

**Before the  
Federal Communications Commission  
Washington, DC 20554**

In the Matter of	)	
	)	
Amendment of Parts 1, 21, 73, 74 and 101 of the Commission’s Rules to Facilitate the Provision of Fixed and Mobile Broadband Access, Educational and Other Advanced Services in the 2150-2162 and 2500-2690 MHz Bands	)	WT Docket No. 03-66 RM-10586
	)	
Part 1 of the Commission's Rules - Further Competitive Bidding Procedures	)	WT Docket No. 03-67
	)	
Amendment of Parts 21 and 74 to Enable Multipoint Distribution Service and the Instructional Television Fixed Service Amendment to Parts 21 and 74 to Engage in Fixed Two-Way Transmissions	)	MM Docket No. 97-217
	)	
Amendment of Parts 21 and 74 of the Commission’s Rules With Regard to Licensing in the Multipoint Distribution Service and in the Instructional Television Fixed Service for the Gulf of Mexico	)	WT Docket No. 02-68 RM-97118
	)	

**Reply Comments of The ITFS/2.5 GHz Mobile Wireless Engineering &  
Development Alliance, Inc. (“IMWED”)**

This filing is submitted by the ITFS/2.5 GHz Mobile Wireless Engineering & Development Alliance, Inc. (“IMWED”) in response to the Commission’s Notice of Proposed Rulemaking (“NPRM”) in the above-captioned matter.<sup>1</sup>

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<sup>1</sup> Amendment of Parts 1, 21, 73, 74 and 101 of the Commission’s Rules to Facilitate the Provision of Fixed and Mobile Broadband Access, Educational and Other Advanced Services in the 2150-2162 and 2500-2690 MHz Bands. 18 FCC 6722 (2003)

## About IMWED

IMWED was formed early this year. Currently, it is composed of six organizations that are licensed to operate ITFS systems scores of communities nationwide, ranging in size from Chicago to Kona, Hawaii.<sup>2</sup> It is a non-profit organization intended to provide member licensees with technical and business assistance needed to convert their systems successfully to digital two-way mobile operation.

A detailed description of IMWED and its members is contained in IMWED's comments in the above-captioned proceeding.<sup>3</sup>

### **I. The Present Licensee Eligibility Rules for ITFS Licensing Should Be Retained.**

Currently, ITFS eligibility is governed by Section 74.932(a) of the Commission's Rules, which specifies that the Commission will award an ITFS license to "an accredited institution or to a governmental organization engaged in the formal education of enrolled students or to a nonprofit organization whose purposes are educational..."<sup>4</sup>

Overwhelmingly, ITFS commenters---universities, school districts, educational trade organizations, public television licensees, religious organizations, and non-institutional ITFS license holders---support the retention of this restriction.<sup>5</sup>

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<sup>2</sup> The members of IMWED are: Chicago Instructional Technology Foundation ("CITF"), Denver Area Educational Telecommunications Consortium ("DAETC"), Instructional Telecommunications Foundation ("ITF"), North American Catholic Educational Programming Foundation ("NACEPF"), Portland Regional Educational Telecommunications Corporation ("PRETC"), and Twin Cities Schools' Telecommunications Group ("TCSTG").

<sup>3</sup> Comments of IMWED, pp. 2-3.

<sup>4</sup> Under comparatively rare circumstances, which apply chiefly to rural areas, commercial entities are able to hold licenses for ITFS spectrum. See Section 74.990 of the Commission's Rules.

<sup>5</sup> See the Joint Comments of the Catholic Television Network and the National ITFS Association ("CTN/NIA Joint Comments"), pp. 7 - 11; Comments of the Education Community, pp. 4-8; Comments of George Mason University Foundation, Inc., *et al*, pp. 12-17; Joint Comments of ITFS Parties, p. 4; Comments of PACE Telecommunications Consortium of Michigan ("PACE"), p. 9; Comments of the School Board of Broward County ("SBBC"), p. 13; Comments of the School Board of Miami-Dade County, Florida ("Miami-Dade Schools"), p. 1; Comments of South Carolina Educational Television Commission ("SCETV"), p. 7; Joint Comments of Stanford University and Northeastern University, p. 5.

There appear to be a handful of exceptions: Education Service Center Region 10 (“Region 10”), Atlanta Interfaith Broadcasters, Inc. (“Interfaith”), and Network for Instructional TV, Inc. (“NITV”).<sup>6</sup>

IMWED will here rebut the arguments set forth by these three entities.

Region 10’s comments deal overwhelmingly with its desire to maintain current instructional video service to its current locations.<sup>7</sup> It appears to have no plans to use low-power LBS or UBS spectrum for educational data purposes, and its cursory discussion of spectrum sales deals with the possibility of ITFS licensees’ selling their LBS or UBS allotment.<sup>8</sup> This is an unusual position, in that the bulk of the ITFS community is committed to the future of educational data use in the band, and is not interested in selling its low power spectrum.

Interfaith does not appear to be a traditional ITFS organization, in that it is alone among ITFS commenters in wishing to eliminate the requirement for formal instructional video programming.<sup>9</sup> Interfaith’s discussion of eligibility matters is even more elliptical than Region 10’s, consisting of its views on how to structure spectrum auctions to maximize financial returns to the ITFS licensee.<sup>10</sup> Axiomatically, maximum financial return is not the purpose of ITFS, or of its non-profit licensees.

NITV’s reply comments indicate that it (and its locally-controlled licensee affiliates) operate ITFS systems in 22 metropolitan areas, including such major cities as New York, Philadelphia, and Washington, DC. NITV is a private entity that is eligible

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<sup>6</sup> Comments of Education Service Center Region 10 at p. 14; Comments of Atlanta Interfaith Broadcasters, Inc. at p. 18; and Comments of Network for Instructional TV, Inc. (“NITV”) at pp. 3-7.

<sup>7</sup> Comments of Region 10, pp. 3-10.

<sup>8</sup> *Id.*, p. 14.

<sup>9</sup> Comments of Interfaith at pp. 11-14.

<sup>10</sup> *Id.*, p. 18.

to hold ITFS licenses as a non-profit organization, rather than as an educational institution. Unlike Region 10 and Interfaith, NITV discusses the eligibility issue in considerable depth.

NITV argues that allowing commercial entities to hold ITFS spectrum would “empower educators to determine how best to utilize their spectrum assets to further their educational missions...”<sup>11</sup> NITV further avers that “the right to hold, rather than lease, a license for spectrum is a powerful incentive to investment and will facilitate the best and highest uses for this spectrum that will benefit education. Expanding eligibility would encourage new entrants who may be reluctant to build businesses using leased spectrum and increase the likely benefits to ITFS licensees by the broader availability of wireless systems that would result from a competitive secondary market for spectrum...”<sup>12</sup>

NITV goes on to state that it “does not believe that providing ITFS licensees with an option to sell... spectrum would necessarily result in large-scale transfers of spectrum from ITFS incumbents to commercial entities. Contrary to the views of CTN/NIA, if ITFS eligibility were expanded to enable commercial entities to hold such licenses, NITV believes that large numbers of educators will choose to hold their licenses based on the substantial use many ITFS licenses are currently making of their capacity and the tremendous potential for educational uses associated with the adoption of rebanding proposals.”<sup>13</sup>

Finally, NITV urges that the Commission require that 5% of the capacity of a digital system be made available by commercial ITFS spectrum holders “free to non-profit educational organizations and institutions for use in fulfilling their educational

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<sup>11</sup> Comments of NITV, p. 3.

<sup>12</sup> *Id.*, p. 4.

mission. In this way, all educators, not just those few who were fortunate enough to apply for a license from the FCC, gain by enjoying continued access to ITFS spectrum.”<sup>14</sup>

None of NITV’s arguments withstand close examination.

NITV’s support of an ongoing 5% capacity set-aside explicitly recognizes that the interests of education as a whole, rather than those of licensees alone, are the central issue. However, it ignores the fact that the transfer of ITFS spectrum to commercial use does permanent damage to education as a whole, even as it provides a one-shot boost to the licensee which sells out.

The five percent educational requirement that NITV recommends be attached to this spectrum is the current *minimum* that an ITFS licensee can allot to educational purposes,<sup>15</sup> and this percentage would become a permanent ceiling if the spectrum is sold. Leasing, in contrast, does not entail permanent damage; even if a licensee signs a bad deal for 15 years, the opportunity to reclaim a greater measure of capacity will come again.

NITV’s argument that licensees should be given the “flexibility” to sell off their pieces of the ITFS patrimony ignores the point that spectrum reservations are made for the benefit of the public, not of licensees. As IMWED wrote in its comments in this proceeding: “The public’s interest in the educational character of the spectrum is enduring, even if individual licensees can be enticed to give it up.”<sup>16</sup>

NITV recognizes that there is an essential quality to the holding of spectrum, in that it argues that commercial entities will be more inclined to invest in 2.5 GHz

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<sup>13</sup> *Id.*, p. 5.

<sup>14</sup> *Id.*, p. 6.

<sup>15</sup> IMWED believes that a 5% minimum is inadequate, and has recommended that this minimum be increased. See IMWED’s Comments, pp. 7-10.

spectrum if they can own their systems, rather than merely lease capacity. However, the very power of licensure is an essential reason to retain present eligibility limits. As IMWED and others pointed out in comments, holding licenses gives educators a seat at the table when networks are designed, as well as the lasting power to determine what percentage of capacity---if any---should be devoted to commercial purposes.<sup>17</sup>

History contradicts NITV's assumption that the sale of ITFS spectrum is necessary in order to attract commercial investment. Billions went into the establishment of wireless cable systems, which were built chiefly on ITFS channels. Later, numerous fixed data systems were established using ITFS frequencies. Though these business models did not succeed, their failure is not to be blamed on ITFS or on excess capacity leasing.

NITV's assertion that allowing the sale of ITFS spectrum promotes secondary markets does not pass the "straight face" test. The very essence of a spectrum sale, as NITV acknowledges, is for commercial entities to buy spectrum rather than rent it. Nothing could be more destructive to excess capacity leasing than making it possible for prospective lessees to buy ITFS systems.

Finally, NITV would have the Commission believe that changing the eligibility standards for ITFS would not result in a significant volume of spectrum sales. While only experience can tell whether NITV is correct, we will assume, *arguendo*, that it is. If this is a small matter---one that will lead to few sales---then there is no significant rationale for the change, since there is no purpose in a fundamental re-regulation of ITFS

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<sup>16</sup> IMWED Comments, p. 5.

<sup>17</sup> IMWED comments, pp. 5-6. CTN/NIA Joint Comments, p. 7.

to secure only a small gain in spectrum efficiency. On the other hand, if transfers become widespread, the loss to American education will be ruinous.

Some commercial parties support the lifting of the ITFS eligibility restriction. These supporters can be divided into two groups: those that currently lease ITFS spectrum,<sup>18</sup> and those that do not.<sup>19</sup> The former considerably outnumber the latter. Significantly, the bulk of commercial entities participating in the rulemaking did not choose to address the issue of ITFS eligibility.<sup>20</sup>

The considerable majority of ITFS spectrum is encumbered by existing leases, many of which extend as long as 15 years. These agreements offer a major impediment to fundamental changes in the band, as observed by a number of commenters.<sup>21</sup> In addition, as the comments of WCA, NIA, and CTN (“Coalition NPRM Comments”) establish, certain commercial operators have secured dominant 2.5 GHz spectrum positions over large swathes of territory. Since ITFS represents the majority of 2.5 GHz spectrum, the bulk of such control is exerted through excess capacity leases.

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<sup>18</sup> Comments submitted by entities in this group are: Comments of Adams Telcom, Inc, Central Texas Communications, Inc., and Leaco Rural Telephone Cooperative, Inc., pp. 7-9; Comments of Grand Wireless Company, Inc. – Michigan, p. 14; Comments of the National Telecommunications Cooperative Association, p. 4; Comments of Rural Commenters, p. 10; Comments of Sprint Corporation, pp. 23-24; Comments of Teton Wireless Television, p. 16.

<sup>19</sup> Comments submitted by entities in this group are: Comments of the Cellular Telecommunications & Internet Association, pp. 4-5; Comments of Earthlink, pp. 10-12; Comments of the Information Technology Industry Council, p. 6, Comments of Intel Corporation, pp. 7-8.

<sup>20</sup> Comments of ArrayCom, Inc., Comments of BellSouth Corporation and BellSouth Wireless Cable, Inc., Comments of Comspec Corporation; Comments of Dallas MDS Partners, Comments of Ericsson, Inc., Comments of Fixed Wireless Holdings, LLC, Comments of Hardin and Associates, Inc., Comments of the Independent MMDS Licensee Coalition, Comments of IPWireless, Inc., Comments of Lucent Technologies, Comments of Motorola, Inc., Comments of NextNet Wireless, Inc., Comments of Nokia, Inc., Comments of NTELOS Inc., Comments of Oklahoma Western Telephone Company, Inc., Comments of PCIA, the Wireless Infrastructure Association, Comments of the Telecommunications Industry Association, Comments of Virginia Communications, Inc., Comments of W.A.T.C.H. TV Company, Comments of Wavetel, LLC, Wavetel NC License Corporation and Wavetel TN, LLC, Comments of the Wireless Communications Association International, Inc. (submitted jointly with NIA and CTN),.

<sup>21</sup> See Comments of The Ad Hoc MMDS Licensee Consortium, p. 26; Comments of Earthlink, footnote 13, p. 8; Comments of the Independent MMDS Licensee Coalition, p. 25; Comments of Spectrum Market, LLC, p. 13.

Through the purchase of MDS authorizations and the leasing of MDS capacity and excess ITFS capacity, a relatively small number of commercial broadband system operators have acquired rights to most of the spectrum in the 2.5 GHz band in areas that collectively cover most of the population of the country. For example, there are various large regions of the country where Sprint has secured access to most of the spectrum in the 2.5 GHz band, and the same can be said for large spectrum consolidators like BellSouth, SBC (which is acquiring the MDS/ITFS assets of Nucentrix) and Nextel (which is securing the holdings of WorldCom) as well as more regional system operators like WinBeam, Evertek, and Ntelos.<sup>22</sup>

New entrants will not spend money today to buy legally encumbered spectrum that will not be available for years. The only large-scale beneficiaries of a change in ITFS eligibility rules will be current spectrum lessees---a fact that explains why such a change is popular with this constituency. Allowing spectrum sales in the ITFS band will *not* create an efficient allocation mechanism, given this environment.

In sum, the upside is low and the downside immense.

Significantly, the bulk of commercial entities submitting comments on the NPRM did not take a position on ITFS eligibility. This neutral group includes prominent MMDS licensees, equipment manufacturers, industry associations, consultants, and even wireless operators such as BellSouth and NTELOS. The reason for such limited commercial support for eligibility changes is that such changes will not have a significant impact on commercial development of the band.

IMWED wishes to oppose, at least in passing, two extreme recommendations concerning ITFS. The Ad Hoc MMDS Licensee Consortium (“Ad Hoc Consortium”) wishes to preclude ITFS from involvement in educational data use by confiscating all

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<sup>22</sup> Coalition NPRM Comments, pp. 107-108.

ITFS LBS and UBS spectrum.<sup>23</sup> The New America Foundation, *et al*, (“NAF”) want to confiscate roughly half of the ITFS band in favor of unlicensed uses.<sup>24</sup> These parties appear not to have gotten the message that the Commission has already considered, and rejected, proposals for the eviction of ITFS. As the NPRM states: “We emphasize... that we do not intend to evict any incumbent licensees from the affected band if they have been in compliance with our rules and continue to comply with our rules when we modify or augment them nor do we intend to undermine the educational mission of ITFS licensees.”<sup>25</sup> If the Commission were to adopt anything approaching the recommendations of the Ad Hoc Consortium or NAF, it would be the ruination of ITFS and its contributions to American education.

## **II. The Commission’s Rules Should be Amended to Increase the Minimum Educational Service that ITFS Licensees are Required to Render.**

Stanford University and Northeastern University have joined IMWED in supporting an increase in the amount of instructional service that ITFS licensees are required to provide.<sup>26</sup>

We accept the contention of Illinois Institute of Technology (“IIT”) and others that many ITFS licensees far exceed the current minimum quota for educational service.<sup>27</sup> However, we point out that raising the minimum education requirement will not disadvantage ITFS licensees whose educational use of the spectrum is already intensive.

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<sup>23</sup> Comments of Ad Hoc Consortium, p. 9. Among other novel recommendations of the Ad Hoc Consortium is a proposal that the Commission to stop collecting installment payments from those who purchased MMDS spectrum at auction. (p. 23.)

<sup>24</sup> Comments of NAF, *et al*, pp. 6-23.

<sup>25</sup> NPRM at paragraph 2.

<sup>26</sup> Joint Comments of Stanford University and Northeastern University, pp. 5-6. Such an increase is also supported NAF. See Comments of NAF, pp. 31-35.

<sup>27</sup> Comments of IIT, pp. 9-12. See also comments of the Diocese of Brooklyn, p. 2, and the CTN/NIA Joint Comments, footnote 20, p. 10.

The purpose of such a regulation is, after all, to improve the performance of those who do only the minimum.

We are distressed to find that two leading voices for ITFS, the National ITFS Association and the Catholic Television Network, have agreed with commercial entities like Sprint that educational requirements should not be strengthened.<sup>28</sup> We find their brief to be unpersuasive.

These parties first argue that a change in the requirements would be disruptive to existing leases, or require that such leases be renegotiated.<sup>29</sup> This is plainly incorrect. IMWED has recommended only prospective application of increased educational requirements.

CTN and NIA argue that extensive cellularization will mean that 5% of an ITFS system's capacity may be ample.<sup>30</sup> This assertion is unproven, as no highly cellularized networks have been built on 2.5 GHz spectrum in the United States, and CTN/NIA offer no engineering calculations in support of their contention. However, even assuming that CTN and NIA are right about system capacity, such a result is not incompatible with IMWED's recommendation. Under the *Joint Statement*, upon which IMWED's recommendation is based, no licensee would be forced to use more than 5% of system capacity for educational purposes; rather, it would have to retain the right to recapture substantial additional capacity, over a period of time.

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<sup>28</sup> See CTN/NIA Joint Comments, pp. 10-12; Comments of Sprint, pp. 19-20.

<sup>29</sup> CTN/NIA Joint Comments, pp. 10-11; Comments of Sprint, p. 19.

<sup>30</sup> CTN/NIA Joint Comments, pp. 11-12.

CTN and NIA correctly state that the 5% standard was imposed on ITFS licensees rather than sought by them.<sup>31</sup> We see no reason, however, that this prior imposition should deter the ITFS community from now seeking more appropriate regulations.

In addition to the CTN/NIA Joint Comments, CTN and NIA co-sponsored the Coalition NPRM Comments along with the Wireless Communications Association International (“WCAI”), and this filing contains its own set of arguments against increasing the educational requirements on ITFS.<sup>32</sup> Perhaps anticipating a rebuttal that existing leases could be grandfathered, the Coalition NPRM Comments avers that new white areas may be added to adjacent ITFS systems and that different standards thus could end up being applied to different sections of a single system, with the more stringent requirements pertaining to the least commercially attractive territory.<sup>33</sup>

It is intriguing that the Coalition would roll out such an argument, given that the same NPRM comments also state:

...keep in mind that the currently available spectrum amounts to “table scraps” -- it is what is left over after more than thirty years of ITFS licensing. In virtually every market of any size within the United States, all of the ITFS channels have been licensed, and where that is not the case, rarely is more than a single channel group available. Thus, WCA, NIA, and CTN are concerned that the “tail” is about to “wag the dog...”<sup>34</sup>

The conundrum that to Coalition attempts to pose is not very difficult to solve, and, to the degree that the Coalition urges that educational requirements for ITFS be determined because of the exigencies of marginal white space, it is the Coalition that wants the tail to wag the dog. IMWED suggests that if white space is allocated to a licensee of adjacent ITFS territory, that such allocation be assigned the same call sign as

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<sup>31</sup> *Id.*, p. 10.

<sup>32</sup> Coalition NPRM Comments, pp. 128-132.

<sup>33</sup> *Id.*, pp. 129-130.

the existing authorization and that the Commission apply to the new area the same regulatory standard that applies to the existing ITFS license.

All of the above demurrals by both educational and commercial interests ignore the core issue. ITFS holds a special place, and this confers on it special responsibilities. IMWED's comments, based upon the *Joint Statement's* recommendations, impose no hardships on any affected party and do not require the inefficient use of spectrum.<sup>35</sup> These recommendations grew out of an educational/commercial compromise, and are a modest means of insuring that education cannot be marginalized within an educational service. As we wrote in our comments: "While it is in the public interest for licensees and operators to have flexibility, and to enter into efficient secondary market transactions, it is not in the public interest to allow a licensee to indenture 95% of its capacity for 15 years."<sup>36</sup>

Educational requirements based upon the *Joint Statement* also serve to illustrate one essential difference between having educational entities hold ITFS licenses and having commercial entities reserve 5% of their capacity for educational use. Under IMWED's recommendations, educators will have both the means and incentive to expand educational use of the spectrum when it is needed, whereas a commercial operator will not.

### **III. The Commission Should Establish a "Across-the-Board" Bandplan That Leads to Low-Power Two-Way Uses of ITFS and MMDS Spectrum on All Channels.**

Many ITFS commenters make well-documented arguments that the ability to continue high-power video service is central to their educational missions, and that

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<sup>34</sup> *Id.*, p. 95.

<sup>35</sup> Comments of IMWED, pp. 7-10.

conversion to an “across-the-board” low power bandplan is incompatible with the uninterrupted video delivery.<sup>37</sup>

IMWED does not contest the importance of existing instructional video services. What we do argue, however, is that the Coalition proposals, taken as a whole, will not allow ITFS licensees to continue to offer video services on a stable basis, and therefore many MBS signals ultimately will go dark. While one could plausibly argue that the 30+% spectrum “tax” imposed by the MBS is an acceptable price if it really assures continued video service, this contention is not viable when one examines the fine details.

Despite their complexity, the Coalition’s proposals, collectively, do not represent a prescription for continuing video service.<sup>38</sup> There are two fatal problems contained within these proposals: 1) the inability of current ITFS licensees to make needed MBS technical changes, especially site moves; and 2) an excessively complex and hazardous transition from the current bandplan to the new bandplan. With respect to the transition, the Coalition would bestow extensive power on an entity known as the Proponent, which could avail itself of a lengthy series of Proponent-friendly procedural “safe harbors.” These recommendations are so loaded in favor of the Proponent that they invite abuse that can permanently ruin ITFS licensees’ operations in both the high and low power sections of the band.

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<sup>36</sup> *Id.*, p. 10.

<sup>37</sup> See, for example, Comments of IIT, pp. 16-18; Comments of the Archdiocese of Los Angeles, p.2; Comments of the Archdiocese of New York, p. 3; Comments of the Diocese of Brooklyn, p. 1; Comments of Education Service Center Region 10, footnote 2, p. 7; Comments of Hispanic Information & Telecommunications Network (“HITN”), pp. 8-9; Comments of NITV, pp. 9-10.

<sup>38</sup> The Coalition’s recommendations sprawl over the original “White Paper” (a voluminous document formally titled *A Proposal for Revising the MDS and ITFS Regulatory Regime*, filed with the Commission on October 7, 2002), later-filed supplements to the White Paper, and the Coalition NPRM Comments. With each new filing, the Coalition’s technical recommendations have morphed to one degree or another.

Proposed Standards Pertaining to Transmission Site Relocations. In its NPRM comments, IMWED argues that an essential ingredient for lasting video service is the ability of a licensee to change high-power transmission sites.<sup>39</sup> We point out that under most excess capacity agreements, access to tower sites is provided by the excess capacity lessee, and that the instability of such arrangements is illustrated by the bankruptcy of entities such as WorldCom and Nucentrix, which collectively hold hundreds of ITFS leases.<sup>40</sup> As with the well-documented case of Instructional Telecommunications Foundation's Philadelphia system, HITN points out that termination of existing leases often leads to "[o]perators that refuse to permit collocation of facilities on their towers..." and "oppositions to modifications filed independent of a lessor/Operator."<sup>41</sup>

Unlike its prescriptions for UBS and LBS operations---which are intended to be very flexible---the Coalition's MBS proposals are derived from current technical rules, which are applied in a much more rigid fashion. When an ITFS (or MMDS) applicant seeks to move its transmission facilities, its application needs to include a showing that it can meet the required desired-to-undesired signal ratios for both neighboring co-channel and adjacent channel ITFS systems over a wide geographic area.<sup>42</sup> In order for a high-power site change to be acceptable, it must meet all applicable standards with respect to all neighboring stations; if there is even a single violation, the entire application is

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<sup>39</sup> IMWED Comments, pp. 14-15.

<sup>40</sup> *Id.*, p. 15. As part of its recent bankruptcy, WorldCom tendered notice to the bankruptcy court that it proposes to terminate a substantial number of ITFS leases. While Nextel, the presumed acquirer of WorldCom's spectrum assets, has agreed to continue to supply essential facilities to ITFS entities whose leases are terminated, this pledge of support is only temporary; it will expire on the same date that the terminated lease was due to expire.

<sup>41</sup> Comments of HITN, p. 5.

<sup>42</sup> In the alternative to meeting these interference standards, the applicant can secure a consent from an affected licensee to accept otherwise impermissible levels of interference. See Section 74.903 of the Commission's Rules.

dismissed. Because the fine print can produce large consequences, proposed technical standards need to be examined rigorously.

IMWED will here critique the Coalition MBS technical proposals, as amended, and demonstrate that they remain deficient.

The original White Paper recommended that ITFS and MMDS stations be allowed to move their transmitter sites up to one mile and make other “minor” technical changes without Commission approval.<sup>43</sup> However, despite all their detail, the White Paper and other Coalition filings are at times maddeningly vague. The White Paper does not make clear whether it intends that a licensee which moves its transmitter site less than a mile would have to comply with the desired-to-undesired signal ratios contained in the Rules. While it would be edifying if the answer turns out to be yes, this still would not be a full basis for stable MBS operation, as it often is not possible to locate a suitable tower within one mile of an existing site.

For site changes of greater than a mile, there is no question that the Coalition intends that interference standards would have to be met, as described below.<sup>44</sup>

Under the White Paper’s proposed regime, an ITFS/MMDS licensee would be protected within an exclusive “geographic service area,” which would never be larger than a current circular PSA, but often would be smaller due to the elimination of PSA overlaps.<sup>45</sup>

The White Paper suggests loosening the current 45 dB D/U ratio in the Coalition’s co-channel standards, *viz*: a reduction to 32 dB if the “victim” system

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<sup>43</sup> White Paper, p. 34, second bullet point, setting forth a proposed new definition of “minor changes.”

<sup>44</sup> The Coalition’s initial MBS interference requirements are set forth on pp. 36 – 39 of the White Paper.

<sup>45</sup> White Paper, pp. 19-22.

transmits digitally; 38 dB if both systems operate with precision frequency offset;<sup>46</sup> a requirement that a desired signal have a usable signal level at a given location in order for interference to be claimed; a requirement that an undesired signal be above the noise floor at a given location in order for interference to be claimed; and a *de minimus* exception for both co-channel and adjacent channel interference, such that an applicant would be allowed to cause predicted interference to as much as 0.5% of the protected service area of a victim system.<sup>47</sup>

The White Paper's recommended minimum adjacent channel D/U ratio was 0 dB, but this suggested standard was loosened to -10 dB in the Coalition NPRM Comments.<sup>48</sup>

While it all of the MBS changes that the Coalition recommends involve the liberalization of current ITFS interference rules, IMWED's consulting engineers performed a sample engineering study ("IMWED Engineering Study") revealing that the Coalition's proposed standards would not allow site changes as short as 3.8 kilometers in a reasonably typical urban market.<sup>49</sup>

The IMWED Engineering Study is based upon the current parameters of a real ITFS station in a top 30 market. The transmissions from this station have the ability to affect five nearby protected service areas/geographic survey areas, which is not an unusually high number. The study posits the possible move of this existing station to two prospective new towers: one such move is 3.8 km in length and the other 7.3 km. Neither of these site moves would have complied with the interference criteria proposed in the White Paper.

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<sup>46</sup> An applicant would be entitled to upgrade a neighboring system to this standard at the applicant's expense, though apparently similar mandatory upgrades to digital transmission are not contemplated.

<sup>47</sup> White Paper, pp. 37-38.

<sup>48</sup> Coalition NPRM Comments, pp. 72-72.

Here is the background as to why these prospective site moves failed. One little-appreciated fact is that the FCC has steadily extended the protected service area of ITFS systems, and that it would not be possible to authorize most existing ITFS systems under current standards. Many ITFS systems exist only because they were established when incumbents' interference rights were much more restricted. Because current systems are grandfathered, they can continue to operate---until they need to modify their facilities, by, for example, changing the transmitting antenna location. Site moves are among the most difficult technical changes, because when one moves a transmitter site, the new location illuminates previously obstructed territory within the protected service area<sup>50</sup> of nearby stations. Whereas currently-visible areas are grandfathered at the current (often high) level of interference, not so with newly-illuminated territory.

While the Coalition's proposed *de minimus* standard is of some help in these circumstances, the IMWED Engineering Study showed that even taking full advantage of all of the co-channel interference liberalizations of the White Paper, both the sample 3.8 km and 7.3 km site moves failed to satisfy the interference criteria. These were not close calls, as with regard to the most vulnerable "victim" ITFS system, the area of new and increased interference was over 10% of its GSA for a 7.3 km site move and 16% for the 3.8 km site move.

Adjacent channel interference is also commonly alleged as a result of site moves. The latest modification of the Coalition recommendations---to reduce the minimum D/U ratio to -10 dB---is helpful in shrinking the area of predicted interference, and often the size of this reduced adjacent-channel interference area will be below the Coalition's

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<sup>49</sup> See the accompanying Engineering Report of DeLawder Communications dated October 23, 2003.

<sup>50</sup> Or, under the White Paper regime, geographic service area.

permitted 0.5% of protected service area. However, aspects of the Coalition proposal on first-adjacent channel interference illustrate the Byzantine and sometimes irrational nature of the Coalition's recommendations.

The Coalition's proposal allows the -10 dB D/U standard to be violated if the victim receiver is upgraded by an interference-resistant model that can withstand the higher undesired signal level.<sup>51</sup> But only sometimes. According to the Coalition, such an upgrade should be allowed if performed by a "Proponent" as part of a bandplan-clearing transition, or by an applicant for technical changes who is protecting a grandfathered ITFS receive site that is outside of a licensee's GSA but within its prior PSA. In contrast, these upgrades would *not* be an available tool to cure interference within a GSA if employed by a workaday ITFS applicant that seeks technical changes, including a site move. The Coalition does not explain why it makes these distinctions---a perhaps understandable omission, as there is no engineering justification.

Transition Arrangements. While the deficiencies of the Coalition interference proposals are too recondite to have attracted much attention, the White Paper's transition arrangements were denounced in a wide assortment of NPRM comments. They were criticized by MMDS licensees, ITFS licensees, rural operators, and equipment manufacturers, although not always for the same reasons.<sup>52</sup>

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<sup>51</sup> Coalition NPRM Comments, footnote 146, pp. 73-74.

<sup>52</sup> See the Comments of the Ad Hoc Licensee Consortium, p. 17. "The... Coalition proposed a complicated plan in which a "Proponent" of de-interleaving would trigger the process of vacating channels and relocating, with a complex system of proposals, counterproposals, and negotiations over who would pay for what. In addition, the initiation of the new channel structure in one market would also require adoption of the new structure in adjacent markets, with the possibility that conflicting daisy chains of plan proponents would become hopelessly ensnarled. That system is unworkable from a practical and structural standpoint." See also Joint Comments of Adams Telecom, Inc., Central Texas Communications, Inc., & Leaco Rural Telephone Cooperative, pp. 3-4; Comments of Fixed Wireless Holdings, LLC, pp. 6-7 (advocating an across-the-board power reduction and licensees' bearing their own transition expenses); Comments of Grand MMDS Alliance New York F/P Partnership, pp. 8-10. "The Coalition proposal...

IMWED agrees with most of IIT's observations about the Coalition transition proposals:<sup>53</sup>

- The Coalition proposal vests too much power in the Proponent.
- Any transition process must be based on the premise that all existing licensees are entitled to assignment of their default plan frequencies.
- A transition plan must sustain any licensee's existing digital operations.<sup>54</sup>
- The process of deciding the transition plan must be balanced and fair, rather than skewed toward the Proponent.
- There is insufficient time under the Coalition proposal for licensees to evaluate and respond to a Proponent's plan.
- The transition arrangements should not allow for anti-competitive behavior.
- Transmission capacity lessees should not be able to sue their capacity lessors on any theory based upon the fact that re-farming makes it impossible for the lessor to provide the lessee with that spectrum contemplated by the lease.

IMWED was impressed by the technical showing put forward by Spectrum Market, LLC ("SM Engineering Report").<sup>55</sup> While we have not endeavored to verify the

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does not clearly explain how competing proposals or proponents will be handled, that a proponent demonstrate sufficient financial ability, what will happen if a proponent withdraws, or how daisy chains will be avoided." Comments of Grand Wireless Company, Inc. – Michigan, p. 9. "It is almost ludicrous to expect a commercial operator who does not want to make or need to make a transition be forced to do so by a Proponent and then be further forced to pay that Proponent's cost of transition. What a can of worms that would be!" Comments of IIT, pp. 20-23. "...IIT believes that the Coalition Proposal unduly favors the qualified "Proponent" in the transition process, and vests excessive power in the Proponent to the detriment of existing licensees and competitors to the Proponent." Comments of the Independent MMDS Licensee Coalition, pp. 4, 12-14. "In some instances, the procedures proposed by the... Coalition are so cumbersome, so time-consuming and so needlessly complex as to invite years of squabbling before the FCC to resolve disputes." Comments of Intel Corporation, pp. 6-7. Comments of IP Wireless, Inc., pp. 11-14 (favoring two alternatives to the Coalition plan posited in the NPRM at paragraphs 103 and 104). Comments of PCIA, the Wireless Infrastructure Association, pp. 2-5 (calling for a cost-sharing clearinghouse). Comments of the Rural Commenters, pp. 7-8 (calling for a three-phase transition process, and for all transition expenses to be paid by the "cost causer"). Comments of Spectrum Market, LLC, pp. 3-11. ("The market-by-market 'Proponent' approach is infeasible... Instead the Commission should adopt a uniform Proponent-free spectrum clearing plan.") Joint Comments of Stanford University and Northeastern University, pp. 13-18. ("The transition plan proposed by WCA, NIA, and CTN is unlikely to help most ITFS licensees.")

<sup>53</sup> Comments of IIT, pp. 20-22.

<sup>54</sup> Assuming, as IMWED does not, that an MBS is established.

<sup>55</sup> In particular, Appendix 1, the Engineering Statement of Carl T. Jones, PE.

specifics of the SM Engineering Report, it is clear that daisy-chaining will occur in densely populated areas of the country, meaning that there is no such thing as a truly market-by-market transition process. Under the Coalition proposals, some locations along heavily populated corridors likely would be drawn into conflicting transitions that originate in different cities with different Proponents. As far as we can ascertain, the White Paper is completely devoid of ideas on how such conflicts would be resolved.

Despite the extensive powers that the Coalition proposals would bestow on a Proponent, we agree with the comments of the Independent MMDS Licensee Coalition that transition disagreements could tax the Commission's resources and drag on for prolonged periods,<sup>56</sup> as well as those of Intel Corporation, which observes that "[t]he proposed market-by-market transition...entails substantial transaction costs that could discourage aggregation and disaggregation of spectrum by frequency and area. Indeed, this approach could lead to a prolonged uncertain transition. Such marketplace uncertainty could increase the risk of investments that require a substantial upfront commitment..."<sup>57</sup>

Cataloguing the defects of the Coalition's transition proposals, in and of itself, does not point to a remedy, and different critics often propose incompatible solutions. To IMWED, the chief question is whether it is better to attempt repair of a Rube Goldberg mechanism, or to abandon the approach entirely.

Though our early inclination was different, we ultimately concluded that reform was too difficult---and too little accommodated by the unresponsive posture of the Coalition. Consequently, we urge the rejection of the Coalition bandplan *in toto*.

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<sup>56</sup> Pp. 12-14.

<sup>57</sup> Comments of Intel, pp. 6-7.

We recognize the difficulties entailed in this position. Like many others, our ITFS systems currently deliver educational video services, and we have many schools that depend on them. None of our systems is now used for educational data purposes. Like most ITFS licensees, we are very reluctant to abandon proven educational services until there is a ready means to replace them.

However, unlike the Coalition plan, an across-the-board bandplan provides a simple transition and known outcome for ITFS licensees. Since high power operations in a region would cease simultaneously, there would be no need for a Proponent, and no opportunity for the sort of mischief that can result from an abusive transition. Further, there are also no “brute force overload” issues in a regime that consists solely of low power operations. As IMWED’s NPRM comments point out, an across-the-board plan avoids the many spectrum inefficiencies inherent in the Coalition bandplan.<sup>58</sup> The need for greater power in rural areas can be accommodated by allowing stations farther than 100 miles from transitioned markets to continue their traditional methods of operation.

Although IMWED’s position is opposed by many of our fellow ITFS licensees, we also see kindred perspectives from some parties in the ITFS community. For example, while the Joint Comments of ITFS Parties are highly supportive of the Coalition’s proposals, one of its members, the Wisconsin Educational Communications Board, “has identified ITFS as a ‘transitional’ technology and looks forward to the revised ITFS band plans as a means of repurposing its use of ITFS for statewide educational telecommunications (two-way data) purposes.”<sup>59</sup>

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<sup>58</sup> IMWED Comments, pp. 12-14.

<sup>59</sup> Appendix to Joint Comments of ITFS Parties. No page numbers provided.

The School Board of Broward County (“SBBC”) states that it will need to use all of its licensed spectrum in a continuous block in order to meet its data requirements, and goes on to state “...we propose that licensees have the flexibility of electing contiguous licensing of their channels... The [Coalition] plan effectively is structured for two separate purposes---wireless data and analog video---and thus is limitative in cases such as SBBC envisages, where only one use, wireless data transmission, is contemplated.”<sup>60</sup>

In sum, while the current video uses of ITFS remain strong and are still needed in many locations, the winds of change blow through our community. An across-the-board bandplan undeniably does injury to the present, but it best accommodates the future.

#### **IV. The Commission Should Reject Operation of Unlicensed “Underlays” on ITFS and MMDS Frequencies.**

Comments in this proceeding overwhelmingly oppose the operation of unlicensed devices on 2.5 GHz spectrum in the near term. The breadth of opposition is nearly unanimous; it encompasses not only ITFS and MMDS licensees---where it might be expected as a means of protecting turf---but also almost all commenting equipment manufacturers, engineering consultants, telecommunications carriers and prospective spectrum users, and a wide variety of industry groups. Indeed, only positive comments on this topic were submitted by NAF, which admits that the necessary technology is not ready for commercial use.<sup>61</sup>

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<sup>60</sup> Comments of the SBBC, p. 11-12. An across-the-board bandplan is accepted by a larger proportion of those in the MMDS and manufacturing community than it is among ITFS licensees, as for-profit entities do not have to consider an established base of educational video users. Consequently, an across-the-board plan is favored by for-profit entities such as Fixed Wireless Holdings, LLC (Comments, pp. 6-7), Grand Alliance New York F/P Partnership (Comments, p. 6), Motorola (Comments of Motorola, pp. 8-9 seeking a bandplan that is compatible with ITU efforts for global harmonization at 2.5 GHz), Spectrum Market, LLC (Comments, pp. 11-13), and the Telecommunications Industry Association (Comments, p. 2 seeking globally harmonized spectrum to secure compatibility with ITU IMT-2000 allocations).

<sup>61</sup> Comments of NAF, pp. 20-22.

The case against underlays in the 2.5 GHz band is well made by Hardin & Associates, engineering consultants:

Although underlay operations may make sense in services where operations are sporadic in nature or where coverage areas are sparse, underlay operations within services that are fixed, mobile and/or portable, and looking to achieve ubiquitous coverage of an area are not practical. This is true of both first and second generation technologies operating within the 2500 – 2690 MHz band. First generation high power television and data services are trying to achieve coverage of a broad area. Downstream transmissions operate virtually continuously for television applications and very near continuously for both upstream and downstream data services. Receiving devices exist throughout the coverage area at various distances and heights from the transmission facility. Finding increments of time or frequency where unlicensed services could operate without interference to the primary service is not practical.

Likewise, second generation technologies still attempt to achieve ubiquitous coverage but with many low power base stations located throughout the desired coverage area. Again, with downstream transmissions from the base stations and random upstream transmissions from customer premises equipment anywhere within the coverage area and mobile, the ability to time devices or track openings in frequency or time for transmission would be extremely difficult...

Interference from underlay operations will manifest themselves as degradation to the receiver's noise floor. Every dB of receiver sensitivity is precious when trying to demodulate non line of site [sic] signals over a ubiquitous area. Decreased receiver sensitivity reduces coverage ability and ultimately requires more infrastructure, costs and spectrum to overcome the interference.<sup>62</sup>

We find the staunch opposition of equipment manufacturers and their associations to be persuasive. Underlays are opposed by:

- The Cellular Telecommunications & Internet Association (“CTIA”)<sup>63</sup>
- Ericsson, Inc.<sup>64</sup>

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<sup>62</sup> Comments of Hardin & Associates, pp. 6-7.

<sup>63</sup> Comments of CTIA, pp. 5-6. CTIA indicates that it is an organization representing both manufacturers and carriers.

- IPWireless<sup>65</sup>
- Lucent Technologies<sup>66</sup>
- Motorola<sup>67</sup>
- Nokia<sup>68</sup>
- Telecommunications Industry Association (“TIA”)<sup>69</sup>

No equipment manufacturer submitted comments supporting the use of underlays in the 2.5 GHz band at present.

IMWED is also impressed by the fact that potential users of the 2.5 GHz band also strongly oppose underlays. For example, Earthlink writes:

...the Commission should not expect facilities-based carriers or wholesale users such as Earthlink to seriously consider relying on an MDS/ITFS spectrum for broadband service if they have no certainty that the underlying network will be protected from harmful interference. Plainly, however, such certainty would be lost if the Commission were to permit unlicensed use of the MDS/ITFS spectrum as proposed in the NPRM...

While the concept of unlicensed underlays has been the subject of much discussion both in the Spectrum Policy Task Force and other ongoing Commission proceedings, to date there is no evidence that unlicensed devices can operate underneath licensed MDS/ITFS spectrum without causing harmful interference to MDS/ITFS licensees. Until such evidence

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<sup>64</sup> Comments of Ericsson, Inc., pp. 9-13 (“...technology to implement such a plan is not currently available. In addition, the industry simply does not have enough technical data on the noise floor, or how it might quantify the interference environment in order to implement such a metric as the ‘interference temperature.’”)

<sup>65</sup> Comments of IPWireless, pp. 20-21.

<sup>66</sup> Comments of Lucent Technologies, p. 4. (“Lucent agrees with others who suggest that the technology to support this type of operation has not yet been demonstrated, and that its adaptation and incorporation into the Commission’s Rules at this time is premature.”)

<sup>67</sup> Comments of Motorola, p. 15-16. (“...creating an unlicensed underlay would significantly increase the potential for unanticipated interference, which would have the result of limiting innovation and deterring licensees and manufacturers from investing in new technologies.”)

<sup>68</sup> Comments of Nokia, pp. 3-4. (“The Commission has yet to demonstrate that measuring and monitoring ‘interference temperature’ is technically feasible or useful towards mitigating interference. Given the complex nature of this band, serious interference considerations among its licensed uses, and challenging transition uses, Nokia does not believe this band a good place in which to test an unproven concept.”)

<sup>69</sup> Comments of TIA, pp. 2-3. (“Allocations based on anticipated advances in technology are dangerous, and should await the demonstrable existence of such technology at reasonable costs for widespread deployment.”)

exists, the Commission should not use MDS/ITFS as a test case for the concept.<sup>70</sup>

NAF offers conditional support for underlays. It recommends that should the Commission refuse its proposal to reallocate half of the MMDS/ITFS band for primary use by unlicensed devices, the FCC should allow underlays on 120 MHz of the band---an amount equivalent to that now used by ITFS.<sup>71</sup> NAF states: “With new radio technology, it becomes increasingly practical to allow unlicensed opportunistic sharing in spectrum assigned to incumbent licensees. For example, DARPA is developing next generation “XG” technology to facilitate opportunistic sharing in foreign countries... This technology and others like it will be made available domestically *in the coming years.*”<sup>72</sup> [Emphasis added.]

Even, NAF, the only entity to support underlays in this proceeding, acknowledges that the technology is not ready today.

## **V. Summary and Conclusion.**

In conclusion, IMWED respectfully recommends the following:

- The present licensee eligibility rules for ITFS licensing should be retained.
- The Commission’s rules should be amended to increase the minimum educational service that ITFS licensees are required to render.
- The Commission should establish and “across-the-board” bandplan that leads to low-power two-way uses of ITFS and MMDS spectrum on all channels.
- The Commission should reject operation of unlicensed “underlays” on ITFS and MMDS frequencies.

Respectfully submitted,

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<sup>70</sup> Comments of Earthlink, Inc., pp. 13-14.

<sup>71</sup> Comments of NAF, pp. 20-22.

<sup>72</sup> *Id.*, p. 22.

