

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

In the Matter of:)	
)	
International Comparison and Consumer)	GN Docket No. 09-47
Survey Requirements in the Broadband)	
Data Improvement Act)	
)	
A National Broadband Plan for Our Future)	GN Docket No. 09-51
)	
Inquiry Concerning the Deployment of)	GN Docket No. 09-137
Advanced Telecommunications Capability to)	
All Americans in a Reasonable and Timely)	
Fashion, and Possible Steps to Accelerate)	
Such Deployment Pursuant to Section 706 of)	
the Telecommunications Act of 1996, as)	
Amended by the Broadband Data)	
Improvement Act)	

REPLY COMMENTS OF AT&T INC.—NBP PUBLIC NOTICE # 6

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Dated: November 13, 2009

SUMMARY

As discussed herein, the record overwhelmingly supports the key points raised by AT&T Inc. (“AT&T”) in its opening comments in this proceeding. Mobile broadband has the potential to fundamentally restructure the way that all Americans live and work. But, as recognized by the Commission and by commenters alike, access to new radio spectrum is the oxygen of wireless networks, and the failure to adequately plan for demand could choke development, innovation and competition. AT&T accordingly urges the FCC to act promptly and ensure that spectrum is available to support the demands of tomorrow’s mobile networks.

Virtually all commenters in this proceeding recognized the need to allocate additional spectrum for mobile use in view of the meteoric rise in data demands. The record also generally reflects that existing network operators are extremely efficient spectrum users, and that the burgeoning demand for data cannot be accommodated through network investment alone. In such regards, the priority should be the identification and reallocation of spectrum for licensed radio services, which are the only networks capable of meeting the quality and throughput demands of subscribers on a wide area basis.

AT&T looks forward to working with the FCC and other stakeholders, including NTIA, to identify possible means for addressing the gaping U.S. broadband spectrum shortfall. While there are certain short-term, stop gap measures that can – and should – be undertaken, such as the reallocation of 1755-1780 MHz spectrum band, the longer term goal should be a complete inventory of spectrum use below 4 GHz. AT&T, like other commenters, believes the process should be exhaustive, and include not only Federal spectrum use, but also television broadcast spectrum and mobile satellite spectrum in the 2 GHz band. The priority should be identifying spectrum that possesses appropriate propagation characteristics, is proximate to other mobile

bands and internationally harmonized, and can be relicensed in large, contiguous blocks suitable for new, and highly efficient, modulation techniques.

AT&T also believes there was strong record support for continuing to license spectrum for mobile services through auctions of exclusive, flexible use authorizations. Historically, these market-based policies have allowed spectrum to rise to its highest and best use and driven the wireless ecosystem to continually innovate in services, products and pricing. Coupled with a successful secondary market, these policies have been proven to be effective in fostering a competitive landscape that includes large carriers and small carriers, allowing the development of networks serving urban niche markets and networks extending deep into rural territories, and allowing the entry of new competitors. These policies – including the ability to modify spectrum use to meet changing demand for fixed and mobile applications, have created a market where spectrum’s value to the public is fully realized.

As a final matter, AT&T also concurs that part and parcel of ensuring the continued development of broadband mobile networks is ensuring the continued availability of backhaul resources. As AT&T and others suggest, the capacity demands of the new generation of wireless systems must be met with increasingly high capacity backhaul. AT&T believes there will be a shortfall of capacity for long haul, rural to urban backhaul spectrum. AT&T therefore urges the Commission to identify additional spectrum in the 6 to 10 GHz range for such purposes.

AT&T commends the Commission for initiating this inquiry into broadband wireless spectrum needs. As expressed on the record, a gaping spectrum shortfall exists that must be rectified if U.S. businesses are to continue to compete internationally and U.S. consumers are to experience the full, rich promise of nationwide mobile broadband. AT&T urges the FCC to act consistent with the comments expressed herein, and prioritize identifying – and reallocating – mobile spectrum for the next generation of advanced wireless services.

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REPLY COMMENTS OF AT&T INC.—NBP PUBLIC NOTICE # 6

AT&T Inc. (“AT&T”) herewith submits its reply to comments filed in response to the FCC’s National Broadband Plan Public Notice #6 concerning future broadband spectrum needs.¹ Despite the variety of economic interests and business models represented among the participants, commenters largely agree on the key issues related to the need for spectrum for broadband. For example, the record evidences virtual unanimity on the need to allocate substantial additional licensed spectrum to support the demand for next generation mobile broadband services. In this regard, commenters also generally agree that the Commission should identify and allocate bands of spectrum for wireless broadband that: (i) possess appropriate

¹ Comment Sought on Spectrum for Broadband, NBP Public Notice # 6, GN Docket Nos. 09-47, 09-51, 09-137 (rel. Sept. 23, 2009) (“*Spectrum Notice*”).

propagation characteristics; (ii) can be licensed in large, contiguous blocks; (iii) are proximate to existing commercial mobile allocations; and (iv) are harmonized with international allocations.

To this end, the Commission and NTIA should conduct a spectrum review of all bands that are suitable for mobile services, and should immediately begin working to reallocate the 1755-1780 MHz band for commercial use. The record was also clear that the Commission should continue to ensure licenses reach their highest and best use by maintaining its market-responsive use of auctions to issue exclusive, flexible use licenses. AT&T's specific comments on these issues are set forth in greater detail below.

I. THE COMMENTS RECOGNIZE THE NEED TO ALLOCATE SPECTRUM TO ACCOMMODATE DEMAND FOR MOBILE BROADBAND SERVICES

A. Accommodating the Data Demands of Advanced Wireless Broadband Systems Will Require Substantial New Spectrum

Virtually every commenter agreed with AT&T that a significant amount of additional spectrum will be required to promote continued innovation and satisfy the demand for next generation mobile broadband services.² As numerous commenters explained, spectrum demand

² See, e.g., Comments of 3G Americas—NBP Public Notice #6, GN Docket Nos. 09-47, 09-51 & 09-137 (filed Oct. 23, 2009) at 3 (“3G Americas Comments”); Comments of Bollore Telecom on Behalf of Worldmax, Mgm Productions Group, Axtel And UK Broadband On NBP Public Notice #6, GN Docket Nos. 09-47, 09-51 & 09-137 (filed Oct. 23, 2009) at 3 (“Bollore Telecom Comments”); Comments of the Consumer Electronics Association, GN Docket Nos. 09-47, 09-51 & 09-137 (filed Oct. 23, 2009) at 2-3 (“CEA Comments”); Covad Communications Company Comments—NBP Public Notice #6, GN Docket Nos. 09-47, 09-51 & 09-137 (filed Oct. 23, 2009) at 3-4 (“Covad Comments”); Comments of CTIA-The Wireless Association NBP Public Notice #6, GN Docket Nos. 09-47, 09-51 & 09-137 (filed Oct. 23, 2009) at 3-5, 16-17 (“CTIA Comments”); Comments of Inquam Broadband NBP Public Notice #6, GN Docket Nos. 09-47, 09-51 & 09-137 (filed Oct. 23, 2009) at 3 (“Inquam Comments”); Comments of MetroPCS Communicatiosn, Inc., GN Docket Nos. 09-47, 09-51 & 09-137 (filed Oct. 23, 2009) at 3 (“MetroPCS Comments”); Comments of Motorola, Inc., GN Docket Nos. 09-47, 09-51 & 09-137 (filed Oct. 23, 2009) at 3-4 (“Motorola Comments”); Comments of State of New York, GN Docket Nos. 09-47, 09-51 & 09-137 (filed Oct. 23, 2009) at 2 (“NY State Comments”); Comments of Qualcomm Incorporated on Spectrum for Broadband In Response To NBP Public Notice #6, GN Docket Nos. 09-47, 09-51 & 09-137 (filed Oct. 23, 2009) at 9-10 (“Qualcomm Comments”); Comments – NBP Public Notice #6 of T-Mobile USA, Inc. , GN Docket Nos. 09-47, 09-51 & 09-137 (filed Oct. 23, 2009) at 2-3 (“T-Mobile USA Comments”); Comments of the Telecommunications Industry Association, GN Docket Nos. 09-47, 09-51 &

is being driven by increased availability of 3G services, innovation in mobile devices and applications, and the prospect of enhanced capabilities through 4G technologies.³ “The Internet is now undergoing a revolution as profound as the introduction of the World Wide Web,” the Consumer Electronics Association explained. “Urgent action is required now in order to keep up with spiraling consumer demand and to ensure that our nation’s broadband platforms are sufficiently robust to allow for the development of increasingly bandwidth-intensive applications, content and services in the years ahead.”⁴

Commenters cited evidence to illustrate the skyrocketing demand for mobile broadband spectrum that was both anecdotal and research-based. Just as AT&T indicated a dramatic increase in data traffic on its mobile network,⁵ T-Mobile reports that users of its G1 smartphone transmit 50 times the data of the average T-Mobile customer, and users of its webConnect™ USB Laptop stick use 200 times the data of an average T-Mobile voice customer.⁶ Although forecasts vary, numerous commenters pointed to researchers who predicted staggering increases in mobile data traffic as next generation networks and devices are deployed. For example, as CTIA commented, “Cisco projects that mobile data traffic will double every year between 2008 and 2013, resulting in traffic 66 times 2008 levels.”⁷ Cisco’s estimate appears to be

09-137 (filed Oct. 23, 2009) at 4 (“TIA Comments”); Comments – NBP Public Notice #6 Comments of Verizon Wireless on Spectrum for Broadband, GN Docket Nos. 09-47, 09-51 & 09-137 (filed Oct. 23, 2009) at 4-5 (“Verizon Wireless Comments”).

³ See, e.g. CEA Comments at 3; CTIA Comments at 5-10; Qualcomm Comments at 5-8; T-Mobile USA Comments at 5-7; Verizon Wireless Comments at 3-5.

⁴ CEA Comments at 3.

⁵ See Comments AT&T Inc. on NBP Public Notice #6, Spectrum for Broadband, GN Docket Nos. 09-47, 09-51 & 09-137 (filed Oct. 23, 2009) at 7 (“AT&T Comments”).

⁶ See T-Mobile USA, Inc. Comments at 6-7.

⁷ See CTIA Comments at 3-4.

conservative, as Verizon Wireless points out, when compared with research done by Chetan Sharma Consulting, which estimates that mobile data traffic in the United States will increase by a factor of 145 times between 2008 and 2013, and by a factor of 300 times by 2014.⁸

MetroPCS speaks for many commenters when it indicates that “[c]urrent spectrum allocations, including allocations that are in process, are woefully inadequate to fully support the next-generation broadband mobile wireless networks and the anticipated surge in demand and throughput requirements.”⁹ Most commenters agreed that the only long-term solution to the demand explosion was a substantial infusion of additional spectrum into the marketplace.¹⁰ CTIA and others echoed AT&T’s call for at least 800 MHz of additional spectrum over the coming years, based upon estimates made by the International Telecommunications Union (“ITU”), Next Generation Mobile Networks, and others.¹¹ As Motorola put it, “[t]here is no doubt that additional significant quantities of spectrum will be needed to meet the predicted capacity requirements resulting from the surging demand for both consumer and specialized wireless broadband applications.”¹²

⁸ See Verizon Wireless Comments at 4.

⁹ MetroPCS Comments at 3.

¹⁰ See, e.g. Bollore Telecom Comments at 3; Covad Comments at 3; CTIA Comments at 5; Inquam Broadband Comments at 3; Motorola Comments at 3; Qualcomm Comments at 9-10; T-Mobile USA Comments at 2; TIA Comments at 4; Verizon Wireless Comments at 5.

¹¹ See, e.g., CTIA Comments at 16-17; T-Mobile USA Comments at 2-3.

¹² Motorola Comments at 3. Notably, Motorola also urged the Commission to consider the needs of public safety users for additional spectrum beyond that to be allocated for commercial purposes. See Motorola Comments at 4-5; see also State of New York Comments at 2-3. AT&T agrees that public safety users have special and vital spectrum needs and urges the Commission to work with Congress to make the 700 MHz D block spectrum available directly to public safety users who can then partner with private sector network operators of their choice in constructing a next generation public safety wireless broadband network. See Comments of AT&T, PS Docket No. 06-229, WT Docket No. 06-150, at 12-16 (filed Oct. 16, 2009).

Commenters also accurately observed that a burgeoning cause for concern is that the United States is currently being outpaced by many European countries in terms of spectrum allocations for broadband. 3G Americas explained that our nation's competitive footing is potentially at stake when it commented that "[b]y 2010, 'mobile broadband penetration will surpass fixed penetration globally. Countries that are behind the curve in spectrum allocation will lag behind as a lack of spectrum will delay the launch of broadband services.'"¹³ More than merely a point of national pride, inadequate spectrum allocations would have a serious detrimental effect on our economy, which relies so heavily on innovation in the wireless sector. "In fact," as Verizon Wireless warns, "it is reasonable to assume that the lack of sufficient spectrum to accommodate new technologies would have a chilling effect on their development in the future, as there would be no incentive to develop new technologies if there is no viable way to implement them."¹⁴ As the CEA put it, "[u]nless significant amounts of new spectrum is allocated to wireless broadband, the next iPhone, the next YouTube, the next telemedicine applications won't be developed in the United States."¹⁵

B. The Record Demonstrates That Mobile Network Operators, While Constantly Striving To Increase Spectral Efficiency, Cannot Meet Expected Demand Through Network Investment Alone

The record demonstrates that mobile network operators are highly efficient spectrum users constantly innovating to increase capacity, but that there are near-term limits to their ability

¹³ 3G Americas Comments at 3 (quoting Chetan Sharma Consulting, *Managing Growth and Profits in the Yottabyte Era* 16 (2009), available at <http://www.chetansharma.com/yottabyteera.html>).

¹⁴ Verizon Wireless Comments at 12.

¹⁵ CEA Comments at 2-3.

to accommodate demand exclusively through additional network investment.¹⁶ As CTIA explained in its comments, “[t]he pressure to increase spectral efficiency is relentless.’

Providers are constantly experimenting with and deploying technologies in an attempt to meet usage requirements and gain a competitive edge.”¹⁷ The U.S. has the most competitive wireless marketplace in the world, and this competition drives carriers to extract every bit of value from their spectrum possible.¹⁸ As T-Mobile and others have explained, when a carrier needs to

¹⁶ See Bollore Telecom Comments at 3; CTIA Comments at 13-16; Motorola Comments at 7, 9-10; T-Mobile USA Comments at 8, 11; Verizon Wireless Comments at 6. Notably, the National Association of Broadcasters and Association for Maximum Service Television takes the opposite view, stating that “additional and substantial gains are possible” for commercial wireless licensees and that there are “efficiency concerns” that mitigate in favor of targeting increased efficiency instead of new spectrum. Comments – NBP Public Notice #6, The Association for Maximum Service Television, Inc. and the National Association of Broadcasters, GN Docket Nos. 90-47, 09-51 & 09-137 (filed Oct. 23, 2009) at 5-6 (“NAB/MSTV Comments”). NAB/MSTV cite to the television broadcasters’ recent digital transition, which they state “increased throughput . . . by 400 or 500 percent.” *Id.* at 6, n.12. NAB and MSTV, however, fail to recognize that mobile network operators in the United States are continually innovating. While they note that broadcasters invested “many billions of dollars . . . with the transition to digital television,” *id.* at 9, AT&T – a single mobile operator – has invested \$38 billion in its network in the past two years alone. Andrew Berg, *Rinne: AT&T Ready for 4G Jump*, *Wireless Week*, Sep. 15, 2009, <http://www.wirelessweek.com/News/2009/09/Rinne--AT-T-Ready-for-4G-Jump/> (“AT&T has invested \$38 billion in its wired and wireless networks over the past two years.”). The television industry has undergone a single efficiency overhaul in its 70 year history. In the 25 years that the broadcasters took to accomplish that single transition, mobile network operators like AT&T upgraded from analog to digital, then from 2G digital to 3G systems, and will soon undergo a transition from 3G to 4G (as well as having implemented a number of other subsidiary transitions in the interim, including switching out TDMA for GSM, and upgrading digital data from CDPD to EDGE and then to HSPA), all without the “the support of a government subsidy.” NAB/MSTV Comments at 10.

¹⁷ CTIA Comments at 14 (quoting Comments of Thomas Hazlett and Matthew Spitzer, ET Docket No. 03-237 at 35 (filed April 5, 2004).

¹⁸ NAB/MSTV hold out the DTV transmission standard, ATSC A/53, as having a “wide-area coverage . . . data rate of almost 20 Mbps within a 6 MHz channel, making it one of the most efficient transmission systems for disseminating high bit-rate content to a wide audience.” NAB/MSTV Comments at 10. This statement is misleading in material respects. Even ignoring that mobile network operators extensively re-use their spectrum in a market, the eight-level vestigial sideband modulation (“8-VSB”) scheme used by the broadcast industry in the U.S. is highly efficient for transmitting data *only* to fixed locations and where coverage is defined as a specific signal level needed for good quality video service – and where transmitters are capable of 1 MW of power. Mobile network operators have to contend with lower signal levels, co-channel and adjacent channel interference, and fading associated with receivers in motion, and therefore have used modulation schemes such as W-CDMA (wideband code division multiple access and OFDMA (orthogonal frequency division multiple access) that have characteristics

expand capacity it has three choices: (1) “[i]ncreasing available capacity per cell sector (*e.g.*, through cell splits);” (2) “[d]eploying more spectrally efficient equipment” and (3) “[a]dding spectrum.”¹⁹ As discussed below, only the addition of spectrum resources has the capability of meeting the exploding demand for wireless data.

Like AT&T, CTIA and others discussed the limitations of enhanced frequency reuse through technological approaches such as cell splitting and antenna sectorization.²⁰ As T-Mobile explains, this sort of network investment is highly expensive and “technical and operational limits restrict how many splits can take place in a given market, and such splits ‘reach a point of diminishing returns.’”²¹ Meanwhile, upgrading networks from 2G to 3G to 4G also enables more efficient spectrum usage, but as Qualcomm and others make clear, although LTE will allow

appropriate for the conditions experienced in mobile networks. Both UMTS (based on W-CDMA) and LTE (based on OFDMA) can use modulation formats such as 64 QAM that have peak spectral efficiencies that are similar to DTV. In addition, both UMTS and LTE can support MIMO (multiple input – multiple output) antenna technology and most LTE systems that are currently being planned will support 2x2 MIMO in their initial deployments which can raise the peak spectral efficiency to 7.3 bps per Hertz. NAB/MSTV appear to be making the claim that 8-VSB provides 20 Mbps in a 6 MHz channel – implying an efficiency of 3.3 bps per Hertz. However, unless DTV stations transmitters are co-located, which is rare, television stations cannot use adjacent channels in the same market because “near” adjacent transmitters will overwhelm “distant” desired signals. As a result, the efficiency of a DTV system (considering that it provides nearly 20 Mbps but precludes use of 18 MHz – the 6 MHz occupied channel and the two adjacent 6 MHz channels) is 1.07 bps per Hertz. The impact on 8-VSB optimization for fixed applications, in fact, is readily evident in the ATSC-H specification for mobile television. Each ATSC-H data group comprises 917 kbps of the overall ATSC bandwidth. There are a total of 8 of these data groups in the ATSC-H standard. Broadcasters require two of these data groups (or 1.834 Mbps) to provide the coding and error correction necessary to provide a 200-400 kbps video payload to a mobile unit. *See e.g.*, Candidate Standard: ATSC-Mobile DTV Standard, Part 1 – ATSC Mobile Digital Television System (A/153 Part 1:2009) at http://www.atsc.org/standards/cs_documents/a153-2009-05-29/S4-130r15-A153-Part-1-ATSC-M-H.pdf (last visited Nov. 13, 2009).

¹⁹ T-Mobile USA Comments at 10; *see also* Bollere Telecom Comments at 3; Inquam Broadband Comments at 3; Verizon Wireless Comments at 6; *see also* 3G Americas, *3GPP Technology Approaches for Maximizing Fragmented Spectrum Allocations* 19 (July 2009) Att. to 3G Americas Comments.

²⁰ *See* CTIA Comments at 14; T-Mobile USA Comments at 10-11.

²¹ T-Mobile USA Comments at 10 (quoting 3G Americas, *3GPP Technology Approaches for Maximizing Fragmented Spectrum Allocations* 19 (July 2009)).

more reuse to increase capacity, it also “is optimized for wider bandwidths – a minimum of 20 MHz of paired spectrum, and ideally at least 40 MHz of paired spectrum per operator, for initial deployments.”²² These sorts of large contiguous blocks of spectrum are very difficult to obtain within the confines of current allocations.

The record demonstrates that carriers are constantly innovating with respect to the first two means of increasing spectral efficiency, but this will not be enough.²³ Motorola indicates that current wireless technology platforms “are approaching the theoretical limits on bandwidth utilization,” while “carriers are already pushing the envelope on cell splitting and are increasingly constrained by tower siting, environmental and zoning requirements.”²⁴ There is a technological limitation fast approaching, beyond which network infrastructure investment cannot take us, as CTIA and others have concluded “[t]he only answer to the demand for more capacity is more licensed spectrum.”²⁵ As a result, accommodating demand in the future will require infusions of additional spectrum into the mobile market.²⁶

C. Unlicensed Spectrum Is Not a Substitute for Licensed Network Operators, and the FCC Should Prioritize Accommodating Licensed Spectrum Needs

Many commenters echoed the point made by AT&T in its initial comments that although unlicensed services have a role to play in today’s wireless broadband marketplace, they can

²² Qualcomm Comments at 10.

²³ See CTIA Comments at 13-16; Motorola Comments at 7, 9-10; T-Mobile USA Comments at 10-12; Verizon Wireless Comments at 6-7.

²⁴ Motorola Comments at 7.

²⁵ CTIA Comments at 15.

²⁶ It also should be noted that given the scarcity of spectrum at a time of exploding demand for mobile broadband services, the freedom of wireless carriers to manage traffic on their networks to wring additional efficiencies from their existing spectrum resources and improve service should not be restricted by so-called “net neutrality” regulations.

never reliably provide the quality of mobile broadband service demanded by consumers and businesses over a wide area.²⁷ As an initial matter, there is already a surplus of valuable spectrum currently allocated for unlicensed uses – Verizon Wireless identified 674.5- 956.5 MHz of spectrum currently available for unlicensed devices in the 5 GHz band or lower, significantly more than the roughly 410 MHz available for licensed CMRS uses.²⁸ As Qualcomm points out, manufacturers continue to make new equipment for all of the currently allocated unlicensed bands, thus arguments about a shortage of unlicensed spectrum ring hollow.²⁹ “If any unlicensed band was congested, new equipment authorizations for the band would decrease” as the devices in that band would become less and less usable.³⁰

The record also provides both economic and technical reasons why unlicensed spectrum is unlikely to be effective for large-scale mobile networks. As CTIA describes, only the exclusive licensee has the economic incentives to make the huge financial investment necessary to construct a large-scale mobile network. “Without an exclusive license, it is largely impossible to know the level of use by other devices in the spectrum band, and consequently a wireless network operator can accurately predict neither the capacity of the network nor the revenues it will earn.”³¹ “Uncertainty of this nature deters investment because of the unquantifiable risk,” MetroPCS explains.³² From a technical perspective, the lack of interference protections in the

²⁷ See CTIA Comments at 24-25; MetroPCS Comments at 7; Qualcomm Comments at 32-33; T-Mobile USA Comments at 17; Verizon Wireless Comments at 10-11.

²⁸ See Verizon Wireless Comments at 10.

²⁹ See Qualcomm Comments at 33.

³⁰ *Id.*

³¹ CTIA Comments at 24.

³² MetroPCS Comments at 7.

unlicensed bands make them unsuitable to mobile broadband service. The more devices in an unlicensed band, the more likelihood of interference between them. “Thus,” Qualcomm states, “unlicensed devices are less reliable than those that use licensed spectrum, and as unlicensed devices proliferate, their reliability is unlikely to improve.”³³

It should thus be clear that the FCC’s priority in addressing the exploding demand for wireless data, is the allocation of additional licensed spectrum for operators. Unlicensed devices, while a useful adjunct to carrier-based networks for small areas, do not have the reliability and cannot attract the investment to achieve nationwide coverage. And, in any event, these systems have adequate spectrum resources to meet projected needs.

II. THE RECORD SUPPORTS IMMEDIATE STEPS TO IDENTIFY AND REALLOCATE ADDITIONAL MOBILE SPECTRUM

The record demonstrates that the Commission, in conjunction with NTIA, should identify and allocate new spectrum for commercial mobile wireless broadband. Although there are some differences with respect to the exact threshold, numerous commenters largely agree with AT&T that, in trying to identify additional spectrum for commercial wireless uses, the Commission should focus on spectrum meeting certain key requirements:

- ***Additional Spectrum Should Possess Appropriate Propagation Characteristics.*** AT&T agrees with CTIA, and others, that “[a]lthough mobile wireless broadband services could potentially be provided in most spectrum bands between 400 MHz and 5 GHz,” “lower-band spectrum is generally considered more desirable for providing wide coverage because of its superior propagation characteristics and the need for fewer base stations.”³⁴
- ***Additional Spectrum Should Be Allocated in Large Contiguous Blocks Suitable for Advanced Services.*** In addition to identifying lower-band spectrum, it is essential that the Commission allocate large, contiguous blocks. 3G Americas explained in its

³³ Qualcomm Comments at 32.

³⁴ CTIA Comments at 18; *see also* 3G Americas Comments at 7; MetroPCS Comments at 7; Motorola Comments at 10; Verizon Wireless Comments at 13.

comments that wider bandwidth allocations are better suited for data-intensive services. “It is instructive that European regulators are planning 2 x 30 MHz pairs for LTE wireless deployment.”³⁵

- ***Additional Spectrum Should Be Allocated Near Existing Commercial Bands.*** As MetroPCS points out, the Commission should attempt to identify spectrum that is proximate to existing CMRS allocations as “[a]djacent or nearby bands are more easily added to existing networks and handsets, thus resulting in economies of scale, operating efficiencies and accelerated deployment.”³⁶
- ***Finally, Additional Spectrum Should Be Internationally Harmonized.*** Many commenters also agreed that the Commission should strive to identify new allocations that would be harmonized with spectrum identification efforts undergone abroad.³⁷ CTIA describes “both economic and social benefits” to be had from globally harmonized spectrum.³⁸ Economically, harmonization drives down equipment costs, resulting in savings for consumers. Socially, in addition to increased broadband deployment, harmonization allows for easier international roaming and for simplified international interference management.³⁹ 3G Americas also comments that global harmonization will result in “a greater number of innovative applications that will arise from a global development base,” and it will expedite the deployment of advanced next generation mobile network platforms.⁴⁰

AT&T looks forward to working with the FCC, NTIA and other stakeholders in seeking out spectrum for reallocation meeting these criteria.

³⁵ 3G Americas Comments at 8. Larger blocks will better enable carriers to take advantage of next generation network platforms, as well. As Verizon Wireless explains, “[t]he current LTE standard supports configurations up to 2 x 20 MHz, with peak data rates exceeding 100 Mbps. Future enhancements to the standard (LTE-Advanced) are expected to support even larger contiguous blocks of spectrum with correspondingly higher data rates.” Verizon Wireless Comments at 13-14 (arguing that new allocations should provide a minimum of 80-120 MHz of contiguous spectrum).

³⁶ MetroPCS Comments at 7.

³⁷ See 3G Americas Comments at 9-10; CTIA Comments at 19-20; Motorola Comments at 10; Verizon Wireless Comments at 15.

³⁸ CTIA Comments at 19.

³⁹ *Id.* at 19-20.

⁴⁰ 3G Americas Comments at 9.

As urged by AT&T and numerous others, the Commission and NTIA should conduct a review of all spectrum bands suitable for mobile services.⁴¹ Due to the importance of the issue, and the large amount of spectrum required, this survey should include an audit of all bands that could conceivably effectively support mobile services, including commercial and governmental bands. It is essential that the Commission work closely with NTIA to ensure transparency as to federal spectrum use, because, as 3G Americas and others have pointed out, “it is likely that underutilized spectrum currently assigned to the Federal government will be a critical source for spectrum that can be repurposed.”⁴²

Just as no stone should be left unturned with respect to federal spectrum, so with currently allocated commercial spectrum must the Commission fully explore all options. For example, the Consumer Electronics Association and others have suggested the Commission consider whether a portion of the broadcast television spectrum could be better used for wireless broadband services.⁴³ Furthermore, the Commission should also consider proposals to examine the efficiency of existing Mobile Satellite Service allocations in the 2 GHz band.⁴⁴ In light of the dire need for additional mobile broadband spectrum and the potentially underutilized state of some other allocations, the Commission may be able to find valuable bands for reallocation with few active users needing relocation. “Notably,” MetroPCS comments, “the MSS allocation in the 2 GHz band is proximate to the existing AWS-1 band that is being rapidly and successfully

⁴¹ 3G Americas Comments at 6-7; CEA Comments at 1-4; CTIA Comments at 27; MetroPCS Comments at 2; T-Mobile USA Comments at 15; TIA Comments at 6.

⁴² 3G Americas Comments at 6; *see also* CTIA Comments at 27.

⁴³ *See* Consumer Electronics Association Comments at 4; CTIA Comments at 30-31.

⁴⁴ *See* MetroPCS Comments at 11-12; Sprint Nextel Comments at 9-12.

commercially deployed by a variety of wireless carriers including MetroPCS, T-Mobile Communications and Leap Wireless, among others.”⁴⁵

Considering the long lead time required to bring any new spectrum to market through an inventory and reallocation process, in the shorter term, as suggested by AT&T and numerous other commenters, the Commission and NTIA should work together to relocate federal users in the 1755-1780 MHz band, and pair that spectrum with the orphaned “extended” AWS-3 spectrum at 2155-2180 MHz.⁴⁶ As CTIA explains in its comments, the 1755-1780 MHz band is attractive for relocation because it is part of the larger 1710-1885 MHz band that has been identified by ITU for commercial wireless uses, furthering goals of international harmonization, and also because of recent experience on behalf of some members of the wireless industry in working to relocate federal incumbents in the adjacent 1710-1755 MHz band.⁴⁷ CTIA also points out that this spectrum could be easily paired with the 2155-2180 MHz band, which is already allocated for commercial wireless use but is currently unpaired and unlicensed.⁴⁸ T-Mobile refers to this plan as representing the opportunity for the Commission to make a spectrum “down payment,” and it “believes that this paired total of 50 MHz is the minimum required for competitive U.S. mobile networks to meet demand in the very near future.”⁴⁹

⁴⁵ MetroPCS Comments at 12.

⁴⁶ See 3G Americas Comments at 9-10; CTIA Comments at 27-28; MetroPCS Comments at 2, 11; Motorola Comments at 14-15; Qualcomm Comments at 24; T-Mobile USA Comments at 14; U.S. Cellular Corporation Comments at 4.

⁴⁷ See CTIA Comments at 27-28.

⁴⁸ *Id.* at 28.

⁴⁹ T-Mobile USA Comments at 14.

III. THE COMMENTERS AGREE THAT COMMISSION SHOULD CONTINUE TO USE PROVEN, MARKET-BASED LICENSE ASSIGNMENT POLICIES

The record in this proceeding also clearly demonstrates that open auctions for exclusive use licenses combined with flexible use regulation ensure spectrum is utilized for its highest and best use. Indeed, the Commission's long-standing flexible use policy has been extremely successful, resulting in a highly innovative and competitive wireless industry. Accordingly, the agency should rely on market forces to meet demand rather than regulatory fiat. For example, the FCC should provide licensees the flexibility to determine what types of wireless broadband services they will deploy in a given band. In addition, the Commission should continue to encourage the use of secondary markets. The Commission also should reject calls for forced spectrum sharing as they discourage necessary investment and could lead to significant harmful interference. Similarly, the FCC should reject protectionist calls to distort the auction process by creating unjustified barriers to participation through eligibility limits or spectrum caps. Finally, as commenters discuss, the FCC should continue to rely on proven market mechanisms to clear reallocated spectrum.

A. The Record Demonstrates That The Commission's Long-Standing Policy of Open Auctions and Exclusive, Flexible Use Licensing Has Ensured Spectrum Reaches Its Highest and Best Use

Given evolution of the FCC's license assignment policies towards market-based mechanisms, it is unsurprising that commenters agree that the existing system of open auctions for exclusive, flexible use licenses, coupled with effective secondary markets, appropriately ensures spectrum reaches its highest value. As multiple commenters note, "the Commission has issued most new spectrum assignments over the past dozen years as flexible use licenses that permit any type of service over any type of platform to any type of user, subject only to

interference limitations with other users.”⁵⁰ This approach, as Qualcomm points out, “has raised upwards of \$100 billion for the American people and has succeeded in getting spectrum into the hands of those companies who value it most highly and, therefore, who will put it to its highest and best use as quickly as possible.”⁵¹

Commenters recognize that the FCC’s flexible licensing regime has created an environment conducive to the emergence of the competitive and innovative wireless industry that we see today. Verizon Wireless, for example, correctly observes that “[t]he Commission’s policy of granting exclusive and transferable flexible use rights to CMRS licensees has fostered investment and the development of innovative products and services.”⁵² Qualcomm similarly attributes today’s “robustly competitive US wireless market with a plethora of competing devices, applications, and services for consumers” directly to the Commission’s flexible licensing scheme.⁵³ For example, consumers now have access to a wide array of innovative wireless services that allow them to connect anytime, anywhere, empowering them to conduct business while on the road, access critical information, contact 911 and the police during an emergency, and perform millions of other activities while on the go.⁵⁴ Absent the Commission’s

⁵⁰ Sprint Nextel Comments at 17. *See also, e.g.*, CTIA Comments at 20-21 (noting that “[t]he Commission has long embraced exclusive-use licensing and flexible service rules with great success”); T-Mobile Comments at 17 (“Auctions and well-defined but flexible service rules are generally the best way to ensure that spectrum is used in the most efficient and publicly beneficial manner possible”).

⁵¹ Qualcomm Comments at 24.

⁵² Verizon Wireless Comments at 18.

⁵³ Qualcomm Comments at 29.

⁵⁴ MSTV and NAB assert that the Commission should place a premium on public policy goals that are served by spectrum use. *See* NAB/MSTV Comments at 2 (noting that broadcast television serves the core public interest goals of local journalism, universal service, availability of educational programming, and timely and reliable provision of emergency information). To this end, mobile broadband services meet several core public interest goals as well, including

flexible regulatory regime, the level of the innovation seen in the wireless sector likely would be significantly diminished.

The record also shows that regulatory flexibility has allowed wireless licensees to adeptly respond to marketplace changes. Sprint Nextel, for example, notes that “operators [are able] to respond quickly to changing consumer demands by offering innovative new services without having to seek regulatory permission, either through time-consuming and administratively burdensome waivers or rule changes.”⁵⁵ Under a flexible licensing regime, carriers, as Verizon Wireless states, also have “a powerful incentive to upgrade technology to increase the quality of their services and to expand the number of users and devices that communicate on their spectrum,” so they may respond to changing consumer demands.⁵⁶ In contrast, restrictive licensing and use policies “can prevent licensees from repurposing their channels to their highest and best use in response to new technologies and shifting user demand and requirements.”⁵⁷

Commenters also note that this policy has ensured licensees utilize their spectrum in the most efficient way possible. For example, Verizon Wireless observed that “[t]he application of such a policy framework to spectrum bands used for CMRS . . . [is] the reason why these bands (e.g., cellular and PCS) are commonly viewed as being used more efficiently and more intensively than other spectrum bands. By granting licensees exclusive use of their assigned spectrum and the ‘flexibility to determine the types of services and the technologies and

promoting small business, mobile connectivity, and emergency services. Mobility is key to the effectiveness of several of those policy goals.

⁵⁵ Sprint Nextel Comments at 17.

⁵⁶ Verizon Wireless Comments at 18.

⁵⁷ Sprint Nextel Comments at 18.

technical implementation designs used to provide those services,' the Commission has fostered highly efficient and innovative use of spectrum."⁵⁸

In light of the success these policies have had on the wireless industry, the Commission should continue to hold open auctions for large,⁵⁹ exclusive use licenses with flexible regulation.⁶⁰ Indeed, many commenters urge the Commission to do just this. For example, Verizon Wireless states, "the most important step the Commission can take to promote greater efficiency is to allocate more spectrum for exclusive use licensing with full flexibility of use."⁶¹ Qualcomm similarly notes, "[t]he additional licensed spectrum should be auctioned without strings attached."⁶²

B. Commenters Agree That the FCC Should Continue To Rely on Market Forces To Meet Demand for Service-Specific Spectrum Applications

The record in this proceeding similarly supports adoption of flexible service rules that allow licensees, not regulatory fiat, to determine what wireless broadband services should be deployed in which spectrum bands. As Qualcomm notes, "[t]he Commission is just not in a

⁵⁸ Verizon Wireless Comments at 17.

⁵⁹ A few commenters raise concerns that smaller or regional carriers are disadvantaged in auctions when spectrum covering large geographic areas are sold in single blocks either directly or through the mechanism of combinatorial bidding. *See, e.g.*, Comments of United States Cellular Corporation NBP Public Notice # 6, GN Docket Nos. 09-47, 09-51 & 09-137 (filed Oct. 23, 2009) at 5 ("USCC Comments"). These commenters argue that smaller carriers should not be forced to bid on spectrum that they do not need and that they lack the necessary resources to compete against the larger carriers that typically bid on such spectrum. AT&T believes the Commission's historic policy of auctioning spectrum in various geographic blocks to accommodate the needs of all types of carriers represents a far more reasonable accommodation between the interests of regional and national carriers. *See* Reply Comments of AT&T Inc., GN Docket Nos. 09-157, 09-51 (filed Nov. 5, 2009) at 32-33 ("AT&T Innovation Reply Comments").

⁶⁰ *See, e.g.*, TIA Comments at 9 ("TIA urges the Commission to allocate and auction a steady stream of licensed spectrum (and acknowledges that unencumbered spectrum provides the most freedom and flexibility to deploy wireless broadband networks.").

⁶¹ Verizon Wireless Comments at 17.

⁶² Qualcomm Comments at 24.

position to pick and choose which uses of a given band should be permitted and which should be forbidden both because the Commission cannot foresee which uses are best suited for a given spectrum band when allocating the spectrum, years before the spectrum is actually used, and because the Commission should let the marketplace decide what use should be made of a given band.”⁶³ In addition, “the highest and best use of spectrum can change over time, and flexible use rights allow the licensee to adapt to changing marketplace conditions without unnecessary government intervention. Flexible spectrum allocations with flexible use rules are best because the government’s objective should be to ensure that spectrum is put to its highest and best use, not to require adherence to a particular use selected by the government which may no longer have a business case.”⁶⁴

Accordingly, the Commission should not allocate spectrum exclusively for fixed wireless broadband, smart grid communications, or any other specific purpose.⁶⁵ Specialized spectrum allocations, as Sprint Nextel notes, “are not the answer.” Indeed,

“preventing the industry that places the highest economic value on a resource from acquiring it by definition imposes opportunity costs on the American economy . . . increases the risk of leaving spectrum fallow and stranding public and private investment . . . [and] curtail[s] competition, increase[s] transaction costs, and raise[s] equipment and deployment costs by, among other things, limiting the potential economies of scale that would occur from having more users in the band (or from having users accessing the band more intensively).”⁶⁶

⁶³ *Id.* at 27.

⁶⁴ *Id.* at 27-28.

⁶⁵ But see Covad Comments at 5 (proposing spectrum be allocated explicitly for fixed wireless broadband); Comments of the Critical Infrastructure Communications Coalition – NBP Public Notice #6, GN Docket Nos. 90-47, 09-51 & 09-137 (filed Oct. 23, 2009) at 1, 6 (requesting 30 MHz of spectrum for smart grid technologies).

⁶⁶ Sprint Nextel Comments at 19.

Instead, “all bands should have flexibility to offer both fixed and mobile services.”⁶⁷ If given this flexibility, carriers will be able to respond to all types of demand. If entities need spectrum for fixed wireless broadband or smart grid communications, they can utilize spectrum that is newly allocated and auctioned for flexible use, lease it from incumbent and new licensees (as Covad notes),⁶⁸ or purchase service from an existing provider.⁶⁹ All of these mechanisms provide carriers with adequate access to spectrum while ensuring that spectrum is used in the most efficient way possible.

C. The Comments Demonstrate That Secondary Markets Are an Effective Mechanism for Addressing Niche Markets

Commenters also agree with AT&T that the Commission should continue to rely on secondary markets as the key means of ensuring spectrum continues to be used for its highest and best use after initial licensing. As CTIA noted, “[t]oday, spectrum is available through a variety of secondary market mechanisms. In addition to the traditional means of obtaining spectrum on the secondary market (e.g., assignments, partitions, and disaggregations), interested parties can gain access to spectrum through a lease. . . . In addition, interested parties also can enter into sharing arrangements with licensees.”⁷⁰

These mechanisms effectively ensure that spectrum continues to be used for its highest and best use. Indeed, many “[e]conomists have consistently endorsed Commission efforts to provide licensees with strong and flexible rights in the form of geographic licenses that can be

⁶⁷ Motorola Comments at 10.

⁶⁸ See Covad Comments at 5.

⁶⁹ Motorola Comments at 10 (noting the ability of entities to lease spectrum for fixed wireless broadband from existing licensees in the 24 GHz, 28 GHz, 31 GHz, and 39 GHz bands).

⁷⁰ CTIA Comments at 33.

purchased at auction and traded on the secondary market, as it is through such policies that the Commission can ensure that spectrum is put to its highest and best use.”⁷¹ Michael Katz, in particular, has noted that secondary market mechanisms “lead to more efficient deployment of broadband wireless networks and other new technologies.”⁷² As such, contrary to MetroPCS’s claims,⁷³ carriers, including AT&T, regularly utilize the Commission’s secondary markets mechanisms to lease or assign spectrum that they are not using to those entities in need of spectrum.⁷⁴ Accordingly, the Commission “should continue to permit flexible transactions in secondary markets for spectrum.”⁷⁵

D. The Record Shows that Forced Spectrum Sharing Is Inappropriate and Discourages Necessary Investment

The record also shows that forced spectrum sharing – in the form of overlays, underlays, or interference temperature-based systems – will discourage necessary investment in the

⁷¹ Verizon Wireless Comments at 17.

⁷² Michael L. Katz, *Don’t Let Short-Term Reforms Interfere with Long-Term Policy Goals* at 19, Att. to Comments of CTIA, ET Docket No. 03-237 (filed Apr. 5, 2004).

⁷³ MetroPCS Comments at 14 (claiming “[t]he only secondary market that appears to be active is the acquisition by the large carriers of smaller carriers” and that “no major new competitors or meaningful innovative wireless services have come to market as a direct result of the secondary markets policy”). MetroPCS need look no further than Clearwire, which undoubtedly constitutes a major new competitor offering meaningful innovative wireless services through having aggregated spectrum using the secondary markets. AT&T, for its part, has entered into a wide variety of leasing arrangements with unaffiliated carriers to permit use of its spectrum in areas where it does not offer service.

⁷⁴ Adoption of several commenters’ requests that the Commission license wireless broadband spectrum in small geographic areas would limit the likelihood that spectrum would be used efficiently and effectively. *See* Bright House Networks Comments – NBP Public Notice #6, GN Docket Nos. 09-47, 09-51 & 09-137 (filed Oct. 23, 2009) at 11 (“Bright House Networks Comments”); USCC Comments at 5. Such licensing, however, does not ensure spectrum is put to its highest and best use as it necessitates broadband buildout on a piecemeal basis. In contrast, licensing in large geographic areas allows licensees to develop and deploy broadband networks that meet the needs of an entire community while also ensuring other entities have access to spectrum through the secondary market.

⁷⁵ T-Mobile USA Comments at 18.

industry, resulting in decreased innovation. For example, Qualcomm details how, “[t]echnically, spectrum overlays and underlays simply will not work and will cause interference . . . as [m]obile broadband systems already employ power control [and other mechanisms] to optimize their spectral efficiency.”⁷⁶ “[T]hese networks and devices use all of their spectrum as efficiently as possible and do not leave any margin within which unlicensed devices can operate.”⁷⁷ Any attempt to underlay or overlay another service on top of wireless broadband would risk upsetting the delicate balance carriers have achieved in their network management. The conclusion that follows from the factual record is that carriers would be less likely to invest in and upgrade their networks because of the prospect of harmful interference. “Without the certainty attached to licensed spectrum, which allows licensees unfettered use,” Clearwire aptly observes, “many network providers may choose not to invest in next generation broadband technologies, or find market capitalization of these technologies chased away by the uncertainty created by potential interference or future capacity limitations if providers are forced to share access to their spectrum.”⁷⁸

E. Proposals To Restrict Entities From Acquiring Spectrum Are Antithetical To Proven Market Driven Regulatory Principles

Despite near universal recognition of a spectrum crisis, some of the smaller wireless carriers nonetheless seek to arrogate to themselves any spectrum the Commission succeeds in making available by artificially distorting the Commission’s market-based policies.⁷⁹ USCC, for

⁷⁶ Qualcomm Comments at 34.

⁷⁷ *Id.* at 35.

⁷⁸ Comments of Clearwire Corporation- NBP Public Notice #6, GN Docket Nos. 09-47, 09-51 & 09-137 (filed Oct. 23, 2009) at 5.

⁷⁹ *See, e.g.*, USCC Comments at 5 (proposing use of a spectrum cap); MetroPCS Comments at 15 (suggesting use of “traffic loading” studies as a prerequisite to obtaining additional

example, seeks reversal of pro-competitive policies and a “spectrum cap” on carriers. MetroPCS, for its part, seeks the application of “traffic loading” analyses to new spectrum acquisitions. Finally, Bright House Networks seeks to gerrymander spectrum counted under the screen, and then use the spectrum screen prospectively as a entry barrier. As noted in several other proceedings,⁸⁰ these self-serving proposals are deeply flawed and should be summarily rejected.

First, the factual predicate underlying these calls for regulation – that larger wireless carriers already have enough (or even too much) spectrum – is misplaced. Larger carriers have greater demands on their spectrum, due to their larger customer bases and the rapid speed with which they are deploying spectrum-intensive wireless broadband services.⁸¹ On the other side of the coin, the new entry by Clearwire, cable companies such as Cox, Bright House, and others, together with the ongoing expansion of smaller wireless carriers such as MetroPCS and Leap Wireless, confirms that spectrum constraints are not deterring competitive entry and investment by smaller providers.⁸² Likewise, the claim that smaller carriers cannot obtain spectrum in secondary markets is flatly wrong. The record shows that (in addition to the spectrum that they

spectrum); Bright House Networks Comments at 11 (arguing that the spectrum screen should treat bands differently).

⁸⁰ See Comments of AT&T Inc., WT Docket No. 09-66 (filed Sept. 30, 2009) at 25-26 (“AT&T Competition Comments”); Reply Comments of AT&T Inc., WT Docket No. 09-66 (filed Oct. 22, 2009) at 58-59 (“AT&T Competition Reply Comments”); Comments of AT&T Inc., GN Docket Nos. 09-157, 09-51 (filed Sept. 30, 2009) at 72 (“AT&T Innovation Comments”); AT&T Innovation Reply Comments at 26-33.

⁸¹ Rysavy Research, *Mobile Spectrum Demand* (Dec. 2008), available at http://www.rysavvy.com/Articles/2008_12_Rysavy_Spectrum_Demand_.pdf; see also *Ex Parte Letter – The Wireless Crisis Foretold: The Gathering Spectrum Storm ... and Looming Spectrum Drought* at 7-8, Att. to *Ex Parte Letter of CTIA – The Wireless Association, A National Broadband Plan for Our Future*, GN Docket No. 09-51 (filed Sept. 29, 2009).

⁸² See AT&T Competition Comments at 25-26; see also USTelecom, *High-Capacity Services: Abundant, Affordable, and Evolving* at 17 (July 2009) (“USTelecom Report”) (noting the spectrum acquisitions of fixed wireless providers, such as FiberTower and Clearwire).

have purchased in auctions) companies like Leap, U.S. Cellular, Cellular South, Clearwire, and MetroPCS, have in fact amassed very substantial amounts of spectrum in secondary markets.⁸³ Indeed, in over 72 percent of all spectrum assignments in 2008, spectrum was acquired by firms that are not affiliated with the so-called big four carriers: AT&T, Verizon, Sprint Nextel, or T-Mobile.⁸⁴ Similarly, nearly half of the spectrum that was sold by these four carriers was transferred to firms unaffiliated with any of them, *i.e.*, to smaller carriers.⁸⁵ It is undeniable that the secondary market for licensed spectrum is extraordinarily robust and that smaller carriers have been the primary purchasers of spectrum in these transactions.⁸⁶

Second, the vigorous competition in the wireless marketplace is itself a powerful argument counseling against spectrum caps.⁸⁷ The Commission eliminated the spectrum cap rule

⁸³ See, *e.g.*, Comments of AT&T Inc., GN Docket Nos. 09-157, 09-51 (filed Sept. 30, 2009) at 72; *see also, e.g.*, Comments of the Catholic Television Network, GN Docket Nos. 09-157, 09-51 (filed Sept. 30, 2009) at 7 (“Today there is a robust secondary market for EBS spectrum that has facilitated the delivery of high-quality educational services at reasonable cost, and at the same time, provided commercial entities such as Clearwire Corporation with ample spectrum for nationwide wireless broadband deployments.”).

⁸⁴ Comments of Cellco Partnership d/b/a Verizon Wireless, GN Docket Nos. 09-157, 09-51 (filed Sept. 30, 2009) at 115 (“Verizon Innovation Comments”).

⁸⁵ *Id.*

⁸⁶ The record further shows that the policies adopted by the Commission in the mid-1990’s and early 2000’s have in fact greatly improved the speed and number of such transactions. The records shows that the time it takes to obtain regulatory approval for license transfers has fallen from an average of about 151 days in 1998 to an average of just over a month from 2005-2009; the number of approved cellular and PCS transfer/assignments jumped from just one in 1994 to thousands throughout this decade; the overall magnitude of the amount of spectrum that has traded hands in terms of MHz of spectrum times the population it covers has experienced extraordinary growth over the past several years; and small carriers have and continue to expand and upgrade their networks using spectrum purchased (or leased) on secondary markets. *See* Verizon Innovation Comments at 110-112; John W. Mayo and Scott Wallsten, *Enabling Efficient Wireless Communications: The Role of Secondary Spectrum Markets*, Georgetown Center for Business and Public Policy (June 2009) (“Mayo-Wallsten Paper”), at Table 3, available at http://www.gcbpp.org/files/Academic_Papers/EnablingWirelessCommunicationsJuly2009.pdf; AT&T Innovation Comments at 72-73.

⁸⁷ *See* USCC Comments at 5.

in 2001 based on a finding that it was “no longer necessary in the public interest” “[i]n light of our finding of meaningful economic competition.”⁸⁸ As AT&T has demonstrated, the market for wireless service has only become more competitive since that time, and there is accordingly no conceivable basis for the Commission to reverse course now and to re-impose a regulation that, as the Commission explained, was adopted in the first place only “to promote competition in [wireless] markets.”⁸⁹ In fact, this was reiterated as recently as November 5, 2009, when the FCC rejected a call for a spectrum cap in *AT&T-Centennial*, stating “case-by-case review [has a] greater degree of flexibility to reach the appropriate decision in each case, reduced likelihood of prohibiting beneficial transactions or levels of investment both in urban and rural areas, and ability to account for the particular attributes of a transaction or market.”⁹⁰ As TIA explains, “reinstating spectrum caps would constitute a step backward in the Commission’s spectrum policies and would negatively affect the mobile and wireless broadband product market’s competitive nature.”⁹¹

Third, in light of the evidence that small carriers are among the fastest growing in the nation,⁹² the call for a spectrum cap by such carriers is an obvious attempt to foreclose an entire

⁸⁸ Report and Order, *2000 Biennial Regulatory Review Spectrum Aggregation Limits for Commercial Mobile Radio Services*, 16 FCC Rcd 22668, ¶ 47 (2001).

⁸⁹ *Id.* ¶ 51.

⁹⁰ *Applications of AT&T Inc. and Centennial Communications Corp.*, WT Docket No. 08-246 (rel. Nov. 5, 2009) at ¶ 50 (“*AT&T-Centennial*”) (citing *Facilitating the Provision of Spectrum-Based Services to Rural Areas and Promoting Opportunities for Rural Telephone Companies to Provide Spectrum-Based Services*, 19 FCC Rcd 19078, 19115 (2004)).

⁹¹ *See, e.g.*, Comments of the Telecommunications Industry Association, WT Docket No. 09-66 (filed Sept. 30, 2009) at 8-9.

⁹² *See* AT&T Competition Comments at 25-26, *supra* pp. 14-15. Similar claims with respect to the need for such regulations to enhanced rural service are also invalid. As has been well documented, AT&T is one of the largest rural wireless providers in the U.S. AT&T’s wireless network covers close to 95% of the U.S. population, and it covers 76% of the population of rural counties (with a population of 100 persons or less). By contrast, smaller carriers often

set of potential bidders and spectrum holders from participating in the spectrum market, and thereby to constrain the price ultimately paid for spectrum and guarantee for themselves the spoils of the next auction. Apart from serving the narrow interests of the carriers that formulate this proposal, the only results to speak of would be to ensure that spectrum does not go to its highest and best use and that the U.S. Treasury is deprived of substantial revenue. What is more, arbitrary caps on spectrum for some carriers will hinder those carriers' efforts to provide the bandwidth-intensive next-generation services and capabilities that consumers demand. None of these results is remotely in the public interest.

In such regards, it makes no difference whether protectionist advocates call it a spectrum "cap" or a pre-emptive spectrum "screen" if the net result is to arbitrarily exclude carriers from entering new spectrum auctions. Bright House Networks states, for example, that "those entities, which would . . . be unable to acquire spectrum based on the Commission's spectrum screen, [should be] unable to participate in auctions for spectrum that would trigger a spectrum screen evaluation."⁹³ Since Bright House Networks appears to recognize that the "screen" merely "trigger[s] a[n] . . . evaluation," its call to exclude carriers from auctions without the required evaluation appears to be no more than linguistic posturing to avoid calling a cap a cap. The FCC's screen is not, and has never been, a limit on the amount of spectrum that can be acquired by a carrier in a market, but rather a processing tool that "eliminates from further review those markets in which there is clearly no competitive harm relative to today's generally competitive

focus their service expansions in more highly populated areas. *See, e.g.*, Paul M. Murdock, *Telecommunications*, *Forbes*, Dec. 2008, http://www.forbes.com/2008/12/20/wireline-wireless-communication-bigcompanies08-cz_pmm_1222telecom.html (pointing out that MetroPCS and Leap Wireless are focusing their deployment in "large markets," such as "Boston and New York (MetroPCS) and Baltimore, Washington, D.C., Philadelphia and Chicago (Leap)").

⁹³ Bright House Network Comments at 11.

marketplace.”⁹⁴ No basis exists to take the extraordinary step of distorting the market and limiting carriers from participating in auctions unless actual competitive harm is shown.

AT&T similarly objects to MetroPCS’ ill-founded “traffic loading” concept as an unnecessary market distortion. No evidence exists that mobile allocations are not being efficiently used; indeed, a substantial amount of record data shows that U.S. carriers “lead the world in efficient use of spectrum.”⁹⁵ One of the direct causes of that efficiency – and the ability of U.S. carriers to respond to changes in market conditions – has been the use of flexible, exclusive auction-based licensing by the Commission.⁹⁶ The ability to secure spectrum has been critical to carriers’ ability to reduce uncertainty in planning and obtain the investment and financing necessary for huge capital expenditures like the transition to 4G services. Turning the regulatory clock back to the late 80s and early 90s serves no articulated purpose and merely undermines the incentive of carriers to innovate in response to market forces.

F. Spectrum Clearing Should Continue To Be Addressed Using Proven Market Mechanisms

Finally, the record shows that commercial spectrum should generally be cleared using tried and true market mechanisms where possible. The Commission’s long-established market mechanisms for relocating incumbent users through negotiations and then mandatory relocation have proven effective time and again. As described by CTIA, the FCC’s approach to relocation of incumbent commercial licensees “represents an appropriate balance of burdens, in that the

⁹⁴ See *AT&T-Centennial* at ¶ 46.

⁹⁵ CTIA Comments at 25.

⁹⁶ *Id.* (stating “[d]ue to the Commission’s exclusive and flexible use policies, commercial mobile wireless spectrum is used extremely efficiently”).

new licensee ultimately assumes the cost of relocating the incumbent and gives both parties an incentive to reach agreement early.”⁹⁷

That being said, market-based clearing can only be effective where meaningful steps are taken pre-auction to identify incumbents so that bidding appropriately reflects the clearing costs. For example, mandating a post-auction clearing process for 700 MHz wireless microphones, which appears to be the suggestion of Shure,⁹⁸ unreasonably upsets the expectations of the bidders that won those licenses at auction.⁹⁹ As Verizon Wireless observes, the Commission has had pending for a considerable time a proceeding where the tentative conclusion was to terminate the rights of wireless microphone users to operate in the auctioned (and Public Safety) 700 MHz bands.¹⁰⁰ AT&T agrees with Verizon Wireless that the FCC should immediately issue an order in that proceeding and make good on its representations that it would clear the band for advanced network deployment.

IV. COMMENTERS AGREE THAT ADDITIONAL SPECTRUM IS NECESSARY FOR LONG PATH MICROWAVE BACKHAUL

Multiple commenters also note a need for additional spectrum for wireless backhaul.¹⁰¹

As CTIA noted, “fixed wireless [backhaul] has an important complementary role to play in the

⁹⁷ *Id.* at 34.

⁹⁸ Comments of Shure Incorporated On Public Notice # 6 Spectrum For Broadband, GN Docket No. 09 -47, 09-51, and 09-137 (filed Oct. 23, 2009).

⁹⁹ See Service Rules for the 698-746, 747-762 and 777-792 MHz Bands, *Report and Order and Further Notice of Proposed Rulemaking*, 22 FCC Rcd 8064, 8066 ¶ 2 (2007) (stating the FCC will “take all steps necessary to make this spectrum effectively available both to public safety as well as commercial wireless services”).

¹⁰⁰ See Comments of Verizon Wireless at 20-22 (citing Revisions to Rules Authorizing the Operation of Low Power Auxiliary Stations in the 698-806 MHz Band, Notice of Proposed Rulemaking, 23 FCC Rcd 13106 (2008)).

¹⁰¹ See, e.g., Motorola Comments at 17, 19; Clearwire Comments at 5; CTIA Comments at 34-35.

deployment of future mobile wireless networks.”¹⁰² Indeed, without long path microwave backhaul, mobile wireless networks will be incomplete and unable to carry mobile data and voice traffic back to the Internet. And “lack of affordable backhaul access may limit the ability even of well-funded providers . . . to enter markets” or deploy 3G services in new markets.¹⁰³

The Commission has not allocated enough spectrum to meet the increasing demand for wireless backhaul, especially for the transport of data traffic from remote rural sites to switching centers in urban areas. As Motorola notes, “[a]s new commercial wireless spectrum comes online, there is a need for either more wireline or wireless backhaul to connect each base station to the overall network. Especially in rural areas, wireless backhaul may be the only means to connect remote base stations to the wireless provider’s network.”¹⁰⁴ Indeed, an ITU report similarly concluded that a single IMT-2000 network may need multiple wireless backhaul links that provide data rates of up to 34 Mbps in a variety of different bands.¹⁰⁵ Thus, as demand for wireless broadband increases, so does demand for long path microwave backhaul.¹⁰⁶

Accordingly, the Commission should identify and reallocate additional spectrum for long haul microwave backhaul. AT&T suggest that such spectrum be identified above the region useable for mobile service – above 6 GHz – and that such allocations follow the traditional model of coordinated, first-come, first-served licensing. When a band is uniformly used for point-to-point systems with high directional gain, the coordinated approach is very spectrally

¹⁰² CTIA Comments at 34.

¹⁰³ Clearwire Comments at 5.

¹⁰⁴ Motorola Comments at 19.

¹⁰⁵ See Fixed Service Use in the IMT-2000 Transport Network, International Telecommunications Union, Report ITU-R, F.2060 (2005).

¹⁰⁶ See, e.g., Motorola Comments at 17 (“Demand will only increase as the technology grows to meet the future needs as outlined for IMT-Advanced networks.”).

