

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

In the Matter of )  
 )  
Amendment of the 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 )

**REPLY COMMENTS OF UNITED STATES CELLULAR CORPORATION**

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October 28, 2013

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## EXECUTIVE SUMMARY

United States Cellular Corporation (“USCC”) again urges the Commission to take full advantage of the potential this proceeding has to significantly advance the public interest. The AWS-3 spectrum could greatly assist in addressing our nation’s ever-increasing spectrum crunch and ensuring that every American, including those living in rural areas, has a chance to benefit from the vast opportunities made possible by broadband access. In order to do so, however, the Commission needs to implement the industry-consensus band plan and adopt service rules and auction procedures that provide small and regional carriers with a reasonable opportunity to acquire AWS-3 licenses and put this spectrum to its highest and best use.

Specifically, USCC strongly urges the Commission to pair the 1695-1710 MHz band with the 2095-2110 MHz band and to pair the 1755-1780 MHz band with the 2155-2180 MHz band. As industry commenters unanimously stressed, this band plan would be optimal because, in addition to maximizing the amount of paired AWS-3 spectrum, it would symmetrically extend the existing AWS-1 band. Licensees could build upon existing infrastructure and incorporate AWS-3 spectrum into their current operations, and existing AWS-1 equipment could serve as a foundation for AWS-3 equipment. This would lower equipment costs for both licensees and the public and allow for more efficient, and thus faster, network deployments.

USCC also believes certain additional actions are necessary for licensees to be able to put this valuable spectrum to its highest and best use. For instance, the Commission should strive to clear the AWS-3 bands of incumbent users to the maximum extent possible. USCC also supports applying the AWS-1 technical rules, and in particular the AWS-1 mobile power limit, to AWS-3 operations, which would promote the seamless integration of AWS-1 networks and equipment into AWS-3 operations. Further, the Commission should license the AWS-3 spectrum on the basis of 5 megahertz “building blocks,” which would reduce the number of

AWS-3 licenses that will require coordination with any remaining Federal users, support a variety of wireless broadband technologies and, most importantly, provide smaller bidders with a reasonable opportunity to acquire AWS-3 licenses.

Similarly, the AWS-3 service rules and auction procedures must create a level playing field for small and regional carriers in order for the Commission to maximize the potential of this proceeding to greatly advance the public interest. Without the participation of these carriers, there will be a continued lack of competition in the wireless industry and reduced network deployments in rural and other underserved areas. USCC again stresses that structuring the AWS-3 rules in the following ways will be critical for ensuring that small and regional carriers have a reasonable opportunity to acquire AWS-3 licenses and to subsequently use this spectrum to become more viable competitors and to provide broadband access to rural residents.

First and foremost, USCC strongly urges the Commission to adopt a clear, *ex ante* interoperability requirement. Specifically, assuming the Commission adopts the AWS-3 spectrum pairings broadly supported by the industry, it should require that: (1) all AWS-3 mobile devices be capable of transmitting across the entire 2095-2180 MHz uplink band and receiving across the entire 1695-1780 MHz downlink band; and (2) all AWS-3 networks permit the use of such mobile devices. By doing so, the Commission would ensure the development of an expansive ecosystem of devices capable of operating across both the AWS-1 and AWS-3 bands, which would expand roaming opportunities, enhance economies of scale, spur network deployments in rural and other underserved areas, and promote competition, which would lead to greater investment and innovation and lower consumer costs. Further, adopting an interoperability requirement at this time would greatly increase auction participation by smaller bidders and prevent the largest bidders, who alone can drive device development, from gaining a

significant “head start” advantage while small and regional carriers wait for the industry to agree to full interoperability, assuming a voluntary industry solution would ever emerge.

USCC also joins a majority of commenters in stressing that licensing the AWS-3 spectrum on the basis of Cellular Market Areas (“CMAs”) is necessary to preserve opportunities for small and regional carriers, as well as new entrants, to provide an important source of competition, variety, and diversity in rural and less densely populated areas. CMAs, not Economic Areas, represent the natural market unit for small and regional carriers, whose business plans and finances require these smaller license areas. At the same time, CMAs allow for targeted spectrum acquisitions and can easily be aggregated into larger service areas, and thereby can be specifically tailored to the large carriers’ business plans as well.

In addition, USCC again strongly urges the Commission to prohibit the use of package bidding, which can effectively foreclose participation by smaller bidders because it skews an auction in favor of the largest bidders, who can end up acquiring licenses at a discount. The alleged benefits of package bidding set forth by the sole commenter that supports the use of these procedures – the nation’s largest carrier – are either unnecessary or nonexistent. At the same time, most of the alleged justifications for package bidding simply would remove a potential burden from the largest bidders while imposing additional burdens on smaller bidders.

USCC also continues to stress that the initial license term must account for the highly-encumbered nature of this spectrum. Before many licensees will have access to their AWS-3 spectrum, they will be forced to wait for the relocation of incumbents to other spectrum bands and/or the completion of the coordination process with any remaining Federal users. USCC therefore proposes a 15-year initial license term, an approach the Commission found necessary for the similarly-encumbered AWS-1 spectrum. Alternatively, USCC would support delaying a 10-year initial license term until the AWS-3 spectrum becomes available. In addition, like a vast

majority of commenters, USCC believes renewal expectancies are necessary in order to provide the certainty required by bidders and their investors. In contrast, no commenter supported the Commission's proposal to subject AWS-3 licensees to additional renewal standards, which would generate enormous and unnecessary new paperwork burdens and create investment-killing uncertainty concerning the security of licenses.

Finally, in order to provide sufficient flexibility in how licensees deploy their networks, USCC again urges the Commission to follow its AWS-1 precedent and gauge AWS-3 licensees' build-out efforts using its "substantial service" standard. Inflexible build-out requirements are unnecessary, arbitrary, and ignore market realities. They also weigh most heavily on small and regional carriers, who often lack existing infrastructure that can serve as a foundation for meeting these benchmarks, and who typically lack the economies of scope and scale of carriers serving urban areas. If the Commission nevertheless prescribes uniform construction obligations, it should avoid adopting an interim benchmark and any final benchmark should take into account the highly-encumbered nature of the AWS-3 bands. Like USCC, a majority of commenters opposed automatic license termination for a failure to meet the final construction benchmark. The record instead supports a "keep-what-you-use" penalty, which would sufficiently incentivize prompt network deployments, but would not risk stranding good faith investments and leaving consumers without services they have been relying on for years.

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United States Cellular Corporation (“USCC”) submits these reply comments in response to the Notice of Proposed Rulemaking (“NPRM”) released July 23, 2013 in the above-captioned proceeding and the comments filed in response to the NPRM.<sup>1</sup> In its comments, USCC urged the Commission to maximize the amount and usability of the AWS-3 spectrum in order to help address our nation’s current spectrum crunch and to ensure that every American, including those living in rural areas, has a chance to benefit from the vast opportunities made possible by broadband access. USCC also explained that maximizing the amount of newly-available spectrum could help to address the current lack of effective competition in the wireless industry.<sup>2</sup>

USCC cautioned, however, that these substantial public interest benefits will only arise if small and regional carriers have a reasonable opportunity to acquire AWS-3 licenses and to subsequently put this spectrum to its highest and best use. Other commenters similarly emphasized the need for the Commission to create a level playing field. For instance, CCA

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<sup>1</sup> See *Amendment of the Commission’s Rules with Regard to Commercial Operations in the 1695-1710 MHz, 1755-1780 MHz, and 2155-2180 MHz Bands*, Notice of Proposed Rulemaking and Order on Reconsideration, 28 FCC Rcd 11479 (2013). Unless otherwise noted, comments cited herein are those filed on September 18, 2013 in GN Docket No. 13-185 in response to the NPRM.

<sup>2</sup> See *Prepared Remarks of Acting Chairwoman Mignon L. Clyburn*, Competitive Carriers’ Association Annual Convention, Las Vegas, Nevada, pp. 2-3 (Sept. 17, 2013) (“*Chairwoman Clyburn CCA Remarks*”) (“Competition is an essential driver of investment and innovation, and must be preserved, as it is the best way to protect the growing percentage of Americans, who rely solely on mobile services, for their communication needs.”).

stressed that the AWS-3 “auction and service rules should be designed to promote competition in the wireless industry, and should not implicitly favor the largest carriers.”<sup>3</sup> Likewise, PSW urged the Commission to “ensure that small entities ... have an opportunity to participate in order to promote the deployment of services throughout the country – including to rural areas.”<sup>4</sup>

## **I. THE PUBLIC INTEREST WOULD BE GREATLY SERVED BY MAXIMIZING THE AMOUNT OF AWS-3 SPECTRUM MADE AVAILABLE TO MOBILE BROADBAND SERVICE PROVIDERS**

Broadband access has become an indispensable component of modern life. For instance, the Commission has found that “broadband is a foundation for economic growth, job creation, global competitiveness and a better way of life.”<sup>5</sup> As Bluegrass Cellular noted, because Americans have similarly realized these substantial benefits, they are “relying more and more on access to wireless broadband services to accomplish everyday tasks that are vital to businesses and public safety, as well as households, in both rural and urban areas.”<sup>6</sup> In turn, CCA explained, this “increasing demand for wireless broadband services has led to a tremendous concomitant increase in the demand for spectrum,”<sup>7</sup> which Nokia emphasized “continues to increase dramatically with no end in sight.”<sup>8</sup> As a result, “the commercial wireless industry faces a critical need for additional spectrum resources.”<sup>9</sup>

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<sup>3</sup> Comments of Competitive Carriers Association (“CCA”) at 2; *see id.* at 6 (“[T]he choices [the Commission] makes regarding auction and service rules for the AWS-3 spectrum will affect competitive conditions in the wireless industry.”).

<sup>4</sup> Comments of Public Service Wireless Services, Inc. (“PSW”) at 2; *see* Comments of the Rural Wireless Association, Inc. f/k/a Rural Telecommunications Group, Inc. (“RWA”) at 8 (“Section 309(j) requires the Commission to promote the dissemination of licenses to small businesses and rural telephone companies.”).

<sup>5</sup> FCC, *Connecting America: The National Broadband Plan*, p. xi (Mar. 16, 2010); *see Joint Statement on Broadband*, 25 FCC Rcd 3420, 3421 (2010) (“Ubiquitous and affordable broadband can unlock vast new opportunities for Americans...”).

<sup>6</sup> Comments of Bluegrass Cellular, Inc. at 2.

<sup>7</sup> Comments of CCA at 1; *see* Comments of Ericsson at 2 (“[D]emand for wireless broadband services and the network capacity associated with those services is surging, resulting in an ever growing demand for spectrum.”).

<sup>8</sup> Comments of Nokia Solutions and Networks (“Nokia”) at 4; *see* Comments of Verizon Wireless (“Verizon”) at 3 (“[C]onsumer demand for mobile broadband services and smartphone devices has continued to surge...”); Comments of Telecommunications Industry Association (“TIA”) at 4 (“America’s use of mobile connectivity is

The Commission therefore must continue to pursue every opportunity to maximize the amount of spectrum made available for wireless broadband services. As AT&T explained, absent additional spectrum, the “industry is unlikely to be able to continue to stay ahead of burgeoning consumer demand.”<sup>10</sup> If the industry cannot meet this consumer demand, Verizon stressed, it cannot “preserve the economic growth and innovation that mobile broadband services have engendered.”<sup>11</sup> Similarly, CTIA cautioned that “the ‘virtuous cycle’ of innovation in the wireless industry is in danger of slowing in the absence of additional spectrum allocations.”<sup>12</sup>

Maximizing the amount of additional spectrum available to commercial wireless providers would lead to other public interest benefits as well. For instance, as USCC detailed in its comments, the ability of small and regional carriers, as well as new entrants, to provide much-needed competition to the dominant national carriers rests in large part on their ability to acquire sufficient spectrum resources.<sup>13</sup> Moreover, because maximizing the amount of reallocated spectrum would increase the likelihood that small and regional carriers will have a reasonable opportunity to acquire licenses, the Commission would help to ensure network deployments in rural and other underserved areas, which often are the focus of these carriers’ business plans.

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growing exponentially.”); Comments of Mobile Future at 2 (“[M]obile data growth remains explosive, and continued LTE deployment and adoption will only intensify these trend lines.”).

<sup>9</sup> Comments of CCA at 1; *see* Comments of T-Mobile USA, Inc. at i (“[T]here is an urgent need for spectrum to meet the growing demand for mobile broadband services.”); Comments of Verizon at 1 (“Wireless service providers require additional spectrum to meet their customers’ demands.”); Comments of Nokia at 4 (“[T]he need for additional spectrum to help meet the spectrum challenge is abundantly clear.”); Comments of Mobile Future at 2 (“[C]ontinued adoption and demand for wireless broadband makes the introduction of new spectrum into the marketplace critical.”).

<sup>10</sup> Comments of AT&T, Inc. at 1.

<sup>11</sup> Comments of Verizon at 2; *see* Comments of Mobile Future at 3 (“Additional spectrum is essential to respond to consumer demand and for the wireless ecosystem to continue to drive economic growth and the next wave of mobile innovation.”).

<sup>12</sup> Comments of CTIA – The Wireless Association at 5.

<sup>13</sup> *See* Comments of CCA at 6-7 (explaining that the market’s “rising concentration [] has impeded wireless competition and harmed consumers”).

Fortunately, this proceeding has the potential to “play a vital role in addressing the spectrum crunch...”<sup>14</sup> As T-Mobile emphasized, seizing the opportunity presented here “is critical to enabling wireless broadband to continue to support economic growth, job creation, and global competitiveness.”<sup>15</sup> But the potential for this proceeding to produce these significant public interest benefits will only be realized if the Commission maximizes the amount of spectrum reallocated for wireless broadband services.

In addition to maximizing the amount of AWS-3 spectrum, USCC strongly urges the Commission to maximize licensees’ ability to put this spectrum to its highest and best use. For instance, various commenters stressed that “the Commission should prioritize the clearing of federal users to maximize the efficient use of the spectrum.”<sup>16</sup> Not only does “the Spectrum Act clearly express[] Congress’s priority for relocation of Federal users over sharing,”<sup>17</sup> but exclusive-use spectrum gives rise to substantial public interest benefits. For instance, Ericsson explained that the “growth in mobile broadband and the benefits it confers on society are primarily enabled through the licensing of exclusive-use spectrum.”<sup>18</sup> In addition, CCA noted that the “sharply increasing demand for commercial services means that the spectrum will be put

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<sup>14</sup> Comments of CTIA at 5; *see* Comments of AT&T at 1 (“[T]he allocation and assignment of this spectrum can be a major step toward alleviating this spectrum shortage.”).

<sup>15</sup> Comments of T-Mobile at 5; *see* Comments of CTIA at 27 (“The AWS-3 bands, when allocated, will play a valuable role in continuing the cycle of mobile innovation in the U.S.”); Comments of Mobile Future at 2 (“Introducing the AWS-3 spectrum into the mobile marketplace will spur innovation and job creation and help ensure that the United States retains its leadership role in the global wireless economy.”).

<sup>16</sup> Comments of CCA at 2; *see* Comments of Ericsson at 3 (“[T]he Commission’s goal should be the auction of exclusively licensed spectrum.”); Comments of Verizon at 1 (“Verizon Wireless [] strongly supports the Commission’s goal of clearing and allocating spectrum ... for exclusive commercial use to the maximum extent feasible.”); Comments of Mobile Future at 16 (“[T]he Commission should work with NTIA to facilitate the clearing of federal spectrum bands to the greatest extent possible...”).

<sup>17</sup> Comments of Ericsson at 3; *see* Comments of 4G Americas at 6 (“[T]he Spectrum Act *requires* relocation of federal systems from evaluated spectrum if feasible.”) (emphasis in original); Comments of AT&T at 2 (“Congress’ clear directive is that federal spectrum reallocated for commercial mobile use should be cleared of incumbent federal uses, if it is at all possible to do so.”).

<sup>18</sup> Comments of Ericsson at 2.

to its greatest potential through commercial services...”<sup>19</sup> As 4G Americas recognized, these benefits of exclusive-use spectrum mean that the AWS-3 auction proceeds “are likely to be higher where clearing is prioritized over sharing.”<sup>20</sup> And CCA noted that this additional revenue likely will be more than sufficient to cover any added relocation costs related to maximizing the amount of cleared spectrum.<sup>21</sup>

On the other hand, as a recent study by The Brattle Group found, “[w]hile spectrum sharing avoids costs of clearing incumbent users, sharing has its own costs and is likely to impact the value of the shared spectrum.”<sup>22</sup> For instance, “[b]y creating geographic exclusion zones, sharing results in reduced revenues from a small coverage area...”<sup>23</sup> Spectrum sharing also delays network deployments because, prior to construction, licensees “have to investigate the potential interference issues and negotiate cooperative terms of use.”<sup>24</sup> As the authors explained, because sharing delays licensees’ access to spectrum, it “reduces the [net present value] of any given spectrum deployment.”<sup>25</sup> Spectrum sharing can impose other costs as well, such as the need “to develop technologies, including filters, cognitive radios and handsets that operate within the parameters of the sharing arrangement.”<sup>26</sup> Notably, the study’s authors found that even relatively minor delays and additional costs can significantly reduce the value of spectrum.<sup>27</sup>

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<sup>19</sup> Comments of CCA at 5.

<sup>20</sup> Comments of 4G Americas at 6.

<sup>21</sup> See Comments of CCA at 4-5 (noting that, for AWS-1 licenses, the “auction proceeds attributable to the former federal spectrum ... amounted to \$6.85 billion ... while relocation costs totaled approximately \$1 billion”).

<sup>22</sup> Bazelon, C. & McHenry, G., *The Economics of Spectrum Sharing*, The Brattle Group, p. 1 (Sept. 6, 2013) (“*Brattle Spectrum Sharing Study*”).

<sup>23</sup> *Id.* at 17.

<sup>24</sup> *Id.* at 20-21.

<sup>25</sup> *Id.* at 20.

<sup>26</sup> *Id.* at 21.

<sup>27</sup> See *id.* (“Combining a one year delay in deployment and a 1 percentage point increase in the cost of capital results in a 32% discount to the [net present value] of deployment and spectrum value.”).

Sharing further reduces the value of spectrum because it “creates new uncertainties, for instance, in when spectrum will be available and whether prohibitive interference will arise.”<sup>28</sup> For AWS-3 licensees, these uncertainties will be magnified because “divergent motivations, a lack of unifying incentive to share, and security concerns are likely to make negotiating between Federal and commercial uses time consuming and difficult.”<sup>29</sup> Finally, USCC stresses that, because the “reduction in value is likely to be *increasing* relative to the extent of sharing,”<sup>30</sup> the Commission must strive to clear the AWS-3 bands to the maximum extent possible, even if it proves impossible to relocate every incumbent user.

## **II. PAIRING THE 1755-1780 MHz BAND WITH THE 2155-2180 MHz BAND AND THE 1695-1710 MHz BAND WITH THE 2095-2110 MHz BAND WOULD BEST SERVE THE PUBLIC INTEREST**

USCC details below the essential elements of an optimal AWS-3 band plan, all of which received substantial support. In particular, USCC strongly urges the Commission to maximize the amount of paired AWS-3 spectrum, and specifically to pair the 1755-1780 MHz band with the 2155-2180 MHz band and the 1695-1710 MHz band with the 2095-2110 MHz band. As AT&T explained, this proceeding presents a “rare opportunity to adopt a band plan and service rules that effectively would add 80 MHz of contiguous, prime, paired spectrum to the 90 MHz AWS-1 allocation.”<sup>31</sup> Accordingly, the “Commission should not fail to seize this opportunity.”<sup>32</sup>

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<sup>28</sup> *Id.*

<sup>29</sup> *Id.* at 8.

<sup>30</sup> *Id.* at 16 (emphasis in original).

<sup>31</sup> Comments of AT&T at 16.

<sup>32</sup> *Id.* at 2.

**A. The Commission Should Maximize the Amount of Paired Spectrum.**

Various commenters joined USCC in emphasizing that, in order to maximize the potential of the AWS-3 bands, the Commission must maximize the amount of paired spectrum.<sup>33</sup> For instance, 4G Americas stressed that, because the “most widely commercially-deployed 3GPP mobile broadband wireless standards call for FDD,” a significant amount of “paired spectrum is [] necessary to meet exploding consumer demand for LTE.”<sup>34</sup> Paired spectrum also helps spur competition and the timely access to wireless broadband services by a greater number of people. For instance, T-Mobile explained that “paired spectrum allows established licensees and new entrants to acquire *all* the critical spectrum inputs needed for their business at once, allowing them to deploy and expand their next-generation services more quickly and efficiently.”<sup>35</sup> In contrast, not only does unpaired spectrum have limited utility, it can “hinder competition because new and expanding entrants would need to spend considerable resources acquiring the downlink portion without any assurance that they could acquire the spectrum in other bands.”<sup>36</sup>

The substantial benefits of paired spectrum, and disadvantages of unpaired spectrum, also directly affect auction revenue. For instance, AT&T noted that an auction of “paired spectrum is far more likely to attract broad participation from existing carriers and new entrants alike.”<sup>37</sup> In contrast, bidders are far “less likely to bid on separate shards of unpaired spectrum that each might require its own standard as part of a carrier aggregation combination.”<sup>38</sup> As a result,

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<sup>33</sup> See Comments of Verizon at 4 (“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.”).

<sup>34</sup> Comments of 4G Americas at 3-4; see Comments of TIA at 10 (“The pairing of AWS-3 spectrum with Frequency Division Duplex (FDD) spectrum that is contiguous and compatible will maximize its efficient use and value.”).

<sup>35</sup> Comments of T-Mobile at 26-27 (emphasis in original); see Comments of AT&T at 13 (noting that a band plan with a significant amount of paired spectrum “would speed deployment and reduce deployment costs”).

<sup>36</sup> Comments of T-Mobile at 26.

<sup>37</sup> Comments of AT&T at 7.

<sup>38</sup> *Id.* at 7.

“paired spectrum generates substantially greater revenues at auction than unpaired spectrum.”<sup>39</sup> Maximizing auction revenue is especially important here in order to “achieve Congress’ intent of funding FirstNet and reducing the federal debt.”<sup>40</sup> The higher value of paired spectrum also will help to “ensure that proceeds exceed 110% of relocation and/or sharing costs, allowing the auction to proceed to licensing.”<sup>41</sup> For these reasons, USCC agrees with CTIA that “the first step for the Commission should be to focus on a holistic band plan that best pairs and licenses spectrum for mobile broadband services.”<sup>42</sup>

### **B. USCC Supports Pairing the 1755-1780 MHz and 2155-2180 MHz Bands.**

A vast majority of commenters joined USCC in strongly supporting the reallocation of the 1755-1780 MHz band and its designation as AWS-3 spectrum. As noted by T-Mobile, “the 1755-1780 MHz band is particularly attractive for conversion to commercial wireless use...”<sup>43</sup> For instance, Mobile Future explained that, because it is “[l]ocated below 3 GHz, the propagation characteristics of the spectrum at 1755-1780 MHz make it ideal for mobile broadband.”<sup>44</sup> Moreover, because this spectrum is “regionally and internationally harmonized for mobile broadband,”<sup>45</sup> commercial “access to the 1755-1780 MHz band will allow industry to leverage global economies of scale for equipment development.”<sup>46</sup> And, perhaps most

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<sup>39</sup> Comments of Mobile Future at 13; *see* Comments of 4G Americas at 3 (“[P]aired spectrum is much more valuable.”).

<sup>40</sup> Comments of Mobile Future at 14.

<sup>41</sup> Comments of 4G Americas at 12.

<sup>42</sup> Comments of CTIA at 8; *see* Comments of Mobile Future at 4 (“The FCC can create an effective band plan for AWS-3 if it pairs these spectrum assets...”).

<sup>43</sup> Comments of T-Mobile at 13; *see* Comments of Mobile Future at 4 (“This spectrum is ideally suited to the provision of mobile broadband services.”).

<sup>44</sup> Comments of Mobile Future at 4.

<sup>45</sup> Comments of T-Mobile at 13.

<sup>46</sup> Comments of Mobile Future at 4; *see* Comments of CCA at 3.

significantly, the band’s “location next to the AWS-1 band will produce significant deployment efficiencies and enable the aggregation of larger spectrum blocks.”<sup>47</sup>

Like CTIA and other commenters, USCC “is generally supportive of the DoD’s proposal for spectrum relocation and sharing in the 1755-1780 MHz band.”<sup>48</sup> As T-Mobile noted, a significant benefit of the DoD’s proposal is that “numerous agency operations [would] vacate the 1755-1780 MHz band, reducing the need for permanent coordination procedures and protection zones.”<sup>49</sup> In contrast, “the CSMAC Working Groups assume that more federal agency operations will remain in the 1755-1780 MHz band, inflating the need for permanent coordination procedures and Protection Zones.”<sup>50</sup> Primarily for this reason, USCC agrees that the Commission “should instead focus on the *DoD Alternative Proposal* as the basis for making the 1755-1780 MHz band available.”<sup>51</sup>

USCC also agrees, however, that the DoD’s proposal “presents certain complexities and challenges that will require further effort from all interested stakeholders.”<sup>52</sup> In particular, AT&T stressed that “[f]urther study is needed to determine whether any of the systems DoD proposes to remain in the 1755-1780 MHz block should be relocated or truncated instead.”<sup>53</sup> In this respect, USCC supports AT&T’s recommendation that the DoD’s proposal “be considered

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<sup>47</sup> Comments of Mobile Future at 4; *see* Comments of CCA at 3 (“[T]he 1755-1780 MHz band is uniquely situated to extend and enhance existing AWS spectrum because it is adjacent to the AWS-1 uplink band.”); Comments of T-Mobile at 13.

<sup>48</sup> Comments of CTIA at 22; *see* Comments of T-Mobile at 14 (“The Commission should use the *DoD Alternative Proposal*, which is largely consistent with the suggestions of the *Industry Roadmap*, as the basis for planning for the future use of the 1755-1780 MHz band.”).

<sup>49</sup> Comments of T-Mobile at 15.

<sup>50</sup> *Id.* at 17-18.

<sup>51</sup> *Id.* at 19; *see* Comments of CTIA at 24 (“CTIA does not fully support the ‘sharing’ studies provided thus far in the CSMAC process...”).

<sup>52</sup> Comments of CTIA at 22; *see* Comments of AT&T at 8 (“While DoD’s proposals represent real progress, additional refinements and analysis are likely required.”).

<sup>53</sup> Comments of AT&T at 9; *see* Comments of CTIA at 24 (“[A]dditional work can and should be done to allow for more commercial usage in this band.”).

together with the Congressional directive that ... sharing should only be considered in cases where clearing is not feasible due to technical or cost constraints.”<sup>54</sup> As detailed above, exclusive-use spectrum increases revenue, decreases costs, and provides carriers with far greater certainty regarding their future operations. As a result, the value bidders assign to fully-cleared spectrum far exceeds their valuation of shared spectrum, which substantially increases auction revenue. Thus, as AT&T observed, the “reimbursement of reasonable relocation costs is unlikely to serve as a justifiable basis for failing to clear the spectrum for commercial use.”<sup>55</sup>

For many of the same reasons, USCC joins various commenters in urging the Commission not to issue “overlay” licenses for the 1755-1780 MHz band.<sup>56</sup> At a minimum, USCC agrees with AT&T that it would be “premature to adopt any ‘overlay license’ regime unless and until it is determined that clearing the spectrum for commercial use through relocation, as Congress directs, is not feasible, and that mutually acceptable sharing mechanisms cannot be adopted.”<sup>57</sup> In other words, “considering overlay licenses assumes both a failure by Federal users to relocate and a further failure to adopt mutually acceptable sharing mechanisms in a timely manner.”<sup>58</sup> As T-Mobile noted, such an approach therefore “would be inconsistent with the Spectrum Act’s preference to relocate federal users to the maximum extent feasible.”<sup>59</sup>

An “overlay” approach also would be “inconsistent with the Commercial Spectrum Enhancement Act, which provides resources for government agencies to study relocation options

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<sup>54</sup> Comments of AT&T at 9; *see* Comments of Verizon at 6 (“[T]he 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.”); Comments of Nokia at 3 (“The Commission should take all steps within its power to ensure the timely clearing of 1755-1780 MHz...”).

<sup>55</sup> Comments of AT&T at 9, n. 17.

<sup>56</sup> *See, e.g.*, Comments of T-Mobile at 19 (“T-Mobile does not support the issuance of ‘overlay’ licenses.”); Comments of 4G Americas at 10 (“4G Americas discourages the Commission from creating a mere ‘overlay’ license at 1755 -1780 MHz.”); Comments of AT&T at 10.

<sup>57</sup> Comments of AT&T at 10 (internal citation omitted).

<sup>58</sup> *Id.*

<sup>59</sup> Comments of T-Mobile at 19.

and to update equipment to facilitate clearing or shared use of spectrum, activities that would not necessarily be undertaken if overlay licenses were issued.”<sup>60</sup> Commenters also stressed that this approach “would amount to consigning commercial mobile to secondary status,”<sup>61</sup> and thereby “create uncertainty about exactly what rights a licensee obtains.”<sup>62</sup> Consequently, an overlay license regime would inhibit network deployments and reduce auction revenue.<sup>63/64</sup>

Given the substantial benefits noted above of reallocating the 1755-1780 MHz band for commercial operations, USCC joins T-Mobile in stressing that “the Commission should adopt a sharing framework for this band which ensures that it realizes its full potential for wireless broadband service.”<sup>65</sup> Specifically, like the vast majority of commenters, USCC again strongly endorses the industry proposal to pair the 1755-1780 MHz band with the 2155-2180 MHz band, which the Spectrum Act requires to be auctioned and licensed by February 2015.<sup>66</sup> As CTIA

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<sup>60</sup> *Id.* at 19-20 (internal citation omitted); *see* Comments of AT&T at 10 (“Such an assumption, at this stage, is likely to ensure that relocation does not occur and mutually acceptable sharing mechanisms are never developed.”).

<sup>61</sup> Comments of AT&T at 10.

<sup>62</sup> Comments of T-Mobile at 20.

<sup>63</sup> *See id.* (“This uncertainty would potentially reduce auction participation and revenues that would be dedicated to the First Responder Network Authority (‘FirstNet’), an outcome which would be contrary to the public interest.”); Comments of AT&T at 10 (“Overlay licenses ... would be unlikely to generate sufficient auction revenue to cover even modest relocation costs, and would inhibit deployment.”); Comments of 4G Americas at 10 (“[S]uch limited rights would likely depress auction proceeds.”).

<sup>64</sup> The Commission has also proposed overlay licenses to be superimposed on existing cellular licenses in its pending proceeding to shift cellular licensing from the site-by-site approach dating from the 1980s to a geographic basis. *See Amendment of Parts 1 and 22 of the Commission’s Rules with Regard to the Cellular Service, Including Changes in Licensing of Unserved Area*, Notice of Proposed Rulemaking and Order, 27 FCC Rcd 1745 (2012). The comments filed in that proceeding, including those by USCC, have demonstrated that overlay licensing in that context will not work and will be a source of endless and needless trouble between the overlapping licensees and among those licensees and the Commission. *See, e.g.*, Comments of USCC, WT Docket No. 12-40 (May 15, 2012); Reply Comments of USCC, WT Docket No. 12-40 (June 14, 2012). Although the context in this proceeding is not the same, any scheme involving two or more licensees with potentially conflicting rights to the same spectrum in the same geographic area will generate similar intractable problems with no countervailing benefit to the public interest.

<sup>65</sup> Comments of T-Mobile at 14.

<sup>66</sup> *See* Comments of CTIA at 12 (“[T]he wireless industry has consistently advocated for this pairing.”); Comments of CCA at 3 (“The Commission’s top priority ... should be to clear the 1755-1780 MHz band, so that it can be paired for auction with the 2155-2180 MHz band.”); Comments of Motorola Mobility LLC at 4 (“[T]he centerpiece of the Notice is the potential pairing of the 1755-1780 MHz and 2155-2180 MHz band segments.”); Comments of Nokia at 3 (“NSN in particular strongly supports the pairing, auctioning and licensing of the 1755-1780 MHz and 2155-2180 MHz bands...”); Comments of Mobile Future at 8 (“This pairing offers significant synergies and is

noted, the industry's broad support "is driven by the findings of technical experts regarding the utility of this pairing and the innovative technologies it would enable."<sup>67</sup>

Various commenters stressed that a primary benefit of this pairing is that it would "symmetrically extend the AWS-1 band."<sup>68</sup> In addition to allowing for the "seamless integration of this spectrum for use by mobile broadband providers,"<sup>69</sup> there would be "significant device design benefits to pursuing this pairing."<sup>70</sup> For instance, Motorola Mobility explained that, because this pairing "is symmetrical to the AWS-1 band and has the same duplex spacing, this band could be supported by existing duplexers."<sup>71</sup> In addition, because "existing power amplifiers for devices are designed to operate across the 1710-1980 MHz band," the "1755-1780 MHz band could be included with little complication."<sup>72</sup> Similarly, Mobile Future explained how "[b]ase stations already designed for the AWS-1 band can be modified easily to use the 2155-2180 MHz band, allowing operators to quickly deploy this spectrum for consumer use."<sup>73</sup> As Motorola Mobility summarized, these "efficiencies mean that 1755-1780 / 2155-2180 MHz

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broadly supported by the wireless industry."); Comments of Verizon at 5 ("The FCC should auction the 1755-1780 MHz and 2155-2180 MHz as paired FDD spectrum."); Comments of AT&T at 5; Comments of TIA at 10; Comments of 4G Americas at 1.

<sup>67</sup> Comments of CTIA at 12.

<sup>68</sup> Comments of T-Mobile at 14; *see* Comments of CCA at 3 ("The most efficient use of [the 1755-1780 MHz band] is to pair it with the 2155-2180 MHz band to symmetrically extend the existing AWS-1 band..."); Comments of Mobile Future at 8 ("The FCC should pair the 1755-1780 MHz band with the 2155-2180 MHz band to achieve a symmetrical expansion of existing AWS allocations."); Comments of CTIA at 10 ("AWS-1 spectrum is directly adjacent to this potential pairing, and it would serve as a logical extension of the AWS-1 band."); Comments of Motorola Mobility at 4-5 ("The 1755-1780/2155-2180 MHz pairing would be a natural extension of the 1710-1755/2110-2155 MHz AWS-1 band..."); Comments of Nokia at 5 ("This 1755-1780/2155-2180 MHz combination is particularly attractive ... because of its immediate adjacency to the 1710-1755/2110-2155 MHz band...").

<sup>69</sup> Comments of CTIA at 10; *see* Comments of Verizon at 5 ("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.").

<sup>70</sup> Comments of Motorola Mobility at 5.

<sup>71</sup> *Id.*

<sup>72</sup> *Id.*

<sup>73</sup> Comments of Mobile Future at 8-9.

capabilities likely could be built into devices with minimal additional cost and without a significant impact on battery life, heat production, or other performance characteristics.”<sup>74</sup>

USCC also agrees with CTIA and others that this pairing is “ideal due to its international harmonization potential.”<sup>75</sup> As Verizon explained, international harmonization would “help drive greater economies of scale, promote more rapid deployment of mobile broadband networks and services, and facilitate international roaming by consumers.”<sup>76</sup> For this reason as well, “pairing these bands would significantly enhance the value of this spectrum.”<sup>77</sup> As CTIA emphasized, because “the revenues from auction of this spectrum will help support FirstNet deployment and deficit reduction, it is in the public interest to design a band plan that maximizes the value of this spectrum.”<sup>78</sup>

### **C. USCC Supports Pairing the 1695-1710 MHz and 2095-2110 MHz Bands.**

USCC also again supports the reallocation of the 1695-1710 MHz band, which, pursuant to the Spectrum Act, the NTIA identified for commercial services.<sup>79</sup> Other commenters similarly recognized the public interest benefits of permitting commercial operations in this band. For instance, CTIA noted that “the 1695-1710 MHz band is directly adjacent to the lower end of the

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<sup>74</sup> Comments of Motorola Mobility at 5; *see* Comments of Verizon at 5 (“This approach will ... 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.”).

<sup>75</sup> Comments of CTIA at 11; *see* Comments of Motorola Mobility at 4 (“Internationally, the 1755-1780 and 2155-2180 MHz bands are allocated for mobile services...”); Comments of Mobile Future at 9 (“This pairing also would harmonize U.S. use with international allocations.”).

<sup>76</sup> Comments of Verizon at 6; *see* Comments of CTIA at 11 (“This international harmonization would allow for economies of scope and scale to be brought to bear in the development of this spectrum.”); Comments of Motorola Mobility at 4 (“Harmonization with international band plans and standards could allow for ... economies of scale that drive down the cost of user equipment and shorten development cycles.”); Comments of Nokia at 6 (“[T]he wireless industry and especially consumers will benefit from the economies of scale, ranging from shorter time to deployment, lower cost for devices and networks, and better international roaming.”).

<sup>77</sup> Comments of CTIA at 11.

<sup>78</sup> *Id.* at 12.

<sup>79</sup> *See* NPRM, 28 FCC Rcd at 11495.

AWS-1 band.”<sup>80</sup> As detailed above, this would allow licensees to leverage existing technology and network investments, which would result in lower equipment costs and more efficient network deployments. In addition, Mobile Future explained that the band’s reallocation would be consistent with efforts “to harmonize the 1695-1710 MHz band internationally and thus enable global deployment and economies of scale.”<sup>81</sup>

With respect to commercial operations sharing this spectrum with Federal users, USCC agrees with T-Mobile that the “approach outlined in the *WG1 Final Report* provides a workable roadmap that will maximize use of the 1695-1710 MHz band while protecting federal operations.”<sup>82</sup> T-Mobile also noted, however, that “some of the initial technical parameters and techniques that Working Group 1 developed were conservative.”<sup>83</sup> Accordingly, the Commission, in consultation with the NTIA, should continue to analyze and refine this proposal in order to “reduce the impact of sharing and the size of the Protection Zones, on both a geographic and temporal basis.”<sup>84</sup>

The Commission seeks comment on several spectrum bands, including the 1755-1780 MHz band, that could be used to satisfy the Spectrum Act’s requirement that it identify an additional 15 megahertz of contiguous spectrum for commercial use. Although USCC fully supports designating 1755-1780 MHz as an AWS-3 band, as detailed above, the optimal pairing of this band would be with the 2155-2180 MHz band. In addition, Congress’ clear intent was for the additional 15 megahertz identified by the Commission to be paired with the 15 megahertz identified by the NTIA. In fact, as CTIA noted, a previous version of the Spectrum Act

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<sup>80</sup> Comments of CTIA at 12; *see* Comments of TIA at 11 (“TIA supports the use of this block for uplink spectrum as it is contiguous to the current AWS uplink spectrum.”).

<sup>81</sup> Comments of Mobile Future at 10.

<sup>82</sup> Comments of T-Mobile at 10.

<sup>83</sup> *Id.* at 11.

<sup>84</sup> *Id.*

expressly “stipulated that the 15 megahertz identified by NTIA was to be paired with the 15 megahertz identified by the FCC.”<sup>85</sup> Pairing the 1755-1780 MHz band with the 1695-1710 MHz band, however, would be illogical. Not only do these bands have disparate bandwidths, but their immediate adjacency to the AWS-1 uplink band weighs strongly in favor of designating both as uplink spectrum.<sup>86</sup> CTIA also noted that the “legislative history of the Spectrum Act makes clear that Congress intended for the Commission to identify 15 megahertz *in addition to* the 1755-1780 MHz band.”<sup>87</sup> For these reasons, USCC agrees “that the Commission may not satisfy this requirement through the allocation of the 1755-1780 MHz band.”<sup>88</sup>

Instead, USCC, like most commenters, believes that “the 2095-2110 MHz band is the most appropriate choice to fulfill this statutory requirement.”<sup>89</sup> As CTIA noted, no other spectrum is as “well-positioned as this band to meet all of the key principles for mobile broadband spectrum: it lies below 3 gigahertz; it will enable the development of large, contiguous blocks; it is adjacent to another mobile broadband allocation, and it would be part of a symmetric pair.”<sup>90</sup> Similarly, Mobile Future explained that, because it is “[l]ocated below 3

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<sup>85</sup> Comments of CTIA at 21, n. 50

<sup>86</sup> See NPRM, 28 FCC Rcd at 11499 (proposing “to allow the use of each AWS-3 band in a manner that is compatible with the use of adjacent bands” in order to “maximize the potential usability of these bands”); Comments of T-Mobile at 12-13 (“[B]ased on the Spectrum Act’s parallel mandates that NTIA and the FCC each identify 15 megahertz of spectrum to be made available for commercial use, it seems apparent that Congress intended for these two 15 megahertz spectrum bands to complement one another through ready pairing for base and mobile station communications.”) (internal quotation marks omitted).

<sup>87</sup> Comments of CTIA at 21 (emphasis in original).

<sup>88</sup> *Id.*

<sup>89</sup> *Id.* at 20; see Comments of CCA at 6 (“[T]he 2095-2110 MHz band is the prime candidate to satisfy the requirement of Section 6401 to identify an additional 15 MHz of spectrum for commercial use.”); Comments of Mobile Future at 12 (“The FCC should identify the 2095-2110 MHz band as the additional 15 MHz to be auctioned and licensed under the Spectrum Act.”).

<sup>90</sup> Comments of CTIA at 13; see Comments of CCA at 6 (noting that the 2095-2110 MHz band “is ideally suited for mobile broadband services, is contiguous and adjacent to existing allocations”).

GHz, with ideal propagation characteristics, and adjacent to the AWS-1 downlink band, the 2095-2110 MHz band is ideal for mobile broadband.”<sup>91</sup>

Moreover, as numerous commenters stressed, the 2095-2110 MHz band would be the optimal pairing for the 1695-1710 MHz band.<sup>92</sup> For instance, T-Mobile explained that, because “NTIA has identified the 1695-1710 MHz band as its 15 megahertz, which has been studied by Working Group 1 as a mobile uplink band, pairing it with 2095-2110 MHz as a mobile downlink band would allow the most productive use of both bands.”<sup>93</sup> This pairing also “is ideal because, like 1695-1710 MHz, 2095-2110 MHz is directly adjacent to AWS-1.”<sup>94</sup> Mobile Future explained how this “would allow the Commission to create another symmetrical expansion of existing AWS-1 allocations,”<sup>95</sup> and thereby establish “a consistent duplex gap between base and mobile operations throughout the country, mitigating interference and expediting deployment.”<sup>96</sup> As T-Mobile summarized, “not only would this pairing drive greater auction revenues, it would also create synergies, reduce the risk of harmful interference between licensees, and maintain the same duplex distance between uplink and downlink as is used in the AWS-1 band which would allow for the use of existing, proven technology.”<sup>97</sup>

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<sup>91</sup> Comments of Mobile Future at 12-13; *see* Comments of T-Mobile at 21 (“[T]his band is contiguous with current commercial wireless allocations [and] has propagation characteristics suited to mobile broadband...”).

<sup>92</sup> *See* Comments of T-Mobile at 12 (“In order to make the best use of the 1695-1710 MHz band, it should be paired with the 2095-2110 MHz band...”); Comments of AT&T at 5 (“CTIA has proposed that the 1695-1710 MHz block be paired with 15 MHz of downlink at 2095-2110 MHz, which is an ideal pairing...”); Comments of TIA at 11 (“To maximize the ... use of this spectrum it would be paired with 2095-2110 MHz for the downlink.”); Comments of CTIA at 13 (“CTIA urges the Commission to give strong consideration to reallocating the 2095-2110 MHz band and pairing it with the 1695-1710 MHz band.”); Comments of Ericsson at 8 (“[T]he 2095-2110 MHz band is ideal for pairing with the 1695-1710 MHz band ...”); Comments of Mobile Future at 13.

<sup>93</sup> Comments of T-Mobile at 13; *see* Comments of CTIA at 13 (“This would [] satisfy the Commission’s statutory obligation to identify and allocate an additional 15 megahertz of contiguous spectrum for mobile broadband...”).

<sup>94</sup> Comments of Verizon at 7.

<sup>95</sup> Comments of Mobile Future at 10.

<sup>96</sup> *Id.* at 13; *see* Comments of CTIA at 12 (“To maintain the same duplex spacing, the logical spectrum pair for the 1695-1710 MHz band would be 2095-2110 MHz.”).

<sup>97</sup> Comments of T-Mobile at 13.

Although NASA raised several concerns regarding commercial operations in the 2095-2110 MHz band, USCC agrees with CCA and others that these concerns “should not be an impediment to [the band’s] prompt auction and introduction into the marketplace for commercial use.”<sup>98</sup> As T-Mobile noted, the NASA Study is “flawed in several respects.”<sup>99</sup> For instance, it “selectively picks from the CSMAC efforts,”<sup>100</sup> and in fact “appears to rely upon many of the worst-case, conservative assumptions” used by CSMAC.<sup>101</sup> In particular, CTIA explained that the NASA Study “assumes a far greater number of LTE base stations, a more equal distribution of these base stations, and a higher overall power level than would be present in a real-world deployment.”<sup>102</sup> As Ericsson noted, if these are correct, “one would have expected interference *today* into TDRSS satellite operations in the 2109.49 MHz band from AWS-1 base stations.”<sup>103</sup> However, NASA made no mention of any interference complaints, and commenters are not aware of any such complaints. Consequently, this “absence of any real-world interference suggests that NASA’s assumptions are overly conservative.”<sup>104</sup> T-Mobile also noted that the NASA Study is inconsistent with the WG3 Report, which “concluded that there was minimal potential for interference from terrestrial LTE handsets to orbiting satellite receivers.”<sup>105</sup>

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<sup>98</sup> Comments of CCA at 6; *see* Comments of T-Mobile at 22 (“The Commission should not allow the *NASA Study* to impede its continued evaluation of the 2025-2110 MHz band...”).

<sup>99</sup> Comments of T-Mobile at 22.

<sup>100</sup> *Id.*

<sup>101</sup> Comments of CTIA at 17.

<sup>102</sup> *Id.*; *see* Comments of T-Mobile at 22 (“For instance, it fails to use the propagation model, inter-site distance, LTE channel bandwidth, clutter factor, scheduler algorithm, Monte Carlo approach, and other such details as agreed upon by CSMAC’s Working Groups.”).

<sup>103</sup> Comments of Ericsson at 17 (emphasis in original).

<sup>104</sup> *Id.*; *see* Comments of CTIA at 17 (“[I]f the assumptions made in NASA’s analysis were correct, there would today be observable interference caused by AWS-1 base stations to TDRSS satellite operations at the 2109.49 MHz frequency, and no such complaints of interference have been made.”) (internal citation omitted).

<sup>105</sup> Comments of T-Mobile at 22.

In addition, CCA underscored that NASA’s concerns should be viewed with some skepticism “based on the amount of information available on the use of this spectrum...”<sup>106</sup> As Verizon explained, “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.”<sup>107</sup> For these reasons, USCC agrees with T-Mobile that NASA’s findings “should not be considered the definitive analysis of the potential for commercial use of this band.”<sup>108</sup> Rather, at a minimum, further analysis of the NASA Study is required before any decisions are made regarding commercial operations in the 2095-2110 MHz band.<sup>109</sup>

In fact, given the substantial benefits detailed above that would result from reallocating the 2095-2110 MHz band for commercial operations and pairing it with the 1695-1710 MHz band, USCC urges the Commission, in consultation with the NTIA, to clear this spectrum to the maximum extent possible. In this respect, although USCC generally supports the DoD proposal for permitting commercial operations in the 1755-1780 MHz band, USCC disagrees with the DoD’s identification of the entire 2025-2110 MHz band as its preferred spectrum to relocate its 1755-1780 MHz band operations. Instead, USCC agrees with T-Mobile that “federal relocation to the broader 2025-2110 MHz band should be minimized to the extent possible and relocation to the 2095-2110 MHz portion of that band should be avoided...”<sup>110</sup> For instance, “as many federal users as possible, particularly hard-to-move systems, should be consolidated in the 1780-1850

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<sup>106</sup> Comments of CCA at 6.

<sup>107</sup> Comments of Verizon at 8.

<sup>108</sup> Comments of T-Mobile at 23.

<sup>109</sup> See Comments of CTIA at 17 (“[T]he Commission must revisit this NASA study to modify the assumptions made to more accurately depict the real-world interference environment.”); Comments of T-Mobile at 23 (“Additional work must be done to address the numerous flaws in NASA’s work.”); Comments of Verizon at 8 (“Verizon recommends further analysis of a recent NASA study considering the feasibility of mobile services in the 2025-2110 MHz band...”).

<sup>110</sup> Comments of T-Mobile at 15-16; see Comments of AT&T at 8-9 (“[R]elocation of government systems to 2095-2110 MHz should not be considered at all, given the ideal suitability of this spectrum for commercial mobile use.”).

MHz band with the 2025-2110 MHz band only used as needed.”<sup>111</sup> As CTIA stressed, “given the intricacies of sharing the 2025-2110 MHz band with Federal operations, Federal access should be limited to only that spectrum necessary to conduct operations.”<sup>112</sup>

Even if some DoD operations will need to be relocated to this band, USCC agrees with CTIA that “the DoD has not adequately explained and justified its need for access to the entirety of the 2025-2110 MHz band.”<sup>113</sup> In particular, “it is unclear why it would need to replace operations in 25 megahertz of spectrum with access to 85 megahertz of spectrum.”<sup>114</sup> Moreover, because the DoD’s proposal calls for some Federal users to remain in the 1755-1780 MHz band, “its need for additional spectrum should be reduced by that fact.”<sup>115</sup> For these reasons, based on currently-available information, it appears that “the exchange proposed by the DoD is not a comparable trade and warrants considerable scrutiny given the national spectrum shortage.”<sup>116</sup>

USCC also supports CTIA’s proposal that, in order to further reduce the need for spectrum sharing, the Commission should study “the need for BAS to occupy the entire 2025-2110 MHz band.”<sup>117</sup> For instance, Mobile Future noted that “compression and other new technologies appear to represent a viable approach to reduce the amount of dedicated spectrum necessary for BAS operations.”<sup>118</sup> In sum, by avoiding Federal relocations to the 2095-2110

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<sup>111</sup> Comments of T-Mobile at 25.

<sup>112</sup> Comments of CTIA at 23.

<sup>113</sup> *Id.* at 17-18.

<sup>114</sup> *Id.* at 18.

<sup>115</sup> *Id.*; see Comments of Ericsson at 19 (“[T]he DoD is not committing to fully exiting the 1755-1780 MHz band, and indeed has identified a *wider* range of spectrum to relocate its 1755-1780 MHz uses...” (emphasis in original)).

<sup>116</sup> Comments of CTIA at 24; see Comments of T-Mobile at 25 (“[If] DoD is provided with access to the remainder of the 2025-2110 MHz band, this should provide DoD with sufficient access to spectrum as it would receive 70 megahertz of spectrum in exchange for the use of the 25 megahertz of spectrum it would relinquish...”).

<sup>117</sup> Comments of CTIA at 14.

<sup>118</sup> Comments of Mobile Future at 13; see Comments of Ericsson at 13 (“BAS and CARS services can benefit from the development of new technologies...”); Comments of CTIA at 15 (“[A]n investigation of the need for 12 MHz for each video channel should be explored.”).

MHz band, limiting the number of Federal users relocated to the 2025-2095 MHz band, and relying on new technologies to make BAS operations more efficient, it may be possible to “accommodat[e] both BAS and Federal operations in the 2025-2095 MHz band, which would free up the 2095-2110 MHz band for use by commercial wireless networks.”<sup>119</sup>

Although USCC believes that further analysis and refinement of the DoD and NASA spectrum sharing proposals will permit the 2095-2110 MHz band to be reallocated for wireless broadband services, if the Commission finds otherwise, USCC agrees with Verizon that the Commission “should make every effort to pair the 1695-1710 MHz uplink band with a downlink band.”<sup>120</sup> As T-Mobile emphasized, “the band’s usefulness for commercial operations will be significantly undermined if it is not paired.”<sup>121</sup> This is particularly so given that “the 1695-1710 MHz band’s use is limited to handset operations because of its proximity to the AWS-1 band.”<sup>122</sup> Specifically, “[u]nlike supplemental downlink spectrum, there are few technical or commercial reasons for additional uplink spectrum.”<sup>123</sup> Consequently, as Verizon explained, “[a]uctioning 1695-1710 MHz as stand-alone supplemental uplink [] would significantly decrease the value of the spectrum and would limit both its uses and interested bidders.”<sup>124</sup>

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<sup>119</sup> Comments of CTIA at 18; *see* Comments of Ericsson at 20 (“Ericsson encourages the Commission to investigate the potential to accommodate *both* BAS and federal operations in the 2025-2095 MHz band while permitting access to the 2095-2110 band for commercial services.”) (emphasis in original).

<sup>120</sup> Comments of Verizon at 7; *see* Comments of T-Mobile at 13 (“In spite of these significant benefits, if the Commission cannot make the 2095-2110 MHz band in particular available, it should endeavor to pair it with other spectrum rather than leave the band unpaired.”).

<sup>121</sup> Comments of T-Mobile at 12.

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

<sup>123</sup> *Id.*; *see* Comments of Verizon at 7 (“Wireless providers generally are more constrained in their downlink bands than their uplink bands.”).

<sup>124</sup> Comments of Verizon at 7; *see* Comments of TIA at 12 (“The further options of standalone uplink or time division duplex (TDD) would make very inefficient use of this block of spectrum.”).

### III. THE COMMISSION SHOULD LICENSE THE AWS-3 SPECTRUM ON THE BASIS OF 5 MHz “BUILDING BLOCKS”

The record contains overwhelming support for the Commission’s proposal to license the AWS-3 spectrum in paired 5 megahertz blocks.<sup>125</sup> As commenters detailed, this approach would produce various public interest benefits. For instance, Mobile Future noted that “[f]ive MHz blocks align well with a variety of wireless broadband technologies (*e.g.*, LTE, W-CDMA, and HSPA).”<sup>126</sup> Similarly, T-Mobile recognized that “five megahertz blocks are sufficiently large to support a variety of wireless broadband technologies, including broadband Internet access...”<sup>127</sup> Accordingly, as Verizon noted, “[t]he auctioning of this spectrum in 5 MHz pairings [] could facilitate the deployment of multiple different technologies.”<sup>128</sup>

In addition, the Commission recently explained that these smaller “building blocks” permit “the greatest amount of flexibility and efficiency.”<sup>129</sup> Similarly, Mobile Future noted that “[l]icensing 5 MHz blocks will [] increase wireless providers’ flexibility in auction bidding.”<sup>130</sup> For instance, this building block approach provides bidders with opportunities to customize their service areas, expand into new markets, and/or strategically supplement spectrum holdings in existing geographic areas.<sup>131</sup> Five megahertz blocks also are necessary to ensure robust

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<sup>125</sup> See, *e.g.*, Comments of T-Mobile at 28 (“T-Mobile supports the Commission’s proposal to license the AWS-3 spectrum using five megahertz blocks.”); Comments of AT&T at 12 (“AT&T agrees with the Commission’s proposal[] to license AWS-3 spectrum in 5 MHz blocks...”); Comments of Mobile Future at 15 (“The Commission should license AWS-3 spectrum in 2x5 MHz blocks.”).

<sup>126</sup> Comments of Mobile Future at 15; see Comments of Verizon at 15 (“Various technologies, including LTE, use 5x5 MHz pairs or multiples of 5 MHz blocks.”); *Expanding the Economic and Innovation Opportunities of Spectrum Through Incentive Auctions*, Notice of Proposed Rulemaking, 27 FCC Rcd 12357, 12403 (2012) (“*Incentive Auction NPRM*”) (“Various globally-standardized technologies ... use 5 + 5 megahertz paired blocks when deployed as FDD.”).

<sup>127</sup> Comments of T-Mobile at 28; see *Incentive Auction NPRM*, 27 FCC Rcd at 12403 (“Five megahertz blocks can support a variety of wireless broadband technologies...”).

<sup>128</sup> Comments of Verizon at 15.

<sup>129</sup> *Incentive Auction NPRM*, 27 FCC Rcd 12403.

<sup>130</sup> Comments of Mobile Future at 15.

<sup>131</sup> See *Service Rules for Advanced Wireless Services in the 1.7 GHz and 2.1 GHz Bands*, Order on Reconsideration, 20 FCC Rcd 14058, 14067 (2005) (“*AWS-1 Recon Order*”) (“[S]maller spectrum block sizes, combined with the

competition in the AWS-3 auction because, as noted in the NPRM, “five-megahertz blocks would provide entry opportunities for small and rural service providers...”<sup>132</sup>

Five megahertz blocks also would reduce the number of AWS-3 licenses that will be co-channel with incumbent Federal users, and thus the number of AWS-3 licensees that will be required to coordinate their operations with Federal users. The Commission previously recognized this benefit of smaller block sizes while licensing the 700 MHz bands. Specifically, it noted that licensees would “likely confront a simpler negotiation process” because they would need to “negotiate with fewer co-channel incumbents in many areas.”<sup>133</sup> Because the same reasoning applies here, the Commission should license the AWS-3 spectrum using 5 megahertz building blocks so that AWS-3 licensees will similarly “benefit from a reduced burden of expense and delay in achieving full use of their licensed spectrum.”<sup>134</sup>

These various benefits related to licensing spectrum on the basis of 5 megahertz building blocks demonstrate why the Commission should reject Verizon’s proposal that it also “auction some 10x10 pairings in AWS-3.”<sup>135</sup> Although USCC agrees that carriers “can deploy LTE at significantly higher speeds over a 10x10 MHz pairing,”<sup>136</sup> the public interest benefits detailed above with respect to 5x5 megahertz pairings far outweigh this lone potential advantage of larger AWS-3 spectrum blocks. This is particularly so given that, as the Commission noted, five

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ability to aggregate and disaggregate spectrum blocks and service areas, will allow carriers to devise spectrum configurations most appropriate for different markets.”).

<sup>132</sup> NPRM, 28 FCC Rcd at 11501; see *Service Rules for Advanced Wireless Service in the 1.7 GHz and 2.1 GHz Bands*, Report and Order, 18 FCC Rcd 25162, 25178 (2003) (“AWS-1 R&O”) (“Five megahertz blocks [] provide entry opportunities for small and rural service providers.”); Comments of Verizon at 15 (“5 MHz pairings could provide small and rural service providers with the opportunity to acquire the spectrum that they need...”).

<sup>133</sup> *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, 492 (2000) (“700 MHz First R&O”).

<sup>134</sup> *Id.*

<sup>135</sup> Comments of Verizon at 15.

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

megahertz blocks “can be aggregated to provide greater capacity where needed.”<sup>137</sup> Specifically, the Commission’s “auction rules allow bidders to aggregate [smaller] band segments,”<sup>138</sup> or licensees can “aggregate larger blocks post auction through the secondary market or using technological approaches such as channel aggregation.”<sup>139</sup> As previously noted by the Commission, these aggregation strategies “allow[] entities that believe they need to acquire a larger amount of spectrum than that available in the individual licenses to do so.”<sup>140</sup> Similarly, Mobile Future noted that, “[b]y aggregating 5 MHz channels, carriers can enable better performance for LTE service and greater bandwidth capacity through wider channels.”<sup>141</sup> At the same time, licensing all of the AWS-3 spectrum on the basis of 5 megahertz blocks would permit smaller bidders to participate fully in the AWS-3 auction.

#### **IV. THE COMMISSION SHOULD APPLY THE AWS-1 MOBILE POWER LIMIT TO AWS-3 OPERATIONS**

USCC joins the vast majority of commenters in opposing the Commission’s proposal to adopt “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.”<sup>142</sup> Instead, USCC agrees with CTIA and numerous other commenters that “the Commission should [] adopt the same overall power limit for AWS-3 mobile devices as is in place for AWS-1 mobiles.”<sup>143</sup> Commenters

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<sup>137</sup> NPRM, 28 FCC Rcd at 11501.

<sup>138</sup> *700 MHz First R&O*, 15 FCC Rcd at 493.

<sup>139</sup> *Incentive Auction NPRM*, 27 FCC Rcd at 12404; *see* Comments of Verizon and Verizon Wireless, Docket No. 12-268, p. 16 (Jan. 25, 2013) (“Mobile broadband providers that want to offer service in a 10x10 MHz or wider service channel can aggregate the 5 MHz building blocks to support such plans.”).

<sup>140</sup> *700 MHz First R&O*, 15 FCC Rcd at 493.

<sup>141</sup> Comments of Mobile Future at 15; *see* Comments of T-Mobile at 28 (“[F]ive megahertz blocks ... would allow for channel aggregation, in which smaller channels can be bonded together for greater performance...”).

<sup>142</sup> NPRM, 28 FCC Rcd at 11522; *see, e.g.*, Comments of Ericsson at 7 (“An EIRP limit of 20 dBm ... is [] not necessary.”); Comments of T-Mobile at 31-32; Comments of Nokia at 20; Comments of Motorola Mobility at 9.

<sup>143</sup> Comments of CTIA at 3; *see, e.g.*, Comments of T-Mobile at 32 (“[T]he rules should parallel the rules for AWS-1, which permit power up to 30 dBm.”); Comments of AT&T at 11 (“AT&T supports the adoption of technical service rules for the AWS-3 spectrum bands that are equivalent to those that apply to the Part 27 rules that apply to

detailed the various benefits that would accrue from mirroring the AWS-1 rules, which impose an EIRP power limit of 30 dBm (1 watt) for mobile devices.<sup>144</sup>

For instance, AT&T explained that consistency between the AWS-1 and AWS-3 technical rules “is necessary to achieve the full benefit from the adoption of the proposed band plan” because it would allow “the creation of a single, combined band class.”<sup>145</sup> As AT&T detailed, “such a consolidated AWS band would be internationally harmonized, would speed deployment, lower deployment costs through economies of scale, promote competition, increase auction valuations and amplify the public interest benefits of making this additional spectrum available.”<sup>146</sup> Similarly, Mobile Future noted that harmonizing the AWS-1 and AWS-3 operating rules would “most efficiently manage[] the spectrum and would improve economies of scale for mobile device equipment manufacturing.”<sup>147</sup>

In contrast, a mobile power limit of 20 dBm EIRP “would effectively require the adoption of a separate 3GPP standard for AWS-3.”<sup>148</sup> The result, Motorola Mobility recognized, is that the “20 dBm power limit would add complexity and hinder device operations unnecessarily,”<sup>149</sup> which “could undermine the successful deployment of the AWS-3 band.”<sup>150</sup>

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AWS-1.”); Comments of TIA at 13 (“Rather than deviating from the AWS-1 power rules ... TIA would apply the same standard for this band as well.”); Comments of Motorola Mobility at 9 (“[T]he Commission ... should instead apply the AWS-1 power limit to these devices, which technically permits mobile operations of up to 1 watt EIRP.”).

<sup>144</sup> See 47 C.F.R. §27.50(d)(4).

<sup>145</sup> Comments of AT&T at 11.

<sup>146</sup> *Id.*; see Comments of Motorola Mobility at 5 (“To maximize the benefits of the wide new mobile spectrum allocations being made available in this proceeding, the Commission should adopt service rules that support robust deployment and easy integration into existing mobile broadband networks.”).

<sup>147</sup> Comments of Mobile Future at 9.

<sup>148</sup> Comments of AT&T at 12.

<sup>149</sup> Comments of Motorola Mobility at 7.

<sup>150</sup> *Id.* at 9.

Moreover, because a lower power limit “increases the number of cell sites and resulting cost of deployment,”<sup>151</sup> spectrum bands with “higher power limits are typically more valuable.”<sup>152</sup>

At the same time, the benefits of the lower power limit, if any, would be minimal. For instance, AT&T noted that, at best, “it is unclear at this point whether there actually would be any need to enlarge protection zones if the Part 27 rules apply.”<sup>153</sup> Nokia went a step further, finding that a power level higher than the 20 dBm limit used by CSMAC “would not require enlarging the Protection Zones.”<sup>154</sup> As Motorola Mobility explained, while “the simulation parameters in the CSMAC study were chosen to model a harsh interference environment,”<sup>155</sup> in the real world “actual losses will be greater, which justifies a higher power limit...”<sup>156</sup> In other words, a higher power limit likely “would not change the conclusions of the CSMAC simulation study...”<sup>157</sup> Moreover, even if further analysis demonstrates that a higher power level would, in fact, necessitate enlarging the Protection Zones, USCC agrees with Ericsson that the substantial benefits of a “higher power limit would outweigh the increased burden of having to coordinate more commercial operations with Federal incumbents.”<sup>158</sup>

USCC also agrees with Motorola Mobility that, “[s]hould the Commission believe there is a need for additional protection, it could model the AWS-3 rules on the AWS-1 regime...”<sup>159</sup> As CTIA explained, although “AWS-1 mobiles are permitted to operate up to 1 watt EIRP,”

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<sup>151</sup> *Brattle Spectrum Sharing Study* at 19.

<sup>152</sup> *Id.* at 14.

<sup>153</sup> Comments of AT&T at 12.

<sup>154</sup> Comments of Nokia at 21; *see* Comments of Verizon at 24 (“This power increase will not have a material impact on interference levels.”).

<sup>155</sup> Comments of Motorola Mobility at 7.

<sup>156</sup> *Id.* at 8.

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

<sup>158</sup> Comments of Ericsson at 7; *see* Comments of AT&T at 12 (“Forcing AWS-3 onto a separate, different 3GPP standard ... would outweigh any benefit that might accrue from a marginal reduction in a protection zone.”).

<sup>159</sup> Comments of Motorola Mobility at 9.

devices “operating with an EIRP of greater than 100 milliwatts (20 dBm) are subject to additional coordination requirements to protect incumbent Federal operations.”<sup>160</sup> Specifically, AWS-1 mobiles “transmitting at a power or antenna height above this threshold must coordinate at a greater distance.”<sup>161</sup> In contrast to subjecting every mobile to an artificially low power limit, this “framework provides wireless network operators with the flexibility to determine the appropriate power levels for a particular implementation.”<sup>162</sup> Moreover, this approach would not impose an undue burden on licensees because, as Nokia noted, LTE technology already incorporates power control features “to adjust the transmit power of the LTE devices.”<sup>163</sup>

If the Commission nevertheless finds that a lower mobile power limit is required, applying the 3GPP standard – *i.e.*, a maximum mobile power limit of 23 dBm +/- 2 dB – to AWS-3 mobiles would be far better than imposing a power limit of only 20 dBm. As Verizon explained, because this power level would not require the development of new standards, it would “allow existing LTE device designs and network implementations, including cell site spacing, to be used in the AWS-3 bands...”<sup>164</sup> Accordingly, this power level would facilitate “the timely provisioning of high quality networks and services to consumers.”<sup>165</sup> Finally, USCC agrees with Motorola Mobility that, at a minimum, any lower power limits “should only apply in the areas near the established protection zones, and not on a nationwide basis.”<sup>166</sup> As noted, this

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<sup>160</sup> Comments of CTIA at 26.

<sup>161</sup> *Id.*; see Comments of T-Mobile at 32 (“[T]he distance at which coordination around Protection Zones is required should be based on different power levels as provided in the current rules governing the protection of federal government operations by AWS-1 licensees.”).

<sup>162</sup> Comments of CTIA at 26; see Comments of Nokia at 20 (“It would be inconsistent with Commission precedent in terms of adopting flexible-use service rules for bands that will support terrestrial wireless service.”).

<sup>163</sup> Comments of Nokia at 20.

<sup>164</sup> Comments of Verizon at 24.

<sup>165</sup> *Id.*; see Comments of Nokia at 21 (“A maximum 25 dBm EIRP ... would allow higher flexibility for licensees to cost efficiently deploy and manage their networks’ operations...”).

<sup>166</sup> Comments of Motorola Mobility at 9.

approach would be consistent with the AWS-1 framework, and could be easily implemented by licensees “through network signaling and power control.”<sup>167</sup>

## V. THE PUBLIC INTEREST REQUIRES AN *EX ANTE* INTEROPERABILITY REQUIREMENT

As USCC detailed in its comments, ensuring interoperability in the AWS-3 bands will be essential to achieving the extraordinary potential of this spectrum to promote competition and spur wireless broadband deployments in rural and other underserved areas. USCC therefore continues to strongly urge the Commission to adopt a clear, *ex ante* interoperability requirement. Specifically, assuming the Commission adopts the spectrum pairings detailed above, it should require that: (1) all AWS-3 mobile devices be capable of transmitting across the entire 2095-2180 MHz uplink band and receiving across the entire 1695-1780 MHz downlink band; and (2) all AWS-3 networks permit the use of such mobile devices.<sup>168</sup>

USCC again notes that this interoperability requirement could be implemented by simply adding 15 megahertz below and 10 megahertz above the current 3GPP Band 10 specifications.<sup>169</sup> As Verizon explained, the substantial benefit of this approach is that the AWS-3 “spectrum could easily be incorporated into handsets and base station equipment using a single band class that

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<sup>167</sup> *Id.*

<sup>168</sup> USCC stresses that, although this interoperability proposal revolves around the industry-consensus AWS-3 band plan, the Commission should not infer that USCC believes that an interoperability requirement would be any less necessary if the Commission adopts an alternative, and sub-optimal, AWS-3 band plan. In fact, an interoperability requirement likely would be even more necessary in that situation. For instance, if the Commission does not pair the 1695-1710 MHz band with the 2095-2110 MHz band, and instead pairs the 1695-1710 MHz band with downlink spectrum that does not symmetrically extend the AWS-1 downlink band, this paired spectrum would be far less valuable. As a consequence, the largest bidders may focus their substantial resources in the AWS-3 auction solely on acquiring licenses for the paired 1755-1780/2155-2180 MHz band, and thereby exclude smaller bidders from acquiring those licenses. The only option for smaller bidders to acquire AWS-3 licenses, therefore, would be to bid on licenses for the pairing which includes the 1695-1710 MHz band. But that spectrum likely would be devoid of the national carriers and their ability to drive device development. Thus, if the Commission feels compelled to adopt an alternative AWS-3 band plan, at that time, USCC will propose an interoperability requirement uniquely-tailored to that band plan.

<sup>169</sup> See Comments of 4G Americas at 4 (“The 1755-1780 MHz band, when paired with the 2155-2180 MHz band, aligns closely with 3GPP Band Class 10.”); Comments of Nokia at 6 (“The 1755-1780/2155-2180 MHz pairing in the U.S., when made available, would overlap with the 1710-1770/2110-2170 MHz band (3GPP Band Class 10).”).

covers 1695-1710/2095-2110, AWS-1, and 1755-1780/2155-2180.”<sup>170</sup> In other words, USCC’s proposed interoperability requirement would ensure the development of an expansive ecosystem of devices capable of operating across both the AWS-1 and AWS-3 bands. As AT&T noted, this “ability to combine the AWS-3 and AWS-1 bands in a single band class would result in more efficient spectrum utilization and more efficient LTE networks.”<sup>171</sup>

An interoperability requirement is particularly necessary to ensure that small and regional AWS-3 licensees will have timely access to the variety of mobile devices demanded by consumers. As USCC previously explained, absent such a requirement, the likely inability of small and regional carriers to offer a portfolio of the latest “cutting edge” devices would significantly impair their ability to compete by making it difficult to maintain current customers and to acquire new ones. Even assuming equipment manufacturers proved willing to accommodate the unique needs of smaller carriers that would result from a lack of interoperability, these carriers would incur higher device costs because they would not benefit from the economies of scale enjoyed by the national carriers.

A lack of device interoperability also would severely limit essential roaming options for small and regional carriers because large carriers could use the “technical incompatibility” loophole to avoid the Commission’s data roaming requirements. Consequently, small and regional carriers, as well as their customers, would be deprived of the substantial benefits associated with data roaming. For instance, small and regional carriers could not offer customers the near-nationwide coverage that roaming agreements otherwise would permit, which would make it extremely difficult for these carriers to compete against the dominant national carriers.<sup>172</sup>

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<sup>170</sup> Comments of Verizon at 8.

<sup>171</sup> Comments of AT&T at 6.

<sup>172</sup> See *Chairwoman Clyburn CCA Remarks* at 3 (“Data Roaming is critical to supporting competition and innovation.”).

In addition to further solidifying the market positions of the already-dominant national carriers, the harms that a lack of interoperability would cause to small and regional carriers would decrease the likelihood that AWS-3 spectrum will be used to provide wireless broadband services in rural and other underserved areas, where these carriers often focus their deployment efforts. For these reasons, USCC believes its interoperability proposal is critical for maximizing the potential of the AWS-3 spectrum. As Chairwoman Clyburn noted after the industry recently reached an agreement regarding interoperability in the Lower 700 MHz band, “by making it easier for small wireless carriers to compete, today’s interoperability solution will spur private investment, job creation, and the development of innovative new services and devices.”<sup>173</sup> It was for these reasons that Chairwoman Clyburn described the agreement as a “big win for consumers, *especially in rural areas*, who will see more competition and more choices.”<sup>174</sup>

USCC also again stresses the importance of adopting an interoperability requirement at this stage. For instance, absent an *ex ante* interoperability requirement, bidders that are not large enough to drive device development may decide not to participate in the AWS-3 auction rather than risk acquiring spectrum rights that would have little value without timely access to a variety of consumer devices. These bidders also could be dissuaded from participating in the auction because the likely delays in device availability would make it more difficult to meet any performance requirements established for the AWS-3 bands. Smaller bidders could even be prevented from participating in the auction because it would be far more difficult to secure funding if potential investors fear that the equipment necessary to provide a return on their investments will not be available in the near-term. At a minimum, the risks these bidders would

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<sup>173</sup> Acting FCC Chairwoman Clyburn Statement on Voluntary Industry Solution Resolving Lower 700 MHz Interoperability, FCC News Release (Sept. 10, 2013).

<sup>174</sup> *Id.* (emphasis added).

face absent an interoperability requirement would cause them to temper their bidding. Either way, auction competition, and thus auction revenue, would decrease.

While the Commission has expressed its preference for industry solutions regarding device interoperability, the Lower 700 MHz experience demonstrates that an *ex ante* interoperability requirement is by far the better approach. Although USCC applauds the recent industry agreement, the significant amount of time that passed between the grant of Lower 700 MHz licenses and this agreement<sup>175</sup> created a significant “head start” advantage for the large carriers with Lower 700 MHz spectrum holdings. Because such a head start advantage “can constitute a significant hurdle to new competition,”<sup>176</sup> the Commission should adopt an *ex ante* interoperability requirement here in order to prevent that situation from reoccurring in the AWS-3 bands.

## **VI. CMA-BASED LICENSING WOULD INCREASE COMPETITION, PROMOTE RURAL DEPLOYMENT, AND BENEFIT ALL CARRIERS**

USCC continues to strongly urge the Commission to license the AWS-3 spectrum on the basis of Cellular Market Areas (“CMAs”). Notably, a majority of commenters addressing this issue expressed their support for CMAs. As USCC detailed in its comments, CMA-based licensing is necessary to preserve opportunities for small and regional carriers to acquire AWS-3 licenses, and thus provide an important source of competition to the dominant national carriers and deploy broadband networks in currently unserved or underserved areas.

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<sup>175</sup> *See id.* (“After many frustrating years, wireless carriers have finally reached a voluntary industry solution...”). Auction 73, which offered Lower 700 MHz band A, B and E Block licenses, as well as Upper 700 MHz band C and D Block licenses, took place between January 24, 2008 and March 18, 2009. *See* [http://wireless.fcc.gov/auctions/default.htm?job=auction\\_summary&id=73](http://wireless.fcc.gov/auctions/default.htm?job=auction_summary&id=73). As noted above, Chairwoman Clyburn announced the voluntary industry solution to the interoperability problem on September 10, 2013, more than five years after the conclusion of Auction 73. The Commission should learn from that experience and avoid a similar result in the AWS-3 auction.

<sup>176</sup> *Reexamination of Roaming Obligations of Commercial Mobile Radio Service Providers and Other Providers of Mobile Data Service*, Order on Reconsideration and Second Further Notice of Proposed Rulemaking, 25 FCC Rcd 4181, 4192 (2010).

In contrast, RWA and others described how, “[i]f the Commission licenses the AWS-3 spectrum on the basis of EAs, it will be highly unlikely that small and rural carriers will participate in the auction as it will not be affordable.”<sup>177</sup> As the Commission noted, EAs are defined 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.*”<sup>178</sup> As a result, “EA based licenses, by the very nature of their size and because they include urban areas, will command very high prices at auction.”<sup>179</sup> However, as CCA noted, many smaller carriers “lack the financial capability to bid on these large and populous spectrum blocks.”<sup>180</sup> Thus, if the Commission licenses the AWS-3 spectrum on the basis of EAs, it would “essentially leave[] only deep-pocketed, nationwide carriers to acquire the licenses.”<sup>181</sup>

Not only are individual EAs prohibitively expensive for many small and regional carriers, but these carriers are further disadvantaged because they are far more likely than the national carriers to already hold licenses for CMA-based service areas. As CCA explained, a failure to license the AWS-3 spectrum on the basis of CMAs could force smaller carriers “to bid on multiple EAs, each of which includes significantly more populated areas, to acquire spectrum that covers their [existing service] footprint.”<sup>182</sup> In other words, simply to upgrade its network for the benefit of existing customers, a carrier’s only option may be to acquire several EA-based

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<sup>177</sup> Comments of RWA at 4-5; *see* Comments of CCA at 7 (“[M]any smaller carriers ... will be unable to participate in auctions that use EAs as geographic units.”); Comments of Bluegrass at 4 (“If the Commission adopts EAs for AWS-3, Bluegrass and similarly sized carriers will almost certainly be foreclosed from participating in the AWS-3 auction.”); Comments of PSW at 2 (“Licensing spectrum on the basis of EAs or larger areas would almost certainly prevent PSW and other similarly sized entities from participating in the upcoming auctions at all.”); Letter from Jonathan Foxman, President & CEO, MTPCS, LLC d/b/a Cellular One, to Marlene H. Dortch, Secretary, FCC, GN Docket Nos. 13-185 and 12-268, p. 2 (Oct. 17, 2013) (“Cellular One Ex Parte”) (“If the Commission adopts EAs, Cellular One – like other similarly situated carriers – will not be able to participate in ... the AWS-3 auction.”).

<sup>178</sup> NPRM, 28 FCC Rcd at 11502 (emphasis added).

<sup>179</sup> Comments of RWA at 4.

<sup>180</sup> Comments of CCA at 8.

<sup>181</sup> Comments of RWA at 5; *see* Comments of Bluegrass at 5 (“An auction of larger geographic license areas like EAs for AWS-3 spectrum greatly favors national carriers with substantial resources...”).

<sup>182</sup> Comments of CCA at 8.

licenses. Of course, for small and regional carriers, this would be an impossibility given that even individual EAs are prohibitively expensive for many of these carriers. The result would be significantly reduced auction participation by small and regional carriers because neither their finances nor business plans could reasonably permit them to bid on multiple EAs. In this respect, several commenters provided compelling real-world examples that clearly demonstrate this likely outcome if the Commission utilizes EA-based licensing.

For example, Bluegrass, a carrier who has been serving rural parts of Kentucky since 1990 using CMA-based licenses, would be forced to bid on four EAs “just to win spectrum to cover the counties within its current service footprint.”<sup>183</sup> Stated differently, Bluegrass would have “to bid on spectrum that covers a population of approximately six million when its core markets cover a much smaller footprint (somewhere closer to a population of 1.2 million).”<sup>184</sup> As a result, Bluegrass would have to forego the opportunity to upgrade its networks using AWS-3 spectrum because it “does not have the financial wherewithal to bid on five separate EAs encompassing five times the number of population it currently serves.”<sup>185</sup>

In addition, PSW, which is deploying a 4G network to serve rural and underserved areas in central Georgia and Alabama, described how EA-based licenses would force it to bid on five EAs “covering approximately 8.9 million POPs in Alabama, Georgia, Florida and North Carolina, and including the Atlanta metropolitan area,” simply to acquire “spectrum in the regional area that PSW serves or desires to serve.”<sup>186</sup> For PSW, “[s]uch a proposition would

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<sup>183</sup> Comments of Bluegrass at 3.

<sup>184</sup> *Id.*

<sup>185</sup> *Id.*

<sup>186</sup> Comments of PSW at 2. Although PSW mentioned 600 MHz spectrum in this particular example, it also opposes EA-based licensing for the AWS-3 spectrum, and the outcome it described would be identical regardless of the exact spectrum that is licensed on the basis of EAs.

simply be untenable.”<sup>187</sup> Moreover, in recent *ex parte* submissions, Carolina West Wireless<sup>188</sup> and Cellular One<sup>189</sup> similarly described how EA-based licenses would make it prohibitively expensive for them to simply cover their existing service footprints. These real-world examples clearly undermine Verizon’s unsupported claim that “EAs are sufficiently small to allow [] for entry by small wireless providers...”<sup>190</sup>

USCC also joins RWA in disagreeing “with the Commission’s broad assertion that EAs ‘represent a natural market unit for local or regional service areas.’”<sup>191</sup> As USCC detailed in its comments, EAs encompass more geography than most small and regional carriers desire to serve, or have the ability to adequately build out. Moreover, as noted, EAs invariably include one or more densely-populated urban areas, while the business plans of small and regional carriers typically focus on small and rural markets. Similarly, RWA explained that, because EAs “often include densely populated urban areas and are typically much larger than the rural areas that rural carriers serve,” they are “not at all representative of local service areas.”<sup>192</sup>

The Commission’s assertion in the NPRM also conflicts with its own precedent. For instance, in the Lower 700 MHz proceeding, the Commission “recognize[d] the importance to small and regional providers of licensing a significant portion of this spectrum band across

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<sup>187</sup> *Id.*

<sup>188</sup> In an auction with EA-based licenses, Carolina West, which currently holds CMA-based AWS-1 licenses, and which “prides itself on delivering quality service to rural North Carolina,” would be forced “to bid on spectrum covering over 18 million POPs, when its core markets cover a much smaller footprint ... closer to 2.5 million POPs.” Letter from Slayton Stewart, CEO, Carolina West Wireless, Inc., to Marlene H. Dortch, Secretary, FCC, GN Docket Nos. 13-185 & 12-268 and AU Docket No. 13-178, pp. 1-2 (Oct. 7, 2013) (“Carolina West Ex Parte”).

<sup>189</sup> In an auction with EA-based licenses, Cellular One, which currently holds CMA-based licenses for rural portions of Texas and Louisiana, and which was formed “with a mission to provide real value to consumers and businesses in markets that were significantly underserved,” would be forced “to bid on spectrum covering over 19 million pops” when its current license areas cover “a population fewer than one million people.” Cellular One Ex Parte at 2.

<sup>190</sup> Comments of Verizon at 14.

<sup>191</sup> Comments of RWA at 3 (quoting NPRM, 28 FCC Rcd at 11502).

<sup>192</sup> *Id.*

MSAs and RSAs.”<sup>193</sup> In doing so, the Commission explained that “MSAs and RSAs represent known area sizes to many business entities, *especially small regional and rural providers*,” and that these service areas “correspond to the needs of many customers, *including customers of small regional and rural providers*.”<sup>194</sup> The Commission therefore concluded that these smaller service areas were necessary to provide “small and rural providers [with] an opportunity to participate in the auction and the provision of spectrum-based services.”<sup>195</sup> In the AWS-1 proceeding as well, the Commission found that CMAs were necessary “to meet the needs of rural carriers...”<sup>196</sup> USCC therefore agrees with RWA, as well as Commission precedent, that CMAs, not EAs, are the “natural market unit for local or regional service areas...”<sup>197</sup>

USCC further notes that, in proposing to license the AWS-3 spectrum on the basis of EAs, the Commission appears to overlook or misunderstand the needs of small and regional carriers in other ways as well. For instance, although USCC generally agrees with the Commission that there are benefits to adopting service areas that align with those in adjacent spectrum bands,<sup>198</sup> USCC also agrees with RWA that “the Commission gives short shrift to AWS-3’s proximity to the 734 CMA-based licenses in the AWS-1 A Block.”<sup>199</sup> In other words, as RWA explained, “[a]dopting CMA-based licensing for AWS-3 would still allow AWS licensees to consolidate operations with adjacent-band licenses...”<sup>200</sup> This is particularly true for

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<sup>193</sup> *Reallocation and Service Rules for the 698-746 MHz Spectrum Band (Television Channels 52-59)*, Report and Order, 17 FCC Rcd 1022, 1061 (2002) (“*Lower 700 MHz R&O*”).

<sup>194</sup> *Id.* (emphasis added).

<sup>195</sup> *Id.*

<sup>196</sup> *AWS-1 Recon Order*, 20 FCC Rcd at 14064.

<sup>197</sup> Comments of RWA at 6.

<sup>198</sup> *See NPRM*, 28 FCC Rcd at 11502.

<sup>199</sup> Comments of RWA at 5.

<sup>200</sup> *Id.* at 6.

small and regional carriers, whose AWS-1 licenses are mostly for the A Block spectrum.<sup>201</sup> But it also is true for T-Mobile, whose acquisition of 93 A Block licenses made it by far the top bidder for CMA-based licenses in Auction 66 in terms of both net bid amounts (\$1,088,866,000) and population covered (93,681,616).<sup>202</sup>

Those commenters that support EAs rely primarily on the claim that these service areas represent a “balance” or “compromise” between the needs of small and regional carriers and the desires of the large national carriers.<sup>203</sup> USCC therefore again notes that the Commission has previously described this type of “middle solution” as an “inefficient approach.”<sup>204</sup> In doing so, the Commission explained that, because medium-sized service areas are not ideally-suited for the business plans of either the national carriers or small and regional carriers, licensing spectrum on this basis imposes “unnecessary transaction costs” because “the likely users would have to either aggregate or partition in order to meet their spectrum needs.”<sup>205</sup>

In contrast, CMAs allow for targeted spectrum acquisitions, and thus accommodate the business plans of both large and small carriers. As the Commission has found, not only do CMAs “allow entities to mix and match rural and urban areas according to their business plans,”<sup>206</sup> but these “local service areas [are] optimal for incumbent operators who may need

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<sup>201</sup> See *Auction of Advanced Wireless Services Licenses Closes; Winning Bidders Announced for Auction No. 66*, Public Notice, 21 FCC Rcd 10521, 10545-82 (2006).

<sup>202</sup> See [http://wireless.fcc.gov/auctions/66/charts/66press\\_3.pdf](http://wireless.fcc.gov/auctions/66/charts/66press_3.pdf).

<sup>203</sup> See Comments of Verizon at 14 (“EAs draw an *appropriate balance* between enabling the efficient deployment of nationwide and regional services, and facilitating access to spectrum by small providers.”) (emphasis added); Comments of T-Mobile at 29 (“Licensing spectrum on an EA basis appears to strike a *proper balance* between the competing factors that impact the Commission’s decisions on geographic license size.”) (emphasis added); Comments of Mobile Future at 15 (“EAs reflect a *suitable and appropriate compromise* between Cellular Market Areas and larger Major Economic Areas or Regional Economic Area Groupings.”) (emphasis added).

<sup>204</sup> *Facilitating the Provision of Spectrum-Based Services to Rural Areas and Promoting Opportunities for Rural Telephone Companies To Provide Spectrum-Based Services*, Notice of Proposed Rulemaking, 18 FCC Rcd 20802, 20837 (2003).

<sup>205</sup> *Id.*

<sup>206</sup> *AWS-1 Recon Order*, 20 FCC Rcd at 14066.

spectrum capacity only in limited areas.”<sup>207</sup> For instance, RWA described how CMAs “would be suitable to small and rural telephone companies because they would be better positioned to obtain local licenses suited to their budgets and business plans.”<sup>208</sup> And, “with respect to larger carriers, the Commission has said that aggregation at auction of smaller spectrum licenses and blocks may provide bidders with greater flexibility to implement their business plans as compared with a more traditional approach of defining an optimal size.”<sup>209</sup>

Notably, as recognized in an Analysis Group paper, the AWS-1 auction demonstrated how “smaller license blocks also inure to the benefit of national operators who may be looking to strategically add spectrum through the auction process.”<sup>210</sup> Specifically, the paper notes that, in Auction 66, “Verizon Wireless purchased one EA and several CMA licenses in and around Louisiana rather than purchase the REAG license that included these EA and CMA markets.”<sup>211</sup> As the paper explains, although Verizon Wireless likely “had the resources to purchase the entire REAG,” its “limited demand in these areas apparently made it more efficient for Verizon Wireless to purchase EA and CMA licenses.”<sup>212</sup>

In addition to benefitting carriers of all sizes, commenters stressed that CMA-based licenses are necessary to “give competitive carriers a meaningful opportunity to provide services over this spectrum.”<sup>213</sup> Moreover, by making AWS-3 licenses accessible to small and regional carriers, “CMAs will [] encourage a larger number of carriers to participate in any AWS-3

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<sup>207</sup> *AWS-1 R&O*, 18 FCC Rcd at 25176-77.

<sup>208</sup> Comments of RWA at 5.

<sup>209</sup> *AWS-1 Recon Order*, 20 FCC Rcd at 14066.

<sup>210</sup> Bazelon, C., *Why the Exclusive Use of Large Licenses in the Upper or Lower 700 MHz Bands Would Reduce the Efficiency of the 700 MHz Auction*, Analysis Group, p. 2 (Apr. 20, 2007) (“*Analysis Group Paper*”).

<sup>211</sup> *Id.*

<sup>212</sup> *Id.*

<sup>213</sup> Comments of CCA at 8; *see* Comments of PSW at 2 (“CMAs represent the only viable geographic area for small carriers...”).

auction, thereby leading to greater auction revenues...”<sup>214</sup> For instance, Bluegrass noted that, “in Auction 73, blocks of spectrum made available in smaller geographic areas generated more revenue on a MHz-pop basis than larger geographic areas.”<sup>215</sup> In addition, CCA explained how the substantial participation by smaller or rural carriers in Auction 73, who were predominantly bidding on CMA-based licenses, led to an increase in overall auction revenue. Specifically, “[i]n addition to the almost \$2 billion competitive carriers paid for licenses in Auction 73, these small entities also bid \$1.2 billion for licenses that larger providers ultimately paid \$1.6 billion to win – driving an additional \$400 million in revenue that most likely wouldn’t have materialized had these carriers not participated and increased bid amounts.”<sup>216</sup>

Although Verizon claims that, “[i]n past *auctions*, winning bids on larger licenses have raised more per MHz/POP than have bids on smaller licenses,”<sup>217</sup> Verizon references only Auction 66, while ignoring the fact that Auction 73 produced the exact opposite outcome.<sup>218</sup> Moreover, the very paper cited to by Verizon as support for this broad claim detailed how, in Auction 66, “price arbitrage failed so dramatically that [SpectrumCo] was able to purchase essentially a nationwide coverage area for about a third (more than a billion dollars) less than what incumbent carriers paid for equivalent spectrum in the same auction.”<sup>219</sup> While the authors

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<sup>214</sup> Comments of Bluegrass at 4; *see* Comments of CCA at 8 (“The Commission [] can promote participation in the AWS-3 auction, and maximize value for AWS-3 spectrum, by using CMAs...”); Comments of RWA at 3 (“[L]icensing spectrum on a CMA basis is necessary to ensure participation by small and rural carriers...”); Comments of PSW at 1 (“Auctioning spectrum on the basis of CMAs will allow for broad participation in the auctions.”); Cellular One Ex Parte at 2 (“CMAs would increase both participation in, and revenues generated through upcoming spectrum auctions.”); Carolina West Ex Parte at 2 (“With smaller geographic areas, more carriers are able to bid for more licenses, and the increased number of bidders leads to higher revenue.”).

<sup>215</sup> Comments of Bluegrass at 4.

<sup>216</sup> Comments of CCA at 8.

<sup>217</sup> Comments of Verizon at 17, n. 37 (emphasis added).

<sup>218</sup> *See* Comments of Bluegrass at 4, n. 9 (“The Upper C Block, auctioned in 12 Regional Economic Area Groups, sold for only \$0.76/MHz-pop. The Lower A Block, auctioned in smaller areas through 176 EAs, sold for \$1.16/MHz-pop. The Lower B Block, auctioned in even smaller areas, 734 CMAs, sold for \$2.68/MHz-pop.”).

<sup>219</sup> Bulow, J., Levin, J. & Milgrom, P., *Winning Play in Spectrum Auctions*, NBER Working Paper No. 14765, p. 1 (Mar. 2009) (“*Bulow/Levin/Milgrom Paper*”).

praised SpectrumCo for its “ability to alter the relative pace of price increases of the large licenses” and “to forecast final total prices” for the smaller licenses,<sup>220</sup> they theorized that the incumbent carriers “devoted less resources to forecasting final prices early in the auction.”<sup>221</sup>

Similarly, an Analysis Group paper explained that, for Auction 66, the “entire price difference between the large REAG licenses and the smaller EA and CMA licenses may be explained by bidder expectations.”<sup>222</sup> As that paper details, for numerous reasons, “larger, more expensive licenses tend to be more active earlier in the auction and ... reach their final prices before smaller, less expensive licenses.”<sup>223</sup> As a consequence, the largest Auction 66 “bidders stopped bidding on REAG licenses at a time when EA and CMA licenses were significantly cheaper, without knowing the final prices those smaller licenses would reach.”<sup>224</sup> In turn, because demand in Auction 66 was “somewhat less than expected,” a “price difference [] emerge[d], even absent any geographic or spectrum aggregation risk premium.”<sup>225</sup> Thus, contrary to Verizon’s claim, the “evidence indicates that aggregation risk premium is not likely to be the main driver for the[] price differences” in Auction 66.<sup>226</sup> Rather, it appears that the incumbent national carriers simply overpaid for the largest licenses, which suggests that the results of Auction 66 were an anomaly, and thus cannot reasonably be used as support for the claim that larger license areas produce greater auction revenues.

Perhaps most significantly, the opportunity CMA-based licensing would afford small and regional carriers to participate in the AWS-3 auction would spur network deployments in rural

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<sup>220</sup> *Id.* at 25.

<sup>221</sup> *Id.* at 24.

<sup>222</sup> *Analysis Group Paper* at 4.

<sup>223</sup> *Id.*

<sup>224</sup> *Id.*

<sup>225</sup> *Id.* (internal citation omitted); *see id.* at 3 (“The mere statement of price [] does not explain how much of these price differences are due to an aggregation risk premium, or whether other factors are at play.”).

<sup>226</sup> *Id.* at 3.

and other underserved areas because “[m]any smaller carriers focus on providing service in rural areas.”<sup>227</sup> In other words, as PSW recognized, “[f]or the goal of increased rural broadband deployment to be realized [] the Commission must license the spectrum on the basis of CMAs.”<sup>228</sup> In contrast, RWA explained that EA-based service areas would “result in AWS-3 licenses being awarded to large carriers who have historically chosen not to serve rural areas.”<sup>229</sup> As a consequence, “many consumers living, working and traveling in rural areas ... would be excluded from the benefits of any advanced service deployments on AWS-3 spectrum...”<sup>230</sup>

USCC again notes that an additional benefit of CMAs, and a significant cost associated with EAs, relates to the possibility that some Federal users will continue to operate in the AWS-3 bands. Specifically, CCA explained that the use of CMAs will “help to maximize the amount of spectrum available for auction by minimizing the effect of federal exclusion zones, should they prove necessary.”<sup>231</sup> As a result, fewer AWS-3 licenses would be encumbered by any ongoing federal operations, which would “facilitate the rapid deployment of more spectrum for advanced wireless services.”<sup>232</sup> In contrast, EA-based licenses likely would prevent the AWS-3 spectrum from being put to its highest and best use, which would undermine both the great potential of this

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<sup>227</sup> Comments of CCA at 8; *see* Comments of RWA at 5 (“Small and rural companies interested in providing localized service to rural areas will not have to compete against ‘national’ companies that value a license based solely on densely populated urban areas.”).

<sup>228</sup> Comments of PSW at 2; *see* Comments of RWA at 6 (“Americans who live, work and travel in rural areas would greatly benefit from the adoption of CMA license areas ... because such licensing will allow those carriers that focus on serving rural areas to acquire licenses that target those geographic areas.”).

<sup>229</sup> Comments of RWA at 4.

<sup>230</sup> *Id.*; *see* Cellular One Ex Parte at 2 (“Not only would auction revenues be diminished by use of EAs, but competitive carriers’ efforts to deploy high-speed, mobile broadband service to rural America would also be jeopardized.”); Carolina West Ex Parte at 2.

<sup>231</sup> Comments of CCA at 8.

<sup>232</sup> *Id.* at 9.

spectrum to significantly expand wireless broadband coverage and the Commission’s statutory obligation to ensure the “efficient and intensive use of electromagnetic spectrum.”<sup>233</sup>

RWA also agreed with USCC that CMAs would benefit rural areas because larger service areas – including EAs – would allow carriers to satisfy the Commission’s proposed build-out requirements “by only providing service to cities and suburbs where population centers are located...”<sup>234</sup> This is possible because, as noted by Verizon, “[l]arger geographic licenses offer mobile providers flexibility in deployment...”<sup>235</sup> The result, RWA explained, would be that “consumers in rural areas will continue to be overlooked as large carriers focus on high population density urban areas and not rural areas.”<sup>236</sup> In contrast, “licensing AWS-3 using CMAs would force winning bidders to provide actual service to small towns and rural communities.”<sup>237</sup> Accordingly, for this reason as well, licensing the AWS-3 bands on the basis of CMAs would facilitate the prompt availability of wireless broadband services to rural markets.

Moreover, while CMAs are necessary to provide small and regional carriers a reasonable opportunity to participate in the AWS-3 auction, and thereby promote competition and spur network deployments in rural and other underserved areas, RWA and others joined USCC in recognizing that “large carriers that wish to establish vast footprints could bid on and aggregate CMA licenses into larger areas.”<sup>238</sup> As a result, contrary to Verizon’s argument in support of EAs, licensing the AWS-3 bands on the basis of CMAs also would provide large carriers with

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<sup>233</sup> 47 U.S.C. §309(j)(3)(D).

<sup>234</sup> Comments of RWA at 7.

<sup>235</sup> Comments of Verizon at 14.

<sup>236</sup> Comments of RWA at 7.

<sup>237</sup> *Id.* at 8.

<sup>238</sup> *Id.* at 5; *see* Comments of Bluegrass at 5 (“[T]he use of smaller geographic license areas will not preclude larger carriers from aggregating blocks of spectrum to serve larger geographic areas.”).

“the ability to take advantage of economies of scale.”<sup>239</sup> In other words, as Bluegrass explained, “the needs of both larger and smaller carriers, regardless of their desired footprint, can be satisfied with the use of smaller geographic license areas.”<sup>240</sup>

In stark contrast, EAs would only serve the needs of large carriers. Not only would small and regional carriers be largely foreclosed from participating in the AWS-3 auction, it would be highly unlikely that these carriers would ever gain access to AWS-3 spectrum. As RWA explained, at best these carriers would be forced to subsequently “try to negotiate secondary market arrangements with the AWS-3 licenses containing their rural markets, assuming a secondary market even develops and license holders are willing to part with their spectrum at reasonable prices.”<sup>241</sup> As USCC detailed in its comments, for a variety of reasons, these secondary market transactions have historically been the exception rather than the rule.

Moreover, even if large carriers are willing to enter into secondary market transactions with the small and regional carriers that would be effectively shut out of the auction if the Commission licenses the AWS-3 bands on the basis of EAs, these smaller carriers would be forced to incur substantial transaction costs. Verizon references the potential need for the national carriers to engage in secondary market transactions in order to establish large geographic footprints if the Commission uses CMAs rather than EAs.<sup>242</sup> However, even assuming the substantial financial resources of the few national carriers would not allow them to assemble their desired footprints during the auction by aggregating CMAs, it would be far more equitable to potentially subject these large carriers to the costs associated with secondary market

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<sup>239</sup> Comments of Verizon at 14.

<sup>240</sup> Comments of Bluegrass at 5.

<sup>241</sup> Comments of RWA at 7.

<sup>242</sup> See Comments of Verizon at 14-15.

transactions than to impose these costs upon small and regional carriers – assuming these carriers would even have an opportunity to acquire AWS-3 spectrum rights in the secondary market.

USCC also agrees with RWA that, at a minimum, “waiting on secondary market transactions [would] unduly delay AWS-3 deployments reaching consumers in rural areas, which is counter to Section 309(j)(3)(A) of the Act.”<sup>243</sup> RWA further explained that, because Section 309(j) “addresses the assignment of *initial licenses* through competitive bidding,” the Communications Act obligates the Commission to “adopt rules that draw rural carriers into the competitive bidding process rather than push them out of the process to secondary markets.”<sup>244</sup>

Commenters also noted that, in other ways as well, licensing the AWS-3 spectrum on the basis of CMAs would be “consistent with the directive and eligibility criteria that Congress has set out for the Commission to use with auctioning spectrum.”<sup>245</sup> For instance, RWA explained how “CMA-based licensing would be more likely to attract a wide variety of bidders to the AWS-3 auction in compliance with Section 309(j)(3)(B) of the Act.”<sup>246</sup> In contrast, by “[f]acilitating the award of AWS-3 licenses to only the large, nationwide carriers,” EA-based licensing would “promote the excessive concentration of licenses in violation of Section 309(j)(3)(B)...”<sup>247</sup> RWA also noted that withholding AWS-3 licenses from small and regional carriers would, in turn, cause rural residents to “be excluded from the benefits of any advanced service deployments on AWS-3 spectrum in violation of Section 309(j)(3)(A) of the Act.”<sup>248</sup>

In sum, USCC agrees with PSW that licensing the AWS-3 spectrum on the basis of EAs “would confer a windfall on the few large wireless carriers able to participate, delay the

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<sup>243</sup> Comments of RWA at 8.

<sup>244</sup> *Id.* at 7-8 (emphasis in original).

<sup>245</sup> Comments of Bluegrass at 4.

<sup>246</sup> Comments of RWA at 5.

<sup>247</sup> *Id.*

<sup>248</sup> *Id.* at 4.

deployment of services to rural areas, and likely reduce the amount of spectrum repurposed and revenue generated in the incentive auction.”<sup>249</sup> Accordingly, only by licensing the AWS-3 bands on the basis of CMAs will the Commission meet its stated statutory goals in this proceeding.<sup>250</sup> Finally, USCC notes that, while a majority of commenters addressing the issue support CMA-based licensing, no commenter advocated for license areas larger than EAs.

## **VII. THE COMMISSION SHOULD NOT ALLOW PACKAGE BIDDING FOR ANY AWS-3 LICENSES**

USCC again expresses its strong opposition to the use of any form of package bidding in the AWS-3 auction. Because package bidding significantly biases an auction in favor of the largest bidders, it would effectively eliminate the opportunity for smaller bidders to acquire AWS-3 licenses, while not providing any public interest benefits. USCC notes that only Verizon expressed a strong preference for package bidding, while other commenters, like T-Mobile, “generally support[ed] the use of the Commission’s *usual* competitive bidding procedures.”<sup>251</sup> Similarly, while AT&T “reserve[d] its comments on the specifics of any auction rules,” it noted “that the use of *customary* simultaneous multiple-round auction rules used by the Commission in past auctions would likely serve to boost participation.”<sup>252</sup> Moreover, while package bidding

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<sup>249</sup> Comments of PSW at 2.

<sup>250</sup> See NPRM, 28 FCC Rcd at 11502 (“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.”).

<sup>251</sup> Comments of T-Mobile at 34 (emphasis added). The Commission has repeatedly referred to an auction without package bidding as its “standard” auction format. See, e.g., *Notice and Filing Requirements, Minimum Opening Bids, Upfront Payments and Other Procedures for Auction No. 66*, Public Notice, 21 FCC Rcd 4562, 4599 (2006) (noting that it had sought comment on holding two auctions for AWS-1 licenses “with one of the auctions using the *standard* SMR format and the other using the FCC’s package bidding format (‘SMR-PB’)”) (emphasis added); *id.* at 4600 (finding it “appropriate to auction the AWS-1 licenses through a single auction using the Commission’s *standard* SMR auction format”) (emphasis added).

<sup>252</sup> Comments of AT&T at 13 (emphasis added).

significantly disadvantages smaller bidders, the alleged benefits of package bidding claimed by Verizon either are unnecessary or nonexistent.

In its comments, USCC detailed the various ways package bidding harms smaller bidders, while benefitting only the largest bidders. For instance, package bidding greatly increases the likelihood that large bidders will tie-up multiple licenses in large package bids, and thereby exclude smaller bidders who have neither the business need nor resources to bid on a large package of licenses. Due to this likely exclusion of all but the largest bidders, USCC seriously questions Verizon’s claim that package bidding “is likely to increase participation and bidding competition in the AWS-3 auction.”<sup>253</sup> Moreover, by excluding smaller bidders, package bidding ultimately would harm those living in rural areas, where these bidders otherwise would have concentrated their AWS-3 license acquisitions and build-out efforts.<sup>254</sup>

In addition, unlike with a license-by-license aggregation strategy, package bidding can force the Commission to accept a package bid even though others placed higher bids, on a per-MHz-pop basis, for one or more of the licenses included in the package. In other words, in addition to effectively shutting smaller bidders out of an auction, package bidding can allow large bidders to obtain certain licenses – likely those most desired by small and regional carriers – at a discount.

Specifically, because the individual licenses desired by smaller bidders typically do not include the most densely-populated markets, their aggregate bids almost certainly would not exceed a package bid, which would invariably also include several high-priced urban service areas. In other words, even if a smaller bidder assigns a higher value to a particular license, this valuation can be completely undercut by a national carrier able to include that license within a

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<sup>253</sup> Comments of Verizon at 17.

<sup>254</sup> See Cellular One Ex Parte at 1 (“An auction structured without HPB will benefit residents and businesses in [rural] areas with an interest in prompt deployment of good quality broadband...”).

large package bid that includes urban areas. On the other hand, because large bidders' focus would remain on the densely-populated service areas in the absence of package bidding, they would compete against each other for these individual licenses rather than for packages encompassing those licenses. As a consequence, the licenses would sell for approximately the same amount as the large bidders would have valued them as part of a package, while smaller bidders would continue to assign higher valuations to less densely-populated service areas.

Verizon argues in favor of package bidding based in part on the contention that the “risk of failing to acquire all licenses in a business plan (the ‘exposure problem’) may inhibit participation in the auction...”<sup>255</sup> Verizon fails to mention, however, that the interaction of package bidding procedures and bidding eligibility rules creates significant exposure risks for smaller bidders. Accordingly, at best, package bidding would simply shift auction risk from large bidders with substantial financial resources to smaller bidders, many of which could not simply absorb the consequences of such a risk coming to fruition.

As USCC detailed in its comments, the exposure risks for smaller bidders arise because, in an auction with package bidding, the Commission’s auction system considers bids made in previous rounds when determining provisionally winning bids, which can cause a dormant bid for an individual license to become provisionally winning many rounds later. As a consequence, once a bid is placed on an individual license, the bidder must choose between two equally undesirable options.<sup>256</sup> The bidder could pursue another license, which would expose the bidder to the risk that its dormant bid subsequently becomes provisionally winning. If so, the bidder could be financially liable for both its new bid and the reactivated bid, even if it desired only a

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<sup>255</sup> Comments of Verizon at 16.

<sup>256</sup> The bidder would be forced to choose between these options because, based on Commission precedent, if package bidding is permitted in the AWS-3 auction, the Commission would “not [] permit any bids, provisionally winning or otherwise, to be dropped or withdrawn from consideration...” *Auction of H Block Licenses in the 1915-1920 MHz and 1995-2000 MHz Bands; Comment Sought on Competitive Bidding Procedures for Auction 96*, Public Notice, 28 FCC Rcd 10013, 10030 (WTB 2013).

single license, and even if it lacks the financing to acquire an additional license. Alternatively, the bidder could simply cease auction participation, and thereby forfeit the opportunity to acquire an AWS-3 license, rather than expose itself to significant risk.

USCC also explained in its comments that package bidding adds significant complexity to an auction, and that this added complexity particularly disadvantages smaller bidders, who lack the substantial resources of those most likely to be package bidders. For instance, package bidding drastically increases the number of bid possibilities, which raises the cost for bidders to evaluate their options and probability of success. Moreover, the noted potential for a “losing” bid on an individual license to become provisionally winning many rounds later substantially increases package bidding’s inherent complexity because a bidder is forced to also factor in the possibility of dormant bids being reactivated. Not only do the limited resources of smaller bidders make it more difficult to address this complexity, but smaller bidders are those most likely to face this situation, which arises only with respect to bids on individual licenses.

Verizon further claims that, “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...”<sup>257</sup> However, as USCC detailed in its comments, the Commission’s standard auction rules, along with the ability to outbid smaller bidders, provide large carriers with ample opportunities to aggregate individual licenses in order to assemble expansive geographic service areas.<sup>258</sup> In other words, while package bidding would subject

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<sup>257</sup> Comments of Verizon at 16.

<sup>258</sup> Notably, a paper relied on by Verizon detailed how in Auction 66, which did not involve package bidding, SpectrumCo “acquired licenses covering 91.2 percent of the U.S. population at prices that were much lower than those paid by the other large buyers.” *Bulow/Levin/Milgrom Paper* at 3.

smaller bidders to the various harms detailed above, large bidders do not require package bidding in order to attain economies of scale.<sup>259</sup>

In contrast, smaller bidders would be unlikely to ever gain access to AWS-3 spectrum if the Commission enables large bidders to monopolize the AWS-3 auction through package bidding. As USCC previously detailed, the acquisition of spectrum rights from the national carriers in the secondary market has been, and likely will continue to be, the exception rather than the rule. Moreover, even if large carriers prove willing to enter into secondary market transactions, the smaller bidders that were shut out of the auction as a result of package bidding would be forced to incur substantial transaction costs.<sup>260</sup>

Large bidders, on the other hand, likely would not face secondary market costs because, as noted, they likely could successfully assemble large AWS-3 service areas during the auction. Nevertheless, according to Verizon, shielding large bidders from the potential for secondary market costs further justifies the use of package bidding because it would allow these bidders to “commit more of their resources toward acquiring licenses in the auction...”<sup>261</sup> Thus, once again, a justification for package bidding alleged by Verizon would have the effect of removing a potential burden from large bidders while imposing an additional burden on smaller bidders.

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<sup>259</sup> See *Auction of H Block Licenses in the 1915-1920 MHz and 1995-2000 MHz Bands Scheduled for January 14, 2014; Notice and Filing Requirements, Reserve Price, Minimum Opening Bids, Upfront Payments, and other Procedures for Auction 96*, Public Notice, AU Docket No. 13-178, DA 13-1885, ¶ 133 (WTB, rel. Sept. 13, 2013) (“We conclude based on the record and in light of our experience with previous spectrum auctions ... that a standard SMR auction format will offer adequate opportunity for bidders to aggregate licenses in order to obtain the level of coverage they desire consistent with their business plans.”).

<sup>260</sup> See *Cellular One Ex Parte* at 1 (noting that an auction without package bidding “permit[s] carriers to directly acquire spectrum in or near their existing rural systems without needing to wait to purchase such interests on the aftermarket from a larger carrier that holds it as an afterthought”).

<sup>261</sup> Comments of Verizon at 17.

## VIII. THE COMMISSION SHOULD ADOPT A SUFFICIENTLY LONG LICENSE TERM, AWARD RENEWAL EXPECTANCIES, AND AVOID ADDITIONAL LICENSE RENEWAL STANDARDS

USCC again urges the Commission to establish a sufficiently long initial license term in order to account for the highly-encumbered nature of this spectrum. Before many licensees will have access to their AWS-3 spectrum, they will be forced to wait for the relocation of incumbent users to other spectrum bands and/or the completion of the coordination process with any remaining Federal users. AT&T likewise noted the “likelihood that some or all of the spectrum might be unavailable at [license] grant...”<sup>262</sup> Similarly, 4G Americas observed that the “history of the AWS-1 auction and subsequent relocation shows that it may take several years to clear.”<sup>263</sup>

Absent a longer initial license term, these inevitable delays would cause AWS-3 licensees to have initial license terms shorter than the 10-year term generally afforded CMRS licensees. As AT&T noted, one method to provide AWS-3 licensees with a sufficient initial license term would be to delay the start of a 10-year term until the spectrum becomes available.<sup>264</sup> Because this date would vary for each licensee, AT&T noted that the initial license term could instead begin “on a date certain to be determined in consultation with the NTIA as the final transition date, as the FCC did in the 700 MHz band when the DTV transition was delayed.”<sup>265</sup> However, both of these approaches would increase the Commission’s administrative burden and involve uncertainties. For instance, the relocation and coordination processes could take longer than anticipated, and thus require the Commission to delay the start of the initial license terms. USCC

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<sup>262</sup> Comments of AT&T at 15.

<sup>263</sup> Comments of 4G Americas at 9.

<sup>264</sup> See Comments of AT&T at 15.

<sup>265</sup> *Id.*

therefore continues to believe that the best approach would be for the Commission to adopt a “15 year initial term, as it did in AWS-1 (for largely the same reasons).”<sup>266</sup>

Based on these same considerations, USCC, like other commenters, again urges the Commission to award renewal expectancies to AWS-3 licensees, like it did for AWS-1 licensees.<sup>267</sup> USCC specifically supports the factors set forth in the NPRM, pursuant to which an AWS-3 licensee would receive a renewal expectancy if it maintained the level of service required by any interim construction requirement, met the final construction requirement, and otherwise complied with the Communications Act and the Commission’s rules and policies.<sup>268</sup> As AT&T noted, by having AWS-3 licensees certify their compliance with these factors, “the Commission can reasonably meet its obligation to ensure that the spectrum is being used in the public interest...”<sup>269</sup> The Commission also should award renewal expectancies at the end of subsequent terms to licensees that maintain the level of service they provided at the end of their initial license terms. As USCC detailed in its comments, renewal expectancies would create a stable regulatory environment that will be attractive to investors and that will encourage expansive and timely AWS-3 network deployments.

In contrast, the Commission’s proposal to subject AWS-3 licensees to additional renewal standards would create investment-killing uncertainty concerning the security of AWS-3 licenses, and thereby dissuade investment in AWS-3 licenses and networks. Notably, no commenter supported this proposal. On the other hand, like USCC, T-Mobile emphasized that the “proposed ‘renewal showing’ is ambiguous and fails to adequately define an objective

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<sup>266</sup> *Id.*

<sup>267</sup> See Comments of T-Mobile at 33 (“Licensees ... should obtain a renewal expectancy at the end of their license terms.”); Comments of AT&T at 16.

<sup>268</sup> See NPRM, 28 FCC Rcd at 11532.

<sup>269</sup> Comments of AT&T at 16.

standard for license renewals.”<sup>270</sup> T-Mobile also explained how it would create “unnecessary regulatory burdens, requiring significant staff time and administrative resources to review and act upon the volumes of information that would be required, further delaying license renewals.”<sup>271</sup> And AT&T stressed that, for carriers as well, the proposal “would be unduly burdensome, costly and unnecessary.”<sup>272</sup> For these reasons, USCC agrees with AT&T that “[s]uch a requirement would impose substantial costs on licensees and FCC staff alike, with no identifiable benefit, and should therefore be rejected.”<sup>273</sup>

**IX. THE COMMISSION SHOULD PROVIDE LICENSEES SUFFICIENT FLEXIBILITY IN HOW THEY DEPLOY THEIR NETWORKS, AND IN NO EVENT SHOULD IMPOSE UNDULY STRINGENT BUILD-OUT REQUIREMENTS OR DRACONIAN PENALTIES**

In order to provide sufficient flexibility in how AWS-3 licensees deploy their networks, USCC again urges the Commission to gauge their build-out efforts using its “substantial service” standard, which the Commission appropriately applied to the similarly-encumbered AWS-1 spectrum. As USCC detailed in its comments, inflexible performance requirements are unnecessarily burdensome, unjustified by market realities, arbitrary, and contrary to sound economic principles and business strategies. They also weigh most heavily on new entrants and small and regional carriers, who often lack the existing infrastructure and economies of scope and scale of carriers serving large urban populations, and who may, absent USCC’s proposed interoperability requirement, face significant delays in obtaining the devices necessary to attract customers and justify AWS-3 service deployments.

Ultimately, inflexible build-out requirements can discourage investment, limit service to the public, particularly in rural areas, force suboptimal network deployments, and diminish

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<sup>270</sup> Comments of T-Mobile at 33.

<sup>271</sup> *Id.*

<sup>272</sup> Comments of AT&T at 15.

<sup>273</sup> *Id.* at 16.

auction revenues, both because of decreased auction participation and because the value of each license is diminished. USCC’s proposed approach also would be consistent with the performance requirements for the similarly-encumbered AWS-1 spectrum, for which the Commission found that the substantial service standard was “particularly appropriate [] because the incumbency of federal and other current licensees ... would make specific benchmarks for all new licensees inequitable.”<sup>274</sup>

If the Commission nevertheless declines to apply its reasonable “substantial service” standard, USCC urges it to ensure that the AWS-3 performance requirements strike an appropriate balance between incentivizing deployment and affording licensees the flexibility necessary to put spectrum to its highest and best use. For instance, USCC opposes RWA’s proposal that the Commission adopt geographic, rather than population-based, performance requirements.<sup>275</sup> Notably, only RWA supports the use of geographic benchmarks, which Verizon noted would be counter to “the Commission’s long-standing policy of utilizing population-based construction benchmarks.”<sup>276</sup> Moreover, although USCC fully supports all Commission efforts to increase wireless broadband access in rural and other underserved areas, contrary to RWA’s suggestion, geography-based performance requirements instead can reduce rural deployments while creating various other public interest harms.

For instance, Verizon explained that “[w]ireless providers offer services for the benefit of consumers, making alternative build-out requirements, such as coverage of land mass, a poor

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<sup>274</sup> *AWS-1 R&O*, 18 FCC Rcd at 25192; *see Lower 700 MHz R&O*, 17 FCC Rcd at 1079 (“The substantial service standard is particularly appropriate for the Lower 700 MHz Band given the highly-encumbered nature of this particular spectrum. ... Because new licensees in different geographic areas will not be similarly situated due to the varying levels of incumbency, specific benchmarks for all new licensees would be inequitable.”)

<sup>275</sup> *See* Comments of RWA at 6.

<sup>276</sup> Comments of Verizon at 22.

measure of the public benefit.”<sup>277</sup> Geographic benchmarks also ignore the stark disparities in population densities across the country,<sup>278</sup> which can force carriers to build systems where no population exists, and thereby divert limited capital away from areas that would better serve the public interest. In contrast, “[a] population-based build-out requirement will ensure that licensees provide wireless broadband services where consumers actually will use them and need them.”<sup>279</sup> Geographic benchmarks also fail to account for differences in terrain, which can substantially increase the time and resources required to serve a particular area.

For these reasons, geography-based performance requirements could have the unintended consequence of discouraging applicants from acquiring licenses in sparsely-populated or harder-to-serve areas, or cause viable bidders to avoid an auction altogether. Not only would this further exacerbate the disparity between network coverage in urban and rural areas that geography-based benchmarks allegedly seek to address, it would lower auction revenue.

On the other hand, the Commission has found that population-based performance requirements “allow a potential new entrant to achieve the economies of scale needed for a viable business model, while also ensuring that a majority of the population in a given region may have access to these services.”<sup>280</sup> Population-based benchmarks also allow both “new and existing providers to promptly and efficiently deploy [] new services, thus reaching more

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<sup>277</sup> *Id.*; see *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 1995-200 MHz Bands*, Report and Order, 28 FCC Rcd 9483, 9561 (2013) (“*H Block R&O*”) (“[P]opulation served is a more accurate measure of useful coverage for this band.”).

<sup>278</sup> For instance, although rural counties comprise 86 percent of the geographic area of the United States, only 21 percent of the U.S. population lives in rural counties. See *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*, Fifteenth Report, 26 FCC Rcd 9664, 9878 (2011).

<sup>279</sup> Comments of Verizon at 22.

<sup>280</sup> *Service Rules for the 698-746, 747-762 and 777-792 MHz Bands*, Second Report and Order, 22 FCC Rcd 15289, 15351 (2007) (“*700 MHz Second R&O*”); see *H Block R&O*, 28 FCC Rcd at 9560-61 (“[P]opulation-based benchmarks are necessary to ensure that H Block licensees have flexibility to scale their networks in a cost efficient manner while they are attempting to meet performance requirements.”).

consumers more quickly.”<sup>281</sup> USCC also notes that, in proposing geographic benchmarks, RWA appears to be primarily concerned with the potential for population-based requirements to allow carriers to ignore rural areas if the Commission licenses the AWS-3 bands on the basis of EAs.<sup>282</sup> Thus, if the Commission appropriately uses CMA-based licensing instead, the alleged benefits of geography-based performance requirements, if any, would be substantially reduced.

Further, if the Commission decides to adopt inflexible performance requirements, USCC again strongly urges it to adequately account for the fact that some AWS-3 spectrum may be highly-encumbered, which would be consistent with the Commission’s expressed intent to “tailor[] performance and construction requirements to the unique characteristics of the spectrum band at issue.”<sup>283</sup> For instance, USCC agrees with AT&T that “the build out period should not necessarily begin on the license grant date, but at the time when the licensed spectrum becomes available.”<sup>284</sup> As AT&T explained, it “might be 4-5 years before a licensee is able to begin to construct and operate a network using this spectrum due to spectrum unavailability.”<sup>285</sup>

USCC also agrees with AT&T that, if the Commission finds that it would better serve the public interest to establish a uniform date for the start of every AWS-3 licensee’s construction obligations, the Commission “should consider starting the build out period on a date certain ... as the FCC did in the 700 MHz band when the DTV transition was delayed.”<sup>286</sup> As detailed below, another option would be to increase the amount of time the Commission proposes to provide

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<sup>281</sup> *700 MHz Second R&O*, 22 FCC Rcd at 15351.

<sup>282</sup> See Comments of RWA at 6 (contending that geographic-based performance requirements are necessary “to prevent spectrum warehousing, particularly if the Commission adopts EA-based licenses”); *id.* at 7 (“Coupling population-based performance requirements with EA-based licensing, which by definition would include metropolitan or similar areas, would only compound this harm.”).

<sup>283</sup> *Service Rules for Advanced Wireless Services in the 2000-2020 MHz and 2180-2200 MHz Bands*, Report and Order and Order of Proposed Modification, 27 FCC Rcd 16102, 16174 (2012) (“*AWS-4 R&O*”).

<sup>284</sup> Comments of AT&T at 14.

<sup>285</sup> *Id.*

<sup>286</sup> *Id.* at 14-15.

licensees to meet each construction milestone in order to account for the inevitable delays licensees will encounter in gaining unencumbered access to their spectrum. If the Commission declines to take one of these approaches, many AWS-3 licensees will simply lack the time necessary to establish a viable operation prior to any construction deadlines,<sup>287</sup> which would be counter to the Commission’s previous acknowledgement that “licensees must be given a reasonable amount of time to meet a performance requirement.”<sup>288</sup>

In addition, T-Mobile and others joined USCC in stressing that “the build out requirements should take into consideration any Protection or Exclusion Zones, or other federal impediments to complete use of auctioned spectrum.”<sup>289</sup> As Raytheon explained, there is “no guarantee to a winning bidder for a license for which the authorized area includes all or part of a Protection Zone that the license will ever be able to operate within the Zone.”<sup>290</sup> Accordingly, the “inclusion of Protection Zone populations may prove fundamentally unfair to licensees in cases where future coordination does not prove workable.”<sup>291</sup> Even worse, “including Protection Zone populations may make the buildout requirements unattainable.”<sup>292</sup> USCC again notes that this approach would be consistent with the performance requirements for both CMA- and EA-based 700 MHz licenses. Similar to the Protection Zones that may be located in some AWS-3 service areas, there the Commission noted that “covering certain government land may be

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<sup>287</sup> See *Amendment of the Commission’s Rules Regarding the 37.0-38.6 GHz and 38.6-40.0 GHz Bands*, Report and Order and Second Notice of Proposed Rule Making, 12 FCC Rcd 18600, 18625 (1997) (noting that, in order to “establish a viable operation,” licensees “must have sufficient time in which to develop market plans, secure necessary financing, develop and incorporate new technology in their systems, accommodate equipment manufacturers’ production schedules, and build a customer base.”).

<sup>288</sup> *Id.*

<sup>289</sup> Comments of T-Mobile at 32; see Comments of Raytheon Company at 38 (“[T]he populations within Protection Zone should not be used to measure whether build out requirements are met.”) (emphasis in original).

<sup>290</sup> Comments of Raytheon at 38.

<sup>291</sup> *Id.* at 38-39.

<sup>292</sup> *Id.* at 39.

impractical, because these lands are subject to restrictions that prevent a licensee from providing service or make provision of service extremely difficult.”<sup>293</sup>

With respect to specific construction benchmarks, USCC believes that the Commission’s proposals, which mirror those it recently adopted for H Block licensees,<sup>294</sup> are overly stringent given the particular characteristics of the AWS-3 spectrum. Specifically, in stark contrast to the AWS-3 bands, the H Block is “cleared and ready for deployment...”<sup>295</sup> Notably, in declining to base the H Block performance requirements on the AWS-1 service rules, the Commission noted that the “[b]uild-out requirements for AWS-1 spectrum took into account the uncertainty associated with the timing of clearing Federal operations from the band, which does not need to occur here.”<sup>296</sup> Thus, in order to provide equitable treatment to AWS-3 licensees, the Commission must adopt less stringent construction benchmarks and/or provide AWS-3 licensees additional time to meet those benchmarks.

USCC therefore disagrees with the Commission’s assertion that its proposed interim benchmark – 40% population coverage within 4 years – constitutes a “relatively low population threshold.”<sup>297</sup> Particularly where, as here, licensees’ network deployments likely will be delayed – possibly for several or more years – as a result of ongoing Federal operations, USCC believes that providing reliable signal coverage to 40% of the population within a license area within only 4 years could prove infeasible to many licensees. This may be especially so for small and regional carriers focusing their deployment efforts in sparsely-populated areas, which do not provide anywhere near the same economies of scale and scope as densely-populated urban markets. USCC also notes that the Commission’s proposed interim coverage requirement is a

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<sup>293</sup> *700 MHz Second R&O*, 22 FCC Rcd at 15350.

<sup>294</sup> *See NPRM*, 28 FCC Rcd at 11529-30.

<sup>295</sup> *AWS-4 R&O*, 27 FCC Rcd at 16129.

<sup>296</sup> *H Block R&O*, 28 FCC Rcd at 9560, n. 629.

<sup>297</sup> *NPRM*, 28 FCC Rcd at 11530.

full 10% more stringent than the benchmark it initially proposed for the AWS-4 bands, which it similarly described as a “relatively low population threshold.”<sup>298</sup>

USCC further believes that, particularly for highly-encumbered spectrum, the proposed final construction benchmark – 75% population coverage within 10 years – is unnecessarily, and unreasonably, stringent. For instance, in adopting the final construction benchmarks of 70% geographic coverage for CMA- and EA-based 700 MHz licenses and 75% population coverage for REAG-based 700 MHz licenses, the Commission repeatedly described these requirements as “stringent.”<sup>299</sup> Moreover, the Commission justified these “stringent” requirements in part on the fact that the 700 MHz band, unlike the AWS-3 spectrum, possesses excellent propagation characteristics because it is sub-1 GHz spectrum. Specifically, the Commission noted that the “unique propagation characteristics of this spectrum means that fewer towers will be needed to serve a given license area, as compared to providing service at higher frequencies, and thus large license areas may be served at lower infrastructure costs.”<sup>300</sup>

In place of these proposed performance requirements, USCC again urges the Commission to avoid adopting an interim milestone, an approach it has favored in the past, including for the AWS-1 spectrum in order “to provide flexibility to licensees to implement their business plans.”<sup>301</sup> If the Commission nevertheless establishes an interim construction benchmark, the highly-encumbered nature of the AWS-3 spectrum fully justifies providing licensees additional time to meet this milestone. Specifically, USCC supports a 6-year period. As USCC previously

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<sup>298</sup> See *Service Rules for Advanced Wireless Services in the 2000-2020 MHz and 2180-2200 MHz Bands*, Notice of Proposed Rulemaking and Notice of Inquiry, 27 FCC Rcd 3561, 3591 (2012).

<sup>299</sup> See *700 MHz Second R&O*, 22 FCC Rcd at 15348 (“[W]e replace the current ‘substantial service’ requirements for the 700 MHz Band licenses that have not been auctioned with *significantly more stringent* performance requirements.”) (emphasis added); *id.* at 15348 (“In adopting these stringent performance requirements...”); *id.* (“[W]e conclude that these set of stringent benchmarks...”); *id.* at 15355 (“Given these stringent performance requirements...”).

<sup>300</sup> *Id.* at 15348.

<sup>301</sup> *AWS-1 R&O*, 18 FCC Rcd at 25192.

explained, not only would a 6-year period help to account for the inevitable delays licensees will face in gaining access to their spectrum, this timeframe would extend the Commission's 4-year proposal in proportion with USCC's proposed 15-year initial AWS-3 license term.

Absent this longer timeframe, the potentially significant time that will be required to either relocate incumbent users or to coordinate operations with remaining Federal users would provide an insufficient amount of time for compliance, particularly for new entrants and small and regional carriers. As the Commission previously concluded, a shorter compliance period "would have a disproportionate impact on new entrants who have no existing networks or customers, as well as small or regional carriers who are looking to enlarge their operating footprint, but who do not already have extensive pre-existing infrastructure in place."<sup>302</sup> With a 6-year construction period, USCC believes that an interim benchmark of 40% population coverage would be reasonable. Otherwise, the Commission should reduce the coverage requirement – *e.g.*, 35% coverage within 5 years, or 30% coverage within 4 years.

With respect to a final build-out requirement, USCC agrees with the Commission that it should apply at the end of the initial license term, but again emphasizes that a 15-year, rather than 10-year, initial term would be far more appropriate. Assuming the Commission establishes a 15-year initial license term, USCC believes the Commission's proposed 75% coverage requirement would be reasonable. Otherwise, like with the interim benchmark, the Commission should reduce the coverage requirement – *e.g.*, two-thirds coverage within 10 years, which would mirror the PCS service rules.<sup>303</sup>

USCC believes these proposals are far more reasonable than the performance requirements proposed by Verizon, which it modeled after those "the Commission recently

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<sup>302</sup> 700 MHz Second R&O, 22 FCC Rcd at 15350.

<sup>303</sup> See 47 C.F.R. §24.203(a).

ordered for AWS-4 spectrum licensees.”<sup>304</sup> Although the timing and coverage obligations Verizon proposes for an interim benchmark – 40% population coverage within 4 years – mirror the Commission’s AWS-3 proposal, Verizon urges the Commission to calculate a licensee’s total AWS-3 population “by summing the population of all of its license authorizations in the AWS-3 band.”<sup>305</sup> While this proposal likely would not significantly affect small and regional carriers, most of which will acquire only a limited number of AWS-3 licenses, it could create a significant advantage for the large national carriers like Verizon.

Even more important, Verizon’s proposed interim benchmark could substantially reduce near-term network deployments by these carriers to rural and other less densely-populated areas. Specifically, Verizon’s proposal would allow a carrier with numerous AWS-3 licenses to meet the interim benchmark by initially focusing its build-out efforts primarily, or even exclusively, on the most densely-populated license areas. In other words, a carrier could delay build-out not only in the less densely-populated communities within a license area, but also within entire license areas that have lower population densities. In declining to adopt a similar proposal for the H Block, the Commission explained that such an approach “would allow a licensee with multiple [] licenses to meet the interim benchmark while underutilizing some of those [licenses] for no other reason than the fact that it acquired more than one [license].”<sup>306</sup> The Commission then stressed that, where it is “assigning initial licenses for spectrum, [it] expect[s] applicants will file for spectrum licenses only in areas in which they intend to put the spectrum to use.”<sup>307</sup>

Far worse, however, is Verizon’s proposed final build-out requirement because, rather than provide licensees with additional time in recognition of the highly-encumbered nature of the

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<sup>304</sup> Comments of Verizon at 21.

<sup>305</sup> *Id.*

<sup>306</sup> *H Block R&O*, 28 FCC Rcd at 9562.

<sup>307</sup> *Id.*

AWS-3 spectrum, Verizon proposes a final benchmark of 70% population coverage within 7 years.<sup>308</sup> Although this proposal mirrors the final benchmark the Commission adopted for the AWS-4 spectrum, the unique rights sought by DISH justified the imposition of more stringent performance requirements. In fact, in that proceeding, “[n]o party suggested that a longer time frame would be necessary and, indeed, DISH stated that seven years is a reasonable period for a final build-out milestone.”<sup>309</sup> Moreover, as noted, the national carriers have a significant advantage with respect to meeting construction benchmarks because of their substantial existing infrastructure and the economies of scale and scope related to the densely-populated markets they primarily serve. Accordingly, providing AWS-3 licensees less time to meet the final benchmark could benefit Verizon by significantly disadvantaging the small and regional carriers who otherwise may be able to use AWS-3 spectrum to become more viable competitors.

If the Commission establishes an interim build-out requirement despite such a benchmark being unnecessary and counterproductive, a failure to meet this milestone should accelerate the final benchmark by one year. As USCC previously explained, a one-year penalty would be particularly appropriate if the Commission declines to either adopt a 15-year initial license term or delay the start of a 10-year term until the spectrum actually becomes available to AWS-3 licensees. Even worse would be Verizon’s proposal that a failure to meet the interim benchmark would reduce the license term for *all* of a carrier’s AWS-3 licenses by two years.<sup>310</sup> A carrier with multiple AWS-3 licenses very well could have some service areas that are far more heavily encumbered by incumbent users, or in which coordination with Federal users takes substantially more time. It therefore would be inequitable to also reduce the terms for those license areas

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<sup>308</sup> See Comments of Verizon at 21.

<sup>309</sup> *AWS-4 R&O*, 27 FCC Rcd at 16177; see *id.* at 16176 (“[T]he incumbent 2 GHz MSS licensees generally support our seven year end-of-term build-out benchmark and have committed to ‘aggressively build-out a broadband network’ if they receive terrestrial authority to operate in the AWS-4 band.”).

<sup>310</sup> See Comments of Verizon at 21.

where a carrier has met or exceeded the interim benchmark simply because the carrier's build-out in another service area has been delayed due to circumstances beyond its control.

With respect to the penalty for a licensee's failure to meet the final build-out requirement, a majority of commenters joined USCC in strongly opposing the Commission's proposal that such a failure would result in automatic license termination for the entirety of a license area. As CCA explained, this penalty "is more severe than necessary to promote the rapid deployment of the spectrum."<sup>311</sup> Moreover, this "harsh rule would risk cutting off service to customers who may already be using the spectrum, and would risk stranding millions of dollars of investment in network deployment."<sup>312</sup> AT&T also noted that this penalty would be particularly inappropriate where a licensee's network deployments fall just short of the final construction requirement.<sup>313</sup>

In light of these harms, most commenters, like USCC, urged the Commission to instead rely on its "keep-what-you-use" rule, which AT&T noted would be "consistent with the requirements that apply in the 700 MHz bands."<sup>314</sup> In addition, CCA explained how this approach "would provide sufficient incentives for licensees to meet the build-out requirements, without the risk of cutting off consumers."<sup>315</sup> Like USCC, CCA also noted that the Commission has previously found that this approach can have the effect of making unused spectrum available on a sufficiently small geographic basis that any re-auctioned licenses would be affordable even to the smallest carriers, which would make rural broadband deployments using AWS-3 spectrum

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<sup>311</sup> Comments of CCA at 9.

<sup>312</sup> *Id.*

<sup>313</sup> *See* Comments of AT&T at 14 ("It would not be in the public interest to cut off service to the public through an automatic license termination in a case, for example, where a carrier is providing substantial service and covers 70 percent of the population.").

<sup>314</sup> *Id.*

<sup>315</sup> Comments of CCA at 9; *see* Comments of Verizon at 22 ("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...").

more likely.<sup>316</sup> In addition, a “keep-what-you-use” penalty would make it more likely that small and regional carriers have access to the financing necessary to participate in the AWS-3 auction and subsequently deploy networks on this spectrum. As CCA explained, “investors may be reluctant to back major capital expenditures if the entire license is at risk of being automatically terminated despite the licensee’s good faith build-out efforts.”<sup>317</sup> This greater access to financing would, in turn, increase auction participation, and thus auction revenue.

## **X. CONCLUSION**

The industry unanimously recognized that reallocating and pairing the 1695-1710/2095-2110 MHz bands and the 1755-1780/2155-2180 MHz bands, and thereby symmetrically extending the AWS-1 band, would create the optimal AWS-3 band plan. This approach would maximize the amount of paired AWS-3 spectrum and enable the industry to leverage existing AWS-1 equipment and infrastructure in order to quickly and cost-effectively put this spectrum to its highest and best use. Accordingly, USCC believes this approach will prove critical to the efforts of the Commission, Congress, and the industry to meet the public’s ever-increasing spectrum demands and to ensure that all Americans can benefit from the vast opportunities made possible by broadband access.

A majority of commenters also recognized that providing a reasonable opportunity for small and regional carriers to acquire AWS-3 licenses will be equally important for ensuring that this proceeding leads to these significant public interest benefits. The Commission, therefore, must ensure that the AWS-3 service rules and auction procedures create a level playing field for small and regional carriers. Otherwise, market concentration will continue to increase to the

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<sup>316</sup> See Comments of CCA at 10 (“[K]eep what you use’ rules ‘provide additional methods for making smaller license areas available, thus promoting access to spectrum and the provision of service, especially in rural areas.’”) (quoting *700 MHz Second R&O*, 22 FCC Rcd at 15349).

<sup>317</sup> *Id.*

