

**Before the  
FEDERAL COMMUNICATIONS COMMISSION  
Washington, D.C. 20554**

In the Matter of	)	
	)	
Service Rules for Advanced Wireless Services In the 2155-2175 MHz Band	)	WT Docket No. 07-195
	)	
Service Rules for Advanced Wireless Services In the 1915-1920 MHz, 1995-2000 MHz, 2020-2025 MHz and 2175-2180 MHz Bands	)	WT Docket No. 04-356

**COMMENTS OF  
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**Attachment A – CostQuest Associates, Inc., *U.S. 3G Mobile Wireless Broadband Competition Report: A Report of Zip Codes and Population by Number of 3G Mobile Wireless Broadband Service Providers* (2008)**

**Attachment B – Robert Hahn, Allan T. Ingraham, J. Gregory Sidak, Hal J. Singer, *The Static and Dynamic Inefficiency of Abandoning Unrestricted Auctions for Spectrum: A Critique of Professor Wilkie’s Analysis of the M2Z Proposal* (2008)**

## SUMMARY

The FCC's proposed rules for the AWS-2 and AWS-3 bands would reverse longstanding and highly successful auction policies that provide licensees with service flexibility to meet consumer demands and interference protection to ensure customers have quality service. Service flexibility, coupled with interference protection, will best ensure that the spectrum at issue here, AWS-2 and AWS-3 *and* broadband PCS and AWS-1, will be most efficiently utilized and the Commission's goals for competition and broadband deployment are best fulfilled. The FCC, therefore, should: (i) permit service flexibility and eliminate the misguided conditions — a free broadband offering, network-based filtering, and open access — proposed for the AWS-3 licensee; and (ii) adopt technical limits for AWS-2 and AWS-3 band licensees that adequately protect existing broadband PCS and AWS-1 licensees from interference. The following summary provides key positions set forth in these Comments:

***1. Consumers Are Best Served When Spectrum Policy Is Market-Oriented And Not Designed For A Single Business Plan.*** As an initial matter, history demonstrates that the public interest is best advanced by the Commission's long-standing flexible-use spectrum policy, which provides licensees the freedom to compete, the opportunity to innovate and deploy new technologies and applications, and the ability to satisfy rapidly evolving consumer demands. A review of market performance demonstrates that wireless consumers have benefited enormously in recent years. In contrast, there is a long record of failed efforts and lost opportunities where spectrum auctions have been designed for specific business models. It is not surprising then that the Commission has received comments from literally hundreds of companies and organizations, many of which are deploying broadband services, expressing concerns about the Commission's proposal for AWS-3 service rules tailored to one business model. CTIA urges the Commission to learn from the lessons of history, not repeat them.

Today, U.S. wireless providers are bringing the convenience, speed and mobility of wireless broadband to nearly all Americans – without asking the Commission for a spectrum giveaway or service rules tailored to facilitate a particular business model. There is no market failure that would justify the type of AWS-3 service rules proposed in the *AWS Further Notice*.

***2. The AWS-3 “Free Broadband” Requirement Will Not Provide A Lifeline Service Or Extend Broadband Coverage.*** The “free broadband” offering will not meet the lofty goals supporters espouse.

- Although some have described the free broadband mandate as “a lifeline” service, it is not a means-tested offering and any residential or business customer can sign up, regardless of income. With a 25 percent network capacity limit, the free broadband mandate does not guarantee that low-income consumers will have access to the service.
- “Free broadband” customers will have to purchase AWS-3 customer equipment, and large upfront equipment charges will make it difficult if not impossible for many low-income individuals to take advantage of the ostensibly “free” service.

- It is extremely unlikely that the AWS-3 licensee would extend broadband beyond the coverage provided by today’s wireless providers, despite the proposed 95% population buildout rule. 3G wireless services are now provided in zip codes covering more than 96% of the U.S. population, and over 92% of the U.S. population has access to 3G service at their primary place of residence. To the extent unserved areas remain, there is no reasonable basis to conclude that the AWS-3 licensee will build out to these areas sooner than current systems.

If service to low-income customers or remaining unserved areas is a primary goal, the Commission can better address these issues through universal service mechanisms.

**3. *There Is No Guarantee That The “Free Broadband” Service Will Be Delivered As Promised.*** It is unclear what service the public will receive in return for mandating the free business model. Specifically, the AWS-3 licensee will not be required to offer the minimum data rate if demand for the free broadband service would require more than 25% of the wireless network’s capacity. The following are just a few of the many questions regarding the “free broadband” service:

- Will the free service be provided to all comers or will it be available on a limited, first-come, first-served basis?
- When a base station’s capacity is oversubscribed, will the licensee limit the free customers significantly more than paying subscribers?
- In light of the interference protection requirements the AWS-3 licensee will have to provide adjacent channel operations, could the AWS-3 licensee meet the free service requirement if it devotes 25 percent of its spectrum – at the band edges – to the free service?

**4. *The FCC Must Take Note That Free Broadband Offerings Have A History Of Failure And M2Z Vastly Overestimates The Benefits Of Its “Free Broadband” Proposal.*** Free, advertiser-supported Internet access and municipal Wi-Fi with low-cost or free tiers of broadband have been tested and have failed in the marketplace. Given the inherent value of this spectrum, the question arises: on what basis does the Commission conclude that the business model it plans to support is, in fact, viable on a national scale? If M2Z has any faith in its proposed business model, why can’t it simply bid against other parties for spectrum that comes without strings attached?

In addition, as detailed in economic papers attached to these comments, M2Z’s economic consultant substantially and systematically overstates the static benefits that would result from M2Z’s proposed service rules, with respect to both new and existing broadband subscribers, and ignores completely the dynamic benefits that would be lost. The factual predicate underlying the analysis is invalid, and M2Z’s estimate of the surplus consumers would purportedly reap under its plan must be ignored.

**5. CTIA Supports Protecting Children From Inappropriate Content On Mobile Devices, But The AWS-3 Network-Based Filtering Proposal Is Unconstitutional.** The Supreme Court has concluded that previous government mandates to block or censor lawful material on the Internet are unconstitutionally overbroad and vague – and the proposal at issue here is equally deficient. Wireless carriers are making parental control features available to consumers, offering a less restrictive and effective means to give parents the ability to monitor their children’s access to content.

**6. No Open Platform Requirement Should Be Adopted In The AWS-3 Band.** Open platform initiatives have been underway for some time – well before the Commission adopted the Upper 700 MHz C Block condition – and reflect commercial interests responding to marketplace forces without the need for regulatory intervention. The Commission should adhere to the principle it established in the 700 MHz proceeding to limit the Open Platform mandate to a single spectrum block and allow government and industry to observe its real-world effects.

**7. Despite The High Demand For Licensed Spectrum, The Proposed AWS-3 Conditions Will Discourage Bidders And Artificially Depress Auction Revenues.** The demand for flexible-use, licensed spectrum has never been greater, and there is substantial interest in an auction for the AWS-3 spectrum if it is unencumbered. Providers across the board — many small, rural carriers, regional carriers, and large carriers and their organizations — are united in their opposition to the free broadband obligations. A mandate to implement a free broadband business plan and other conditions will de-value the spectrum and drive away potential bidders.

There are much better alternatives to assure a successful auction for the AWS-3 band, including: downlink-only; a J Block/AWS-3 licensed block with 2020-2025 MHz as uplink and 2155-2180 MHz as downlink; a reconfigured J Block at 2020-2025 MHz/2155-2160 MHz; and a structured uplink-downlink that includes adequate interference protection.

**8. The FCC Must Ensure Adequate Interference Protection For Consumers Using Broadband PCS And AWS-1 Devices.** The Communications Act requires the Commission to adopt rules “necessary to prevent interference between stations,” and current rules do protect AWS-1 and broadband PCS licensees and their millions of customers from harmful interference. In a significant and unlawful about-face, the technical rules proposed here suggest a greater focus on protecting a new business model than adopting reasonable interference protection rules for adjacent licensees. Indeed, the proposal risks causing serious interference to tens (or hundreds) of millions of customers’ PCS handsets and AWS-1 devices already issued or in the supply chain; it undermines years and years of effort by the U.S. Government and industry to make AWS-1 spectrum available for mobile broadband; and it will skew billions’ of dollars worth of wireless broadband investments. Importantly, this interference will result in significant public safety concerns, as customers’ E911 and other safety-related calls and services will be disrupted.

The Commission has previously taken note of the serious adjacent channel interference risks raised by mobile operations in the H Block and AWS-3 bands. In the *AWS-2 Notice*, the Commission noted, “[i]n particular, we are concerned about potential interference from handsets transmitting in the 1915-1920 MHz band to PCS handsets receiving in the 1930-1990 MHz

band.” In the *AWS-3 Notice*, the Commission went so far as to acknowledge, “[t]his ‘mobile-to-mobile’ interference scenario will exist if we permit mobile transmissions in the 2155-2175 MHz AWS-3 band because of the presence of receiving mobiles in the adjacent bands[.]”

Of significant importance, the Commission acknowledged that AWS-3 transmissions might have to be limited. Specifically, the Commission stated that “additional flexibility may come at the cost of additional interference protections that would severely restrict the utility of mobile transmissions in the band.”

**9. *It Is Arbitrary And Capricious To Adopt Significantly Less Stringent Out-of-Band Emission (OOBE) Interference Protection Rules For The AWS-1 Band Than For The PCS Band.*** The Commission readily acknowledges that OOBE “fall[s] directly within the pass band of an adjacent-band receiver” and “cannot be ‘filtered out.’” (emphasis added). However, it proposes vastly different OOBE limits for H Block and AWS-3, inexplicably resulting in significantly greater interference to AWS-1 devices than PCS devices. In particular, the Commission proposes an OOBE limit of  $90 + 10 \log(P)$  dB on H Block transmissions into the PCS band 1930-1990, but it only proposes an OOBE limit of  $60 + 10 \log(P)$  dB on AWS-3 transmissions into the AWS-1 mobile receive band. The provision of 30 dB less protection for AWS-1 devices cannot be justified.

**10. *Handset Filtering Will Not Resolve AWS-3 Interference Problems.*** Additional filtering would not restrict AWS-3 OOBE from entering the pass band in AWS-1 mobile devices. Thus filtering is no solution to the interference caused by OOBE. Just as importantly, the evidence in the record demonstrates that mobile device filtering technology cannot eliminate the receiver overload interference to AWS-1 devices that would result from AWS-3 devices transmitting at 2155 MHz.

**11. *Harmful Interference Is Not A Low Probability Event But Will Be Inevitable And Widespread.*** M2Z’s own engineering consultant concludes that substantial interference will occur, requiring 14-25 MHz frequency separation under certain conditions. The consultant urges further study to gain a more comprehensive understanding of the interference environment. M2Z has not provided any basis on which to find that the current proposal meets the clear obligation of Section 303(f) of the Act: to adopt regulations “as it may deem necessary to prevent interference.”

**12. *Other M2Z Claims Lack Merit.*** The 700 MHz technical rules are not relevant to the AWS interference issues. Although the commercial 700 MHz technical rules nominally give licensees the flexibility to choose FDD (including duplex direction) or TDD operations, the rules for the adjacent public safety operations, as well as adjacent television broadcast operations below the 700 MHz band, place constraints on such flexibility and effectively dictate the technology options for the band.

The AWS-3 licensee can readily address risks of base-to-base interference and will have no incentive to reduce mobile-to-mobile interference. Unlike the mobile-to-mobile interference scenario, where AWS-1 licensees will have no recourse to limit interference to their customers’

devices, the AWS-3 licensee will have several remedies available to address the risk of base-to-base interference.

***13. The Commission Should Be Wary Of Disrupting Internationally Harmonized Usage Of Spectrum, A Result Achieved After Years Of Effort By The U.S. Government And The Private Sector.*** A decision to reject a harmonized approach in the AWS-3 spectrum will create interference for existing AWS-1 devices and devices in the pipeline, and it will force the manufacture of custom-developed equipment for the U.S. market alone. The end result is quite clear: more costly AWS-1 handsets for U.S. consumers.

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2020-2025 MHz and 2175-2180 MHz Bands	)	

**COMMENTS OF  
CTIA – THE WIRELESS ASSOCIATION®**

CTIA – The Wireless Association®<sup>1</sup> (“CTIA”) hereby respectfully submits these comments in response to the Commission’s Advanced Wireless Service (“AWS”) *Further Notice of Proposed Rulemaking*.<sup>2</sup> As discussed below, the FCC’s proposed rules for the AWS-2 and AWS-3 bands would reverse longstanding and highly successful auction policies that provide licensees with service flexibility to meet consumer demands and interference protection to ensure customers have quality service. Rather than abandon these sound policies, the FCC should: (i) permit service flexibility and eliminate the misguided conditions —a free broadband offering, network-based filtering, and open access — proposed for the AWS-3 licensee; and (ii) adopt technical limits for AWS-2 and AWS-3 band licensees that adequately protect existing broadband PCS and AWS-1 licensees from interference.

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<sup>1</sup> CTIA – The Wireless Association® is the international organization of the wireless communications industry for both wireless carriers and manufacturers. Membership in the organization covers Commercial Mobile Radio Services (“CMRS”) providers and manufacturers, including cellular, broadband PCS, ESMR, Advanced Wireless Service, as well as providers and manufacturers of wireless data services and products.

<sup>2</sup> *Service Rules for Advanced Wireless Services in the 2155-2175 MHz Band*, WT Docket No. 07-195, Further Notice of Proposed Rulemaking, FCC 08-158 (rel. June 20, 2008) (“AWS *Further Notice*”), published at 73 Fed. Reg. 35995 (June 25, 2008).

## **I. CONSUMERS ARE BEST SERVED WHEN SPECTRUM POLICY IS MARKET-ORIENTED AND NOT DESIGNED TO PROMOTE A SINGLE BUSINESS PLAN**

History demonstrates that the public interest is best advanced by the Commission's long-standing flexible-use spectrum policy, which provides licensees the freedom to compete, the opportunity to innovate, and the ability to satisfy evolving consumer demands. In contrast, there is a long record of failed efforts and lost opportunities when auctions have been designed for specific business models.

### **A. Flexible-Use Spectrum Policy Has Greatly Expanded Consumer Welfare and U.S. Productivity**

For 15 years, under the leadership of Republican and Democratic Chairmen alike, the Commission's goal for spectrum auction policy has been "to place ultimate reliance on the market, rather than on regulation, to direct the course of development in the CMRS and other markets."<sup>3</sup> The Commission also has repeatedly and clearly found that the adoption of "flexible, market-based service rules is the most appropriate approach for implementing our Section 309(j) statutory directives."<sup>4</sup> Wireless competition is flourishing under this approach. The recent

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<sup>3</sup>1998 Biennial Regulatory Review *Spectrum Aggregation Limits for Wireless Telecommunications Carriers*, WT Docket No. 98-205, *Report and Order*, 15 FCC Rcd 9219, 9231 ¶ 22 (1999). This approach also is incorporated into the Commission's first objective for competition policy in the draft Strategic Plan: "the Commission shall . . . place primary reliance on market forces to stimulate competition, technical innovation, and development of new services for the benefit of consumers." FCC, *Draft Strategic Plan, 2009-2014*, p.6 (June 24, 2008) (describing Objective 1 of the Competition goal), available at <http://www.fcc.gov/omd/strategicplan/>.

<sup>4</sup>*Reallocation and Service Rules for the 698-746 MHz Spectrum Band (Television Channels 52-59)*, GN Docket No. 01-74, *Report and Order*, 17 FCC Rcd 1022, 1049-50 ¶ 64 (2002); *Reallocation and Service Rules for the 698-746 MHz Spectrum Band (Television Channels 52-59)*, GN Docket No. 01-74, *Memorandum Opinion and Order*, 17 FCC Rcd 11613, 11629 ¶ 39 (2002) (finding that "[b]y taking a flexible use approach and using competitive bidding, we established a market-based approach that allows the spectrum to be employed for a full range of allocated services . . . . We believe that this approach . . . [will] promote our goals of assigning these licenses expeditiously and promoting the intensive and efficient use of this spectrum"); *Implementation of Section 309(j) of the Communications Act – Competitive Bidding*, PP Docket No. 93-253, *Second Report and Order*, 9 FCC Rcd 2348, 2349-50 ¶ 5 (1994) (finding that competitive bidding should place licenses in the hands of the parties able to use them most efficiently); *Mobile Communications Corp. v. FCC*, 77 F.3d 1399, 1405 (D.C. Cir. 1996) (explaining that because "the party able to use the license most efficiently will be able to bid the most," the competitive bidding regime mandated by Congress ensures that "the license will end up in the hands of the firm best able to develop its potential"), *cert. denied*, *Mobile Telecomm. Techs. Corp. v. FCC*, 519 U.S. 823 (1996).

history of the wireless market shows that consumers receive the greatest benefit when this path is followed:

- *Competition.* More than 95 percent of the U.S. population lives in areas with at least three mobile telephone providers offering service, and more than half of the population lives in areas with at least five competing providers, according to the most recent FCC data.<sup>5</sup> Over 92 percent of the U.S. population already has access to 3G mobile wireless broadband service at their primary place of residence.<sup>6</sup> And, more than two-thirds of all Americans (68 percent) have three or more 3G providers operating in their zip codes.<sup>7</sup>
- *Subscribership.* Since 2002, the number of U.S. mobile telephone subscribers has increased by well over 100 million to approximately 260 million.<sup>8</sup>
- *Usage and Pricing.* American consumers use more minutes, pay less per minute of use and get more wireless service for their dollar than consumers anywhere else in the world. The average number of wireless voice minutes used per subscriber per month grew from 427 in 2002 to 812 in 2007, while the average revenue per minute declined from \$0.11 to \$0.06.<sup>9</sup>
- *Productivity.* In 2005, the productivity value of all mobile wireless services was worth \$185 billion, greater than the total value of the U.S. pharmaceutical industry. Between 2004 and 2005, the productivity enhancements generated by the use of mobile wireless broadband tripled in value.<sup>10</sup>
- *Capital Investment.* In the last six calendar years, wireless service providers in the U.S. have made over \$120 billion of incremental capital investments (this figure does not include spectrum acquisition costs, whether acquired through the FCC auctions or through private market transactions).<sup>11</sup>

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<sup>5</sup> *Annual Report and Analysis of Competitive Market Conditions With Respect to Commercial Mobile Services*, WT Docket No. 07-71, Twelfth Report, 23 FCC Rcd 2241, 2245 ¶ 2 (2008) (“*Twelfth CMRS Competition Report*”).

<sup>6</sup> See Comments of CTIA-The Wireless Association, WC Docket No. 05-337 (filed April 17, 2008), at Attachment 1.

<sup>7</sup> CostQuest Associates, Inc., *U.S. 3G Mobile Wireless Broadband Competition Report: A Report of Zip Codes and Population by Number of 3G Mobile Wireless Broadband Service Providers*, at 3 (2008) (included as an Attachment A to these comments).

<sup>8</sup> Glen Campbell, et al., *Global Wireless Matrix 2Q07*, Merrill Lynch, Oct. 4, 2007, at tbl. 1.

<sup>9</sup> *Twelfth CMRS Competition Report*, 23 FCC Rcd at 2246-47 ¶ 1.

<sup>10</sup> Ovum, *The Increasingly Important Impact of Wireless Broadband Technology and Services on the U.S. Economy*, 2 (2008) (“Ovum Study”).

<sup>11</sup> See CTIA’s *Wireless Industry Indices, Semi-Annual Data Survey Results: A Comprehensive Report From CTIA Analyzing the U.S. Wireless Industry, Year-End 2007 Results*, released May 2008, at p.124.

As the Commission recently summed up, “U.S. consumers continue to reap significant benefits – including low prices, new technologies, improved service quality, and choice among providers – from competition in the Commercial Mobile Radio Services (“CMRS”) marketplace . . . .”<sup>12</sup>

Flexible-use spectrum policy has enabled this thriving and innovative wireless environment, and it would be unwise for the Commission to micromanage the dynamics of the marketplace by imposing service rules on the AWS spectrum that dictate the specific business model a licensee must follow. CTIA identifies specific concerns with the proposed AWS-3 conditions below, but as a matter of principle it notes here its general opposition to specially tailored auctions.

#### **B. Auction Rules Tailored To A Particular Business Model Have A History Of Failure**

History has proven that prescriptive auction regulation ultimately undermines the public interest, rarely achieves its advertised benefits, and is a poor substitute for allowing the marketplace to function freely. Past FCC efforts to craft an auction to advance a single company’s business plan have proved ineffective. Indeed, in many cases, the company that the rules were designed to “help” ultimately did not bid. A result that is also quite possible here.<sup>13</sup>

The examples of these policy missteps are plentiful. A few are described below:

- *700 MHz D Block.* With the best of intentions, the FCC established rules that largely mirrored the business plans of one company, Frontline, seeking to leverage commercial investment for public safety broadband. In the end, Frontline did not even participate in the auction, and there was no winning D Block bid. The FCC is now reassessing D Block policy.

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<sup>12</sup> *Twelfth CMRS Competition Report*, 23 FCC Rcd at 2245 ¶ 1.

<sup>13</sup> See COMMUNICATIONS DAILY, June 3, 2008 (“M2Z hasn't put out a statement on auction plan, but CEO John Muleta said Monday the company remains intact and interested in the spectrum, which it originally tried to get without having to buy it in auction.”).

- *MVDDS*. In response to advocacy by one company, the FCC adopted rules to shoehorn a terrestrial MVPD service into the DBS spectrum.<sup>14</sup> Like the current case, the company pressed the FCC for a license without an auction.<sup>15</sup> The FCC instead chose to auction the spectrum rights applying rules tailored to the company's business plan. That company never showed up at the auction, and in the years since scant deployment has taken place.<sup>16</sup>
- *1670-1675 MHz*. One company pushed aggressively for a nationwide license to provide wireless broadband service.<sup>17</sup> The FCC adopted a nationwide license. The company could not gather the resources to show up at the auction.<sup>18</sup>
- *DBS Orbital Slot at 61.5*. One company advocated limiting eligibility for the DBS auction of 2 channels at the 61.5 degrees W.L. orbit location.<sup>19</sup> The FCC adopted the eligibility restriction. After obtaining rights to the spectrum, the company soon afterwards sold its operations to an incumbent, thus exiting the business.<sup>20</sup>

This list vividly illustrates the risk facing the FCC's policy choice for AWS-3. In each of these cases, the FCC acted with the best of intentions to shape the auction toward a favored outcome. In each case, the results show how ineffective and counter-productive these policy

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<sup>14</sup> See *Amendment of Parts 2 and 25 of the Commission's Rules to Permit Operation of NGSO FSS Systems Co-Frequency with GSO and Terrestrial Systems in the Ku-Band Frequency Range*, ET Docket No. 98-206, First Report and Order, 16 FCC Rcd 4096, 4177 ¶ 213 (2000) (permitting MVDDS operations in the 12.2-12.7 GHz band pursuant to a petition for rulemaking filed by Northpoint Tech. Ltd.), *aff'd on recon.*, 17 FCC Rcd 9614 (2002).

<sup>15</sup> See *Amendment of Parts 2 and 25 of the Commission's Rules to Permit Operation of NGSO FSS Systems Co-Frequency with GSO and Terrestrial Systems in the Ku-Band Frequency Range*, ET Docket No. 98-206, Memorandum Opinion and Order and Second Report and Order, 17 FCC Rcd 9614, 9710-11 ¶ 250 (2002) (subjecting MVDDS to competitive bidding).

<sup>16</sup> See *Auction of MVDDS Licenses; Three Bidders Qualified to Participate in Auction No. 63*, DA 05-2960, Public Notice, 20 FCC Rcd 18016 (WTB 2005).

<sup>17</sup> See *Amendments to Parts 1, 2, 27 and 90 of the Commission's Rules to License Services in the 216-220 MHz, 1390-1395 MHz, 1427-1429 MHz, 1429-1432 MHz, 1432-1435 MHz, 1670-1675 MHz, and 2385-2390 MHz Government Transfer Bands*, WT Docket 02-8, Report and Order, 17 FCC Rcd 9980, 9991-92 ¶ 19 (2002) (adopting a single nationwide license plan as proposed by ArrayComm, Inc.).

<sup>18</sup> See *Auction of License for 1670-1675 MHz Band, Two Qualified Bidders*, DA 03-1166, Public Notice, 18 FCC Rcd 7115 (WTB 2003).

<sup>19</sup> See *Auction of Direct Broadcast Satellite Licenses*, FCC 04-271, *Order*, 19 FCC Rcd 23849, 23853-56 ¶¶ 9-15 (2004).

<sup>20</sup> See *Rainbow DBS Company LLC, Assignor and EchoStar Satellite L.L.C., Assignee*, IB Docket No. 05-72, *Memorandum Opinion and Order*, 20 FCC Rcd 16868 (2005) (granting assignment of authority to operate a DBS space station at the 61.5° orbital slot).

approaches can be for the American people. CTIA implores the FCC to learn from the lessons of this history, not repeat them.

## **II. THE PROPOSED AWS-3 SERVICE RULES ARE DEEPLY FLAWED AND SHOULD NOT BE ADOPTED**

### **A. The “Free Broadband” Proposal Is Unnecessary And Unwise**

#### **1. Significant Wireless Broadband Deployment and Competition Exists Today**

Today, U.S. wireless providers are bringing the convenience, speed and mobility of wireless broadband to nearly all Americans – without asking the Commission for a spectrum giveaway or service rules tailored to facilitate a particular business model.

*Wireless is already providing the vast majority of Americans their third, fourth, or fifth broadband alternative:*

- 96.8 percent of Americans have at least one wireless provider offering 3G service within their zip code;
- 86.5 percent of Americans have two or more wireless providers offering 3G services in their zip code; and
- More than two-thirds of all Americans (68 percent) have three or more 3G providers operating in their zip codes.<sup>21</sup>

In addition, over 92 percent of the U.S. population has access to 3G service at their primary place of residence.<sup>22</sup>

The number of subscribers with wireless broadband capability, moreover, grew by more than 300 percent between June 2006 and June 2007.<sup>23</sup> Whereas DSL and cable modem services

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<sup>21</sup> CostQuest Associates, Inc., *U.S. 3G Mobile Wireless Broadband Competition Report: A Report of Zip Codes and Population by Number of 3G Mobile Wireless Broadband Service Providers*, at 3 (2008).

<sup>22</sup> CostQuest Associates, Inc., *U.S. Ubiquitous Mobility Study: Identification of and Estimated Initial Investments to Deploy Third Generation Mobile Broadband Networks in Unserved and Underserved Areas*, attachment to Comments of CTIA-The Wireless Association, WC Docket No. 05-337 (filed April 17, 2008).

grew by approximately 4.6 million lines combined during this period, wireless broadband grew by nearly 25 million lines.<sup>24</sup> By 2016, it is estimated that 83 percent of business users will be using wireless broadband.<sup>25</sup>

In addition to the five largest carriers providing wireless broadband, it is important to note the number of new wireless broadband competitors that are emerging in the marketplace without auction rules tailored to their specific business model. Existing wireless service providers of all shapes and sizes are upgrading their networks for more and better broadband service, and a host of new entities are entering the market. While nationwide players like SpectrumCo and the proposed Sprint/Clearwire venture hold significant promise, there are many smaller licensees building broadband systems in rural areas. Alaska Communications Systems and Bluegrass Cellular, for example, are offering wireless broadband service in rural areas of Alaska and Kentucky, respectively. Likewise, Nex-Tech Wireless is providing wireless broadband service in rural Kansas. In the past two years, over 100 bidders won licenses both in the AWS-1 auction and the 700 MHz auction. Existing carriers, like NTELOS in rural Virginia and North Carolina, purchased licenses in the AWS-1 spectrum to expand their wireless broadband service offerings to serve the mobile Internet needs of its customers. Others still, like newcomer to the wireless marketplace Stelera Wireless, purchased licenses in the AWS-1 spectrum auction to focus exclusively on providing wireless broadband service in underserved rural markets. These wireless broadband services were made possible by the Commission's market-oriented service rules.

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<sup>23</sup> Industry Analysis and Technology Division, FCC, *High-Speed Services for Internet Access: Status as of June 30, 2007*, tbl.1 (March 2008), available at <http://www.fcc.gov/wcb/iatd/comp.html>.

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

<sup>25</sup> See Ovum Study at 7.

Wireless broadband access comes in a variety of forms to suit the varying needs of wireless consumers. For those consumers who value the portability of their handheld wireless devices, wireless broadband Internet access is embedded in the vast majority of devices for sale. For those consumers who want to use their laptop computer on-the-go, wireless broadband providers increasingly are offering “data cards” that add wireless broadband functionality to a customer’s existing computer. Finally, for those consumers who want both a wireless device and the convenience of a wireless modem, there are “tethered” wireless devices that, through a wire or a wireless Bluetooth connection, allow the computer to access the Internet through the wireless device’s connection to licensed (or unlicensed) spectrum. With all of these choices, wireless consumers have a multitude of options at their disposal to choose which will best fit their broadband needs.

Once a consumer has decided to use wireless broadband, they also have a wide variety of plan options to suit their broadband data needs. Customers can subscribe to plans that include a fixed amount of data per month, a “bucket of bits” to complement similar wireless voice packages, or plans similar to traditional “all-you-can-eat” broadband offerings. In addition to these monthly pre-paid options, a number of carriers offer an alternative to the traditional “always-on” Internet connection. Customers with broadband capable devices can access the Internet, at a metered rate, without incurring a monthly fee or paying for more than they need. Through these and other innovative service offerings, wireless consumers can select the option right for them, and subscribe and use the Internet accordingly.

In light of the above, it is clear there is no market failure in the wireless broadband marketplace that justifies the type of AWS-3 services rules envisioned in the *AWS Further Notice*. If anything, the proposed order threatens to skew the market as competitors would be

required to contend with a licensee that obtained spectrum at a reduced price, in effect offering subsidized broadband for free. The proposal affects all broadband providers, especially those that just acquired spectrum at market-based rates.

## **2. The “Free Broadband” Requirement Is Ill-Defined, Will Not Provide A Lifeline Service, And Will Not Expand Broadband Coverage**

The proposal here foregoes the Commission’s proven, market-oriented spectrum policy in exchange for a requirement that the AWS-3 licensee make available a free broadband offering – but the service the Commission would mandate is not well-defined and does not promise to meet the lofty goals supporters espouse. Indeed, there are serious doubts regarding the legitimacy of the “free” offering.

First, although some have described the free broadband mandate as “a life-line” offering, the proposed service will not necessarily provide help to low-income consumers. The free broadband requirement is not a means-tested offering, and thus any residential or business customer could sign up for it. As a result, with a 25 percent network capacity limit, the free broadband mandate does not guarantee that low-income consumers will have access to the service. That is assuming, as discussed below, that the service is built out to low-income consumers. Moreover, the proposal makes clear that the free offering does not include the cost of customer equipment for low-income consumers.<sup>26</sup> A recent report observes that the “large upfront equipment charge would make it difficult if not impossible for low-income individuals to take advantage of this ostensibly free Internet access service.”<sup>27</sup> It notes the difficulty that low-income individuals have with large upfront payments in comparison to monthly recurring ones,

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<sup>26</sup> See *AWS Further Notice*, FCC 08-158 app. A at 25 (proposing rules 47 C.F.R. § 27.1191 (b)(3), (e)).

<sup>27</sup> George S. Ford, *Valuing the AWS-3 Spectrum: A Response to Comments*, Phoenix Center Perspectives 08-02 at 4 (July 21, 2008) available at <http://www.phoenix-center.org/perspectives/Perspective08-02Final.pdf>.

and concludes “[t]his is the reason the FCC and states have for years operated ‘LinkUp’ universal service plans that are specifically designed to mitigate the large upfront charges for installation of local dialtone service.”<sup>28</sup>

Second, while the M2Z business model promises “deployment of facilities throughout the United States,”<sup>29</sup> it is not at all clear that the AWS-3 licensee would extend coverage beyond today’s wireless providers. As noted above, 3G wireless services are now provided in zip codes covering more than 96 percent of the U.S. population, and over 92 percent of the U.S. population has access to 3G service at their primary place of residence. By any reasonable measure, 3G wireless services are likely to exceed the 95 percent population coverage requirement long before the ten-year deadline proposed here. Moreover, to the extent unserved areas remain, there is no reasonable basis to conclude that the AWS-3 licensee’s build-out will reach these areas sooner than the current systems given their current buildout. If service to currently unserved areas is a primary goal, it is better addressed through universal service mechanisms rather than adoption of tailored service rules.

Finally, it is unclear what the public will receive in return for mandating the free business model in lieu of the dynamic market forces associated with flexible-use spectrum. Specifically, the AWS-3 licensee would be required to use up to 25 percent of its “wireless network capacity” for a free two-way broadband service, “at a minimum engineered data rate of 768 kbps downstream per user,” but the licensee “will not be required to maintain the minimum data rate when and where meeting additional demand for the free broadband service would require more than twenty-five percent of wireless network capacity.”<sup>30</sup> Further, the licensee “may provide and

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

<sup>29</sup> M2Z *Ex Parte* Letter, WT Docket Nos. 04-356 & 07-195, at 4 (filed June 3, 2008).

<sup>30</sup> AWS *Further Notice*, FCC 08-158 at app. A at 24 (proposing rule 47 C.F.R. § 27.1191(b), (b)(2)).

prioritize fee-based services[.]”<sup>31</sup> The following are just a few of the many questions regarding the “free broadband” service:

- Will the free service be provided to all comers or will it be available on a limited, first-come, first-served basis?
- What is meant by the ability to “prioritize” the fee-based service?
- What is the meaning of “a minimum engineered data rate of 768 kbps downstream per user”?
- If the free service is advertiser-supported, will the advertising information be used to satisfy the minimum data rate requirement?
- If the free service is advertiser-supported, are the “free” customers expected to pay for their service through the loss of their privacy rights?
- When a base station’s capacity is oversubscribed, will the licensee limit the free customers significantly more than paying subscribers?
- In light of the interference protection requirements the AWS-3 licensee will have to provide adjacent channel operations, could the AWS-3 licensee meet the free service requirement if it devotes 25 percent of its spectrum – at the band edges – to the free service?

Ultimately, the proposed rules are vague and will not fulfill the lofty goals associated with the Commission’s proposal.

### **3. The Commission Must Take Note That Free Broadband Offerings Have A History Of Failure**

As noted above, the Commission has a very poor track record when it attempts to tailor service rules to a particular business plan. As demonstrated below, there is also ample evidence that this particular business model has been tested and failed in the market. In light of this history – and the inherent value in this spectrum – the question arises: on what basis does the

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<sup>31</sup> *Id.* at app. A at 25 (proposing rule 47 C.F.R. § 27.1191(f)).

Commission conclude that the business model it plans to support is, in fact, viable on a national scale?

Free, advertiser-supported Internet access has been tried as far back as the mid-1990's. NetZero, Inc., Juno Online Services, Spinway, Freei, and Bluelight all tried this model, and all failed. Spinway, Freei, and Bluelight went bankrupt and were bought by United Online.<sup>32</sup> NetZero and Juno, also owned by United, have evolved their model away from a focus on advertiser-supported free service.<sup>33</sup> These early providers of free dial-up Internet services quickly discovered that they could not make these business plans profitable.<sup>34</sup>

Throughout the country, efforts have collapsed to establish municipal Wi-Fi networks in which low-cost or free tiers of service were to have been offered to address broadband access concerns.<sup>35</sup> Even plans calling for “premium” services to subsidize the provision of free services

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<sup>32</sup> See Verne Kopytoff, *Bluelight Buys Spinway*, SAN FRANCISCO CHRONICLE, Dec. 5, 2000, at C2; see also *NetZero Signs Letter of Intent to Acquire Certain Assets of Freeinternet.com; Move Comes as Freeinternet.com Files For Chapter 11 Bankruptcy Protection*, BUSINESS WIRE, Oct. 6, 2000, available at [http://findarticles.com/p/articles/mi\\_m0EIN/is\\_2000\\_Oct\\_6/ai\\_65815302](http://findarticles.com/p/articles/mi_m0EIN/is_2000_Oct_6/ai_65815302); Lizette Wilson, *It's Lights Out For Bankrupt Kmart's BlueLight.com*, SAN FRANCISCO BUSINESS TIMES, Nov. 8, 2002 available at <http://www.bizjournals.com/sanfrancisco/stories/2002/11/11/newscolumn6.html>.

<sup>33</sup> NetZero's free service, for example, is limited to 10 hours of dial-up access per month, and the focus is on their paid services. See *Product Information*, available at <http://account.netzero.net/s/landing?action=viewProduct&productId=free> (last visited July 8, 2008).

<sup>34</sup> See Laurie J. Flynn, *Days of Plenty Are Over at Free Internet Services*, THE NEW YORK TIMES, Jan. 1, 2001, available at <http://query.nytimes.com/gst/fullpage.html?res=980CEEDC153BF932A35752C0A9679C8B63>.

<sup>35</sup> See John Cox, *Municipal Wi-Fi 2.0*, NETWORK WORLD, Apr. 21, 2008, available at <http://www.networkworld.com/research/2008/042108-municipal-wifi.html> (quoting Stan Schatt, vice president and research director at ABI Research: “It's pretty clear that ‘free Wi-Fi’ was an unrealistic expectation. . . . What's happened is that the early business models didn't work. They weren't realistic.”); see also Lisa Leff, *EarthLink Bows Out of San Francisco Wi-Fi Deal*, SAN FRANCISCO CHRONICLE, Aug. 30, 2007, available at <http://www.sfgate.com/cgi-bin/article.cgi?f=/n/a/2007/08/29/financial/f193633D05.DTL>.

have failed.<sup>36</sup> The notion of premium subscriptions economically carrying a free broadband offering has failed in part because of significant questions about “customer demand.”<sup>37</sup>

Many large cities have seen their plans for municipal Wi-Fi cancelled, including Chicago, San Francisco, Houston, St. Louis, Sacramento, New Orleans, and Portland. Municipal Wi-Fi in San Francisco and Philadelphia remain in a state of flux.<sup>38</sup> A host of smaller cities also face uncertain – or no – municipal Wi-Fi futures.<sup>39</sup> Others still are now faced with trying to find a service provider for networks that are in place but were being managed by EarthLink.<sup>40</sup> MetroFi, whose service was based on “ad-supported no-fee access, coupled with paid, no-ads service, and higher tiered commercial offerings,” recently announced it was exiting its nine markets by either selling its networks, or shuttering them if they cannot find a buyer.<sup>41</sup> Even proponents of a free broadband requirement express concern “with the long-term viability of the

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<sup>36</sup> See *EarthLink Bows Out of San Francisco Wi-Fi Deal*, SAN FRANCISCO CHRONICLE, Aug. 30, 2007 (noting that prior to dropping out of the deal, EarthLink had “planned to try to recoup its investment (*in free service – ed.*) by charging \$21.95 per month for a premium Wi-Fi service.”), available at <http://www.sfgate.com/cgi-bin/article.cgi?f=/n/a/2007/08/29/financial/f193633D05.DTL>.

<sup>37</sup> *Id.*

<sup>38</sup> Anthony Ha, *Meraki brings free WiFi to 100,000 San Franciscans*, VENTUREBEAT, Jul. 3, 2008 (describing a Wi-Fi project where equipment manufacturer Meraki is “showcas[ing]” its technology and “isn’t looking to make money from the network”), available at <http://venturebeat.com/2008/07/03/meraki-brings-free-wifi-to-100000-san-franciscans>; Press Release, Wireless Philadelphia, Mayor Nutter Announces New Deal Expected To Bring Free Wireless To Philadelphia (Jun. 17, 2008) (announcing that EarthLink will transfer network to a new ownership group), available at [http://www.wirelessphiladelphia.org/blog\\_detail.cfm/blog/72](http://www.wirelessphiladelphia.org/blog_detail.cfm/blog/72).

<sup>39</sup> These cities include Concord, CA, Cupertino, CA, Foster City, CA, Riverside, CA, San Jose, CA, Santa Clara, CA, and Sunnyvale, CA. See *Cities Unwired*, RCR WIRELESS NEWS, Nov. 17, 2007, available at <http://www.rcrnews.com/apps/pbcs.dll/article?AID=/20071117/SUB/71117010/0/cla>; see also Tim Wu, *Where’s My Free Wi-Fi?*, SLATE.COM, Sept. 27, 2007 available at <http://www.slate.com/id/2174858/>; W. David Gardner, *Nine More Municipal Wi-Fi Networks Slated for Closing*, INFORMATIONWEEK, May 19, 2008, available at <http://www.informationweek.com/news/mobility/muni/showArticle.jhtml?articleID=207801062>.

<sup>40</sup> W. David Gardner, *EarthLink to Pull Philly’s Muni Wi-Fi, Anaheim’s Days Numbered*, INFORMATIONWEEK, May 14, 2008, available at <http://www.informationweek.com/news/mobility/muni/showArticle.jhtml?articleID=207800077>.

<sup>41</sup> See Glenn Fleishman, *MetroFi Plans Market Exit: Sale or Shutter*, WNN WI-FI NET NEWS, May 15, 2008, available at <http://wifinetnews.com/archives/008322.html>.

proposed project, given the accelerated timetable, difficulty of implementation, and amount of up-front capital required.”<sup>42</sup>

Tim Wu came to the following conclusion in considering why municipal wireless networks have been “such a flop”: “The result . . . has been telecom's Bay of Pigs—a project the government wanted to happen but left to underqualified private parties to deliver. Firms like EarthLink promised too much, and the cities have stood by and watched as the firms trying to build Wi-Fi systems have twisted and died on the beachhead.”<sup>43</sup> Here the FCC runs the same risk. If it creates a set of auction rules to engineer this business plan — and the marketplace cannot support such a model – the FCC will have to clean up mishandled spectrum policy and failed businesses for years to come. In the interim, the American people will lose out on the potential of this critical spectrum for deployment of wireless broadband offerings that can be built out to meet their evolving needs.

CTIA applauds entrepreneurial efforts to innovate in wireless broadband. Indeed, the industry has a long record of innovative pricing models (*e.g.*, bucket of minutes), new technologies (*e.g.*, HSPDA, EVDO, and WiMax) and the broadband applications they support, and vast investment and deployment (over 96 percent 3G coverage of the population by zip code). In each case, these innovations have brought tremendous benefits to the American people. Government never mandated these changes, however – and some unsuccessful initiatives have failed or been overtaken in the marketplace (*e.g.*, TDMA, CDPD). The U.S. government was not a business partner in these unsuccessful efforts, and licensees were able to

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<sup>42</sup> Public Knowledge *et al.* *Ex Parte* Letter, WT Docket No. 07-195, at 2 (filed June 2, 2008).

<sup>43</sup> See Tim Wu, *Where's My Free Wi-Fi?*, SLATE.COM, Sept. 27, 2007, available at <http://www.slate.com/id/2174858/>.

abandon these technologies and services to better meet consumers' needs. AWS-3 threatens to change this relationship.

#### **4. M2Z's Economic Consultant Vastly Overestimates the Benefits of the Proposed AWS-3 Service Rules.**

In support of its arguments, M2Z commissioned a paper by Professor Simon Wilkie purporting to demonstrate that the proposed AWS-3 service rules would generate significant public benefits.<sup>44</sup> Professor Wilkie's paper suggests that M2Z's plan would generate between \$12.3 billion and \$27.2 billion in additional consumer surplus for new broadband subscribers and between \$13.1 billion and \$65.6 billion in additional consumer surplus for existing subscribers. However, as described at length in the attached paper authored by Criterion Economics, Professor Wilkie's analysis substantially and systematically overstates the static benefits that would result from M2Z's proposed service rules, with respect to both new and existing broadband subscribers, and ignores completely the dynamic benefits that would be lost.<sup>45</sup>

First, Professor Wilkie has relied on outdated figures that have been overtaken by the wireless industry's aggressive buildout of broadband services. Accordingly, Professor Wilkie's analysis overstates the likely benefits (if any) arising from M2Z's proposal. While Professor Wilkie relies on an assumption that M2Z will serve many currently unserved households, recent statistics indicate that only a small percentage of American households lack access to broadband. M2Z has made no real commitment to extend service those households that today lack access to broadband services. Indeed M2Z has excluded from its commitments the last five percent of

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<sup>44</sup> Simon Wilkie, *The Consumer Welfare Impact of M2Z Networks Inc.'s Wireless Broadband Proposal* (Mar. 1, 2007), available at <http://www.m2znetworks.com/resource-center/>.

<sup>45</sup> See Robert Hahn, Allan T. Ingraham, J. Gregory Sidak, Hal J. Singer, *The Static and Dynamic Inefficiency of Abandoning Unrestricted Auctions for Spectrum: A Critique of Professor Wilkie's Analysis of the M2Z Proposal*, at 13-26 (2008) (included as Attachment B to these comments).

consumers – the very consumers that are the most likely to lack broadband access today or 10 years into the future.

Moreover, recent data from the Pew Internet & American Life Project also suggests that broadband availability is increasing rapidly – by 17 percent between early 2007 and mid-2008 – and that those without broadband often would not subscribe to such service under any circumstances.<sup>46</sup> These figures cast serious doubt on claims that M2Z’s proposal would lead to increased uptake among customers that do not currently subscribe to broadband, and discredit Professor Wilkie’s estimates regarding customer surplus gains in this market segment.

Second, Professor Wilkie relies on the false assumption that M2Z’s customer acquisition rate in unserved areas would equal its acquisition rate in other areas. In fact, the economics of network development render this prospect remote at best. Customers that lack access to broadband are likely to live in sparsely populated or otherwise hard-to-serve areas.<sup>47</sup> These areas are generally high-cost areas offering relatively low revenue opportunities, limiting carriers’ deployment incentives.<sup>48</sup> Moreover, with build-out requirements measured in terms of population covered, M2Z would almost surely focus overwhelmingly on already-served areas if its plan were implemented.

Third, Professor Wilkie assumes that M2Z’s “free” ad-based broadband offering would be viewed by consumers as a substitute for their existing broadband offerings, and would thus exert downward pressure on market prices. However, Professor Wilkie cites no evidence for this proposition, and no such evidence exists. Dial-up ISPs offering “free” service funded by

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<sup>46</sup> *See id.* at 14-15.

<sup>47</sup> *See id.* at 16.

<sup>48</sup> *See id.*

advertising have generally failed, and studies confirm that customers dislike advertising.<sup>49</sup> Given these preferences, M2Z's offering would not be viewed by end users as a substitute for traditional broadband offerings, and would therefore exert little or no downward pressure on prices. Moreover, as recent Congressional hearings have highlighted, advertiser-supported service is by no means "free" if the advertisers expect users to trade their privacy rights for their service.

In short, it is unlikely that M2Z would serve many customers who currently lack access and/or choose not to subscribe to broadband, and it is equally unlikely that M2Z's offering would reduce prices in currently served areas. Individually and together, these facts wholly invalidate Professor Wilkie's estimate of the surplus consumers would purportedly reap if M2Z's plan were adopted.

#### **B. Network-Based Content Filtering Is Unconstitutional And Should Not Be Required**

CTIA wholeheartedly supports the important goal of protecting children from inappropriate content on mobile devices. The proposed content filtering mandate, however, when required by government rule is unconstitutional and should be rejected. As discussed below, the Commission lacks authority to impose such a condition and, even if such authority existed, adoption of the mandatory filtering condition would be unconstitutional. A content filter is a potent censor and should be in the hands of parents, not the government.

By way of background, CTIA has worked with the wireless industry to create the Wireless Carrier Content Classification and Internet Access Control Guidelines. All the major wireless providers and many other carriers and third parties offer consumers tools to limit content at no charge, and parents can search their carrier's website to find information about the

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<sup>49</sup> *See id.* at 17-18.

parental controls available to them. Parents of young wireless users have the ability to: request that Internet access capabilities be turned off; filter web content; and block unwanted text messages or phone calls; as well as keep track of their child's whereabouts with mobile GPS applications; and monitor their wireless usage.<sup>50</sup>

Here, the Commission seeks to require the AWS-3 licensee to incorporate a network-based content filter on its free service, "active at all times," to block "images and text that constitute obscenity or pornography and, in context, as measured by contemporary community standards and existing law, any images or text that otherwise would be harmful to teens and adolescents."<sup>51</sup> The proposal is a content-based regulation subject to First Amendment strict scrutiny standards – namely, any regulation must be the least restrictive means of furthering a compelling government interest.<sup>52</sup>

The Supreme Court has concluded that previous government mandates to block or censor lawful material on the Internet are unconstitutionally overbroad and vague<sup>53</sup> – and the proposal at issue here is equally deficient. As an initial matter, the proposed regulation would bar adult access to lawful content and there are less restrictive alternatives available. In *Reno v. ACLU*, the Court stated that a statute that "effectively suppresses a large amount of speech that adults have a constitutional right to receive and to address to one another ... is unacceptable if less restrictive alternatives would be at least as effective in achieving the legitimate purpose that the

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<sup>50</sup> See Steve Largent, President & CEO, CTIA, Remarks at the Department of Justice Internet Safety Briefing (June 4, 2008), available at <http://www.ctia.org/blog/index.cfm/2008/6/4/Cyberbullying-A-Serious-Problem-Facing-Kids-Today>; see also CTIA *Ex Parte* Presentation, WT Docket Nos. 05-194 & 08-27, at 1 (filed June 11, 2008); The Wireless Foundation, *Tools From Your Wireless Carrier*, available at [http://www.wirelessfoundation.org/WirelessOnlineSafety/tools\\_from\\_carrier.cfm](http://www.wirelessfoundation.org/WirelessOnlineSafety/tools_from_carrier.cfm).

<sup>51</sup> *AWS Further Notice*, FCC 08-158 at app. A at 25-26 (proposing rule 47 C.F.R. § 27.1193(a)).

<sup>52</sup> See, e.g., *FEC v. Wis. Right to Life, Inc.*, 127 S. Ct. 2652, 2664 (2007); *First Nat'l Bank v. Bellotti*, 435 U.S. 765, 786 (1978); *NAACP v. Button*, 371 U.S. 415, 438 (1963).

<sup>53</sup> *Reno v. ACLU*, 521 U.S. 844 (1997); *Ashcroft v. ACLU*, 542 U.S. 656 (2004).

statute was enacted to serve.”<sup>54</sup> At that time, back in 1997, the Court noted the existence of reasonably effective “user-based” filtering technologies and found there were less restrictive means to further the government’s interest, rendering the Communications Decency Act (“CDA”) unconstitutional.<sup>55</sup> Seven years later, in *Ashcroft v. ACLU*, the Court upheld a lower court injunction against the Child Online Protection Act and again honed in on the availability of filtering technologies that “impose selective restrictions on speech *at the receiving end*, not universal restrictions at the source.”<sup>56</sup> The Court went on to suggest that “programs to promote use of filtering software . . . could give parents [monitoring] ability without subjecting protected speech to severe penalties.”<sup>57</sup> A network-based filter, in contrast, would impose the standards of the most conservative community on a national basis, in contravention to First Amendment principles.<sup>58</sup>

As noted above, wireless carriers are making parental control features available to consumers, offering a less restrictive and effective means to give parents the ability to monitor their children’s access to content – and this factual basis establishes that the proposed regulation is unconstitutionally overbroad.

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<sup>54</sup> *Reno v. ACLU*, 521 U.S. at 874.

<sup>55</sup> *Id.* at 876-78.

<sup>56</sup> *Ashcroft v. ACLU*, 542 U.S. at 667 (emphasis added).

<sup>57</sup> *Id.* at 670. In a similar case, *U.S. v. Playboy Entertainment Group, Inc.*, the Court upheld a lower court ruling that mandatory scrambling of sexually explicit programming required by Section 505 of the Telecommunications Act of 1996 was unconstitutional because a less restrictive alternative was available: viewers could order signal blocking on a household-by-household basis. *U.S. v. Playboy Entertainment Group, Inc.*, 529 U.S. 803 (2000). The Court held that when a “plausible, less restrictive alternative is offered to a content-based speech restriction,” the Government may employ content regulation only if it can show that the less restrictive alternative “will be ineffective to achieve its goals.” *Id.* at 816.

<sup>58</sup> *See Miller v. California*, 413 U.S. 15, 30-32 (1973) (requiring the trier of fact, when evaluating material for obscenity, to decide whether “the average person, applying contemporary community standards would consider certain materials prurient,” (internal quotes omitted) and stating that “it is neither realistic nor constitutionally sound to read the First Amendment as requiring that the people of Maine or Mississippi accept public depiction of conduct found tolerable in Las Vegas, or New York City.”).

The content filtering proposal is also impermissibly vague. The standard under consideration here includes a ban of “any image or text that otherwise would be harmful to teens and adolescents.”<sup>59</sup> Courts will no doubt conclude that this standard will have an “obvious chilling effect on free speech,”<sup>60</sup> is overly vague, and is unconstitutional.

Finally, the Commission should take note that in Section 230 of the Act, Congress required providers of interactive computer services to notify customers of the “commercial availab[ility]” of “parental control protections ... such as filtering services” but did not require (or give the Commission authority to require) that such providers themselves provide the filtering, let alone for free.<sup>61</sup> For the reasons described here, the Commission should refrain from imposing the content filtering proposal.

### **C. No Open Platform Requirement Should Be Adopted**

CTIA also opposes the Commission’s proposal to extend the 700 MHz C Block open platform requirements to new spectrum, including the AWS-3 band.<sup>62</sup> As discussed below, such a requirement is both unnecessary and unwise.

The market for open platforms, devices and applications was emerging well before the recent 700 MHz auction and adoption of the *FNPRM*. For example, since April 1, 2005 Alltel

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<sup>59</sup> *AWS Further Notice*, FCC 08-158 app. A at 25-26 (proposing rule 47 C.F.R. § 27.1193(a)).

<sup>60</sup> *ACLU v. Reno*, 521 U.S. at 871-72 (citations omitted).

<sup>61</sup> 47 U.S.C. § 230(d). Even if the Commission were to ignore the constitutional problems at issue here, there is no statutory authority for the proposed filtering requirement. Section 326 of the Act expressly prohibits censorship in connection with radio communications. 47 U.S.C. § 326 (“Nothing in this chapter shall be understood or construed to give the Commission the power of censorship over the radio communications or signals transmitted by any radio station, and no regulation or condition shall be promulgated or fixed by the Commission which shall interfere with the right of free speech by means of radio communication.”). Moreover, the Commission’s rulemaking authority regarding radio obscenity, indecency and profanity is limited to broadcasting, and thus does not apply to wireless broadband Internet access. *See Public Telecommunications Act of 1992*, Pub. L. No. 102-356, § 16(a), 106 Stat. 949, 954 (stating that the FCC shall promulgate regulations regarding “the broadcasting of indecent programming”). Finally, even if the FCC somehow conjures authority to reach obscenity and indecency, there is absolutely no basis for the regulation of “any images or text that otherwise would be harmful to teens and adolescents,” as the proposed rule would. *AWS Further Notice*, FCC 08-158 app. A at 25-26 (proposing rule 47 C.F.R. § 27.1193(a)).

<sup>62</sup> *AWS Further Notice*, FCC 08-158 at ¶ 2; *id.* at app. A at 20-21 (proposing rule 47 C.F.R. § 27.16).

has allowed customers to activate their own CDMA equipment on the Alltel network without a contract requirement.

Wireless consumers also have been able to run software applications of their choosing and have been doing so for quite some time. Existing wireless platforms offer consumers the ability to download, install and run compatible applications of their choosing. Most notable is the increasing prevalence of Windows Mobile as a platform for “Pocket PCs” and “Smartphones.” For example, Skype and a host of other applications are capable of running on these handsets utilizing Windows Mobile.<sup>63</sup> Carriers have been involved in enabling this independent software development, with AT&T being the first major wireless carrier to launch an application developer program in 2001.

More recently, in November 2007 the Open Handset Alliance (“OHA”) announced the Android™ project, an open source mobile platform that will create additional opportunities in the mobile marketplace. OHA includes mobile carriers from around the world (including Sprint Nextel and T-Mobile), as well as many leading handset manufacturers, software developers and semiconductor companies. OHA has plans to commercially deploy handsets and services using this new platform by the end of 2008.<sup>64</sup> This work is an excellent example of commercial interests coming together to respond to marketplace forces by developing new products and services, all without need for any regulatory intervention.

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<sup>63</sup> Developers are free to write programs to run on Windows Mobile handsets using Microsoft’s Windows Mobile Development Kit, which allows programmers to use the existing Windows Mobile Application Programming Interface (“API”) to develop applications for this mobile operating system. *See* Microsoft Developers Network, *Windows Mobile for Developers*, available at <http://www.microsoft.com/windowsmobile/developers/default.msp> (last visited July 8, 2008). *See also* Microsoft, *Visual Studio Developer Center: Learn More*, available at <http://msdn2.microsoft.com/en-us/vstudio/aa973782.aspx> (containing a partial list of the available programming languages available under Visual Studio) (last visited July 8, 2008).

<sup>64</sup> *See* <http://www.openhandsetalliance.com>.

Separately, in late November 2007 Verizon Wireless announced that it would, by the end of 2008, provide all customers on its nationwide wireless network the option to use wireless devices, software and applications not offered by the company.<sup>65</sup> Seeing the marketplace potential of this additional retail option, Verizon Wireless CEO Lowell McAdam said at the time that the company was responding to the desires of a small but growing number of customers who were “looking for a different wireless experience.”<sup>66</sup>

These developments are a testament to the fact that consumer benefit is best achieved by allowing competitive market forces to operate freely. Under these circumstances, an open platform mandate in the AWS-3 band is not warranted. This is especially true now that an open platform requirement was imposed on the Upper 700 MHz C Block licensee.<sup>67</sup> If this capability is truly desired by consumers, then licensees in other bands will have to implement the capability or lose subscribers to the Upper 700 MHz C Block licensees and others in the open platform market.

In addition, less than a year ago the Commission determined that the public interest would be disserved by extending the open platform mandate beyond the Upper 700 MHz C Block. The Commission acknowledged that this new paradigm “may have unanticipated drawbacks” and therefore imposed the open platform requirement “only on a limited basis” so as to “allow both the Commission and industry to observe [its] real-world effects.”<sup>68</sup> Services using the open platform mandated for the Upper 700 MHz C Block have not yet been initiated,

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<sup>65</sup> See Press Release, Verizon Wireless, *Verizon Wireless To Introduce ‘Any Apps, Any Device’ Option For Customers In 2008* (Nov. 27, 2007), available at <http://news.vzw.com/news/2007/11/pr2007-11-27.html>.

<sup>66</sup> *Id.*

<sup>67</sup> 47 C.F.R. § 27.16.

<sup>68</sup> See *Service Rules for the 698-746, 747-762 and 777-792 MHz Bands, et al.*, WT Docket No. 06-150 et. al, Second Report and Order, 22 FCC Rcd 15289, 15364 ¶ 205 (2007) (“700 MHz Second Report and Order”).

so there is no basis for the Commission to revisit its conclusion to limit the open platform mandate to the Upper 700 MHz C Block.

Moreover, imposing open platform requirements on the AWS-3 band would undercut the fundamental premise of the Commission's competitive bidding program since its inception – *i.e.*, that bidders who value the spectrum most highly likely will make the most efficient use of it – and would surely reduce the spectrum's value at auction, depriving the public of the true value of this unique spectrum resource. The results of FCC Auction No. 73 – where the average price (per MHz/pop) of the open platform-conditioned Upper 700 MHz C Block spectrum was \$0.76 compared with \$1.16 and \$2.68 for the Lower 700 MHz A and B Blocks, respectively – suggest that the costs of complying with the open platform mandate were among the factors that affected the relative spectrum valuations.<sup>69</sup>

### **III. DESPITE THE HIGH DEMAND FOR LICENSED SPECTRUM, THE PROPOSED AWS-3 CONDITIONS WILL DISCOURAGE BIDDERS AND ARTIFICIALLY DEPRESS AUCTION REVENUES**

The demand for flexible-use, licensed spectrum has never been greater, and there is substantial interest in an auction for the AWS-3 spectrum if it is unencumbered. A mandate to implement a free broadband business plan and other conditions, however, will de-value the spectrum and drive away potential bidders.

#### **A. The Proposed Rules Would De-Value The Spectrum**

The AWS-1 and 700 MHz auctions were the biggest, most successful wireless auctions in the Commission's history. These two auctions generated \$33 billion in proceeds, resulting in

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<sup>69</sup> See George S. Ford, *et. al*, *Using Auction Results to Forecast the Impact of Wireless Carterfone Regulation on Wireless Networks*, Phoenix Center Policy Bulletin No. 20 (May 2008), available at <http://www.phoenix-center.org/PolicyBulletin/PCPB20Final2ndEdition.pdf>. See also *Wireless Strategy, Bidding at the End of Round 261, the End of Auction 73*, tbl. 1, available at <http://www.wirelessstrategy.com/auction8.html> (giving the average cost per MHz-pop for each spectrum block in auction 73).

large part from the Commission's predominant adoption of flexible-use service rules that provide licensees the freedom to develop services and business models that promote intensive use of the spectrum and respond to consumer demand.<sup>70</sup> The Commission's proposed mandate to implement M2Z's shaky business plan, however, is a "poison pill" that will lower the value of the spectrum and drive off potential bidders.

In this regard, House Energy and Commerce Committee Ranking Member Joe Barton and Telecommunications and the Internet Subcommittee Ranking Member Cliff Stearns recently expressed concern that the "proposed auction conditions are going to discourage certain parties from bidding. Our understanding is that there are more than 40 small, medium, and large carriers that would be interested in bidding on the spectrum if it didn't have the service conditions. Thus, placing these conditions would result in the Commission choosing winners and losers, as well as denying taxpayers the added revenue the spectrum would likely fetch if auctioned without the conditions."<sup>71</sup>

To that end, the Phoenix Center recently released an analysis that compares the value of the AWS-3 spectrum under an unencumbered, flexible-use approach with the value of the spectrum under the current proposal.<sup>72</sup> Under the Phoenix Center analysis, it estimated that an AWS-3 auction for unencumbered spectrum would generate revenues "in the upper \$2 billion range" – and possibly up to \$5.3 billion.<sup>73</sup> Conversely, if the Commission were to move forward

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<sup>70</sup> Notably, the 700 MHz licenses that mandated specific business models were either unsold (the 700 MHz D Block with public-private partnership requirements) or auctioned for a price below comparable, flexible-use spectrum (the 700 MHz C Block with Open Platform requirements). The Commission should refrain from engaging in the same steps here.

<sup>71</sup> Letter from The Honorable Joe Barton, Ranking Member, Committee on Energy and Commerce, and Cliff Stearns, Ranking Member, Subcommittee on Telecommunications and the Internet, to the Honorable Kevin J. Martin, Chairman, FCC 1 (June 30, 2008).

<sup>72</sup> George S. Ford, *Calculating the Value of Unencumbered AWS-III Spectrum*, Phoenix Center Perspectives No. 08-01 (June 25, 2008) available at <http://www.phoenix-center.org/perspectives/Perspective08-01Final.pdf>.

<sup>73</sup> *Id.* at 2.

with an auction for AWS-3 spectrum subject to the conditions proposed in the *FNPRM*, the analysis suggests that the spectrum value would be substantially discounted and that auction revenue would likely be reduced by approximately 40% or more. Indeed, the Phoenix Center’s analysis shows that an open access obligation alone would likely reduce auction revenue by approximately 40%.<sup>74</sup>

### **B. The Record Shows There Is Substantial Interest In Unencumbered AWS-3 Spectrum**

The record in this proceeding demonstrates the tremendous value associated with the AWS-3 spectrum, as there is a substantial interest in the band. In September 2007, less than one year ago, the Commission sought comment on service rules for the AWS-3 band that would promote “the most effective and efficient use of the spectrum.”<sup>75</sup> At the time, numerous commenters expressed interest in the band, and since the trade press reported an item circulating among the Commission with “M2Z-like” rules, many more parties have weighed in urging the Commission to reject the proposal and auction the band as unencumbered spectrum. Of note, providers across the board — many small, rural carriers, regional carriers, and large carriers and their organizations — are united in their views. They “vigorously oppose any auction and service rules, such as the purported ‘free’ service obligations, that limit the AWS-2 and/or AWS-3 bands to one particular business model,”<sup>76</sup> and they seek flexible-use rules that “allow the marketplace to determine the highest and best use for this spectrum.”<sup>77</sup> For example:

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<sup>74</sup> *Id.* at 3 (“[T]he open access obligation imposed upon the Upper C block reduced auction bids by 40%, and I see no reason to believe that such a substantial discount would not appear in the AWS-III auction given the proposed conditions”).

<sup>75</sup> *Service Rules for Advanced Wireless Services in the 2155-2175 MHz Band*, WT Docket No. 07-195, Notice of Proposed Rulemaking, 22 FCC Rcd 17035, 17036 ¶ 2 (2007) (“AWS-3 Notice”).

<sup>76</sup> Rural Broadband Group *Ex Parte* Letter, WT Docket Nos. 04-356 & 07-195, at 2 (filed June 3, 2008).

<sup>77</sup> MetroPCS *Ex Parte* Letter, WT Docket Nos. 04-356 & 07-195, at 2 (filed June 5, 2008).

- 36 small and rural companies, comprising the Rural Broadband Group, opposed the proposals as identified in the *AWS Further Notice*. According to the group, the proposed plan “will only hamper broadband deployment by destabilizing the marketplace and deterring investment in rural broadband systems. How will a small or rural company acquire funding to deploy a system if it faces the prospect of competing with a nationwide carrier providing free service heavily subsidized with cheap spectrum? Rather than crafting rules to require one specific business model, the Commission should auction AWS spectrum under flexible use rules.”<sup>78</sup>
- 24 small and rural companies urged the Commission not to adopt the proposed rules “tailored to a particular business model” because the AWS-2 and AWS-3 bands present an opportunity for small and mid-sized carriers to satisfy their spectrum needs.<sup>79</sup>
- Calaveras Telephone Company observed that the Commission’s proposal is “very risky and potentially destructive” and would destabilize the broadband market and deter investment in rural broadband deployment. “The FCC should not engage in this type of ‘designer spectrum allocation,’ crafting rules to require or benefit one specific business model of the FCC’s choosing.”<sup>80</sup>

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<sup>78</sup> Rural Broadband Group *Ex Parte* Letter, WT Docket Nos. 04-356 & 07-195, at 1-2 (filed June 4, 2008); *see also* Rural Broadband Group *Ex Parte* Letter, WT Docket Nos. 04-356 & 07-195 (filed June 3, 2008).

<sup>79</sup> *See, e.g.*, Nucla-Naturita Telephone Company *Ex Parte* Letter, WT Docket Nos. 04-356 & 07-195, at 1-2 (filed June 5, 2008); 3 Rivers Telephone Cooperative, Inc. *Ex Parte* Letter, WT Docket Nos. 04-356 & 07-195, at 1-2 (filed June 5, 2008); South Central Communications, Inc. *Ex Parte* Letter, WT Docket Nos. 04-356 & 07-195, at 1-2 (filed June 5, 2008); Custer Telephone Cooperative, Inc. *Ex Parte* Letter, WT Docket Nos. 04-356 & 07-195, at 1-2 (filed June 5, 2008); Consolidated Telcom *Ex Parte* Letter, WT Docket Nos. 04-356 & 07-195, at 1 (filed June 5, 2008); Emery Telcom *Ex Parte* Letter, WT Docket Nos. 04-356 & 07-195, at 1-2 (filed June 5, 2008); Command Connect, LLC *Ex Parte* Letter, WT Docket Nos. 04-356 & 07-195, at 1-2 (filed June 5, 2008); All West Communications *Ex Parte* Letter, WT Docket Nos. 04-356 & 07-195, at 1 (filed June 5, 2008); Mud Lake Telephone Cooperative Assn., Inc. *Ex Parte* Letter, WT Docket Nos. 04-356 & 07-195, at 1 (filed June 5, 2008); Manti Telephone Co. *Ex Parte* Letter, WT Docket Nos. 04-356 & 07-195, at 1-2 (filed June 5, 2008); Advanced Communications Technology *Ex Parte* Letter, WT Docket Nos. 04-356 & 07-195, at 1-2 (filed June 5, 2008); Rockwell Cooperative Telephone Association *Ex Parte* Letter, WT Docket Nos. 04-356 & 07-195, at 1-2 (filed June 5, 2008); Wiggins Telephone Association *Ex Parte* Letter, WT Docket Nos. 04-356 & 07-195, at 1 (filed June 5, 2008); Ponderosa Telephone *Ex Parte* Letter, WT Docket Nos. 04-356 & 07-195, at 1-2 (filed June 4, 2008); CTC Telcom, Inc. *Ex Parte* Letter, WT Docket Nos. 04-356 & 07-195, at 1-2 (filed June 4, 2008); Van Buren Telephone Co., Inc. *Ex Parte* Letter, WT Docket Nos. 04-356 & 07-195, at 1-2 (filed June 4, 2008); Peñasco Valley Telecommunications *Ex Parte* Letter, WT Docket Nos. 04-356 & 07-195, at 1 (filed June 4, 2008); Central Utah Telecom *Ex Parte* Letter, WT Docket Nos. 04-356 & 07-195, at 1-2 (filed June 3, 2008); Copper Valley Telephone Cooperative *Ex Parte* Letter, WT Docket Nos. 04-356 & 07-195, at 1-2 (filed June 3, 2008); Big Bend Telephone Company Inc. *Ex Parte* Letter, WT Docket Nos. 04-356 & 07-195, at 1-2 (filed June 3, 2008); Kennebec Telephone Co., Inc. *Ex Parte* Letter, WT Docket Nos. 04-356 & 07-195, at 1-2 (filed June 3, 2008); New Ulm Telecom *Ex Parte* Letter, WT Docket Nos. 04-356 & 07-195, at 1-2 (filed June 3, 2008); Midstate Communications, Inc. *Ex Parte* Letter, WT Docket Nos. 04-356 & 07-195, at 1-2 (filed June 3, 2008); Marne & Elk Horn Telephone Company *Ex Parte* Letter, WT Docket Nos. 04-356 & 07-195, at 1-2 (filed June 3, 2008).

<sup>80</sup> Calaveras Telephone Company *Ex Parte* Letter, WT Docket Nos. 04-356 & 07-195, at 2 (filed June 4, 2008).

- Volcano Telephone Company noted that small and rural companies seek spectrum and, but for the Commission’s “designer allocation[],” these needs could be addressed by the AWS-3 auction.<sup>81</sup>
- OPASTCO, which represents more than 600 independently owned LECs and their affiliate telecommunications companies, expressed concern “that auctioning the proposed AWS broadband license on a nationwide or super-regional basis would have the effect of excluding rural carriers from any meaningful opportunity to acquire this valuable spectrum.”<sup>82</sup>
- The Western Telecommunications Alliance, which represents more than 250 small communications companies in 24 states west of the Mississippi River, objected to the Commission’s current proposal because it “would have the affect of excluding rural carriers from any meaningful opportunity to acquire this valuable spectrum.”<sup>83</sup>
- MetroPCS “note[d] its objection against any type of ‘designer allocations.’ As the Commission’s experience with the D-Block demonstrates, designer allocations run the risk that they are so closely tied to a particular entity’s business model that the allocation may fail if the business entity fails. The better approach is to allow flexibility of use and allow the marketplace to determine the highest and best use for this spectrum.”<sup>84</sup>
- United States Cellular Corporation noted that the AWS-3 spectrum is “an appropriate means to give smaller, rural and regional providers a fair chance to participate in the provision of advanced services in rural as well as non-rural markets.”<sup>85</sup> It opposed the Commission’s current proposal because it “effectively places this spectrum beyond the reach of local, regional and rural providers” and therefore “undercuts the valuable competition which local, regional and rural providers could make possible in this block.”<sup>86</sup>

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<sup>81</sup> Volcano Telephone Company *Ex Parte* Letter, WT Docket Nos. 04-356 & 07-195, attach. 1 (filed June 4, 2008); accord Cap Rock Telephone Cooperative *Ex Parte* Letter, WT Docket Nos. 04-356 & 07-195, attach. 1 (filed June 4, 2008); Nsight Telservices *Ex Parte* Letter, WT Docket Nos. 04-356 & 07-195, attach. 1 (filed June 4, 2008); Molalla Communications *Ex Parte* Letter, WT Docket Nos. 04-356 & 07-195, attach. 1 (filed June 4, 2008).

<sup>82</sup> OPASTCO *Ex Parte* Letter, WT Docket Nos. 04-356 & 07-195, at 1 (filed June 4, 2008).

<sup>83</sup> Western Telecommunications Alliance *Ex Parte* Letter, WT Docket Nos. 04-356 & 07-195, at 2 (filed June 5, 2008).

<sup>84</sup> MetroPCS *Ex Parte* Letter, WT Docket Nos. 04-356 & 07-195, at 2 (filed June 5, 2008).

<sup>85</sup> Joint Comments of TDS Telecommunications Corporation and United States Cellular Corporation, WT Docket 07-195, at 3 (filed Dec. 14, 2007).

<sup>86</sup> United States Cellular Corporation *Ex Parte* Letter, WT Docket Nos. 04-356 & 07-195, at 3 (filed June 5, 2008).

- AT&T, Inc., Leap Wireless International, Inc., T-Mobile USA, Inc., and Verizon Wireless supported designating the spectrum for downlink-only use.<sup>87</sup> As Leap noted, “[T]he use of the AWS-3 band as a downlink would still afford licensees the flexibility to pair AWS-3 spectrum with other frequency bands licensed for CMRS use, including asymmetric pairing with AWS-1 or PCS spectrum to facilitate next-generation wireless data services.”<sup>88</sup>

Collectively, these providers present to the Commission an overwhelming call to do the right thing: auction an unencumbered AWS-3 band and allow the wireless market to continue along its strong track record of providing the American public with innovative services and option packages that have enhanced the nation’s consumer welfare and productivity over the past two decades.

**C. There Are Much Better Alternatives To Assure A Successful Auction For The AWS-3 Band**

The Commission can craft AWS-3 rules that permit valued use of the band without imposing rules that either dictate a single business plan or unnecessarily impede the prospects for adjacent licensees in the AWS-1 band. Given the interest expressed above, the Commission should eliminate the proposed encumbrances and adopt a band plan among the following options:

- The Commission could adopt the downlink-only approach it raised in the *AWS-3 Notice*.<sup>89</sup>
- As identified in the *AWS-3 Notice*, the J Block could be combined with the AWS-3 spectrum into a single license, with the 2020-2025 MHz block used for uplink and the 2155-2180 MHz block used for downlink.<sup>90</sup>

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<sup>87</sup> AT&T, Inc. Comments, WT Docket No. 07-195 (filed Dec. 14, 2007); Leap Wireless International, Inc. Reply Comments, WT Docket No. 07-195, 2-3 (filed Jan. 14, 2008); T-Mobile USA, Inc. Comments, WT Docket No. 07-195, 1-4 (filed Dec. 14, 2007); Verizon Wireless Comments, WT Docket No. 07-195, 13-15 (filed Dec. 14, 2007).

<sup>88</sup> Leap Wireless International, Inc. Reply Comments, WT Docket No. 07-195, at 2-3 (filed Jan. 14, 2008).

<sup>89</sup> *AWS-3 Notice*, 22 FCC Rcd at 17046 ¶ 21-23.

<sup>90</sup> *Id.* at 17050 ¶ 29.

- Alternatively, the J Block could be reconfigured as 2020-2025 (uplink) with 2155-2160 MHz (downlink), with a 20 MHz AWS-3 band at 2160-2180 MHz.<sup>91</sup>
- Finally, the Commission could pursue a structured uplink-downlink model that adequately protects AWS-1 licensees from harmful interference.

These approaches would fulfill the fundamental goals for the band: provide for valuable use of the spectrum and protect adjacent licensees from interference.

#### **IV. THE COMMISSION MUST ENSURE ADEQUATE INTERFERENCE PROTECTIONS FOR CONSUMERS USING BROADBAND PCS AND AWS-1 DEVICES**

The Communications Act requires the Commission to adopt rules “necessary to prevent interference between stations,”<sup>92</sup> yet the technical rules proposed here suggest a greater focus on protecting a new business model than adopting reasonable interference protection rules for adjacent licensees. Indeed, the proposal risks causing serious interference to tens (or hundreds) of millions of customers’ PCS handsets and AWS-1 devices already issued or in the supply chain; it undermines years and years of effort by the U.S. Government and industry to make AWS-1 spectrum available for mobile broadband; and it will skew billions of dollars worth of wireless broadband investments. The rules, moreover, inexplicably would provide significantly less stringent interference protection for AWS-1 devices than for PCS devices.

The Commission has long recognized that mobile transmit operations in the AWS-2 and AWS-3 bands would cause significant interference risks to nearby PCS and AWS-1 devices, respectively. At the proposed levels, in innumerable circumstances including wherever PCS or AWS-1 signals are weak but still acceptable (*e.g.*, indoors, inside trains, and at the edges of coverage areas), consumers will experience additional lost calls, inability to make/receive calls, lack of location data (critical for E911), and lower data rates when they are in close proximity to

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<sup>91</sup> *Id.* at 17049-50 ¶¶ 27-30.

<sup>92</sup> 47 U.S.C. § 303(f).

the devices the FCC now proposes to authorize. This will result in significant public safety concerns, as customers' E911 and other safety-related calls and services will be disrupted.

The law requires the Commission to protect adjacent licensees from harmful interference.<sup>93</sup> Sound policy, moreover, dictates that the Commission avoid disrupting consumer expectations about their devices and services and investor expectations that the agency would adopt rational interference protection rules. CTIA calls on the Commission to adopt an interference regime that protects PCS and AWS-1 operations. To begin with, the Commission should direct OET to engage in joint testing of the interference risks or, at a minimum, study the results of ongoing industry testing before making any interference-related decisions.<sup>94</sup>

#### **A. The Resulting Interference to Existing AWS-1 and PCS Licensees Would Violate Statutory and Contractual Rights**

Section 309(j) requires the Commission to place interested bidders on notice of the characteristics of licenses and bidding rules *in advance* of the auction and, thereby, to enable those bidders to “develop business plans, assess market conditions, and evaluate the availability of equipment for the relevant services.”<sup>95</sup> Pursuant to this obligation, the Commission has consistently noted in pre-auction service rules proceedings where the spectrum to be auctioned would be subject to harmful interference or similar limitations. At the time the Commission auctioned the PCS and AWS-1 bands, bidders could not have reasonably predicted that subsequent actions by the FCC would create adjacent services, such as the H Block or the proposed AWS-3 TDD block, that harbor substantial interference potential and potentially make a portion of the spectrum they acquired unusable.

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<sup>93</sup> *Id.*

<sup>94</sup> *See, e.g.* T-Mobile USA, Inc. *Ex Parte* Letter, WT Docket No. 07-195, at 1 (June 4, 2008).

<sup>95</sup> *See* 47 U.S.C. §§ 309(j)(3)(E)(i)-(ii).

The AWS-1 was an incredible success – at the time the largest, most successful auction in FCC history – grossing nearly \$13.9 billion.<sup>96</sup> Auction winners rightfully had high expectations for their spectrum. The Commission had highlighted the promise of the larger AWS blocks, such as the F Block, in its service rules, stating its belief that these blocks would “enable a broader range of broadband services, including Internet access at faster speeds. These larger blocks should also accommodate future, higher data rates, and provide operators with additional capacity, and, importantly, with greater flexibility.”<sup>97</sup> Accordingly, the F Block raised the highest revenue per POP per MHz of all the licenses offered for auction, and the E Block raised the second highest revenue per POP per MHz of all the licenses in the auction. At the close of the auction, Chairman Martin called the AWS-I spectrum “prime ‘spectrum real estate’” that will enable licensees “to roll out new devices, which will allow consumers to access the Internet and dedicated video services wherever they want, whenever they want.”<sup>98</sup>

AWS-1 bidders, however, were not “on notice” of the fact that adjacent operations in the 2155-2175 MHz band could limit the utility of portions of the spectrum. M2Z’s argument that TDD mobile transmit in the 2155-2175 MHz band “is not a new idea” runs counter to the Commission’s own statements regarding future use of AWS-3 spectrum. The *AWS-1 Service Rules Order* did not assert that the Commission would employ mobile transmissions in AWS-3 spectrum. TDD was just one of several proposals contemplated, and the Commission acknowledged that TDD mobile transmit posed a risk of causing harmful interference.<sup>99</sup> It would have been impossible for AWS-1 licensees to engineer their networks to account for all of

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<sup>96</sup> Statement of Chairman Kevin J. Martin on the Conclusion of Advanced Wireless Services Auction, News Release (Sept. 18, 2006), available at [http://hraunfoss.fcc.gov/edocs\\_public/attachmatch/DOC-267473A1.pdf](http://hraunfoss.fcc.gov/edocs_public/attachmatch/DOC-267473A1.pdf).

<sup>97</sup> *Service Rules for Advanced Wireless Services in the 1.7 GHz and 2.1 GHz Bands*, Report and Order, 18 FCC Rcd 25162, ¶ 44 (Nov. 25, 2003) (“*AWS-1 Service Rules Order*”).

<sup>98</sup> *See id.*

<sup>99</sup> *Id.* at ¶ 46.

the proposed uses of the 2155-2175 MHz band – especially the unprecedented nature of what the FCC is now proposing for the AWS-3 band.

Indeed, when the Commission established service rules for AWS-1, it clearly stated the potential for interference to new licensees and what degree of interference these licensees would be required to tolerate.<sup>100</sup> The FCC stated that AWS licensees would be required to accept interference from incumbent government facilities in the 1710-1755 MHz band. The FCC did not mention similar concerns regarding AWS-3. Further, it is standard practice for the Commission to outline in its service rules proceedings for yet-to-be-auctioned spectrum whether the winning bidder will be required to coordinate with incumbent licensees or otherwise protect co- or adjacent-channel licensees from harmful interference.<sup>101</sup>

Similarly, broadband PCS licensees clearly lacked notice, at the time they acquired their licenses, of potential H Block interference arising from a reallocation of the 1.9 GHz spectrum. Immediately prior to the broadband PCS auctions, the FCC stated those “auctions will constitute the largest auction of public assets in American history and are expected to recover billions of dollars for the United States Treasury.”<sup>102</sup> The FCC further noted that “the auctions will lead to the introduction of an array of new telecommunications products and services that are expected to fuel our nation's economic growth and revolutionize the way in which Americans communicate.”<sup>103</sup> Although auctioned in separate blocks at different times, the FCC’s prediction

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<sup>100</sup> *Id.* at ¶¶ 118-123.

<sup>101</sup> *See, e.g., Amendment of the Commission's Rules to Establish New Personal Communications Services*, Second Report and Order, 8 FCC Rcd 7700 (1993) (imposing the burden to protect incumbent microwave licenses against interference solely on PCS licensees in the 2 GHz band); *AWS-1 Service Rules Order* at ¶¶ 113-115, 118-123, 131 (outlining the responsibilities of AWS-1 licensees to protect various incumbents from harmful interference).

<sup>102</sup> *Implementation of Section 309(j) of the Communications Act*, 9 FCC Rcd 5532, 5534 (1994).

<sup>103</sup> *Id.*

was borne out as the original broadband PCS auctions raised approximately \$19.6 billion and were, at that time, the largest spectrum auctions ever conducted.<sup>104</sup>

Again, PCS bidders were not “on notice” that the FCC would reallocate nearby spectrum for operations that could cause harmful interference. When the broadband PCS spectrum was auctioned, the band comprising the 1915-1920 MHz portion of the H Block was allocated as an “unlicensed PCS” band.<sup>105</sup> Not only were unlicensed PCS devices very low power, those devices were authorized under Part 15 of the Commission’s rules and therefore could not cause interference to, or claim interference protection from, licensed PCS systems in the adjacent spectrum. Since the FCC’s 1994 PCS Order indicated that the FCC was looking for additional spectrum to allocate to unlicensed PCS, there was absolutely no notice that the unlicensed allocation could be replaced with potentially interfering licensed operations with significantly greater authorized power.<sup>106</sup>

CTIA believes that, based on the lack of notice and the change in the expected use of the bands already auctioned, the proposed H Block and AWS-3 rules may render the Commission’s actions in the broadband PCS and AWS-1 auctions *ultra vires*. Should the Commission proceed along this path, the Commission would thus risk the integrity of its auction process and create uncertainty for capital markets to assess foreseeable risks associated with future auctions. The net result would be uncertain auctions appealing to speculators, not those intending to put the spectrum to use.

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<sup>104</sup> The 1995 A & B Block auction (Auction No. 4) raised net bids of \$7 billion, the 1995 C Block auction \$10.1 billion (Auction No. 5), and the 1996 D, E & F Block auction \$2.5 billion (Auction No. 11).

<sup>105</sup> See *Amendment of the Commission’s Rules to Establish New Personal Communications Services*, 9 FCC Rcd 4957 (1994) (revising PCS allocation to pre-auction format, with 1850-1910 MHz/1930-1990 MHz for licensed PCS and 1910-1930 MHz band for unlicensed PCS).

<sup>106</sup> *Id.* at 4991 (committing to instituting further proceedings to meet the long term spectrum needs of unlicensed PCS).

In addition, if the Commission’s rules permit interfering H block and AWS-3 band operations requiring broadband PCS and AWS-1 licensees to cease using their spectrum for its originally stated purpose, they would appear to have a primary retroactive effect in violation of the Administrative Procedure Act (“APA”). The APA limits “rules” to agency prescriptions of “future effect”<sup>107</sup> and establishes a *per se* bar on the adoption of primarily retroactive rules.<sup>108</sup> In this case, bidders in the PCS and AWS-1 auctions had the well-reasoned and well-settled expectation that their licenses were designed for services free from harmful interference in the entirety of the spectrum band purchased. Indeed, even if the service rules are not “primarily retroactive,” they could be stricken as secondarily retroactive rules lacking adequate justification, as the rules would affect “a regulated entity’s investment made in reliance on the regulatory *status quo* before the rule’s promulgation.”<sup>109</sup> As knowledge of such harmful interference to broadband PCS and AWS-1 spectrum would have altered bidders’ strategy at auction, the rule would likely fail the D.C. Circuit’s well-established reasonableness inquiry used in cases of secondary retroactivity.<sup>110</sup>

Further, to the extent the H block and AWS-3 band plans adopted allow harmful interference to broadband PCS and AWS-1 licensees, the FCC may violate the contractual relationship established when it concluded the relevant auctions. Licensees’ payments for spectrum establish a contractual relationship, including an implied covenant of good faith and

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<sup>107</sup> 5 U.S.C. § 551(4).

<sup>108</sup> See, e.g., *DIRECTV v. FCC*, 110 F.3d 816, 825-26 (D.C. Cir. 1997) (holding that “primarily retroactive” rules are *per se* unlawful under the APA).

<sup>109</sup> *Mobile Relay Assocs. v. FCC*, 457 F.3d 1, 11 (D.C. Cir. 2006).

<sup>110</sup> See, e.g., *Celtronix Telemetry, Inc. v. FCC*, 272 F.3d 585, 590 (D.C. Cir. 2001) (determining that, in the context of a spectrum auction, a retroactive rule change was not arbitrary and capricious because bidders would not have altered their bidding strategy in light of the newly imposed rules).

fair dealing, which the FCC could breach by adopting rules in this proceeding that impair the value of previously-purchased spectrum.

Moreover, the Commission has stated that its licenses create “spectrum usage rights” that are “defined within the terms, conditions, and period of the license at the *time of issuance*.”<sup>111</sup> Indeed, Commission policy strongly disfavors interference with existing licenses.<sup>112</sup> As stated above, the Commission typically makes clear in its service rules proceedings when greenfield spectrum will be subject to interference from co- or adjacent-channel operations. By not forecasting a specific band plan for the H block and AWS-3, the Commission contributed to bidders’ expectations that they would be able to operate in the entirety of their broadband PCS and AWS-1 spectrum free from harmful interference.

#### **B. The Risks Of Mobile-to-Mobile Interference At Issue Here Are Well Defined And Understood**

Since the first days of cellular, CMRS operations have relied on frequency division duplex (“FDD”) technology that requires frequency separation between the mobile transmit band and the mobile receive band in order to minimize the risk of mobile-to-mobile interference. The cellular allocation, for example, is 824-849/869-894 MHz, the PCS allocation is 1850-1910/1930-1990 MHz (with licensed service now including 1850-1915/1930-1995 MHz), and AWS-1 is 1710-1755/2110-2155 MHz. As the Commission explained in the *AWS-3 Notice*, “if a handset transmitting in the 2155-2175 MHz band is in close proximity to a handset receiving in

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<sup>111</sup> *Principles for Promoting the Efficient Use of Spectrum by Encouraging the Development of Secondary Markets*, 15 FCC Rcd 24178, 24187, ¶ 22 (2000) (emphasis added).

<sup>112</sup> See, e.g., *In the Matter of Township of Cinnaminson, New Jersey*, Order, 22 FCC Rcd 4583 (2007) (considering possible interference with spectrum users as a factor when denying license application and related waiver request); *In the Matter of City of Richmond, Virginia*, Order, 21 FCC Rcd 14,384 (2006) (same); *Advanced Wireless Spectrum (AWS-1 Auction)*, Small Entity Compliance Guide, 21 FCC Rcd 9098, 9102 (2006) (explaining that the Commission requires that licensees not interfere with incumbent licensees); *Office of Engineering and Technology Seeks Additional Comment on Petitions for Reconsideration for Unlicensed National Information Infrastructure Devices*, Public Notice, 21 FCC Rcd 4339, 4340 (describing Commission’s efforts to minimize interference with existing radiofrequency operations).

the adjacent 2110-2155 MHz band, then ‘mobile-to-mobile’ interference could occur to the receiving handset,” creating “certain types of adjacent channel interference scenarios, which are not present when base and mobile transmissions are situated in spectrum far apart from one another.”<sup>113</sup>

There are typically two types of adjacent channel interference that can occur: out-of-band emission (“OOBE”) interference and receiver overload. OOBE, as the Commission has explained, “fall[s] directly within the pass band of an adjacent-band receiver” and “cannot be filtered out.”<sup>114</sup> The only way to reduce OOBE interference, other than keeping the devices separate, is by “suppressing OOBE at the source (*i.e.*, the transmitter).”<sup>115</sup> Receiver overload occurs when a device transmits a strong signal just outside the pass band of the receiver and the receiver’s front-end filter “can only provide limited attenuation of the unwanted signal.”<sup>116</sup> Other than keeping the two devices separate, receiver overload can be limited by improving the filtering of the receiver or limiting the power of the transmitter.

The Commission has previously taken note of the serious adjacent channel interference risks raised by mobile operations in the H Block and AWS-3 bands. In the *AWS-2 Notice*, the Commission noted, “[i]n particular, we are concerned about potential interference from handsets transmitting in the 1915-1920 MHz band to PCS handsets receiving in the 1930-1990 MHz band.”<sup>117</sup> In the H Block/PCS scenario, there is 10 MHz of frequency separation between mobile transmit and mobile receive. The risk of harmful interference in the AWS-1 band is even

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<sup>113</sup> *AWS-3 Notice*, 22 FCC Rcd at 17058 ¶ 51.

<sup>114</sup> *Id.* at 17059 ¶ 52 (emphasis added).

<sup>115</sup> *Id.*

<sup>116</sup> *Id.*

<sup>117</sup> *Service Rules for Advanced Wireless Services in the 1915-1920 MHz, 1995-2000 MHz, 2020-2025 MHz and 2175-2180 MHz Bands*, WT Docket No. 04-356, Notice of Proposed Rulemaking, 19 FCC Rcd 19263, 19297 ¶ 86 (2004) (“*AWS-2 Notice*”).

more substantial because there would be no frequency separation between AWS-1 mobile receive at 2110-2155 MHz and AWS-3 mobile transmit at 2155-2175. As discussed further below, in the *AWS-3 Notice* the Commission went so far as to acknowledge, “[t]his ‘mobile-to-mobile’ interference scenario will exist if we permit mobile transmissions in the 2155-2175 MHz AWS-3 band because of the presence of receiving mobiles in the adjacent bands[.]”<sup>118</sup>

The ability to limit the risk of mobile-to-mobile interference is a critical element of wireless service quality. The proposals at issue here would result in more interference to consumers’ wireless devices.

### **C. The Commission Must Ensure That It Protects PCS Devices From H Block Operations**

As part of the *AWS-2* proceeding, CTIA commissioned two engineering studies by independent test labs to consider the impact that mobile transmit operations in the 1915-1920 MHz portion of the H Block would have on PCS devices operating at 1930-1990 MHz.<sup>119</sup> These studies showed that mobile transmit at levels proposed in the *AWS-2 Notice* would cause significant interference. Whereas today’s interference protection industry standards are set to enable two mobiles to operate at a distance of one meter, the handset test studies showed that the Commission’s proposal would subject PCS handsets to harmful interference where H Block devices transmit 8 meters (26 feet) away in some instances.<sup>120</sup>

AWS operations in the H Block will create a new interference dynamic for nearby PCS operations – impacting millions of existing PCS customers. Numerous parties made suggestions regarding appropriate OOB and power limits. CTIA urges the Commission to take the steps

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<sup>118</sup> *AWS-3 Notice*, 22 FCC Rcd at 17059 ¶ 53.

<sup>119</sup> See CTIA—The Wireless Association Comments, WT Docket Nos. 02-353 & 04-356, at 13 and appendices (filed Dec. 8, 2004).

<sup>120</sup> See *id.*

necessary to protect PCS operations and the millions of PCS handsets and customers currently in the marketplace.

**D. As the Commission Has Recognized, Mobile Transmissions in the AWS-3 Band Will Create Interference to AWS-1 Operations and Must Be Adequately Addressed**

Time and again, M2Z suggests that Commission statements identifying the potential for TDD operations in the AWS-3 band should have placed AWS-1 licensees and other nearby licensees on notice that the Commission was prepared to allow significant levels of interference in neighboring bands in order to advance AWS-3 operations, but this reverse *caveat emptor* argument is erroneous. The real issue, as the Commission noted in the *AWS-3 NPRM*, is identifying “the technical and operational rules *to protect these various services from harmful interference.*”<sup>121</sup>

The *AWS-3 Notice* is full of references recognizing that, if the Commission were to allow TDD operations in the AWS-3 band, it would have to address the significant adjacent channel interference issues given that the FCC rules require FDD downlink operations in the adjacent 2110-2155 MHz band. For example, the Commission observed:

- “This ‘mobile-to-mobile’ interference scenario will exist if we permit mobile transmissions in the 2155-2175 MHz AWS-3 band because of the presence of receiving mobiles in the adjacent bands[.]”<sup>122</sup>
- “[W]e are concerned about the potential for interference to mobile receivers operating in these ‘base-transmit’ bands if we were to permit mobile transmissions in the 2155-2175 MHz band.”<sup>123</sup>
- “[I]f a handset transmitting in the 2155-2175 MHz band is in close physical proximity to a handset receiving in the adjacent 2110-2155 MHz band, then ‘mobile-to-mobile’ interference could occur to the receiving handset[.]”<sup>124</sup>

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<sup>121</sup> *AWS-3 Notice*, 22 FCC Rcd at 17058 ¶ 49 (emphasis added).

<sup>122</sup> *Id.* at 17059 ¶ 53.

<sup>123</sup> *Id.* at 17060 ¶ 55.

<sup>124</sup> *Id.* at 17058-59 ¶ 51.

- “[P]ermitting either of our approaches that include uplink transmissions may raise potentially significant interference issues associated with the presence of both mobile and base station transmissions in the band. We therefore seek comment on methods to address such concerns, including the use of power limits and out-of-band emission restrictions.”<sup>125</sup>
- “The presence of base *and* mobile transmissions in the same band, adjacent to spectrum designated for base transmissions, creates the possibility for certain types of adjacent channel interference scenarios, which are not present when base and mobile transmissions are situated in spectrum far apart from one another.”<sup>126</sup>

Thus, there is no question that the Commission recognized the challenging nature of its proposal – namely, the introduction of mobile transmit operations immediately adjacent to licensed mobile receive would cause serious degradation to the mobile receive operations.

Of significant importance, the Commission acknowledged that AWS-3 transmission might have to be limited. Specifically, the Commission stated that “additional flexibility may come at the cost of additional interference protections that would severely restrict the utility of mobile transmissions in the band....”<sup>127</sup> Moreover, if the Commission were to adopt strict technical limits on AWS-3 mobile transmissions, “*the occupied bandwidth of the mobile transmission might have to be restricted to a relatively small portion of the spectrum near the center of the band.*”<sup>128</sup>

The Commission should engage in joint testing of the interference risks or, at a minimum, study the results of ongoing industry testing before making any interference-related decisions.

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<sup>125</sup> *Id.* at 17036-37 ¶ 2.

<sup>126</sup> *Id.* at 17058-59 ¶ 51 (emphasis in original).

<sup>127</sup> *Id.* at 17042 ¶ 11.

<sup>128</sup> *Id.* at 17059-60 ¶ 54 (emphasis added).

**E. It Is Arbitrary And Capricious To Adopt Significantly Less Stringent OOB E Interference Protection Rules For The AWS-1 Band Than For The PCS Band**

The *AWS Further Notice* proposes the same power limits for H Block and AWS-3 mobile devices but vastly different OOB E limits, inexplicably resulting in significantly greater interference to AWS-1 devices than PCS devices.<sup>129</sup>

The Commission proposes an OOB E limit of  $90 + 10 \log(P)$  dB on H Block transmissions into the PCS band 1930-1990, but it only proposes an OOB E limit of  $60 + 10 \log(P)$  dB on AWS-3 transmissions into the AWS-1 mobile receive band.<sup>130</sup> The provision of 30 dB less protection for AWS-1 devices cannot be justified.

As noted above, the Commission readily acknowledges that OOB E “fall[s] directly within the pass band of an adjacent-band receiver” and “cannot be ‘filtered out.’”<sup>131</sup> The only way to reduce OOB E interference, other than keeping the devices separate, is by “suppressing OOB E at the source (*i.e.*, the transmitter).”<sup>132</sup> Ubiquitous mobile services of course cannot restrict the whereabouts of their subscribers *vis a vis* other mobile device users. Thus, the AWS-1 licensees have no recourse against the significantly higher level of OOB E that the *AWS Further Notice* proposes to allow into their licensed spectrum. The Commission, therefore, must impose reasonable OOB E limits on AWS-3 operations to protect AWS-1 devices from interfering signals in their pass band.

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<sup>129</sup> See *AWS Further Notice*, FCC 08-158 at app. A at 21-22 (proposing rules 47 C.F.R. §§ 27.50(d)(4), 27.53(h)(2) & (3)).

<sup>130</sup> See *id.* at app. A at 21-22 (proposing rule 47 C.F.R. § 27.53(h)(2) & (3)).

<sup>131</sup> *AWS-3 Notice*, 22 FCC Rcd at 17059 ¶ 52 (emphasis added).

<sup>132</sup> *Id.*

## **F. Handset Filtering Will Not Resolve AWS-3 Interference Problems**

The proposed limits cannot be rationalized by the simple claim that AWS-1 licensees should incorporate more robust filtering into their consumer devices.

First, as noted above, additional filtering would have no impact in restricting AWS-3 OOB from entering the pass band in AWS-1 mobile devices. Thus, filtering is no solution to the interference caused by OOB as described above.

Just as importantly, the evidence in the record demonstrates that mobile device filtering technology cannot eliminate the receiver overload interference to AWS-1 devices that would result from AWS-3 devices transmitting at or above 2155 MHz.

Avago, the world's largest privately held semiconductor company and one of the world's largest producers of handset filters, observed, “[f]or RF filtering to be an effective cure for interference, there must be adequate frequency spacing (guard band) between the frequency of transmission and the frequency of reception to allow a filter to achieve the desired amount of rejection.”<sup>133</sup> This is true regardless of whether or not the transmitter is in the same device as the receiver. Even with the best mobile filter technology available, a guard band has to be wide enough to account for three effects: the steepness of the filter roll off between pass band and desired rejection level; the changes of the filter response with temperature changes; and part-to-part variation between filters arising from manufacturing process tolerances.

Consider the case of an AWS-1 receiver operating at the upper end of the 2110-2155 MHz band and an AWS-3 transmitter operating at the lower end of AWS-3. The Avago presentation shows “un-refuted, compelling data” that even if AWS-1 devices contain a band pass filter limited to 2110-2155 MHz, interference would not be eliminated unless a guard band

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<sup>133</sup> Avago Technologies, *Some Comments on RF Filtering*, 13 (Dec. 5, 2007), in Verizon Wireless Comments, WT Docket No. 07-195, attach. B (filed Dec. 14, 2007). Avago was spun off from Agilent in late 2005.

is established “between mobile operations in the 2.1 GHz band.”<sup>134</sup> Thus, interference will occur even if manufacturers were to construct U.S.-centric mobile devices with filters designed for receive signals at 2110-2155 MHz if AWS-3 uplink transmissions at full power are permitted in the lower end of the AWS-3 band.

The Commission cannot reasonably demand that AWS-1 licensees adopt an internal guard band to account for the interference from new AWS-3 operations – indeed a guard band of sufficient size would threaten the commercial viability of licenses in the upper end of the AWS-1 band.

### **G. M2Z’s Other Claims Lack Merit**

#### **1. Harmful Interference Is Not a Low Probability Event But Will Be Inevitable and Widespread**

M2Z acknowledges that “harmful interference between AWS-3 and AWS-1” will occur, but it discounts any interference concerns by claiming that such instances will be “rare,” “easily avoided,” and “limited.”<sup>135</sup> Yet its own engineering consultant is far less certain. M2Z’s engineering submission concludes that substantial interference will occur and urges further study to gain a more comprehensive understanding of the interference environment. M2Z has not provided any basis on which to find that the current proposal meets the clear obligation of Section 303(f) of the Act: to adopt regulations “as it may deem necessary to prevent interference.”<sup>136</sup>

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<sup>134</sup> Declaration of Neville R. Ray, Sr. Vice President for Engineering and Operations, T-Mobile USA, Inc. ¶ 8, *in* T-Mobile USA, Inc. *Ex Parte* Letter, WT Docket No. 07-195, attach. (filed June 5, 2008) (“Ray Declaration”).

<sup>135</sup> M2Z *Ex Parte* Letter, WT Docket No. 07-195, at 2 (filed June 17, 2008).

<sup>136</sup> 47 U.S.C. § 303(f).

M2Z contracted with Alion Science and Technology (“Alion”) to assess the interference impact of AWS-3 TDD mobile operations on AWS-1 mobile devices. Alion’s report concedes that substantial interference will occur:

[W]here the devices are separated by only one meter and the AWS-1 receiver is operating near a minimum desired signal level, the frequency separation required to suppress interference below threshold levels is excessive. When considering the combined effects of OOB and blocking, the required separation (referenced to the upper boundary of F-block channels) can be as little [sic] 14 MHz, or greater than 25 MHz depending on transmitter noise characteristics and duplexer/filter characteristics of the deployed devices.<sup>137</sup>

Further, Alion provides only a tempered conclusion that “the probability of interference and consequent impact on AWS-1 capacity *may be* relatively small.”<sup>138</sup> Alion studied only nine related scenarios – in every scenario it was assumed that (1) users were outdoors, (2) base stations antennas were 30 meters above ground, and (3) propagation followed the relatively favorable suburban propagation model. CTIA believes that simulations with parameters representing typical urban users – (1) users both indoors and outdoors, (2) base station antennas below rooftops, and (3) the less favorable urban propagation model – the results would show significantly more interference. The nine scenarios were generated by considering three different power levels for the AWS-1 base station and three different guard band widths inside the AWS-3 spectrum. In the case where the AWS-1 base station power was lowest – but at a reasonable level for urban operations – interference from AWS-3 operations directly adjacent to the AWS-1 band reduced the capacity of the AWS-1 system by more than 18 percent.

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<sup>137</sup> Alion Science and Technology, *AWS-3 to AWS-1 Mobile-to-Mobile Interference Effect: Preliminary Analysis Results* at 12, in M2Z *Ex Parte* Letter, WT Docket No. 07-195, attach. (filed June 3, 2008)

<sup>138</sup> *Id.* at 13 (emphasis added).

Alion concludes by noting that its “Monte Carlo” study is merely a “preliminary analysis” and that “[a]dditional cases should be explored to develop a more complete characterization of the possible scenarios and system parameter excursions.”<sup>139</sup>

T-Mobile has conducted its own testing, and its Senior Vice President for Engineering and Operations submitted a declaration concluding that “interference is present in an extensive number of circumstances, not solely limited to challenging coverage areas.”<sup>140</sup> T-Mobile found that under there will be a substantial risk of dropped calls, not just when an AWS-3 device operates within two meters of an AWS-1 device, but even tens of meters away. These scenarios cannot be considered low probability events.

## **2. The 700 MHz Rules Are Not Relevant But the Commission’s “Good Neighbor” Policy Is**

The Commission should not be persuaded by a superficial review of the 700 MHz technical rules. Although the commercial 700 MHz technical rules nominally give licensees the flexibility to choose FDD (including duplex direction) or TDD operations, the rules for the adjacent public safety operations, as well as adjacent television broadcast operations below the 700 MHz band, placed constraints on such flexibility and effectively dictate the technology options for the band.

Specifically, the Part 90 700 MHz public safety rules restrict the higher 700 MHz public safety block (793-805 MHz) to mobile transmit operations, while base transmit is limited to the lower 700 MHz public safety block (763-775 MHz).<sup>141</sup> Because the FCC set the duplex direction for 700 MHz public safety operations, sound engineering dictates the same duplex

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<sup>139</sup> *Id.*

<sup>140</sup> Ray Declaration at ¶ 9.

<sup>141</sup> *See* 47 C.F.R. § 90.531(a).

direction for the CMRS licenses in the Upper 700 MHz band (even if it is not conventional to place mobile receive in the lower block and mobile transmit in the upper block). As a result, the Upper C Block frequencies (746-757 MHz) immediately adjacent to the lower C Block (740-746 MHz) will likely be mobile receive. The Lower 700 MHz paired-block licensees will likely operate in conventional FDD mode, with mobile transmit in the lower block and mobile receive in the upper block. Because the Lower 700 MHz band is immediately adjacent to TV channel 51 and only 6 MHz away from channel 50, some licensees can expect to operate near high-powered broadcast operations in certain areas. As a result, good engineering practice dictates that the lower paired band in the Lower 700 MHz be used for mobile transmit and the upper paired band for mobile receive. Thus Lower 700 MHz C Block and Upper 700 MHz C Block will each be mobile receive. The 700 MHz band plan, therefore, is effectively set regardless of flexible technical rules.

The Commission should follow its “good neighbor” policy of “group[ing] technically compatible systems and devices in close spectrum proximity.”<sup>142</sup> The Commission typically operates under this policy. In the *AWS-2 Notice*, for example, the Commission observed, “[i]f we adopt rules effectuating our tentative conclusion to permit only mobile transmission in the 1915-1920 MHz band, then operations in the band will be compatible with the use of the spectrum below 1915 MHz.”<sup>143</sup> For just these reasons, the Commission’s *AWS Report and Order* did not make provision for TDD in the AWS–1 band, stating that it would revisit that determination only if “proponents of TDD can conclusively demonstrate that portions of this spectrum could be used for such transmissions without causing interference to Federal

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<sup>142</sup> Spectrum Policy Task Force, FCC, *Report*, ET Docket No. 02-135, at 22 (Nov. 2002) (“*SPTF Report*”), available at [http://hraunfoss.fcc.gov/edocs\\_public/attachmatch/DOC-228542A1.pdf](http://hraunfoss.fcc.gov/edocs_public/attachmatch/DOC-228542A1.pdf).

<sup>143</sup> *AWS-2 Notice*, 19 FCC Rcd at 19297-98 ¶ 87.

government users or other licensees.”<sup>144</sup> While the Commission left open how the AWS-3 band was to be used, there was a reasonable expectation that the Commission would likewise bar TDD in that band unless it was conclusively shown not to cause harmful interference to AWS-1 licensees employing FDD.

“One of the challenges presented by permitting additional flexibility within assigned spectrum is the potential for incompatible adjacent systems,” and the good neighbor policy recognizes the reality that where “[s]ystem or device spectrum incompatibility” exists, “additional constraints” such as guard bands may be necessary.<sup>145</sup> In this case, if the Commission provides for TDD operations in the AWS-3 band, the Commission must require AWS-3 operations to adequately account for this incompatible use and protect AWS-1 operations.

### **3. The AWS-3 Licensee Can Readily Address Risks Of Base-to-Base Interference And Will Have No Incentive To Reduce Mobile-to-Mobile Interference**

M2Z tells the Commission it need not worry about mobile-to-mobile interference to AWS-1 licensees because the potential for AWS-1 to AWS-3 base-to-base interference creates mutual interference concerns that will ensure cooperation between AWS-3 and AWS-1 licensees.<sup>146</sup> This is not so, as the AWS-3 licensee need not depend on cooperative efforts to address base-to-base interference risks. Unlike the mobile-to-mobile interference scenario, where AWS-1 licensees will have no recourse to limit interference to their customers’ devices, the AWS-3 licensee will have several remedies available to address the risk of base-to-base interference.

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<sup>144</sup> *AWS-1 Service Rules Order*, 18 FCC Rcd at 25179 ¶ 46.

<sup>145</sup> SPTF Report at 22.

<sup>146</sup> M2Z *Ex Parte* Letter, WT Docket No. 04-356, attach. at 12 (filed July 2, 2008).

First, AWS-3 licensees will be able to deploy highly selective filters at base stations to filter out the AWS-1 base station transmissions. Much more selective filters can be employed at base stations than in handsets due to the availability of space and power. Another engineering approach is to orient the receive antennas at an AWS-3 base station so as to minimize the received signal level from the direction of the AWS-1 base station, given that the interfering station is at a fixed and known location. Again, this option is not available in the mobile-to-mobile interference context, where interfering devices are itinerant. Further, an additional engineering solution would be to create a *de facto* guard band within the AWS-3 spectrum by employing a technology that allows the assignment of mobile transmit frequencies separated from the AWS-1 spectrum. An OFDM system such as WiMAX could be configured to do this on a cell-site by cell-site basis, thereby enabling this remedy only where other techniques are not possible or are not sufficiently effective.

With these reasonable and deployable base station options available, the AWS-3 operator will not experience “mutual interference” and will have no incentive to eliminate the mobile-to-mobile interference that will wreak havoc on consumers that use AWS-1 devices.

#### **H. The Commission Should Be Wary of Disrupting Internationally Harmonized Usage of Spectrum**

Finally, the Commission should carefully consider the effects of departing from the global standards that the United States worked hard over many years to achieve. A Commission decision to reject a harmonized approach in the AWS-3 spectrum will result in more costly handsets for U.S. customers and more expensive and less innovative services, and it will upend international expectations and future international harmonization efforts.

The U.S. Government, equipment manufacturers, and service providers went to great lengths to identify internationally harmonized 3G spectrum, including the 2110-2170 MHz band

as downlink spectrum. For example, the International Telecommunication Union (“ITU”) Recommendation for IMT-2000 (the international, third generation standard for mobile wireless systems) included a limited number of frequency arrangement alternatives from 1.7 to 2.2 GHz.<sup>147</sup> The 2110-2170 MHz band is viewed internationally as the downlink component of a paired frequency allocation, and none of the Recommendations suggest using this spectrum for deployment of TDD in an unpaired allocation. In 2002, moreover, NTIA had identified the 2110-2170 band for 3G downlink use in its assessment of potential 3G spectrum,<sup>148</sup> and the Inter-American Committee on Telecommunications (CITEL) of the Organization of American States has sought to harmonize the usage of other governments in Region 2 with that of the United States by designating this band as downlink-only.<sup>149</sup>

Equipment manufacturers, in turn, relied on the international harmonization of this entire band of spectrum for downlink-only usage in designing the handsets used in the U.S. AWS-1 market. As a result, the equipment already in use by consumers and in the supply pipeline for AWS-1 has been designed on the reasonable assumption that the spectrum from 2110 through 2170 MHz would be used for downlinks only. The filters built into those handsets were reasonably designed to pass that entire frequency band.

Breaking away from the international standard will create interference for existing devices and will make handsets more expensive and less subject to competitive supply, because they would have to be custom-developed for the U.S market alone. Further, a change will

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<sup>147</sup> See ITU, Recommendation ITU-R M.1036-3 (2007) available at <http://www.itu.int/rec/R-REC-M.1036-3-200707-I/en>.

<sup>148</sup> National Telecommunications and Information Administration, *United States Department of Commerce, An Assessment of the Viability of Accommodating Advanced Mobile Wireless (3G) Systems in the 1710-1770 MHz and 2110-2170 MHz Bands* (July 22, 2002), available at <http://www.ntia.doc.gov/ntiahome/threeg/va7222002/3Gva072202web.htm>.

<sup>149</sup> See 3G Americas *Ex Parte* Letter, WT Docket No. 04-356, at 2 (filed June 25, 2008).

deprive U.S. consumers of the ability to use their handsets as roamers on some overseas networks. The Commission therefore should avoid disrupting the internationally harmonized AWS spectrum.

## **V. CONCLUSION**

For the reasons discussed above, the Commission should not adopt its proposed rules for the AWS-2 and AWS-3 bands which would reverse two decades of auction policies that provide licensees flexibility in service offerings and protect incumbent users from harmful interference. Rather than abandon these sound policies, the FCC should adopt rules that promote flexible use

by the auction winner and eliminate the onerous conditions — a free broadband offering, network-based filtering, and open access — proposed for the AWS-3 licensee. At the same time, the FCC should adopt power limits for AWS-2 and AWS-3 band licensees that adequately protect existing broadband PCS and AWS-1 licensees from interference.

Respectfully submitted,

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