BEFORE THE
FEDERAL COMMUNICATIONS COMMISSION
WASHINGTON, D.C.

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
Amendment of Section 2.106 of the Commission's Rules to Allocate Spectrum at 2 GHz for Use By the Mobile-Satellite Service	ET Docket No. 95-18
The Establishment of Policies and Service Rules for the Mobile-Satellite Service in the 2 GHz Band	IB Docket No. 99-81
Petition for Rule Making of the Wireless Information Networks Forum Concerning the Unlicensed Personal Communications Service	RM-9498
Petition for Rule Making of UTStarcom, Inc., Concerning the Unlicensed Personal Communications Service	RM-10024

TO: THE COMMISSION

COMMENTS OF THE AD HOC MDS ALLIANCE ON THE FURTHER NOTICE OF PROPOSED RULE MAKING

Thomas J. Dougherty, Jr.
Gardner, Carton & Douglas
1301 K Street, N.W.
Suite 900, East Tower
Washington, DC 20005-3317
(202) 408-7100 - Phone
(202) 289-1504 – Telecopier
tdougherty@gcd.com

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SUMMARY

The Ad Hoc MDS Alliance ("Ad Hoc"), is a group of MDS licensees. Previously, it opposed proposals to relocate a portion of MDS channel 2 spectrum to alternative frequencies to set aside spectrum for advanced wireless services. In view of recent events, however, Ad Hoc has reflected on its position and the National interest, and has come to the conclusion that it can conditionally support a reallocation of MDS channel 1, 2 and 2A operations to a suitable, alternative band in a manner, and with a result, that does not penalize Ad Hoc.

There are important conditions to this support, which include the following:

- For a variety of compelling reasons, the alternative spectrum for MDS channels 1, 2 and 2A must be lower in frequency than the 2150-2162 MHz band currently allocated to MDS channels 1, 2 and 2A.
- The decision to reallocate MDS channels 1, 2 and 2A to alternative spectrum should be made rapidly to minimize the time this spectrum spends under what is proving to be a paralyzing cloud of regulatory uncertainty and risk.
- To minimize further avoidable disruption and costs to consumers and service providers, licensees of MDS channel 1, 2 and 2A spectrum should be allowed to hold licenses simultaneously for the 2150-2162 MHz band and the replacement spectrum band during a transition period.
- For the same reasons, and to accelerate the end of the transition period, the Commission should issue replacement spectrum licenses to MDS channel 1, 2 and 2A

licensees as soon as possible after the decision to relocate MDS channel 1, 2 and 2A operations to alternative spectrum.

- A reallocation of operations within the lower 10 MHz of the MDS channel 1, 2 and 2A band between 2150-2160 should also include a reallocation of operations within the upper 2 MHz of MDS channel 2 operations between 2160-2162 MHz to a single, contiguous band of frequencies.
- Within the replacement spectrum, MDS channel 2A should not continue to suffer a lesser bandwidth allocation of 4 MHz. It should be treated the same as MDS channels 1 and 2.
- The replacement spectrum should not be shared.
- In identifying spectrum for replacement, the Commission should target spectrum that can be made available with a minimum of disruption to incumbent services. To that end, the Commission is encourages to prefer as displacement spectrum that which is (a) used less than other spectrum, (b) used on a private as opposed to common carrier basis, (c) unlicensed rather than licensed spectrum, (d) spectrum in play in the 3G proceeding as opposed to spectrum foreign to the proceeding, (e) spectrum that can be reallocated without causing a break in a band of spectrum that is more efficiently used as a continuous band of spectrum, and (f) spectrum that lacks the bandwidth to satisfy large capacity demands of advanced wireless services.

Considering the bands of spectrum at play in the 3G rule making, none except the 1910-1930 MHz band satisfies those spectrum reallocation guidelines. Unlike other, identified candidate bands, the 1910-1930 MHz band meets the requirements of (1) being lower in frequency, (2) being lightly used, (3) being used as ancillary to other business pursuits, (4) being

unlicensed, (4) providing enough spectrum for MDS in one contiguous band of frequencies, and (5) lacking the bandwidth to meet announced 3G bandwidth demands. Accordingly, a reallocation of MDS channel 1, 2 and 2A operations to 1910-1930 MHz would be supported by Ad Hoc.

Although the 1910-1930 MHz band offers more bandwidth to MDS channels 1, 2 and 2A than they now possess, the amount of useable bandwidth is not significantly greater than what MDS channels 1, 2 and 2A now have. Some of the extra bandwidth will be subject, of necessity, to use restrictions required to protect adjacent band broadband PCS operations conducted at lower powers.

Like the 2500-2690 MHz MDS band, the MDS channel 1, 2 and 2A band, whether at 2150-2162 MHz or at a relocation band, should have a flexible use allocation. Both sets of frequencies are used together, and should be subject to a uniform set of usage rules Moreover, the legal requirement for such an allocation is present.

While there are unlicensed PCS operations in the 1910-1930 MHz band that would need to be relocated to make room for MDS in the band, the circumstances appear relatively ideal for a relocation. First, it appears that the unlicensed PCS operations can be migrated into the 2390-2400 MHz band, already allocated for unlicensed PCS. Second, the cost of such migration is mitigated by the fact that the unlicensed PCS spectrum is used for auxiliary support of other business operations conducted mainly on an "in-building" basis. Nonetheless, the Commission should impose an immediate freeze on new unlicensed PCS operations in the 1910-1930 MHz band, and upon expansions or modifications of operations in that band, so as to avoid any unnecessary difficulties in the reallocation process.

Finally, any reallocation of FMS users (if any) in the 1910-1930 MHz band should proceed in accordance with the rules now in existence for this purpose.

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TO: THE COMMISSION

COMMENTS OF THE AD HOC MDS ALLIANCE ON THE FURTHER NOTICE OF PROPOSED RULE MAKING

The Ad Hoc MDS Alliance, by and through its attorneys ("Ad Hoc"),[1] hereby submits these comments in response to the *Memorandum Opinion and Order and Further Notice of Proposed Rulemaking* (the "*FNPRM*") in the above-referenced proceedings, released on August 20, 2001

[1] The Ad Hoc MDS Alliance consists of the following entities: Atlanta MDS Company, Inc., Chicago MDS Company, Detroit MDS Company, Los Angeles MDS Company, Inc., Milwaukee MDS Company, Minneapolis MDS Company, New York MDS, Inc., Phoenix MDS Company, San Diego MDS Company, San Francisco MDS, Inc., St. Louis MDS Company, Inc., Washington MDS, Inc., Private Networks, Inc., Multipoint Information Systems, and Broadcast Data Corporation.

(FCC 01-224). The date for submitting comments on the matters raised in the *FNPRM* was extended to October 22, 2001.[2]

I. BACKGROUND

The *FNPRM* initiates a new stage in the ongoing process of locating and allocating spectrum for advanced wireless services, including "Third Generation" ("3G") or IMT-2000 wireless services. The first stage ended with the adoption of the *First Report and Order and Memorandum Opinion and Order* (the "*First R& O*").[3] Therein, the Commission took two actions of significance to Ad Hoc. First, as requested by Ad Hoc and other 2500-2690 MHz MDS licensees and interests, the Commission removed the 2500-2690 MHz band from the list of bands that might be reallocated for advanced wireless services.[4] Second, the Commission adopted Ad Hoc's suggestion that the Commission add a mobile allocation to that band "in order to provide additional flexibility for use of this spectrum and promote more efficient use, thereby serving the public interest."[5] Ad Hoc commends the Commission for these decisions and the Commission's recognition of the heavy use of that band for fixed wireless services, including distance learning and high-speed Internet access for educational purposes.

At this juncture, the remaining identified spectrum candidates for advanced services reallocation are the five bands first identified in the *FNPRM* -- 1910-1930 MHz, 1990-2025 MHz,

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[2] That due date was first extended to October 19, 2001 in the *Order Extending Comment Period*, DA 01-2313 (D. Chief, Wireless Telecommunications Bureau; rel. Oct. 4, 2001). Subsequently, the Commission extended the due date for all filings otherwise due on October 18 or 19, 2001, to October 22, 2001. *FCC Announces Change in Filing Location for Paper Documents*, Public Notice, DA 01-2446 (rel. Oct. 17, 2001); *Clarification on FCC's Announced Changes in Filing Procedures*, Public Notice, DA 01-2451 (rel. Oct. 18, 2001) (announcing that the extension of due dates to October 22, 2001 applies to both paper and electronic filings).

[3] FCC 01-256 (rel. September 24, 2001)(ET Docket No. 00-258, RM 9911).

[4] *Id.* at ¶ 2.

[5] *Id.* at ¶ 19.

2150-2160 MHz, 2165-2200 MHz and 2390-2400 MHz[6] -- along with the 2110-2150 MHz, 2160-2165 MHz, 1710-1755 MHz and 1755-1850 MHz bands previously identified in the *Advanced Services NPRM*.[7] But, while the 1770-1850 MHz band may at one time have offered a viable option for an advanced services home, the NTIA has announced that there will be a joint governmental agency assessment of spectrum for advanced wireless services, and that the "1770 to 1850 MHz band is not a part of this assessment."[8] This joint assessment of the Commission, the Department of Defense, NTIA and other Executive Branch agencies will focus its attentions on the use of the 1710-1770 and 2110-2170 MHz bands as homes for advanced wireless services, presumably to the exclusion of other candidate bands.[9]

Ad Hoc's members are licensees of MDS channels that operate in the 2150-2162 MHz band on either MDS Channel 1 or MDS Channel 2 in major markets.[10] Ad Hoc continues to have a vital interest in this proceeding, as the 2150-2160 MHz band is a specific focus of the *FNPRM*. This interest is heightened by the announcement in the *NTIA Statement* that the U.S. Government, including the Commission, will focus its attention upon just two 60 MHz bands -- one of which includes the 2150-2162 MHz MDS frequencies -- in the joint-agency assessment of spectrum needs for advanced wireless.

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6 *FNPRM*, at ¶ 2.

7 *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, *Notice of Proposed Rule Making and Order*, 16 FCC Rcd 596 (2001) ("*Advanced Services NPRM*"), at ¶¶ 66-69.

8 *NTIA Statement Regarding New Plan To Identify Spectrum for Advanced Wireless Mobile Services (3G)* (rel. Oct. 5, 2001) ("*NTIA Statement*").

9 *Id.*

10 MDS channel 1 operates in the 2150-2156 MHz band. MDS channel 2 operates in the 2156-2162 MHz band. MDS channel 2A is 2/3rds of the size of either MDS channel 1 or MDS channel 2 and operates in the 2156-2160 MHz band.

II. IN VIEW OF THE NATIONAL INTEREST, THERE ARE CONDITIONS UNDER WHICH AD HOC WOULD SUPPORT A REALLOCATION OF MDS CHANNELS 1, 2 AND 2A TO ALTERNATIVE, SUITABLE SPECTRUM

The *Advanced Services NPRM* asked whether the 2160-2165 MHz band should be reallocated to support advanced wireless services. This band includes the upper 2 MHz of MDS channel 2. In its comments in response to the *Advanced Services NPRM*, Ad Hoc urged the Commission not to reallocate that upper 2 MHz due to the severe impact that such reallocation would have on the fixed wireless broadband industry. Notably, the remaining portions of MDS channels 1 and 2 were not at that time subject to consideration as a 3G home. And while the specific focus of those comments was that upper 2 MHz of MDS channel 2, Ad Hoc also explained the critical importance to MDS/ITFS-based broadband fixed wireless services of maintaining the whole of MDS channels 1 and 2 for those services. That portion of those comments bears repeating in these comments:

> From Ad Hoc's perspective, the most urgent issue raised by the *Advanced Services NPRM* is the proposal to reduce MDS Channel 2 by one-third of its licensed spectrum. Implementing this proposal would risk dire consequences to the fixed wireless plan for the 2 GHz spectrum. The 2150-2162 MHz band is a critical link in the industry-consensus "Breckenridge Agreement" plan for 2 GHz fixed wireless. Because of this band size and its spectral distance from the remaining 2500-2690 MHz band, the industry selected the 2150-2162 MHz contiguous band for a "superband," 12 MHz upstream path.
>
> The industry's selection of this architecture is embodied in the so-called "Breckenridge Agreement," representing one of the more far-reaching, creative, and significant examples of telecommunications industry self-regulation. Absent this agreement, many industry observers believe that two-way service – which otherwise has no dedicated return path spectrum – could not become a reality. If MDS Channel 2 is split into two parts, the ability of MDS Channel 2 to operate will be dramatically and adversely affected, and will make MDS Channel 1 substantially less valuable due to the fact that customer premises equipment ("CPE") will be built at the same cost with less useful capacity. Under this scenario, MDS Channel 1 would lose a significant (if not fatal) amount of utility,

> and the Breckenridge Agreement's main purpose, to provide for an upstream channel, would be rendered meaningless.[11]

While Ad Hoc continues to believe in the validity of those comments, the recently announced inter-governmental consensus in the *NTIA Statement* to narrow the 3G candidate band focus to two bands – one of which includes MDS channels 1 and 2 -- coupled with the Commission's decision in the *FNPRM* to include the MDS channel 1 and 2 band in such candidate bands, indicate that there is a strong bias in favor of reallocating the spectrum now used for MDS channels 1 and 2 for advanced wireless services.

For that reason and in view of the National interest, Ad Hoc is willing to support a relocation of MDS channels 1, 2 and 2A to a suitable, alternative spectrum that does not penalize either Ad Hoc or consumers. As explained below, the location and the other characteristics of this new spectrum, as well as the provisions for its regulation, are of critical importance to any reallocation.

III. CONSIDERATIONS IN RELOCATING MDS CHANNELS 1 AND 2

Ad Hoc has identified certain important considerations that it believes should guide any effort by the Commission to identify a new spectral home for MDS Channels 1, 2 and 2A as part of a reallocation of the 2150-2162 MHz band for advanced wireless services. We will identify and elaborate upon those considerations in this Section III of these comments.

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[11] Ad Hoc Comments to *Advanced Services NPRM*, at 4-5 (filed Feb. 22, 2001) (footnote omitted).

A. Relocating MDS Channels 1, 2 and 2A to a Lower Frequency Band, as Opposed to a Higher Frequency Band, Will Better Promote the Public Interest, and Will Avoid Potentially Disastrous Service, Equipment Availability and Operational Problems That May Be Associated With a Relocation to Higher Frequency Bands.

As explained above and in Ad Hoc's comments to the *Advanced Services NPRM*, MDS channels 1, 2 and 2A are critical return paths for broadband fixed wireless services using MDS and ITFS frequencies. Lest there be any doubt as to the importance of MDS channels 1, 2 and 2A to MDS/ITFS fixed broadband wireless, one need only consider that the so-called "Breckenridge Agreement" of the major MDS/ITFS wireless operators designates MDS Channels 1, 2 and 2A as the primary subscriber return paths for MDS/ITFS-based fixed broadband wireless systems.[12]

Because of the relatively low frequencies used by MDS channels 1, 2 and 2A, as well as the remaining MDS/ITFS band, these channels can be used to create broadband communication paths of very long lengths, as well as paths of short and intermediate lengths. It is for that reason that MDS and ITFS channels have a protected service area with a radius of 35 miles,[13] although these frequencies are often used with the Commission's blessing to serve subscribers more than 50 miles from a transmitter.[14] This technical characteristic is especially important for MDS channels 1, 2 and 2A, because their use as the primary return path frequencies requires the combination of long path lengths at relatively low powers preferred for transceivers operated by consumers.

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[12] Comments of Nucentrix Broadband Networks, Inc. to *Advanced Services NPRM*, at 21 (filed Feb. 22, 2001)

[13] Rules 21.902(d) and 74.903(d).

[14] The protected service area is the area within which the reception of the MDS channel is protected from interference. It does not restrict where a receiver may be located, just where it is protected.

The long path lengths that this spectrum will support in a return path mode makes it ideal for service to rural areas.[15] Without that capability, the number of cell sites (or base stations) required to support service would multiply. But, because rural markets are typified by low population density, the cost of equipment plant will be spread over far fewer people, requiring transmission systems dependent upon fewer cell sites (or base stations) that can serve out to great distances. This is no minor attribute of MDS channels 1, 2 and 2A, as MDS is perhaps the only viable short-term means of addressing the digital divide between urban/suburban and rural communities.[16]

Relocating MDS channels 1, 2 and 2A to a substantially higher frequency band would reduce their rural service potential, thus causing harm to pre-existing business plans and thwarting efforts to bridge the digital divide that is so pronounced in rural areas. Other aspects of existing business plans also would suffer from such an action. Unless transmit power is greatly increased at much higher operational costs, such relocation would result in substantial service area losses. Higher frequencies also require more base stations to preserve a given level of throughput capacity and coverage, once again pressing higher operational and additional capital costs. These cost pressures also would be manifested in CPE, which would become more expensive to build and operate. Indeed, the expense of building CPE that of necessity incorporates MDS channels 1, 2 and 2A (return path) with the MDS/ITFS channels between 2500 and 2690 MHz (outbound) could skyrocket if an increase in the spectrum allocated to the

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15 "MDS's larger radius makes the service well suited for not only urban and suburban residential customers, but also customers in rural, underserved, and unserved areas, where the large cell-size substantially reduces the cost of providing service." *Inquiry Concerning the Deployment of Advanced Telecommunications Capability*, CC Docket No. 98-146, Second Report, FCC 00-920, at ¶ 39 (Aug. 21, 2000)("*Advanced Services Report*").

16 *First R&O*, at ¶ 19, n.84 ("In rural or underserved markets in the country, and for many educational users, ITFS/MMDS may be the sole provider of broadband service."); *see also Advanced Services Report*, at ¶¶ 220-223.

MDS 1, 2 and 2A channels significantly reduces the spectral separation between those bands, requiring expensive filtering. Since CPE tends not to be shared among subscribers, such cost increases would be passed directly to the subscriber. This is not only bad for the consumer, but more so for the fixed wireless service provider because it requires CPE charges that the subscriber is conditioned to resist.[17]

The relocation of MDS channels 1, 2 and 2A to a substantially higher frequency band also could impair the utility of the existing practice of pairing them as return paths with MDS/ITFS channels located in the 2500-2690 MHz band to offer a single two-way service. At present, MDS channels 1, 2 and 2A have effective path distances and other technical characteristics akin to, but somewhat superior to, those of the MDS/ITFS channels between 2500 and 2690 MHz, thereby allowing them to be used together to offer a single service, with the MDS channels 1, 2 and 2A as low power return path channels. Relocating MDS channels 1, 2 and 2A to a substantially higher frequency band would risk a loss, or significant diminution, in this compatibility, thereby significantly reducing if not eliminating the value of MDS channels 1, 2 and 2A as broadband fixed wireless return paths.

The importance of equipment manufacturers, and of their willingness to fund the research, development and production of transceiver products necessary for a subscriber-demanded broadband fixed wireless service also should not be overlooked in this analysis. In the short history of broadband fixed wireless, manufacturers already have been subject to extreme financial pressures in their effort to serve that industry. The Commission first accepted applications for authorizations to offer this service in August of 2000. Almost immediately

[17] In this regard, the household subscriber to communications service has been led to expect his or her CPE required for the service to be provided at no charge or at a charge that is reduced significantly by a rebate. If there is any question about this marketing creation, one need only look at any cellular radiotelephone advertisement.

thereafter, NTIA announced that it would review the MDS/ITFS band at 2500-2690 MHz, as well as the upper 2 MHz of MDS channel 2, for reallocation for advanced wireless services, thereby vastly increasing the uncertainty and risks faced by these manufacturers.[18] Only two months ago was the MDS/ITFS band at 2500-2690 MHz removed from reallocation consideration, only to have the critically important MDS channel 1 and 2 band between 2150 and 2160 MHz added to the list of bands subject to reallocation consideration. The uncertainty created by this shifting regulatory landscape, coupled with the crash in the technology capital markets, has had a pronounced negative effect on the number of interested equipment manufacturers, as well as the investment they are willing to make (and can make within the restrictions of available financing) to develop the equipment needed to offer MDS/ITFS-based fixed broadband wireless services. It is thus important for the Commission to minimize the negative effect of any MDS channel 1, 2 and 2A reallocation decision on these manufacturers. While a reallocation of MDS channels 1, 2 and 2A to a lower band would require some new research and development, it would tend to lower the cost of equipment thus improving the business prospects of service providers and incenting equipment manufacturers to continue and increase their equipment development and production activity. Reallocating such channels to a higher band can be expected to have the opposite result.

For these reasons, it is essential that any reallocation of MDS channels 1, 2 and 2A be to lower frequency bands. A move to higher frequencies would penalize Ad Hoc, delay services to the public and disserve consumers.

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[18] NTIA, *Plan to Select Spectrum for Third Generation (3G) Wireless Systems in the United States* (rel. Oct. 20, 2000).

B. Any Reallocation Decision Should Be Made Rapidly and Reallocated MDS Licensees Should Be Allowed to Simultaneously Hold Licenses for Both the 2150-2162 MHz Band and the Relocation Band During a Transitional Phase to Minimize Stranded Investment, Revenue Loss, Damage to Good Will and Inconvenience to Consumers.

MDS channel 1, 2 and 2A licensees, as well as their lessees, are suffering financial losses resulting from the mere fact that the 2150-2162 MHz spectrum has been identified for reallocation to advanced wireless services. The uncertainty and risk created by this rule making redounds in reductions in marketing efforts. It simply makes little sense to buy and install customer premises equipment operating in that band when there is a real danger that the spectrum will be taken away. Not only does this fact hurt profits and imbedded cost recovery, it also injures consumers who are deprived of the choice of receiving fixed broadband wireless from MDS/ITFS service providers. In many rural markets, where MDS/ITFS service providers are the only choice,[19] consumers are deprived of this increasingly necessary service. For those reasons, Ad Hoc exhorts the Commission to remove this risk and uncertainty as quickly as possible by placing this rule making on a fast track, thereby reducing if not eliminating those negative effects.

It is important to recognize that a reallocation of MDS spectrum will also result in the need to transition existing customers from non-compliant response stations to response stations operating on the newly allocated frequency band. It is important that the transition process proceed in an orderly fashion to avoid the disruption of services used by tens of thousands of subscribers and to minimize the stranded investment and lost revenues of providers of the services using the reallocated frequencies. A flash-cut from the old band to the new band will not allow for an orderly transition. Instead, consumers will lose their service, providers will lose their good will and reputations for service quality, and providers will suffer severe revenue losses.

To avoid that prospect and allow for an orderly transition, it is necessary that MDS channel 1, 2 and 2A licensees hold licenses for both the 2150-2162 MHz band and the reallocated band simultaneously during a transition phase. During that phase, MDS channel 1, 2 and 2A licensees should retain primary status in the 2150-2162 MHz band, but each such MDS licensee should have the ability to negotiate with the 3G auction winners for an early departure of the MDS licensee from that band to accommodate instances in which auction winner wishes to accelerate the conclusion of the transition period.

C. Licenses for the Reallocated Spectrum Should Be Issued as Soon as Possible After the Conclusion of This Rule Making Proceeding to Allow MDS/ITFS-Based Broadband Fixed Wireless Systems to Continue Marketing Without the Cloud Created by This Proceeding and to Accelerate the Clearing of the Spectrum that Will Be Auctioned to Others to Support Advanced Wireless Services.

Licenses for reallocated spectrum should be issued as soon as possible after the conclusion of this proceeding. At present, MDS/ITFS-based broadband wireless service providers are curtailing marketing.[20] This is a natural outgrowth of the uncertainty and risk to such operations resulting from the regulatory uncertainty first applied to the 2500-2690 MHz band and now the 2150-2162 MHz band as a result of this proceeding. Issuing these licenses will eliminate this uncertainty. As a result, equipment manufacturers will more rapidly commence the research, development and production required to market equipment operating on the displacement frequencies, and service providers will be able to more rapidly resume marketing and services.

There is no need to wait for an auction of the spectrum selected for advanced wireless services to issue licenses for displacement spectrum. Indeed, issuing such licenses in advance of

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19 *First R& O*, at ¶ 19, n.84.

the advanced wireless services auction will allow part of the unavoidable displacement transition period to be completed before anyone is licensed to use the displaced spectrum for advanced wireless services, thus efficiently speeding the delivery of useful services to the consuming public. As a further positive result, the Commission would be able to shorten the transition period without injuring services subject to transition.

D. A Reallocation of 2150-2160 MHz Should Include 2160-2162 MHz

In its comments to the *Advanced Services NPRM*, Ad Hoc cautioned that reallocating the 2 MHz between 2160 and 2162 MHz would have dire consequences for the broadband fixed wireless plan for 2 GHz spectrum.[21] The *FNPRM* looks at the situation in reverse; that is, the *FNPRM* examines a reallocation of the 2150-2160 MHz band apart from the 2160-2162 MHz band. Either way, splitting MDS channel 2 would be detrimental to the fixed broadband wireless community and would result in the inefficient use of scarce spectrum. As stated by Ad Hoc in its comments to the *Advanced Services NPRM*:

> First, should the Commission split MDS Channel 2's bandwidth between two non-contiguous bands, it would leave licensees with little of discernable valuable. To Ad Hoc's knowledge, there is no video digital encoding equipment designed to operate in just a 4 MHz bandwidth. Indeed, it is highly unlikely that any equipment manufacturer would forecast a sufficiently large and sustainable market for 4 MHz bandwidth equipment operable between 2156 and 2160 to justify even the research and development cost of such equipment, let alone the actual production and sale of it.[22]

Quite simply, stranding the 2 MHz between 2160 and 2162 MHz on a spectrum island would result in the total loss in the utility of this spectrum. No manufacturer would be willing to risk the investment required to create equipment that could use such a small amount of fixed

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[20] Sprint Communications Corp., the largest holder of MDS/ITFS spectrum channel rights, has sent letters to its ITFS and MDS spectrum partners announcing that Sprint is curtailing its MDS/ITFS-based fixed broadband wireless activity.

[21] Ad Hoc Comments to *Advanced Services NPRM*, at 4-5 (filed Feb. 22, 2001).

[22] *Id.* at 5.

wireless spectrum. And it is doubtful that any economical fixed wireless use of the spectrum would evolve. Spectrum efficiency requires that either there be no reallocation of operations conducted within any portion of the 2150-2162 MHz band or a reallocation that moves all operations within that band to one uninterrupted band of frequencies.

E. The Spectrum Provided for Relocation to MDS Channel 2 and to MDS Channel 2A Should Be Equal in Amount.

At present, there is a significant difference in the bandwidths assigned to MDS channel 2 and MDS channel 2A. Reflecting the spectrum use policy and spectrum need forecasts of 1974, MDS Channel 2 was allocated in fifty of the then-largest cities with 6 MHz of bandwidth while the remainder of the country was given access only to MDS Channel 2A with 4 MHz of bandwidth.[23] While the Commission in 1974 offered no reason for this distinction between MDS channel 2 and MDS channel 2A,[24] it is counterintuitive to allocate a larger channel to a metropolitan area that can support channel reuse through cellular techniques, and to allocate a smaller channel to rural areas that cannot support channel reuse.[25] It should come as no surprise, therefor, that the Commission has granted several petitions to increase the size of particular MDS 2A channels from 4 to 6 MHz. For the most part, however, this odd difference in bandwidth persists without a difference in the service need that could justify the difference.

For those reasons, and in recognition of the high costs the industry would bear in the transition to a reallocation of MDS channels 1, 2 and 2A to alternative frequencies, and to minimize those costs, MDS channels 2 and 2A should receive uniform bandwidths. Changing from the present patchwork system of bandwidth assignment to a uniform system will also

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[23] *Amendment of Parts 1, 2, 21, and 43 of the Commission's Rules and Regulations to Provide For Licensing and Regulation of Common Carrier Radio Stations in the Multipoint Distribution Service*, 45 F.C.C.2d 616 (1974).

[24] *Id.* at ¶ 12.

[25] *See* note 15, *supra*.

provide the additional benefit of increased economies of scale in manufacturing the equipment that will operate on these channels in a post-reallocation era. As a result, subscribers should benefit from lower service costs and the potential of 2 GHz fixed broadband wireless as a viable competitor should be improved.

F. As MDS Channels Can and Do Employ Omnidirectional or Wide-Area Antennas, They Should Be Reallocated to Spectrum that Is Not Shared

Presently, MDS channels 1, 2 and 2A are used mostly for the subscriber return path; stated otherwise, they transmit from the subscriber's location to a hub receive station via a narrow beam antenna. Typically, these hub receive stations use 360° antenna arrays. Because MDS channels 1 and 2 operate in microwaves, their signals are easily absorbed or obstructed by topography, other natural terrain features and man-made structures. Consequently, high hub receive antenna heights are required to establish communication paths with multiple subscriber stations.[26]

It would be difficult to relocate such operations to any band shared with other uses.[27] Interference and subscriber dissatisfaction would surely result. While the coordination of frequency use sometimes is a means to accommodate sharing between otherwise incompatible services, the broadband fixed wireless services offered with these frequencies are made available, in part, to home consumers who neither can afford the cost nor will tolerate the delay and irritation of a frequency coordination process. Moreover, the subscriber response stations operating on MDS channels 1, 2 and 2A have receiver arrays that, because of their altitude above

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[26] The height above ground level ("AGL") of these antenna arrays varies based upon many factors such as size of the cell and topography. Still, even the lowest antenna arrays will be in excess of 100 feet AGL to allow the signals from subscriber "response" stations to clear trees. Not infrequently, these antenna arrays are mounted at points in excess of 350 feet AGL.

[27] This statement is in no way inconsistent with the concept that reallocation of these MDS channels to a band where there are existing uses may be acceptable, but such existing uses must be removed from the band with fair rapidity.

ground and omnidirectional sensing of low power emissions, are extremely susceptible to interference from any direction.[28]

It is important to recognize that MDS Channels 1, 2 and 2A do not now share their frequency band with any other users. Their 35-mile radius circle protected service areas are not compatible with geographic frequency sharing, such as can occur between point-to-point microwave systems. To reallocate these channels to a shared band would materially diminish the utility of these channels.

G. The Commission Should Endeavor to Find a New Spectral Home Where the Negative Impact of Migration Is Minimized, to the Extent Possible, Consistent with the Above-Described Concerns.

Given the congestion of the domestic frequency bands, moving MDS Channels 1, 2 and 2A to make room for advanced wireless services involves the domino effect of having to displace other spectrum incumbents to make room for displaced MDS incumbents. To minimize the reallocation disruption, Ad Hoc would encourage the Commission to relocate MDS channels 1, 2 and 2A to spectrum that is little used, or that has uses that are accommodated or that can be easily accommodated in other bands.[29]

To better control the disruption that will result, the Commission should prefer spectrum that is used on a private basis by companies and organizations that use the spectrum not as their principal modality of business, but as a mere ancillary support for another business endeavor (e.g., a law firm that generates $350,000,000 in annual revenues using unlicensed PCS for its internal wireless telephone system costing $750,000). Such businesses expect to replace such

[28] A report by George H. Harter, P.E supports this statement. Mr. Harter's report is attached to the comments of the Wireless Communications Association International filed February 22, 2001 in response to the *Advanced Services NPRM*. These findings appear at A-66, App. 5.2 of that report.