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Ex Parte

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

Re: Policies Regarding Mobile Spectrum Holdings, WT Docket No. 12-269

Dear Ms. Dortch:

Throughout this proceeding, Verizon has urged the Commission to correct the spectrum screen to include the full 194 MHz of Broadband Radio Service (BRS) and Educational Broadband Service (EBS) spectrum. Some parties claim that the long and complicated history of these bands justifies their exclusion from the screen. To address these claims, the attached paper traces the evolution of these spectrum bands from their origins in the 1960s to today and demonstrates that continued exclusion of this spectrum, which is *in use today* for mobile broadband services, is no longer defensible.

This letter is being filed pursuant to Section 1.1206 of the Commission's rules. Please contact me with any questions.

Sincerely,

Kathleen Grillo

Attachment

The Evolution of the 2.5 GHz Band and Its Success for Mobile Broadband Demand a Spectrum Screen Refresh

As the Federal Communications Commission considers how to resolve the *Mobile Spectrum Holdings* proceeding, its threshold responsibility will be to determine which additional spectrum bands to incorporate into the spectrum screen.[1] Just last year, the FCC issued a white paper that identified the full 194 MHz of the 2.5 GHz band (2496-2500 MHz) as among the "most commonly deployed mobile broadband spectrum bands" in the United States.[2] And yet the FCC continues to exclude from the current spectrum screen more than 70 percent of the 2.5 GHz band, or 138.5 of that 194 MHz. It is far past time for the Commission to include all of the 2.5 GHz spectrum in the spectrum screen.

For nearly 40 years, the Commission has labored to tap the promise of the 2.5 GHz band – a swath of spectrum originally dedicated for educational use. Time and again, the Commission took steps to foster commercial opportunities in the band through licensing, flexible use rules, modernized technical limits, a band plan overhaul, and – notably – through increasingly liberalized policies allowing educational licensees to lease their spectrum to commercial providers. Over time, the relationship between commercial and educational interests evolved, as have the commercial services in the band – from wireless cable, to fixed broadband, and finally to 4G LTE mobile broadband deployment. Today, the 2.5 GHz band is the tip of the spear for Sprint's 4G LTE broadband roll-out, and Sprint CEO Dan Hesse touts that "Sprint controls 120 MHz of 2.5 GHz spectrum in 90 of the top 100 U.S. markets."[3]

The purpose of this white paper is to trace the evolution of the 2.5 GHz band from its origins in the 1960s through today and to demonstrate that continued exclusion of this spectrum from the screen is no longer defensible – despite efforts to exploit the long and complicated history of the band as grounds for continued exclusion.[4] The 2.5 GHz (with minimal exception for the 5 percent educational use reservation on the educational spectrum) should be included in the screen as it is not only "suitable" and "available" under the spectrum screen standard, but *it is in use* for mobile broadband.

I. THE EVOLUTION OF THE 2.5 GHz BAND – 1962 TO 2000

A. The Early Years of ITFS

More than 50 years ago, the FCC established the service known today as Educational Broadband Service ("EBS") as Instructional Television Fixed Service ("ITFS"). Historically, educational television stations had provided instructional programming directed to students taking courses at accredited educational institutions. But in the early 1960s, educational stations were increasingly scheduling programming with a more general cultural and entertainment appeal, and the Commission was concerned that this new programming would soon crowd out the instructional programming. In 1963, the Commission created ITFS in the 2500-2690 MHz band.[5]

ITFS licensee eligibility was restricted to institutions or governmental organizations engaged in education and nonprofits formed to provide instructional television material to such institutions. The new service was intended to deliver video instructional material to schools, colleges and universities "for the formal education of Students."[6]

A scarcity of funding, however, plagued the development of ITFS and resulted in light demand for the service. Nonetheless, in 1971 the Commission designated 168 MHz of the 2.5 GHz band for exclusive ITFS use even while acknowledging there was no evidence to warrant the expanded allocation.[7] In other words, ITFS had a significant swath of spectrum but lacked the wherewithal to make use of it.

B. The Early Years of MDS

Like EBS, the service now known as Broadband Radio Service ("BRS") was initially known by another name – Multipoint Distribution Service ("MDS"). In its first incarnation, MDS was licensed in the 2150-2160 MHz band. That band, first allocated for point-to-multipoint microwave use in 1962, was of little interest until the Commission modified the rules to enable the transmission of full-color television signals in 1970.[8] A flurry of interest ensued, and in 1974 the Commission formally allocated the 2150-2162 MHz band for a new service, MDS: a common carrier, point-to-multipoint transmission service for private television or high speed computer data selected by the subscriber.[9]

In the early years of MDS, licensees explored a range of services and ultimately landed on one: the distribution of premium programming services such as Home Box Office ("HBO") in major urban areas that had not yet been wired for cable television. By the late 1970s, over one million homes in urban areas subscribed to single channel MDS-delivered pay television service.

The long-term prospects for MDS, however, soon dimmed as the cable industry continued to wire America's largest cities with multiple channel offerings. The MDS industry found itself with a business model but insufficient spectrum to compete as a wireless alternative to cable's multi-channel programming service.

C. MDS and ITFS—A Shotgun Marriage for Wireless Cable

With ITFS channels "largely vacant in most locations"[10] and the MDS industry in need of more spectrum, in 1983 the Commission forged the relationship between educational and commercial interests in the 2.5 GHz band that endures today. Thus began a 20-year evolution of the rules governing the 2.5 GHz band. The Commission provided for greater service and technical flexibility, sometimes in fits and starts, and continued to foster greater commercial access and investment throughout the 2.5 GHz band, including in the educational spectrum.

The Commission took two significant steps in 1983 that altered the future of the 2.5 GHz band. First, it reallocated 56 MHz (8 channels) of underutilized ITFS spectrum for what became known as multichannel MDS or MMDS. Second, it authorized ITFS licensees to lease "excess capacity" to help meet the needs of the MDS industry *and* provide funding for the promotion of ITFS.[11] The resulting multichannel video programming distribution systems, called "wireless cable" systems, were viewed as a competitive solution that would "spur cable systems to build promised systems faster, improve existing systems, and keep prices low."[12] And, despite

opposition from the ITFS community, the Commission concluded that leasing would benefit educators, as "new revenue sources are necessary in order to give ITFS every chance to grow and succeed."[13]

Even as it fostered the development of wireless cable, the nascent industry struggled under a regulatory regime that frustrated initial deployments. For example, the FCC granted authorizations on a site-by-site basis, and the application review process was intensive and lengthy.

From the late 1980s through the mid 1990s, the Commission modified its technical, licensing, and operational rules to provide greater flexibility.[14] The Commission conducted an overlay auction, granting winners the exclusive right to file site-based applications for MDS spectrum in areas outside existing licensed service areas.[15] Importantly, the FCC also made multiple rule changes to facilitate commercial leasing of ITFS spectrum.

Those actions, however, were too little, too late for wireless cable. Although well over one hundred wireless cable systems were launched using MDS and leased ITFS channels, the wireless cable industry struggled to become a significant competitor due to difficulties in securing access to programming, a scarcity of financing, limited channel capacity, and a burdensome regulatory regime. By the mid-1990s, it became clear that the growth of 100+ channel cable systems and the emergence of Direct Broadcast Satellite had shut the window of opportunity for wireless cable in all but the handful of markets where the service already had gained a foothold.

D. The Beginnings of Broadband

By the mid-1990s the diminishing prospects for wireless cable were apparent and many in the MDS industry turned to fixed high-speed data services as the future of MDS and ITFS spectrum. Industry returned to the Commission seeking further modification of the 2.5 GHz band.

In response, the Commission issued a series of decisions from 1998 through 2000 to promote the use of MDS and ITFS spectrum for fixed two-way services. Again, the Commission took steps to liberalize the ITFS leasing rules and foster commercial use of the entire 2.5 GHz band, not just the MDS spectrum. Among other things, the Commission increased the minimum ITFS lease term from 10 to 15 years,[16] permitted an ITFS licensee to meet its educational programming requirement on any spectrum (MDS or ITFS) within the system,[17] and replaced complex education-capacity reservation rules with the simple requirement that each ITFS licensee engaged in leasing reserve at least 5 percent of its channel capacity for educational use. This made up to 95 percent of ITFS spectrum available for commercial use.[18]

Several operators began deployment of first generation two-way fixed broadband systems in the spring of 2000. Sprint, for example, deployed in the Phoenix market in March 2000 and expanded to 13 additional cities over the next year.[19] Other large MDS and ITFS spectrum holders followed suit, collectively investing several billion dollars to bring fixed broadband service over the 2.5 GHz band.[20]

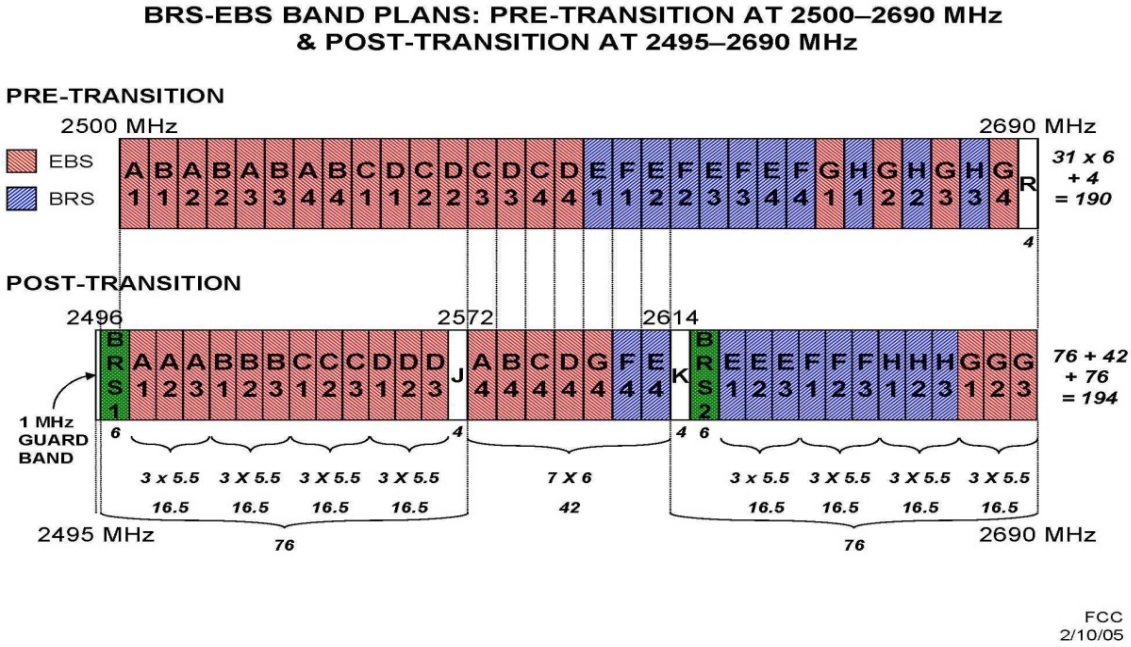
The two-way business model faced a bumpy road, however. While opening up an emerging use for the spectrum, the Commission's new rules retained the non-contiguous band plan optimized for video, continued to require site-based applications, and were even more protective of incumbent operations than the prior rules. In addition, the first generation of 2.5 GHz fixed broadband technology proved problematic, largely because it required direct line-of-sight from the base station to a subscriber antenna mounted outside the subscriber's premises and only a small number of subscribers could share each costly base station. As a result, Sprint and others quickly chose to halt the deployment of additional first generation systems (particularly those focused on serving the consumer market in urban and suburban areas).[21]

II. 2.5 GHz MOBILE BROADBAND EMERGES – 2001-2013

A. Revamping the Band Plan

In 2001, the Commission expanded the 2.5 GHz allocation to make the band "available for advanced mobile and fixed terrestrial wireless services, including third generation ("3G") and future generations of wireless systems."[22] A coalition of MDS and ITFS representatives seized the opportunity and proposed a radical re-imagination of the 2.5 GHz regulatory environment to "strip away decades of broadcast-style regulation and replace it with a more contemporary approach appropriate to the flexible nature of the service."[23]

The Commission began to rework the 2.5 GHz band to enable mobile broadband services. In 2004, the FCC adopted a new band plan that reconfigured the 2.5 GHz band and renamed MDS as BRS and ITFS as EBS.[24] The figure below compares the old band plan to the new one:



In all, the Commission took the following milestone actions:

- It reserved 152 MHz of 2.5 GHz spectrum for low-powered cellular services such as mobile broadband, while providing flexibility in the remaining 42 MHz for either high-powered services or low-powered cellular services.[25]

- It transitioned from site-based to geographic area licensing, fostering commercial deployments throughout a licensed area.[26]

- It provided each multichannel licensee with contiguous channels, facilitating wider channelization and more broadband throughput.

- It moved the 2.5 GHz band rules into Part 27, where the rules for other flexible use services like PCS and AWS reside, and stripped away obsolete interference protection rules.[27]

While the rules adopted in 2004 were met with great applause by the 2.5 GHz industry,[28] clean-up ensued, and it was 2006 by the time the Commission implemented a modified transition plan and migration to the new band plan began in earnest.[29] Today, nearly every market in the U.S. has successfully transitioned to the new band plan.[30] Indeed, citing the fact that "[t]he last transition took place in 2012," the FCC staff's recent "Report on FCC Reform" recommends that "[t]he rules governing the transition are no longer necessary and should be eliminated."[31]

B. Expanding Commercial Access to EBS Through Leasing Flexibility

As part of the BRS/EBS overhaul, the Commission further liberalized the rules governing commercial leasing of the educational spectrum. These steps provided greater certainty for commercial investment in the 2.5 GHz band, in no small part due to greater access to the EBS spectrum. The FCC took the following actions:

- It abandoned its micro-management of leases and instead subjected EBS leases entered into since January 10, 2005 to its standard "Secondary Markets" leasing rules.[32]

- It permitted EBS licensees to enter into leases of up to 30 years maximum duration (subject to license renewal).[33] And it allowed EBS licensees to grant lessees rights of first refusal extending even beyond the 30 year benchmark, assuring that operators willing to pay marketplace rates could continue using the spectrum well beyond 30 years.[34]

- It rejected a request to increase the 5 percent minimum educational usage requirement, finding that allowing EBS licensees to lease 95 percent of their spectrum capacity "promotes flexibility" and that "to reconsider this long-resolved issue in a manner that would impede upon such flexibility would do a great disservice to the public interest."[35]

Through these actions, the Commission had adopted a regulatory environment in which the technical rules promoting mobile broadband applied equally to BRS and EBS, and the leasing rules eliminated any meaningful hurdles to commercial access to EBS spectrum.

C. Clearwire's Use of BRS and EBS to Advance Mobile Broadband

In the early years of the band plan transition, the two largest spectrum holders in the 2.5 GHz band were Sprint Nextel Corp. ("Sprint Nextel") and Clearwire Corp. ("Old Clearwire"). In 2008, the Commission approved a transaction in which the two companies would combine their 2.5 GHz operations, including their BRS licenses and leases and EBS leases, into a single entity that became Clearwire Corp. ("Clearwire").[36] Comcast Corporation, Time Warner Cable Inc., Bright House Networks, LLC, Google, Inc., and Intel Corporation also made substantial investments in Clearwire. While finding that "the level of spectrum aggregation resulting from the proposed transaction raises potential competitive concerns,"[37] the Commission concluded that, on balance, "the transaction will result in major public interest benefits by facilitating the provision of a nationwide WiMAX-based network that will lead to increased competition, greater consumer choice, and new services."[38]

The United States quickly became a global pioneer in the 2.5 GHz band, one of only a handful of nations even to license the band for mobile broadband.[39] At the time, there was no global consensus regarding the appropriate band plan for the spectrum or the optimal technology.[40] Clearwire and Sprint decided to use Time Division Duplex WiMAX technology; Sprint became the first company to launch a 4G network using WiMAX technology in Baltimore in 2008,[41] and Clearwire soon followed with a 4G WiMAX deployment in Portland, Oregon.[42] Clearwire in particular continued to deploy 4G aggressively in markets across the country. During this period, Clearwire consolidated its hold on the 2.5 GHz band, ultimately acquiring licenses or leases for the overwhelming majority of the MHz/pops associated with the band. Between 2008 and the 2013 acquisition by Sprint, Clearwire consummated 28 separate transactions acquiring one or more BRS licenses, leased 540 EBS licenses and 11 BRS licenses from third parties, and acquired 42 unassigned BRS BTA licenses auctioned by the FCC in October 2009. [43] Clearwire later announced that, primarily for the benefit of its largest wholesale customer – Sprint – it would utilize its deep spectrum portfolio to overbuild its WiMAX network with a TD-LTE network.[44]

By its own account, Clearwire had deployed "a capacity-rich 4G mobile broadband network" on its 2.5 GHz network (Sprint's 2.5 GHz holdings today) "rel[ying] upon BRS licenses *and* excess capacity leases from other BRS and EBS licensees."[45] These deployments leveraged Clearwire's licensed BRS and leased BRS and EBS holdings across the 2.5 GHz band – what Clearwire itself described as "approximately 140 MHz of spectrum on average across [its] national spectrum footprint and approximately 160 MHz of spectrum on average in the 100 largest markets," deployments that "enable[] [it] to offer [its] subscribers significant mobile data bandwidth."[46] By the end of the first quarter of 2013, Clearwire's mobile broadband network covered an estimated 133.9 million people in 71 markets and served approximately 1.5 million retail and 7.9 million wholesale subscribers.[47] The 2.5 GHz band – both BRS *and* EBS – were in use for commercial mobile broadband.

III. TODAY'S REALITY—SPRINT'S 4G BROADBAND SERVICE IN THE 2.5 GHz BAND

On July 13, 2013, the Commission approved both Sprint's acquisition of the remaining Clearwire stock it did not already own and SoftBank's acquisition of control of Sprint. In

approving the deal, the Commission stated that "Softbank's provision of greater resources for transitioning the existing networks of Sprint and Clearwire to LTE technology could accelerate Sprint's rollout of advanced mobile broadband services, thereby supporting our goal of expanding mobile broadband deployment throughout the country."[48] In addition, the Commission concluded that the proposed transactions "likely will strengthen Sprint's ability to compete in the wireless marketplace, potentially resulting in greater innovation and reduced prices for all consumers, including rural, low-income, and minority consumers."[49]

The Commission's expectations are already being met:

- Sprint (and Clearwire) had deployed over 5,000 2.5 GHz sites by the end of 2013.[50]
- Sprint has announced that it expects to convert another 2,000 legacy Clearwire sites in the first half of 2014 and that, by mid-year, it will begin overlaying the 2.5 GHz band on its existing network.
- Approximately 100 million 2.5 GHz LTE POPs will be deployed by the end of 2014.[51]

Indeed, this 2.5 GHz TD-LTE network is at the heart of what Sprint calls "Spark" – a tri-band (800 MHz, 1.9 MHz and 2.5 GHz) LTE service that is relying on additional rapid deployment at 2.5 GHz. Sprint CEO Dan Hesse recently observed that Sprint is "deploying LTE aggressively on the 1.9 [GHz] spectrum," is "beginning to deploy LTE on 800 [MHz]," and "*of course [is] focusing first on deploying 2.5 [GHz]* … in those dense urban markets where we can use it for speed and especially capacity so that's our initial priority."[52] As a former Clearwire CEO has asserted, the 2.5 GHz band actually has an advantage over low-band spectrum in dense urban markets because it can carry much more data at higher rates, a key capability as carriers cope with increasing data traffic.[53]

Moreover, the scale economies anticipated by SoftBank's acquiring control over Sprint and Clearwire's 2.5 GHz band assets are coming to fruition. Today, the entire 2.5 GHz band is being used globally for mobile broadband using TD-LTE technology.[54] Like Sprint in the United States, SoftBank and KDDI both have deployed in the 2.5 GHz band (Band 41) in Japan.[55] And, after years of trials, in late 2013 China Mobile launched a TD-LTE network that incorporates the 2.5 GHz band.[56] As a senior Sprint executive recently noted, "[w]ith the imminent commercial launch of TDD LTE networks in China, TDD LTE Band 41. . . is now a common band of operation in three of the largest economies in the world: United States, China and Japan."[57] In other words, a global marketplace has developed for LTE in the 2.5 GHz band, paving the way for efficient and cost-effective infrastructure and device deployment.

IV. GIVEN SPRINT'S SUCCESS IN THE 2.5 GHz BAND, THE FCC MUST INCLUDE THE REMAINING BRS AND EBS SPECTRUM IN THE SPECTRUM SCREEN

A. The Spectrum Screen and Evolution of the 2.5 GHz Band

Just as the Commission was starting to re-think the 2.5 GHz band in 2004, it also was adopting the two-part spectrum screen to identify markets where the acquisition of spectrum warrants further competitive analysis.[58] The first part of the screen considers changes in market

concentration, and the second part examines the proposed spectrum acquisition in light of the amount of spectrum that is suitable and available on a market-by-market basis for the provision of mobile telephony/broadband service.[59]

For purposes of the second part of this screen, "suitability" is determined by: (1) "whether the spectrum is capable of supporting mobile service given its physical properties and the state of equipment technology"; (2) "whether the spectrum is licensed with a mobile allocation and corresponding service rules"; and (3) "whether the spectrum is committed to another use that effectively precludes its use for the relevant mobile service."[60] Spectrum is "available" if it is "fairly certain that it will meet the criteria for suitable spectrum in the near term."[61]

In 2005, the Commission concluded that it would be "premature" to include any of the 2.5 GHz band in the spectrum screen given that the service rules permitting mobile use had just been adopted and the band plan transition process was on hold pending action on the petitions for reconsideration.[62]

By 2008, however, BRS and EBS licensees had made significant progress on the band plan transition and standards development, and the Commission modified the spectrum screen to include 55.5 MHz of BRS spectrum as part of the *2008 Sprint-Clearwire Order*.[63] But the FCC continued to exclude the remaining 21.5 MHz of BRS spectrum and all 117.5 MHz of EBS spectrum, maintaining that it lacked a record as to the extent the Middle Band Segment was available for mobile service (*i.e.*, it did not have evidence regarding the extent of incumbent high-powered video operations) and paying deference to the "special requirements" associated with leasing EBS spectrum.

It is indisputable that the 2.5 GHz band spectrum is "suitable" and "available" for mobile broadband today. All of 2.5 GHz band – BRS *and* EBS included – is "capable of supporting mobile service." It is "licensed with a mobile allocation and corresponding service rules." And save perhaps for the 5 percent of EBS capacity that is reserved for educational use, it is not "committed to another use." The 2.5 GHz band is "available" – indeed *it is in use* for mobile broadband. It is time for the Commission to include the 2.5 GHz band in the spectrum screen.

B. Arguments to Continue to Exclude BRS and EBS Spectrum Are Meritless

Notwithstanding Sprint's own statements that it holds a large swath of 2.5 GHz spectrum and is deploying 4G LTE broadband across the nation, it continues to advocate for a spectrum screen *status quo* for BRS and EBS spectrum (although it now "does not object" to adding the BRS Middle Band Segment to the screen "since these channels are now more routinely available for mobile broadband use").[64] We refute each of the arguments for continuing to exclude the remaining BRS and EBS spectrum below.

1. EBS

The crux of Sprint's most recent arguments seems to be that access to EBS spectrum involves certain challenges and therefore the spectrum should be excluded from the screen. But it willfully ignores the commercial and regulatory developments that have transpired over the last decade – most notably the widespread leasing of EBS spectrum and significant commercial

deployment. Given that, as Sprint CEO Dan Hesse recently remarked, "*Sprint controls 120 MHz of 2.5 GHz spectrum in 90 of the top 100 U.S. markets,*"[65] and that there are only 76.5 MHz of BRS spectrum, it is evident that Sprint (and Clearwire before it) has overcome whatever challenges had hindered commercial access to EBS spectrum.

Commercial Access Via Lease and the 5 Percent Educational Reservation. The fact that EBS spectrum is licensed to educational entities and commercial operators may only lease it is no basis to exclude EBS from the screen.[66]

The Commission's spectrum leasing policies state that general competition principles, including assessment of potential competitive effects of transactions, apply to leased spectrum.[67] Leased spectrum is thus routinely counted in the screen, and it should be included here.

In addition, over the years the Commission has whittled away at its educational use requirements in an effort to provide sufficient flexibility and not undermine commercial deployments. That effort has clearly been a success. The educational purpose of the EBS spectrum and the related leasing rules – namely, the requirement for a licensee to reserve 5 percent of the capacity of its channels for educational purposes[68] – have not precluded the use of EBS spectrum for mobile broadband services.[69] As Sprint itself explained, the rules "allow commercial operators leasing EBS spectrum to make better use of the 2.5 GHz band."[70]

In most cases, EBS licensees meet their 5 percent reservation and related use requirements over the Sprint network, rather than employing stand-alone networks. For example, EBS licensees may consider their use of Sprint's mobile broadband service, which Sprint also provides to consumers and other organizations, as fulfilling the 5 percent reservation requirement. Indeed, Sprint Nextel and SoftBank acknowledge that EBS licensees rely on Clearwire's coverage to satisfy their buildout requirements.[71]

To the extent that the 5 percent reservation is at all relevant to the spectrum screen, at most it could justify limiting to 95 percent the amount of EBS spectrum included.[72]

"Narrow" EBS Channelization. The fact that EBS channels are licensed on a 5.5- or 6-MHz wide channel and need to be aggregated for wider channelization is no basis to exclude EBS from the screen.[73]

At the outset, EBS and BRS channelization are identical – both have 5.5 MHz- or 6 MHz-wide channels – and BRS spectrum is already included in the screen. Further, there are several commercial spectrum bands included in the screen that are licensed in 5 and 6 MHz blocks – including some licenses that are standalone 6 MHz blocks.

The 2004 band plan transition, moreover, reconfigured the 2.5 GHz licensing scheme to provide EBS licensees with a wide swath of contiguous spectrum.[74] Most EBS licensees now hold a minimum of 16.5 MHz of contiguous spectrum (three 5.5 MHz channels). And, with Clearwire's consolidation of the EBS spectrum, Sprint is well-positioned to combine spectrum from multiple licensees into very wide swaths of spectrum. As Sprint CEO Dan Hesse observed, "Sprint could eventually use 60 MHz 2.5 GHz channels using carrier aggregation."[75]

EBS Geographic Service Areas. Finally, the site-based character of EBS licensing and associated white spaces is not a reasonable basis to exclude the spectrum from the screen.[76]

The Commission already includes in the screen other types of spectrum that are site-based with white space gaps, *e.g.*, cellular spectrum.[77] Cellular licensing shares the same characteristics as EBS – cellular is described by the FCC as "site-based"[78] with unlicensed "unserved areas" throughout the country[79] – yet cellular spectrum is included in the screen.

Moreover, the Commission currently is considering a range of proposals for licensing the EBS white spaces.[80] Under similar circumstances, the Commission added 80 MHz of spectrum in the 700 MHz band to the screen in 2007, even though the majority of this spectrum (62 MHz) had yet to be licensed, because it expected licensing to be accomplished in the reasonably near term and that availability provided market discipline.[81] At a minimum the Commission should count EBS spectrum in the screen in counties where it is licensed, and is therefore available for mobile use, as Sprint has advocated in the past.[82]

2. BRS

Sharing BRS Channel 1 with MSS. The fact that BRS Channel 1 (2496-2502 MHz) shares the 2496-2500 MHz band with Globalstar's Mobile Satellite Service ("MSS") is no basis to exclude the spectrum from the screen.[83]

Over the years Clearwire assembled BRS-1 spectrum across much of the country, because the "ability of BRS-1 to accommodate common, near-nationwide operations on a single frequency represents an especially valuable asset."[84] Further, it acknowledged operating on BRS-1 in 2012, noting that "CLWR currently operates WiMAX and pre-WiMAX technologies in the 2496-2500 band and has not received ANY interference complaints."[85]

Moreover, the Commission has firmly rejected Sprint's argument that the sharing of some (but not all) BRS Channel 1 spectrum with MSS renders BRS Channel 1 unsuitable for the provision of mobile broadband service.[86]

V. CONCLUSION: THE FCC MUST ADD 132.625 MHz OF 2.5 GHz SPECTRUM TO THE SPECTRUM SCREEN

For the reasons set forth above, the 2.5 GHz band is "suitable" and "available" for mobile broadband, and any continued exclusion of BRS spectrum and 95 percent of the EBS spectrum is inconsistent with both marketplace realities and Commission precedent. Appendix 1 contains a table identifying each segment of the 2.5 GHz band, the relevant spectrum that is currently excluded, and the amount of spectrum that should be included to correct the flawed spectrum screen, followed by a segment-by-segment summary of the reasons for inclusion.

Appendix 1: Additional BRS/EBS Spectrum to be Included in the Spectrum Screen

Band	BRS MHz to Include in Screen	EBS MHz	95% of EBS to Include in Screen	Total to Include in Screen
Lower Band Segment				
BRS Channel 1	6	0	0	6
LBS EBS	0	66	62.7	62.7
Middle Band Segment				
MBS BRS (F4 and E4)	12	0	0	12
MBS EBS	0	30	28.5	28.5
J and K Blocks				
J Block	0	4	3.8	3.8
K Block	3	1	0.95	3.95
Upper Band Segment				
UBS EBS	0	16.5	15.675	15.675
Total				
	21	117.5	111.625	132.625

- BRS Channel 1 – 6 MHz. Clearwire previously acknowledged that BRS Channel 1 is a valuable asset and that it had deployed mobile broadband in BRS Channel 1. The Commission should include the 6 MHz of BRS Channel 1.

- Lower Band EBS – 62.7 MHz. Sprint (and Clearwire before it) touts EBS spectrum as part of its 2.5 GHz broadband deployments. The Commission should include 95 percent of the 66 MHz of Lower Band Segment EBS spectrum, *i.e.*, 62.7 MHz.

- Middle Band BRS – 12 MHz. As noted, Sprint recently conceded it did not object to the inclusion of BRS Channels E4 and F4 in the spectrum screen because they are "now more routinely available for mobile broadband use."[87] In any event, other bands (*i.e.,* Lower 700 MHz C, D, and E block spectrum) have been included in the screen despite flexible use rules permitting high-powered broadcasts. The Commission should include the 12 MHz of Middle Band BRS spectrum.

- Middle Band EBS – 28.5 MHz. Sprint's acknowledgment that Middle Band spectrum is "now more routinely available for mobile broadband use" holds true for the 30 MHz of the MBS allocated for EBS. The Commission should, at a minimum, add 95 percent of the 30 MHz of Middle Band EBS spectrum, *i.e.*, 28.5 MHz, to the screen.

- J and K Blocks – 7.75 MHz. Although the BRS/EBS J and K blocks are secondary to high-powered video systems in the MBS, Sprint's admission regarding the availability of MBS applies to consideration of the J and K blocks. The FCC should add 95 percent of the 4 MHz EBS J block, *i.e.*, 3.8 MHz; 95 percent of the 1 MHz EBS K block, *i.e.*, 0.95 MHz; and the 3 MHz BRS K block.

- Upper Band EBS – 15.675 MHz. Finally, for the reasons stated above as to EBS spectrum suitability and availability, the FCC should include 95 percent of the 16.5 MHz of Upper Band EBS spectrum, *i.e.*, 15.675 MHz, in the screen.

[1] *See* Policies Regarding Mobile Spectrum Holdings, *Notice of Proposed Rulemaking*, 27 FCC Rcd 11710 (2012) ("*Spectrum Holdings NPRM*").
[2] FCC, Wireless Telecommunications Bureau and the Office of Engineering & Technology, *FCC White Paper, The Mobile Broadband Spectrum Challenge: International Comparisons*, at 5 (Figure 1) (Feb. 26, 2013). The National Broadband Plan also included the full 194 MHz of 2.5 GHz spectrum as among the spectrum bands that "can be used for mobile broadband" and "provide[] a 'runway' for the launch of next-generation mobile broadband services." *See* FCC Omnibus Broadband Initiative, *Connecting America: The National Broadband Plan*, at 84-85 & Exhibit 5-F (2010).
[3] Phil Goldstein, *Sprint's Hesse: Spark tri-mode LTE service could eventually provide real-world speeds of 150-180 Mbps*, *Fierce Wireless* (Dec. 10, 2013), *available at* http://www.fiercewireless.com/story/sprints-hesse-spark-tri-mode-lte-service-could-eventually-provide-real-worl/2013-12-10.
[4] *See* Sprint's Competition-Based Framework For A Weighted Wireless Broadband Spectrum Screen, WT Docket No. 12-269, at 27-30 (filed Feb. 11, 2014) ("Sprint Spectrum Screen Proposal") (attached to ex parte letter).
[5] *See* Amendment of Parts 2 and 4 of the Commission's Rules and Regulations to Establish a New Class of Educational Television Service for the Transmission of Instructional and Cultural Material to Multiple Receiving Locations on Channels in the 1990-2110 Mc/s or 2500-2690 Mc/s Frequency Band, *Report and Order*, 39 F.C.C. 846 (1963) ("*1963 ITFS Order*"), *recon. denied*, 39 F.C.C. 873 (1964).
[6] *Id.* at 852-53.
[7] *See* Amendment of Parts 2 and 74 of the Commission's Rules and Regulations to Establish a New Class of Educational Television Service for the Transmission of Instructional and Cultural Material to Multiple Receiving Locations on Channels in the 2500-2690 MHz Frequency Band, Amendment of Parts 81, 87, 89, 91, and 93, *Second Report and Order*, 30 F.C.C.2d 197, 198 (1971) ("None of the individuals or groups presented comments which demonstrate a need for any specific number of channels for . . . educational . . . fixed television purposes."). OFS was restricted to television transmission on the remaining three channels, and the FCC eliminated the international control station allocation. *See id.* at 200.
[8] Part 21, Section 21.703(g) and (h) of the Commission's Rules, *Memorandum Opinion and Order*, 47 F.C.C.2d 957 (1970).
[9] Amendment of Parts 1, 2, 21, and 43 of the Commission's Rules and Regulations to Provide for Licensing and Regulation of Common Carrier Radio Stations in the Multipoint Distribution Service, *Report and Order*, 45 F.C.C.2d 616, 617 (1974) ("*1974 MDS R&O*"), *recon. denied*, 57 F.C.C.2d 301 (1975).
[10] *See* Amendment of Parts 2, 21, 74 and 94 of the Commission's Rules and Regulation in Regard to Frequency Allocation to the Instructional Television Fixed Service, the Multipoint Distribution Service and Private Operational Fixed Microwave Service, *Notice of Inquiry, Proposed Rulemaking and Order*, 45 Fed. Reg. 29323, 29328 (May 2, 1980). *See also* Amendment of Parts 2, 21, 74 and 94 of the Commission's Rules and Regulations in Regard to frequency allocation to the Instructional Television Fixed Service, the Multipoint Distribution Service, and the Private Operational Fixed Microwave Service, *Report and Order*, 94 F.C.C.2d 1203, 1206 (1983) ("*1983 Wireless Cable Order*") ("There are a substantial number of unused IITFS channels in many areas of the country (several states have no IITFS licensees), and it appears that, while some growth in the IITFS service will occur, this growth is unlikely to exhaust the supply of channels."); Amendment of Parts 1, 21, 73, 74 and 101 of the Commission's Rules to Facilitate the Provision of Fixed and Mobile Broadband Access, Educational and Other Advanced Services in the 2150-2162 and 2500-2690 MHz Bands, Notice of Proposed Rule Making and Memorandum Opinion and Order, 18 FCC Rcd 6722, 6728 (2003) ("*2003 2.5 GHz Restructuring NPRM*") ("the ITFS spectrum was underutilized given that there were a substantial number of unused ITFS channels in many areas of the country, with several states having no ITFS licensees.") (citation omitted).
[11] *See 1983 Wireless Cable Order*, 94 F.C.C.2d. at 1249-51.
[12] *Id.* at 1228.
[13] *Id.* at 1250.
[14] *See* Revisions to Part 21 of the Commission's Rules regarding the Multipoint Distribution Service, *Report and Order*, 2 FCC Rcd 4251 (1987).
[15] Amendment of Parts 21 and 74 of the Commission's Rules With Regard to Filing Procedures in the Multipoint Distribution Service and in the Instructional Television Fixed Service, *Report and Order*, 10 FCC Rcd 9589 (1995) ("*1995 MDS/ITFS R&O*").

[16] Amendment of Parts 21 and 74 to Enable Multipoint Distribution Service and Instructional Television Fixed Service Licensees to Engage in Fixed Two-Way Transmissions, *Report and Order*, 13 FCC Rcd 19112, 19183-84 (1998).
[17] *See id.* at 19166.
[18] *See id* at 19159-60.
[19] *See* A Proposal For Revising The MDS and ITFS Regulatory Regime, Wireless Communications Ass'n Int'l, Nat'l ITFS Ass'n and Catholic Television Network, RM-10586, at 4 (filed Oct. 7, 2002) ("WCAI-CTN White Paper").
[20] *See 2003 2.5 GHz Restructuring NPRM,* 18 FCC Rcd at 6735-36.
[21] *See, e.g.*, Michael Martin, Sprint's Ion reaches end of line, Network World (Oct. 22, 2001), *available at* http://www.networkworld.com/archive/2001/126613_10-22-2001.html (announcing Sprint's discontinuance of new first generation deployments pending review of second generation technology).
[22] *See* Amendment of Part 2 of the Commission's Rules to Allocate Spectrum Below 3 GHz for Mobile And Fixed Services to Support the Introduction of New Advanced Wireless Services, Including Third Generation Wireless Systems, *First Report and Order and Memorandum Opinion and Order*, 16 FCC Rcd 17222, 17223 (2001).
[23] WCAI-CTN White Paper at 1.
[24] *See* Amendment of Parts 1, 21, 73, 74 and 101 of the Commission's Rules to Facilitate the Provision of Fixed and Mobile Broadband Access, Educational and Other Advanced Services in the 2150-2162 and 2500-2690 MHz Bands, *Report and Order and Further Notice of Proposed Rulemaking*, 19 FCC Rcd 14165, 14169 (2004) ("*2004 2.5 GHz Restructuring Order*").
[25] *Id*. at 14176-78. It also consolidated the two original MDS channels at 2150-2162 MHz with the remainder of the MDS spectrum at 2.5 GHz, in the process expanding the 2.5 GHz band to the larger 2496-2690 MHz range. *See id.* at 14178-80.
[26] *See id.* at 14189-94.
[27] *See id.* at 14208-15, 14243-44.
[28] *See* Sprint Nextel Corporation and Clearwire Corporation, Applications for Consent to Transfer of Control of Licenses, Leases and Authorizations, FCC File Nos. 0003462540 *et al*., Ex. 1 at 35 (filed June 24, 2008) ("Sprint-Clearwire Public Interest Statement") ("The Commission's decision to reconfigure the 2.5 GHz band in 2004 . . . creat[ed] a band plan and a set of technical rules to support the provision of wireless broadband in the band.").
[29] *See* Amendment of Parts 1, 21, 73, 74 and 101 of the Commission's Rules to Facilitate the Provision of Fixed And Mobile Broadband Access, Educational and Other Advanced Services in the 2150-2162 And 2500-2690 MHz Bands, *Order on Reconsideration and Fifth Memorandum Opinion and Order and Third Memorandum Opinion and Order and Second Report and Order*, 21 FCC Rcd 5606, 5639-42 (2006) ("*2006 Reconsideration Order*").
[30] Annual Report and Analysis of Competitive Market Conditions with Respect to Mobile Wireless, Including Commercial Mobile Services, *Sixteenth Repo*rt, 28 FCC Rcd 3700, 3774-75 (2013) ("*Sixteenth Wireless Report*").
[31] FCC Staff Working Group, *Report on FCC Process Reform*, at 74 (Feb. 14, 2014).
[32] *See 2004 2.5 GHz Restructuring Order*, 19 FCC Rcd at 14226. Prior to that decision, the Commission required the filing of all ITFS leases.
[33] *See 2006 Reconsideration Order*, 21 FCC Rcd at 5715-16. Indeed, EBS leases entered into between January 10, 2005 and July 18, 2006 were not subject to any maximum term whatsoever. *See id.* at 5716.
[34] *See id.* at 5716.
[35] *Id*. at 5701.
[36] Sprint Nextel Corporation and Clearwire Corporation, *Memorandum Opinion and Order*, 23 FCC Rcd 17570 (2008) ("*2008 Sprint-Clearwire Order*").
[37] *See id.* at 17589.
[38] *See id.* at 17572.
[39] *See* Global View Partners, *The 2.6 GHz Spectrum Band: Unique Opportunity to Realize Global Mobile Broadband*, at 15-19 (Dec. 2009) *available at* http://www.rysavy.com/Articles/2009_12_GSMA_2_6_GHz_Report.pdf.
[40] *See id.*
[41] *See* Press Release, *Sprint, XOHM, Intel and WiMAX Partners Celebrate New 4G Broadband Era in Baltimore* (Oct. 8, 2008), *available at* http://newsroom.sprint.com/article_display.cfm?article_id=749.
[42] *See* Annual Report and Analysis of Competitive Market Conditions With Respect to Mobile Wireless, Including Commercial Mobile Services, *Fourteenth Report*, 25 FCC Rcd 11407, 11485 (2010) (noting that Clearwire launched commercial 4G mobile WiMAX service in Portland, Oregon in January 2009).

[43] *See also Sixteenth Wireless Report*, 28 FCC Rcd at 3717, 3786 (confirming that Clearwire, which had not been acquired by Sprint at the time, "has access to the predominant amount of 2.5 GHz spectrum" and that Clearwire "holds the predominant share of BRS spectrum, and has access to much of the EBS spectrum through spectrum leasing arrangements").
[44] *See, e.g.*, Bonnington, "So Long, WiMax: Sprint Confirms LTE Rollout by 2013," *Wired* (Oct. 7, 2011). While Sprint continues to provide WiMAX service over the 2.5 GHz band and has not specified any date for ending that service, it has changed its terms of service with subscribers to facilitate moving WiMAX subscribers to its LTE network. *See* Goldstein, "Sprint changes terms of service to give WiMAX customers more flexibility to switch to LTE," *Fierce Wireless* (June 14, 2013), *available at* http://www.fiercewireless.com/story/sprint-changes-terms-service-give-wimax-customers-more-flexibility-switch-l/2013-06-14.
[45] Comments of Clearwire Corporation, RM-11685, at 7 (filed Jan. 14, 2013) ("Clearwire Comments RM-11685") (emphasis added) (citation omitted).
[46] Clearwire Corp., Annual Report (Form 10-K), at 14 (Feb. 16, 2012) ("Clearwire Annual Report"), *available at* http://www.sec.gov/Archives/edgar/data/1442505/000144530512000337/clwr1231201110-k.htm.
[47] Clearwire Corp., Quarterly Report (Form 10-Q) at 33 (Apr. 26, 2013), *available at* http://www.sec.gov/Archives/edgar/data/1442505/000144250513000039/clwr0331201310-q.htm#s8B8BA59704BD478104B15A28D40293AE.
[48] Applications of Softbank Corp., Starburst II, Inc., Sprint Nextel Corp., & Clearwire Corp., *Memorandum Opinion and Order, Declaratory Ruling, and Order on Reconsideration*, 28 FCC Rcd. 9642, 9682 (2013).
[49] *Id.*
[50] Sprint, Sprint 3Q13 Earnings Conference Call, at 14 (Oct. 30, 2013), *available at* http://investors.sprint.com/Cache/1500053682.PDF?Y=&O=PDF&D=&fid=1500053682&T=&iid=4057219)
[51] Sprint Q4 2013 Earnings Call Transcript (Feb. 11, 2014) (Statement of Steven Elfman, President-Network, Technology and Operations).
[52] Sprint Q3 2013 Earnings Call Transcript (Oct. 30, 2013) (Statement of Daniel Hesse, President and CEO) (emphasis added).
[53] Phil Goldstein, *Former Clearwire CEO Prusch: Sprint will have advantage with 2.5 GHz spectrum*, *Fierce Wireless* (Jan. 14, 2014), *available at* http://www.fiercewireless.com/story/former-clearwire-ceo-prusch-sprint-will-have-advantage-25-ghz-spectrum/2014-01-14#ixzz2qZan0UR0.
[54] *See, e.g.*, Radio-Electronics.com, Cellular telecoms, *LTE Frequency Bands & Spectrum Allocations*, http://www.radio-electronics.com/info/cellulartelecomms/lte-long-term-evolution/lte-frequency-spectrum.php (last visited Feb. 24, 2014).
[55] Global TD-LTE Radio Network White Paper, Ver. 5, Section 2.2.1 (2013), *available at* http://lte-tdd.org/upload/accessory/20139/20139241338187091653.pdf.
[56] Dan Meyer, *China Mobile set to launch TD-LTE '4G' service Dec. 18; iPhone to be included in plans*, *RCR Wireless* (Nov. 25, 2013), *available at* http://www.rcrwireless.com/article/20131125/carriers/china-mobile-set-to-launch-td-lte-4g-service-dec-18-iphone-to-be-included-in-plans/.
[57] *See* John Saw, *Happy New Year LTE*, *Sprint Newsroom* (Jan. 22, 2014), *available at* http://newsroom.sprint.com/perspectives/sprint-perspectives/happy-new-year-lte.htm.
[58] *See, e.g.*, Applications of AT&T Wireless Services, Inc. and Cingular Wireless Corporation For Consent to Transfer Control of Licenses and Authorizations, *Memorandum Opinion and Order*, 19 FCC Rcd 21522 (2004).
[59] *Spectrum Holdings NPRM*, 27 FCC Rcd at 11714 (citations omitted).
[60] *Id.* at 11722 (citing Application of AT&T Inc. and Qualcomm Incorporated, *Order*, 26 FCC Rcd 17589, 17605-06 (2011) ("*AT&T-Qualcomm Order*"); Applications of AT&T Inc. and Centennial Communications Corp., *Memorandum Opinion and Order*, 24 FCC Rcd 13915, 13935 (2009); Applications of Cellco Partnership d/b/a Verizon Wireless and Atlantis Holdings LLC, M*emorandum Opinion and Order and Declaratory Ruling*, 23 FCC Rcd 17444, 17473 (2008)).
[61] *Id.* (citing *AT&T-Qualcomm Orde*r, 26 FCC Rcd at 17606).
[62] S*ee* Applications of Nextel Communications, Inc. and Sprint Corporation, *Memorandum Opinion and Order*, 20 FCC Rcd 13967, 14022 (2005).
[63] *2008 Sprint-Clearwire Order*, 23 FCC Rcd at 17598-99.
[64] *See* Sprint Spectrum Screen Proposal at 27. Having conceded that that BRS channels E4 and F4 should be added to the screen because they are now routinely available for mobile broadband use, the same must be said for the

remainder of the Middle Band Segment, which is equally available now that high-powered video usage has substantially diminished.
[65] *See supra* note 3.
[66] *See* Sprint Spectrum Screen Proposal at 28 (complaining that "EBS channels are generally available for licensing only to educational entities, and commercial operators have to obtain a lease from the EBS licensee to use the spectrum").
[67] Promoting Efficient Use of Spectrum Through Elimination of Barriers to the Development of Secondary Markets, *Report and Order and Further Notice of Proposed Rulemaking*, 18 FCC Rcd 20604, 20657, 20667 (2003) (applied to spectrum manager and long term *de facto* leases).
[68] 47 C.F.R. § 27.1214(b)(1). An EBS licensee can aggregate the 5% reservation so it is all in one channel. *See id*. (requiring only that a licensee reserve 5% "of the capacity of its channels").
[69] *See 2008 Sprint-Clearwire Order*, 23 FCC Rcd at 17599.
[70] Sprint-Clearwire Public Interest Statement at 35; *see id*. at 65.
[71] *See* Joint Opposition of Sprint Nextel Corporation and SoftBank Corp. to Petitions to Deny and Reply Comments, IB Docket No. 12-343, at 46 (filed Feb. 12, 2013).
[72] This 111.625 includes 62.7 MHz of the EBS spectrum in the Lower Band Segment, 28.5 MHz of the EBS spectrum in the Middle Band Segment ("MBS"), 15.675 MHz of the EBS spectrum in Upper Band Segment, 3.8 MHz of the EBS spectrum in the J band and 0.95 MHz of the EBS spectrum in the K band.
[73] Sprint Spectrum Screen Proposal at 28.
[74] *2004 2.5 GHz Restructuring Order*, 19 FCC Rcd at 14168 ("The restructured band plan we adopt will provide ITFS and MDS licensees with contiguous spectrum to deploy both existing and emerging technologies.").
[75] *See supra* note 3.
[76] *2008 Sprint-Clearwire Order*, 23 FCC Rcd at 17599. While no doubt the task of deploying wireless broadband on the EBS spectrum would be challenging absent industry consolidation, Sprint is now leasing the vast majority of EBS spectrum and has managed to solve many of the concerns it has cited. Indeed, it is telling that while Sprint uses the Dallas-Ft. Worth markets to illustrate the difficulties it faced because of the size and shape of EBS geographic service areas, Sprint has also announced to great fanfare that it has launched its Sprint Spark service in the Dallas and Ft. Worth markets. "Sprint Adds Six Markets to Initial Sprint Spark Launch; Mobile Peak Speeds Up to 60 Mbps Now Available in 11 Markets," *Sprint Newsroom* (Jan. 7, 2014), *available at* http://newsroom.sprint.com/news-releases/sprint-adds-six-markets-to-initial-spark-launch-mobile-peak-speeds-up-to-60-mbps-now-available-in-11-markets.htm.
[77] *See* Comments of AT&T Inc., WT Docket No. 12-269, at 41 & n.118 (filed Nov. 28, 2012).
[78] *See* Amendment of the Commission's Rules with Regard to the Cellular Service, Including Changes in Licensing of Unserved Area, *Notice of Proposed Rulemaking and Order*, 27 FCC Rcd 1745, 1746 (2012) (proposing, but not adopting rules, to revise the current cellular licensing model from a "site-based model to a geographic-based approach").
[79] *See id*. at 1748-49, 1755.
[80] *See* Amendment of Parts 1, 21, 73, 74 and 101 of the Commission's Rules to Facilitate the Provision of Fixed and Mobile Broadband Access, Educational and Other Advanced Services in the 2150-2162 and 2500-2690 MHz Bands, *Third Order on Reconsideration and Sixth Memorandum Opinion and Order and Fourth Memorandum Opinion and Order and Second Further Notice of Proposed Rulemaking and Declaratory Ruling*, 23 FCC Rcd 5992, 6060-68 (2008).
[81] *See, e.g.*, Applications of AT&T Inc. and Dobson Communications Corporation, *Memorandum Opinion and Order*, 22 FCC Rcd 20295, 20313 (2007) ("We are also confident at this point in time that [700 MHz spectrum] will be licensed and available on a nationwide basis in the sufficiently near-term – less than a year and a half – that the prospect of its availability will discipline current market behavior.") (citations omitted).
[82] *See* March 2013 Ex Parte.
[83] *See* Sprint Spectrum Screen Proposal at 27.
[84] Clearwire Comments RM-11685 at 10 (citation omitted).
[85] *See* Letter from Cathleen A. Massey, Vice President, Regulatory Affairs and Public Policy, Clearwire Corp., to Marlene H. Dortch, Secretary, FCC, WT Docket No. 03-66, RM-11614, Att. at 3, 4 (filed Oct. 19, 2012).
[86] *See 2008 Sprint-Clearwire Order*, 23 FCC Rcd at 17598.
[87] Sprint Spectrum Screen Proposal at 27.