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February 27, 2014

**Via ECFS**

Marlene H. Dortch, Secretary
Federal Communications Commission
445 12th Street, SW
Washington, DC 20554

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

Dear Ms. Dortch:

In seeking comment on the allocations and service rules for what will become the AWS-3 bands,[1] the Commission recognized that this spectrum has the potential to "help ensure that the speed, capacity, and ubiquity of the nation's wireless networks keeps pace with the skyrocketing demand for mobile service."[2] In order to ensure that these public interest benefits are fully realized, however, the Commission must take certain actions in this proceeding. For instance, as United States Cellular Corporation ("USCC") previously explained in its comments and reply comments,[3] and as the Commission has recognized on numerous occasions with respect to other spectrum bands,[4] ensuring interoperability in the AWS-3 bands will be essential to achieving the

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[1] Similar to the Commission, USCC's use of the term "AWS-3" herein "refers to the spectrum, separately and collectively," on which the Commission sought comment in the "NPRM regarding service rules for non-Federal use of spectrum, including the following bands: 1695-1710 MHz, 1755-1780 MHz, 2020-2025 MHz, and 2155-2180 MHz." *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, 11481, n. 1 (2013) ("*AWS-3 NPRM*").

[2] *Id.* at 11481-82; *see id.* 11576 (Statement of Acting Chairwoman Mignon L. Clyburn) ("This proceeding has the potential to repurpose a significant amount of spectrum for flexible commercial use, benefiting consumers and businesses across the nation."); *id.* at 11577 (Statement of Commissioner Rosenworcel) ("We are teeing up for auction spectrum bands that have the potential to change our wireless landscape…"); *id.* 11579 (Statement of Commissioner Pai Approving in Part and Concurring in Part) (noting that the AWS-3 bands "will be crucial to making 4G LTE services available to millions of Americans").

[3] *See* Comments of USCC at 16-27; Reply Comments of USCC at 27-30. Unless otherwise noted, all comments and reply comments cited herein were filed in this docket on September 18, 2013 and October 28, 2013, respectively.

[4] *See, e.g.*, *Promoting Interoperability in the 700 MHz Commercial Spectrum*, Report and Order and Order of Proposed Modification, 28 FCC Rcd 15122, 15145 (2013) ("*Lower 700 MHz Interoperability Order*") (noting that interoperability will "promote the efficient use of spectrum, the availability of higher quality and lower priced offerings and enhanced choices for customers of all wireless broadband providers, overall timely deployment of nationwide wireless broadband coverage, and the delivery of such service to rural and underserved areas"); *Application of AT&T Inc. and Qualcomm Incorporated for Consent to Assign Licenses and Authorizations*, Order,

extraordinary potential of this spectrum to promote competition and greatly expand access to wireless broadband services, particularly in rural and other underserved areas.[5] USCC therefore joins a large majority of commenters addressing this issue and again strongly urges the Commission to adopt a clear, *ex ante* interoperability requirement for the AWS-3 bands.[6]

USCC previously urged the Commission to require that: (1) all AWS-3 mobile devices be capable of transmitting across the entire 1695-1780 MHz uplink band and receiving across the entire 2095-2180 MHz downlink band; and (2) all AWS-3 networks support and permit the use of such mobile devices. Although not a precise match, commenters noted how this approach would closely align with the current 3GPP Band 10 specification (*i.e.*, 1710-1770/2110-2170 MHz).[7] Specifically, this interoperability requirement could be implemented by adding 15 megahertz below and 10 megahertz above the current Band 10 specification. As the Commission previously found, "because multi-band devices have been used successfully in the U.S.," "AWS does not need to be deployed exclusively on [internationally] harmonized spectrum."[8]

USCC based the above interoperability proposal on the industry-consensus AWS-3 band plan. Specifically, in addition to overwhelming record support for pairing the 1755-1780 MHz band with the 2155-2180 MHz band,[9] the vast majority of commenters urged the Commission to

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26 FCC Rcd 17589, 17619 (2011) (noting that the "substantial public interest benefits" of interoperability include "enhancing competition by facilitating consumer choice, and facilitating the widespread deployment of broadband services and competition, including access to broadband in rural and underserved areas"); *Expanding the Economic and Innovation Opportunities of Spectrum Through Incentive Auctions*, Notice of Proposed Rulemaking, 27 FCC Rcd 12357, 12415 (2012) ("*Incentive Auction NPRM*") ("Interoperability has often been important in ensuring rapid and widespread deployment of mobile devices in a new spectrum band.").

[5] *See* Reply Comments of T-Mobile USA, Inc. ("T-Mobile Reply") at 21 ("[I]nteroperability creates significant benefits."); *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, 9498 (2013) ("*H Block R&O*") (explaining that interoperability "generally serves the public interest"); *Lower 700 MHz Interoperability Order*, 28 FCC Rcd at 15171 (Statement of Acting FCC Chairwoman Mignon L. Clyburn) ("Clyburn Statement") (noting that interoperability in the Lower 700 MHz band "will substantially benefit the public interest").

[6] *See, e.g.*, T-Mobile Reply at 21-22; Reply Comments of the Rural Wireless Association, Inc. f/k/a Rural Telecommunications Group, Inc. ("RWA Reply") at 7-8; Reply Comments of Sprint Corporation ("Sprint Reply") at 6; Reply Comments of the Blooston Rural Carriers ("Blooston Reply") at 6-7; Reply Comments of NTCH, Inc. ("NTCH Reply") at 2-3; Reply Comments of Smith Bagley, Inc. MTPCS, LLC d/b/a Cellular One and Cellular Network Partnership d/b/a Pioneer Cellular ("Cellular One/Pioneer Cellular Reply") at 3-4.

[7] *See* Comments of 4G Americas ("4G Americas Comments") 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 Solutions and Networks ("Nokia Comments") at 6 ("The 1755-1780/2155-2180 MHz pairing … would overlap with the 1710-1770/2110-2170 MHz band (3GPP Band Class 10).").

[8] *Amendment of Part 2 of the Commission's Rules to Allocate Spectrum Below 3 GHz for Mobile and Fixed Services to Support the Introduction of New Advanced Wireless Services, including Third Generation Wireless Systems*, Second Report and Order, 17 FCC Rcd 23193, 23202 (2002).

[9] *See, e.g.*, Comments of CTIA – The Wireless Association ("CTIA Comments") at 12 ("[T]he wireless industry has consistently advocated for this pairing."); Comments of Competitive Carriers Association ("CCA Comments") 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 ("Motorola Mobility Comments") at 4

pair the 1695-1710 MHz band with the 2095-2110 MHz band.[10] As noted by Verizon, this pairing would be "ideal because, like 1695-1710 MHz, 2095-2110 MHz is directly adjacent to AWS-1."[11] Similarly, Mobile Future explained that, because this pairing "would allow the Commission to create another symmetrical expansion of existing AWS-1 allocations,"[12] it would establish "a consistent duplex gap between base and mobile operations throughout the country, mitigating interference and expediting deployment."[13] Unfortunately, commenters also recognized that there are potentially significant challenges to reallocating the 2095-2110 MHz band,[14] and thus pairing this spectrum with the 1695-1710 MHz band.

USCC therefore takes this opportunity to propose an alternative interoperability requirement. Specifically, if the AWS-3 spectrum does not include the 1695-1710/2095-2110 MHz pairing, the Commission should require that: (1) all AWS-3 mobile devices be capable of transmitting across the entire 1710-1780 MHz uplink band and receiving across the entire 2110-2180 MHz downlink band; and (2) all AWS-3 networks support and permit the use of such mobile devices. A significant benefit of both of these interoperability proposals is that they would foster the development of an expansive ecosystem of devices capable of operating across both the AWS-1 and AWS-3 bands. As AT&T explained, 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."[15] Similarly, CTIA noted the "efficiencies" that would arise "by allowing the same equipment to be used for AWS-1 and AWS-3."[16]

USCC stresses that, regardless of the specific parameters of the AWS-3 interoperability requirement ultimately adopted by the Commission, it is particularly important for licensees' interoperability obligations to include all of the paired 1755-1780/2155-2180 MHz spectrum bands. A failure to do so could significantly reduce the value of the uppermost 10 megahertz of this pairing, which, as shown in the chart below, is not included in the current Band 10 specification. As a result, the largest bidders likely would focus on, and thus monopolize, the lower 15 megahertz of this pairing, leaving only the "orphaned" uppermost 10 megahertz

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("[T]he centerpiece of the Notice is the potential pairing of the 1755-1780 MHz and 2155-2180 MHz band segments."); Nokia Comments 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 ("Mobile Future Comments") at 8 ("This pairing offers significant synergies and is broadly supported by the wireless industry.").

[10] *See, e.g.*, Comments of T-Mobile USA, Inc. ("T-Mobile Comments") 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…"); Reply Comments of CTIA – The Wireless Association ("CTIA Reply") at 12 ("[T]he 2095-2110 MHz band … provides a logical extension of existing AWS bands if paired with 1695-1710 MHz."); Comments of AT&T Inc. ("AT&T Comments") at 5 (describing the 2095-2110 MHz band as the "ideal pairing" for 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 …").

[11] Comments of Verizon Wireless ("Verizon Comments") at 7.

[12] Mobile Future Comments at 10.

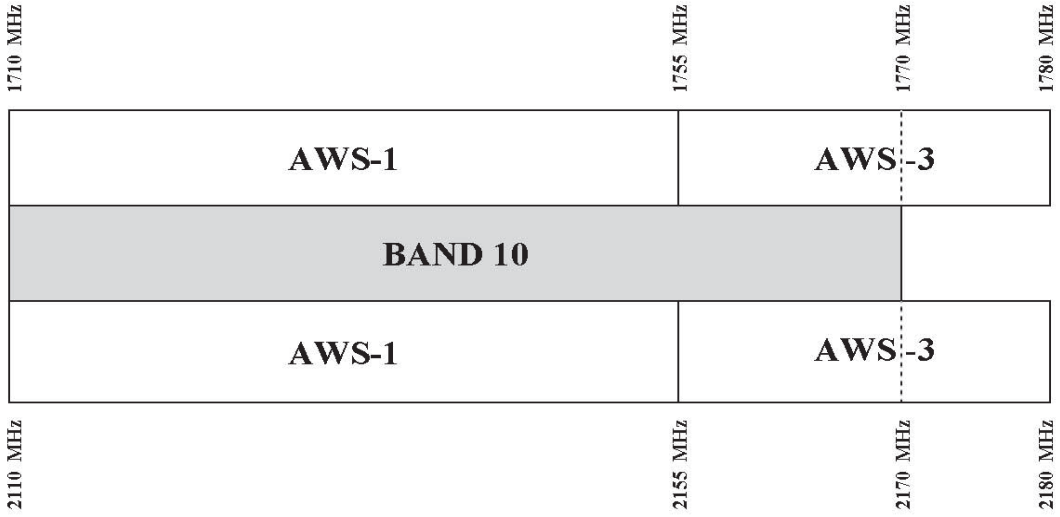
[13] *Id.* at 13; *see* CTIA Comments at 12 ("To maintain the same duplex spacing, the logical spectrum pair for the 1695-1710 MHz band would be 2095-2110 MHz.").

[14] *See, e.g.*, T-Mobile Reply at 4; CTIA Reply at 12.

[15] AT&T Comments at 6.

[16] CTIA Reply at 5.

potentially available to small and regional carriers, who even collectively lack sufficient market power to drive device development.




USCC also notes that, if the challenges related to reallocating the 2095-2110 MHz band prove insurmountable, commenters strongly urged the Commission to identify an alternative 15 megahertz of downlink spectrum to pair with the 1695-1710 MHz band.[17] As USCC and various other commenters emphasized, the Commission must strive to maximize the amount of paired spectrum in order to realize the full potential of the AWS-3 bands.[18] Not only do the leading mobile broadband technologies require paired spectrum blocks,[19] but paired spectrum increases auction revenue,[20] spurs competition, and promotes timely access to wireless broadband services by a greater number of people. For instance, T-Mobile explained how "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."[21]

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[17] *See, e.g.,* T-Mobile Comments at 13 ("[I]f 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."); CTIA Reply at 12 ("[T]he Commission should consider other options if it determines that the 1695-1710/2095-2110 approach is not feasible within the statutory time period."); Verizon Comments at 7 (urging the Commission to "make every effort to pair the 1695-1710 MHz uplink band with a downlink band").

[18] *See, e.g.,* Verizon Comments at 4 ("To ensure this potential is met [] the FCC must identify pairings for the identified bands…"); CTIA Comments at 8 ("[T]he first step for the Commission should be to focus on a holistic band plan that best pairs and licenses spectrum for mobile broadband services.").

[19] *See Incentive Auction NPRM*, 27 FCC Rcd at 12401.

[20] *See* Mobile Future Comments at 13 ("[P]aired spectrum generates substantially greater revenues at auction than unpaired spectrum."); Verizon Comments at 7 ("Auctioning 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.").

[21] T-Mobile Comments at 26-27 (emphasis in original); *see* AT&T Comments at 13 (noting that a band plan with a significant amount of paired spectrum "would speed deployment and reduce deployment costs"); *Incentive Auction NPRM*, 27 FCC Rcd at 12405 ("[P]airing spectrum, where possible, will allow mobile broadband providers to deploy and expand 4G wireless broadband services quickly and efficiently.").

Although nearly all licensees prefer and benefit from paired spectrum, maximizing the amount of paired spectrum is particularly critical for small and regional carriers, who typically lack sufficient spectrum holdings to pair with newly-acquired spectrum blocks on an asymmetric basis. If paired spectrum is unavailable, these carriers would risk acquiring stand-alone blocks without any assurance that they will subsequently gain access to return-link spectrum in other bands.[22] While all bidders would face this exposure risk, it would fall disproportionately on smaller bidders because the large carriers bidding for this spectrum are more likely to have the scale to determine which band is ultimately adopted as the standard return-link, and it would be in these carriers' interest to drive an ecosystem around spectrum they already hold. It would be difficult, to say the least, for a small bidder to know *ex ante* that it will be able to deploy interoperable systems with the spectrum it acquires. Because of this risk, smaller carriers would be far less likely to participate in the AWS-3 auction,[23] which would hinder competition[24] and reduce the likelihood that AWS-3 spectrum will be used to expand broadband access to rural and other underserved areas.[25]

If the Commission determines that the 2095-2110 MHz band cannot be reallocated, and assuming it identifies alternative downlink spectrum to pair with the 1695-1710 MHz band in order to take advantage of the benefits of paired spectrum, USCC urges the Commission to seek public comment regarding a potential interoperability requirement for this additional pairing. As USCC previously explained, an interoperability requirement likely will be even more necessary if the Commission cannot adopt the industry-consensus AWS-3 band plan. For instance, because pairing the 1695-1710 MHz band with downlink spectrum other than the 2095-2110 MHz band would not symmetrically extend the AWS-1 band, such a pairing would not offer the many benefits of contiguous spectrum bands described below. 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.

***The Public Interest Requires a Fully Interoperable AWS-3 Device Ecosystem.***

As the Commission recently found, interoperability "serve[s] the public interest by enabling consumers, *especially in rural areas*, to enjoy the benefits of greater competition and more choices, and by encouraging efficient use of spectrum, investment, job creation, and the

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[22] *See H Block R&O*, 28 FCC Rcd at 9496 ("[B]y licensing the H Block as a paired band, we allay the concerns some commenters expressed about the risk of a stranded, standalone block of spectrum that may be unsuitable for mobile broadband use.").

[23] *See* AT&T Comments at 7 ("[A] bidder would be all the less likely to bid on separate shards of unpaired spectrum that each might require its own standard as part of a carrier aggregation combination."); *id.* ("[P]aired spectrum is far more likely to attract broad participation from existing carriers and new entrants alike.").

[24] *See* T-Mobile Comments at 26 ("[U]npaired uplink spectrum has limited utility and could 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.").

[25] *See H Block R&O*, 28 FCC Rcd at 9496 (explaining that a "paired spectrum band plan will facilitate the deployment of wireless fixed and mobile services in rural areas").

development of innovative mobile broadband services and equipment."[26] Most fundamentally, device interoperability is necessary to promote timely access to a variety of mobile devices by all AWS-3 licensees, including small and regional carriers.[27] Absent a fully interoperable AWS-3 device ecosystem, each carrier could be forced to pursue a unique subset of devices that would be compatible only with its networks. As T-Mobile explained, "the creation of custom-designed or 'boutique' band classes reduces the availability, affordability, and portability of end-user equipment and delays the deployment of mobile broadband services."[28]

This is particularly so for smaller carriers, which lack the considerable leverage *vis-à-vis* manufacturers enjoyed by the largest, already-dominant carriers as a result of their volume purchases. Because of this leverage, if "boutique" AWS-3 band classes develop, manufacturers would initially, and perhaps exclusively, focus on the needs of the largest carriers in order to maximize their profits. As a consequence, at a minimum, smaller carriers would experience significant delays in gaining initial access to devices, and thereafter would continue to lack the quantity and quality of devices available to the largest carriers.[29] The Commission therefore must adopt an interoperability requirement in order to prevent the creation of "boutique" band classes. As Blooston explained, such a requirement "would ensure that nationwide service providers do not have an incentive to create narrowly tailored band classes that exclusively favor their own interests to the detriment of smaller carriers."[30]

If the Commission declines to adopt an interoperability requirement, the likely inability of small and regional carriers to obtain a variety of devices, if any, would significantly impair their ability to compete by making it difficult to maintain current customers and acquire new ones. As RWA emphasized, smaller carriers "cannot compete with larger carriers if they do not have access to up to date handsets."[31] Similarly, in its most recent Wireless Competition Report, the Commission noted that mobile handsets and devices "directly affect the quality of a consumer's mobile wireless experience and can factor into a consumer's choice of a wireless provider."[32] As such, a carrier's "portfolio of handsets and devices may be a significant non-price factor affecting its ability to compete for customers."[33] Accordingly, despite any competitive advantages small or regional carriers may have when it comes to price, local

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[26] *Lower 700 MHz Interoperability Order*, 28 FCC Rcd at 15123 (emphasis added).

[27] *See* Cellular One/Pioneer Cellular Reply at 4.

[28] T-Mobile Reply at 21.

[29] *See* Sprint Reply at 6 (stressing that the largest carriers' balkanization of a spectrum band provides them with "the ability to strand competitors' investments, raise rivals' costs, and delay deployment of competitive services").

[30] Blooston Reply at 7; *see* CCA Comments at 2 (urging the Commission to ensure that the AWS-3 rules are "designed to promote competition in the wireless industry, and [do] not implicitly favor the largest carriers").

[31] RWA Reply at 8.

[32] *Annual Report and Analysis of Competitive Market Conditions With Respect to Mobile Wireless, Including Commercial Mobile Services*, Sixteenth Report, 28 FCC Rcd 3700, 3768 (2013) ("*Sixteenth Competition Report*"); *see Annual Report and Analysis of Competitive Market Conditions With Respect to Mobile Wireless, Including Commercial Mobile Services*, Fifteenth Report, 26 FCC Rcd 9664, 9847 (2011) ("*Fifteenth Competition Report*") ("Handsets and devices are becoming increasingly central to consumers of mobile wireless services.").

[33] *Sixteenth Competition Report*, 28 FCC Rcd at 3768; *see Fifteenth Competition Report*, 26 FCC Rcd at 9847 ("Recent studies show handsets play an important role for consumers as a basis for choosing providers…").

coverage and customer service, consumers may avoid these carriers if they cannot offer a specific handset.[34] This clearly would impact small and regional carriers' ability to truly compete with the national carriers, which would result in higher prices for consumers.[35]

Even if small and regional carriers manage to secure some devices for their AWS-3 networks without an interoperability requirement, as demonstrated in the Lower 700 MHz band, these devices likely will be delayed for months or years after the introduction of similar devices by the national carriers.[36] In other words, small and regional carriers would not be able to offer the latest "cutting edge" devices demanded by consumers. On the other hand, Commissioner Rosenworcel recently noted how full device interoperability "provide[s] consumers of small and rural wireless carriers access to more cutting-edge devices."[37] Thus, as RWA explained, an interoperability requirement would help to ensure that the Commission meets the "statutory mandates of Section 309(j)(3)(A) by promoting rural customers' access to new technologies."[38]

Moreover, even if the latest devices eventually become available to small and regional carriers, by then the national carriers would have already established a substantial AWS-3 customer base that, absent interoperability, could not switch providers without purchasing a new handset. These switching costs would effectively bind many consumers to the largest carriers, making it very difficult to persuade them to change service providers.[39] Ultimately, this competitive imbalance would directly harm consumers, many of whom could not justify incurring the potentially significant switching costs to move to another carrier, no matter how much better or less expensive the competing service may be.[40]

On the other hand, the Commission has explained that, "[i]f enough consumers have the ability and propensity to switch service providers in response to a change in price or non-price factors, then mobile wireless service providers will have an incentive to compete vigorously to gain customers and retain their current customers."[41] In other words, an interoperability

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[34] *See Sixteenth Competition Report*, 28 FCC Rcd at 3844 ("In addition to competing on price and network quality, mobile wireless providers continue to compete by offering consumers a variety of different mobile wireless devices with innovative features.").

[35] *See Promoting Interoperability in the 700 MHz Commercial Spectrum*, Notice of Proposed Rulemaking, 27 FCC Rcd 3521, 3359 (2012) ("*Lower 700 MHz Interoperability NPRM*") (Statement of Commissioner Clyburn) (noting that a "lack of interoperability means fewer device and service choices for consumers," and that "[f]ewer competitive options results in higher prices").

[36] *See Lower 700 MHz Interoperability Order*, 28 FCC Rcd at 15173 (Statement of Commissioner Jessica Rosenworcel) ("Rosenworcel Statement") (noting that, with full interoperability, "devices will be available faster").

[37] *Id.* (Rosenworcel Statement).

[38] RWA Reply at 8.

[39] *See Lower 700 MHz Interoperability Order*, 28 FCC Rcd at 15145 ("[I]nteroperability directly promotes 'the ability of consumers to switch … at low cost.'") (quoting *Amendment of the Commission's Rules to Establish New Personal Communications Services*, Memorandum Opinion and Order, 9 FCC Rcd 4957, 5021-22 (1994) ("*1994 PCS Order*")).

[40] *See id.* ("The record demonstrates that the existence of two incompatible band classes is a substantial obstacle to the ability of subscribers to switch their service provider to take advantage of higher quality or lower cost service.").

[41] *Fifteenth Competition Report*, 26 FCC Rcd at 9808.

requirement would "promote consumers' ability to choose the higher quality service at affordable prices and thus increase[] competition."[42] In sum, absent an interoperability requirement, small and regional carriers' delayed access to the devices demanded by today's consumers, as well as the high switching costs that would result from a lack of interoperability, would further solidify the largest carriers' dominant market positions by providing them with a substantial "head-start" advantage with respect to acquiring AWS-3 customers – an advantage the Commission has described as "a significant hurdle to new competition."[43]

In addition, without a universal AWS-3 device ecosystem, small and regional carriers would incur higher device costs due to a lack of volume production and the resulting loss of beneficial economies of scale.[44] In contrast, a national carrier could, by itself, order a sufficiently large volume of devices to generate economies of scale. Small and regional carriers would be forced to either pass their higher device costs on to consumers in the form of higher retail prices – which most consumers would not pay if given the choice of service providers – or absorb the added costs in order to compete with the prices offered by large carriers. This latter approach also has negative consequences because device subsidies result in slim, nonexistent or even negative profit margins, meaning these discounts would directly affect smaller carriers' bottom lines and ultimately their ability to remain in business. Either way, these higher device costs would harm competition by erecting yet another barrier to entry into new markets or service offerings.[45]

With an *ex ante* requirement, however, the resulting "broad interoperability [would] increase economies of scale,"[46] and thereby reduce device costs for even the largest carriers.[47] In other words, as noted by Blooston, an interoperability requirement would "promote economies of scale for the benefit of *all* AWS-3 licensees…"[48] Presumably, carriers would pass these additional savings on to consumers in order to survive in the more competitive marketplace that an interoperability requirement would help to create.[49] In turn, these lower costs would

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[42] *Lower 700 MHz Interoperability Order*, 28 FCC Rcd at 15145.

[43] *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).

[44] *See Lower 700 MHz Interoperability Order*, 28 FCC Rcd at 15173 (Rosenworcel Statement) ("Thanks to economies of scale, [devices] also will be less expensive.").

[45] *See 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, 20807 (2003) ("Any small, new entrant attempting to serve a niche market might face barriers to entry arising from its inability to exploit economies of scale, and will inevitably have less bargaining power to secure equipment, supplies, or negotiate agreements.").

[46] *1994 PCS Order*, 9 FCC Rcd at 5022.

[47] *See Sixteenth Competition Report*, 28 FCC Rcd at 3821-22 ("When competing mobile wireless service providers deploy compatible network technologies, greater economies of scale in the production of both end-user devices and network infrastructure equipment can result, lowering the unit cost of handsets, chipsets, and other [] equipment.").

[48] Blooston Reply at 7 (emphasis added); *see* T-Mobile Reply at 21.

[49] *See* T-Mobile Reply at 21.

"promote more rapid adoption of mobile wireless services,"[50] particularly amongst lower-income consumers, who currently lag in broadband adoption.[51]

Although a lack of timely and affordable access to a sufficient quantity of the latest devices would be the most direct consequence from a lack of interoperability in the AWS-3 bands, numerous other harms to small and regional carriers and the public would arise from the absence of a robust device ecosystem. For instance, because small and regional carriers would lack any assurances that they could offer the variety of mobile devices demanded by consumers, it would be difficult to justify expending the substantial sums needed to purchase AWS-3 licenses and build out networks. In other words, as the Commission recently found with respect to the Lower 700 MHz band, a lack of interoperability in the AWS-3 bands would discourage network deployments by small and regional carriers, and thereby withhold the public interest benefits of broadband access and increased competition from those who otherwise would be served by these carriers.[52] In contrast, requiring interoperability would "remove barriers to infrastructure investment for mobile broadband services and increase spectrum utilization…"[53]

Not only would the reduced participation by small and regional carriers in the AWS-3 auction reduce revenues and further increase concentration in the wireless industry, it would decrease the likelihood that the AWS-3 spectrum will be used to provide broadband services to rural and other underserved areas. As NTCA explained, "rural areas often receive subpar or no service by large, nationwide providers, who understandably concentrate their build-out efforts and resources in more profitable, easier to serve, urban areas…"[54] In contrast, "[m]any smaller carriers focus on providing service in rural areas."[55] Consequently, rural consumers "often depend on smaller, local wireless providers for service in the areas where they live and work."[56]

USCC therefore joins RWA and other commenters in stressing that "it is imperative that the Commission adopt rules requiring interoperability in the AWS-3 band in order to increase deployment of wireless broadband services to rural America."[57] In other words, absent an

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[50] *Sixteenth Competition Report*, 28 FCC Rcd at 3822.

[51] *See* FCC, *Connecting America: The National Broadband Plan*, p. 5 (Mar. 2010) ("*Broadband Plan*") (noting that broadband adoption "lags considerably among certain demographic groups, including the poor, the elderly, some racial and ethnic minorities, those who live in rural areas and those with disabilities").

[52] *See Lower 700 MHz Interoperability Order*, 28 FCC Rcd at 15146 ("The difficulties of obtaining prompt delivery from vendors of the choices of 4G devices at affordable prices necessary to attract and retain subscribers have discouraged LTE network deployments for smaller new market entrants.").

[53] *Id.* at 15156; *see id.* at 15171 (Clyburn Statement) ("Today's Order removes barriers that have kept [small wireless] carriers from operating in this band, and acts to spur private investment, job creation and the development of new services and devices.").

[54] Reply Comments of NTCA – the Rural Broadband Association ("NTCA Reply") at 2; *see* Comments of the Rural Wireless Association, Inc. f/k/a Rural Telecommunications Group, Inc. ("RWA Comments") at 4 ("[L]arge carriers [] have historically chosen not to serve rural areas…").

[55] CCA Comments at 8.

[56] NTCA Reply at 2.

[57] RWA Reply at 7; *see* T-Mobile Reply at 21 ("Interoperability can help facilitate the provision of wireless broadband services to rural and other underserved areas…); Cellular One/Pioneer Cellular Reply at 5 (noting that an

interoperability requirement, ultimately it will be rural consumers who will suffer.[58] Because "most areas without mobile broadband coverage are in rural or remote areas,"[59] this outcome clearly would conflict with the Commission's and President Obama's goal of accelerating the reach of broadband to all Americans.[60] Moreover, even where rural residents have some broadband access, they often lack the competitive benefits that arise from multiple service providers,[61] or they only have access to slower broadband speeds.[62]

Significantly, because it would benefit consumers in unserved and underserved rural areas, an *ex ante* interoperability requirement for the AWS-3 bands would be consistent with the Commission's "most critical policy objectives,"[63] as well as its "primary statutory obligations."[64] As the Commission recently noted, "[b]y eliminating barriers to deployment by small and rural" Lower 700 MHz band licensees, it took "another important step toward fulfilling [the] mandate to bring these advanced services, 'so far as possible, to all the people of the United States.'"[65] Likewise, because an AWS-3 interoperability requirement would similarly remove an "unnecessary barrier to the successful operation of businesses," such a requirement would "drive economic growth, promote competitive service, and create jobs in rural America…"[66] As the Commission explained, "[s]mall or regional providers serving rural areas drive economic growth

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interoperability requirement would "help ensure that the tremendous benefits of the AWS-3 spectrum are realized by not only consumers in urban centers of the country, but by consumers in small towns and rural areas as well.").

[58] *See Lower 700 MHz Interoperability Order*, 28 FCC Rcd at 15171 (Clyburn Statement) (noting that the Lower 700 MHz band's lack of interoperability "ended up stifling deployment of service into rural areas").

[59] *Broadband Plan* at 22; *see Lower 700 MHz Interoperability Order*, 28 FCC Rcd at 15123 ("[I]n rural America, [] 1.3 million people (and approximately 13% of rural road miles) still lack any mobile wireless broadband coverage").

[60] *See Lower 700 MHz Interoperability Order*, 28 FCC Rcd at 15138 ("As the demand for mobile broadband continues to grow, it is critical that there is nationwide mobile broadband coverage, including service in rural and underserved areas…"); *Connect America Fund*, Report and Order and Further Notice of Proposed Rulemaking, 26 FCC Rcd 17663, 17684 (2011) ("The principle that all Americans should have access to communications services has been at the core of the Commission's mandate since its founding."); Memorandum for the Heads of Executive Departments and Agencies, *Expanding America's Leadership in Wireless Innovation*, 78 Fed. Reg. 37431 (2013).

[61] *See Lower 700 MHz Interoperability Order*, 28 FCC Rcd at 15146 ("More than one-third of the population in rural areas still lacks coverage from more than two mobile broadband service providers."); *Fifteenth Competition Report*, 26 FCC Rcd at 9881 ("While 82 percent of the total U.S. population lives in census blocks with coverage by three or more mobile broadband providers, this is true for only 38 percent of the rural population.").

[62] *See* NTIA, *Broadband Availability Beyond the Rural/Urban Divide, Broadband Brief No. 2*, p. 5 (May 2013) ("[O]nly 15 percent of rural residents had wireless download speeds of 10 Mbps or greater available, compared to 70 percent of urban residents.").

[63] *See Service Rules for the 698-746, 747-762 and 777-792 1MHz Bands*, Second Report and Order, 22 FCC Rcd 15289, 15362 (2007) ("Rapid deployment and ubiquitous availability of broadband services across the country are among the Commission's most critical policy objectives.").

[64] *See Facilitating the Provision of Spectrum-Based Services to Rural Areas and Promoting Opportunities for Rural Telephone Companies to Provide Spectrum-Based Services*, Report and Order and Further Notice of Proposed Rulemaking, 19 FCC Rcd 19078, 19081 (2004) ("One of the Commission's primary statutory obligations, as well as one of its principal public policy objectives, is to facilitate the widespread deployment of facilities-based communications services to all Americans, including those doing business in, residing in, or visiting rural areas.").

[65] *Lower 700 MHz Interoperability Order*, 28 FCC Rcd at 15146-47 (quoting 47 U.S.C. §151).

[66] *Id.* at 15123.

in these rural areas, directly, by investing in their networks and creating jobs, and indirectly, by enabling the growth of other small businesses."[67] It was for these reasons that Commissioner Clyburn described the industry agreement regarding interoperability in the Lower 700 MHz band as a "big win for consumers, *especially in rural areas*, who will soon see more competition and have more choices."[68]

A lack of interoperability in the AWS-3 bands also would severely limit essential roaming options for small and regional carriers because it would allow large carriers to rely on the "technical incompatibility" loophole in order to avoid the Commission's data roaming rule. Such a result would undermine the "substantial benefits that [otherwise] will be derived from adoption of the data roaming rule."[69] For instance, in the *Data Roaming Order*, the Commission explained that the availability of roaming arrangements "encourage[s] service providers to invest in and upgrade their networks and to deploy advanced mobile services ubiquitously, *including in rural areas*."[70] Roaming arrangements also "provide additional incentives to enter a market by allowing network providers without a presence in an area a competitive level of local coverage during the early period of investment and buildout."[71]

The Commission further noted how "the availability of data roaming arrangements can be critical to providers remaining competitive in the mobile services marketplace."[72] This is especially true for small and regional carriers, who cannot viably compete against the dominant national carriers if they cannot offer customers expansive geographic coverage.[73] As the Commission explained, because "consumers expect to be able to have access to the full range of services available on their devices wherever they go," even where a carrier has "built out broadband networks in a regional service territory, [its] inability to offer roaming easily can deter customers from subscribing."[74]

Absent an interoperability requirement, the national carriers could take advantage of this competitive reality by building non-interoperable AWS-3 networks and relying on the data roaming rule's "technical incompatibility" loophole. These carriers could then differentiate their

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[67] *Id.*

[68] *Id.* at 15172 (Clyburn Statement) (emphasis added); *see id.* at 15123 ("The steps we take here will assist consumers and the economies in rural areas, as well as small and regional businesses that operate there.").

[69] *Reexamination of Roaming Obligations of Commercial Mobile Radio Service Providers and Other Providers of Mobile Data Service*, Second Report and Order, 26 FCC Rcd 5411, 5427 (2011) ("*Data Roaming Order*").

[70] *Id.* at 5443 (emphasis added); *see id.* at 5480 (Statement of Chairman Genachowski) ("[T]he absence of data roaming guarantees will limit our broadband future by eliminating choices, *especially in rural areas*, or in some cases delaying or preventing access to mobile broadband at all.") (emphasis added).

[71] *Id.* at 5421; *see Sixteenth Competition Report*, 28 FCC Rcd at 3837 ("[R]oaming provides important assistance to new entrants who wish to begin offering service before they have fully deployed their networks.").

[72] *Data Roaming Order*, 26 FCC Rcd at 5419.

[73] *See Sixteenth Competition Report*, 28 FCC Rcd at 3837 ("[R]oaming remains particularly important for small and regional providers with limited network population coverage to remain competitive by meeting their customers' needs for nationwide service.").

[74] *Data Roaming Order*, 26 FCC Rcd at 5419; *see id.* at 5480 (Statement of Chairman Genachowski) ("[P]roviders must be able to offer nationwide voice and data plans to have any chance of competing in today's market.").

services in terms of coverage from that of smaller carriers, which would make the national carriers far more attractive to potential customers. In doing so, the national carriers would not be differentiating their services by making them better. Rather, they would be differentiating their services by forcing their competitors to be worse.

On the other hand, an interoperability requirement would provide small and regional carriers with the ability to enter into effective roaming arrangements,[75] and thereby significantly improve their service offerings for the benefit of the public. As the Commission stressed in the *Data Roaming Order*, "the availability of roaming capabilities is and will continue to be a critical component to enable consumers to have a competitive choice of facilities-based providers offering nationwide access to commercial mobile data services."[76] Moreover, because roaming arrangements are crucial for small and regional carriers to effectively compete, such arrangements are "particularly important for consumers in rural areas – where mobile data services may be solely available from small rural providers."[77] The additional competition from small and regional carriers also would reduce costs to consumers, and thereby promote greater broadband adoption.[78]

Permitting customers of the national carriers to roam on the networks of small and regional carriers would produce public interest benefits as well. For instance, these customers would have seamless coverage as they travel through more remote areas, where the largest carriers typically have not deployed their own networks. Importantly, carrier diversity also would provide roaming alternatives to public safety entities, including users of FirstNet. This carrier diversity also would increase the robustness and availability of service to public safety because the network of one carrier may not experience the same outage as that of another carrier.

Given that the wireless industry is in its most precarious competitive state in over a decade,[79] the potential for the AWS-3 spectrum to promote competition to the dominant national carriers makes an interoperability requirement particularly important.[80] As noted, without such a requirement, small and regional carriers' ability to effectively compete could be significantly impaired, which would continue to deprive the public of the many benefits of a competitive

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[75] *See* Cellular One/Pioneer Cellular Reply at 4 ("[A]n interoperability requirement will facilitate roaming arrangements and allow smaller regional carriers to compete with the larger carriers – a result that is in the public interest."); T-Mobile Reply at 21; *Lower 700 MHz Interoperability Order*, 28 FCC Rcd at 15147 ("[T]he AT&T license modifications … will help promote reasonable roaming arrangements among 700 MHz providers.").

[76] *Data Roaming Order*, 26 FCC Rcd at 5419; *see id.* at 5422 ("[R]oaming arrangements help[] provide consumers with greater competitive choices … by encouraging investment and network deployments…").

[77] *Id.* at 5419; *see* NTCH Reply at 3 (noting that interoperability would permit "roaming by customers of carriers whose home carriers have only a subset of the available bands, a crucial requirement for rural customers"); *Broadband Plan* at 49 ("[S]mall rural providers serve customers that may be more likely to roam in areas outside their providers' network footprints.").

[78] *See Data Roaming Order*, 26 FCC Rcd at 5428 ("[A] rough estimate is that the benefits from the increased competition would be in the billions of dollars per year."); *id.* at 5427 ("[M]illions of American consumers who otherwise might not have full access to mobile broadband services will benefit from adoption of the rule.").

[79] *See Sixteenth Competition Report*, 28 FCC Rcd at 3857.

[80] *See* T-Mobile Reply at 21; CCA Comments at 6-7 (emphasizing that the industry's continually "rising concentration [] has impeded wireless competition and harmed consumers").

marketplace. For instance, the Commission has found that competition among service providers is "critical to ensure vitality and innovation in the broadband ecosystem and to encourage new products and services that benefit American consumers and businesses of every size."[81] The Commission also recently noted how "[a]dditional competition in rural areas is likely to result in lower-priced services,"[82] which in turn "result[s] in direct consumer surplus as well as greater utilization of broadband data services."[83]

The potentially significant amount of AWS-3 spectrum, and thus the great importance of this spectrum to the wireless industry,[84] also means that the Commission's decisions in this proceeding will have long-lasting effects with respect to the competitive state of the wireless industry.[85] Accordingly, USCC joins various commenters in strongly urging the Commission to ensure that its AWS-3 service rules – including an interoperability requirement – maximize this spectrum's potential to promote competition.[86] As detailed above, absent an interoperable AWS-3 device ecosystem, small and regional carriers likely will be incapable of using this spectrum to increase competition to the largest carriers because they will not be able to provide the quantity and quality of AWS-3-capable devices necessary to attract a sufficient customer base. In turn, the continued lack of adequate competition would "raise concerns that firms may be able to exercise market power, *i.e.*, without competitors or potential entry, there may not be sufficient constraints to prevent the exercise of market power."[87]

Ensuring interoperability in the AWS-3 bands by adopting an express requirement prior to the auction, rather than hoping that a voluntary industry solution will arise in the future, would have other significant benefits as well. For instance, an *ex ante* interoperability requirement is necessary so that potential bidders in the AWS-3 auction that are not large enough to drive device development will know in advance that this spectrum will conform to the Commission's traditional model of full interoperability. Otherwise, the potential lack of interoperability, and the significant harms that would impose upon these bidders, would deter their auction participation. In fact, without an explicit requirement, smaller bidders could be prevented from participating in the auction because it would be far more difficult to secure the outside financing

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[81] *Joint Statement on Broadband*, 25 FCC Rcd 3420, 3420 (2010).

[82] *Lower 700 MHz Interoperability Order*, 28 FCC Rcd at 15123.

[83] *Data Roaming Order*, 26 FCC Rcd at 5428; *see Broadband Plan* at 168 ("When prompted for the main reason they do not have broadband, 36% of non-adopters cite cost.").

[84] *See*, *e.g.*, CTIA Comments at 4-5 ("The spectrum identified in this proceeding will play a vital role in addressing the spectrum crunch…"); AT&T Comments at 1 ("[T]he allocation and assignment of this spectrum can be a major step toward alleviating this spectrum shortage.").

[85] *See* CCA Comments at 6 ("[T]he choices it makes regarding auction and service rules for the AWS-3 spectrum will affect competitive conditions in the wireless industry."); CTIA Reply at 18 ("The AWS-3 bands, when allocated, will play a valuable role in continuing the cycle of mobile innovation and competition in the U.S.").

[86] *See*, *e.g.*, CCA Comments at 7 ("The Commission's auction and service rules should be attentive to such rising concentration and should aim to improve the competitiveness of the marketplace."); Sprint Reply at 2 ("[T]he Commission should continue to ensure that its spectrum policies promote competition…"); Blooston Reply at 2 ("The Commission should [] adopt auction and service rules for the AWS-3 bands that maximize the potential for competition by companies of all sizes.").

[87] *Fifteenth Competition Report*, 26 FCC Rcd at 9690.

many of these bidders require if potential investors fear that the equipment necessary to provide an adequate return on investment will not be available in the near-term. As CIT Group Inc., a bank holding company, recently explained, "[i]f there is any investor or lender concern as to the timely availability of technology necessary for the initiation of revenue service, that concern will have a detrimental effect on the availability of capital, with a commensurate impact on the financial success of [an] auction."[88]

At a minimum, the risks these bidders would face absent an interoperability requirement would cause them to temper their bidding. Either way, auction competition, and thus auction revenue, would decrease. In contrast, if small and regional carriers are assured that they will have access to a competitive range of devices as a result of an interoperability requirement, they would be far more likely to aggressively participate in the AWS-3 auction. Their expanded participation would, in turn, boost auction competition and revenue, and substantially increase the likelihood that AWS-3 spectrum will be used to deploy wireless broadband networks in rural and other underserved areas. While anticipated auction revenue is always a valid consideration for the Commission,[89] it is particularly important here in order to "achieve Congress' intent of funding FirstNet and reducing the federal debt."[90] Higher auction revenues also would help to "ensure that proceeds exceed 110% of relocation and/or sharing costs, allowing the auction to proceed to licensing."[91] Finally, an *ex ante* interoperability requirement would prevent those carriers who oppose interoperability from resisting future interoperability efforts by claiming detrimental reliance[92] or a lack of Commission authority.[93]

***The Characteristics of the AWS-3 Bands Make Ensuring Interoperability Even More Crucial.***

An interoperability requirement also is especially important here because, as the Commission recognized, the AWS-3 spectrum has "several characteristics that make it especially appealing for commercial wireless use."[94] Perhaps most significantly, because at least a portion of the AWS-3 spectrum will be located immediately adjacent to the existing AWS-1 band, this spectrum will "symmetrically extend the AWS-1 band," and thereby "offer[] the benefits of contiguous bands."[95] As CTIA explained, the adjacency of these spectrum bands will "allow for

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[88] Supplemental Comments of CIT Group Inc., Docket No. 12-268, p. 6 (June 14, 2013).

[89] *See Ranger Cellular v. FCC*, 33 F.3d 255, 261 (D.C. Cir. 2003) ("[T]he Commission is free to consider revenue enhancement when determining whether to expand the pool of eligible bidders.").

[90] Mobile Future Comments at 14; *see Incentive Auction NPRM*, 27 FCC Rcd at 12555 (Statement of Commissioner Jessica Rosenworcel) ("We cannot divorce the choices this agency makes in developing these auctions from the broader purposes in this legislation and the public safety needs of the American people."); 4G Americas Comments at 10 ("Reduced proceeds will threaten sufficient funding of FirstNet and NG911 upgrades…").

[91] 4G Americas Comments at 12.

[92] *See* Comments of AT&T Services Inc., WT Docket No. 12-69, p. 20 (June 1, 2012) ("[T]he imposition of this mandate would destroy reliance interests of participants throughout the wireless ecosystem.").

[93] *See id.* at 37 (arguing that an interoperability requirement would be "an unlawful retroactive modification").

[94] *AWS-3 NPRM*, 28 FCC Rcd at 11496.

[95] *Id.*; *see* Comments of Ericsson at 5 ("[A]n important feature of the spectrum in the 2 GHz band is its proximity to the AWS-1 band…"); CCA Comments 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.").

the seamless integration of this spectrum for use by mobile broadband providers for wireless services."[96] For instance, current AWS-1 licensees could build upon their existing infrastructure and incorporate AWS-3 spectrum into their current operations, which would enable them to offer new and expanded services in an efficient and cost-effective manner.[97]

Notably, these cost savings may permit licensees to deploy AWS-3 networks in rural and other high-cost areas that otherwise would be uneconomical to serve. However, if the Commission declines to adopt an interoperability requirement, small and regional carriers will lack any assurance that they will have access to a competitive range of devices. As a result, despite the deployment efficiencies related to the AWS-3 spectrum's adjacency to the AWS-1 band, small and regional carriers, which often focus their buildout efforts in rural and other underserved areas, may not be able to justify expending the substantial sums that AWS-3 licenses likely will command.

Commenters also explained that the benefits of contiguous bands "apply not only to network infrastructure, but also to end user equipment."[98] For instance, existing AWS-1 consumer devices could serve as a foundation for AWS-3 equipment, which Verizon explained would create "greater economies of scale and lower-cost equipment…"[99] The Commission also noted that, because the 1755-1780 MHz band "is regionally and internationally harmonized for mobile broadband," licensees will be able "to benefit from economies of scale achieved by equipment manufacturers developing equipment for a global market."[100] Lower device costs obviously would also benefit lower-income Americans, another demographic currently lagging in broadband adoption. However, absent an interoperability requirement, small and regional carriers, as well as their customers, likely will not realize the scale necessary to appreciably decrease device costs.

***Achieving Interoperability Would Be Relatively Easy and Inexpensive.***

Another significant benefit of the AWS-3/AWS-1 adjacency is that an interoperability requirement spanning these spectrum bands would be neither difficult nor expensive for the industry to implement. As noted by Ericsson, "service providers and equipment manufacturers may be able to use or adapt existing AWS-1 band equipment for spectrum that effectively could

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[96] CTIA Comments at 10.

[97] *See AWS-3 NPRM*, 28 FCC Rcd at 11495 ("[S]pectrum that is adjacent to that used for like services will promote efficiency in broadband deployment."); Mobile Future Comments at 4 (noting that the spectrum's "location next to the AWS-1 band will produce significant deployment efficiencies"); *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, 16135 (2012) ("[E]xtensions of existing bands can typically be put to use more cost-effectively…").

[98] CTIA Reply at 5; *see* Mobile Future Comments at 13 ("Spectrum contiguity offers network design synergies and handset design benefits.").

[99] Verizon Comments at 5; *see* Motorola Mobility Comments at 5 (noting the "significant device design benefits").

[100] *AWS-3 NPRM*, 28 FCC Rcd at 11496; *see Broadband Plan* at 85 ("[P]airing the AWS-3 band with spectrum from the 1755-1780 MHz band has the potential to bring benefits of a global equipment ecosystem to this band.").

be an extension of that band."[101] And, with respect to the proposed 1755-1780/2155-2180 MHz pairing in particular, 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."[102] 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."[103] 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."[104] As Motorola Mobility summarized, these "efficiencies mean that 1755-1780/2155-2180 MHz 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."[105]

***Only an Explicit Requirement Can Ensure Interoperability.***

The Commission has previously expressed a general preference for industry solutions regarding device interoperability.[106] And with respect to the 600 MHz band, the Commission thus far has only noted that one of its "goals in deciding how best to license this spectrum is encouraging interoperability."[107] Similarly, commenters in this proceeding have noted that adopting AWS-3 technical rules which mirror the AWS-1 rules would help to facilitate interoperability across the AWS bands.[108] While USCC fully supports the adoption of band plans and technical rules that "encourage" or "facilitate" interoperability, it stresses that an interoperable AWS-3 device ecosystem, as well as the various benefits detailed above which would arise from such an ecosystem, likely will not develop absent an explicit *ex ante* interoperability requirement.

Simply put, the largest carriers, who alone can drive device development, have no incentive, and in fact have a disincentive, to offer interoperable equipment. Because these carriers are the preferred customers of device manufacturers, and because they are sufficiently large to independently benefit from economies of scale, they would gain little, and perhaps lose much, by voluntarily agreeing to full interoperability in the AWS-3 bands. For instance, interoperability would enhance the competitiveness of small and regional carriers by affording them the ability, through roaming, to offer customers geographic coverage comparable to that offered by the national carriers. In contrast, because large carriers operate geographically-

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[101] Comments of Ericsson at 8; *see* Verizon Comments at 8 ("[T]his spectrum could easily be incorporated into handsets and base station equipment using a single band class that covers 1695-1710/2095-2110, AWS-1, and 1755-1780/2155-2180.").

[102] Motorola Mobility Comments at 5.

[103] *Id.*

[104] Mobile Future Comments at 8-9.

[105] Motorola Mobility Comments at 5.

[106] *See, e.g.*, *Lower 700 MHz Interoperability NPRM*, 27 FCC Rcd at 3543.

[107] *Incentive Auction NPRM*, 27 FCC Rcd at 12415.

[108] *See, e.g.*, Letter from Tamara Preiss, Vice President, Regulatory Affairs, Verizon, to Marlene H. Dortch, Secretary, FCC, GN Docket No. 13-185, p. 2 (Feb. 3, 2014).

extensive networks, the potential incremental coverage available to them via roaming would be small.[109] Further, to the extent that customers of the large carriers possess devices that are compatible with other carriers' networks, interoperability would reduce customer switching costs, and thus enhance the potential for increased competition by making it easier for customers to migrate to rival providers.

Although USCC applauds the recent industry agreement, the experience of small and regional carriers, as well as the Commission, with respect to the Lower 700 MHz band clearly demonstrates that the industry – *i.e.*, the largest carriers – will not voluntarily offer interoperable equipment absent, at a minimum, substantial pressure by the Commission and, as a practical matter, the passage of considerable time during which damage can be significant. As Commissioner Clyburn explained, although she "had hoped that [the] NPRM would create the proper incentives for wireless companies on opposite sides of this debate to reach a solution" to the lack of interoperability in the Lower 700 MHz band, "[u]nfortunately, that did not happen."[110] Consequently, Commissioner Clyburn was forced to "issue[] statements indicating that [she] expected an interoperability solution – whether voluntary or regulatory – during [her] tenure" as Acting Chairwoman.[111]

As a result of this delay, after carriers acquired their Lower 700 MHz A Block licenses, a significant – and unreasonable – amount of time elapsed before the necessary parties agreed to work together to establish an interoperable Lower 700 MHz band.[112] As the Commission recently recognized, during that time, the lack of interoperability "had numerous effects,"[113] including "seriously limited development of the Lower 700 MHz band…"[114] In urging the Commission to adopt an AWS-3 interoperability requirement, commenters in this proceeding similarly noted the public interest harms caused by the lack of interoperability in the Lower 700 MHz band. For instance, RWA underscored how the significant difficulties related to obtaining devices for the Lower 700 MHz A Block left these licensees "unable to effectively compete against large carriers in their markets and [] significantly delayed deployment of services."[115]

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[109] *See Data Roaming Order*, 26 FCC Rcd at 5426 ("Consolidation in the mobile wireless industry … may have [] reduced the incentives of the largest two providers to enter into such arrangements by reducing their need for reciprocal roaming.").

[110] *Lower 700 MHz Interoperability Order*, 28 FCC Rcd at 15171 (Clyburn Statement).

[111] *Id.* (Clyburn Statement).

[112] *See Acting FCC Chairwoman Clyburn Statement on Voluntary Industry Solution Resolving Lower 700 MHz Interoperability*, FCC News Release (Sept. 10, 2013) ("After many frustrating years, wireless carriers have finally reached a voluntary industry solution…").

[113] *Lower 700 MHz Interoperability Order*, 28 FCC Rcd at 15126.

[114] *Id.* at 15146; *see id.* at 15171 (Clyburn Statement) ("This expected innovation and investment in advanced communications has been on hold for far too long"); *id.* at 15173 (Rosenworcel Statement) ("For too long, lack of interoperability in the lower 700 MHz band has left some carriers and some consumers with fewer choices and higher prices.").

[115] RWA Reply at 7-8.

In other words, despite our nation's current spectrum crunch, many carriers, as well as their potential customers, were effectively denied access to this valuable spectrum resource.[116] Given the substantial public interest benefits related to an interoperable device ecosystem, as well as the fact that the largest carriers are unlikely to readily agree to full interoperability, USCC joins Blooston and others in strongly urging the Commission to adopt an *ex ante* interoperability requirement in order to "prevent a similar situation to what hampered prompt deployment of service and competition in the 700 MHz bands…"[117]

In sum, as the Commission recently concluded with respect to the Lower 700 MHz band, requiring interoperability in the AWS-3 bands would be "consistent with the Commission's longstanding interest in promoting the interoperability of wireless mobile services … and further[] important public interests, including promoting the widest possible deployment of mobile broadband services, ensuring the most efficient use of spectrum, promoting competition and enhancing consumer choice of wireless services."[118]

Pursuant to Section 1.1206 of the Commission's Rules, 47 C.F.R. §1.1206, this *ex parte* presentation is being filed electronically with the Office of the Secretary.

Respectfully submitted,
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/s/.
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[116] *See Lower 700 MHz Interoperability Order*, 28 FCC Rcd at 15173 (Rosenworcel Statement) ("[A]t a time when demand for our airwaves is growing at a breathtaking pace, we are ushering into use 12 megahertz of prime wireless spectrum that previously had been barely used.").

[117] Blooston Reply at 6; *see* RWA Reply at 8 ("Not requiring a fully interoperable AWS-3 device ecosystem could result in a repeat of the delayed roll-out of the Lower 700 MHz band."); Cellular One/Pioneer Cellular Reply at 4 (noting that an interoperability requirement would "prevent[] a situation, like that in the 700 MHz band, where manufacturers focused on the needs of the larger carriers").

[118] *Lower 700 MHz Interoperability Order*, 28 FCC Rcd at 15128.