance on coordination timelines? Should we set a specific time frame by which licensees are required to initiate the coordination process, *i.e.*, how much advance notice should a licensee provide prior to commencing operations? Should there be time limits established on various phases of the coordination process itself? If a licensee intends to alter operating plans after reaching a coordination agreement, should it have to fully re-coordinate with the applicable Federal agencies? How should the Commission coordinate with NTIA in facilitating an effective coordination procedure, consistent with our respective roles under the Spectrum Act?

67. *AWS-1 Precedent.* In particular, we seek comment on whether the coordination procedures established for non-Federal licensees to gain early access to adjacent AWS-1 uplink band (1710-1755 MHz) could serve as a model for coordination in the 1695-1710 MHz band. In AWS-1, recognizing the importance of protecting the Federal operations while opening up the spectrum to newly licensed commercial users, the Commission worked closely with NTIA to craft a coordination procedure before the full band transition was completed. Prior to operating, the AWS-1 licensee was required to contact the appropriate Federal agency to get information necessary to perform an interference analysis.[179] The AWS-1 licensee would first perform the interference analysis and then send it to the appropriate designated agency contact for review.[180] At the end of 60 days, if the Federal agency raised no objection, the AWS-1 licensee was permitted to commence operations.[181] NTIA required Federal agencies to cooperate with AWS-1 licensees and provide, within 30 days of a request from an AWS-1 licensee wishing to operate within a coordination zone, site-specific technical information that would allow the licensee to complete the interference analysis.[182] NTIA also required agencies that disapprove of an interference analysis submitted by an AWS-1 licensee to provide the licensee with a detailed rationale for its disapproval.[183] Finally, Federal agencies were required to work in good faith to identify the source of the harmful interference and work with AWS-1 licensees to eliminate or mitigate the interference.[184] Would a similar procedure work here? If so, what exact procedures and timelines would be appropriate? What is the best way to ensure balanced treatment of Federal and non-Federal users' interests? Commenters are asked to provide the reasoning for their suggestions, and to discuss our authority to implement these suggestions, where applicable.

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[179] The Federal Communications Commission and the National Telecommunications and Information Administration—Coordination Procedures in the 1710-1755 MHz Band, *Public Notice,* 21 FCC Rcd 4730 (2006) (*AWS-1 Coordination Procedures PN*).

[180] *Id.,* 21 FCC Rcd at 4733.

[181] *Id.*

[182] *Id.*

[183] *Id.*

[184] *Id.*

68. *Appeals*. We seek comment on whether we should adopt an appeals process for licensees whose coordination proposals are rejected by the government agency or the final decision maker in the coordination process. If so, who should adjudicate the appeals and what should be the criteria for reversal?

69. *Interference Power Spectral Density ("IPSD") Limits.* To facilitate coordination, the *WG1 Final Report* also recommended, to the extent possible, an automated process with the ability to assess if proposed commercial networks will meet predetermined IPSD limits.[185] We seek comment on the extent to which such a process is possible and, if so, how best to implement this recommendation. Are there automated processes already in place that we could adapt to this situation? How much of the coordination process can be automated? What are the challenges associated with such an approach and are they surmountable? Would the benefits of implementation exceed the associated costs? The *WG1 Final Report* also recommended establishment of a testing program that would "demonstrate the viability and effectiveness of proposed protection and mitigation methods before commercial licensees may begin operations within a Protection Zone."[186] We seek comment on establishing such a program. What would it entail? Are there existing testing programs that can serve as a model?

70. *Enforcement.* The *WG1 Final Report* states that clear enforcement procedures must be established in order to protect Federal operations within the Protection Zones.[187] We seek comment on ways to deter and terminate commercial operations from causing harmful interference to Federal operations through violations of the rules or of a coordination agreement. How should commercial operators be notified to cease operations in such a situation? What can or should be done in the event that there is a dispute between the parties as to the actual source of interference? Do our existing enforcement procedures provide adequate remedies or do the special circumstances of this band require additional enforcement mechanisms? What remedies, above and beyond notice to stop operations, are appropriate in such circumstances? Would fines and/or loss of license be appropriate in this case? Commenters are encouraged to propose adequate enforcement mechanisms that will ensure that incumbent Federal operations do not suffer harmful interference.

71. The *WG1 Final Report* notes that real-time monitoring of IPSD limits with automated adjustments would be ideal in order to ensure that the established interference limits are not being exceeded.[188] Ideally, this real-time monitoring could quickly detect violations and facilitate immediate adjustments to commercial operations so as to prevent harmful interference to Federal operations. However, a real-time monitoring system would not necessarily determine the source of the problem. We seek comment on whether establishing a real-time monitoring mechanism is possible and feasible. If so, commenters are invited to describe how this can be accomplished.

d. Relocating Federal government receive locations in the 1695-1710 MHz band

72. Some of the Protection Zones set forth in Table 1 above are located in highly populated urban areas where there is a continuously rising demand for commercial broadband services.[189] NTIA did not have the opportunity to study the possibility of relocating Federal receive sites in the band.[190] Accordingly, and in response to an industry suggestion, NTIA recommends that before auction, the feasibility and cost impact of relocating Federal operations in the 1695-1710 MHz band be explored for

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[185] *WG1 Final Report* at 2 and App. 2 (Calculation of IPSD).

[186] *Id.* at 2.

[187] *Id.* at 2.

[188] *Id.* at 2.

[189] *Id.* at 7.

[190] *Id.* at 7.

the top 100 markets, with the goal of creating an environment where there would be less restricted commercial use of the band within the Protection Zones.[191] If any studies consistent with this recommendation are conducted, we intend to incorporate them into the record of this proceeding. Further, NTIA has identified some challenges that a Federal receiver relocation study should address. These include ensuring that:

> 1) a receive site is located in a suitable area to capture necessary data, 2) the location is in a rural enough area to minimize the size of or need for Protection Zones in high population areas, 3) reliable power is available, 4) adequate and redundant backhaul facilities can be established to ensure highly reliable reception of data, 5) any delay in receiving raw satellite data introduced by a remote receiver is minimal and does not negatively impact the government mission, and 6) any suitable site is able to meet applicable environmental statutory regulatory requirements to build-out such a facility.[192]

We seek comment on how to address these challenges, again, within the restricted time frame. Commenters should also address, if possible, anticipated relocation/installation costs and timelines for relocation. We also ask commenters to address whether, if we proceed to formulate regulations and conduct an initial auction based on the recommended Protection Zones, it still would be appropriate and feasible to conduct the relocation study thereafter, or whether there would be no benefits to such a study subsequent to an initial auction of 1695-1710 MHz with the associated Protection Zones.

2. 1755-1780 MHz

73. NTIA established CSMAC Working Groups 2-5 to analyze ways to facilitate commercial operations in the 1755-1780 MHz band.[193] To date, NTIA has endorsed the recommendations of Working Group 2 (Federal law enforcement surveillance systems, explosive ordnance disposal systems, and other short distant links). We anticipate that Working Groups 3-5 will, in the coming months, present their recommendations to NTIA,[194] which will, in turn, make recommendations addressing the remaining Federal systems in the band to the Commission. We seek comment on appropriate relocation or sharing arrangements for these systems if relocation is not feasible. As noted above, we intend to incorporate NTIA's forthcoming recommendations into the record of this proceeding and anticipate that commenters will discuss NTIA's recommendations in comments, reply comments, or *ex parte* presentations, as appropriate, depending on the timing.

74. As mentioned above, NTIA endorses the recommendations of WG2 that Federal law enforcement surveillance systems, explosive ordnance disposal systems, and other short distant links can be relocated out of the band within five years, once funding and comparable spectrum are available.[195] NTIA also endorses Working Group 2's recommendations ranking Economic Areas to be transitioned according to industry implementation priorities.[196] NTIA notes that while industry would prefer Federal relocation based on the ranking of economic areas ("EAs") on the suggested list, the agencies will need to establish their timelines for clearing based on their operational requirements and that, in some cases, operational needs may require clearing larger geographic areas.[197] Accordingly, NTIA clarifies that the prioritized list of EAs will serve as an input for consideration as the agencies develop their transition

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[191] *Id.* at 7.

[192] *Id.* at 7.

[193] *See, e.g., WG2 Final Report* at 4.

[194] *See NTIA Recommendations Letter* at 1.

[195] *WG2 Final Report* at 6.

[196] *Id.* at 6-12.

[197] *See NTIA Recommendations Letter* at 2.

plans.[198] Furthermore, due to the agencies' challenges in planning and implementing the transition of these systems without impacting operational requirements, NTIA states that prospective bidders should understand that agencies may not be able to vary significantly from the timelines in their published transition plans, unless the Office of Management and Budget ("OMB") approves accelerated implementation payments.[199]

75. In the event that clearing is not feasible, we must prepare for the possibility that CSMAC may present a "hybrid" recommendation, in which some operations would be relocated,[200] some would share the band with commercial licensees, and some (in geographic exclusion zones) would not share the band.[201] If so, and if the NTIA endorses the CSMAC recommendations, we could adopt Protection Zones, Exclusion Zones, and other sharing measures to clearly define the potential for Federal and commercial operations to share the 1755-1780 MHz band (spectrally, geographically, temporally, dynamically, or any combination of these). We seek comment on what sharing measures would appropriately maximize commercial access to the spectrum. We intend to incorporate NTIA's forthcoming recommendations into the record of this proceeding and anticipate that commenters will discuss NTIA's recommendations in comments, reply comments, or *ex parte presentations*, as appropriate, depending on the timing. We also expect that commenters will discuss the CSMAC's specific recommendations as well as various implementation details, including on the coordination processes required for shared use of the band.

76. Anticipating the possibility that CSMAC and NTIA are unable to recommend clearly defined sharing parameters, we also seek comment on whether to issue "overlay" licenses that would permit new licensees to gain access to the 1755-1780 MHz band only if they are able to reach coordination agreements with affected Federal users, *i.e.*, "operator-to-operator" coordination.[202] Under this alternative, we would adopt rules to license the 1755-1780 MHz band on a non-harmful interference basis to, and subject to accepting harmful interference from, Federal incumbents that are not relocating or, if they are relocating, until they are relocated under an approved plan.[203] We seek comment on this proposal.[204]

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[198] *See WG2 Final Report* at 12. NTIA further recommends that the FCC include the proposed prioritization list in this Notice of Proposed Rulemaking to give broad notice to commercial operators regarding the list. See *NTIA Recommendations Letter* at 2-3.

[199] NTIA must make the transition plans, with the exception of classified or other sensitive information, publicly available on its website no later than 120 days before the auction start date. 47 U.S.C. § 923(h)(5). OMB may, in consultation with NTIA, make additional payments to eligible Federal entities that are implementing a transition plan in order to encourage such entities to complete the implementation more quickly, thereby encouraging more timely access to the eligible frequencies. *Id.* at §§ 928(f)(2)), 923(g)(3)(A)(v).

[200] *See supra* note 92.

[201] *See supra* note 93.

[202] *See e.g.*, 47 C.F.R. § 27.53(h)(4). *See also AWS-4 Service Rules R&O*, 27 FCC Rcd. at 16149 ¶ 109 (noting an operator-to-operator agreement between DISH and Federal users of the adjacent 2200-2290 MHz band, which NTIA transmitted to the Commission).

[203] The Spectrum Act includes provisions that condition transfers from the Spectrum Relocation Fund to a Federal incumbent conditioned on (1) the Federal incumbent's submission of a transition plan, (2) the approval of the transition plan by a newly created Technical Panel, and (3) the publication of the plan on NTIA's Website. 47 U.S.C. § 928(c)(2).

[204] For a recent example of such an overlay license approach, see Amendment of Parts 1 and 22 of the Commission's Rules with Respect to the Cellular Service, Including Changes in Licensing of Unserved Areas, *Notice of Proposed Rulemaking and Order*, 27 FCC Rcd 1745 (2012). *See also Fresno Mobile Radio, Inc. v. FCC,* 165 F.3d 965 (D.C. Cir. 1999).

77. Finally, as another alternative, we seek comment on the possibility that the 1755-1780 MHz band remain for exclusive Federal use and how that would affect the band configurations described in section III.D above (Band-Use Configurations) and our Spectrum Act obligation to identify an additional 15 megahertz of contiguous spectrum to allocate and auction for commercial use.

a. Industry Roadmap

78. As noted above,[205] T-Mobile recently filed a wireless industry proposal (Industry Roadmap) for making the 1755-1780 MHz band available for commercial use in time to auction the band at the same time as the 2155-2180 MHz band, which the Spectrum Act requires to be auctioned and licensed by February 2015.[206] The Industry Roadmap assesses Federal operations in the 1.7 GHz band and proposes a combination of sharing, relocation, and channel prioritization for the majority of Federal operations in the 1755-1850 MHz band to provide industry early access to the 1755-1780 MHz portion of the band. The Industry Roadmap also acknowledges that additional study is necessary. We add this filing to the record of this proceeding and seek comment on the Industry Roadmap.

b. DoD Alternative Proposal

79. Also, as noted above,[207] on July 22, 2013, NTIA transmitted to the Commission correspondence to NTIA from the Chief Information Officer of the DoD that outlines a proposal for making 1755-1780 MHz available for auction and licensing in the near term, while protecting critical DoD capabilities and preserving the necessary flexibility to address the long-term status of the 1780-1850 MHz portion of the band.[208] NTIA states that it only recently received this proposal and is not in a position to endorse it at this time.[209] According to DoD, under its proposal:

> 1. DoD retains access to the 1780-1850 MHz band
> 2. DoD is provided shared access to 2025 - 2110 MHz band, removing the need to relocate broadcasters
> 3. DoD is not provided access to 5150-5250 MHz for telemetry, leaving the band available for Wi-Fi consideration
> 4. DoD will modify selected systems to operate at both 1780- 1850 MHz & 2025-2110 MHz. These include Small Unmanned Aerial Systems, Tactical Targeting Network Technology, Tactical Radio Relay, and High Resolution Video systems
> 5. DoD will modify selected systems to operate in other existing Federal bands as identified: Precision Guided Munitions to 1435- 1525 MHz, Point-to-Point Microwave Links to 7125- 8500 MHz, and DoD Video Surveillance/Robotics to 4400-4940 MHz
> 6. DoD systems will share spectrum with commercial users in the 1755-1780 MHz band as follows: Satellite Operations (SA TOPS), Electronic Warfare (EW), Air Combat Training System (ACTS) (where required), and Joint Tactical Radio System (JTRS) at 6 sites.

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[205] *See supra* ¶ 22.

[206] Letter from Steve Sharkey, T-Mobile U.S., Inc., to Marlene H. Dortch, Secretary, Federal Communications Commission, WT Docket Nos. 10-123, 07-195 (dated Jun. 24, 2013), at Attachment, *Industry Roadmap to Assessing the 1755-1850 MHz Band* (assesses the entire 1755-1850 MHz band in a manner that considers making the lower band (1755-1780 MHz) available first, but also addresses the rest of the band up to 1850 MHz in order to meet Federal agencies' concerns. The plan takes into account the NTIA instructions given to the CSMAC Working Groups, which were directed to consider a plan that lowers the repurposing costs and/or improves or facilitates industry access while protecting Federal operations from adverse impact). *See id*., T-Mobile Letter, at 1.

[207] *See supra* ¶ 23.

[208] *NTIA July 2013 Letter* at 1. *See also id.*, Enclosure 1 (Letter from Teresa M. Takai, Chief Information Officer, DoD, to Lawrence E. Strickling, Assistant Secretary for Communications and Information, NTIA, U.S. Dept. of Commerce (July 17 2013).

[209] *NTIA July 2013 Letter* at 1.

7. DoD will compress remaining operations into 1780 - 1850 MHz
8. Estimate of DoD costs is* $3.5B for 25 MHz.[210]

In the interest of obtaining input from all interested stakeholders on this proposal, as NTIA has requested,[211] we are adding this correspondence to the record of this proceeding and seeking public comment on it as part of the AWS-3 rulemaking.

F. Increased Federal Access to Spectrum through Sharing

80. The 2013 Presidential Memorandum strongly encourages the FCC, in collaboration with NTIA, where appropriate, to enable innovative and flexible commercial uses of spectrum, including broadband, to be deployed as rapidly as possible. The 2013 Presidential Memorandum also encourages a number of steps including identifying spectrum allocated for non-Federal uses that can be made available for Federal agencies, on a shared or exclusive basis.[212]

1. Federal Use of AWS-3 Spectrum including 2155-2180

81. Shared use of spectrum bands by Federal and non-Federal users could facilitate the increased use of "commercial-off-the-shelf" ("COTS") communication technologies to support important government missions, including military uses. By allowing government users to tap into global scale economies of the commercial market, the use of COTS devices, networks, and components could potentially help improve the performance and cost of certain government communications systems, where appropriate.[213] Moreover, the use of such technologies might also increase electromagnetic compatibility with commercial uses, thereby facilitating greater shared use of spectrum. Accordingly, we seek comment on whether Federal users should be able to access the AWS-3 band(s), including spectrum not presently allocated for Federal use (*e.g.*, 2155-2180 MHz), on Federal lands or properties that are generally unserved by commercial wireless networks. We seek comment on the benefits and drawbacks of this proposal. We would expect that such locations might include, for example, military training ranges in otherwise unpopulated areas and that Federal use of the band would be on terms and conditions consistent with the commercial service rules we establish in this proceeding and in future proceedings. We seek comment on specific locations where such access would be appropriate or inappropriate, as well

[210] *See NTIA July 2013 Letter*, Enclosure 1.

[211] *See NTIA July 2013 Letter* at 1. NTIA notes that it has not forwarded two attachments to the DoD letter that have not yet been approved for public release, but that these attachments will be submitted when such approval is received. *Id* at n.1.

[212] *See* 2013 Presidential Memorandum at Sec. 7((b).

[213] *See, e.g.*, Implementing Public Safety Broadband Provisions of the Middle Class Tax Relief and Job Creation Act of 2012, PS Docket No. 12-94, Comments of Ericsson at 2-3 (filed May 24, 2013) (advising Commission to maintain as a key guiding principle in developing the rules for a nationwide public safety network, the ability of public safety providers to use commercial off-the-shelf-technologies; Reply Comments of Oceus Networks at 3-5 (filed Jun. 10, 2013) (states that in developing LTE-based systems for the U.S. military, it understands that deviation from standards will impact the availability of devices, increase costs, and prevent public safety users from fully leveraging the commercial industry's research and development investments and that failure to adhere to commercial standards will prevent public safety's ability to cost-effectively take advantage of future iterations of LTE and standard commercial technologies). *See also* U.S. Department of Defense, DOD Releases Commercial Mobile Device Implementation Plan, News Release No. 108-13 (Feb. 26, 2013), http://www.defense.gov/releases/release.aspx?releaseid=15833, citing DoD Mobile Device Strategy and Implementation Plan, http://www.defense.gov/news/dodmobilitystrategy.pdf and http://www.defense.gov/news/DoDCMDImplementationPlan.pdf ("The CMD Implementation Plan establishes the framework to equip users and managers with mobile solutions that leverage commercial off-the-shelf products, improve functionality, decrease cost, and enable increased personal productivity." *Id*., Attach. 1 at 1. Researches Aim to Bring Smart Phones to Warfighters, News, American Forces Press Service (Dec. 2, 2010) http://www.defense.gov/news/newsarticle.aspx?id=61917.

as comment on a regulatory framework that would enable such use in a manner consistent with the Communications Act and the ongoing commercial use of these bands. We seek specific comment on any amendments to Section 2.103 of our rules or any other rules that might be appropriate for Federal use of such bands.[214]

2. Increased Federal access 2025-2110 MHz and 5150-5250 MHz bands

82. As noted above, NTIA indicates that in certain Federal relocation scenarios, DoD and other Federal incumbents in the 1755-1850 MHz band would need access to other bands specifically, that certain aeronautical systems could relocate to the 2025-2110 MHz and 5150-5250 MHz bands.[215] NTIA subsequently transmitted a more recent proposal from DoD that implicates the 2025-2110 MHz band but not the 5150-5250 MHz band.[216] We seek comment on these and any alternative relocation concepts, including the viability of repacking incumbents into the 1780-1850 MHz band, recognizing that most commenters will not have access to information about Federal system characteristics or mission requirements. Nonetheless, we seek comment on the potential benefits and costs of implementing such a relocation, particularly with respect to existing and potential future uses of those bands. In section III.I below (Allocation Matters) we seek comment on any changes to the Table of Frequency Allocations that would be necessary.

G. Technical Rules

83. Our rules for the AWS-3 bands must take account of the potential for permissible operations to cause harmful interference to operations in other service areas, blocks or bands. In the proposed band plan, AWS-3 spectrum would be licensed in five-megahertz blocks using EA licenses.[217] Interference must therefore be considered between adjacent AWS-3 blocks, *e.g.*, between 2155-2160 MHz and 2160-2165 MHz, as well as between AWS-3 operations in the 2155-2180 MHz band and services in the adjacent AWS-1 and AWS-4 bands. Similarly, AWS-3 mobiles could interfere with proximate Federal or non-Federal operations in the same or nearby bands.[218]

84. Two predominant types of adjacent channel interference can occur. The first is caused by out-of-band emissions ("OOBE") that fall directly within the passband of an adjacent-band receiver.[219] Such emissions cannot be "filtered out," and can only be mitigated by: (1) providing sufficient physical separation between the transmitter and receiver; and/or (2) suppressing OOBE at the source (*i.e.*, the transmitter). The second type of interference is caused by "receiver overload." Receiver overload interference occurs when a strong signal from an adjacent band transmission falls just outside the passband of a receiver, where the front-end filter of the receiver can provide only limited attenuation of the unwanted signal. There are three ways to minimize receiver overload interference: (1) improve the receiver performance including filtering; (2) limit the power of the transmitter; and (3) provide physical separation between the transmitter and receiver.

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[214] 47 C.F.R. § 2.103 (Federal use of non-Federal frequencies).

[215] *See, e.g.*, *supra* ¶ 13.

[216] *See supra* ¶ 79.

[217] *See supra* ¶ 48.

[218] In addition to technical rules, we are proposing license conditions and prior-coordination requirements to protect Federal operations. *See supra* section III.E (Federal/non-Federal Sharing and Coordination).

[219] A passband is "[t]he portion of spectrum, between limiting frequencies, that is transmitted with minimum relative loss or maximum relative gain." *See* Alliance for Industry Telecommunications Solutions, *Glossary*, available online at: http://www.atis.org/glossary/definition.aspx?id=2835.

85. We seek comment on possible technical and operational rules to protect these various services from harmful interference.[220] Where possible, we propose to adopt for AWS-3 the same technical requirements as apply to AWS-1, where our experience indicates that the requirements have facilitated good service while minimizing undesirable interference, and to AWS-4. We are especially interested in whether specific AWS-3 spectrum considerations may warrant different requirements. We also ask commenters to address any specific technical rules that would be required for specific AWS-3 bands that they propose, other than the ones identified in this notice.

1. OOBE Limits

86. Section 27.53(h) of our rules requires that out-of-band emissions from transmissions in the AWS-1 bands be attenuated below the transmitter power (P) by a factor of not less than $43 + 10 \log_{10}$ (P) dB outside of the licensee's frequency block.[221] The same rule also specifies the measurement procedure required to determine compliance with this OOBE standard. We seek comment on extending the scope of section 27.53(h) to apply to AWS-3 as well, except as discussed otherwise below.

a. Interference between Adjacent Block AWS-3 Licensees

87. We anticipate that the characteristics of the future AWS-3 band systems will be essentially identical to those of AWS-1. For this reason, we believe that the normal OOBE limit of $43 + 10 \log_{10}$ (P) dB outside of the licensee's frequency block is appropriate to protect AWS-3 services operating in adjacent spectrum blocks. We seek comment on this conclusion. Commenters should discuss and quantify the costs and benefits of this and any proposed alternative approaches.

b. Interference with Services in Other Bands — Uplink Stations Operating in 1695-1710, 1755-1780 and 2020-2025 MHz

88. *Interference with operations below 1695 MHz.* The 1695-1710 MHz AWS-3 uplink band is adjacent to satellite downlink spectrum at 1675-1695 MHz, which is allocated for Federal and non-Federal satellite use. The rules for the AWS-1 uplink band at 1710-1755 MHz include an OOBE attenuation limit of our standard $43 + 10 \log_{10}$ (P) dB in order to protect satellite downlink spectrum currently below 1710 MHz. We believe that the services used in these adjacent AWS bands will be similar, and that the repurposing of 1695-1710 MHz essentially just shifts the boundary between AWS uplink and satellite downlink services down from 1710 to 1695 MHz. We therefore propose to apply the same standard OOBE limit of $43 + 10 \log_{10}$ (P) dB to future AWS-3 operations at 1695-1710 MHz with respect to spectrum below 1695 MHz.[222] We seek comment on this proposal. Commenters should discuss and quantify the costs and benefits of this proposal and any proposed alternative approaches.

89. *Interference with operations above 1710 MHz.* The 1695-1710 MHz AWS-3 uplink band is adjacent to AWS-1 uplink spectrum at 1710-1755 MHz. Because we anticipate that the services used in the adjacent AWS-3 and AWS-1 uplink bands will be similar, we propose that the appropriate OOBE

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[220] Operations that will eventually be relocated to other spectrum will also require protection until they do so. The mechanisms for such interim measures are addressed in section III.E (Federal/non-Federal Sharing and Coordination). In addition, some operations will continue to share these bands with AWS-3 services, and will require protection indefinitely. Several CSMAC working groups are studying co-channel sharing issues between future AWS-3 transmissions and Federal receivers, and we anticipate receiving recommendations on sharing measures. *See, e.g., supra* III.E.2 (Federal/non-Federal Sharing and Coordination, 1755-1780 MHz.

[221] 47 C.F.R. § 27.53(h). *See AWS-1 Service Rules R&O*, 18 FCC Rcd at 25198 ¶ 92. The same limit applies generally to AWS-4, but with an additional restriction to provide greater protection to the adjacent 1995-2000 MHz band. 47 C.F.R. § 27.53(h). 47 C.F.R. § 27.53(i) provides that the Commission has authority to require greater attenuation when an OOBE causes harmful interference.

[222] In addition to technical rules for AWS-3 operations in the 1695-1710 MHz band, we are proposing coordination requirements to protect certain Federal operations. *See supra* section III.E.1 (1695-1710 MHz – Federal/non-Federal Sharing Framework).

limit for the AWS-3 uplink band at 1695-1710 MHz is 43 + 10 $\log_{10}$(P) dB. We seek comment on this proposal. Commenters should discuss and quantify the costs and benefits of this and any proposed alternative approaches.

90. *Interference with operations below 1755 MHz.* The 1755-1780 MHz AWS-3 uplink band is also adjacent to AWS-1 uplink spectrum at 1710 -1755 MHz. Because we anticipate that the services used in the adjacent AWS-3 and AWS-1 uplink bands will be similar, we again propose that the appropriate OOBE limit for the AWS-3 uplink band at 1755-1780 MHz is 43 + 10 $\log_{10}$(P) dB. We seek comment on this proposal. Commenters should discuss and quantify the costs and benefits of this proposal and any proposed alternative approaches.

91. *Interference with operations above 1780 MHz.* The 1755-1780 MHz AWS-3 uplink band is adjacent to Federal operations at 1780-1850 MHz. We propose the standard OOBE limit of 43 + 10 $\log_{10}$(P) dB to address this adjacency, the same limit as the AWS-1 rules now provide for protecting Federal spectrum above 1755 MHz.[223] Like the situation described in paragraph 88 above, where the boundary between AWS use and adjacent spectrum moves, but there is no significant change in the uses on either side of the boundary, we believe it is appropriate to maintain the existing OOBE limit at the new boundary.[224] We seek comment on this proposal. Commenters should discuss and quantify the costs and benefits of this proposal and any alternative approaches.

92. *Interference with operations below 2020 MHz.* The 2020-2025 MHz AWS-3 uplink band is adjacent to AWS-4/MSS uplink spectrum at 2000-2020 MHz. The rules applicable to AWS-4 mobile stations operating in the 2000-2020 MHz band include a general OOBE attenuation of 43 + 10 $\log_{10}$(P) dB between the AWS-4 A and B blocks and above 2020 MHz. We anticipate the services in the adjacent AWS-3 and AWS-4 bands will be similar in use. Accordingly we propose that the OOBE limits on operations in the 2020-2025 MHz band mirror those of AWS-4, *i.e.*, 43 + 10 $\log_{10}$(P) dB below 2020 MHz. We seek comment on this proposal. Commenters should discuss and quantify the costs and benefits of this and any proposed alternative approaches.

93. *Interference with operations above 2025 MHz.* The 2020-2025 MHz AWS-3 uplink band is adjacent to the 2025-2110 MHz band, which includes BAS and Cable Television Relay Service ("CARS") operations, as well as certain Federal government operations. As noted above, for AWS-4 uplinks at 2000-2020 MHz, the Commission recently adopted the 43 + 10 $\log_{10}$(P) standard above 2020 MHz.[225] Prior to AWS-4, the same OOBE limit was applicable to 2000-2020 MHz MSS/ATC uplinks above 2020 MHz.[226] We also note that in the AWS-4 proceeding, the Engineers for the Integrity of Broadcast Auxiliary Services Spectrum ("EIBASS") stated that it did not object to a 43 + 10 $\log_{10}$(P) dB OOBE attenuation factor above 2025 MHz from low power, mobile type devices.[227] Accordingly, we propose to apply the standard 43 + 10 $\log_{10}$(P) OOBE limit above 2025 MHz and seek comment on this proposal. Commenters should discuss and quantify the costs and benefits of this and any proposed alternative approaches, and whether the closer proximity of the 2020-2025 MHz band warrants any additional protection.

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[223] 47 C.F.R. § 27.53(h).

[224] In addition to technical rules for AWS-3 operations in the 1755-1780 MHz band, we are proposing license conditions to protect Federal operations [in the 1755-1850 MHz band]. *See, e.g., supra* section III.E.2 (Federal/non-Federal Sharing and Coordination, 1755-1780 MHz).

[225] 47 C.F.R. §27.53(h). *See AWS-4 Service Rules R&O*, 28 FCC Rcd at 16146-47 ¶ 104.

[226] The former Ancillary Terrestrial Component (ATC) rules originally limited mobile emissions to 70 + 10 $\log_{10}$ (P) dB above 2025 MHz, but the Commission waived that limit in 2009 and applied the 43 + 10 $\log_{10}$ (P) dB standard. *See New ICO Satellite Services G.P.*, 24 FCC Rcd 171, 193-194 ¶ 61 (Intl. Bur. 2009) ("*ICO Waiver Order*").

[227] *See* EIBASS Comments, WT Docket No. 12-70 at 3 (filed May 17, 2012). EIBASS did argue that additional protections would be needed if the 2020-2025 MHz band were used for high-power base stations. *Id*.

c. Interference with Services in Other Bands — Base Stations Operating in 2155-2180 MHz

94. *Interference with operations below 2155 MHz and above 2180 MHz.* The 2155-2180 MHz AWS-3 downlink band is adjacent to the AWS-1 downlink spectrum at 2110-2155 MHz and to the AWS-4/MSS downlink spectrum at 2180-2200 MHz. Because we anticipate that operations in 2155-2180 MHz and in the adjacent downlink bands will be similar, we believe the standard attenuation factor of $43 + 10 \log_{10}(P)$ dB will be sufficient to protect AWS-1 and AWS-4/MSS receivers operating in the bands adjacent to AWS-3.[228] We seek comment on this proposal. Commenters should discuss and quantify the costs and benefits of this and any proposed alternative approaches.

d. Measurement of OOBE

95. To fully define an emissions limit, the Commission's rules generally specify how to measure the power of the emissions, such as the measurement bandwidth. For AWS-1 and AWS-4, the measurement bandwidth used to determine compliance with this limit for fixed, mobile, and base stations is generally one megahertz, with some modification within the first megahertz.[229] We believe that it is reasonable to apply this same procedure to all transmissions in the AWS-3 bands. We seek comment on this proposal. Commenters should discuss and quantify the costs and benefits of this proposal and any proposed alternative approaches.

2. Antenna Height Restrictions

96. We propose, as discussed below, that the flexible antenna height rules that apply to AWS-1 should generally also apply to AWS-3. Additionally, because we do not propose to authorize fixed operation in the 1695-1710 MHz and 1755-1780 MHz bands, we do not expect any special antenna height restrictions are needed for those bands.

97. *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 bans antenna heights that would be a hazard to air navigation.[230] Furthermore, the limitations of field strength at the geographical boundary of the license discussed below also effectively limit antenna heights.[231] We similarly propose that no unique antenna height limits are needed for AWS-3 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 and any alternatives.

98. *Fixed stations.* Section 27.50(d)(4) specifies a height restriction of 10 meters for fixed stations operating in AWS-1 spectrum, and was deemed necessary to protect Federal operations in the 1710-1755 MHz and adjacent Federal bands.[232] The height restriction was not applied to the AWS-4 band.[233] Here, the 1695-1710 and 1755-1780 MHz bands are adjacent to the AWS-1 band and the Federal operations that necessitated a height limitation for AWS-1 fixed stations, whereas the 2020-2025 MHz band is not. Moreover, in defining the Protection Zones, CSMAC's assumptions did not include

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[228] 47 C.F.R. §27.53(h). *See AWS-4 Service Rules R&O*, 27 FCC Rcd at 16147 ¶ 106. When held by different licensees, the standard attenuation factor also governs OOBE at the AWS-1 and AWS-4 block edges, *e.g.*, between AWS-4 A and B blocks. *See AWS-4 Service Rules R&O*, 27 FCC Rcd at 16125 ¶ 59.

[229] 47 C.F.R. § 27.53(h)(1).

[230] *Id*. § 27.56.

[231] *See infra* section III.G.4 (Co-Channel Interference between AWS-3 Systems).

[232] 47 C.F.R. § 27.50(d)(4). *See* 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 at 25203-04 and n.279 (2003) ("*AWS-1 Report and Order")*.

[233] *See AWS-4 Service Rules R&O*, 27 FCC Rcd at 16162 ¶ 156.

commercial fixed uplinks. We therefore propose not to authorize fixed stations in the 1695-1710 MHz and 1755-1780 MHz bands; thus no height limit is necessary. We believe no such limit is necessary for fixed stations in the 2020-2025 MHz band, and we propose to apply the same rules that govern low-power fixed stations in the adjacent AWS-4 band. We seek comment on this proposal. Commenters should address the costs and benefits of this proposal and of any proposed alternatives.

3. Power Limits

99. As discussed below, we generally propose to apply existing AWS-1 power limits to the AWS-3 downlink and 2020-2025 MHz uplink bands, which CSMAC did not analyze. For AWS-3 uplink bands with NTIA recommended Protection Zones, within which commercial use must be coordinated successfully with Federal users prior to operation, CSMAC made technical assumptions about commercial operations that are set forth in Appendix 3 of the *WG1 Final Report*.[234] Specifically, CSMAC assumed baseline LTE uplink characteristics. We are not proposing technical rules to require AWS-3 licensees to comply with any particular industry standard such as LTE. Nonetheless, we believe some technical rules must accommodate CSMAC's assumptions, or the Protection Zones might have to be redrawn.

100. *Base Stations*. The current AWS-1 and AWS-4 rules limit base station power in non-rural areas to 1640 watts EIRP for emission bandwidths less than one megahertz and to 1640 watts per MHz EIRP for emission bandwidths greater than one megahertz,[235] and double these limits (3280 watts EIRP or 3280 watts/MHz) in rural areas.[236] The same limits apply to broadband PCS stations,[237] and in our experience have provided good service while avoiding harmful interference. Further, the higher power limit for rural areas may promote the Commission's goals of furthering rural deployment of broadband services. Therefore, we propose that section 27.50(d)(1)-(2), which set the power limits for AWS-1 and AWS-4 base stations, should also apply to AWS-3 base stations operating in the 2155-2180 MHz band. We seek comment on this proposal, including the costs and benefits of the proposal and any alternatives.

101. The current AWS-1 rules also require that base stations with transmit power greater than the non-rural limits described above (1640 Watts EIRP or 1640 watts/MHz EIRP) be coordinated with licensees in adjacent AWS blocks and Broadband Radio Service ("BRS") licensees in the 2150-2160 MHz band authorized within 120 kilometers (75 miles), and with satellite entities operating in the 2025-2110 MHz band.[238] The AWS-4 rules require similar coordination between adjacent AWS-4 blocks within 120 kilometers, but do not require coordination with BRS or with satellite operators in the 2025-2110 MHz band because these bands are not adjacent to the AWS-4 uplink band.[239] As AWS-3 base station operations will be co-channel with BRS and directly adjacent to the AWS-1 and AWS-4 downlink bands, but situated at least 45 MHz away from the 2025-2110 MHz satellite band, consistent with the rationale in the Commission's decision in the *AWS-4 Service Rules R&O*, we do not see a need to carry all of these requirements over to AWS-3. We propose that AWS-3 base stations with transmit power above 1640 watts EIRP and 1640 watts/MHz EIRP be required to coordinate with the following licensees

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[234] *See WG1 Final Report*, App. 3 (Baseline LTE Uplink Characteristics). This document reflects the consensus of the LTE Technical Characteristics group of the CSMAC Working Groups. Participants included numerous Federal and non-Federal representatives. *Id*. at 1.

[235] 47 C.F.R. § 27.50(d)(1).

[236] *Id.* § 27.50(d)(2). The AWS-4 limits supersede a 32 dBW limit that previously governed ATC stations in the 2180-2000 MHz band. *See ICO Waiver Order*, 24 FCC Rcd at 188 ¶ 47; *TerreStar Networks Inc.*, 25 FCC Rcd 228, 235-36 ¶ 23-24 (IB 2010).

[237] 47 C.F.R. § 24.232.

[238] *Id.* §§ 27.50(d)(3), (8).

[239] *See id.* §27.50(d)(8); *see also AWS-4 Service Rules R&O*, 27 FCC Rcd at 16156 ¶¶ 133-34.

authorized to operate within 120 kilometers (75 miles) of the base or fixed station operating in this band: all BRS licensees authorized in the 2155-2160 MHz band and all AWS licensees authorized to operate on adjacent frequency blocks in the AWS-3 band, the 2110-2155 MHz band or the 2180-2200 MHz band. Because of the spectral separation between the 2155-2180 MHz band and the 2025-2110 MHz satellite band, however, we do not propose to require coordination with these operators. We seek comment on this proposal, including the costs and benefits of the proposal and any alternatives.

102. *Mobile and Portable (handheld) Stations*. The Part 27 AWS rules specify a power limit of 1 watt EIRP for the AWS-1 uplink band, and 2 watts EIRP for the AWS-4 uplink band.[240] The lower AWS-1 power limit was intended to simplify coordination with Government operations that would remain in the 1710-1755 MHz band,[241] a situation that the AWS-4 band did not present.[242] The three AWS-3 uplink bands present the same distinction: the 1695-1710 MHz and 1755-1780 MHz bands both contain Government operations, while the 2020-2025 MHz band does not. In other respects, we anticipate that the services in the AWS-3 bands will be similar to those in the AWS-1 and AWS-4 bands. The existence or not of Government operations, however, dictates different power limits. In particular, as described above, the Protection Zones that trigger coordination are based in part on CSMAC's assumption that typical commercial user equipment will be LTE devices.[243] We further note that the LTE standard sets a maximum transmitter power output (TPO) of 23 dBm.[244] CSMAC's analysis indicates that such devices will have an actual EIRP varying between -40 dBm and 20 dBm EIRP,[245] due to power control and typical antenna gains/losses, and that it used these EIRP assumptions for the purpose of defining the Protection Zones.[246] As stated above, in accordance with the Spectrum Act, the Commission intends to adopt flexible-use service rules for the AWS-3 band supporting terrestrial wireless service and we are not proposing to mandate the use of any industry standard.[247] We note that similar commercial mobile services such as PCS, AWS-1 and the 700 MHz band deploy handsets using a variety of technologies, including CDMA[248] and UMTS,[249] as well as LTE,[250] whose devices most commonly operate at a maximum EIRP of 23 dBm (200 mW) regardless of higher FCC power limits.

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[240] 47 C.F.R. § 27.50(d)(4). The former ATC rules originally specified a power limit of 1 dBW (1.25 watts) EIRP in a bandwidth of 1.23 MHz for mobiles operating in 2000-2020 MHz. 47 C.F.R. § 25.252(b)(1) (2003).

[241] *AWS-1 Service Rules Report and Order*, 18 FCC Rcd at 25200 ¶ 98.

[242] *See AWS-4 Service Rules R&O*, 27 FCC Rcd at 16157-60.

[243] *See WG1 Final Report* at 1.

[244] *See* 3rd Generation Partnership Project (3GPP), Technical Specification Group Radio Access Network, Evolved Universal Terrestrial Radio Access (E-UTRA); User Equipment (UE) radio transmission and reception (Release 11) Table 6.2.2-1 (3GPP TS 36.101 v11.1.0, June 2012) ("LTE Standard, Table 6.2.2-1"), available at http://www.3gpp.org/ftp/Specs/archive/36_series/36.101/36101-b40.zip (last visited June 20, 2013).

[245] *See WG1* Final *Report*, App. 3 at 2-4, (Table, Tabulated CDF Data).

[246] *See id.*, App. 7 at 2.

[247] *See supra* para. 10 (Spectrum Act requires Commission to license spectrum under flexible use service rules for commercial use).

[248] *See* "Recommended Minimum Performance Standards for cdma2000 Spread Spectrum Mobile Stations" 3GPP2 C.S0011-E, Version 1.0, April 2012, Table 4.4.5.3-1 available at http://www.3gpp2.org/Public_html/specs/C.S0011-E_v1.0_1x_MS_MPS_20120505.pdf (last visited July 11, 2013). PCS CDMA handsets are subject to power limitations for Band Class 1. Station class II includes a range of maximum power limits from 200 milliwatts to 1 watt.

[249] *See* 3rd Generation Partnership Project (3GPP), Technical Specification Group Radio Access Network User Equipment (UE) radio transmission and reception (FDD) (Release 11) Table 6.1 (3GPP TS 25.101 v11.5.0, (2013-03), available at http://www.3gpp.org/ftp/specs/html-INFO/25101.htm (last visited July 11, 2013).

[250] *See* LTE Standard, Table 6.2.2-1.

103. Nonetheless, because the Protection Zones are based on typical LTE devices operating at a maximum EIRP of 20 dBm, we propose an EIRP power limit of 20 dBm (100 mW) for mobiles and portables (handhelds) operating in the 1695-1710 MHz and 1755-1780 MHz bands. The Commission's rules will govern all devices nationwide, rather than typical devices operating near the 27 Protection Zones. Therefore, we seek comment on whether an EIRP limit of 23 dBm would necessitate enlarging the Protection Zones, and if so, whether the benefits this higher power limit would outweigh the increased burden of having to coordinate more commercial operations with Federal incumbents. For mobiles and portables (handhelds) operating in the 2020-2025 MHz band, we propose a maximum of 2 watts EIRP. Regarding the latter proposal, we believe there is virtually no risk of overloading BAS receivers in the adjacent 2025-2110 MHz band given the likely separation distances, AWS-3 mobile nominal transmit powers, steerable BAS antennas, and path losses. We further propose that mobile and portable stations operating in these bands must employ a means for limiting power to the minimum necessary for successful communications. We seek comment on these proposals, including the costs and benefits of the proposals and any alternatives.

4. Co-Channel Interference between AWS-3 Systems

104. If we ultimately decide to license the AWS-3 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.[251] The current rules for AWS-1 and AWS-4 address the possibility of harmful co-channel interference between geographically adjacent licenses by setting a field strength limit from base stations of 47 dBμV/m at the edge of the license area.[252] Due to the similarities between AWS-1, AWS-4, and AWS-3 spectrum use, we propose to amend section 27.55(a)(1) to include the 2155-2180 MHz band.

105. In recent filings in the H Block and Incentive Auctions proceedings, commenters have suggested that the boundary limit be adjusted to accommodate varying channel bandwidths. In the H Block proceeding, Sprint requested that the Commission modify the boundary limit to set a reference measurement bandwidth of 1 MHz, with the aim of limiting boundary power density to the equivalent of that first applied to PCS systems in 1993.[253] At that time, operators were deploying mostly Digital AMPS, PCS1900 and CDMA technologies, which had channel bandwidths of 30 kHz, 200 kHz and 1.25 MHz, respectively. Sprint claims that because today's LTE transmissions operate on much wider bandwidths up to 20 MHz, a 47 dBμV/m limit measured over the full channel bandwidth will effectively result in a comparatively lower power level. Sprint proposed to adjust the field strength limit from 47 dBμV/m to 62 dBμV/m per MHz.[254] Verizon has made a similar claim in the Incentive Auctions proceeding, but proposed a field strength limit of 50 dBμV/m per MHz.[255] Sprint further suggested that the boundary limits with Canada and Mexico should similarly be based on power density levels.[256]

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[251] If we authorize a single licensee in these bands, it will be unnecessary 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.

[252] *Id.* § 27.55(a)(1).

[253] *See* Sprint Reply Comments, WT Docket No. 12-357 at 7-8 (filed Mar. 7, 2013) (Sprint H Block Reply Comments). *See also* In the Matter of Amendment of the Commission's Rules to Establish New Personal Communication Services, GN Docket No. 90-314, *Second Report and Order*, 8 FCC Rcd 7700 (1993) (adopted 47 C.F.R. § 99.232 (field strength limits), which was subsequently renumbered as 47 C.F.R. § 24.236).

[254] *See* Sprint H Block Reply Comments at 8. Sprint argued that the power spectral density for a 30 kHz Digital AMPS carrier at a 47 dBμV/m field strength is equivalent to a 62 dBμV/m LTE carrier with a 1 MHz bandwidth, adjusting the field strength limit by the ratio of the bandwidths ($10 \log_{10}$ (1 MHz / 30 kHz) = 15 dB).

[255] Verizon and Verizon Wireless Comments, Docket 12-268 at 58 (filed Jan. 25, 2013).

[256] Sprint H Block Reply Comments at 8.

106. We tentatively agree with Sprint that, in concept, a boundary limit that adjusts for large differences in channel bandwidths may be appropriate. The specific limit of 62 dBμV/m per MHz proposed by Sprint may not be the optimal solution. Sprint derives the value for the field strength based on a comparison against a 30 kHz Digital AMPS signal. Other technologies may provide a more appropriate reference upon which to base the value for the field strength. Also, there are other metrics that may be used to limit the signal at the boundary, such as power flux density. We observe that the Commission has already adopted a bandwidth-independent approach when setting boundary limits with Canada and Mexico. For example, certain international limits are expressed as a power flux density (*i.e.*, $dBW/m^2/MHz$), a measure of power, whereas field strength is a measurement of voltage.

107. We seek comment on what the appropriate boundary limit should be. Should the limit be based on a field strength, a power flux density, or some other metric? What would the appropriate level be? We encourage all interested parties to explore this issue in this proceeding to develop a full record of the technical concerns and ramifications of such an approach. Please provide detailed technical analysis to support any proposed limit.

108. Finally, we propose that adjacent affected area licensees may voluntarily agree upon higher field strength boundary levels. This concept is already codified in the field strength rules for both PCS and AWS services, as Sprint acknowledges. Accordingly, to maintain consistency with the PCS and other AWS bands, we propose to permit adjacent area licensees to agree to a higher field strength limit.

5. Co-Channel Interference to BRS Channels 1 and 2

109. The AWS-1 rules include provisions that protect BRS Channel 1 (2150-2156 MHz) and Channel 2 (2156-2160/62 MHz).[257] Because these BRS channels will be co-channel to licenses in the AWS-3 downlink band at 2155-2180 MHz, we propose that the same AWS-1 provisions in sections 27.1132 and 27.1255 be applied to future AWS-3 licensees operating in the 2155-2180 MHz band.[258] We seek comment on this proposal. Commenters should address the costs and benefits of this proposal and any proposed alternatives.

6. Canadian and Mexican Coordination

110. Section 27.57(c) of our rules indicates that AWS-1 and AWS-4 operations are subject to international agreements with Mexico and Canada.[259] We propose to apply the same limitation to the AWS-3 band. 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 or final 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

111. *General Part 27 rules.* There are several additional technical rules applicable to all Part 27 services, including sections 27.51 Equipment authorization, 27.52 RF safety,[260] 27.54 Frequency

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[257] 47 C.F.R §§ 27.1132, 27.1255.

[258] The Commission's licensing records reflect that there are fewer than five BRS incumbents licensed on these channels, and that most of the stations use Channels 1 and/or 2 for fixed broadband uplink.

[259] 47 C.F.R. § 27.57(c).

[260] The Commission has initiated a review of its RF exposure limit rules in order to develop a current record regarding whether existing regulations and policies limiting human exposure to radiofrequency radiation are appropriately drawn. Reassessment of Federal Communications Commission Radiofrequency Exposure Limits and Policies, ET Docket No. 13-84, *Notice of Inquiry*, 28 FCC Rcd 3498, 3570 ¶¶ 205-06 (2013). To the extent that commenters desire to propose changes to the RF standards, they should file in ET Docket No. 13-84.

stability, 27.56 Antennas structures; air navigation safety, and 27.63 Disturbance of AM broadcast station antenna patterns.[261] As AWS-3 will be a Part 27 service, we propose that all of these general Part 27 rules should apply to all AWS-3 licensees, including licensees who acquire their licenses through partitioning or disaggregation (to the extent the rules permit such aggregation). We seek comment on this approach, including its costs and benefits.

8. Receiver Performance

112. We invite comment on any potential for receiver overload interference between AWS-3 operations and non-AWS operations below 1695 MHz, above 1780 MHz, above 2025 MHz, and above 2180 MHz. If such a risk exists, we request that parties provide whatever information may be available about the characteristics of the receivers operating or likely in the future to operate in these frequencies, potential solutions to overload interference, and an assessment of the impact this might have on deployment of AWS-3 service. We also invite comment on any other receiver issues that should be considered in this proceeding that could affect the potential for harmful interference to adjacent channel receivers and usability of the AWS-3 spectrum.

H. Licensing and Operating Rules; Regulatory Issues

113. We are proposing licensing and operating rules that will provide AWS-3 licensees with the flexibility to provide any fixed or mobile service that is consistent with the allocations for this spectrum. Specifically, we are seeking comment on the appropriate license term, criteria for renewal, and other licensing and operating rules pertaining to the AWS-3 band. In addition, we seek comment on the potential impact of all of our proposals on competition. In addressing these issues, commenters should discuss the costs and benefits associated with these proposals and any alternative that commenters propose.

1. Assignment of Licenses

114. The Spectrum Act states that the Commission shall grant new initial licenses for the 1695-1710 MHz and 2155-2180 MHz bands, and 15 additional megahertz of contiguous spectrum to be identified by the Commission, through a system of competitive bidding pursuant to section 309(j) of the Communications Act.[262] Additionally, for all AWS-3 bands, including 1755-1780 MHz and 2020-2025 MHz, we propose to license on a geographic area basis, which will permit the acceptance of mutually exclusive applications. As such, we propose to resolve all AWS-3 applications and assign licenses through competitive bidding consistent with our statutory mandate.[263] We seek comment in section III.H.10 below on our proposals regarding the competitive bidding rules that would apply to license assignments in these bands.

2. Flexible Use

115. Consistent with the Spectrum Act's mandate to license under flexible use service rules,[264] we propose service rules that permit a licensee to employ the spectrum for any non-Federal use permitted by the United States Table of Frequency Allocations,[265] subject to the Commission's Part 27 flexible use

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[261] 47 C.F.R. §§ 27.51, 27.52, 27.54, 27.56, 27.63.

[262] Spectrum Act, § 6401(b). The Commission is required to establish by regulation a competitive bidding methodology in accordance with section 309(j)'s statutory requirements when assigning licenses through auction. *See* 47 U.S.C. § 309(j)(3), (4).

[263] 47 U.S.C. §§ 309(j).

[264] Spectrum Act, § 6401(b)(1)(b).

[265] 47 C.F.R. § 2.106. In section III.I (Allocation Matters) *infra*, we propose amendments to the Table of Frequency Allocations and tentatively conclude that these allocation proposals, together with our proposed service rules, satisfy 47 U.S.C. § 303(y).

and other applicable rules (including service rules to avoid harmful interference).[266] Thus, we propose that the spectrum may be used for any fixed or mobile service that is consistent with the allocations for the band. If commenters think any restrictions are warranted, they should describe why such restrictions are needed, quantify the costs and benefits of any such restrictions, and describe how such restrictions would comport with the statutory mandates of section 6401 of the Spectrum Act.

a. Regulatory Framework

116. Consistent with the proposed flexible use of the AWS-3 band, we also propose licensing the spectrum under the flexible regulatory framework of Part 27 of our rules.[267] 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. We believe that our Part 27 rules are consistent with the Spectrum Act's requirement for "flexible-use service rules." We seek comment on our proposal to license the AWS-3 band under Part 27 service and licensing rules, and any associated costs or benefits of doing so.

b. Regulatory Status

117. We propose to apply the regulatory status provisions of section 27.10 of the Commission's Rules to licensees in the AWS-3 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 provide[268] because service offerings may bear on eligibility and other statutory and regulatory requirements.[269] 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.[270] Thus, a Part 27 applicant is not required to choose between providing common carrier and non-common carrier services. We propose to adopt this same approach here. Licensees in the AWS-3 band would be able to provide all allowable services anywhere within their licensed area at any time, consistent with their regulatory status.[271] 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 the appropriate licensing approach and ask that commenters discuss the costs and benefits of their proposed licensing approach.

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[266] Part 27 licensees must also comply with other Commission rules of general applicability. *See* 47 C.F.R. § 27.3. In addition, flexible use in international border areas is subject to any existing or future international agreements. *See supra* section III.G.6 (Canadian and Mexican Coordination).

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

[268] 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).

[269] *See, e.g.*, *infra* section III.H.4 (Eligibility).

[270] *See* 47 C.F.R. § 27.10; 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 at 10846-48 ¶¶ 119-122 (1997) ("*Part 27 Report and Order").*

[271] 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.

118. We further propose that applicants and licensees in the AWS-3 band be required to indicate a regulatory status for any services they choose to provide. Apart from this designation of regulatory status, we do not propose to require applicants to describe the services they seek to provide.[272] 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;[273] otherwise the applicant must choose non-common carrier status.[274] 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.[275] We propose to apply this framework to AWS-3 licensees and seek comment on this proposal, including the costs and benefits of this proposal.

119. We also propose that if a licensee were to change the service or services it offers such that it would be inconsistent with its regulatory status, the licensee must notify the Commission.[276] 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 and AWS-4 spectrum.[277] Consistent with our Part 27 rules, we propose to require licensees to file 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.[278] We seek comment on this proposal, including the costs and benefits.

3. Foreign Ownership Reporting

120. We propose to apply the provisions of section 27.12 of the Commission's rules to applicants for licenses in the AWS-3 band.[279] Section 27.12 implements section 310 of the Communications Act, including foreign ownership and citizenship requirements that restrict the issuance of licenses to certain applicants.[280] An applicant requesting authorization to provide services in this band other than broadcast, common carrier, aeronautical en route, and aeronautical fixed services would be

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

[273] *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.").

[274] *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.

[275] *Part 27 Report and Order,* 12 FCC Rcd at 10848 ¶ 121.

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

[277] 47 U.S.C. § 310(b); *see infra* section III.H.3 (Foreign Ownership Reporting).

[278] *See* 47 C.F.R. § 27.66.

[279] *Id.* § 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). *See also* Review of Foreign Ownership Policies for Common Carrier and Aeronautical Radio Licensees under Section 310(b)(4) of the Communications Act of 1934, as amended, IB Docket No. 11-133, *Second Report and Order,* 28 FCC Rcd 5741 (2013) ("*Foreign Ownership Policies"*).

[280] 47 U.S.C. § 310.

subject to the restrictions in section 310(a), but not to the additional restrictions in section 310(b).[281] An applicant requesting authorization for broadcast, common carrier, aeronautical en route, or aeronautical fixed services would be subject to both sections 310(a) and 310(b). We do not believe that applicants for this band should be subject to different obligations in reporting their foreign ownership based on the type of service authorization requested in the application. Consequently, we propose to require all applicants to provide the same foreign ownership information, which covers both sections 310(a) and 310(b), regardless of which service they propose to provide in the band. We note, however, that we would be unlikely to deny a license to an applicant requesting to provide exclusively services that are not subject to section 310(b), solely because its foreign ownership would disqualify it from receiving a license if the applicant had applied for authority to provide such services. However, if any such licensee later desires to provide any services that are subject to the restrictions in section 310(b) we would require the licensee to apply to the Commission for an amended license, and we would consider issues related to foreign ownership at that time. We request comment on this proposal, including any costs and benefits.

4. Eligibility

121. For the AWS-3 band, we propose to adopt an open eligibility standard and seek comment on this approach. In particular, we seek comment on whether adopting an open eligibility standard for the licensing of the AWS-3 band would encourage efforts to develop new technologies, products, and services, while helping to ensure efficient use of this spectrum.[282] We note that an open eligibility approach would not affect citizenship, character, or other generally applicable qualifications that may apply under our rules. Additionally, section 6004 of the Spectrum Act restricts participation in auctions required under the Spectrum Act, which will include most of the AWS-3 band, by "person[s] who [have] been, for reasons of national security, barred by any agency of the Federal Government from bidding on a contract, participating in an auction, or receiving a grant."[283] In the *Incentive Auctions NPRM* and in the *H Block NPRM*, the Commission sought comment on whether section 6004 permits or requires the Commission to restrict eligibility of persons acquiring licenses on the secondary market, whether and to what extent such a restriction is consistent with other provisions of the Communications Act, and what procedures and rules, if any, should apply to persons acquiring licenses on the secondary market.[284] Recently, in the *H Block R&O*, the Commission adopted an eligibility rule providing that "[a] person described in 47 U.S.C. § 1404(c) is ineligible to hold a license that is required by 47 U.S.C. Chapter 13 (Middle Class Tax Relief and Job Creation Act of 2012, Pub. L. No. 112-96, 125 Stat. 156 (2012)) to be assigned by a system of competitive bidding under Section 309(j) of the Communications Act, 47 U.S.C. § 309(j)."[285] We note that this revised eligibility restriction will govern most of the AWS-3 spectrum.[286]

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[281] *See id.* § 310(b) (stating that "[n]o broadcast or common carrier or aeronautical en route or aeronautical fixed radio station license shall be granted to" certain entities).

[282] *See id.* § 309(j)(3).

[283] *See* Spectrum Act, § 6004; 47 U.S.C. § 1404.

[284] *H Block NPRM*, 27 FCC Rcd at 16286 ¶¶ 74-75. The Commission noted that section 6004 does not address eligibility to acquire licenses through transfers, assignments, or other secondary market mechanisms from the initial or subsequent licensee. *See, e.g., Incentive Auctions NPRM*, 27 FCC Rcd at 12483-84 ¶ 382 (citing Spectrum Act at § 6004(c)).

[285] *See H Block R&O* at App. A. *See also* 47 C.F.R. § 27.12(b). In the *H Block R&O*, the Commission also adopted a revision to the bidding application and certification procedures. *See* 47 C.F.R. § 1.2105(a)(2)(xii).

[286] In the *H Block R&O*, the Commission noted that until appropriate application forms are revised, applicants for spectrum subject to Section 6004 will be required to include a certification as an attachment to the application and for applicants that are not individuals, the same attribution standards that were adopted for short-form applications will apply. *H Block R&O* at ¶ 187.

5. Mobile Spectrum Holding Policies

122. We seek comment generally on whether and how to address any mobile spectrum holdings issues involving AWS-3 spectrum in order to meet our statutory requirements and our goals for the AWS-3 band. Section 309(j)(3)(B) of the Communications Act provides that, in designing systems of competitive bidding, the Commission shall "promot[e] economic opportunity and competition and ensur[e] that new and innovative technologies are readily accessible to the American people by avoiding excessive concentration of licenses."[287] More recently, section 6404 of the Spectrum Act recognizes the Commission's authority "to adopt and enforce rules of general applicability, including rules concerning spectrum aggregation that promote competition."[288] In September, 2012, we initiated a proceeding to revisit the mobile spectrum holdings policies that apply to both transactions and auctions, including which spectrum bands are relevant to our competitive analysis.[289] The Commission also has sought comment on some mobile spectrum holdings issues with respect to particular spectrum bands in service rulemakings.[290]

123. We seek comment on whether the acquisition of each of the various bands identified in this proceeding for potential AWS-3 spectrum should be subject to the same general mobile spectrum holding policies applicable to frequency bands that the Commission has found to be suitable and available for mobile telephony/broadband services. Alternatively, depending on the specific service rules and requirements that will apply to AWS-3 spectrum, should we distinguish AWS-3 spectrum for purposes of evaluating mobile spectrum holdings? Commenters should discuss and quantify any costs and benefits associated with any proposals on the applicability of spectrum holdings policies to AWS-3 spectrum.

6. License Term, Performance Requirements, Renewal Criteria, Permanent Discontinuance of Operations

a. License Term

124. We propose to establish a 10-year term for licenses for the AWS-3 band. The Communications Act does not specify a term limit for AWS band licenses.[291] The Commission has adopted 10-year license terms for most wireless radio services licenses.[292] To maintain this consistency among wireless services, in the *H Block R&O* and the *AWS-4 Service Rules R&O*, the Commission adopted 10 year license terms.[293] We continue to believe that a 10-year license term is appropriate, and consequently propose, a 10 year license term for the AWS-3 spectrum. We seek comment on this proposal, including any costs and benefits of the proposal. In addition, we invite commenters to submit alternate proposals for the appropriate license term, which should similarly include a discussion on the costs and benefits.

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[287] 47 U.S.C. § 309(j)(3)(B).

[288] Spectrum Act, § 6404.

[289] *See* Policies Regarding Mobile Spectrum Holdings, WT Docket No. 12-269, *Notice of Proposed Rulemaking*, 27 FCC Rcd 11710 (2012) ("*Mobile Spectrum Holdings NPRM"*). During the pendency of the *Mobile Spectrum Holdings NPRM*, the Commission is continuing to apply its current case-by-case approach to evaluate mobile spectrum holdings during the consideration of secondary market transactions and initial spectrum licensing after auctions. *See Mobile Spectrum Holdings NPRM,* 27 FCC Rcd at 11718, n. 59.

[290] *See H Block NPRM*, 27 FCC Rcd at 16286 ¶¶ 76-77; *Incentive Auctions NPRM*, 27 FCC Rcd at 12484 ¶ 384. *See also AWS-4 NPRM,* 27 FCC Rcd at 3596-97 ¶¶ 110-11.

[291] 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).

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

[293] *H Block R&O*, ¶ 193; *AWS-4 Service Rules R&O*, 27 FCC Rcd at 16200 ¶ 262.

125. 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.[294] This approach is similar to the partitioning provisions the Commission adopted for BRS,[295] for broadband PCS,[296] for the 700 MHz band,[297] and for AWS-1 licenses at 1710-1755 MHz and 2110-2155 MHz,[298] and AWS-4.[299] We emphasize that nothing in our proposal is intended to enable a licensee, by partitioning or disaggregating the license, to confer greater rights than it was awarded under the terms of its license grant. Similarly, nothing in our proposal is intended to enable any partitionee or disaggregatee to obtain rights in excess of those previously possessed by the underlying licensee. We seek comment on these proposals, including the cost and benefits thereof.

b. Performance Requirements

126. The Commission establishes performance requirements to promote the efficient deployment of wireless services, including to rural areas, and to ensure that spectrum is used. Over the years, the Commission has applied different performance and construction requirements to different spectrum bands based on considerations relevant to those bands. For example, within four (4) years, an AWS-4 licensee must provide reliable terrestrial signal coverage and offer terrestrial service to at least forty (40) percent of its total AWS-4 population. Within seven (7) years, an AWS-4 licensee must provide reliable terrestrial signal coverage and offer terrestrial service to at least seventy (70) percent of the population in each of its license areas.[300] Similarly, for licensees operating in the 2.3 GHz Wireless Communications Services ("WCS") band, the Commission adopted performance requirements that included population-based construction requirements (40 percent of the license area's population within four (4) years and 75 percent within six-and-a-half (6.5) years) and reporting requirements.[301] More recently, in the *H Block R&O*, the Commission required licensees within four (4) years to provide reliable signal coverage and offer service to at least forty (40) percent of the population in each of its license areas

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[294] "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). For further detail, *see infra* section III.H.7.a (Partitioning and Disaggregation).

[295] *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).

[296] *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).

[297] *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).

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

[299] *AWS-4 Service Rules R&O*, 27 FCC Rcd at 16200 ¶ 263.

[300] *AId.*, 27 FCC Rcd at 16173-74 ¶ 187. In the *AWS-4 Service Rules R&O*, we noted that the incumbent licensee generally supported our seven year end-of-term buildout benchmark and agreed to aggressively build out the spectrum. As a result of this commitment, we adopted a final buildout requirement of 7 years. *Id*.

[301] *See* 47 C.F.R. § 27.14(p) (2012). *See* 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, Establishment of Rules and Policies for the Digital Audio Radio Satellite Service, IB Docket No. 95-91, *Order on Reconsideration*, 27 FCC Rcd 13651, 13696-13701 ¶¶ 111-121 (2012).

and within ten (10) years, provide reliable signal coverage and offer service to at least seventy-five (75) percent of the population in each of its license areas.[302]

127. We continue to believe that performance requirements play a critical role in ensuring that licensed spectrum does not lie fallow, and now propose to establish the following performance requirements. We seek comment on the following buildout requirements for the AWS-3 band:

- AWS-3 Interim Buildout Requirement: Within four (4) years, an AWS-3 licensee shall provide reliable signal coverage and offer service to at least forty (40) percent of the population in each of its license areas.

- AWS-3 Final Buildout Requirement: By the end of the license term, *i.e.*, within ten (10) years, an AWS-3 licensee shall provide reliable signal coverage and offer service to at least seventy-five (75) percent of the population in each of its license areas.

128. We propose these performance requirements in an effort to foster deployment expeditiously in the AWS-3 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 interim benchmark at four years would ensure that a licensee begins deploying facilities quickly, 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 buildout requirement timeline of ten years, we believe we allow a reasonable amount of time for any AWS-3 licensee to attain nationwide scale.[303]

129. We seek comment on these proposed buildout requirements. We encourage comment on whether our proposals represent the appropriate balance between requirements that are too low as to not result in meaningful buildout and those that would be so high as to be unattainable. We also seek comment on whether other benchmarks represent more appropriate requirements. In particular, are there appropriate performance benchmarks for any AWS-3 uplink spectrum paired with downlink spectrum in a band other than AWS-3? In this event, should the performance requirements applicable to that downlink band apply? How should we account for the areas where Federal use limits or prohibits AWS-3 use? We also seek comment on alternative methodologies for measuring population coverage requirements in the Gulf of Mexico. 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.

130. *Penalties for Failure to Meet Construction Requirements*. Along with construction benchmarks, we seek to adopt meaningful and enforceable consequences, or penalties, for failing to meet the benchmarks. Building on what we have learned from other bands and considering the unique characteristics of the AWS-3 band, we propose and seek comment, including on the costs and benefits, of the following penalties in the event an AWS-3 licensee fails to satisfy its buildout requirements:

- In the event an AWS-3 licensee fails to meet the AWS-3 Interim Buildout Requirement in its license area, the term of the license shall be reduced by two years.

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[302] *H Block R&O*, ¶ 195.

[303] 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).

- In the event an AWS-3 licensee fails to meet the AWS-3 Final Buildout Requirement in its license area, the AWS-3 licensee for each license area in which it fails to meet the buildout requirement shall terminate automatically without Commission action.

131. We further propose that, in the event a licensee's authority to operate terminates, the licensee's spectrum rights would become available for reassignment pursuant to the competitive bidding provisions of section 309(j). Further, consistent with the Commission's rules for other spectrum bands, including AWS-1 and the BRS, we propose that any AWS-3 licensee who forfeits its license for failure to meet its performance requirements would be precluded from regaining the license.[304]

132. *Compliance Procedures*. Consistent with section 1.946(d) of the Commission's rules, we propose to require AWS-3 licensees to demonstrate compliance with the performance requirements by filing a construction notification within 15 days of the relevant milestone certifying that they have met the applicable performance benchmark.[305] 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.[306]

133. 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.

c. Renewal Criteria

134. 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."[307] We propose to adopt AWS-3 license renewal requirements consistent with those adopted in the *700 MHz First Report and Order*, the *AWS-4 Report and Order*, and the *H Block R&O*.[308] We emphasize that, as the Commission made clear in these

[304] *See, e.g.*, 27 C.F.R. § 27.14(a), (o).

[305] *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").

[306] *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.").

[307] 47 U.S.C. § 308(b).

[308] Service Rules for the 698-746, 747-762 and 777-792 MHz Bands, WT Docket No. 06-150, *Report and Order and Further Notice of Proposed Rulemaking*, 22 FCC Rcd at 8093-94 ¶ 75-77 (2007) ("*700 MHz First Report and Order"*); *AWS-4 Service Rules R&O* at ¶ 269-71; *H Block R&O*, ¶¶ 223-227. *See also* 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 at 6997-98, 7002-09 ¶¶ 2, 16-32 (2010) ("*WRS Renewals NPRM and Order"*).

proceedings, a licensee's performance showing and its renewal showing are two distinct showings.[309] A performance showing provides a snapshot in time of the level of a licensee's service, while a renewal showing provides information regarding the level and types of service provided over the entire license term.[310] As the Commission has emphasized, a licensee that meets the applicable performance requirements might nevertheless fail to meet the renewal requirements.[311]

135. We propose that applicants for renewal of AWS-3 licenses file a "renewal showing," in which they demonstrate that they have been and are continuing to provide service to the public (or, if consistent with the licensee's regulatory status, it is using the spectrum for private, internal communication), and substantially complying with the Communications Act and the Commission's rules and policies.[312] We propose to apply to AWS-3 the same renewal showing requirement recently adopted for the H Block. Specifically, we adopt the following renewal criteria requirements. We require the renewal showing to include a detailed description of the renewal applicant's provision of service during the entire license period and discuss: (1) the level and quality of service provided by the applicant (including 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(e)(3)(i) of the Commission's rules; and (5) any other factors associated with the level of service to the public.[313]

136. As explained above, today we are proposing that AWS-3 licensees meet four and ten-year performance obligations.[314] We seek comment on whether the public interest would be served by awarding AWS-3 licensees renewal expectancies where they have (1) maintained at least the level of service required at the four year performance benchmark over the next six years while increasing service levels towards compliance with the end-of-term benchmark, (2) met the final (ten year) benchmark, and (3) otherwise complied with the Communications Act and the Commission's rules and policies during their license term. We also seek comment on whether AWS-3 licensees should obtain a renewal expectancy at the end of subsequent license terms, if they continue to provide at least the level of service required at the ten year performance benchmark through the end of any subsequent license terms. Commenters should discuss and quantify the costs and benefits of this approach.

137. Finally, consistent with the *AWS-4 Report and Order*, the *700 MHz First Report and Order* and the *H Block R&O*, we propose to prohibit the filing of mutually exclusive renewal applications,[315] and that if a license is not renewed, the associated spectrum would be returned to the Commission and subsequently made available for assignment.[316] We seek comment on these proposals, including on the associated costs and benefits.

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[309] *H Block R&O*, ¶ 223; *AWS-4 Service R&O*, 27 FCC Rcd at 16202 ¶ 270; *700 MHz First Report and Order*, 22 FCC Rcd at 8093 ¶ 75; *see also WRS Renewals NPRM and Order*, 25 FCC Rcd at 6997-98, 7004-11 ¶¶ 2, 21-35.

[310] *H Block R&O*, ¶ 223; *AWS-4 Service Rules R&O*, 27 FCC Rcd at 16201 ¶ 264.

[311] *AWS-4 Service Rules R&O*, 27 FCC Rcd at 16202 ¶ 270.

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

[313] *See H Block R&O,* ¶ 223. *See also AWS-4 Service R&O*, 27 FCC Rcd at 16202 ¶ 271; *700 MHz First Report and Order*, 22 FCC Rcd at 8093 ¶ 75; *WRS Renewals NPRM and Order,* 25 FCC Rcd at 7043, App. A (proposed rule § 1.949(c)(4)).

[314] *See supra* section III.H.6.b (Performance Requirements).

[315] *See AWS-4 Service Rules R&O*, 27 FCC Rcd at 16202 ¶ 272; *700 MHz First Report and Order*, 22 FCC Rcd at 8093-8094 ¶¶ 76-77; *H Block R&O*, ¶ 224.

[316] *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.

d. Permanent Discontinuance of Operations

138. 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 lie idle for extended periods.[317] Under section 1.955(a)(3) of the Commission's rules, an authorization will automatically terminate, without specific Commission action, if service is "permanently discontinued."[318] For the AWS-3 band, for providers that identify their regulatory status as common carrier or non-common carrier, we propose to define "permanently discontinued" as a period of 180 consecutive days during which the licensee does not provide service to at least one subscriber that is not affiliated with, controlled by, or related to, the provider in an EA (or smaller service area in the case of a partitioned EA license). This approach is consistent with the definition that the Commission has adopted for the H Block and the AWS-4 band.[319] We propose a different approach, however, for licensees that use their licenses for private, internal communications, because such licensees generally do not provide service to unaffiliated subscribers.[320] For such private, internal communications, we propose to define "permanent discontinuance" as a period of 180 consecutive days during which the licensee does not operate.[321] Licensees would not be subject to this requirement until the date of the first performance requirement benchmark, which is proposed as four years from the date of license grant, so they will have adequate time to construct their network. In addition, consistent with section 1.955(a)(3) of the Commission's rules, we propose that, if an AWS-3 licensee permanently discontinues service, the licensee must notify the Commission of the discontinuance within 10 days by filing FCC Form 601 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. We seek comment on these proposals, including the associated costs and benefits.

7. Secondary Markets

a. Partitioning and Disaggregation

139. The Commission's Part 27 rules generally allow for geographic partitioning and spectrum disaggregation.[322] 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 amounts 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 same band. As the Commission noted when first establishing partitioning and disaggregation rules, allowing such flexibility could facilitate the efficient use of spectrum by enabling licensees to make offerings directly responsive to market demands for particular types of services, increasing competition

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

[318] 47 C.F.R. § 1.955(a)(3).

[319] *See H Block R&O* at ¶ 230; *AWS-4 Service Rules R&O*, 27 FCC Rcd at 16203 ¶ 274; *WRS Renewals NPRM and Order*, 25 FCC Rcd at 7018 ¶ 54.

[320] *See WRS Renewals NPRM and Order*, 25 FCC Rcd at 7022 ¶ 68, 7047 App. A § § 1.953.

[321] In other words, the rule that we propose for private, internal communications does not include a requirement that the licensee provide service to an unaffiliated subscriber in order to avoid triggering the permanent discontinuance rule. *See id*.

[322] *See* 47 C.F.R. § 27.15.

by allowing market entry by new entrants, and expediting provision of services that might not otherwise be provided in the near term.[323]

140. We propose to permit partitioning and disaggregation by licensees in the AWS-3 band. To ensure that the public interest would be served if partitioning or disaggregation is allowed, we propose requiring each AWS-3 licensee that 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.[324] We seek comment on these proposals. Commenters should discuss and quantify the costs and benefits of these proposals with respect to competition, innovation, and investment.

141. We also seek comment on whether the Commission should adopt additional or different mechanisms to encourage partitioning and/or disaggregation of AWS-3 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 of AWS-3 spectrum, including the effects of the proposal.

b. Spectrum Leasing

142. 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.[325] These policies and rules enable 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 are permitted to provide wireless services consistent with the underlying license authorization.[326] 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.[327] 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.[328]

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[323] 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).

[324] *See generally WRS Renewals NPRM and Order,* 25 FCC Rcd 6996, 6998-99, 7029-33 ¶¶ 5, 91-97.

[325] 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).

[326] *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. *Id.*, 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*.

[327] *See id.*, 18 FCC Rcd at 20607 ¶ 2.

[328] 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*). We note that (continued….)

143. We propose that the spectrum leasing policies and rules established in those proceedings be applied to the AWS-3 in the same manner that those policies apply to other Part 27 services.[329] We seek comment on this proposal. Commenters should discuss the effects on competition, innovation and investment, and on extending our secondary spectrum leasing policies and rules to the AWS-3 band.

8. Other Operating Requirements

144. Even though licenses in the AWS-3 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 may be subject to the application filing procedures for the Universal Licensing System, set forth in Part 1 of our rules.[330]

- Licensees may be required to comply with the practices and procedures listed in Part 1 of our rules for license applications, petitions for declaratory ruling under Section 310(b),[331] adjudicatory proceedings, *etc*.

- Licensees may be required to comply with the Commission's environmental provisions, including section 1.1307. [332]

- Licensees may 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 ("CMRS"), we propose that such service would be subject to the provisions of Part 20 of the Commission's rules, including 911/E911 and hearing aid-compatibility requirements, along with the provisions in the rule part under which the license was issued. [333] Part 20 applies to all CMRS providers, even though the stations may be licensed under other parts of our rules.[334]

- To the extent a licensee provides interconnected VoIP services, we propose that the licensee would be subject to the E911 service requirements set forth in Part 9 of our rules.[335]

- The application of general provisions of Parts 22, 24, 27, or 101 would include rules related to equal employment opportunity, *etc*.

145. We seek comment on whether these provisions should apply to AWS-3 licensees and, if so, whether we need to modify any of these rules to ensure that AWS-3 licensees are covered under the necessary provisions. We seek comment on applying these rules to the AWS-3 spectrum and specifically

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there may be limitations on the use of such immediate approval procedures where certain foreign ownership questions must be addressed. *See Foreign Ownership Policies* at ¶¶ 96, 110.

[329] *Id*. *See e.g*., 47 C.F.R. 1.9005(j).

[330] *See* 47 C.F.R. Part 1, Subpart F.

[331] *Foreign Ownership Policies*. App. B (codifying new rules effective 30 days after publication in Federal Register).

[332] 47 C.F.R. § 1.1307.

[333] 47 C.F.R. Part 20; *see also* 47 C.F.R. § 27.3(g).

[334] *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).

[335] 47 C.F.R. Part 9.

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. What are the potential 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?

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

146. The Commission currently has under consideration various provisions and policies intended to promote greater use of spectrum over Tribal lands.[336] We propose to extend any rules and policies adopted in that proceeding to any license that may be issued through competitive bidding in this proceeding. We seek comment on this proposal, including any costs and benefits.

10. Competitive Bidding Procedures

147. As discussed above, the Spectrum Act requires the Commission to grant new initial licenses for the use of spectrum in certain specified frequency bands through a system of competitive bidding.[337] We will therefore assign licenses in the 1695-1710 MHz, 1755-1780 MHz, and 2155-2180 MHz bands through competitive bidding. In addition, because we propose to license the 2020-2025 MHz band on a geographic area basis, which procedure will permit the acceptance of mutually exclusive applications, we will also resolve such applications through competitive bidding consistent with our statutory mandate.[338] Accordingly, we seek comment on a number of proposals relating to competitive bidding for licenses for spectrum in these bands. We also note below that we have recently amended our rules to require an additional certification that will be required of applicants in any short-form application to participate in competitive bidding for licenses in certain AWS-3 bands at issue herein.

a. Application of Part 1 Competitive Bidding Rules

148. We propose that the Commission would conduct any auction for licenses for spectrum in the 1695-1710 MHz, 1755-1780 MHz, 2020-2025 MHz, and 2155-2180 MHz bands 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.[339] 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.[340] Under this

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[336] 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) ("*Tribal Lands NPRM*").

[337] *See* 47 U.S.C. § 1451(b)(1)-(2). The spectrum, as specified in the Spectrum Act, is as follows: 1915-1920 MHz, 1995-2000 MHz, 2155-2180 MHz, the 15 megahertz of spectrum identified by NTIA pursuant to 47 U.S.C. § 1451(a)(3), and 15 megahertz of contiguous spectrum to be identified by the Commission. *See id*. § 1451(b)(2). Pursuant to the Spectrum Act's directive, on December 17, 2012, the Commission released a Notice of Proposed Rulemaking proposing service rules and licensing procedures for the 1915-1920 MHz and 1995-2000 MHz bands. *See H Block NPRM*, 27 FCC Rcd 16258 (2012). As noted above, recently the Commission notified NTIA that, pursuant to CSEA, as amended by the Spectrum Act, it plans to commence the auction of licenses in the 1695-1710 MHz band and the 1755-1780 MHz band as early as September 2014. *See* FCC March 2013 Auction Notification Letter.

[338] 47 U.S.C. §§ 309(j).

[339] *See* 47 C.F.R. §§ 1.2101-1.2114.

[340] *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*, (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. 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 these frequency bands.

b. Revision to Part 1 Certification Procedures

149. Section 6004 of the Spectrum Act prohibits "a person who has been, for reasons of national security, barred by any agency of the Federal Government from bidding on a contract, participating in an auction, or receiving a grant" from participating in a system of competitive bidding under section 309(j) required to be conducted under Title VI of the Spectrum Act.[341] In the *H Block Report and Order*, the Commission implemented this Spectrum Act mandate by adding a national security certification to the various other certifications that a party must make in any short-form application to participate in competitive bidding as required under our existing rules.[342] Accordingly, an applicant to participate in an auction offering licenses for spectrum in the AWS-3 bands required by the Spectrum Act to be assigned by auction will be required to certify, under penalty of perjury, that it and all of the related individuals and entities required to be disclosed on the short-form application are not persons who have "been, for reasons of national security, barred by any agency of the Federal Government from bidding on a contract, participating in an auction, or receiving a grant."[343] As with other required certifications, failure to include the required certification by the applicable filing deadline would render the application unacceptable for filing, and the application would be dismissed with prejudice.[344]

c. Small Business Provisions for Geographic Area Licenses

150. 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."[345] In addition, Section 309(j)(3)(B) of the Communications Act provides that, in establishing eligibility criteria and bidding methodologies, the Commission shall seek to promote a number of objectives, including "economic opportunity and competition . . . by avoiding excessive

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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 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).

[341] *See* Spectrum Act § 6004(b)-(c).

[342] *See H Block R&O* at ¶ 253; *see also* 47 C.F.R. § 1.2105(a)(2)(xii).

[343] *See H Block R&O* at ¶ 254. For purposes of this certification, "person" is defined as an individual, partnership, association, joint-stock company, trust, or corporation. *See H Block R&O* at ¶ 253; *see also* 47 U.S.C. § 153(39) ("The term 'person' includes an individual, partnership, association, joint-stock company trust or corporation."). For purposes of this certification, "reasons of national security" is defined to mean matters relating to the national defense and foreign relations of the United States. *See H Block R&O* at ¶ 253; *see also* 18 U.S.C. app. 3 § 1(b) (defining "national security" as "the national defense and foreign relations of the United States").

[344] *See* 47 C.F.R. § 1.2105(b)(1).

[345] 47 U.S.C. § 309(j)(4)(D).

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."[346] One of the principal means by which the Commission fulfills this mandate is through the award of bidding credits to small businesses.

151. 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.[347] 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.[348]

152. In the event that the Commission assigns geographic area licenses for spectrum in the 1695-1710 MHz, 1755-1780 MHz, 2020-2025 MHz, and 2155-2180 MHz bands, we believe that this spectrum would be employed for purposes similar to those for which spectrum in the AWS-1 band is used. We therefore propose to establish the same small business size standards and associated bidding credits for these bands as the Commission adopted for the AWS-1 band.[349] These small business size standards and associated bidding credits were adopted for the AWS-1 band because of the similarities between the AWS-1 service and the broadband PCS service.[350] The Commission also followed this approach when proposing small business size standards and associated bidding credits in the *AWS-2 NPRM* and *H Block NPRM*, and when adopting them in the *AWS-4 Service Rules R&O*.[351] 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.[352] We seek comment on this proposal, including the costs and benefits associated with the proposal.

153. 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.[353] 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,

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[346] *Id.* § 309(j)(3)(B).

[347] 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); 47 C.F.R. § 1.2110(c)(1).

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

[349] *See* 47 C.F.R. § 24.720 (1994); *AWS-1 Report and Order,* 18 FCC Rcd at 25220 ¶ 149. *See also AWS-4 Service Rules R&O*, 27 FCC Rcd 16102, 16185 ¶ 217*)* (adopting the AWS-1 size standards and associated bidding credits for small businesses for any AWS-4 licenses awarded through competitive bidding); *H Block NPRM*, 27 FCC Rcd at 16295-97, ¶¶ 105-111 (2012) (proposing to use the AWS-1 size standards and associated bidding credits for small businesses for any H Block licenses awarded through competitive bidding).

[350] 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*, 17 FCC Rcd 24135, 24164-65 ¶¶ 76-77 (2002).

[351] *See 2004 NPRM*, 19 FCC Rcd at 19308-09 ¶¶ 122-23; *H Block NPRM*, 27 FCC Rcd at 16295-97, ¶¶ 105-111; *AWS-4 Service Rules R&O*, 27 FCC Rcd at 16185 ¶ 217.

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

[353] 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).

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 frequency bands for which the Commission has already established service rules as a basis for their comments and any quantification of costs and benefits regarding the appropriate small business size standards.

154. In establishing the criteria for small business bidding credits, we acknowledge the difficulty in accurately predicting the technology and market conditions 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.

155. We seek comment on whether the small business provisions we propose today are sufficient to promote participation by businesses owned by minorities and women, as well as rural telephone companies. To the extent that commenters propose additional provisions to ensure participation by minority-owned or women-owned businesses, they should address how such provisions should be crafted to meet the relevant standards of judicial review.[354]

156. We also 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.

157. Finally, we note that under our Part 1 rules, a winning bidder for a market will be eligible to receive a bidding credit for serving a qualifying tribal land within that market, provided that it complies with the applicable competitive bidding rules.[355] The Commission currently has under consideration various provisions and policies intended to promote greater use of spectrum over tribal lands. We propose to extend any rules and policies adopted in that proceeding to any licenses in the 1695-1710 MHz, 1755-1780 MHz, 2020-2025 MHz, and 2155-2180 MHz bands that may be assigned through competitive bidding.[356] We seek comment on this proposal.

d. Commercial Spectrum Enhancement Act Requirements

158. As noted above, the CSEA established the SRF to reimburse Federal agencies operating on certain frequencies that have been reallocated from Federal to non-Federal use for the cost of relocating their operations.[357] The SRF is funded from cash proceeds attributable to "eligible frequencies" in an auction involving such frequencies.[358] CSEA requires NTIA to notify the Commission of estimated relocation costs and timelines for relocation from eligible frequencies by eligible Federal

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[354] *See, e.g.*, *Adarand Constructors, Inc. v. Peña*, 515 U.S. 200 (1995) (requiring a strict scrutiny standard of review for Congressionally mandated race-conscious measures); *United States v. Virginia*, 518 U.S. 515 (1996) (applying an intermediate standard of review to a state program based on gender classification).

[355] 47 C.F.R. § 1.2110(f)(3).

[356] *Tribal Lands NPRM*, 26 FCC Rcd 2623, 2630-31 ¶¶ 19-20.

[357] *See supra* ¶ 11. *See also* 47 U.S.C. § 928 (Spectrum Relocation Fund).

[358] 47 U.S.C. § 928(b). "Eligible frequencies" are defined as those in the 216-220 MHz band, the 1432-1435 MHz band, the 1710-1755 MHz band, the 2385-2390 MHz band, and any other band of frequencies reallocated from Federal use to non-Federal use or to shared use after January 1, 2003 that is assigned by competitive bidding pursuant to Section 309(j) of the Communications Act, 47 U.S.C. § 309(j). *See* 47 U.S.C. § 923(g)(2).

entities at least six months in advance of a scheduled auction of eligible frequencies.[359] CSEA further requires that the total cash proceeds from any auction of "eligible frequencies" must equal at least 110 percent of estimated relocation costs of eligible Federal entities,[360] and prohibits the Commission from concluding any auction of eligible frequencies that falls short of this revenue requirement.[361] We invite comment on the applicability of the 110 percent requirement in the CSEA to the various relocation and sharing scenarios discussed herein.[362] We also note that the proceeds of spectrum required to be auctioned under Section 6401 of the Spectrum Act are to be deposited in the Public Safety Trust Fund established under Section 6413 of the Spectrum Act. Commenters may wish to discuss the potential interplay between these Spectrum Act provisions and the CSEA.

e. Multi-Stage Auction and Licensing Alternatives for 1.7 GHz

159. We recognize that the Federal/non-Federal sharing scenarios being considered by CSMAC are very complex and workable rules may prove difficult to implement prior to the licensing deadlines imposed by the Spectrum Act. Therefore, we seek comment on alternative licensing constructs that could facilitate ongoing "operator-to-operator" negotiations between licensees in commercial bands (*e.g.*, 2155 MHz) and Federal agencies occupying complementary Federal bands (*e.g.*, 1.7 GHz), should sharing or relocation for exclusive use not be possible.

160. We expect that such approaches would contain a licensing component, which would provide that licensees in the commercial bands are granted an exclusive license for the shared Federal/non-Federal band with all non-Federal operations subject to successful coordination with all Federal operators. They might also contain a mechanism to allow for the conveyance of funds to facilitate commercial access in a manner consistent with applicable laws, including, but not limited to, the CSEA and the Miscellaneous Receipts Act.[363]

161. For example, under this scenario, could the license for the commercial bands be paired with an "overlay" license in Federal bands providing that commercial use of such bands would be entirely contingent upon successful coordination with incumbent Federal users? Alternatively, could the

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[359] 47 U.S.C. § 923(g)(4). On March 20, 2013, the Commission notified NTIA that it "plans to commence the auction of licenses in the 1695-1710 MHz band and the 1755-1780 MHz band as early as September 2014." *FCC March 2013 Letter to NTIA* at 1.

[360] *See* 47 U.S.C. § 309(j)(3)(F). Section 309(j)(16)(A) of the Communications Act, which was added by Section 203(b) of CSEA, requires the Commission to revise its existing regulations to prescribe methods by which the total cash proceeds from any auction of licenses authorizing use of "eligible frequencies" shall equal at least 110 percent of the total estimated relocation costs provided to the Commission by NTIA. *See* 47 U.S.C. § 309(j)(16)(A). In implementing rules and procedures necessary to comply with CSEA, the Commission amended its reserve price rule to provide that, for any auction of "eligible frequencies" requiring recovery of estimated relocation costs, the Commission will establish a reserve price or prices pursuant to which the total cash proceeds from any auction of eligible frequencies shall equal at least 110 percent of the total estimated relocation costs of provided to the Commission by NTIA. *See* Implementation of the Commercial Spectrum Enhancement Act and Modernization of the Commission's Competitive Bidding Rules and Procedures, *Report and Order*, 21 FCC Rcd 891, 894 ¶¶ 6-7 (2006) (implementing provisions of CSEA) (*CSEA Implementation Report and Order)*; 47 C.F.R. § 1.2104(c). The Commission also modified its Tribal land bidding credit rule to enable the Commission, in auctions subject to CSEA, to award all eligible applicants tribal land bidding credits on a *pro rata* basis in the event that the net winning bids at the close of bidding (exclusive of tribal land bidding credits) are not sufficient both to meet the reserve price(s) and to award all eligible applicants full tribal land bidding credits. *See id.* at 896-898 ¶¶ 13-16; 47 C.F.R. § 1.2110(f)(3)(v). The reserve price and Tribal land bidding credit rules adopted by the Commission in the *CSEA Implementation Report and Order* remain in effect today.

[361] *See* 47 U.S.C. § 309(j)(16)(B).

[362] *See* 47 U.S.C. § 309(j)(8)(D) (as amended by Section 6401(c) of the Spectrum Act.

[363] 31 U.S.C. 3302(b) (an official or agent of the Government receiving money for the Government from any source shall deposit the money in the Treasury as soon as practicable without deduction for any charge or claim).

commercial licenses grant to the licensee exclusive eligibility status with respect to a future assignment of rights in such Federal bands? Could an auction proceed in two stages, to enable the initial assignment of a "negotiation right" and subsequent payments into the Spectrum Relocation Fund to facilitate relocation or upgrades pursuant to the CSEA? For example, the first stage could assign commercial licenses and any concomitant rights to negotiate with incumbent Federal users for the use of Federal spectrum. The second stage would consist of a supplementary round with participation limited to eligible commercial licensees, and a reserve price set based on the 110 percent funding requirement established by the CSEA. What approaches would generate the most certainty, and therefore expected value, in the use of the spectrum?

11. Non-Federal Relocation and Cost Sharing

a. 2155-2180 MHz

162. There are two non-Federal incumbent services still authorized in portions of the 2155-2180 MHz band: there are approximately 250 Fixed Microwave Service ("FS") licenses in the 2160-2180 MHz band and approximately five BRS licensees in the 2150-2160/62 MHz band. The FS operations in the 2160-2180 MHz band are typically configured to provide two-way microwave communications using paired links in the 2110-2130 MHz band. While few BRS systems remain, in the past BRS systems were deployed via three types of system configurations: high-power video stations, high-power fixed two-way systems, and low-power, cellularized two-way systems.[364] Under the Commission's rules, AWS licensees in these bands must protect incumbent operations or relocate the incumbent licensees to comparable facilities, until the applicable "sunset date," after which the incumbents must cease operating if the AWS licensee intends to operate a station in the relevant area.[365] The Commission's rules also address cost-sharing reimbursement to cover the scenario where relocation of an incumbent system benefits more than one AWS licensee.[366] We propose to extend to the AWS-3 band the current relocation and cost sharing rules for both the FS in the 2160-2180 MHz band and the BRS in the 2150-2160/62 MHz band. We seek comment on this proposal.

b. 2020-2025 MHz

163. *Background*. The 2020-2025 MHz band is part of the 1990-2025 MHz band that the Commission reallocated from the BAS to emerging technologies ("ET") such as PCS, AWS, and MSS.[367] 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.[368] In addition, as a general rule, the Commission's traditional cost-sharing principles are applicable to the

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[364] 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, *Ninth Report And Order and Order*, 21 FCC Rcd at 4480 ¶ 12 (2006) ("*AWS Allocation Ninth R&O").* The 2150-2160/62 MHz BRS band is subdivided into two channels: Channels 1 from 2150-2156 MHz and Channel 2a/2 from 2156-2160/62 MHz.

[365] 47 C.F.R. §§ 27.1250-27.1255, 101.69-101.82; *AWS Allocation Ninth R&O,* 21 FCC Rcd at 4481-4503, 4505-07, 4515-19, 4526-33, ¶¶ 15-54, 58-63, 74-85, 104-125.

[366] 47 C.F.R. §§ 27.1160-1190.

[367] *See supra* section III.B.4 (Proposed Bands for AWS-3 Service Rules, 2020-2025 MHz). *See also* 47 C.F.R. § 74.690. Of the total 35 megahertz of spectrum, five megahertz was authorized for PCS and held by Sprint; 10 megahertz is authorized for, and to be auctioned and licensed as, AWS; and 20 megahertz is authorized for MSS and AWS-4.

[368] 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 at 13876 ¶ 5 (2010) ("*2010 BAS Ruling*").

1990-2025 MHz band.[369] Sprint, which is the PCS licensee at 1990-1995 MHz, completed the BAS transition for the entire 35 megahertz in 2010.[370] In 2011, Sprint notified the Commission that it entered in a private settlement with DISH to resolve the dispute with MSS licensees with respect to MSS licensees' obligation to reimburse Sprint for their share of the BAS relocation costs.[371] Accordingly, the only remaining cost-sharing obligations in the 1990-2025 MHz band are attributable to the remaining, unassigned ten megahertz of spectrum in the 1990-2025 MHz band: 1995-2000 MHz and 2020-2025 MHz.[372]

164. In the *AWS Allocation Sixth R&O,* the Commission determined that all new entrants to the 1990-2025 MHz band may be required to bear a proportional share of the costs incurred in the BAS clearance on a *pro rata* basis according to the amount of spectrum each licensee is assigned. However, the Commission did not decide specifically how to allocate that share.[373] In the *2004 NPRM,* the Commission sought comment on how the reimbursement rights and obligations of each AWS licensee could be most efficiently and equitably be allocated if the 2020-2025 MHz were licensed on a geographic area basis other than as a nationwide license.[374] To the extent that not all spectrum in the 1990-2025 MHz band would have been licensed, the Commission sought comment on whether to require those entrants who are licensed at that time to bear a *pro rata* share of the relocation costs based on the amount of spectrum they have been assigned relative to the amount of 1990-2025 MHz spectrum that has been licensed.[375] In addition, the Commission also sought comment on whether to impose reimbursement obligations on later arriving new entrants, on the appropriate length of such an obligation, and on the

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[369] *See* Improving Public Safety Communications in the 800 MHz Band, WT Docket No. 02-55, ET Docket No. 00-258, ET Docket No. 95-18, *Report and Order, Fifth Report and Order, Fourth Memorandum Opinion and Order, and Order*, 19 FCC Rcd 15095, 15099 ¶¶ 252, 261 (2004) ("*800 MHz R&O"*). Under these procedures, the first new entrant into the band that incurs relocation expenses for the relocation of incumbents from portions of the band that the new entrant will not occupy is, as a general matter, eligible to obtain reimbursement from subsequent entrants in the band. 47 C.F.R. §§ 27.1160-1174, 101.82.

[370] 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, WT Docket No. 02-55 (dated July 15, 2010). Sprint has stated that the *pro rata* share of the overall BAS relocation costs attributable to each five megahertz of relocated BAS spectrum amounts to $94,875,516. Sprint completed the BAS transition for the entire 35 megahertz due to the integrated nature of BAS operations, which required relocations on a market-by-market basis, nationwide.

[371] *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 had reached an agreement with DISH to settle its outstanding disputes).

[372] As the 2020-2025 MHz band represents one-seventh of the relocated BAS spectrum, the relocation costs collectively attributable to 2020-2025 MHz licenses amount to $94,875,516. Another 5 megahertz in the 1990-2025 MHz band is currently part of the H Block (1995-2000). The Commission addressed the one-seventh owed to Sprint for the relocation costs associated with the H Block in a separate proceeding, WT Docket No. 12-357.

[373] 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, *Sixth Report and Order, Third Memorandum Opinion and Order, and Fifth Memorandum Opinion and Order,* 19 FCC Rcd at 20753 ¶¶ 72-73 (2004) *("AWS Allocation Sixth R&O').*

[374] The Commission sought comment on whether to determine the pro rata amount owed by the licensee of each individual license on the basis of the geographic area or population covered by each license, or the value of each license as indicated by the winning auction bid, or by some other means. *See 2004 NPRM,* 19 FCC Rcd at 19287-19288 ¶ 60.

[375] *See 2004 NPRM*, 19 FCC Rcd at 19288 ¶ 61.

mechanism for applying those obligations.[376] In the *2010 BAS Order* the Commission determined that an AWS entrants' cost-sharing obligation for the 1990-2025 MHz band will be triggered upon the final grant of the long form application for each of its licenses.[377]

165. *Discussion*. Consistent with the Commission's intent that all entrants to the 1990-2025 MHz band bear a proportional share of the costs incurred in the BAS clearance on a *pro rata* basis according to the amount of spectrum each entrant is assigned, we propose that 2020-2025 MHz band licensees be responsible for reimbursing Sprint for one-seventh of the BAS relocation costs (*i.e.*, the proportional share of the costs associated with Sprint relocating 5 megahertz of BAS spectrum that will be used by licensees of the 2020-2025 MHz band). We believe it is important to provide auction bidders with reasonable certainty as to the range of the reimbursement obligation associated with each license under various auction outcomes. We also believe it is important for Sprint to be fully reimbursed as soon as possible given that Sprint cleared the spectrum so 2020-2025 MHz band licensees will receive unencumbered spectrum. Accordingly, we propose to require 2020-2025 MHz band licensees to reimburse Sprint based on the gross winning bids of the initial auction of the 2020-2025 MHz band. Specifically, we propose that the reimbursement amount owed ("RN") be determined by dividing the gross winning bid ("GWB")[378] for a 2020-2025 MHz license (*i.e.*, an individual EA) by the sum of the gross winning bids for all 2020-2025 MHz band licenses won in the initial auction and then multiplying by $94,875,516. In other words, the cost-sharing formula would read as follows:

$$RN = \left(\frac{\text{EA GWB}}{\text{Sum of GWBs}} \right) x \$94{,}875{,}516$$

Because certain EAs, such as for the Gulf of Mexico, have a relative value that is not directly tied to population, our proposal seeks to allow the market to determine the value of each EA license and the associated amount of the reimbursement obligation. However, parties can comment on alternative cost-sharing formulas, including one based on population as described below. We seek comment on our proposals.

166. This formula would ensure that Sprint receives full reimbursement after the first auction by effectively apportioning the reimbursement costs associated with any unsold 2020-2025 MHz band licenses among the winning bidders of 2020-2025 MHz band licenses in the first auction—with an exception in the event a successful bidder's long-form application is not filed or granted,[379] and a contingency to cover an unlikely scenario. We further propose that winning bidders of 2020-2025 MHz band licenses in the first auction of this spectrum would not have a right to seek reimbursement from

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[376] *See id*.

[377] 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, 13896 ¶ 50 (2010).

[378] Basing the proposed cost-sharing formula on gross, rather than net, winning bids, avoids having to recalculate obligations in the event that a bidding credit is adjusted or denied during the review of the long-form applications.

[379] The Commission imposes payment obligations on bidders that withdraw provisionally winning bids during the course of an auction, on those that default on payments due after an auction closes, and on those that are disqualified. *See* 47 C.F.R. §§ 1.2110(f)(2)(i). To the extent such were to occur and a winning bidder were not awarded a license, we propose that the EA license at issue be deemed to have triggered a reimbursement obligation that will be paid to Sprint by the licensee acquiring the license at a reauction. The amount owed to Sprint by the licensee acquiring the EA license at reauction will be based on the gross winning bid for the EA license in the initial auction. Accordingly, an applicant at reauction will know with the certainty the reimbursement obligation owed to Sprint and take it into account in placing its bids for each EA license. Our proposal balances the interests of all parties while adopting a cost-sharing formula that is easy to administer.

other 2020-2025 MHz licensees including for licenses awarded in subsequent auctions. We believe this approach would avoid recordkeeping burdens and potential disputes and that it is appropriate given that—in the event that most licenses are awarded—the reimbursement obligation for an individual license will represent but a fraction of overall reimbursement to Sprint. We seek comment on our proposals including the following contingency: in the unlikely event that licenses covering less than 40 percent of the population of the United States[380] are awarded in the first auction, we propose that winning bidders—in the first auction of this spectrum as well as in subsequent auctions—will be required to timely pay Sprint their *pro rata* share calculated by dividing the population of the individual EA awarded at auction by the total U.S. population and then multiplying by $94,875,516. This contingent proposal would ensure that Sprint is reimbursed as soon as possible while also protecting winning bidders of 2020-2025 MHz band licenses from bearing an undue burden of the reimbursement obligation due to Sprint. We seek comment on our proposal.

167. Alternatively, we specifically seek comment on the relative costs and benefits of adopting a population based cost-sharing formula as the general rule for the 2020-2025 MHz band.[381] We acknowledge that using a population based approach in all events would offer bidders certainty as to the obligation attached to each license but this approach could also defer Sprint's full reimbursement indefinitely if less than all of the licenses are awarded during the initial auction.

168. We further propose that winning bidders promptly pay Sprint the amount owed, as calculated pursuant to the formula that we adopt, within 30 days of grant of their long form applications for the licenses. For PCS and AWS-1, and AWS-4, cost sharing obligations are triggered when a licensee proposes to operate a base station in an area cleared of incumbents by another licensee. In this case, rather than Sprint itself benefiting from its band clearing efforts, other entrants in the band will reap the benefits of Sprint's efforts. Accordingly, we find no significant reason to treat Sprint any differently than UTAM, for its clearing of the 1910-1915 MHz band[382] and as recently proposed for UTAM's clearing of the 1915-1920 MHz band.[383] Thus, we propose that Sprint be fully reimbursed by AWS licensees that will benefit from Sprint's clearing of the 2020-2025 MHz band. Moreover, as noted above, given the relative fraction of overall reimbursement to Sprint that will be owed by each winning bidder, we believe that it will not disincentivize parties from filing applications or impose a burden on winning bidders to reimburse Sprint within 30 days of the grant of their long-form applications. We seek comment on the above proposals, including the costs and benefits.

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[380] The population percentage would be as measured using 2010 Census data or such other data or measurements that the Wireless Telecommunications Bureau proposes and adopts under the notice and comment process for the auction procedures.

[381] For example, some EAs, such as for the Gulf of Mexico, may have a relative value that is not directly tied to population. In these cases, a population based cost-sharing formula may not fairly apportion relocation costs among the winning bidders of such licenses.

[382] 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, *Third Report and Order, Third Notice of Proposed Rulemaking and Second Memorandum Opinion and Order*, 18 FCC Rcd at 2251 ¶ 58 (2003) ("*AWS Allocation Third R&O and Third NPRM").*

[383] *See H Block NPRM*, 27 FCC Rcd at 16278-16279 ¶¶ 58-61. UTAM relocated virtually all of the incumbent microwave links in the 1910-1930 MHz band. The Commission similarly proposed that Sprint be fully reimbursed by AWS licensees that will benefit from Sprint's clearing of BAS incumbents from the H Block (1995-2000 MHz). *See id*. at ¶¶ 64-68.

169. Consistent with precedent, we propose a specific date on which the reimbursement obligation adopted above will terminate.[384] In recent instances, the relocation and cost-sharing obligations concurrently sunset ten years after the first ET license is issued in the respective band.[385] In 2003 the Commission established a relocation sunset date for the 1990-2025 MHz band of December 9, 2013 on which the obligation of new entrants to relocate the incumbent BAS operations would end.[386] However, in this instance, we do not believe that the public interest would be served by maintaining December 9, 2013 as the sunset date for terminating the requirement that 2020-2025 MHz licensees collectively reimburse Sprint for one-seventh of the BAS relocation costs.[387] Rather, we propose a sunset date for the cost-sharing obligations of 2020-2025 MHz band licensees to Sprint that is ten years after the first 2020-2025 MHz band license is issued in the band. We find that a number of factors support our proposal. As discussed above, Sprint relocated BAS incumbents from the 2020-2025 MHz band, even though 2020-2025 MHz band licensees and not Sprint itself will reap the benefits of Sprint's relocation of BAS. In addition, the integrated nature of BAS operations required relocations on a market-by-market basis, and such a requirement would have imposed significant costs on individual 2020-2025 MHz band entrants because isolated, link-by-link relocation was infeasible. It therefore served the public interest for Sprint to undertake the relocation on an integrated, nationwide basis. Because 2020-2025 MHz band licenses have yet to be auctioned and because interested applicants will be able to calculate their reimbursement obligation to Sprint in bidding on licenses, we do not believe that our proposal imposes a burden on the winning bidders of 2020-2025 MHz licenses. We seek comment on our proposed sunset date, including the costs and benefits.

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[384] We recognize that our proposal assumes that most of the 2020-2025 MHz band licenses will be awarded the first time they are offered at auction and that 2020-2025 MHz band licensees will satisfy their reimbursement obligation to Sprint within thirty days of the grant of their long-form application. However, as proposed above, if the licenses sold at the first auction cover less than forty (40) percent of the nation's population collectively, an AWS licensee that obtains a license for a market not awarded in the first 2020-2025 MHz band auction will have a reimbursement obligation to Sprint. Therefore, we find it necessary to adopt a sunset date for the termination of the reimbursement obligation of 2020-2025 MHz band licensees to Sprint. We believe that the proposed sunset date balances the interests of all parties by encouraging timely payment to Sprint while ensuring that, consistent with precedent, the reimbursement obligation terminates on a specific date for any licenses that have not yet triggered an obligation to pay Sprint.

[385] *See, e.g.,* 47 C.F.R. § 101.79(a)(1)-(a)(2).

[386] 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 Nos. 95-18 and 00-258, IB Docket No. 01-185, *Third Report and Order and Third Memorandum Opinion and Order*, 18 FCC Rcd 23638, 23661-62, 23670 ¶¶ 47, 64 (2003); 47 C.F.R. § 74.690e(6), 78.40(f)(6). The date of December 9, 2013 was ten years after the mandatory negotiation period began for MSS operators, which was commenced via the release of a Commission order and not by the traditional means of a new entrant stating its intent in writing to negotiate with an incumbent.

[387] We also do not believe it is in the public interest to tie Sprint's reimbursement rights for clearing the 1995-2000 MHz band to the 800 MHz band realignment. In the *AWS Allocation Sixth R&O* the Commission stated that Nextel (now Sprint) could seek reimbursement for relocating the BAS incumbents from AWS licensees that enter the band prior to the end of the 800 MHz reconfiguration period. *AWS Sixth R&O*, 19 FCC Rcd at 20753 ¶ 72. In 2010, the Commission addressed the issue of cost-sharing between Sprint and MSS licensees with respect to Sprint's relocation of BAS incumbents from the 1990-2025 MHz band; explained that the Commission tied the reimbursement obligations to the completion of the 800 MHz band realignment for administrative convenience and efficiency and not to provide entrants with a means to avoid paying BAS relocation costs; and concluded that fairness as well as our well-established cost sharing principles dictate that all of the new entrants should bear the burden of the increased cost and complexity of the BAS transition and not just Sprint. *2010 BAS Ruling*, 25 FCC Rcd 13883-13885 ¶¶ 24-27. As explained below, we believe it is fair to all parties to require AWS licenses to pay their fair share of BAS relocation costs. We find no reason to connect the reimbursement obligation owed by 2020-2025 MHz band licensees to Sprint to the 800 MHz band realignment.

I. Allocation Matters

1. 1695-1710 MHz

170. To facilitate the Spectrum Act's requirement that the Commission reallocate the 1695-1710 MHz segment of the 1675-1710 MHz band for wireless broadband, we propose to amend the Table of Frequency Allocations[388] by allocating the 1695-1710 MHz band to the fixed and mobile except aeronautical mobile services on a primary basis for non-Federal use. We are excluding aeronautical mobile service from our mobile allocation proposal to better protect earth station reception of frequencies in the 1695-1710 MHz band. Additionally, we propose to adopt a new U.S. footnote (tentatively numbered as US88) to provide for the protection of Federal earth stations in the 1695-1710 MHz band. Because we anticipate that NTIA will endorse the revised list of 27 Protection Zones that WG1 reported to CSMAC on June 18, 2013,[389] we propose to adopt the following U.S. footnote, which would codify our agreement with NTIA:

> US88 In the band 1695-1710 MHz, Federal earth stations in the meteorological-satellite service (space-to-Earth) shall be afforded protection from harmful interference at the 27 sites listed below:

Earth Station Location	Latitude	Longitude	Maximum Protection Distance (km)
Wallops Island, Virginia	375645 N	752745 W	30
Fairbanks, Alaska	645822 N	1473002 W	20
Suitland, Maryland	385107 N	765612 W	98
Miami, Florida	254405 N	800945 W	51
Hickam AFB, Hawaii	211918 N	1575730 W	28
Sioux Falls, South Dakota	434409 N	963733 W	42
Cincinnati, Ohio	390610 N	843035 W	32
Rock Island, Illinois	413104 N	903346 W	19
St. Louis, Missouri	383526 N	901225 W	34
Vicksburg, Mississippi	322047 N	905010 W	16
Omaha, Nebraska	412056 N	955734 W	30
Sacramento, California	383550 N	1213234 W	55
Elmendorf AFB, Alaska	611408 N	1495531 W	98
Andersen AFB, Guam	133452 N	1445528 E	42
Monterey, California	363534 N	1215120 W	76
Stennis Space Center, Mississippi	302123 N	893641 W	57
Twenty-Nine-Palms, California	341746 N	1160944 W	80
Yuma, Arizona	323924 N	1143622 W	95
Barrow, Alaska	711922 N	1563641 W	35
Boise, Idaho	433542 N	1161349 W	39
Boulder, Colorado	395926 N	1051551W	2
Columbus Lake, Mississippi	333204 N	883006 W	3
Fairmont, West Virginia	392602 N	801133 W	4
Guaynabo, Puerto Rico	182526 N	660650 W	48
Kansas City, Missouri	391640 N	943944 W	40

[388] 47 C.F.R. § 2.106.

[389] WG1 recommended the revised list of 27 Protection Zones to CSMAC on June 18, 2013. *See supra* note 163.

Earth Station Location	Latitude	Longitude	Maximum Protection Distance (km)
Knoxville, Tennessee	355758 N	835513 W	50
Norman, Oklahoma	351052 N	972621 W	3

NOTE: The year 2030 is the projected date when the last legacy space station is expected to cease operations in the band 1695-1710 MHz. Stations at the 27 locations must be protected until legacy operations in the band actually cease operations.

171. We also propose to remove four unused allocations that apply to the 1695-1710 MHz band from the U.S. Table. First, we propose to delete the primary non-Federal meteorological-satellite service (space-to-Earth) allocation from the 1695-1710 MHz band, as we are not aware of any use in this segment of the band. Second, we propose to delete the primary Federal fixed service allocation from the 1700-1710 MHz band and associated footnote G118. Third, we propose to delete the primary meteorological aids (radiosonde) allocation from the 1695-1700 MHz band.[390] Fourth, we propose to restrict the use currently authorized pursuant to international footnote 5.289 by moving its text into a U.S. footnote (tentatively numbered as US289) so that Earth exploration-satellite service applications, other than the meteorological-satellite service, can continue to be used in the 460-470 MHz and 1690-1695 MHz bands (but not the 1695-1710 MHz band) for space-to-Earth transmissions subject to not causing harmful interference. Revised US289 would read as follows:

> US289 Earth exploration-satellite service applications, other than the meteorological-satellite service, may also be used in the bands 460-470 MHz and 1690-1695 MHz for space-to-Earth transmissions subject to not causing harmful interference to stations operating in accordance with the Table of Frequency Allocations.

We seek comment on these proposals. Commenters may wish to discuss how any proposed allocation changes reflect Congress' priority for relocation over sharing for enabling commercial access to new spectrum, subject to technical and cost constraints.[391]

2. 2020-2025 MHz

172. Although we do not propose to modify the existing allocations in the 2020-2025 MHz band, we propose to remove footnote NG177 from the Allocation Table because Television Broadcast Auxiliary Stations have completed their transition from the 1990-2110 MHz band (120 MHz) to the 2025-2110 MHz band (85 MHz).[392]

3. 2155-2180 MHz

173. We propose several modifications that relate to the 2155-2180 MHz band. Specifically, we propose to update and combine footnotes NG153 and NG178, and to tentatively number the resultant footnote as NG41. Specifically, we propose to remove the first two sentences from footnote NG153[393]

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[390] *See Fast Track Report* at 2-2 ("radiosondes operate in the 1675-1683 MHz portion of the band").

[391] *See supra* ¶ 11.

[392] The Commission reallocated the 1990-2025 MHz band from BAS to emerging technologies such as PCS, AWS, and MSS. "Sprint, which is the PCS licensee at 1900-1995 MHz, completed the BAS transition for the entire 35 megahertz in 2010." *See H Block NPRM*, 27 FCC Rcd 16258, 16279-16280 ¶ 62.

[393] Footnote NG153 currently reads as follows: The band 2160-2165 MHz is reserved for future emerging technologies on a co-primary basis with the fixed and mobile services. Allocations to specific services will be made in future proceedings. Authorizations in the band 2160-2162 MHz for stations in the Multipoint Distribution Service applied for after January 16, 1992, shall be on a secondary basis to emerging technologies. 47 C.F.R. § 2.106, n.NG153.

(because we are not proposing to add any additional allocations to the 2160-2165 MHz band); to revise the last sentence in footnote NG153 by updating "Multipoint Distribution Service" and "emerging technologies" to read "Broadband Radio Service" and "Advanced Wireless Services," respectively; to highlight that all initial authorizations in the 2160-2180 MHz band applied for after January 16, 1992 were issued on a secondary basis; and to highlight the sunset provisions that apply to Part 101 fixed stations that were authorized on a primary basis.[394] We propose to remove footnotes NG153, NG177, and NG178, and the new footnote, tentatively numbered NG41, would read as follows:

> NG41 In the 2160-2180 MHz band, the following provisions shall apply to grandfathered stations in the fixed service:
>
> (a) Stations operating pursuant to licenses applied for after January 16, 1992 in the Common Carrier Fixed Point-to-Point Microwave Service and in the 2160-2162 MHz sub-band of the Broadband Radio Service may operate on a secondary basis to the Advanced Wireless Service (AWS).
>
> (b) Fixed stations in the Common Carrier Fixed Point-to-Point Microwave Service that were authorized on a primary basis will retain that status unless and until an AWS licensee requires use of the spectrum. AWS licensees are required to pay relocation costs until ten years after the first AWS license is issued in the band.

We also propose several non-substantive updates to the Table: (1) expand the cross reference to Part 27 of the Commission's rules, which is shown as "Wireless Communications (27)" in the 1710-1755 MHz band, by displaying this cross reference in the 1695-1780 MHz band; and (2) revise the 1850-1980 MHz and 1980-2025 MHz bands in the Federal Table (which are not allocated for any Federal use) to read 1850-2000 MHz and 2000-2025 MHz. We also seek comment on any other allocation changes that would be necessary to effectuate any of the proposals contained in this *Notice of Proposed Rulemaking.*

4. 1.7 GHz Band

174. In the sections above, we seek comment on possible service rules for non-Federal, mobile use of 1755-1780 MHz on a shared basis with Federal users.[395] Furthermore, NTIA has suggested that commercial use be considered in the full 1755-1850 MHz band. Our determination of whether such use should be permitted would be based on whether it serves the public interest, convenience, and necessity. We expect that the record in this proceeding will include recommendations from NTIA informed by the CSMAC process. In the event that the record supports a conclusion that non-Federal terrestrial service rules are appropriate for any of the 1.7 GHz band spectrum currently allocated for Federal use, what changes to the Table of Frequency Allocations would be necessary to implement such a conclusion in the 1.7 GHz band? Would different changes be required for different band segments and/or geographical locations? Could different portions of the band be allocated for shared or exclusive use?

5. Other Bands, including 2025-2110 MHz and 5150-5250 MHz

175. Throughout this notice, we seek comment on potential changes to Federal and non-Federal uses in several different bands. For instance, in section III.C.2 above, we seek comment on CTIA's proposal for commercial use of the 2095-2110 MHz band.[396] NTIA notes that the Department of Defense has identified the 2025-2110 MHz band as the preferred option to relocate most of its operations

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[394] Part 101 use of the 2160-2180 MHz band is restricted to Common Carrier Fixed Point-to-Point Microwave Service per section 101.101. Applications for new facilities submitted after the adoption date of the *Notice of Proposed Rulemaking* in ET Docket No. 92-9 (Jan. 16, 1992) "will be granted on a secondary basis only." 47 C.F.R. §§ 101.79(a)(1), 101.101.

[395] We also note that 1755-1780 MHz could be identified to meet or exceed the Spectrum Act requirement for the FCC to identify, auction and license 15 megahertz of contiguous spectrum by February 2015.

[396] *See supra* note 118.

and that the National Aeronautics and Space Administration and DoD have identified the 5150-5250 MHz band as a comparable destination band for their aeronautical mobile telemetry systems).[397] NTIA adds that, "[i]f it is determined that agencies will need to relocate any of these systems, the FCC and NTIA will need to identify replacement spectrum and take necessary steps to enable comparable capabilities."[398] More recently, NTIA transmitted a proposal from DoD that would require increased Federal access to the 2025-2110 MHz band, but not the 5150-5250 MHz band. We therefore seek comment on any changes to the Table of Frequency Allocations that would be necessary to effectuate these and any other band reconfiguration concepts identified in this notice or proposed alternatives. We note that in contrast to non-Federal terrestrial allocations, where the issuance of service rules is typically required prior to the issuance of licenses, the addition of a Federal allocation to a band typically allows the authorization of new Federal assignments without an intermediate step. In other words, once the Federal allocation is in place, NTIA could immediately begin issuing spectrum assignments. Therefore, if the record should demonstrate the public interest in accommodating new Federal systems through allocation changes, we seek comment on whether, and if so how, any new Federal allocations be made contingent on relocation to accommodate new commercial licensees in the 1.7 GHz band.

6. Statutory Requirements

176. In discussing any changes to the Table of Frequency Allocations, we seek specific comment on any special statutory conditions that may apply. Two particular statutory provisions are of special relevance here.

177. First, Congress recognized the potential benefits of flexible spectrum allocations and amended the Communications Act in 1997 to add section 303(y), which grants the Commission the authority to adopt flexible allocations if certain factors are met.[399] We seek comment on how best to read Section 303(y) in light of the subsequent mandate of Section 6401 to "allocate the spectrum described [therein] for commercial use." We also seek comment on whether any allocation changes, together with the proposed service rules, proposed or identified in this notice or by commenters would satisfy the four elements of Section 303(y) of the Act.

178. Second, Section 1062(b) of the National Defense Authorization Act for Fiscal Year 2000 requires that, if "in order to make available for other use a band of frequencies of which it is a primary user, the Department of Defense is required to surrender use of such band of frequencies, the Department shall not surrender use of such band of frequencies until…the [NTIA], in consultation with the [FCC], identifies and makes available to the Department for its primary use, if necessary, an alternative band or bands of frequencies as a replacement for the band to be so surrendered."[400] Furthermore, current law requires that "the Secretary of Commerce, the Secretary of Defense, and the Chairman of the Joint Chiefs of Staff jointly certify…that such alternative band or bands provides comparable technical characteristics to restore essential military capability that will be lost as a result of the band of frequencies to be so

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[397] *See NTIA Recommendation*s Letter *at* 3.

[398] *See, e.g., id. See also* Letter from Lawrence E. Strickling, Assistant Secretary for Communications and Information, U.S. Department of Commerce, to Julius Genachowski, Chairman, FCC (Feb. 19, 2013) (stating, at 1, that it may be necessary to relocate Federal aeronautical mobile telemetry systems from the 1755-1850 MHz band to the 5150-5250 MHz band and citing, at n.10, *NTIA 1755-1850 MHz Assessment Report* at 45.

[399] Section 303(y) provides the Commission with authority to allocate spectrum for flexible 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." Balanced Budget Act of 1997, 47 U.S.C. § 303(y), Pub. L. No. 105-33, 111 Stat. 251, 268-69.

[400] Section 1062(b) of the National Defense Authorization Act for Fiscal Year 2000 (Public Law 106–65; 113 Stat. 768); *see also* provisions (Surrender of Department of Defense Spectrum) set out as a note under 47 U.S.C. § 921.

surrendered."[401] We seek comment on the extent to which any proposed allocation changes would meet these requirements.

IV. ORDER ON RECONSIDERATION (WT DOCKET NOS. 07-16 AND 07-30)

179. In this *Order on Reconsideration*, we deny three petitions for reconsideration filed by McElroy Electronics Corporation (MEC), NetfreeUS, LLC (NetfreeUS), and Open Range Communications, Inc. (Open Range).[402] All three petitions ask us to reverse the Commission's August 2007 decision[403] that dismissed petitioners' March 2007 applications without prejudice.[404] Those applications, which were filed before Congress passed the Spectrum Act, all sought authority to operate in the 2155-2175 MHz Band, which, as discussed above, is a portion of the 2155-2180 MHz Band that the Spectrum Act directed the Commission to allocate for commercial use and license through a system of competitive bidding subject to flexible-use service rules. We deny the petitions for the reasons set forth below.

180. *Background.* On May 5, 2006, M2Z filed an application to construct and operate a nationwide broadband wireless network in the 2155-2175 MHz band.[405] In addition, M2Z filed a petition for forbearance on September 1, 2006, in which it requested that the Commission forbear from applying any rules, statutes, or policies that would block M2Z's application from being granted, including the competitive bidding provisions of Section 309(j) of the Communications Act.[406] On January 31, 2007, the Commission released a public notice stating that M2Z's application was accepted for filing pursuant to the Commission's general statutory authority under Section 309 of the Communications Act -- "rather than pursuant to an established framework of processing rules."[407] However, the Commission stated that its "action does not imply any judgment or view about the merits of the [M2Z] Application, nor does it preclude a subsequent dismissal of the Application as defective under existing rules or under future rules that the Commission may promulgate by notice and comment rulemaking."[408] The Commission also

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[401] *Id.*

[402] Petition for Reconsideration filed by McElroy Electronics Corporation (filed Oct. 1, 2007); Petition for Partial Reconsideration of NetFreeUS, LLC (filed Oct. 1, 2007); Petition for Reconsideration filed by Open Range Communications, Inc. (filed Oct. 1, 2007).

[403] *See* Applications for License and Authority to Operate in the 2155-2175 MHz Band, WT Docket No. 07-16, Petitions for Forbearance Under 47 U.S.C. § 160, WT Docket No. 07-30, *Order*, 22 FCC Rcd 16563 (2007) (*Applications and Forbearance Petitions Order*).

[404] Application of McElroy Electronics Corporation for a Nationwide 2155-2175 MHz Band Authorization (filed Mar. 2, 2007); Application of NetfreeUS, LLC for License and Authority to Provide Wireless Public Broadband Service in the 2155-2175 MHz Band (filed Mar. 2, 2007); Application of Open Range Communications, Inc. for License to Construct and Operate Facilities for the Provision of Rural Broadband Radio Services in the 2155-2175 MHz Band (filed Mar. 2, 2007).

[405] *See* Application of M2Z Networks, Inc. for License and Authority to Provide a National Broadband Radio Service in the 2155-2175 MHz Band (filed May 5,2006) (M2Z Application).

[406] *See* Petition of M2Z Networks, Inc. for Forbearance under 47 U.S.C. § 160(c) Concerning Application of Sections 1.945(b) and (c) of the Commission's Rules and Other Regulatory and Statutory Provisions, filed Sept. 1, 2006 (M2Z Petition).

[407] Wireless Telecommunications Bureau Announces that M2Z Networks, Inc.'s Application for License and Authority to Provide a National Broadband Radio Service in the 2155-2175 MHz Band is Accepted for Filing, WT Docket No. 07-16, *Public Notice*, 22 FCC Rcd 1955 (2007) (*M2Z Public Notice*).

[408] *M2Z Public Notice*, 22 FCC Rcd at 1955.

noted that "additional applications for spectrum in this band may be filed while the M2Z application is pending."[409]

181. On March 2, 2007, the Commission received several additional applications seeking authorization to use the 2155-2175 MHz Band, including the three petitioners' applications.[410] Some applicants, including MEC, stated that the Commission should assign licenses for this band by competitive bidding.[411] NetfreeUS asked the Commission to assign this spectrum without first conducting a rulemaking proceeding to consider service and licensing rules[412] In addition to its application, NetfreeUS filed a forbearance petition similar to the one submitted by M2Z.[413]

182. On August 31, 2007, the Commission released the *Applications and Forbearance Petitions Order*, which is the decision that all three petitioners now ask us to reconsider. In that decision, the Commission, among other things, dismissed without prejudice the applications filed by M2Z and the three petitioners here, and denied the M2Z and NetfreeUS petitions for forbearance.[414] The Commission found that "the public interest is best served by first seeking public comment on how the band should be used and licensed,"[415] rather than attempting to act on the applications in an *ad hoc* adjudicatory proceeding, outside the context of an auction and prior to the issuance of applicable rules. One applicant (M2Z)[416] appealed the Commission's decision to the D.C. Circuit, while the three petitioners sought reconsideration before the agency. The D.C. Circuit denied the appeal,[417] and we note that two of the petitioners here (Open Range and NetfreeUS) participated in the appeal as intervenors.[418]

183. *Discussion.* We now deny the three Petitions for Reconsideration. The Spectrum Act, which was enacted in February 2012, now expressly states that the Commission shall, among other things, allocate the frequencies between 2155 MHz and 2180 MHz and, through a system of competitive bidding, grant new initial licenses for the use of such spectrum pursuant to flexible-use service rules that the Commission has not yet adopted.[419] To the extent that petitioners sought licenses that would not be subject to these requirements, we deny the petitions as inconsistent with the clear requirements of the Spectrum Act. As noted in our prior order, our dismissal of petitioners' applications was without prejudice, and they are free to file applications in accordance with the rules and procedures that we adopt to govern such required auctions.

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[409] *M2Z Public Notice*, 22 FCC Rcd at 1956.

[410] Application of McElroy Electronics Corporation for a Nationwide 2155-2175 MHz Band Authorization (filed Mar. 2, 2007); Application of NetfreeUS, LLC for License and Authority to Provide Wireless Public Broadband Service in the 2155-2175 MHz Band (filed Mar. 2, 2007); Application of Open Range Communications, Inc. for License to Construct and Operate Facilities for the Provision of Rural Broadband Radio Services in the 2155-2175 MHz Band (filed Mar. 2, 2007).

[411] *Applications and Forbearance Petitions Order*, 22 FCC Rcd at 16576 ¶ 21.

[412] Petition for Partial Reconsideration of NetFreeUS, LLC (filed Oct. 1, 2007) at 17-19.

[413] Petition for Forbearance of NetFreeUS, LLC (filed Mar. 2, 2007).

[414] *See Applications and Forbearance Petitions Order*, 22 FCC Rcd at 16562-63, 16583-84.

[415] *Applications and Forbearance Petitions Order*, 22 FCC Rcd at 16564 ¶ 1.

[416] *See* Application of M2Z Networks, Inc. for License and Authority to Provide a National Broadband Radio Service in the 2155-2175 MHz Band (filed May 5, 2006).

[417] *M2Z Networks, Inc. v FCC*, 558 F.3d 554 (D.C. Cir. 2009).

[418] *See M2Z*, 558 F.3d at 554.

[419] Spectrum Act, § 6401(b).

184. Quite apart from the mandate of the Spectrum Act, for this portion of the AWS-3 band, the D.C. Circuit's *M2Z* opinion upheld the Commission's decision not to forbear from the relevant rules;[420] it also recognized that licenses are typically processed after the Commission adopts service rules through a rulemaking proceeding.[421] The D.C. Circuit also found that the Commission properly declined the request to license this band outside of the auction context.[422]

185. Petitioners (two of whom, as we noted, were intervenors in that case) have provided no basis why the rationale for that decision with respect to M2Z's application should not apply with equal force to their follow-on applications. To the extent the petitioners are asking us to forbear, as M2Z did, we find that their petitions should be denied for the reasons set forth in the *Applications and Forbearance Petitions Order*, which was upheld by the *M2Z* court. To the extent petitioners maintain that the Commission erred by dismissing their applications on the grounds that such applications preceded our adoption of applicable rules,[423] we reaffirm the Commission's 2007 decision that assignment of this spectrum without first conducting a rulemaking proceeding to consider service and licensing rules would not serve the public interest.[424] That determination has been upheld by the *M2Z* court. The court held that, whether the Commission's "consider[ation of] the public interest in deciding whether to forgo an auction . . . is characterized as an analysis under section 309 or a section 160 forbearance analysis matters little."[425] The court concluded that "the Commission reasonably performed every statutory duty at issue."[426] That analysis applies with equal force to the three applications filed in response to the M2Z application, "under the same standards,"[427] and with respect to their similar claims of public interest justification for dispensing with our established auction procedures.

186. We also find misplaced MEC's reliance on the *M2Z Public Notice* as one that "bound [the Commission] to process the application" in accordance therewith.[428] That notice expressly stated that our acceptance of M2Z's application, for a service for which we had not yet established service rules, was *not* "pursuant to an established framework of processing rules."[429] Thus, MEC's assertions about the operation of cutoff rules that it asserts would otherwise be applicable here are beside the point. So, therefore, are the prior McElroy decisions.[430] Moreover, those decisions would at most entitle MEC to be treated "under the same standards" as M2Z as a competing applicant, the dismissal of whose application has been upheld by the D.C. Circuit. They do not undermine "the Commission's authority to change

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[420] *M2Z*, 558 F.3d at 558-564.

[421] *M2Z*, 558 F.3d at 557.

[422] *M2Z*, 558 F.3d at 562-64.

[423] Petition for Reconsideration filed by Open Range Communications, Inc. (filed Oct. 1, 2007) at 5; Petition for Reconsideration filed by McElroy Electronics Corporation (filed Oct. 1, 2007) at 5-6.

[424] *Applications and Forbearance Petitions Order*, 22 FCC Rcd at 16583 ¶ 30 & n.117, citing *Bachow Communications v. FCC,* 257 F.3d 683 (D.C. Cir. 2001).

[425] *M2Z Networks, Inc. v. FCC,* 558 F.3d at 563.

[426] *Id.* at 564.

[427] MEC Petition at 6.

[428] *Id.* at 7.

[429] *M2Z Public Notice,* 22 FCC Rcd at 1955.

[430] *McElroy Electronics Corp. v. FCC*, 990 F.2d 1351 (D.C. Cir. 1993) ("*McElroy I*"); *McElroy Electronics Corp. v. FCC,* 86 F.3d 248 (D.C. Cir. 1996) ("*McElroy II*"). As the D.C. Circuit later confirmed, those decisions "stan[d] for the proposition that the Commission must follow its own rules," and do not "create some generalized right to exclude competitors." *Bachow Communications, Inc. v. FCC,* 237 F.3d 683, 687 (D.C. Cir. 2001). Here, the *M2Z Notice* made clear that the kind of processing rules relied upon by McElroy in its petition would not apply.

license allocation procedures mid-stream," even in cases where such action may "disrupt[ ] expectations and alter[ ] the competitive balance among applicants,"[431] and they clearly do not prevent the Commission from deferring action on applications accepted for filing until it has first established a "framework of processing rules" and "future rules" to govern the service.[432] Such applications would then be subject to this regulatory framework for the new service.

V. PROCEDURAL MATTERS

A. Disposition of Prior Proceedings

187. Before the National Broadband Plan was developed or the Spectrum Act was enacted, the Commission had begun rulemakings on how to license spectrum in the 1915-1920 MHz, 1995-2000 MHz, 2020-2025 MHz, 2155-2175 MHz, and 2175-2180 MHz bands. In 2004, the Commission sought comment on licensing and service rules for the 2020-2025 MHz and 2175-2180 MHz bands.[433] In 2007, the Commission proposed service rules for 20 megahertz of unpaired spectrum at 2155-2175 MHz.[434] After reviewing the comments and reply comments to the *2007 NPRM*, however, the Commission issued a *Further Notice of Proposed Rulemaking* in 2008 to seek additional comment on a range of issues including combining the upper "J" band at 2175-2180 MHz with the 2155-2175 MHz band to create a 25 MHz block of unpaired spectrum.[435] As mentioned above, however, since the Commission released the *2008 FNPRM*, the National Broadband Plan was developed, the Spectrum Act was enacted, and wireless broadband technologies and the wireless industry have evolved to such an extent that, in our assessment, the development of a fresh record is warranted. As a result, we will adopt rules for AWS-3 based on the record developed in response to this *Notice of Proposed Rulemaking* (GN Docket No. 13-185). Accordingly, we are terminating the proceedings begun in 2004 and 2007 (WT Docket Nos. 04-356 and 07-195). We note that, in December 2012, the Commission similarly commenced a new proceeding to consider service rules for 1915-1920 MHz and 1995-2000 MHz.[436]

B. Ex Parte Presentations

188. The proceedings shall be treated as a "permit-but-disclose" proceeding in accordance with the Commission's *ex parte* rules.[437] 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

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[431] *Bachow Communications, Inc. v. FCC,* 237 F.3d at 687-78.

[432] *M2Z Public Notice,* 22 FCC Rcd at 1955.

[433] *2004 NPRM.* The Commission is addressing service rules for 1915-1920 MHz and 1995-2000 MHz separately. *See infra* text accompanying note 436.

[434] *2007 NPRM*, 22 FCC Rcd 17035.

[435] *2008 FNPRM*, 23 FCC Rcd at 9860 ¶ 3.

[436] Service Rules for the Advanced Wireless Services H Block – Implementing Section 6401 of the Middle Class Tax Relief and Job Creation Act of 2012 Related to the 1915-1920 MHz and 1995-2000 MHz Bands, WT Docket No. 12-357. In June 2013 the Commission adopted service rules for these bands. *See supra* note 41 and accompanying text.

[437] 47 C.F.R. §§ 1.1200 *et seq.*

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

C. Comment Period and Filing Procedures

189. 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://apps.fcc.gov/ecfs//.
- Paper Filers: Parties who choose to file by paper must file an original and one copy of each filing. If more than one active docket or rulemaking number appears in the caption of this proceeding, filers must submit two additional copies for each additional docket or rulemaking number.

190. 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.

191. 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).

192. *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., Room CY-A257, Washington, D.C.. These documents will also be available via ECFS. Documents will be available electronically in ASCII, Microsoft Word, and/or Adobe Acrobat.

D. Initial Regulatory Flexibility Analysis

193. As required by the Regulatory Flexibility Act,[438] 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

[438] 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.

E. Paperwork Reduction Act Analysis

194. 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.

F. Further Information

195. For additional information on this proceeding, contact John Spencer of the Broadband Division, Wireless Telecommunications Bureau, at (202) 418-BITS, or Michael Ha, Office of Engineering and Technology, (202) 418-2099.

VI. ORDERING CLAUSES

196. Accordingly, IT IS ORDERED, pursuant to sections 1, 2, 4(i), 10, 201, 301, 302, 303, 307, 308, 309, 310, 316, 319, 324, 332, and 333 of the Communications Act of 1934, as amended, and Title VI of the Middle Class Tax Relief and Job Creation Act of 2012, Pub. L. No. 112-96, 126 Stat. 156, 47 U.S.C. §§ 151, 152, 154(i), 160, 201, 301, 302a, 303, 307, 308, 309, 310, 316, 319, 324, 332, 333, 1403, 1404, and 1451, that this Notice of Proposed Rulemaking is hereby ADOPTED.

197. IT IS FURTHER ORDERED that NOTICE IS HEREBY GIVEN of the proposed regulatory changes described in this Notice and that comment is sought on these proposals.

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

199. IT IS FURTHER ORDERED that WT Docket Nos. 04-356, 07-16, 07-30, and 07-195 ARE TERMINATED.

200. IT IS FURTHER ORDERED that the Petitions for Reconsideration filed by McElroy Electronics Corp., NetfreeUS, LLC, and Open Range Communications Inc., on October 1, 2007, ARE DENIED.

201. 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 part 27 as follows:

PART 27 – MISCELLANEOUS WIRELESS COMMUNICATIONS SERVICES

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

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

2. Section 27.1 is amended by adding paragraphs (b)(11) through (14) to read as follows:

§ 27.1 Basis and purpose.

* * * * *

(b) * * *

(11) 1695-1710 MHz.

(12) 1755-1780 MHz.

(13) 2020-2025 MHz.

(14) 2155-2180 MHz.

3. Section 27.5(h) is amended to read as follows:

§ 27.5 Frequencies.

* * * * *

(h) *1710-1755 MHz, 2110-2155 MHz, 1695-1710 MHz, 1755-1780 MHz, 2020-2025 MHz, and 2155-2180 MHz bands.* The following frequencies are available for licensing pursuant to this part in the 1710-1755 MHz, 2110-2155 MHz, 1695-1710 MHz, 1755-1780 MHz, 2020-2025 MHz, and 2155-2180 MHz bands:

* * * * *

(3) Channel blocks of 5 megahertz each are available for assignment as follows:

Block G: reserved

Block J1: 1695-1700 MHz

Block J2: 1700-1705 MHz

Block J3: 1705-1710 MHz

Block K1: 1755-1760 MHz

Block K2: 1760-1765 MHz

Block K3: 1765-1770 MHz

Block K4: 1770-1775 MHz

Block K5: 1775-1780 MHz

Block L: 2020-2025 MHz

Block M1: 2155-2160 MHz

Block M2: 2160-2165 MHz

Block M3: 2165-2170 MHz

Block M4: 2170-2175 MHz

Block M5: 2175-2180 MHz

4. Section 27.6 is amended by adding paragraph (j) to read as follows:

§ 27.6 Service areas.

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(j) 1695-1710 MHz, 1755-1780 MHz, 2020-2025 MHz and 2155-2180 MHz bands. AWS service areas for the 1695-1710 MHz, 1755-1780 MHz, 2020-2025 MHz and 2155-2180 MHz bands are based on Economic Areas (EAs) as defined in paragraph (a) of this section.

5. Section 27.13 is amended by adding paragraph (j) to read as follows:

§ 27.13 License period.

*****

(j) 1695-1710 MHz, 1755-1780 MHz, 2020-2025 MHz, and 2155-2180 MHz bands. Authorizations for the 1695-1710 MHz, 1755-1780 MHz, 2020-2025 MHz, and 2155-2180 MHz bands will have a term not to exceed ten years from the date of issuance or renewal.

6. Section 27.14 is amended by revising the first sentence of paragraphs (a), (f), and (k), and adding paragraph (r) 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 licensees holding AWS authorizations in the 1695-1710 MHz, 1755-1780 MHz, 2000-2020 MHz, 2020-2025 MHz, 2155-2180 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. ***

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(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 licensees holding AWS authorizations for the 1695-1710 MHz, 1755-1780 MHz, 2000-2020 MHz, 2020-2025 MHz, 2155-2180 MHz, and 2180-2200 MHz bands. ***

*****

(k) Licensees holding WCS or AWS authorizations in the spectrum blocks enumerated in paragraphs (g), (h), (i), (q), or (r) 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. ***

* * * * *

(r) The following provisions apply to any licensee holding an AWS authorization in the 1695-1710 MHz, 1755-1780 MHz, 2020-2025 MHz, and 2155-2180 MHz bands:

(1) An AWS licensee in the bands covered by this paragraph (r) shall provide signal coverage and offer service within four (4) years from the date of the initial license to at least forty (40) percent of the total population in each service area that it has licensed in the 1695-1710 MHz, 1755-1780 MHz, 2020-2025 MHz, and 2155-2180 MHz bands ("AWS Interim Buildout Requirement").

(2) An AWS licensee in the bands covered by this paragraph (r) shall provide signal coverage and offer service within ten (10) years from the date of the initial license to at least seventy-five (75) percent of the population in each of its licensed areas in the 1695-1710 MHz, 1755-1780 MHz, 2020-2025 MHz, and 2155-2180 MHz bands ("AWS Final Buildout Requirement").

(3) If an AWS licensee in the bands covered by this paragraph fails to establish that it meets the AWS Interim Buildout Requirement for a particular licensed area, then the AWS Final Buildout Requirement (in this paragraph (r)) and the AWS license term (as set forth in § 27.13(j)) for each license area in which it fails to meet the AWS Interim Buildout Requirement shall be accelerated by two years (from ten to eight years).

(4) If an AWS licensee fails to establish that it meets the AWS Final Buildout Requirement for particular licensed areas in the 1695-1710 MHz, 1755-1780 MHz, 2020-2025 MHz, and 2155-2180 MHz bands, its authorization for each license area in which it fails to meet the AWS Final Buildout Requirement shall terminate automatically without Commission action. The AWS licensee that has its license automatically terminate under this paragraph (r) will be ineligible to regain it if the Commission makes the license available at a later date.

(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 be deemed served by the licensee only 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 include only the population within the Census Tract (or other acceptable identifier) towards meeting the performance requirement of a single, individual license.

(6) An applicant for renewal of a geographic-area authorization in the 1695-1710 MHz, 1755-1780 MHz, 2020-2025 MHz, and 2155-2180 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:

(i) 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);

(ii) The date service commenced, whether service was ever interrupted, and the duration of any interruption or outage;

(iii) The extent to which service is provided to rural areas;

(iv) The extent to which service is provided to qualifying tribal land as defined in § 1.2110(f)(3)(i); and

(e) Any other factors associated with the level of service to the public.

7. Section 27.15 is amended by revising the first sentence in paragraph (d)(1)(i); adding paragraph (d)(1)(iv); revising the first sentence in paragraph (d)(2)(i), and adding paragraph (d)(2)(iv) 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 AWS authorizations in the 1695-1710 MHz, 1755-1780 MHz, 2000-2020 MHz, 2020-2025 MHz, 2155-2180 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. ***

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(iv) For licensees holding AWS authorizations in the 1695-1710 MHz, 1755-1780 MHz, 2020-2025 MHz, and 2155-2180 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

partitioner or partitionee fails to meet any service-specific performance requirements on or before the required date, then the consequences for this failure shall be those enumerated in § 27.14(r).

(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 AWS authorizations in the 1695-1710 MHz, 1755-1780 MHz, 2000-2020 MHz, 2020-2025 MHz, 2155-2180 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. ***

*****

(iv) For licensees holding AWS authorizations in the 1695-1710 MHz, 1755-1780 MHz, 2020-2025 MHz, and 2155-2180 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 disaggregator or a disagregatee fails to meet any service-specific performance requirements on or before the required date, then the consequences for this failure shall be those enumerated in § 27.14(r).

8. Section 27.18 is added to read as follows:

§ 27.18 Discontinuance of service in the 1695-1710 MHz, 1755-1780 MHz, 2020-2025 MHz, and 2155-2180 MHz bands.

(a) Termination of Authorization. A licensee's AWS authorization in the 1695-1710 MHz, 1755-1780 MHz, 2020-2025 MHz, and 2155-2180 MHz bands will automatically terminate, without specific Commission action, if it permanently discontinues service after meeting the AWS Interim Buildout Requirement specified in § 27.14 of the Commission's rules.

(b) For licensees with common carrier or non-common carrier regulatory status that hold AWS authorizations in the 1695-1710 MHz, 1755-1780 MHz, 2020-2025 MHz, and 2155-2180 MHz bands, permanent discontinuance of service is defined as 180 consecutive days during which a licensee does not

provide service to at least one subscriber that is not affiliated with, controlled by, or related to the licensee. For licensees with private, internal regulatory status that hold AWS authorizations in the 1695-1710 MHz, 1755-1780 MHz, 2020-2025 MHz, and 2155-2180 MHz bands, permanent discontinuance of service is defined as 180 consecutive days during which a licensee does not operate.

(c) Filing Requirements. A licensee of the 1695-1710 MHz, 1755-1780 MHz, 2020-2025 MHz, and 2155-2180 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.

9. Section 27.50(d) is amended 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 1695-1710 MHz, 1710-1755 MHz, 1755-1780 MHz, 2000-2020 MHz, 2020-2025 MHz, 2110-2155 MHz, 2155-2180 MHz and 2180-2200 MHz bands:

(1) The power of each fixed or base station transmitting in the 2110-2155 MHz, 2155-2180 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:

(A) an equivalent isotropically radiated power (EIRP) of 3280 watts when transmitting with an emission bandwidth of 1 MHz or less;

(B) an EIRP of 3280 watts/MHz when transmitting with an emission bandwidth greater than 1 MHz.

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

(A) an equivalent isotropically radiated power (EIRP) of 1640 watts when transmitting with an emission bandwidth of 1 MHz or less;

(B) an EIRP of 1640 watts/MHz when transmitting with an emission bandwidth greater than 1 MHz.

* * * * *

(4) Mobile and portable (hand-held) stations operating in the 1695-1710 MHz, 1710-1755 MHz, and 1755-1780 bands are limited to 100 milliwatts (20 dBm) EIRP. Mobile and portable stations operating in this band must employ a means for limiting power to the minimum necessary for successful communications. Mobile and portable (hand-held) stations in the 1695-1710 MHz and 1755-1780 MHz bands are permitted to transmit only when controlled by an associated base station.

* * * * *

(7) Fixed, mobile, and portable (hand-held) stations operating in the 2000-2020 MHz and 2020-2025 MHz bands are limited to 2 watts EIRP, except that the total power of any portion of an emission that falls within the 2000-2005 MHz band may not exceed 5 milliwatts. A licensee of AWS-4 authority may enter into private operator-to-operator agreements with all 1995-2000 MHz licensees to operate in 2000-2005 MHz at power levels above 5 milliwatts EIRP; except the total power of the AWS-4 mobile emissions may not exceed 2 watts EIRP.

* * * * *

10. Section 27.53(h) is amended to read as follows:

§ 27.53 Emission limits.

* * * * *

(h) *AWS emission limits* —(1) *General protection levels.* Except as otherwise specified below, for operations in the 1695-1710 MHz, 1710-1755 MHz, 1755-1780 MHz, 2000-2020 MHz,, 2020-2025MHz, 2110-2155 MHz, 2155-2180 MHz, and 2180-2200 bands, the power of any emission outside a licensee's frequency block shall be attenuated below the transmitter power (P) in watts by at least $43 + 10 \log_{10} (P)$ dB.

* * * * *

11. Section 27.55(a) is amended to read as follows:

§ 27.55 Power strength limits.

(a) *Field strength limits.* For the following bands, the predicted or measured median field strength at any location on the geographical border of a licensee's service area shall not exceed the value specified unless the adjacent affected service area licensee(s) agree(s) to a different field strength. This value applies to both the initially offered service areas and to partitioned service areas.

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

* * * * *

12. Section 27.57(c) is amended to read as follows:

§ 27.57 International coordination.

* * * * *

(c) Operation in the 1695-1710 MHz, 1710-1755 MHz, 1755-1780 MHz, 2000-2020 MHz, 2020-2025 MHz, 2110-2155 MHz, and 2180-2200 MHz bands is subject to international agreements with Mexico and Canada.

13. The heading of Subpart L is amended to read as follows:

Subpart L—1695-1710 MHz, 1710-1755 MHz, 1755-1780 MHz, 2020-2025 MHz, 2110-2155 MHz, 2155-2180 MHz, 2180-2200 MHz Bands

14. Section 27.1105 is added to read as follows:

§ 27.1105 1695-1710 MHz, 1755-1780 MHz, 2020-2025 MHz, and 2155-2180 MHz bands subject to competitive bidding.

Mutually exclusive initial applications for 1695-1710 MHz, 1755-1780 MHz, 2020-2025 MHz, and 2155-2180 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.

15. Section 27.1106 is added to read as follows:

§ 27.1106 Designated Entities in the 1695-1710 MHz, 1755-1780 MHz, 2020-2025 MHz and 2155-2180 MHz bands.

Eligibility for small business provisions:

(a) Small business. (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 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 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.

16. Section 27.1131 is amended to read as follows:

§ 27.1132 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 2110-2180 MHz band. Coordination shall be conducted in accordance with the provisions of § 24.237 of this chapter.

17. Section 27.1134 is amended by revising paragraph (c) and adding paragraph (f) to read as follows:

§ 27.1134 Protection of Federal Government operations.

* * * * *

(c) Protection of Federal operations in the 1675-1710 MHz band.

(1) Protection Zones. Prior to operating a base station within the radius of operation of a facility protected pursuant to Table [X] ("Protection Zones") of this section that permits mobile or portable stations to transit in the 1695-1710 MHz band, licensees must successfully coordinate said base station operation with Federal Government entities operating meteorological satellite Earth-station receivers in

the 1695-1710 MHz band listed in Table [X]. Coordination must be implemented in accordance with methodologies recommended by NTIA (CSMAC WG1 Final Report).

(i) Interference: If Federal users at a protected facility receive harmful interference, AWS licensees must, upon notification, modify the stations' location and/or technical parameters as necessary to eliminate the interference.

(ii) Point of contact: Licensees in the 1695-1710 MHz band must provide and maintain a point of contact at all times so that immediate contact can be made should interference against protected Federal sites occur.

(iii) Procedures for coordination of operations within the Protection Zones:

[TBD. For an example, see The Federal Communications Commission and the National Telecommunications and Information Administration – Coordination Procedures in the 1755-1780 MHz Band, WTB Docket No. 02-353, *Public Notice*, 71 Fed Reg. 28696 (May 17, 2006).]

(iv) Operation outside of Protection Zones. Non-Federal operations outside of the protection zones are permitted without coordination. Such operations may not cause harmful interference to the Federal sites listed in Table X.

(2) Requirements for licensees operating in the 1710-1755 MHz band. AWS licensees operating fixed stations in the 1710-1755 MHz band, if notified that such stations are causing interference to radiosonde receivers operating in the Meteorological Aids Service in the 1675-1700 MHz band or a meteorological-satellite earth receiver operating in the Meteorological-Satellite Service in the 1675-1710 MHz band, shall be required to modify the stations' location and/or technical parameters as necessary to eliminate the interference.

* * * * *

(f) Protection of Federal operations in the 1755-1780 MHz band. The Federal Government operates communications systems in the 1755-1780 MHz band. See 47 C.F.R. § 2.106, US note 89. Licensees in the 1755-1780 MHz band must accept any interference received from these Federal operations and are excluded from certain areas (Exclusion Zones), subject to successful coordination in other areas (Protection Zones), and permitted without Federal coordination elsewhere subject to

paragraph (b) of this section. The Exclusion Zones are set forth in Table [Y] and the Protection Zones are set forth in Table [Z].

(1) Exclusion Zones. 1755-1780 MHz band licensees may not operate in any of the Exclusion Zones defined by the radii of operation specified in Table [Y] of this section.

(2) Protection Zones. Prior to operating a base station within the radius of operation of a facility protected pursuant to Table [Z] ("Protection Zones") of this section that permits mobile or portable stations to transmit in the 1755-1780 MHz band, licensees must successfully coordinate said base station operation with Federal Government entities operating facilities identified in Table [Z]. Coordination must be implemented in accordance with methodologies recommended by NTIA (CSMAC [TBD] Final Report).

(i) Interference: If Federal operations identified in 47 C.F.R. § 2.106, US note 89 receive harmful interference, 1755-1780 MHz licensees must, upon notification, modify the stations' location and/or technical parameters as necessary to eliminate the interference.

(ii) Point of contact. Licensees in the 1755-1780 MHz band must provide and maintain a point of contact at all times so that immediate contact can be made should interference against protected Federal sites occur.

(iii) Procedures for coordination of operations within the Protection Zones:

[TBD. For an example, see The Federal Communications Commission and the National Telecommunications and Information Administration – Coordination Procedures in the 1755-1780 MHz Band, WTB Docket No. 02-353, *Public Notice*, 71 Fed Reg. 28696 (May 17, 2006).]

(3) Operation outside of Protection Zones. Non-Federal operations outside of the protection zones are permitted without coordination. Such operations may not cause harmful interference to the Federal operations in 47 C.F.R. § 2.106, US note 89.

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 (NPRM*). 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* for comments. The Commission will send a copy of the *NPRM*, including this IRFA, to the Chief Counsel for Advocacy of the Small Business Administration (SBA).[2] In addition, the *NPRM* and IRFA (or summaries thereof) will be published in the Federal Register.[3] This *NPRM* contains new information collection requirements subject to the Paperwork Reduction Act of 1995 (PRA), Public Law 104-13. It will be submitted to the Office of Management and Budget (OMB) for review under Section 3507(d) of the PRA. OMB, the general public, and other Federal agencies are invited to comment on the new or modified information collection requirements contained in this proceeding. In addition, we note that 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 the Commission might further reduce the information collection burden for small business concerns with fewer than 25 employees.

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

2. Wireless broadband is a key component of economic growth, job creation and global competitiveness because consumers are increasingly using wireless broadband services to assist them in their everyday lives.[4] The explosive growth of wireless broadband services has created increased demand for wireless spectrum, which is expected to continue increasing, despite technological developments, such as LTE, that allow for more efficient spectrum use. Adoption of smartphones increased at a 50 percent annual growth rate in 2011, from 27 percent of U.S. mobile subscribers in December 2010 to nearly 42 percent in December 2011.[5] Further, consumers have rapidly adopted the use of tablets, which were first introduced in January of 2010.[6] By the end of 2012, it was estimated that one in five Americans—almost 70 million people—would use a tablet.[7] Between 2011 and 2017, mobile data traffic generated by tablets is expected to grow at a compound annual growth rate of 100 percent.[8] New mobile applications and

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[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] *See NPRM* at ¶ 4.

[5] comScore 2012 Mobile Future in Focus (2012) at 16 http://www.comscore.com/Press_Events/Presentations_Whitepapers/2012/2012_Mobile_Future_in_Focus (last visited Apr. 25, 2013).

[6] 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, 9754 ¶ 145 (*Fifteenth Mobile Wireless Competition Report*).

[7] Press Release, eMarketer, *Tablet Shopping Growing, but Retailers Must Keep Up* (June 15, 2012), *available at* http://www.emarketer.com/Article.aspx?R=1009120&ecid=a6506033675d47f881651943c21c5ed4 (last visited Apr. 25, 2013).

[8] Ericsson, Traffic and Market Report: On the Pulse of the Networked Society (June 2012), available at http://www.ericsson.com/res/docs/2012/traffic_and_market_report_june_2012.pdf (last visited Apr. 25, 2013).

services, such as high resolution video communications, are also using more bandwidth. For example, a single smartphone can generate as much traffic as thirty-five basic-feature mobile phones,[9] while tablets connected to 3G and 4G networks use three times more data than smartphones over the cellular network.[10] All of these trends, in combination, are creating an urgent need for more network capacity and, in turn, for suitable spectrum.

3. Today we propose rules for spectrum in the 1695-1710 MHz, 1755-1780 MHz, 2020-2025 MHz, and 2155-2180 MHz bands that would make available significantly more spectrum for Advanced Wireless Services ("AWS"). We will refer to these four bands collectively as "AWS-3."[11] The additional spectrum for mobile use will help ensure that the speed, capacity, and ubiquity of the nation's wireless networks keeps pace with the skyrocketing demand for mobile service. This *Notice of Proposed Rulemaking* explores novel approaches to spectrum sharing between commercial and Federal operators. Where possible, we continue to make efforts to identify exclusive-use spectrum bands. In some circumstances, however, spectrum sharing may be the best path forward to expanding flexible spectrum access for innovative commercial uses. Today's action is another step in implementing the Congressional directive in Title VI of the Middle Class Tax Relief and Job Creation Act of 2012 ("Spectrum Act") to allocate for commercial use and grant new initial licenses for flexible use in certain bands by February 2015.[12]

4. We propose to license the 2155-2180 MHz band for downlink/base station operations and to license the 2020-2025 MHz band for uplink/mobile operations. Both of these bands are currently allocated for non-Federal, commercial use and are in the Commission's inventory of bands available for licensing. We propose to allocate and license the 1755-1780 MHz band for uplink/mobile operations on a shared basis with Federal incumbents. We note that the record of the instant proceeding will be informed by recommendations of the National Telecommunications and Information Administration ("NTIA"), which has tasked the Commerce Spectrum Management Advisory Committee ("CSMAC") with studying the potential for Federal/non-Federal spectrum sharing. NTIA anticipates receiving final reports from CSMAC working groups shortly. If NTIA endorses these reports, we will add them to the record and anticipate that commenters will discuss NTIA's forthcoming recommendations in comments, reply comments, or written *ex partes*, as appropriate, depending on the timing. If NTIA does not propose a workable framework for sharing the1755-1780 MHz band, this proposal may not be feasible in the near term, in which case it may not be possible to adopt rules that allow commercial access to the band. We also propose to allocate and license the 1695-1710 MHz band for uplink/mobile operations on a shared basis with Federal incumbents within specified Protection Zones recommended by NTIA. Commercial operation outside of these Protection Zones would not require coordination with Federal incumbents.

5. For all of the AWS-3 spectrum within the scope of this NPRM, *i.e.*, spectrum for which we seek comment regarding service rules for non-Federal use, we propose to assign licenses by

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[9] Cisco Visual Networking Index: Global Mobile Data Traffic Forecast Update, 2011-2016 (February 2012), available at http://www.cisco.com/en/US/solutions/collateral/ns341/ns525/ns537/ns705/ns827/white_paper_c11-520862.html (last visited Apr. 25, 2013).

[10] Kevin Fitchard, 3G/4G tablets suck up 3x more data than smartphones, GIGAOM, May 15, 2012, available at http://gigaom.com/mobile/study-3g4g-tablets-suck-up-3x-more-data-than-smartphones/ (last visited Dec. 6, 2012).

[11] The Commission has previously referred to the 2155-2175 MHz band as the "AWS-3 band." *See, e.g.*, 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) ("*2007 NPRM*"). We are revising this informal nomenclature: herein, "AWS-3" refers to the spectrum, separately and collectively, on which we seek comment in the instant NPRM regarding service rules for non-Federal use of spectrum, including the following bands: 1695-1710 MHz, 1755-1780 MHz, 2020-2025 MHz, and 2155-2180 MHz.

[12] *See* Middle Class Tax Relief and Job Creation Act of 2012, Pub. L. No. 112-96, 126 Stat. 156 (2012) ("Spectrum Act").

competitive bidding, offering five megahertz blocks that can be aggregated using Economic Areas ("EAs") as the area for geographic licensing. We also seek comment on whether, and if so how, to pair any of the AWS-3 spectrum.

6. These service rules would make available additional spectrum for flexible use in accordance with the Spectrum Act. In proposing service rules for the band, which include technical rules to protect against harmful interference, licensing rules to establish geographic license areas and spectrum block sizes, and performance requirements to promote robust buildout, we advance toward enabling rapid and efficient deployment.[13] We do so by proposing service, technical, assignment, and licensing rules for this spectrum under the Commission's Part 27 rules, which generally govern flexible use terrestrial wireless service, except where special provisions are necessary to facilitate shared use with co-primary Federal operations.

7. Overall, 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. The market-oriented licensing framework for these bands would ensure that this spectrum is efficiently utilized and will foster the development of new and innovative technologies and services, as well as encourage the growth and development of broadband services, ultimately leading to greater benefits to consumers.

B. Legal Basis

8. 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, and Title VI of the Middle Class Tax Relief and Job Creation Act of 2012, Pub. L. No. 1122-96, 126 Stat. 156, 47 U.S.C. §§ 151, 152, 154(i), 201, 301, 302a, 303, 307, 308, 309, 310, 316, 319, 324, 332, 333, 1403, 1404, and 1451.

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

9. The RFA directs agencies to provide a description of, and, where feasible, an estimate of the number of small entities to which the proposed rules and policies will apply, if adopted.[14] The RFA generally defines the term "small entity" as having the same meaning as the terms "small business," "small organization," and "small governmental jurisdiction."[15] In addition, the term "small business" has the same meaning as the term "small business concern" under the Small Business Act.[16] 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.[17]

10. *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 that encompass

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[13] *See NPRM* sections III.G (Technical Rules) and III.H (Licensing and Operating Rules; Regulatory Issues).

[14] 5 U.S.C. § 603(b)(3).

[15] 5 U.S.C. § 601(6).

[16] 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*.

[17] 15 U.S.C. § 632.

entities that could be directly affected by the proposals under consideration.[18] Nationwide, there are a total of approximately 27.9 million small businesses, according to the SBA.[19] Additionally, a "small organization" is generally "any not-for-profit enterprise which is independently owned and operated and is not dominant in its field."[20] Nationwide, as of 2007, there were approximately 1,621,315 small organizations.[21] Finally, the term "small governmental jurisdiction" is defined generally as "governments of cities, counties, towns, townships, villages, school districts, or special districts, with a population of less than fifty thousand."[22] Census Bureau data for 2007 indicate that there were 89,527 governmental jurisdictions in the United States.[23] We estimate that, of this total, as many as 88,761 entities may qualify as "small governmental jurisdictions."[24] Thus, we estimate that most governmental jurisdictions are small.

11. *Wireless Telecommunications Carriers (except satellite)*. The *NPRM* proposes to apply various Commission policies and rules to service in the AWS-3 bands. We cannot predict who may in the future become a licensee or lease spectrum for use in these bands. In general, any wireless telecommunications provider would be eligible to become an Advanced Wireless Service licensee or lease spectrum from an AWS-3 licensee. This industry comprises establishments engaged in operating and maintaining switching and transmission facilities to provide communications via the airwaves.[25] 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.[26] 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.[27] Under the present and prior categories, the SBA has deemed a wireless business to be small if it has 1,500 or

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[18] *See* 5 U.S.C. § 601(3)–(6).

[19] *See* SBA, Office of Advocacy, "Frequently Asked Questions," http://www.sba.gov/sites/default/files/FAQ_Sept_2012.pdf.

[20] 5 U.S.C. § 601(4).

[21] INDEPENDENT SECTOR, THE NEW NONPROFIT ALMANAC & DESK REFERENCE (2010).

[22] 5 U.S.C. § 601(5).

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

[24] The 2007 U.S Census data for small governmental organizations are not presented based on the size of the population in each such organization. There were 89,476 local governmental organizations in 2007. If we assume that county, municipal, township, and school district organizations are more likely than larger governmental organizations to have populations of 50,000 or less, the total of these organizations is 52,095. If we make the same population assumption about special districts, specifically that they are likely to have a population of 50,000 or less, and also assume that special districts are different from county, municipal, township, and school districts, in 2007 there were 37,381 such special districts. Therefore, there are a total of 89,476 local government organizations. As a basis of estimating how many of these 89,476 local government organizations were small, in 2011, we note that there were a total of 715 cities and towns (incorporated places and minor civil divisions) with populations over 50,000. CITY AND TOWNS TOTALS: VINTAGE 2011 – U.S. Census Bureau, *available at* http://www.census.gov/popest/data/cities/totals/2011/index.html. If we subtract the 715 cities and towns that meet or exceed the 50,000 population threshold, we conclude that approximately 88,761 are small. U.S. CENSUS BUREAU, STATISTICAL ABSTRACT OF THE UNITED STATES 2011, Tables 427, 426 (Data cited therein are from 2007).

[25] 2007 NAICS Definition, 517210 Wireless Telecommunications Carriers (except Satellite), http://www.census.gov/cgi-bin/sssd/naics/naicsrch?code=517210&search=2007%20NAICS%20Search.

[26] *Id*.

[27] 13 C.F.R. § 121.201, NAICS code 517210.

fewer employees.[28] For this category, census data for 2007 show that there were 11,163 firms that operated for the entire year.[29] Of this total, 10,791 firms had employment of 999 or fewer employees and 372 had employment of 1000 employees or more.[30] Thus under this category and the associated small business size standard, the Commission estimates that the majority of wireless telecommunications carriers(except satellite) are small entities that may be affected by our proposed action.

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

12. This *NPRM* proposes or seeks comment on a number of possible rule changes that could affect reporting, recordkeeping and other compliance requirements that would apply to all entities in the same manner. These include requirements related to Federal/non-Federal sharing and coordination,[31] technical rules,[32] license term, performance requirements, renewal criteria, permanent discontinuance of operations,[33] other operating requirements[34] and non-Federal relocation and cost sharing.[35] 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.

13. The Commission proposes to require any applicants for licenses of AWS-3 Block spectrum to file license applications using the Commission's automated Universal Licensing System (ULS).[36] 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.

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

14. 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

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[28] 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).

[29] 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).

[30] *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." *See* http://factfinder2.census.gov/faces/tableservices/jsf/pages/productview.xhtml?pid=ECN_2007_US_51SSSZ2&prodType=table.

[31] *See NPRM* section III.E

[32] *See id.* section III.G

[33] *See id.* section III.H.6

[34] *See id.* section III.H.8

[35] *See id.* section III.H.11

[36] *See* http://wireless.fcc.gov/uls/index.htm?job=home

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."[37]

15. The proposal in the *NPRM* to license the AWS-3 spectrum 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 B and C block licenses.[38] Additionally, assigning AWS-3 in EA geographic areas would allow AWS-3 licensees to make adjustments to suit their individual needs. EA license areas are small enough to provide spectrum access opportunities for smaller carriers.[39] EA license areas also nest within and may be aggregated up to larger license areas.[40] Therefore, the benefits and burdens resulting from assigning AWS-3 spectrum in EA license areas are equivalent for small and large businesses. Depending on the licensing mechanism we adopt, licensees may adjust their geographic coverage through auction or, as we discuss in section III.H.7 (Secondary Markets) of the *NPRM*, through secondary markets.[41] This proposal should enable AWS-3 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. As a result, we believe the ability of licensees to adjust spectrum holdings will provide an economic benefit by making it easier for small entities to acquire spectrum or access AWS spectrum

16. The technical rules proposed in section III.G (Technical Rules) of the *NPRM* will protect entities operating in nearby spectrum bands from harmful interference, which may include small entities. In the proposed band plan, AWS-3 spectrum would be licensed in five-megahertz blocks using EA licenses.[42] Interference must therefore be considered between adjacent AWS-3 blocks, *e.g.*, between 2155-2160 MHz and 2160-2165 MHz, as well as between AWS-3 operations in the 2155-2180 MHz band and services in the adjacent AWS-1 and AWS-4 bands. Similarly, AWS-3 mobiles could interfere with proximate Federal or non-Federal operations in the same or nearby bands.[43]

17. The *NPRM* proposal in section III.H.10 (Competitive Bidding Procedures) pertaining to how the AWS-3 licenses will be assigned includes proposals to assist small entities in competitive bidding. We propose that the Commission would conduct any auction for licenses for spectrum in the 1695-1710 MHz, 1755-1780 MHz, 2020-2025 MHz, and 2155-2180 MHz bands 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.[44] 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.[45] Specifically,

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[37] 5 U.S.C. § 603(c)(1) – (c)(4).

[38] *See NPRM* section III.D.4 (Service Areas).

[39] *Id*.

[40] *Id*.

[41] *See id.* section III.H.7 (Secondary Markets).

[42] *See id.* section III.D (Band-Use Configurations).

[43] In addition to technical rules, we are proposing license conditions and prior-coordination requirements to protect Federal operations. *See id.* section III.EIII.E (Federal/non-Federal Sharing and Coordination).

[44] *See* 47 C.F.R. §§ 1.2101-1.2114.

[45] *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*, (continued….)

small entities will benefit from the proposal to provide small businesses with a bidding credit of 15 percent and very small businesses with a bidding credit of 25 percent.[46] Providing small businesses and very small businesses with bidding credits 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. The Commission also seeks comment on whether the small business provisions we propose today are sufficient to promote participation by businesses owned by minorities and women, as well as rural telephone companies.

18. In section III.H.2 (Flexible Use) of the *NPRM*, the Commission, consistent with the Spectrum Act's mandate to license under flexible use service rules,[47] proposes service rules that permit a licensee to employ the spectrum for any non-Federal use permitted by the United States Table of Frequency Allocations,[48] subject to the Commission's Part 27 flexible use and other applicable rules (including service rules to avoid harmful interference).[49] Thus, we propose that the spectrum may be used for any fixed or mobile service that is consistent with the allocations for the band. The technical rules we propose or seek comment on will allow licensees of AWS-3 spectrum to operate while also protecting licensees of nearby spectrum, some of whom are small entities, from harmful interference.[50]

19. Consistent with the proposed flexible use of the AWS-3 band, we also propose licensing the spectrum under the flexible regulatory framework of Part 27 of our rules.[51] For each frequency band under its umbrella, Part 27 defines permissible uses and any limitations thereon, and specifies basic licensing requirements. We believe that our Part 27 rules are consistent with the Spectrum Act's requirement for "flexible-use service rules."

20. We propose to permit partitioning and disaggregation by licensees in the AWS-3 band.[52] These secondary market rules apply equally to all entities, whether small or large.[53] We believe the opportunity to enter into secondary market agreements for AWS-3 spectrum will provide an economic benefit to all entities, whether large or small Therefore, the benefits and burdens resulting from

(Continued from previous page)

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 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).

[46] *See NPRM* section III.H.10 (Competitive Bidding Procedures).

[47] Spectrum Act, § 6401(b)(1)(b).

[48] 47 C.F.R. § 2.106. In section III.H.2 (Flexible Use), we propose amendments to the Table of Frequency Allocations and tentatively conclude that these allocation proposals, together with our propose service rules, satisfy 47 U.S.C. § 303(y).

[49] Part 27 licensees must also comply with other Commission rules of general applicability. *See* 47 C.F.R. § 27.3. In addition, flexible use in international border areas is subject to any existing or future international agreements. *See NPRM* section III.G.6 (Canadian and Mexican Coordination).

[50] *See NPRM* section III.G

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

[52] *See NPRM* section III.H.7 (Secondary Markets).

[53] *See id.* section III.H.7 (Secondary Markets).

secondary market agreements for AWS-3 spectrum are equivalent for small and large businesses. Further, in the *NPRM*, 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.[54]

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

21. None.

[54] See NPRM ¶ 153. 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).

STATEMENT OF
ACTING CHAIRWOMAN MIGNON L. CLYBURN

Re: ***Amendment of the Commission's Rules with Regard to Commercial Operations in the 1695-1710, 1755-1780 MHz, and 2155-2180 MHz Bands, GN Docket No. 13-185***

Today, we take another critical step toward providing additional spectrum for wireless broadband services. The proliferation of wireless devices, such as smartphones and tablets, has triggered a significant surge in demand for mobile broadband and providers need additional spectrum in order to keep pace with rapidly changing market dynamics. This proceeding has the potential to repurpose a significant amount of spectrum for flexible commercial use, benefiting consumers and businesses across the nation.

This item helps the Commission to meet Congress's directive to auction and license certain frequency bands by February 2015. It is also consistent with the President's encouragement to expand the availability of spectrum for innovative and flexible commercial uses by expediting the repurposing of spectrum, and where technically and economically feasible, utilizing spectrum sharing to enhance efficiency among all users.

Included in today's item are proposals for identifying spectrum that is free, clear, and available for exclusive use, as well as proposals for spectrum that could be shared with Federal users if clearing and reallocating is not possible in the near-term. It provides flexibility to accommodate any number of effective paths toward making additional spectrum available for wireless broadband. We are committed to finding new and innovative strategies to expedite commercial access to additional spectrum.

The proposals in this Notice represent dedicated work by Commission staff, other Federal agencies including the National Telecommunications & Information Administration (NTIA) and the Department of Defense, and the wireless industry. I look forward to continuing a productive dialogue on making federal spectrum available for commercial use, including the on-going discussions in the Policy and Plans Steering Group (PPSG), Commerce Spectrum Management Advisory Committee (CSMAC), and other forums.

We must continue to move toward adopting allocation, service, technical, and licensing rules for this spectrum in a timely manner, consistent with the public interest and our statutory obligations. I encourage all stakeholders to roll up their sleeves and help us to push this proceeding forward. We must also take steps to bring spectrum already available to the marketplace in the near term. I thank the talented staff in the Wireless Bureau and Office of Engineering and Technology for presenting us with a thorough Notice.

STATEMENT OF
COMMISSIONER JESSICA ROSENWORCEL

Re: ***Amendment of the Commission's Rules with Regard to Commercial Operations in the 1695-1710, 1755-1780 MHz, and 2155-2180 MHz Bands, GN Docket No. 13-185***

This proceeding is important. We are teeing up for auction spectrum bands that have the potential to change our wireless landscape for years to come.

If we do this right, we can auction 55 megahertz for new mobile broadband uses. This may seem like a little regulatory feat. But it has the power to contribute big things to the economy. The services that are dependent on wireless airwaves are multiplying fast. Consider that mobile data traffic is projected to increase by 13 times in the next five years. Moreover, making more spectrum available can help grow the broader economy. After all, our wireless economy already generates nearly $200 billion annually and supports directly or indirectly 3.8 million jobs.

But the promise of this proceeding goes further. Because if we get this right, we also will substantially fund a nationwide, interoperable, wireless broadband network for public safety—the First Responders Network Authority—even before we begin our upcoming spectrum incentive auctions. This is important, because it means we can finally deliver on the promise of the 9/11 Commission recommendations. Plus, funding this network through these auctions now will enhance the Commission's flexibility to design more robust incentive auctions later.

Now for details. In this rulemaking, the Commission asks about spectrum that Congress specifically directed the agency to auction in the Middle Class Tax Relief and Job Creation Act. But this rulemaking goes above and beyond. It also seeks comment on spectrum not specifically identified by Congress, notably the 1755-1780 MHz band. There has been a full court press to auction these airwaves paired with the 2155-2180 MHz band identified in the law. There is good reason for this—these bands are internationally harmonized for mobile broadband use. They are a more valuable resource auctioned together. At the same time, it is important for this agency to find a way to respect the existing federal uses in the band, including the national defense.

I am hopeful that we will soon have a path to clear 1755-1780 MHz for commercial mobile broadband use. Nonetheless, I think we need a plan in the event that this spectrum is not fully cleared and ready for pairing with 2155-2180 MHz.

To this end, I am thankful that the Commission is asking about my proposal to auction the 2155-2180 MHz band along with the right to work with the federal incumbents in the 1755-1780 MHz band. This could be an elegant way forward. It could raise the value of the 2155-2180 MHz spectrum—by the amount the winning bidder allocates to purchasing the exclusive right to negotiate with federal incumbents. Moreover, by providing a source of agency, it could create opportunity for direct negotiation with federal users and foster creative ideas for near-term testing, sharing, and long-term clearing and relocation.

Finally, timing matters. The Middle Class Tax Relief and Job Creation Act requires the Commission to license 55 megahertz of spectrum as discussed in this rulemaking and 10 megahertz of spectrum in the 1915-1920 MHz and 1995-2000 MHz bands, known as the H-block, by February 22, 2015. To license it by this date requires that we auction it in 2014. In light of the 18-month long process for repurposing federal spectrum in the Commercial Spectrum Enhancement Act, that means the spectrum currently allocated for federal use must be auctioned in the third quarter of 2014.

I would prefer that we auction all of these spectrum bands in a single auction. That means one simple auction of the 65 megahertz described in the Middle Class Tax Relief and Job Creation Act—combining the 55 megahertz described here with the 10 megahertz from the H-block. A single auction could mean more interest from more bidders. A single auction could mean more ability to consider how these bands can be substitutes or complements for one another. A single auction could be our best shot for funding the First Responder Network Authority now, and providing the agency with more flexibility in the incentive auction down the road. At the same time, I recognize that auctioning the H-block earlier in a separate auction may have benefits for the agency. But we should be careful that administrative convenience does not get in the way of good spectrum policy and the objectives under the law.

In the end, there is a lot to be optimistic about in this proceeding. The auction of spectrum described in this rulemaking, with the incentive auctions to follow, is exciting. It is the kind of activity that is good for the economy, good for consumers, and can help keep the United States at the vanguard of spectrum policy.

STATEMENT OF
COMMISSIONER AJIT PAI
APPROVING IN PART AND CONCURRING IN PART

Re: ***Amendment of the Commission's Rules with Regard to Commercial Operations in the 1695-1710, 1755-1780 MHz, and 2155-2180 MHz Bands, GN Docket No. 13-185***

When it comes to spectrum, supply is short, and demand is long. One reason is that the federal government is the sole occupant of 588.5 MHz of spectrum ideally suited for mobile broadband and controls another 885.5 MHz of spectrum that's shared by federal users and the private sector.[1] In other words, 61.4 percent of the spectrum between 600 MHz and 3 GHz is insulated from market forces and can't be used to meet consumers' ever-increasing demand for data.

Fortunately, Congress foresaw this situation and gave the Commission two powerful tools to solve the problem. The first is the Commercial Spectrum Enhancement Act of 2004,[2] which allows the proceeds of a spectrum auction to pay for the relocation of incumbent federal users. That authority was used to great success seven years ago, when we cleared federal users out of the 1710–1755 MHz band and created the AWS-1 band, which has been used by carriers to deploy 4G LTE services throughout the United States. And that auction was a boon to the Treasury to boot; the National Broadband Plan estimated that net revenues from clearing and auctioning the band were "nearly $6 billion."[3]

The second is the Spectrum Act of 2012, which directed the FCC to allocate and license 65 MHz of spectrum for commercial use by February 2015.[4] The Spectrum Act built on the Commercial Spectrum Enhancement Act, and while it allowed more flexibility for sharing spectrum between federal and commercial users, it codified Congress's strong preference for clearing and reallocating spectrum. Indeed, the National Telecommunications and Information Administration must "give priority" to clearing and reallocation and may pursue a sharing strategy only if, in consultation with the Office of Management and Budget, it determines that "relocation of a Federal entity from the band is not feasible because of technical or cost constraints."[5]

Today we follow through on our responsibilities under these statutes by proposing service rules for several bands, including the critically important 1755–1780 MHz band. I say critically important because this band, when paired with the 2155–2180 MHz band that the Spectrum Act requires us to auction by February 2015, will be crucial to making 4G LTE services available to millions of Americans and making the promise of the National Broadband Plan a reality. It's already internationally harmonized for commercial use, so deployment will be quicker than any other band, and its adjacency to the existing AWS-1 band allows for more efficient spectrum usage.

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[1] National Telecommunications and Information Administration, United States Frequency Allocations: The Radio Spectrum (Aug. 2011) (denoting spectrum allocated for "government exclusive" use, "non-government exclusive" use, and "government/non-government shared" use).

[2] Commercial Spectrum Enhancement Act, Pub. L. No. 108-494, 118 Stat. 3986, Title II (2004).

[3] FCC, Connecting America: The National Broadband Plan at 82 (2010), *available at* http://download.broadband.gov/plan/national-broadband-plan.pdf.

[4] Middle Class Tax Relief and Job Creation Act of 2012, Pub. L. No. 112-96, 126 Stat. 156, Title VI (2012).

[5] Spectrum Act § 6701(a)(1)(B) (amending section 113(j) of the National Telecommunications and Information Administration Organization Act (47 U.S.C. § 923)); *see also id.* (entitling such subsection "Relocation Prioritized Over Sharing"); Spectrum Act § 6401(a) (entitled "Clearing Certain Federal Spectrum").

Although I cannot support every proposal in today's Notice, I am especially pleased that my colleagues were willing to incorporate my proposals to ensure that if clearing the 1755–1780 MHz band is feasible, we can move forward with relocation and exclusive commercial use there. Not only is clearing the bipartisan legislative preference, it just makes sense. The fewer impairments, exclusion zones, and complicated sharing arrangements there are, the more valuable the spectrum will be, especially for regional carriers that are unlikely to have the wherewithal to coordinate their use with potentially hundreds of federal users.

A coda to today's Notice. When the Commission commenced the notice-and-auction process of the Commercial Spectrum Enhancement Act back in March,[6] I reiterated my belief that "we should aim to clear and reallocate the 1755–1780 MHz band rather than forcing federal users and commercial operators to undertake the complicated, untested task of spectrum sharing."[7] Although some at the time suggested large-scale clearing was impossible, I was pleased to see recent correspondence from the Chief Information Officer of the Department of Defense putting reallocation and auction of the 1755–1780 MHz band "in the near-term" on the table.[8] This recognition—that relocating some operations and compressing most others into existing federal spectrum is feasible at a total cost of only $3.5 billion—is a tremendous step in the right direction.[9] I commend the Department of Defense for working towards a solution that will serve federal and consumer interests alike.

[6] Letter from Julius Genachowksi, Chairman, FCC, to Lawrence E. Strickling, Assistant Secretary for Communications and Information, U.S. Department of Commerce, at 1 (Mar. 20, 2013), *available at* http://go.usa.gov/2VR5.

[7] Statement of Commissioner Ajit Pai on Commencement of the Process to Auction 1755–1780 MHz Band (Mar. 21, 2013), *available at* http://go.usa.gov/jkT9.

[8] Letter from Teresa M. Takai, Chief Information Officer, Department of Defense, to the Honorable Lawrence E. Strickling, Assistant Secretary for Communications and Information, National Telecommunications and Information Administration, at 1 (July 17, 2013), *available at* http://apps.fcc.gov/ecfs/document/view?id=7520932630.

[9] *Id.*