

**Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, DC 20554**

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

COMMENTS OF VERIZON WIRELESS

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TABLE OF CONTENTS

I. INTRODUCTION AND SUMMARY.....	1
II. THE FCC SHOULD ADOPT A BAND PLAN THAT WILL FACILITATE THE EFFICIENT AND ECONOMICAL DEPLOYMENT OF WIRELESS BROADBAND IN THE IDENTIFIED SPECTRUM BANDS.....	4
A. The FCC Should Pair the 1755-1780 MHz Uplink Band with the 2155-2180 MHz Downlink Band.....	5
B. The FCC Should Pair the 1695-1710 MHz Uplink Band with a 15 MHz Downlink Band.	7
III. THE LICENSING AND OPERATING RULES FOR AWS-3 SHOULD ENSURE THE SPECTRUM IS QUICKLY PUT TO USE FOR THE BENEFIT OF CONSUMERS....	9
A. The FCC Should Add All Suitable and Available Spectrum to the Spectrum Screen before Adopting Rules for the AWS-3 Auction.....	9
B. The FCC Should Use Economic Areas to License the AWS-3 Spectrum.....	13
C. The FCC Should Auction the AWS-3 Spectrum in a Combination of 5x5 MHz and 10x10 MHz Blocks.....	15
D. The FCC Should Allow Package Bidding in the AWS-3 Auction.....	16
E. The Commission Should Narrow the Scope of the Anti-Collusion Rule.	17
F. AWS-3 Licensees Should Be Granted 10 Year License Terms and Be Subject to Population-Based Performance Requirements.....	20
G. The FCC Should Apply its Partitioning, Disaggregation, and Spectrum Leasing Rules to the AWS-3 Spectrum.	22
IV. THE FCC SHOULD ADOPT TECHNICAL RULES THAT WILL BEST FACILITATE THE RAPID DEPLOYMENT OF WIRELESS SERVICES.	23

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The Commission's Notice of Proposed Rulemaking¹ is a major step toward making available significantly more commercial spectrum for Advanced Wireless Services (AWS) and achieving Congress' mandate in the Middle Class Tax Relief and Job Creation Act to license spectrum for commercial mobile use.² Verizon Wireless thus strongly supports the Commission's goal of clearing and allocating spectrum in the 1695-1710 MHz, 1755-1780 MHz, and 2155-2180 MHz bands for exclusive commercial use to the maximum extent feasible.

I. INTRODUCTION AND SUMMARY

Wireless service providers require additional spectrum to meet their customers' demands. Data prove that customers are increasingly using wireless for their broadband needs, buying more devices and services that wirelessly access the Internet, increasing their megabytes of use of those devices and services, and downloading more bandwidth-intensive applications for purposes as diverse and important as monitoring health and conserving energy. A recent report

¹ *Amendment of the Commission's Rules with Regard to Commercial Operations in the 1605-1710 MHz, 1755-1780 MHz, and 2155-2180 MHz Bands*, Notice of Proposed Rulemaking and Order on Reconsideration, 28 FCC Rcd 11479 (2013) ("*NPRM*").

² *See* Middle Class Tax Relief and Job Creation Act of 2012, Pub. L. No. 112-96, § 6401, 126 Stat. 156 (2012) (the "Spectrum Act").

from Pew Research Center shows that more than two-thirds of cell phone owners use it to go online, more than double the percentage that did so in 2009.³

The Obama Administration's objectives for wireless broadband and the Commission's *National Broadband Plan* recognize that new licensed spectrum is necessary for service providers to meet these demands, and to preserve the economic growth and innovation that mobile broadband services have engendered.⁴ Conversely, the Commission also recognized that "[t]he growth of wireless broadband will be constrained if government does not make spectrum available to enable network expansion and technology upgrades . . . [resulting in] higher prices, poor service quality, an inability for the U.S. to compete internationally, depressed demand and, ultimately, a drag on innovation."⁵ To promote and preserve the enormous economic potential of mobile broadband services, the *National Broadband Plan* established a goal of making 300 MHz of spectrum newly available for mobile broadband services by 2015, and 500 MHz by 2020.

³ Pew Research Center, *Cell Internet Use 2013*, at 2 (Sept. 16, 2013), at http://pewinternet.org/~media/Files/Reports/2013/PIP_CellInternetUse2013.pdf (further providing that "one third of these cell internet users (34%) *mostly use their phone* to access the internet, as opposed to other devices like a desktop, laptop, or tablet computer").

⁴ See Presidential Memorandum, *Unleashing the Wireless Broadband Revolution*, 75 Fed. Reg. 38387, 38387 (2010) ("America's future competitiveness and global technology leadership depend, in part, upon the availability of additional spectrum. . . . 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 Americans' lives."); *Connecting America: The National Broadband Plan*, at 76-78 (FCC 2010), <http://download.broadband.gov/plan/national-broadband-plan.pdf> ("*National Broadband Plan*"); see also FCC Staff Technical Paper, "Mobile Broadband: The Benefits of Additional Spectrum," at 5, http://hraunfoss.fcc.gov/edocs_public/attachmatch/DOC-302324A1.pdf (Oct. 2010) ("Mobile Broadband Technical Paper") ("[a]s smartphones, laptops, and other devices become increasingly integral to consumers' mobile experiences, mobile data demand is expected to grow between 25 and 50 times current levels within 5 years").

⁵ *National Broadband Plan* at 77.

In the three years since the *National Broadband Plan*'s release, consumer demand for mobile broadband services and smartphone devices has continued to surge⁶ – to such an extent that then-FCC Chairman Genachowski warned just last fall that the *National Broadband Plan* targets of 300 MHz and 500 MHz in five and ten years may be insufficient, given data usage trends for LTE devices, the emergence of tablet devices and machine to machine technologies that use substantially more data and spectrum capacity than smartphones.⁷ According to one public estimate, the average smartphone will generate 2.7 GB of traffic per month in 2017 (an 18-fold increase over the 2012 average of 342 MB per month), “aggregate smartphone traffic in 2017 will be 19 times greater than it is today,” and mobile-connected tablets alone will generate more traffic in 2017 than the entire global mobile network in 2012.⁸

Maximizing the amount of newly-licensed mobile broadband spectrum through the AWS-3 auction is an essential component of the Federal government's policy of achieving the economic benefits and the transformative capabilities of wireless technologies and services. Put

⁶ See, e.g., Cisco, “Cisco Visual Networking Index: Global Mobile Data Traffic Forecast Update, 2012–2017,” at 5 (Feb. 6, 2013), http://www.cisco.com/en/US/solutions/collateral/ns341/ns525/ns537/ns705/ns827/white_paper_c11-520862.pdf (“Cisco 2012-2017 Forecast”); Ericsson, “Ericsson Mobility Report: On the Pulse of the Networked Society,” at 5-13 (Nov. 2012), <http://www.ericsson.com/res/docs/2012/ericsson-mobility-report-november-2012.pdf>; CTIA-The Wireless Association, “CTIA's Wireless Industry Summary Report, Year-End 2012 Results,” at 9 (2013), http://files.ctia.org/pdf/CTIA_Survey_YE_2012_Graphics-FINAL.pdf (reporting that Americans used more than 1.4 trillion megabytes (MB) of data from December 2011-December 2012, which was an increase of 69.3 percent over the previous 12 months' usage (866.8 billion MB)).

⁷ See Julius Genachowski, Chairman, Federal Communications Commission, Prepared Remarks, University of Pennsylvania – Wharton, at 6-7 (Oct. 4, 2012), http://hraunfoss.fcc.gov/edocs_public/attachmatch/DOC-316661A1.pdf (“Genachowski Wharton Speech”).

⁸ See Cisco 2012-2017 Forecast at 3.

simply, further gains in consumer welfare from the wireless sector depend in part on ensuring that the sector has sufficient spectrum.

The *NPRM* correctly recognizes the importance of the AWS-3 spectrum to the wireless industry and consumers. To meet the surging demand for capacity, and thus spectrum, the AWS-3 auction must be designed to ensure the spectrum is put to its highest and best use and placed in the hands of the entity that values it the most. The auction and service rules for the AWS-3 band should:

- Pair the 1755-1780 MHz uplink band with the 2155-2180 MHz downlink band.
- Establish a downlink pairing for the 1695-1710 MHz uplink band.
- Adopt open and flexible licensing and service rules that promote participation by a wide variety of bidders so the spectrum is acquired by the entity that values it the most.
- Apply existing technical standards to the AWS-3 bands so they may be deployed quickly using currently available technology.

Verizon's comments below detail specific recommendations for the AWS-3 band.

II. THE FCC SHOULD ADOPT A BAND PLAN THAT WILL FACILITATE THE EFFICIENT AND ECONOMICAL DEPLOYMENT OF WIRELESS BROADBAND IN THE IDENTIFIED SPECTRUM BANDS.

The AWS-3 bands are ideally positioned to offer wireless providers additional spectrum to meet the growing demands of the public for mobile services, particularly broadband. To ensure this potential is met, however, the FCC must identify pairings for the identified bands and auction this spectrum for paired Frequency Division Duplexing (FDD) use. Failure to do so and instead auctioning the 1695-1710 MHz and 1755-1780 MHz bands as stand-alone uplink spectrum would render these bands virtually useless, as it is the downlink spectrum that carriers,

both new and incumbent, most require to meet the skyrocketing demand for mobile broadband bandwidth.

A. The FCC Should Pair the 1755-1780 MHz Uplink Band with the 2155-2180 MHz Downlink Band.

The FCC first identified the 1755-1780 MHz band for potential reallocation to commercial use in the *National Broadband Plan* in 2010.⁹ Since then, wireless carriers, the FCC, the National Telecommunications and Information Administration (NTIA), the Department of Defense (DOD), and other federal agencies have made extensive efforts to determine the feasibility of this band for mobile broadband. The results of this work show that the 1755-1780 MHz band can be repurposed for wireless broadband uplink use and that most incumbent federal systems can be moved within five years.

The FCC should auction the 1755-1780 MHz and 2155-2180 MHz as paired FDD spectrum. By pairing the 1755-1780 MHz band with the 2155-2180 MHz band, the FCC will conform the new spectrum to a band plan that is compatible with existing AWS-1 spectrum. As a result, the AWS band will be expanded by 50 MHz to a total of 140 MHz: the 1710-1780 MHz band for mobile uplink transmissions and the 2110-2180 MHz band for base station downlink transmissions. This approach will make substantial spectrum available for new entrants and allow existing licensees to leverage the investments already being made in AWS-1, thereby creating greater economies of scale and lower-cost equipment as well as reducing the risk of harmful interference. Ultimately, this pairing will lead to more rapid deployment of broadband networks to the benefit of consumers and the economy.

Further, pairing the 1755-1780 MHz band with the 2155-2180 MHz band will offer the U.S. a long-term spectrum plan that is harmonized with international spectrum allocations.

⁹ See *National Broadband Plan*, at 76.

Forty-three countries already are using this paired spectrum for commercial purposes and 17 of the G-20 countries have allocated this spectrum for commercial use.¹⁰ Harmonization will help drive greater economies of scale, promote more rapid deployment of mobile broadband networks and services, and facilitate international roaming by consumers.

To ensure these benefits occur, the FCC should work with NTIA to ensure as many federal systems as possible are relocated from the 1755-1780 MHz band into other spectrum bands or truncated above 1780 MHz.¹¹ Specifically, as detailed in the *Industry Roadmap to Assessing the 1755-1780 MHz Band*¹² and DOD's alternative proposal,¹³ law enforcement video surveillance operations, tactical radio relay operations, joint tactical radio system operations, air combat training system operations, small unmanned aerial vehicle operations, precision guided munitions operations, fixed point-to-point microwave operations, and air mobile telemetry operations should be truncated above 1780 MHz or relocated to other bands.

Based on Verizon's current analysis, the remaining incumbent government operations can be accommodated in the 1755-1780 MHz band, subject to certain limitations. First, space ground link sub-system operations can remain in place and operate throughout the 1755-1850 MHz band. Protection zones should be designed to protect only government systems from harmful interference, not the commercial systems that will be deployed by AWS-3 licensees. To

¹⁰ See CTIA and Wireless Broadband Coalition, "International Harmonization Status Report: 1755-1780 MHz and 2155-2180 MHz," (Feb. 2013), http://files.ctia.org/pdf/1302.Harmonization_Status_Report.Country-by-Country_Data.pdf.

¹¹ See *NPRM*, ¶ 73.

¹² Letter from Steve Sharkey, T-Mobile, to Marlene H. Dortch, FCC, WT Docket Nos. 10-123 & 07-195, at Attachment, *Industry Roadmap to Assessing the 1755-1780 MHz Band* (Jun. 24, 2013).

¹³ Letter from Teresa M. Takai, DOD, to the Honorable Lawrence E. Strickling, NTIA (July 17, 2013).

do this, the FCC should work with NTIA, DOD, and industry to determine the appropriate protection zones for 27 satellite earth systems. Specifically, in determining these protection zones, the FCC, NTIA, DOD, and industry should use terrain and clutter modeling to accurately reflect the amount of interference that these satellite earth systems would be subject to at various distances. Second, electronic warfare operations can remain in the 1755-1780 MHz band provided their operations continue to operate on a secondary, non-interfering basis.

B. The FCC Should Pair the 1695-1710 MHz Uplink Band with a 15 MHz Downlink Band.

The Commission also should make every effort to pair the 1695-1710 MHz uplink band with a downlink band. Wireless providers generally are more constrained in their downlink bands than their uplink bands. Auctioning 1695-1710 MHz as stand-alone supplemental uplink therefore would significantly decrease the value of the spectrum and would limit both its uses and interested bidders. In addition, this spectrum is not well-suited for Time Division Duplexing (TDD) operations. The Commerce Spectrum Management Advisory Committee's Working Group 1's evaluation of sharing between certain incumbent operations in 1695-1710 MHz and mobile operations was predicated on use of that band as uplink; TDD operations were not studied to determine their feasibility in this band. In addition, the 1695-1710 MHz band is directly adjacent to the AWS-1 uplink. TDD operations in this band, therefore, would cause mobile-to-mobile interference from AWS-1 into 1695-1710 MHz and base station-to-base station interference between both bands. To prevent or limit such interference, the Commission would need to create an internal guard band in the 1695-1710 MHz band, rendering part of this band unusable for mobile operations.

The FCC could pair the 1695-1710 MHz band with 2095-2110 MHz. This pairing is ideal because, like 1695-1710 MHz, 2095-2110 MHz is directly adjacent to AWS-1. As such,

this spectrum could easily be incorporated into handsets and base station equipment using a single band class that covers 1695-1710/2095-2110, AWS-1, and 1755-1780/2155-2180. Ultimately, this would provide the wireless industry with 85 x 85 MHz of contiguous spectrum. Such a bandplan will provide a solid foundation for the next generation of wireless networks and services, including those that will utilize LTE-Advanced technology. Further, through this pairing, the FCC could facilitate a long term spectrum plan that could ultimately lead to a unified band plan for the 2 GHz spectrum: 1695-1920 MHz for uplink operations and 1930-2200 MHz for downlink operations.

In reallocating the 2095-2110 MHz band for mobile broadband use, the FCC should work with NTIA, the National Aeronautics and Space Administration (NASA), other government agencies, incumbent commercial licensees, and the wireless industry to identify existing operations in the band and to determine as quickly as possible whether these operations can either be relocated or shared with commercial mobile operations. In particular, Verizon recommends further analysis of a recent NASA study considering the feasibility of mobile services in the 2025-2110 MHz band with incumbent primary services of the Space Operation, Earth Exploration-Satellite and Space Research services.¹⁴ While the study raises concerns that co-channel mobile services could cause satellite-to-satellite interference in the forward-link transmissions from NASA geostationary Tracking and Data Relay Satellite System (TDRSS) to Low Earth Orbit (LEO) satellites, it is impossible to assess the validity of modeling of propagation, antenna performance, LTE system characteristics, and satellite system characteristics without additional information from NASA.

¹⁴ See Letter from Karl Nebbia, NTIA, to Julius Knapp, OET, GN Docket No. 09-51 (July 22, 2013) at Attachment, ITU Radiocommunication Study Groups, *United States of America: Feasibility Assessment for Accommodation of Mobile Broadband Long Term Evolution (LTE) Systems in the 2025-2110 MHz Band* (Document 4-5-6-7/170-E).

If the FCC and NTIA determine that the 2095-2110 MHz band cannot be reallocated for mobile broadband, they should consider whether a different 15 MHz of the BAS band could be reallocated instead. To the extent that other portions of the BAS band may not be used by the same incumbent federal operations as the 2095-2110 MHz, there may be a better pairing option for 1695-1710 MHz. To determine whether this is the case, the FCC and other interested parties should consider the rest of the BAS band when they complete the analysis recommended above.

III. THE LICENSING AND OPERATING RULES FOR AWS-3 SHOULD ENSURE THE SPECTRUM IS QUICKLY PUT TO USE FOR THE BENEFIT OF CONSUMERS.

A. The FCC Should Add All Suitable and Available Spectrum to the Spectrum Screen before Adopting Rules for the AWS-3 Auction.

Before acting in this Rulemaking, the Commission should update the spectrum screen that it will use to review wireless providers' spectrum holdings after the auction is complete and before licensing, by adding 192 MHz of spectrum that clearly meets the test for inclusion. Specifically, the Commission should update the screen to include an additional (1) 132.625 MHz of 2.5 GHz band spectrum designated for the Broadband Radio Service and the Educational Broadband Service ("BRS/EBS"), (2) 19.275 MHz of Mobile Satellite Service (MSS) spectrum, and (3) 40 MHz of 2 GHz spectrum designated as AWS-4.

These spectrum bands easily qualify for inclusion in the screen under the Commission's longstanding policy. Not only are they suitable and available to provide mobile services, but the largest block missing from the screen, the BRS/EBS spectrum, has in fact long been in use to provide those services.¹⁵ By omitting these bands, the current screen fails to account for the full amount of spectrum that can be used to compete in the mobile services marketplace, and thus

¹⁵ In a 2013 White Paper, FCC staff itself identified the entire EBS and BRS bands as "available for mobile broadband." Wireless Telecommunications Bureau and Office of Engineering & Technology, *The Mobile Broadband Spectrum Challenge: International Comparisons*, at 8 Table 5, http://hraunfoss.fcc.gov/edocs_public/attachmatch/DOC-318485A1.pdf (Feb. 26, 2013).

cannot achieve its purpose of identifying spectrum acquisitions and transactions that may pose a risk of competitive harm. Failing to update the spectrum screen by adding this spectrum, much of it already in use, to the screen would unfairly benefit particular competitors over others. Moving forward to make AWS-3 spectrum available while continuing to apply the current flawed screen could allow a wireless provider with more commercial mobile spectrum to acquire spectrum in the auction while prohibiting a different wireless provider with less commercial mobile spectrum from acquiring that spectrum, merely because of the particular bands each provider holds – even though all those bands are available for mobile use. Such a result could distort the auction, adversely impact auction revenues, and prevent the spectrum from being put to its highest and best use.

First, the Commission should add 132.625 MHz of BRS/EBS spectrum to the screen in addition to the 55.5 MHz that is currently included, for a total of 188.125 from the 2.5 GHz band. Almost all of the 194 MHz of spectrum that is allocated for BRS and EBS is clearly both suitable and available for use to provide mobile services, and thus meets the Commission’s criteria for inclusion.¹⁶ It should thus add 132.625 MHz of BRS/EBS spectrum – the remaining 21 MHz of BRS spectrum that is not currently included in the screen plus 111.625 MHz of EBS

¹⁶ When it adopted the spectrum screen, the Commission decided that it should include all spectrum that is “suitable” and “available” for the “mobile telephony/broadband services” product market. *See Policies Regarding Mobile Spectrum Holdings*, Notice of Proposed Rulemaking, 27 FCC Rcd 11710, ¶¶ 24-26 (2012). “‘Suitability’ is determined by whether the spectrum is capable of supporting mobile service given its physical properties and the state of equipment technology, whether the spectrum is licensed with a mobile allocation and corresponding service rules, and whether the spectrum is committed to another use that effectively precludes its use for the relevant mobile service.” *Id.*, ¶ 26. Spectrum is “‘available’ if it is fairly certain that it will meet the criteria for suitable spectrum in the near term.” *Id.*

spectrum (the 95 percent of EBS spectrum that is available for commercial mobile use).¹⁷

Together with the 55.5 MHz of BRS spectrum that is already included in the screen, this addition would properly account for a total of 188.125 MHz as suitable and available for mobile telephony/broadband use and, thus, included in the screen.¹⁸

Continuing to omit EBS/BRS spectrum, particularly when it is actually being used to compete in the mobile services market, renders the current screen arbitrary and inaccurate. Clearwire, now owned by Sprint, began deploying mobile services on that spectrum in 2009,¹⁹ and has since launched on that spectrum across most of the United States. These deployments leveraged Clearwire's licensed BRS and leased BRS and EBS holdings across the 2.5 GHz band – what Clearwire itself describes as “approximately 140 MHz of spectrum on average across [its] national spectrum footprint and approximately 160 MHz of spectrum on average in the 100 largest markets,” deployments that “enable[] [it] to offer [its] subscribers significant mobile data bandwidth.”²⁰

¹⁷ See 47 C.F.R. § 27.1214(b)(1) (requiring an EBS licensee to reserve a minimum of 5 percent of the capacity of its channel for educational use, making 95 percent of the capacity of the EBS spectrum available for commercial mobile services).

¹⁸ Verizon Wireless has previously detailed each of the components of the EBS/BRS spectrum bands and explained why each component should be included in the screen because it is suitable and available for mobile use. See Comments of Verizon Wireless, *Policies Regarding Mobile Spectrum Holdings*, WT Docket No. 12-269, at 22-27 (Nov. 28, 2012) (“Verizon Wireless Spectrum Policies Comments”) and Reply Comments, at 8-14 (Jan. 7, 2013).

¹⁹ See *Annual Report and Analysis of Competitive Market Conditions with Respect to Mobile Wireless, Including Commercial Mobile Services*, Fourteenth Report, 25 FCC Rcd 11407, ¶ 117 (2010) (noting that Clearwire launched commercial 4G mobile WiMAX service in Portland, Oregon in January 2009).

²⁰ Clearwire Corp. Form 10-K, at 14, <http://www.sec.gov/Archives/edgar/data/1442505/000144530512000337/clwr1231201110-k.htm> (Feb. 16, 2012) (for period ending Dec. 31, 2011).

The Commission, moreover, has recognized that BRS/EBS spectrum is being used to provide terrestrial mobile broadband.²¹ This is of course far more spectrum than the mere 55.5 MHz of BRS spectrum currently included in the screen, and its use demonstrates that the BRS/EBS band is capable of supporting mobile services.²² It is thus arbitrary for the screen to include only 55.5 MHz of BRS spectrum but exempt the remaining BRS/EBS spectrum.

Second, the Commission should add 19.275 MHz of Mobile Satellite Services (MSS) spectrum that is licensed in the Big LEO (“Low Earth Orbit”) band. The Commission granted Globalstar, a Big LEO licensee, ancillary terrestrial authority that extends to 19.275 MHz of its spectrum in the 1.6 and 2.5 GHz bands, enabling it to provide mobile services and compete with other mobile service providers for customers.²³ This spectrum thus meets the criteria for inclusion in the spectrum screen.²⁴

Third, the Commission should add the 40 MHz of AWS-4 spectrum to the screen. In 2012, the Commission created the AWS-4 designation for the 2000-2020 and 2180-2200 MHz

²¹ See *Annual Report and Analysis of Competitive Market Conditions with Respect to Mobile Wireless, Including Commercial Mobile Services*, Fifteenth Report, 26 FCC Rcd 9664, ¶¶ 113, 273, & 287 (2011) (“*Fifteenth CMRS Report*”).

²² The BRS/EBS band clearly has a mobile allocation and corresponding service rules. See *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*, First Report and Order and Memorandum Opinion and Order, 16 FCC Rcd 17222 (2001); *Amendment of Parts 1, 21, 73, 74 and 101 of the Commission’s Rules to Facilitate the Provision of Fixed and Mobile Broadband Access, Educational and Other Advanced Services in the 2150-2162 and 2500-2690 MHz Bands, et al.*, Report and Order and Further Notice of Proposed Rulemaking, 19 FCC Rcd 14165 (2004) (subsequent history omitted).

²³ See *Globalstar Licensee LLC*, Order of Modification, 23 FCC Rcd 15056 (2008).

²⁴ See *Verizon Wireless Spectrum Policies Comments*, at 20-22.

bands, and expressly authorized the use of these bands for terrestrial use.²⁵ The order confirms that the AWS-4 spectrum is both suitable and available for mobile services. In addition, AWS-4 licensees are required to begin deploying service soon as the FCC's rules require licensees to reach 40 percent of the population across their AWS-4 footprint by March 2017.²⁶ DISH also recently confirmed that it plans to use the AWS-4 spectrum "to pursue new strategic initiatives that will facilitate its entry into the wireless market."²⁷

In sum, before it completes action in this proceeding, the Commission should update and correct the amount of spectrum included in the screen by adding 192 MHz. This addition will recognize the reality that all of this spectrum is suitable and available for use, restore the screen to a valid metric for assessing spectrum aggregation, and ensure that the auction results in the AWS-3 spectrum being put to its highest and best use.

B. The FCC Should Use Economic Areas to License the AWS-3 Spectrum.

To facilitate rapid deployment of mobile broadband services in the AWS-3 spectrum, Verizon supports the Commission's proposal to license the AWS-3 spectrum in Economic Areas (EAs). In the *NPRM*, the Commission notes that it seeks to adopt a service area that meets several goals, including "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 promoting investment in and rapid

²⁵ See *Service Rules for Advanced Wireless Services in the 2000-2020 MHz and 2180-2200 MHz bands, et al.*, Report and Order and Order of Proposed Modification, 27 FCC Rcd 16102 (2012) ("AWS-4 Service Rules Report and Order").

²⁶ See 47 C.F.R. § 1.946(e).

²⁷ See *DISH Petition for Waiver of Sections 27.5(j) and 27.53(h)(2)(ii) and Request for Extension of Time*, WT Docket No. 13-225, at 3, attached to Letter from Jeffrey H. Blum, DISH, to Chairwoman Mignon Clyburn, FCC, *Promoting Interoperability in the 700 MHz Commercial Spectrum*, WT Docket No. 12-69 (Sept. 10, 2013).

deployment of new technologies and services.”²⁸ Licensing the AWS-3 bands on an EA basis will meet all of these goals.

While licensing based on larger areas such as EAGs and REAGs ordinarily would be preferable from a facilities deployment and auction design perspective, EAs draw an appropriate balance between enabling the efficient deployment of nationwide and regional services, and facilitating access to spectrum by small providers.²⁹

The Commission should not adopt service areas smaller than EAs, such as CMAs. Larger geographic licenses offer mobile providers flexibility in deployment and the ability to take advantage of economies of scale. For example, in selecting license areas for the Upper 700 MHz band plan, the Commission noted that “large geographic areas would readily allow aggregation into a nationwide service area and would enable multiple parties to bid on this spectrum for the provision of high-speed wireless data services.”³⁰ In contrast, as the Commission has noted, “[w]hen [license] areas are inefficiently small, the costs of aggregation during or after the auction in terms of delay and transaction costs may harm both service providers and customers alike.”³¹ In addition, EAs are sufficiently small to allow both for entry by small wireless providers and network deployment on a granular basis.

License areas of EAs also facilitate a more efficient auction. When attempting to build a national or regional footprint, in the auction or on the secondary market, licenses larger than a

²⁸ *NPRM* ¶ 50.

²⁹ See 47 U.S.C. § 309(j)(4)(C); see also Comments of Verizon Wireless, *Service Rules for the 698-746, 747-762 and 777-792 MHz Bands, et al.*, WT Docket No. 06-150, at 9-15 (May 23, 2007).

³⁰ *Service Rules for the 746-764 and 776-794 MHz Bands, and Revisions to Part 27 of the Commission's Rules*, First Report and Order, 15 FCC Rcd 476, ¶ 60 (2000).

³¹ *Id.*, ¶ 59.

CMA will require fewer transactions and make it less likely that an operator would come out of an auction with “holes” in its footprint.

C. The FCC Should Auction the AWS-3 Spectrum in a Combination of 5x5 MHz and 10x10 MHz Blocks.

Verizon supports auctioning the AWS-3 spectrum in a combination of 5x5 MHz and 10x10 MHz blocks.³² As the Commission notes, the AWS-3 spectrum should be auctioned in a way that maximizes both utility and efficiency.³³ Various technologies, including LTE, use 5x5 MHz pairs or multiples of 5 MHz blocks. The auctioning of this spectrum in 5 MHz pairings therefore could facilitate the deployment of multiple different technologies. In addition, 5 MHz pairings could provide small and rural service providers with the opportunity to acquire the spectrum that they need, without forcing them to acquire more than they need.

The FCC, however, also should auction some 10x10 MHz pairings in AWS-3. Capacity increases significantly as license block pairings get larger. For example, a wireless provider can deploy LTE at significantly higher speeds over a 10x10 MHz pairing than it can over a 5x5 MHz pairing. Additionally, efficiency is enhanced through the provisioning of larger contiguous spectrum blocks, as opposed to the provider’s use of discontinuous Carrier Aggregation techniques, where a service provider may later combine spectrum blocks that were acquired from discontinuous allocations. Finally, LTE-Advanced will only be able to be deployed on spectrum bands of at least 20 MHz (although even larger bands would be better). For these reasons, many carriers may prefer wider spectrum blocks in the AWS-3 auction.

To accommodate these varying benefits of different spectrum block sizes, the FCC should auction the AWS-3 spectrum in a combination of 5x5 MHz and 10x10 MHz blocks.

³² See *NPRM* ¶ 47.

³³ See *id.*

Further, if multiple 10x10 MHz pairings are auctioned, these 10x10 MHz pairing blocks should be adjacent, so that in some cases they can be combined to form 20x20 MHz pairings.

D. The FCC Should Allow Package Bidding in the AWS-3 Auction.

The Commission should conduct, as it proposes, the AWS-3 auction in conformity with the general competitive bidding rules set forth in Part 1, Subpart Q of the Commission's rules.³⁴

In addition, the Commission should allow package bidding. Providers may offer mobile broadband services on a nationwide or regional basis. Accordingly, some operators will participate in the AWS-3 auction either to complement or expand existing spectrum holdings, or to develop new mobile broadband services that will compete with existing regional or nationwide services. The risk of failing to acquire all licenses in a business plan (the "exposure problem") may inhibit participation in the auction because, for some bidders, the potential for acquisition of all desired licenses is needed to support the amount of a bid for multiple licenses.³⁵

Allowing AWS-3 auction participants to more readily acquire regional or nationwide spectrum licenses will benefit their broadband deployment plans. And by allowing the winning bidders to take advantage of the economies of scale in larger licensed areas, package bidding will facilitate more rapid build-out of licensed AWS-3 services, which in turn will benefit consumers.

The Commission recognized these public interest benefits for package bidding in Auction 73:

Minimizing the exposure problem with package bidding should facilitate the entry of applicants whose business plans require the economies of scale that only can be obtained with nationwide operation. We anticipate that package bidding can be implemented so as to shield such bidders from a potential significant exposure problem. Importantly, we also anticipate that it can be implemented without

³⁴ See *NPRM* ¶ 148.

³⁵ See *Service Rules for the 698-746, 747-762 and 777-792 MHz Bands, et al.*, Second Report and Order, 22 FCC Rcd 15289, ¶ 287 (2007).

imposing disadvantages on parties that wish to bid on individual licenses comprising the nationwide footprint.³⁶

Package bidding also is likely to increase participation and bidding competition in the AWS-3 auction. Package bidding allows auction participants to bid not just on the value of the individual EA licenses, but also on the value of obtaining all EAs in a REAG over a consistent set of frequencies.³⁷ Thus, AWS-3 auction participants can commit more of their resources toward acquiring licenses in the auction, rather than trying to meet their goals in the subsequent secondary market.

E. The Commission Should Narrow the Scope of the Anti-Collusion Rule.

The goals the Commission identified when it adopted the auction anti-collusion rule in 1994 remain sound today – to prevent parties from “agreeing in advance to bidding strategies that divide the market according to their strategic interests and disadvantage other bidders,” to “strengthen confidence” in the bidding process, and to “help ensure that the government receives a fair market price for the use of the spectrum.”³⁸ But since then, the Commission has extended its restrictions to routine business discussions,³⁹ causing uncertainty as to whether discussions

³⁶ *Id.*, ¶ 290.

³⁷ In past auctions, winning bids on larger licenses have raised more per MHz/POP than have bids on smaller licenses. In Auction 66 for AWS spectrum licenses, the REAG licenses sold for an average of \$0.705 per MHz/POP, while CMA licenses sold for \$0.417 per MHz/POP. The EA licenses for Block B sold at \$0.451 and for Block C at \$0.548. See Jeremy Bulow, Jonathan Levin, and Paul Milgrom, *Winning Play in Spectrum Auctions*, at 25 (Mar. 2009), <http://www.stanford.edu/~jdlevin/Papers/AWS.pdf>.

³⁸ *Implementation of Section 309(j) of the Communications Act - Competitive Bidding*, Second Report and Order, 9 FCC Rcd 2348, ¶ 221 (1994) (“*Competitive Bidding Second Report and Order*”).

³⁹ *Wireless Telecommunications Bureau Provides Guidance on the Anti-Collusion Rule for D, E, and F Block Bidders*, Public Notice, 11 FCC Rcd 10134, 10135 (1996) (instructing potential auction participants that the anti-collusion rule “may affect the way in which they conduct their routine business during the auction” and that “management, resale, roaming, interconnection,

not related to bids or bidding strategies or post-auction market structure could violate the rule. The Commission has acknowledged that this approach goes well beyond the nation’s antitrust laws, but there is no evidence that it enhances “the competitiveness of the auction process and of the post-auction market structure.”⁴⁰ Companies are now forced to weigh the significant costs of putting unrelated, conventional business negotiations on hold for months at a time against the potential advantages of auction participation. Some firms have likely foregone participation in auctions because the substantial burdens on routine business outweigh the potential benefits of auction participation. These uncertainties place undue limits on routine business discussions, impose significant costs, and the Commission should take this opportunity to narrow the scope of the rule in four ways to ensure that it does not deter auction participation and reduce proceeds.

First, the anti-collusion rule should apply only to discussions that directly convey information regarding bids or bidding strategies, or directly relate to post-auction market structure, but not to other unrelated routine business discussions and agreements – an approach that would be consistent with the manner in which the Commission heretofore has enforced the anti-collusion rule.⁴¹ Business negotiations that do not directly involve any such

partitioning and disaggregation agreement negotiations may all raise impermissible subject matter for discussion by applicants”).

⁴⁰ *Competitive Bidding Second Report and Order*, ¶ 225. See also *Auction of 700 MHz Band Licenses Scheduled for January 24, 2008; Notice and Filing Requirements, Minimum Opening Bids, Reserve Prices, Upfront Payments, and Other Procedures for Auctions 73 and 76*, Public Notice, 22 FCC Rcd 18141, ¶ 27 (2007) (“700 MHz Auction Procedures PN”).

⁴¹ See, e.g., *Northeast Communications of Wisconsin, Inc.*, Forfeiture Order, 19 FCC Rcd 18635 (EB 2004); *Star Wireless, LLC*, Forfeiture Order, 19 FCC Rcd 18626 (EB 2004); *Star Wireless, LLC and Northeast Communications of Wisconsin, Inc.*, Order on Review, 22 FCC Rcd 8943 (2007), rev. denied, *Star Wireless, LLC v. FCC*, 522 F.3d 469 (D. C. Cir. 2008)); *Mercury PCS II, LLC*, Notice of Apparent Liability for Forfeiture, 12 FCC Rcd 17970 (1997), *aff’d*, *Mercury PCS II, LLC*, Memorandum Opinion and Order, 13 FCC Rcd 23755 (1998), *aff’d* *High Plains Wireless, L.P. v. FCC*, 276 F.3d 599 (D.C. Cir. 2002)); *Cascade Access, L.L.C.*, Notice of

communications or agreements do not violate the rule, so the Commission should clarify that business discussions, including those regarding agreements for management, resale, roaming, interconnection, or partitioning and disaggregation, are not prohibited, unless the participants expressly convey information regarding their bids or bidding strategy or post-auction market structure.

Second, the Commission should also confirm that discussions regarding generic technical handset and network issues, such as discussions in industry standards-setting bodies and discussions with manufacturers regarding specifications for network equipment or handsets, are not prohibited. At a minimum, the Commission should allow applicants to segregate their representatives negotiating such arrangements from those company employees involved in, and knowledgeable about, the company's auction and bidding strategy. To the extent that such separation is established and there is no prohibited communication to or from individuals outside of the applicants' auction teams, there is no risk of harm to the auction.

Third, the Commission should narrow the definition of "applicants" for purposes of the rule to include the filing entity and its controlling equity interest holders, but otherwise exclude persons/entities holding a ten percent or greater interest in the filing entity.⁴² A commercial agreement between a holder of a non-controlling interest in a filer and another auction applicant does not bind the filer or otherwise influence its behavior in the auction in a way that would disadvantage other bidders. Further, a minority non-controlling interest holder is highly unlikely to have knowledge regarding the filer's bids or bidding strategy at auction. Yet application of the rule in this instance could bar non-controlling entities from a variety of commercial

Apparent Liability for Forfeiture, 24 FCC Rcd 1350 (EB 2009), *aff'd*, *Cascade Access, L.L.C.*, Forfeiture Order, 28 FCC Rcd 141 (EB 2013).

⁴² See 47 C.F.R. § 1.2105(c)(7)(i).

transactions that otherwise would advance the economy and benefit consumers. In any event, the Commission's policies barring prohibited communications via a third party conduit would apply to non-applicants, thus rendering the application of the rest of the FCC's anti-collusion rules to non-controlling interests in a filer unnecessary.⁴³

Fourth, the Commission should shorten the period during which the rule is in effect to the period between the short-form application deadline prior to the auction and when the bidding closes, rather than extend it to the date when long-form applications are due, as in the past. (For example, in Auction 73 the anti-collusion rule was in effect for four months, from December 3, 2007 to April 3, 2008.) Once the bidding closes, communications between auction applications cannot, by definition, affect participants' bids or bidding strategies, and cannot disadvantage other bidders. To the extent such communications could result in winning bidders defaulting on their final payments, the Commission can assess an appropriate default penalty.⁴⁴

F. AWS-3 Licensees Should Be Granted 10 Year License Terms and Be Subject to Population-Based Performance Requirements.

Verizon Wireless supports the Commission's proposal to grant licenses for 10-year terms, consistent with the terms applicable to other wireless licenses.⁴⁵ Verizon Wireless also supports performance requirements on AWS-3 licenses to drive licensees to put the spectrum to use to

⁴³ See *Amendment of Part 1 of the Commission's Rules – Competitive Bidding Procedures*, Seventh Report and Order, 16 FCC Rcd 17546, ¶ 6 (2001) (cautioning applicants “against indirectly communicating their bids or bidding strategies to each other through third-party discussions or disclosures to other auction applicants”); *Auction Of FM Broadcast Construction Permits Scheduled For March 27, 2012*, Public Notice, 26 FCC Rcd 15484, ¶ 16 (2011) (cautioning against “dealings with other parties, such as members of the press, financial analysts, or others who might become a conduit for the communication of prohibited bidding information”).

⁴⁴ See 47 C.F.R. § 1.2104(g)(1); *700 MHz Auction Procedures PN*, ¶¶ 267-68.

⁴⁵ See *NPRM* ¶ 124.

serve the public.⁴⁶ The Commission should adopt population-based performance requirements similar to those the Commission recently ordered for AWS-4 spectrum licensees.⁴⁷

Specifically, the Commission should adopt following build-out requirements:

- *AWS-3 Interim Build-out Requirement.* Within four (4) years, an AWS-3 licensee shall provide signal coverage and offer service to at least forty (40) percent of its total AWS-3 population. A licensee's total AWS-3 population shall be calculated by summing the population of all of its license authorizations in the AWS-3 band.
- *AWS-3 Final Build-out Requirement.* Within seven (7) years, an AWS-3 licensee shall provide signal coverage and offer service to at least seventy (70) percent of the population in each of its license authorization areas.

These requirements will accomplish the Commission's primary goal for performance requirements: "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."⁴⁸

With respect to penalties for failure to meet these requirements, the Commission should adopt the approach used for the WCS REAG and EA licenses:⁴⁹

- In the event an AWS-3 licensee fails to meet the AWS-3 Interim Build-out Requirement, the term of *all* of the licensee's AWS-3 license authorizations shall be reduced by two years.
- In the event an AWS-3 licensee fails to meet the AWS-3 Final Build-out Requirement in any of its license areas, its AWS-3 license for each license authorization area in which it fails to meet the build-out requirement shall terminate automatically without Commission action for those geographic portions of its license where it is not providing service, and such licensee may be subject to an appropriate enforcement action, including forfeitures. The Commission would then re-auction the unserved area as a new license.

⁴⁶ See *id.* ¶ 126.

⁴⁷ See *AWS-4 Service Rules Report and Order*, ¶¶ 187-88.

⁴⁸ *NPRM* ¶ 128.

⁴⁹ See 47 C.F.R. § 27.13(h)-(i).

These penalties meet the Commission’s goal of imposing “meaningful and enforceable consequences” for failure to meet the AWS-3 build-out requirements, without discouraging investment by denying the licensee the benefits of the build-out accomplished during the initial license term.⁵⁰

These population-based, “keep-what-you use” performance requirements will ensure AWS-3 licensees deploy wireless broadband services effectively and efficiently throughout the nation. This approach accords with the Commission’s long-standing policy of utilizing population-based construction benchmarks. Wireless providers offer services for the benefit of consumers, making alternative build-out requirements, such as coverage of land area, a poor measure of the public benefit. A population-based build-out requirement will ensure that licensees provide wireless broadband services where consumers actually will use them and need them.

This proposal also promotes rapid deployment and service to the public. Licensees who fail to meet the interim four-year build-out requirement will have shortened license terms, and licensees who fail to meet the seven-year coverage requirement risk losing unused spectrum. The “new applicant” process provides an opportunity for third parties to bid for the unserved area, but it does not foreclose service by the licensee if no competing bidder materializes. In that case, the incumbent licensee should be allowed to reclaim the unserved area.

G. The FCC Should Apply its Partitioning, Disaggregation, and Spectrum Leasing Rules to the AWS-3 Spectrum.

The Commission should apply its existing Part 27 geographic partitioning, disaggregation, and spectrum leasing rules to AWS-3 licenses, as proposed in the *NPRM*.⁵¹

⁵⁰ *NPRM* ¶ 130.

⁵¹ *NPRM* ¶ 140.

Allowing licensees the ability to partition and/or disaggregate portions of their spectrum holdings, and/or to lease such holdings, promotes a robust secondary market in spectrum. And it particularly facilitates acquisition of spectrum rights by smaller carriers, who may serve small, targeted markets.⁵² These rules have been effective and should be applied to the AWS-3 band.

For example, Verizon Wireless has successfully used partitioning to lease its Upper 700 MHz C Block spectrum to nearly two dozen participants in its “LTE in Rural America” (LRA) program. Through this program, rural wireless carriers provide 4G LTE services within their coverage area on the C Block spectrum, bringing advanced mobile broadband services to rural communities.⁵³ To date, twenty different rural wireless carriers have entered into LRA arrangements with Verizon Wireless and thirteen of these providers have already launched LTE networks.⁵⁴ The Commission should ensure such beneficial secondary market activity can continue in the AWS-3 band by applying its partitioning, disaggregation and leasing rules to that band.

IV. THE FCC SHOULD ADOPT TECHNICAL RULES THAT WILL BEST FACILITATE THE RAPID DEPLOYMENT OF WIRELESS SERVICES.

Verizon Wireless agrees that the Commission should adopt technical rules that both facilitate reliable service and minimize undesirable interference. To do this, the Commission should apply the existing technical rules for the AWS-1 band to the AWS-3 band. These rules have already proven effective at protecting adjacent operations from harmful interference. At the same time, adopting these rules will facilitate both the use of this spectrum, as new standards

⁵² See *Fifteenth CMRS Report*, ¶ 282.

⁵³ See <http://news.verizonwireless.com/news/2012/09/4G-LTE-rural-america-conference.html>.

⁵⁴ Verizon, “4G LTE Network Launches in Rural Alaska” (Sept. 4, 2013), <http://news.verizonwireless.com/news/2013/09/4g-lte-rural-america-program-alaska.html> (last visited Sept. 17, 2013).

will not need to be developed, and the timely provisioning of high quality networks and services to consumers.

Power Limits. Verizon Wireless supports the Commission's proposal to apply the existing power limits for both AWS-1 and AWS-4 base stations to AWS-3 base stations. For uplink operations, however, the FCC should adopt the existing standard LTE maximum mobile uplink power for the AWS-1 band, which is a maximum power limit of +23 dBm EIRP (200 mW), in the AWS-3 band, rather than the FCC proposed power limit of +20 dBm EIRP (100 mW).⁵⁵ This power increase will not have a material impact on interference levels. In addition, this power level will allow existing LTE device designs and network implementations, including cell site spacing, to be used in the AWS-3 bands as they conform to the +23 dBm power level.

Antenna Height Restrictions. Verizon Wireless agrees with the Commission that no unique antenna height limits are needed for AWS-3 base stations.⁵⁶ The general height restrictions that are already included in Part 27 adequately mitigate any co-channel licensee interference concerns.

Fixed Stations. Verizon Wireless agrees that the Commission should prohibit fixed stations in the 1695-1710 MHz and 1755-1780 MHz uplink bands.⁵⁷ In determining the Government Protection Zones for these bands, the CSMAAC did not consider the impact of high gain or tall antennas on government operations. While Verizon Wireless is generally supportive of flexible use policies, the authorization of fixed high gain antennas in these bands could cause interference to government operations and thus the FCC should prohibit their use in these bands.

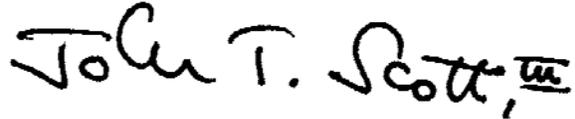
⁵⁵ *NPRM* ¶¶ 102-103.

⁵⁶ *Id.* ¶ 97.

⁵⁷ *Id.* ¶ 98.

Out-of-Band Emissions Limits. The FCC should adopt the normal out-of-band emission limit of $43 + 10 \log P$ to AWS-3 operations, as it proposes.⁵⁸ This limit has proven effective in protecting adjacent channel operations absent extraordinary interference situations and should be applied to the AWS-3 band.

Respectfully submitted,



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⁵⁸ *Id.* ¶¶ 86-94.