

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

FEB 22 2001
FEDERAL COMMUNICATIONS COMMISSION
OFFICE OF THE SECRETARY

In the Matter of)
)
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)

ET Docket No. 00-258 ✓

COMMENTS

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February 22, 2001

No. of Copies rec'd 0+12
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EXECUTIVE SUMMARY

The Wireless Communications Association International, Inc. (“WCA”) is the primary advocate of the fixed wireless broadband industry on matters affecting the use of Multipoint Distribution Service (“MDS”) and Instructional Television Fixed Service (“ITFS”) spectrum in the 2150-2162 MHz band (the “2.1 GHz band”) and the 2500-2690 MHz band (the “2.5 GHz band”). As discussed at length in the *FCC Interim Report*, a wide range of companies are aggressively deploying fixed wireless networks utilizing these bands throughout the United States to provide high-speed broadband services to residential, commercial and educational users. In its *Notice of Proposed Rulemaking* in this proceeding (the “*NPRM*”), the Commission asks for comment on, among other things, whether it should displace some or all of the current MDS and ITFS licensees from the 2.1 and 2.5 GHz bands to provide additional spectrum that could be used for so-called third generation (“3G”) mobile wireless systems. WCA’s position is simple: the mobile industry does not need the 2.1 and 2.5 GHz bands to provide 3G services, as ample spectrum is available elsewhere. And, the marginal benefits (if any) to mobile service providers of clearing the 2.1 and 2.5 GHz bands for 3G pale in comparison to the crippling impact any forced migration of some or all MDS and ITFS licensees to other bands would have on the deployment of fixed wireless broadband networks designed to serve unserved and underserved residential, commercial and educational users. Finally, relocation would be inconsistent with the Commission’s prior auction of rights to the 2.1 and 2.5 GHz bands and would undermine future auction efforts.

WCA applauds the Commission for recognizing in the very first paragraph of the *NPRM* that, despite the “hype” surrounding 3G, the object of this proceeding must be broader than merely identifying additional spectrum that existing providers of mobile voice and data services can acquire to deploy 3G technology. Consistent with its obligation under Section 706 of the Telecommunications Act of 1996, the Commission has properly tailored the *NPRM* to “explore the possibility of introducing new advanced mobile *and fixed* services” capable of providing “a wide range of voice, data and broadband services over a variety of mobile *and fixed* networks” in the frequency bands currently used for mobile services, as well as in the 1710-1755 MHz, 1755-1850 MHz, 2110-2150 MHz, 2160-2165 MHz and 2.5 GHz bands. As the Commission embarks on that exploration, it cannot forget that, while the technologies being used today to deploy fixed wireless broadband services in the 2.1 GHz and 2.5 GHz bands do not necessarily comport with the IMT-2000 air interface standards adopted by the International Telecommunications Union, they are precisely the types of advanced services that Section 706 and the *NPRM* seek to promote. Unarguably, the Commission’s objectives here will best be served by a spectrum allocation that accommodates any demonstrable need of mobile service providers for additional spectrum to launch 3G technologies *and* that preserves the entire 2.1 and 2.5 GHz bands for the advanced, fixed wireless broadband services that would be jeopardized by any forced migration to other spectrum. Such a “win-win” solution is readily achievable.

The touchstone of this proceeding must remain the Commission’s obligations under Section 706 to “encourage the deployment on a reasonable and timely basis . . . to all Americans (including, in particular, elementary and secondary schools and classrooms)” of “advanced telecommunications

capability,” which Congress defined “without regard to any transmission media or technology, as high-speed, switched, broadband telecommunications capability that enables users to originate and receive high-quality voice, data, graphics, and video telecommunications using any technology.” Five years after passage of Section 706, Congress’s objective of promoting widespread availability of broadband services remains unfulfilled. Broadband service is by no means ubiquitous even in the most urban areas, and, absent a wireless solution, may never become available in large portions of the country where wireline cable modem and DSL services cannot be offered in a cost-efficient manner. Moreover, even where broadband service exists, many users (particularly residential and small business users) do not have a choice of competing providers (and, ironically, are often forced to rely solely on DSL services from the same local telephone companies that are most aggressively seeking a reallocation of the 2.1 and 2.5 GHz bands).

Due to the unique propagation characteristics of the 2.1 and 2.5 GHz bands, MDS/ITFS fixed wireless broadband operators are well-equipped to provide service to unserved and underserved regions of the country – as the Commission itself noted in the *FCC Interim Report*, “[t]he growth of [MDS/ITFS] two-way service is intended to provide affordable service to those market sectors that are more likely to be underserved and provide a competitive choice to consumers in more urban and more affluent markets.” Many billions of dollars have been invested to date in acquiring spectrum, developing new advanced technologies and deploying new MDS/ITFS-based fixed broadband service offerings. As reflected in the *FCC Interim Report*, MDS/ITFS operators are aggressively deploying fixed wireless broadband systems in both large and small markets across the country. Although the Commission has only granted a small portion of the over 2,000 applications already submitted for MDS/ITFS two-way service offerings, MDS/ITFS fixed wireless broadband services are currently available in approximately four dozen markets. As pending applications are granted by the Commission’s staff, it is expected that the number of markets in which MDS/ITFS fixed wireless broadband services are available will increase rapidly (assuming that the cloud over the 2.1 and 2.5 GHz bands resulting from the *NPRM* is lifted). Indeed, according to one study cited by the Commission, there will be over one million residential MDS/ITFS broadband subscribers in as little as two years.

Furthermore, by virtue of the Commission-crafted interdependent relationship between commercial operators and the ITFS educational community, fixed broadband system operators utilizing the 2.1 and 2.5 GHz bands are constructing what are in fact shared networks capable of delivering broadband services to elementary and secondary schools, colleges, universities and other institutions of higher learning. Perhaps even more important, as these shared MDS/ITFS fixed wireless broadband networks reach into the residential and small business markets, “distance learners” will be able for the first time to access a wide variety of innovative educational materials that ITFS licensees and other educators can make available only over high-speed Internet connections. All of this is made possible by lease arrangements between commercial operators and ITFS licensees through which commercial operators provide financial support, broadband services, equipment, and technical and operational support to ITFS educational initiatives in exchange for the right to integrate ITFS spectrum at 2.5 GHz into a shared commercial/educational network. Any Commission action in this proceeding that disrupts ITFS lease arrangements (such as relocating

ITFS licensees to another band, which as a practical matter would preclude the development of shared MDS/ITFS networks) or that otherwise halts or delays the ongoing nationwide deployment of MDS/ITFS shared commercial and educational fixed wireless broadband networks would be impossible to reconcile with Congress's desire to promote more aggressive broadband deployment to advance education.

The *FCC Interim Report* correctly acknowledges that it would be impossible for separate fixed and mobile operators simultaneously to utilize the entire 2.1 GHz band and 2.5 GHz band in the same geographic area. As a practical matter then, the Commission has three fundamental options to examine: (1) clearing all or part of the 2.1 and 2.5 GHz bands for 3G services by relocating the current licensees to comparable spectrum; (2) providing existing licensees with the flexibility to offer mobile 3G, as well as fixed, services; or (3) accommodating 3G in other spectrum. Because adoption of the first option would have a significant adverse impact on the deployment of MDS/ITFS facilities for the provision of advanced wireless broadband services, and because the interference protection rules that would have to accompany adoption of the second would effectively preclude significant 3G use, the public interest will best be served by adoption of the third option.

It is telling that neither the *FCC Interim Report* nor the *NPRM* has identified any spectrum to which MDS/ITFS services could migrate that would be comparable to the 2.1 and 2.5 GHz bands. That is not surprising. WCA has been unable to identify any spectrum band that both is available and has propagation characteristics comparable to the 2.1 and 2.5 GHz bands (other than the bands identified in the *NPRM* for 3G use), and the Commission and WRC-2000 have both recognized that MDS-type operations demand spectrum below 3 GHz. The Commission cannot lose sight of one fact – the ability of MDS/ITFS-based fixed broadband providers to serve the unserved and underserved is directly tied to the propagation characteristics of the 2.1 and 2.5 GHz bands. These bands provide reliable path lengths far greater than are available above 3 GHz, allowing MDS/ITFS-based networks to serve subscribers located substantially farther from a given cell than would be possible using higher frequency bands. Regardless of the frequency band, a fixed wireless broadband cell is costly, and can only be cost-justified if it will attract a critical mass of subscribers among which to spread the cost. Ergo, because MDS/ITFS cells can serve subscribers located over a larger geographic area, cells can be deployed using the 2.1 and 2.5 GHz bands in areas that would be uneconomic using higher frequencies. Since there is no available spectrum with propagation characteristics comparable to those at 2.1 and 2.5 GHz, any forced migration of MDS/ITFS to alternative spectrum would undermine the ability of MDS/ITFS broadband service providers to serve the unserved and the underserved.

Moreover, any attempt at a Solomonic splitting of the 2.5 GHz band will have a substantial adverse impact on fixed wireless deployment. As set forth in the accompanying report by HAI Consulting, Inc., any reduction in the amount of spectrum available to MDS/ITFS-based networks at 2.1 or 2.5 GHz would undermine their economic viability. Reduced spectrum availability means that additional frequency reuse will be necessary to provide the same quality of service to the same number of subscribers utilizing less spectrum. The HAI analysis concludes that, were the Commission to reduce the spectrum available to MDS/ITFS by 90 MHz in the manner suggested in

the *FCC Interim Report*, MDS/ITFS-based networks would have to implement multi-cell architectures that would not be economically viable in many of the same unserved and underserved areas of the country where the Commission and Congress are attempting to promote broadband.

Forced relocation of 2.1 and 2.5 GHz licensees would also be inconsistent with the Commission's prior auction of rights to that spectrum and would have significant adverse consequences for future spectrum auctions. Less than five years ago, the Commission auctioned MDS Basic Trading Area ("BTA") authorizations which gave the winning bidder the exclusive right to secure licenses for MDS and commercial ITFS facilities utilizing the 2.1 and 2.5 GHz bands within its BTA. Any reauctioning of the 2.1 and 2.5 GHz bands for the benefit of the mobile industry would raise unprecedented legal and public policy issues that will be litigated for years to come, with the deployment of MDS/ITFS-based fixed wireless broadband services to the public hostage to the process.

Moreover, even if comparable relocation spectrum were available (and it is not) and the Commission were able to overcome the inevitable legal challenge to a reauction of the 2.1 and 2.5 GHz bands, any relocation of MDS/ITFS incumbents would be fraught with difficulties unlike those presented by prior relocations of fixed wireless incumbents - difficulties that will require a comprehensive reassessment of the Commission's relocation policies. MDS/ITFS fixed wireless broadband systems integrate facilities licensed to ten or more interdependent MDS/ITFS licensees per market, each of which enjoy different levels of interference protection and is subject to a variety of private intra- and intermarket agreements (e.g., channel leases, channel swaps, interference consent arrangements) that permit adjacent MDS/ITFS systems to co-exist in a two-way broadband environment. By contrast, the Commission's existing relocation procedures are designed to facilitate gradual relocation of point-to-point fixed microwave services on a link-by-link basis, and thus are poorly suited for relocation of highly complex, technically integrated MDS/ITFS fixed wireless broadband systems.

Moreover, unlike other fixed microwave services that have been relocated for the benefit of the mobile wireless industry, MDS/ITFS fixed wireless broadband is a mass-market, consumer-based service, and thus the Commission's relocation procedures must be substantially revised to account for the significant and unprecedented delays, disruptions, and costs that would arise from any relocation of MDS/ITFS incumbents to new spectrum. Such costs would include, for example, those arising from the time and expense associated with developing and deploying a new generation of MDS/ITFS transmission and reception equipment; ongoing expenses (including tower acquisition, rental and maintenance, backhaul and costs associated with replacing obsolete and installing new customer premises equipment) that would be imposed on MDS/ITFS systems were they forced to relocate to spectrum where inferior propagation characteristics requires deployment of multi-cell architectures; lost revenues that ITFS licensees will suffer if forced to migrate to spectrum that commercial operators refuse to lease; and the loss of customers who migrate to incumbent cable and DSL providers because the fixed wireless broadband roll-out is delayed. The Commission must also consider the unquantifiable public interest costs associated with, among other things, disruption or termination of MDS/ITFS development in areas where consumers have no broadband service, or

cannot choose among competing broadband providers; stopping MDS/ITFS distance learning and other broadband-related educational initiatives indefinitely, and perhaps permanently, while the unprecedented complexities of relocating MDS/ITFS incumbents are sorted out; and disruption or elimination of competitive MDS/ITFS multichannel video to approximately 750,000 households.

Fortunately, however, the Commission need not impose relocation on MDS/ITFS incumbents, their customers or their students, since *relocation of MDS/ITFS incumbents is not necessary to facilitate the launch of 3G services in the United States*. Ample spectrum is already or can soon be available for 3G in other frequency bands. The issue before the Commission thus is not whether there will be 3G service in the United States; it is whether the benefit of clearing MDS/ITFS incumbents out of the 2.1 and 2.5 GHz bands for 3G outweighs the substantial economic and societal costs of relocation.

And it is now evident that the purported benefits of clearing the 2.1 and 2.5 GHz bands for 3G are largely illusory. Allocation of the 2.5 GHz band for 3G will not promote “global harmonization.” The fact is that many countries throughout the world (including Canada and Mexico) are not allocating or licensing 3G systems in the 2.5 GHz band.

In sum, all relevant economic and public policy considerations point to one conclusion: the public interest will be better served by a spectrum allocation plan for advanced wireless services that promotes *all* advanced wireless services providers, not one that sacrifices one advanced wireless service for another. The Commission can and should adopt a spectrum allocation plan for advanced wireless services (including 3G) that fully preserves the 2.1 and 2.5 GHz bands for MDS/ITFS fixed wireless broadband service.

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

In the Matter of)	
)	
Amendment of Part 2 of the)	
Commission's Rules to Allocate)	
Spectrum Below 3 GHz for Mobile)	ET Docket No. 00-258
and Fixed Services to Support the)	
Introduction of New Advanced)	
Wireless Services, including Third)	
Generation Wireless Systems)	

COMMENTS

The Wireless Communications Association International, Inc. ("WCA") hereby submits its initial comments with respect to the *Notice of Proposed Rule Making* (the "NPRM") in the above-captioned proceeding.^{1/} WCA vehemently opposes reallocation for so-called third generation ("3G") mobile services of any of the spectrum currently allocated to the Multipoint Distribution Service ("MDS") or the Instructional Television Fixed Service ("ITFS") in the 2150-2162 MHz band (the "2.1 GHz band") or the 2500-2690 MHz band (the "2.5 GHz band"). Simply put, (i) the mobile industry does not need the 2.1 and 2.5 GHz bands to provide 3G services, as there is ample spectrum available elsewhere to support 3G services, (ii) the marginal benefits (if any) to mobile service providers of clearing these bands for 3G pale in comparison to the crippling impact any forced relocation of MDS and/or ITFS licensees to other bands would have on the deployment of fixed wireless broadband networks designed to serve unserved and underserved residential, commercial and educational users; and (iii) retaking and reauctioning of the 2.1 and 2.5 GHz bands would be

^{1/} *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*, ET Docket 00-258, FCC 00-455 (rel. Jan. 5, 2001).

inconsistent with the Commission's prior auction of rights in those bands and would undermine future auction efforts.

I. STATEMENT OF INTEREST AND INTRODUCTION.

WCA is the trade association of the fixed wireless broadband industry. It has served as the primary industry advocate for users of MDS and ITFS spectrum for two decades, and has participated extensively in every Commission proceeding involving the 2.1 GHz and 2.5 GHz bands during that period. WCA's members include the operators of nearly all wireless communications systems operating in the 2.1 and 2.5 GHz bands, the MDS and ITFS licensees who provide spectrum for use in such systems, equipment and content suppliers, and consultants.^{2/}

The MDS/ITFS industry is in the midst of a dramatic transformation. While the industry today serves approximately 750,000 subscribers to multichannel video offerings,^{3/} its future largely lies in the offering of broadband services. Little more than two years ago (and without any suggestion by the mobile industry that the 2.1 and 2.5 GHz bands should be diverted to 3G use), the Commission adopted rules and policies in MM Docket No. 97-217 to govern the routine licensing of MDS and ITFS spectrum for innovative fixed data, voice and video services.^{4/} Since that time,

^{2/} WCA members also include entities that provide or support the provision of fixed wireless broadband services using spectrum at 2.3 GHz, 18 GHz, 24 GHz, 28 GHz, 31 GHz and 38 GHz allocated generally to the Wireless Communications Service ("WCS"), Local Multipoint Distribution Service ("LMDS") and Private Operational Fixed Service ("POFS").

^{3/} Kagan, "Census of Video Subs," *Wireless-Private Cable Investor*, at 4 (Dec. 12, 2000).

^{4/} See *Amendment of Parts 21 and 74 to Enable Multipoint Distribution Service and Instructional Television Fixed Service Licensees to Engage in Fixed Two-Way Transmissions*, 13 FCC Rcd 19112 (1998) (the "Two-Way Report and Order"); *Amendment of Parts 1, 21 and 74 to Employ Multipoint Distribution Service and Instructional Television Fixed Service Licensees to Engage in Fixed Two-Way Transmissions; Request for Declaratory Ruling on the Use of Digital Modulation by Multipoint Distribution Service and Instructional Television Fixed Service Stations*, 14 FCC Rcd 12764 (1999) (the "Two-Way Reconsideration Order").

billions of dollars have been invested in the acquisition of MDS and ITFS spectrum rights, the development of innovative new fixed wireless technologies, and the deployment of advanced telecommunications networks using the 2.1 and 2.5 GHz bands for the provision of high-speed Internet access and other broadband services.

As a direct result of the favorable propagation characteristics of the 2.1 and 2.5 GHz bands, these shared MDS/ITFS networks represent the only practical vehicle for providing facilities-based, last mile broadband access to the vast areas of the nation that are either unserved or underserved by other broadband alternatives. The Commission recognized as much in its November 15, 2000 *Interim Report* for this proceeding on usage of the 2.5 GHz band, finding that “in rural or otherwise underserved markets in the country, ITFS/MDS may be the *sole* provider of broadband service.”^{5/} In addition, even in areas where DSL or cable modem service is offered, the availability of MDS/ITFS fixed wireless broadband service promotes the Commission’s pro-competitive agenda, since “[n]ational deployment of MDS systems will provide Americans with another option for high speed access.”^{6/} Moreover, by virtue of the Commission-crafted partnership between commercial operators and the ITFS educational community, shared MDS/ITFS broadband systems “provide educational users with broadband access for a variety of video and data applications, thereby establishing ITFS as an integral educational tool.”^{7/}

^{5/} “Interim Report - Spectrum Study of the 2500-2690 MHz Band: The Potential for Accommodating Third Generation Mobile Systems,” ET Docket 00-232, *FCC Staff Report*, at 22-23 (Nov. 15, 2000) (the “*FCC Interim Report*”) (emphasis added).

^{6/} *Id.* at 22.

^{7/} *Id.* at 20.

Despite the obvious benefits to the public that derive from the use of the 2.1 and 2.5 GHz bands for fixed broadband services, the *NPRM* calls for an examination of the reallocation of MDS/ITFS spectrum in light of the decision by last year's World Radiocommunication Conference in Istanbul ("WRC-2000") to identify the 2.5 GHz band as one of many bands available for possible 3G mobile usage. WCA and its member companies played an active role in developing the United States government's position at WRC-2000 regarding 3G. From the outset, the United States consistently recognized the unique value of the services provided by MDS/ITFS operators, and acknowledged that any allocation of spectrum for 3G must be crafted with those services in mind:

In looking toward identification of spectrum for potential domestic use by advanced communications applications including IMT-2000, the United States must consider the investment of existing licensees, the impact on consumers and other users of existing services and the flexibility to authorize other systems based on national needs. The United States therefore must look at current and emerging uses, the availability of comparable replacement spectrum to which current and emerging uses might migrate, and the costs of relocation against the benefits of global harmonization of spectrum for IMT-2000 and other advanced communications applications. The United States has concerns with both the 1755-1850 MHz band and the 2500-2690 MHz band. . . *The United States uses the 2500-2690 MHz band for important fixed point-to-point and point-to-multipoint operations that provide video and telecommunications services to homes, schools, colleges, universities and businesses. These important existing uses present significant challenges to the United States as it examines their potential use by advanced mobile communications including IMT-2000.*^{8/}

This approach was reflected in the United States' formal proposal for Agenda Item 1.6.1.^{9/}

In its explanatory statement, the United States summarized its position as follows:

^{8/} United States of America, Information Paper, Agenda Item 1.6.1., http://www.fcc.gov/wrc00/usdraft/usinfo_1-06-1_1.doc, at 2-3 (last visited Feb. 21, 2001) (footnotes omitted) (emphasis added).

^{9/} U.S. Proposals for the Work of the Conference, Proposal for Terrestrial and Satellite Components of IMT-2000, Addendum 3 to Document 12-E, World Radiocommunication Conference, Istanbul, May 8 - June 2, 2000.

The United States realizes that it may not be possible for many administrations to make available the large amount of contiguous, globally-harmonized spectrum for use by IMT-2000 and other advanced communications applications. The difficulty arises from the need of many administrations to consider the investment of existing licensees, the impact on consumers and other users of existing services and the flexibility to authorize other systems based on national needs.^{10/}

The United States' position was largely incorporated into the Final Acts of WRC-2000 and the Table of Frequency Allocations of the International Telecommunications Union ("ITU"). Specifically, WRC-2000 recognized that a variety of fixed services, including point-to-multipoint MDS/ITFS-like systems, are in operation or planned in the 2500-2690 MHz band, and that "for technical reasons, the existing applications in the bands identified for [3G] require spectrum below 3 GHz."^{11/} WRC-2000 recommended that as national administrations study the availability of spectrum for 3G, they "take into account the services currently using the bands or planning to use the bands [identified for 3G]. . . ."^{12/} and found that "due to the usage by and investment in existing services, [administrations] may not be able to implement [3G] in all of those bands."^{13/}

It is against this backdrop that the issues raised by the *NPRM* must be evaluated. WCA applauds the Commission for recognizing in the very first paragraph of the *NPRM* that, despite the "hype" surrounding 3G,^{14/} the object of this proceeding must be broader than merely identifying

^{10/} *Id.*

^{11/} Final Acts of the World Radiocommunication Conference (WRC-2000), Resolution 223 at 2.

^{12/} *Id.* Resolution [COM5/24] at 5.

^{13/} *Id.* at 3.

^{14/} Indeed, just yesterday the *Wall Street Journal* reported that "[p]hone companies thought they had seen the future in a cellular technology dubbed "3G," but now the picture has blurred." Pringle and Delaney, "Next Generation of Cellphones Becomes Murky," WALL ST. J., Feb. 21, 2001, at B4 ("*3G Becomes Murky*"). The *Journal* quoted the Chairman of one of France's largest mobile service operators as stating

additional spectrum that existing providers of mobile voice and data services can acquire to deploy 3G technology. Consistent with the Commission's obligation under Section 706 of the Telecommunications Act of 1996 (the "1996 Act"),^{15/} the Commission has properly tailored the *NPRM* to "explore the possibility of introducing new advanced mobile *and fixed* services" capable of providing "a wide range of voice, data and broadband services over a variety of mobile and fixed networks" in the frequency bands currently used for mobile services, as well as in the 1710-1755 MHz, 1755-1850 MHz, 2110-2150 MHz, 2160-2165 MHz and 2.5 GHz bands.^{16/} As the Commission embarks on that exploration, it cannot forget that, while the technologies being used today to deploy fixed wireless broadband services in the 2.1 GHz and 2.5 GHz bands do not necessarily comport with the IMT-2000 interface standards adopted by the ITU (and thus generally are not considered to fall within the 3G rubric), they are precisely the types of advanced services that Section 706 and the *NPRM* seek to promote.^{17/}

that 3G "is no longer indispensable for mobile multimedia applications" and noted that upgraded second generation or "2G" networks are capable of handling 80% of all services people have identified for 3G (quoting a mobile phone specialist with Arthur D. Little). *Id.* Those sentiments were echoed by the Executive Vice President and Chief Technical Officer of Verizon Wireless, who is quoted as stating that "[u]pgraded 2G technology is 'exactly what we need to satisfy the customer.'" *Id.*

^{15/} Pub. L. No. 104-104, Title VII, § 706, Feb. 8, 1996, 110 Stat. 153 (1996), *codified at* 47 U.S.C. § 157 (2000).

^{16/} *NPRM* at ¶ 1 (emphasis added).

^{17/} Although 3G proponents have on occasion claimed that they will offer "broadband" services, there is a substantial difference between the services being offered by the fixed wireless broadband industry (which today can deliver 1 Mb/s or better downstream speeds) and those that fall within the 3G rubric. As the *NPRM* recognizes, the mobile services that are driving the push to 3G generally will only provide service up to 144 kb/s in vehicular applications and up to 384 kb/s for pedestrian applications. Although speeds of 2 Mb/s are cited for 3G, those speeds are limited solely to short range indoor networks. *See id.* at Table 1.

Unarguably, then, the Commission's goal of promoting the development of *all* "advanced wireless services" will best be served by a spectrum allocation that both accommodates any demonstrated need of mobile service providers for additional spectrum to launch 3G technologies *and* that preserves the entire 2.1 and 2.5 GHz bands for the advanced, fixed broadband services that would be jeopardized by any forced migration to other spectrum. Such a "win-win" solution is readily achievable. The mobile industry can provide 3G services without the 2.1 and 2.5 GHz bands, since ample spectrum is available today or can be made available under planned future auctions that will not adversely impact MDS/ITFS. Moreover, no comparable relocation spectrum is available for MDS/ITFS incumbents and, even if it were, the relocation of mass market, highly complex MDS/ITFS systems to other spectrum raises unprecedented technical, financial and logistical issues that the Commission's current relocation procedures are not equipped to address. Simply put, the benefits that mobile service providers claim will accrue by clearing the 2.1 and 2.5 GHz bands for 3G are largely illusory, and pale in comparison to the crippling impact any forced relocation of some or all MDS and ITFS licensees to other bands would have on the deployment of fixed wireless broadband networks designed to serve unserved and underserved residential, commercial and educational users. Moreover, any attempt by the Commission to repossess and reauct the 2.1 and 2.5 GHz bands will be subject to legal challenge by those who won the initial auction for rights in those bands, and will undermine future auction efforts.

For the reasons set forth herein, it is WCA's position that the Commission can and should achieve its objective of promoting all wireless broadband services by fully preserving the 2.1 GHz and 2.5 GHz bands for MDS/ITFS fixed wireless broadband service, and thereby avoid the

unprecedented harm to the fixed wireless broadband industry and to the public interest that would result from relocating MDS/ITFS incumbents to other spectrum.

II. DISCUSSION.

A. THE COMMISSION'S OBLIGATION TO PROMOTE DEPLOYMENT OF ALL ADVANCED WIRELESS SERVICES MUST REMAIN THE GUIDING REGULATORY PRINCIPLE OF THIS PROCEEDING.

The Commission's blueprint for this docket is set forth in the first paragraph of the *NPRM*:

In this [*NPRM*], we explore the possible use of frequencies below 3 GHz to support the introduction of new advanced wireless services, including third generation ("3G") as well as future generations of wireless systems. Advanced wireless systems could provide, for example, a wide range of voice, data and broadband services over a variety of mobile *and* fixed networks. . . . By these actions, we initiate proceedings to provide for the introduction of new advanced wireless services to the public, consistent with our obligations under section 706 of the 1996 Telecommunications Act, and promote increased competition among terrestrial services.^{18/}

This statement embodies the bedrock objective of the Commission's spectrum allocation policies since passage of the 1996 Act. Section 706 obliges the Commission to "encourage the deployment on a reasonable and timely basis . . . to all Americans (including, in particular, elementary and secondary schools and classrooms)" of "advanced telecommunications capability" which Congress defined "without regard to any transmission media or technology, as high-speed, switched, broadband telecommunications capability that enables users to originate and receive high-quality voice, data, graphics, and video telecommunications using any technology."^{19/} As a result, the debate over spectrum allocation for 3G services cannot take place in a vacuum, and ultimately

^{18/} *NPRM* at ¶ 1 (emphasis added) (footnote omitted).

^{19/} See *supra* note 15.

must be part of a larger debate over how the Commission can promote the deployment of *all* advanced wireless services as quickly as possible, consistent with its Section 706 obligation to ensure that broadband capability be made available to all Americans. Indeed, the Commission has repeatedly cited Section 706 as its public interest “compass” where allocation of spectrum is concerned.^{20/} That the Commission has done so again here is a reminder of the Commission’s obligation to promote rapid deployment of wireless broadband infrastructure to all areas of the country, and not to merely adopt policies designed to benefit a handful of mobile service providers (many of whom are affiliated with the incumbent local telephone companies (“ILECs”) that will face competition from MDS/ITFS broadband service).^{21/} WCA thus fully supports the Commission’s efforts in this proceeding to develop a spectrum plan that facilitates the development of *all* advanced wireless services, not just those comporting with IMT-2000 interface standards that compromise the delivery of fixed wireless broadband systems to accommodate lower data rate mobile applications.

^{20/} See, e.g., *Amendment of Parts 2 and 25 of the Commission’s Rules to Permit Operation of NGSO FSS Systems Co-Frequency with GSO and Terrestrial Systems in the Ku-Band Frequency Range et al.*, FCC 00-418, ET Docket No. 98-206, at ¶ 1 (rel. Dec. 8, 2000) (Stating that Commission will permit new terrestrial fixed Multichannel Video Distribution and Data Service to operate in 12.2-12.7 GHz band to “provide for the introduction of new advanced services to the public, consistent with our obligations under Section 706.”); *Amendment of the Commission’s Rules With Regard to the 3650-3700 MHz Government Transfer Band*, FCC 00-363, ET Docket No. 98-237, at ¶ 1 (rel. Oct. 24, 2000) (stating that allocation of 3.6 GHz band for fixed and mobile (base station) use “will help foster the introduction of such services to rural areas of the United States, thus promoting the objectives of Section 706.”).

^{21/} See, e.g., *Inquiry Concerning the Deployment of 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*, FCC 00-290, CC Docket No. 98-146, at ¶ 7 (the “*Second Section 706 Report*”) (“As Congress directed in section 706, we focus on the *availability* of advanced telecommunications capability. Accordingly, we concentrate our efforts largely on addressing the deployment of the infrastructure necessary to bring advanced telecommunications capability to consumers, as well as the level of subscribership to the services provided over that infrastructure.”) (emphasis added).

By now it is well documented that there is an immediate need for more rapid deployment of high-speed Internet service to all markets throughout the United States. As recently noted by the Department of Commerce's National Telecommunications and Information Administration ("NTIA"):

Advanced capabilities are becoming ever more important as businesses and consumers increasingly rely on the Internet and on sophisticated applications incorporating audio and video which require sustained high information rates. Availability of advanced telecommunications will become essential to the development of business, industry, shopping, trade, as well as distance learning, telemedicine and telecommuting. The rate of deployment therefore has implications for the welfare of Americans and the economic development of our nation's communities.^{22/}

Consumer demand for high-speed Internet service is skyrocketing to unprecedented levels. According to one estimate, residential broadband subscribers will constitute 40% of the Internet access market within three years.^{23/} NTIA, however, has found that deployment of broadband service "has only just begun," and that barely 10% of "on-line" households in the United States have

^{22/} "Advanced Telecommunications in Rural America: The Challenge of Bringing Broadband Service to All Americans," NTIA and U.S. Dept. of Agric., at 2 (April 2000) ("*Advanced Telecommunications in Rural America*").

^{23/} See "Residential Broadband Will Reach More Than 20 Million Households by Year 2003," *eMarketer*, at http://www.emarketer.com/press_room/press_releases/100500_bband.html (last visited Feb. 21, 2001); Gaffney, "It's High Time for High Speed," *TurboAds.com*, at <http://www.turboads.com/broadband/stats/bs20000128.html> (last visited Feb. 21, 2001) (citing Yankee Group study predicting that the total market for high-speed Internet access will reach 16.6 million subscribers in 2004, and that nearly two-thirds of all PC-owning households indicated that they would be interested in using some type of high-speed Internet access service); "High Speed Access to Pass Dial-Up in 2005," at http://cyberatlas.internet.com/market/broadband/article/0,,10099_567101,00.html (last visited Feb. 21, 2001) (citing Strategis Group report indicating that broadband market will reach 36 million subscribers in 2005, surpassing dial-up access); "At-work Broadband Audience to More than Double by 2005," at <http://www.jup.com/company/pressrelease.jsp?doc=pr010125> (last visited Feb. 21, 2001) (estimating that the number of people with broadband connectivity at work will more than double to 55 million by 2005, and predicting that at work-dial-up access will drop significantly from approximately 18.5 million individuals to 8.1 million).

a broadband connection to the Internet.^{24/} As noted by the Commission in the *FCC Interim Report*, such evidence “indicates that over the next several years the demand for affordable broadband services in the United States will far outpace the ability of incumbent local exchange carriers and cable operators to provide those services.”^{25/}

Furthermore, and again as noted in the *FCC Interim Report*, “[a]nalysts estimate that for a variety of technical, financial and operations reasons, cable modem and DSL services cannot or will not meet the increasing demand for broadband by themselves.”^{26/} This is especially so in rural and smaller markets: according to a recent joint report prepared by NTIA and the Rural Utilities Service, “[p]roviders with both rural and non-rural service areas will likely bring broadband to their larger, urban, and more lucrative markets first.”^{27/} For example, the report found that while less than five percent of towns of 10,000 or less have cable modem service, more than 65 percent of all cities with populations over 250,000 have some access to such service.^{28/} Similarly, the report found that:

[T]he Regional Bell Operating Companies (RBOCs) are providing DSL service primarily in cities with populations above 25,000 according to public RBOC data.

^{24/} “Falling Through The Net: Toward Digital Inclusion,” NTIA White Paper, <http://search.ntia.doc.gov/pdf/fttn00.pdf>, at 23 (October 2000) (“*Toward Digital Inclusion*”).

^{25/} *FCC Interim Report* at 21.

^{26/} *Id.* at 21 n.27.

^{27/} *Advanced Telecommunications in Rural America* at 17; see Spicer, “Consumers Clamor for Broadband Wireless, Sprint Reports,” *Wireless Insider*, at 1, 2 (Aug. 28, 2000) (“Wireline-based Internet service providers don’t seem to be in a hurry to span the last mile and deliver high-speed connections to homes. While businesses pay for high-speed service on T-1 lines, few consumers will pay the fees for residential services.”).

^{28/} See *Advanced Telecommunications in Rural America* at ii. Even in the larger urban cities, however, there already are indications that the cable industry’s deployment of cable modem service may not be as aggressive as originally anticipated. See, e.g., Estrella, “Cities Sense AT&T Slowdown,” at <http://www.multichannel.com/>.

While more than 56 percent of all cities with populations exceeding 100,000 had DSL available, less than five percent of cities with populations less than 10,000 had such service. Deployment of both cable modems and DSL service in remote rural areas is far lower.^{29/}

As a result, NTIA has found that only 7.3% of consumers in rural areas access the Internet via a broadband connection,^{30/} and that rural areas “are now lagging behind central cities and urban areas in broadband penetration.”^{31/} The Commission’s *Second Section 706 Report* accords with NTIA’s findings: “[T]he majority of Americans who live in rural areas do not have readily available, lowest-cost access to advanced or even high-speed services today. . . [W]e conclude that many rural Americans are particularly vulnerable to not receiving timely access to advanced services.”^{32/}

The primary reason for slower (or, in some cases, nonexistent) deployment of cable modem and DSL service in rural and smaller markets is economic - for wireline technologies, the costs of

^{29/} *Advanced Telecommunications in Rural America* at ii.

^{30/} *Toward Digital Inclusion* at 24.

^{31/} *Id.* at xviii.

^{32/} *Second Section 706 Report* at ¶ 223 (emphasis added); see also “High-Speed Services for Internet Access: Subscriberhip as of June 30, 2000,” Federal Communications Commission, Common Carrier Bureau, Industry Analysis Division, at 4 (October 2000) (“High population density has a positive correlation with reports that high-speed subscribers are present, and low population density has a negative correlation. For example, as of June 30, 2000, high-speed subscribers are reported to be present in 96% of the most densely populated zip codes and in 40% of the zip codes with the lowest population densities.”) (the “*October 2000 High-Speed Access Report*”).

providing service increase as the distances both to and between customers lengthen.^{33/} As to cable modem service, the NTIA/Rural Utilities Service report describes the problem as follows:

To maintain the quality of TV signals, the [cable] signal must be amplified at about 2,000 feet from the node and reamplified every 2,000 feet after that. Each amplifier adds noise and subtle distortions that have a small cumulative effect on the TV signal but which can severely impair the performance of cable modem operation. As a result, when a cable provider adds cable modem service to its cable system, it generally adds no more than eight amplifiers, resulting in a maximum range of 16,000 feet from the node. Because it is more reliable and requires less maintenance and adjustment, the preferred method is to operate without amplifiers, which limits range to about 2,000 feet.^{34/}

DSL service suffers from a similar problem. As noted in the NTIA/Rural Utilities Service report, “[t]elephone loops can be grouped into categories: those that extend less than 18,000 feet (about 3 ½ miles) from their central switching office or carrier serving area and those that are longer.

^{33/} See, e.g., *Federal-State Joint Board on Universal Service (Rural Task Force Recommendation to the Federal-State Joint Board on Universal Service)*, CC Docket No. 96-45, at 12 (rel. Sept. 29, 2000) (finding that, on average, total plant investment per loop is over \$5,000 for Rural Carriers compared to less than \$3,000 for non-Rural Carriers, and that the range of values for total plant investment per loop for Rural Carriers (\$1,400 to \$40,500) is far greater than the range for non-Rural Carriers (\$1,570 to \$4,350)).

^{34/} *Advanced Telecommunications in Rural America* at 10-11; see also *FCC Interim Report*, Appendix 3.3 at A-40 n.15 (“[C]able was built as a one-way transmission pipe, and must be upgraded to handle two-way capacity. Estimates are that the cost for the upgrades can run up to \$1,000 per home. Because of this cost, the buildout is progressing slowly and the service is not offered in many areas.”). Even where cable modem service is available, state public utility commissions and local cable franchising authorities have expressed concern that cable operator restrictions on certain types of Internet services often work to the disadvantage of subscribers in underserved areas. See Comments of the Competitive Access Coalition, GN Docket No. 00-185, at 53 (filed Dec. 1, 2000) (“[R]estrictions that the cable companies have insisted upon undermine the quality of potential Internet service to the particular disadvantage of rural and low-income urban users. The cable companies have insisted on restrictions on streaming video. . . . This type of limit not only constrains consumer entertainment choice and competition for traditional television programming, it also limits the opportunities for home commuting and video teleconferencing. Indeed, some cable companies have placed limitations on uploading by home users designed to steer customers to separate business services sold by their telephone company affiliates. Adelphia, for example, offers its *Powerlink* service in Vermont only “for home and family use”; barring, by tariff, the use of web space for ‘business oriented web pages.’”) (footnotes omitted).

The shorter loops can generally support DSL-based advanced services.”^{35/} In turn, because they are served by these short loops, many (but hardly all) customers in cities and towns are served by plant that is advanced services capable upon the addition of DSL equipment. Conversely, the longer loop lengths required for less densely populated areas are poorly suited for DSL service, and, even where shorter loop lengths exist, the presence of non-DSL compatible remote terminal technology and as other aspects of deployed line electronics (*e.g.* load coils, bridge taps) preclude deployment of DSL service.^{36/} The difficulties of deploying DSL in smaller markets have been summarized in a recent financial analysts’ report on Nucentrix Broadband Networks, Inc. (“Nucentrix”), an MDS/ITFS operator which holds spectrum rights to serve over 90 markets covering an estimated 9 million households across the Midwest and Texas:

As it relates to Nucentrix’s mainly less densely populated markets, DSL is a less compelling technology relative to its attractiveness in tier 1 markets — simply because the average copper loop length within these markets is significantly greater than in larger, more dense markets. . . . IDC estimates that the number of unique DSL qualified lines as a percentage of total access lines will grow from just over 20% in 1999 to 67% in 2003. We believe it will be very difficult with current technologies to extend DSL beyond this point simply because of loop length issues; additionally, environmental barriers such as DLCs and load coils, which stand between the end user and the [central office], will serve to cap DSL deployment and force providers to drive fiber deeper into the loop in order to reach the final one third of access lines. Although it is difficult to estimate the number of access lines that DSL can reach within Nucentrix’s markets, we believe it is reasonable to believe that it will be significantly less than in the U.S. overall because of the less dense nature of the company’s markets.^{37/}

^{35/} *Advanced Telecommunications in Rural America* at 12-13.

^{36/} See *FCC Interim Report* at 21 n.27 (citing “Broadband! - A Joint Industry Study by Sanford C. Bernstein & Co., Inc. and McKinsey & Company, Inc.,” at 25 (January 1999)).

^{37/} Equity Research Report Re: Nucentrix Broadband Networks, Inc., Morgan Keegan & Company, Inc., at 10 (Aug. 8, 2000).

Thus, it is abundantly clear that the need for broadband deployment remains compelling in rural and smaller markets, and must be addressed in the near term. Again, NTIA's findings are instructive:

[T]hose who live in the rural towns and countryside. . . can especially benefit from high-speed, distance-defying connections to external markets and employment opportunities, urban medical centers, large universities offering specialty courses, and similar distant resources. Access to broadband means, for example, that a rural automotive designer need no longer relocate to the company headquarters to participate in interactive, real time computer-aided modeling of a new vehicle. It also gives a doctor in rural America the kind of access to data-intensive applications (such as three-dimensional imaging) previously only available to doctors connected by local area network.^{38/}

Congress, too, is well aware of the problem. As noted by Senator Conrad Burns:

The pace of broadband deployment to rural America must be accelerated for electronic commerce to meet its full potential. . . . Broadband access is as important to our small businesses in Montana as water is to agribusiness. I am convinced that the proper use of Section 706 of the Telecommunications Act can help to bring these advanced data services to underserved areas.^{39/}

In addition, the Commission must not forget that even in areas where broadband networks are available, many consumers do not have the ability to choose among competing providers. Indeed, in many areas of the country the only source of broadband is a DSL offering from the very

^{38/} *Advanced Telecommunications in Rural America* at 2; see "The Power of the Internet For Learning: Moving from Promise to Practice," Report of the Web-Based Education Commission to the President and the Congress of the United States, at 18 (Dec. 2000) (the "*Web Commission Report*") (citing lack of broadband deployment in rural areas); see also *Second Section 706 Report* at ¶ 216, quoting Stahir, "Rural America's Stake in the Digital Economy, The Main Street Report" (May 25, 2000), at http://www.kc.frb.org/RuralCenter/mainstreet/MSE_0500.pdf ("In the near future, enhanced connectivity and information infrastructure will prove crucial to the health of the rural economy. Telecommunications will be critical not only for rural development -- attracting and retaining residents and businesses - - but for basic sustainability in an ever-changing economic environment.").

^{39/} Statement of Senator Conrad Burns, Senate Communications Subcommittee, Hearing on Broadband Deployment in Rural America (Mar. 28, 2000), at <http://burns.senate.900/broadband.statements.html/>.

same ILECs, some of whom are proponents of reallocation of the 2.1 and 2.5 GHz bands. Here the words of Chairman Powell bear repeating:

If we shield mature industry participants from the pressures of having to adapt to the presence of new entrants, we merely prevent these new entrants from offering customers greater value at a lower price, while simultaneously rewarding incumbents for providing no new value to the economy other than income for armies of lobbyists.^{40/}

It is precisely for this reason that the Commission amended its rules to permit MDS/ITFS operators to use the 2.1 and 2.5 GHz bands for deployment of two-way fixed services:

The [MDS/ITFS two-way] rules we adopt today will . . . provide significant benefits to consumers. A new, competitive group of players will now enter the market for high speed two-way communications service. Both individual and business consumers will be able to use the high-speed and high-capacity data transmission and Internet service that will be available through the new systems. Also, consumers will be able to take advantage of new video-conferencing, distance learning and continuing education opportunities. Commenters have also suggested cutting edge applications like tele-medicine for the new two-way systems. *Most importantly, from a consumer perspective, there will be another choice of provider for these services, helping to drive down the costs in a more competitive market.*^{41/}

This, of course, merely reaffirms a cardinal rule of the marketplace: broadband providers have more incentive to bring new services to consumers as quickly and inexpensively as possible where competitors have a full and fair opportunity to enter the market and offer similar or better services. Indeed, the Commission very recently noted that robust competition between broadband

^{40/} Remarks of Michael K. Powell, Chairman, Federal Communications Commission, before the Federal Communications Bar Association, New York, New York (May 27, 1998), at <http://www.fcc.gov/speeches/powell/spmkp813.html>; see also *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 and Implementation of Section 309(j) of the Communications Act -- Competitive Bidding, Notice of Proposed Rule Making*, 9 FCC Rcd 7665, 7666 (1994) (“[I]n providing communications services, the public interest is better served by competition. A competitive industry framework promotes lower prices for services, provides incentives for operators to improve those services and stimulates economic growth.”).

^{41/} *Two-Way Report and Order*, 13 FCC Rcd at 19116-17 (emphasis added).

platforms “is important to ‘promote the continued development of the Internet,’ to ‘preserve the vibrant and competitive free market that presently exists for the Internet and other interactive computer services,’ and to encourage the deployment on a reasonable and timely basis of advanced telecommunications capability to all Americans.”^{42/} Clearly, the fastest possible introduction of broadband to the marketplace is achieved by promoting vigorous head-to-head competition between the wireline incumbents and emerging MDS/ITFS-based wireless operators who are ready, willing and able to deliver service to the public. A static marketplace that promotes the development of only one or two competitors achieves the opposite result.

Recent data, however, confirms that “robust” broadband competition has yet to reach substantial portions of the country. Indeed, NTIA recently reported that over 95% of all broadband households subscribe to cable modem (50.8%), DSL (33.7%) or ISDN (10.9%) service.^{43/} Thus, where they are available, wireline services remain by far the dominant service providers in the broadband marketplace. In addition, the Commission’s *October 2000 High-Speed Access Report* reflects that states with the largest rural or small market populations tend to have the fewest broadband providers, the lion’s share of whom are cable or DSL.^{44/} In fact, given the limitations on

^{42/} *Applications for Consent to the Transfer of Control of Licenses and Section 214 Authorizations by Time Warner, Inc. and America Online, Inc., Transferors, to AOL Time Warner Inc., Transferee*, CS Docket No. 00-30, FCC 01-12, at ¶ 121 (rel. Jan. 22, 2001) (“*AOL-Time Warner*”) (footnotes omitted).

^{43/} *Toward Digital Inclusion* at 23.

^{44/} “High-Speed Services for Internet Access: Subscribership as of June 30, 2000,” Federal Communications Commission, Common Carrier Bureau, Industry Analysis Division, at 4 (October 2000), Table 6 (*e.g.*, Alabama - 61%, Colorado - 63%, Florida - 62%, Idaho - 69%, Indiana - 60%, Maine - 70%, Michigan - 64%, New Hampshire - 85%, New Mexico - 62%, New York - 62%, North Carolina - 73%, Ohio - 69%, Puerto Rico - 85%, South Carolina - 65%, Tennessee - 63%, Vermont - 92%, West Virginia - 75%, and Wyoming - 74%).