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Before The
Federal Communications Commission
Washington, D.C. 20554

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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

To: The Commission

REPLY OF NETWORK FOR INSTRUCTIONAL TV, INC.

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SUMMARY

Network for Instructional TV, Inc. encourages the Commission to take immediate action to preserve ITFS services and fixed wireless broadband competition to cable and DSL.

The record in this proceeding overwhelmingly demonstrates that continued ITFS and MDS use of the 2500 – 2690 MHz ("2.5 GHz") and 2150 – 2162 MHz bands is critical to: (1) ensuring that no American student -- undertaught or otherwise -- is left behind on the unserved side of the "digital divide"; and (2) promoting implementation of competitive fixed wireless broadband systems serving students and the public.

The record contains no evidence that 160 MHz of additional spectrum is necessary to permit implementation of 3G services in the U.S. Even if the Commission were to decide to allocate 160 MHz of spectrum, the record demonstrates that there is ample available spectrum outside of the 2.5 GHz and 2150 –2162 MHz bands that is *preferred* by the proponents of additional spectrum for advanced mobile services.

ITFS licensees and commercial operators are in a symbiotic relationship. Reallocation of ITFS would strip the commercial value of the ITFS spectrum and needlessly separate ITFS licensees from the vital financial and technical support provided by commercial operators. As a result, commercial operators would not have access to sufficient spectrum to provide viable commercial broadband services. After years of regulatory effort to create and enhance this symbiotic relationship, the Commission should not risk killing both the goose and the golden egg through a reallocation of ITFS.

Accordingly, the Commission should promptly remove the 2.5 GHz and 2150 – 2162 MHz bands from consideration in this proceeding.

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REPLY OF NETWORK FOR INSTRUCTIONAL TV, INC.

Network for Instructional TV, Inc. ("NITV") hereby submits its Reply to comments in response to the Commission's *Notice of Proposed Rule Making and Order* ("*Notice*") in the above-captioned proceeding evaluating whether additional spectrum should be allocated for new advanced mobile and fixed wireless services, including Third Generation ("3G") mobile services.[1]

In considering whether to reallocate ITFS spectrum and conduct auctions for advanced wireless services, regulators must not be tempted by the potential revenues such an auction may yield. This proceeding is not about money. It is about leveraging technology to serve American education and the future of America's children, particularly the underserved and undertaught. For NITV this means helping to meet the technology needs of more than one million youth daily – narrowing the gap in the "digital divide" that separates America's "haves" from its "have-nots."

[1] NITV timely filed comments ("NITV Comments") in this proceeding on February 22, 2001.

NITV is appalled at the spectrum-grabbing tactics of those that suggest that the ITFS spectrum allocated for education and used in a public-private partnership for commercial purposes be relocated or reduced in size.[2] Some of these parties are in direct competition with incumbent commercial operators of ITFS and MDS stations and their arguments are nothing more than a transparent attempt to thwart competition. Amazingly, without providing a shred of verifiable factual evidence, these parties claim that as much as 160 MHz of spectrum is needed for advanced mobile services. In stark contrast, NITV and numerous others have demonstrated the need for the entire 2.5 GHz band for educational and commercial broadband wireless services.

Moreover, the record clearly demonstrates that the 2.5 GHz band is not the best or the most desired band for the provision of mobile services. The time has come to remove this band from consideration and eliminate the regulatory uncertainty that threatens to delay the transition of ITFS and MDS from analog video to digital broadband services. NITV and the ITFS community must not be led on a forced march to spectrum Siberia that would not only undermine the use of ITFS to harness the power of the Internet to serve education, but would chill commercial operators' ability to provide more choice and in some cases, the only choice, for high-speed Internet access and other competitive broadband services.

I. Mobile Service Providers Have Utterly Failed to Provide Evidence of the Need for 160 MHz of New Spectrum for 3G

The record in this proceeding contains virtually no hard data supporting mobile interests' claim that 160 MHz of additional spectrum is necessary to implement 3G services in the U. S. In its *Notice*, the FCC specifically asked the proponents of additional spectrum for 3G services to

[2] These parties include the "Association Group," composed of the Cellular Telecommunications and Internet Association, Personal Communications Association and Telecommunications Industry Association; Verizon Wireless; AT&T Wireless Services, Inc.; Cingular Wireless LLC; and Voicestream Wireless Corporation.

comment on the types of data services currently offered and the demand for those services, the projected demand and growth rates for those services, market studies evaluating projected demand for advanced wireless services and other data to help it make its decisions in this proceeding.[3] From that record, the Commission expects to decide on the amount of spectrum that should be allocated for advanced wireless services.[4]

The comments filed by mobile interests' are not responsive. Rather than providing data regarding their existing services and efforts to transition to 3G on existing spectrum, commenters such as Cingular, Verizon and Ericsson repeatedly cite only to the World Radio Conference's ("WRC's") dated estimate that 160 MHz is needed, the October 2000 Executive Memorandum and the history of the cellular telephone roll-out.[5] There is also no attempt to link the speculative demand figures with the enormous amount of spectrum they claim is necessary.

As discussed by NITV and others in the initial comments, numerous mobile data industry leaders and analysts are voicing substantial doubts regarding consumer demand for 3G services.[6] For example:

- The Executive Vice President and Chief Technical Officer of Verizon Wireless has stated that he doesn't "see the need to move rapidly toward 3G" and upgraded 2G technology "is exactly what we need to satisfy the customer."[7]

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[3] *Notice* at paragraph 20.

[4] *Notice* at paragraph 25.

[5] Comments of Verizon Wireless ("Verizon Comments") at 4; Comments of Cingular Wireless LLC ("Cingular Comments") at 8-10; Comments of Ericsson ("Ericsson Comments") at 1-8.

[6] *See* NITV Comments at Note 43; Comments of the National ITFS Association ("NIA Comments") at 17-21; .

[7] Pringle and Delaney, "Next Generation of Cellphones Becomes Murky," *Wall Street Journal*, February 21, 2001.

- The CEO of Palm believes that 3G is overhyped and will not provide the types of services that millions of consumers will have need for.[8]
- NTT DoCoMo official Takeshi Natsuno, known for his critical role in development of the "i-mode" mobile Internet service, believes that "[t]hird generation doesn't mean anything for subscribers unless the applications fall into place," while Qualcomm chief Irwin Jacobs admits that some 3G applications may be frivolous.[9]
- Nicholas Negroponte, director of MIT's media lab, states that the huge auction prices paid for 3G spectrum in some European countries were "a big mistake" because there is no research demonstrating that 3G services will be vital to consumers, especially given near-term implementation of 2.5G services.[10]
- A study by Frost & Sullivan released March 6, 2001 indicates that a rapid and widespread deployment of 3G is unlikely, the study's author concluding that the European mobile industry will not be able to deploy 3G rapidly because of the enormous cost incurred at auction and the "as yet undetermined business models and revenue streams."[11]
- A Morgan Stanley Dean Witter study of January 2001 finds that "3G phones may struggle to differentiate themselves from GPRS phones, and may still be less than 15% of industry shipments by 2005."[12]

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[8] "Palm Chief Calls '3G' Systems Costly, 'Overhyped,'" *The Boston Globe*, February 23, 2001.

[9] Munro and Stevenson, "Killer 3G Applications Remain At-Large," December 6, 2000 at http://dailynews.yahoo.com/h/nm/20001206/tc/telecoms_threeg_dc_1.html.

[10] Lacey, "Negroponte: '3G will not see the light of day,'" September 14, 2000 at http://www.zdnet.co.uk/egi-bin/printnews.egi.

[11] Haskin, "3G Uncertainty Grips Industry" at www.allnetdevices.com/wireless/news/2001/03/06/3g_uncertainty.html.

[12] "Mobile Phone Industry Overview," Morgan Stanley Dean Witter Equity Research Report, January 19, 2001, at 1, *cited in* Comments of the Wireless Cable Association International, Inc. ("WCAI Comments") at Note 137.

In another recent development illustrating that the "race to implement 3G" is not a threat to U.S. economic and technological leadership, Japan Telecom announced this week that it will delay its launch of 3G services until October 2002.[13] The company previously planned to role out its service in December, 2001.[14] Against this backdrop, mobile interests inexplicably cling to unsubstantiated claims that more spectrum is needed, at the expense of educators and commercial operators and to the detriment of the American public.

II. There is Little Support for the Use of the MDS and ITFS Spectrum for 3G Services

A. Mobile Interests Have Expressed A Clear Preference for 1.7 GHz

To the extent the case can be made that some amount of additional spectrum is needed for 3G services, the record reflects a clear preference that frequencies in the 1.7 GHz band be allocated.[15] Preference for this spectrum has been expressed by parties promoting use of the 2.1 and 2.5 GHz spectrum for 3G in addition to the 1.7 GHz band,[16] those that see the 2.1 GHz and 2.5 GHz bands as a second-choice alternative to the 1.7 GHz band[17] and by those that correctly argue that the existing downstream services and broadband usage of the ITFS and MDS spectrum should not be disturbed or delayed.[18]

As discussed in the *Notice*, with the exception of federal power agencies and 17 Department of Defense sites, the frequencies in the 1710-1755 MHz band already are slated for transfer from the National Telecommunications and Information Administration ("NTIA") to the

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[13] Vaughan-Adams, "Japan Telecom delays 3G roll-out," *Independent News*, March 7, 2001.

[14] "Let the wait begin for 3G," March 7, 2001, at http://www.3gnewsroom.com/3g_news/news_0399.shtml.

[15] *Notice* at paragraph 40.

[16] *See* Comments of AT&T Wireless Services, Inc. ("AT&T Comments") at 3; Ericsson Comments at 5, 14-15; Verizon Comments at 9-22.

[17] *See* Cingular Comments at i, 18-22.

[18] *See* Comments of the National ITFS Association ("NIA Comments") at iii and throughout; Comments of the Catholic Television Network ("CTN Comments") at iii and throughout; WCAI Comments at i and throughout.

partners, Canada and Mexico, and with Central and South American nations.[23] Equipment manufacturers such as Lucent and Motorola also note that the 2.5 GHz band will not be used for 3G services in Europe and Asia in the foreseeable future, if it is ever used for 3G services at all.[24] In any event, Cingular correctly points out that regional harmonization is far more important and valuable than global harmonization.[25] Furthermore, as discussed in the *Notice* and in the record, global harmonization may be achieved through the use of multi-band mobile telephones (or mobile Internet access devices) and, later, through software defined radio technologies.[26]

The record demonstrates that it may be feasible[27] to relocate sufficient military uses on the 1.7 GHz band to permit 3G services using portions of that band.[28] Such relocation already is underway for the 1710 -1755 MHz frequencies pursuant to the Omnibus Budget Reconciliation Act of 1993[29] and Balanced Budget Act of 1997,[30] and only a small amount of additional

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[23] Comments of Radio Advisory Board of Canada at 11, 15; Comments of Canadian Wireless Telecommunications Association at 2-5; NITV Comments at 19-20; NIA Comments at 23-24; Comments of the Wireless Communications Association International, Inc. ("WCAI Comments") at 59.

[24] Lucent Comments at 9; Comments of Motorola, Inc. ("Motorola Comments") at 12.

[25] Cingular Comments at 11.

[26] *Notice* at Note 47; *Inquiry Regarding Software Defined Radios, Notice of Proposed Rulemaking*, ET 00-47, released December 8, 2000, *Notice of Inquiry*, released March 21, 2000.

[27] NITV fully recognizes the special considerations inherent in the relocation of military spectrum. As discussed by Cingular, if certain portions of the 1755 – 1850 MHz are reallocated, adjustments to the FCC's relocation mechanisms may be necessary in order to protect national security interests. Cingular Comments at 21-22.

[28] *See* Report of the Industry Association Group on Identification of Spectrum for 3G Services, appended to the Joint Comments of the Cellular Telecommunications and Internet Association, Telecommunications Industry Association and Personal Communications Industry Association, at iii – v, 4-10.

[29] Pub. L. No. 103-66, 107 Stat. 312 (1993).

[30] Pub. L. No. 105-33, 111 Stat. 251 (1997).

spectrum would be needed from the 1755 – 1850 MHz band if the Commission were to decide that 160 MHz of additional spectrum should be allocated to 3G.[31]

B. Forced Relocation of ITFS Above 3 GHz Is Infeasible

With the technical evidence mounting that wireless broadband businesses cannot be implemented above 3 GHz, it is not surprising that NITV is aware of only one commenter, Ericsson, which ventured to propose a relocated spectrum band above 3 GHz.[32] Although Ericsson proposes relocating ITFS to 3.5 GHz, it does not suggest a solution to the technical difficulties of operating a fixed broadband system above 3 GHz or engineering a viable system using only the MDS channels in the 2.5 GHz band.

As discussed in the FCC's Interim Report, and by WCAI, any relocation or segmentation plan must account for the enormous complexities of the FCC's licensing scheme for ITFS and MDS.[33] First, variations in channel availability from market to market would cause any generalized reallocation to yield wildly varying results. With rare exception, not every ITFS channel is available to the commercial operator in a given market. There are typically up to twelve licensees in a market (there may be more than twelve licensees in markets where, for example, a four channel group is split between two parties) and some licensees may elect not to join with the commercial operator. In addition, interference from adjacent markets may render one or more channels unavailable. Some channels may be needed as guard band, and some channels may be wholly reserved to an ITFS licensee pursuant to contractual arrangements.

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[31] Relocation of military uses would afford the military services the option to enhance their systems through use of state-of-the-art equipment and promotes global harmonization of U.S. military spectrum. Such system upgrades and harmonization would enhance rather than disrupt military capabilities.

[32] *See* Ericsson Comments at Note 33.

[33] *See* FCC Staff Report Issued by the Office of Engineering and Technology, Mass Media Bureau, Wireless Telecommunications Bureau, and International Bureau, "Spectrum Study of the 2500 – 2690 MHz Band: The Potential for Accommodating Third Generation Mobile Systems," Interim Report, ET Docket No. 00-232, DA00-2583, released November 15, 2000, at 62.

FCC by 2004. Although there is little evidence of a need for 160 MHz of additional spectrum for 3G services (as discussed by NITV, the National ITFS Association ("NIA") and IPWireless in initial comments), the entire 160 MHz suggested by WRC as necessary for 3G services could be allocated for 3G by using the 45 MHz of spectrum at 1710 – 1755 MHz already slated for transfer to the Commission plus the approximately 70 MHz of spectrum available in the 746-806 MHz, 1850 – 1910 and 1930 – 1990 MHz bands plus up to 45 MHz in the 2110 – 2150 MHz[19] and 1755 – 1850 MHz bands.

Lucent, for example, has developed a band plan and an alternative band plan that do not impinge on ITFS or MDS frequencies. It proposes as a first alternative that the Commission adopt a 1710 – 1750 MHz/ 1805 – 1845 MHz (80 MHz) band plan, with a 5 MHz guard band to avoid interference to and from PCS.[20] If the 1755 – 1850 MHz band cannot be cleared of government uses, Lucent suggests an alternative plan: a 1710 – 1735 MHz/ 1805 – 1830 MHz pairing combined with a 1735 – 1765/ 2110 – 2140 MHz pairing (110 MHz).[21] As set forth in Lucent's comments, this choice of allocations provides "new" spectrum for 3G, promotes global harmonization and minimizes relocation requirements.[22]

As discussed at length in comments filed by the Radio Advisory Board of Canada, Canadian Wireless Telecommunications Association, NITV, NIA, the Wireless Communications Association International, Inc. ("WCAI") and others, use of the 1.7 GHz band for 3G services will promote harmonization of spectrum usage with the United States' most substantial trading

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[19] NITV notes that guard band frequencies are needed between any 3G allocation and Channel MDS-1 (2150-2156 MHz).

[20] Comments of Lucent Technologies, Inc. ("Lucent Comments") at 12.

[21] Lucent Comments at 13.

[22] Lucent Comments at 12.

Second, a particular channel may have significantly different uses from market to market. Accordingly, a reallocation plan that removes particular ITFS or MDS channels might take away upstream capability (denying two-way interactive capability to students and teachers, as well as commercial customers), remove necessary guard band frequencies (diminishing or even destroying broadband capability) or force relocation or cessation of a channel of ITFS educational video programming, depending on the channel plan in the market. This effect is particularly acute given the channel swapping provisions of the ITFS and MDS rules. Pursuant to Sections 74.902(f) and 21.901(d) of the FCC's rules, so long as the FCC's instructional requirements are met, ITFS and MDS licensees may change channel assignments. Thus, the "ITFS channels" in a particular market could be licensed to commercial parties, and the "MDS channels" could be licensed to educators, complicating immeasurably the ability to relocate the "ITFS channels."

As discussed by WCAI and NIA, the FCC also should note a number of practical difficulties inherent in relocating the ITFS spectrum that are not fully recognized in the *Notice*.[34] The challenges presented are vastly more complex than for any relocation ever undertaken by the Commission. Whereas previous relocations have involved fixed point-to-point operations deployed for private internal communications, ITFS stations transmit to multiple points when being used for traditional distance-learning and will transmit to and from vast numbers of receive and response station facilities at homes, schools and businesses following the transition to broadband. Such relocation would likely involve new equipment for the approximately 2,400 authorized ITFS stations[35] and replacement or retuning of their attendant receive site equipment[36]

[34] WCAI Comments at 34-37; NIA Comments at 28-31.

[35] NIA Comments at 3.

and broadband terminals, and compensation of all ITFS licensees and commercial fixed wireless operators for the termination of their spectrum lease agreements. Construction of relocated systems, which would require significantly more cells, also would create substantial expense that would have to be reimbursed. Tower space acquisition, rent and maintenance, and equipment costs, for example, would increase exponentially. Enormous costs clearly would result from re-engineering the ITFS systems for the inferior propagation characteristics of frequencies above 3 GHz.

C. MDS 1 and 2/2A are Necessary Components of Fixed Wireless Systems

Ericsson, Motorola and others[37] propose reallocation of all or some of MDS Channels 1 (2150-2156 MHz), 2 (2156-2160 MHz) and 2A (2156-2162 MHz),[38] while Verizon claims 2150 –2160 MHz should become guard band for 3G.[39] The Commission should not disturb these allocations and should ensure they are separated from mobile uses by adequate guard band because these channels are essential to the roll out of fixed wireless broadband systems.[40] The spectrum must be preserved for MDS purposes in order to preserve the commercial fixed wireless broadband operations that support educational use of the ITFS spectrum.

As an initial matter, many MDS-1 and MDS-2/2A stations already are authorized and operating as the crucial upstream component of commercial wireless broadband services.[41]

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[36] The Commission estimates that there are 70,000 ITFS receive sites. *Id.*

[37] Ericsson Comments at 12; Motorola Comments at 11; AT&T Comments at 15; Cingular Comments at 23-24.

[38] Channels MDS-2 and MDS-2A are subsequently referred to as "Channel MDS-2/2A."

[39] Verizon Comments at 14.

[40] Channel MDS-1 is allocated to MDS in all markets. Channel MDS-2 is allocated to MDS in the top 50 U.S. markets pursuant to Section 21.901 of the Commission's rules, while the 4 MHz Channel MDS-2A is allocated to MDS in all other markets.

[41] WCAI Comments at 42-43.

Relocating these channels, especially if they are moved closer to the 2500 – 2690 MHz band, would require redesign and re-licensing of the entire wireless broadband system in each market.[42] The delay and disruption caused by a relocation at a time when customers are clamoring for installation of the newly available service would irreparably harm deployment of the service.

Reallocation of Channels MDS-1, MDS-2/2A also would create inefficiencies in the broadband systems being designed by commercial fixed wireless operators. Designs for "two-way" ITFS/MDS systems generally require upstream operation of the MDS-1 and MDS-2/2A channels because the frequencies between 2162 MHz (or 2160 MHz where there is an MDS-2A station) and 2150 MHz serve as a natural guard band between upstream and downstream operations. With this guard band in place, the amount of guard band spectrum necessary to permit broadband operations on the 2.5 GHz band is minimized. Without this guard band, the amount of guard band spectrum necessary within the 2.5 GHz band is dramatically increased.

Finally, as discussed by WCAI and supported by a study by HAI Consulting, Inc., without the MDS-1 and MDS-2/2A channels, wireless operators will have difficulty securing the number of ITFS and MDS channels necessary to provide a viable commercial service.[43] NITV agrees with WCAI that the Commission should adhere to its recent determinations that the MDS-1 and MDS-2/2A channels are necessary to the development of viable commercial fixed wireless systems and thus should remain allocated to MDS.[44] Any disruption of the MDS operations on

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[42] *Id.* at 41-42; "MDS/MMDS/ITFS Two-Way Fixed Wireless Broadband Service; Spectrum Requirements and Business Case Analysis," HAI Consulting, Inc. (Appendix B to WCAI Comments) ("HAI Study") at 28; Comments of Nucentrix Broadband Networks, Inc. ("Nucentrix Comments") at 20-22.

[43] *Id.* at 33-34.

[44] *Id.* at 44, *citing Redevelopment of Spectrum to Encourage Innovation in the Use of New Telecommunications Technologies*, 7 FCC Rcd 6886, 6889 (1992).

these channels will be highly disruptive of efforts to design and license broadband systems on the ITFS and MDS frequencies at 2500 – 2690 MHz and hence disruptive to development of NITV's broadband educational services. Accordingly, NITV strongly urges the Commission to retain the current allocation for these channels.

III. The Need for Educational and Commercial Wireless Broadband Services is Overwhelming

A. Educational and Commercial Use of the ITFS Spectrum Serves Students and Teachers

As fully demonstrated in the record by NITV, NIA, CTN, Illinois Institute of Technology, national teachers organizations, and numerous other educators, ITFS licensees carry out their educational missions through extensive use of ITFS frequencies and depend on the ITFS/commercial fixed wireless partnership for financial and technical support in fulfilling their educational mission.

Verizon blatantly ignores the operation of the ITFS leasing rules in its groundless assertion that ITFS licensees and the students and teachers that depend on ITFS can be accommodated in less spectrum than is presently assigned to ITFS.[45] Verizon even goes so far as to claim that "spectrum allocated to ITFS has been largely commercialized and is no longer used for its 'primary intended purpose' of instructional programming."[46] These conclusions reflect a gross misunderstanding of the ITFS rules.

The Commission has long recognized that the vast majority of educators must have access to the equipment maintenance and upgrades, expertise and leasing revenues offered by commercial fixed wireless operators in order to make full educational use of the ITFS spectrum.

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[45] Verizon Comments at 24.

[46] *Id.* at 23.

In numerous rulemaking proceedings since 1983, the FCC has carefully evaluated the record to determine whether commercial leasing of ITFS capacity was interfering with the primary educational purpose of the ITFS reservation.[47] Each time it considered this issue, the Commission concluded that ITFS leasing was necessary to promote educational use of the ITFS spectrum and that proposed rule changes that properly balance the interests of ITFS licensees and commercial wireless operators would enhance rather than harm educational uses of the ITFS spectrum.[48]

Verizon is clearly off base in asserting that ITFS licensees use only 5% of their licensed spectrum.[49] The FCC's rules provide that, where an ITFS licensee enters into a leasing arrangement with a commercial wireless operator, the licensee must reserve a *minimum* of 5% of ITFS spectrum capacity for itself *where digital technologies are employed.*[50] The 5% rule does not change the requirement that ITFS licensees utilize a minimum of 20 hours per channel per week. Moreover, ITFS licensees such as NITV have reserved far more capacity than required by the FCC for educational use. In the District of Columbia, for example, NITV utilizes 50% of its capacity to deliver analog video services. Indeed, in a large number of markets that are being

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[47] *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) ("*Two-Way Order*"), *recon.*, 14 FCC Rcd 12764 (1999), *further recon.*, 15 FCC Rcd 14566 (2000); *Amendment of the Commission's Rules with Regard to Filing Procedures in the Multipoint Distribution Service and the Instructional Television Fixed Service*, 1 CR 1 (1995); *Amendment of Parts 21, 43, 74, 78 and 94 of the Commission's Rules Governing Use of the Frequencies in the 2.1 and 2.5 GHz Bands*, 6 FCC Rcd 6792 (1991); *Amendment of Part 74 of the Rules Governing Use of the Frequencies in the Instructional Television Fixed Service*, 9 FCC Rcd 3360 (1994); *Amendment of Parts 2, 21, 74 and 94 of the Commission's Rules and Regulations in Regard to Frequency Allocation to the Instructional Television Fixed Service, the Multipoint Distribution Service and the Private Operational Fixed Microwave Service*, 94 FCC 2d 1203 (1983), *Memorandum Opinion and Order on Reconsideration*, 98 FCC 2d 129 (1984); NITV Comments at 9-10.

[48] Each of these notice-and-comment rulemaking proceedings offered an opportunity for the public to voice concerns about spectrum usage in the 2500-2690 MHz bands. Such concerns were not raised.

[49] Verizon Comments at 23.

[50] 47 C.F.R. Section 74.931(d).

transitioned from analog video to digital broadband, NITV has obtained free access to the first 5% of its own capacity and the right to access an unlimited amount of capacity on the system as a whole at reduced rates.

In its *Report and Order* in the "two-way" proceeding, the Commission held that the public interest would be served through the very ITFS leasing provisions that Verizon attacks.[51] Following an exhaustive review, the Commission determined that the new ITFS rules would maximize the flexibility of ITFS licensees and commercial fixed wireless operators to design broadband systems to support the unique educational needs being served by each ITFS licensee and the specific business and technical requirements of each operator's system. The Commission's objectives were protection of the educational purpose of ITFS, efficient use of the spectrum and increased competitiveness in the market for broadband services. It is clear from the record that the Commission's objectives are being met.

Verizon also overlooks the most basic point of all: ITFS licensees and their commercial fixed wireless partners are on the verge of a large-scale transition to digital broadband services. In contrast to ITFS licensees, the proponents of allocating additional 3G spectrum are not moving quickly to reduce inefficiencies on their own existing spectrum. Instead, the mobile interests in this proceeding ask the Commission to allow them to continue existing inefficient operations indefinitely while benefiting from 160 MHz of additional spectrum. In essence, Verizon and others attempt to penalize ITFS licensees for their good stewardship of the spectrum, while asking the FCC for more spectrum to make up for their own failure to transition to more efficient technologies on their own existing frequencies.

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[51] *Two-Way Order* at 19160.

As discussed by CTN, ITFS is the *only* reservation of spectrum set aside for formal instructional purposes.[52] This reservation is more important today than ever because of the need for widespread broadband educational services to students, teachers and lifelong learners wherever they are, which can best be accomplished through fixed wireless broadband technologies. The public/private partnership of ITFS licensees and commercial wireless operators has created a unique opportunity for the promotion of widespread educational broadband services. Cable and DSL competitors to commercial wireless operators utilizing MDS and ITFS capacity simply do not have the same incentive to provide these services in a cost-effective manner to schools, homes, businesses and other places of learning.

B. Fixed Wireless Providers Need Access to Leased ITFS Capacity

NITV strongly supports comments in the record filed by Sprint, WorldCom, Nucentrix, IPWireless, Cisco and other commercial fixed wireless providers and equipment manufacturers. These commercial parties have established beyond purview the need of commercial fixed wireless broadband providers to access leased ITFS capacity as well as the MDS channels in order to provide viable commercial broadband services in a market.[53] NITV notes that the fixed wireless services currently being rolled out by Sprint and WorldCom are true broadband services, while 3G is not. Sprint's downstream rates, for example, are 512 kbps to 1.5 million bits per second (mbps) with burst rates up to 5 mbps and upstream rates up to 256 kbps.[54] In contrast, the expected maximum service actually provided to 3G consumers is lower.[55]

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[52] CTN Comments at 14; *see* 47 C.F.R. Section 74.932.

[53] Verizon boldly claims that a reallocation of the ITFS spectrum to 3G mobile services would not cause "direct[] harm" to commercial fixed wireless operators. Verizon Comments at 26.

[54] Comments of Sprint Corporation ("Sprint Comments") at 8.

[55] Sprint Comments at 8; Comments of WorldCom, Inc. ("WorldCom") at 9-10.

Just as ITFS licensees are dependent on commercial wireless operators for funding and services to carry out their educational mission using their educational frequencies, commercial fixed wireless operators must have access to the ITFS frequencies to establish competitive commercial businesses. Surely, after years of regulatory effort to create and enhance this symbiotic relationship, the Commission should not risk killing both the goose and the golden egg through a reallocation of ITFS.

As reflected in the record, commercial fixed wireless operators must have access to all of the existing contiguous ITFS and MDS frequencies in the 2.5 GHz band in order to design, construct and operate viable fixed broadband systems.[56] If ITFS were relocated above 3 GHz or segmented, commercial fixed wireless operators simply would not have the incentive to construct systems because they would not be commercially viable. As illustrated in comments submitted by Cisco Systems and elsewhere in the record, a fixed wireless system's commercial viability depends on signals that cover a customer service area large enough to spread the costs of constructing a cell among enough customers to permit competitive pricing of the service.[57] A viable system requires, first, that the signal propagation characteristics of the transmissions are sufficient to permit adequate coverage of the service area while constructing a limited number of cells. Second, the commercial fixed broadband operator must have access to a sufficient amount of bandwidth to provide customers with the specific services they require. In the case of broadband services, substantial capacity is needed because there must be adequate upstream and

[56] *See* Sprint Comments at 20-23; WorldCom Comments at 16-21; Nucentrix Comments at 8-12; Comments of Cisco Systems, Inc. ("Cisco Comments") at 6-16; WCAI Comments at 32-45. The Commission doubtless will fail in its effort to create secondary spectrum markets should it cause the cancellation of the overwhelming majority of ITFS leases after commercial parties have invested billions of dollars in the spectrum. *See Principles for Promoting the Efficient Use of Spectrum by Encouraging the Development of Secondary Markets, Policy Statement*, released December 1, 2000.

[57] Cisco Comments at 6-9; *see also* Sprint Comments at 20-21.

downstream frequencies, separated by guard band.[58] According to studies examining these requirements with respect to ITFS and MDS, fixed wireless broadband services are not viable utilizing frequencies above 3G or with less contiguous spectrum.[59]

C. Without Financial and Technical Support, Educational Services Cannot Be Provided

In contrast to Verizon's assertions, relocation to another frequency band would strip the commercial value of the ITFS spectrum, separating ITFS licensees from the vital financial and technical support provided by commercial operators.[60] Without this support, numerous ongoing educational services would no longer be possible. Costs to the licensee would include maintenance of the ITFS equipment and purchase of any necessary upgraded or replacement equipment, tower space rental (and any opportunity costs or legal fees involved in negotiating for the space), and payment for backbone connections to Internet, in addition to the expense of creating or purchasing video or broadband instructional materials and services for transmission via the ITFS channels. All of these operational costs are currently carried by the commercial fixed wireless operator, not taxpayers. CTN's local affiliates, for example, estimate that the costs of providing instructional services over a single ITFS station range from $1.0 million to $3.2 million annually.[61] Clearly, most ITFS licensees would be unable to obtain such substantial funding without the assistance of a commercial fixed wireless operator.[62]

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[58] WCAI Comments at 33-34.

[59] Cisco Comments at 9-13; HAI Study at 28.

[60] Verizon Comments at 26.

[61] CTN Comments at 3-14.

[62] *See* NITV Comments at 3-8; CTN Comments at 2-14; NIA Comments at 6-13 and Appendix; Comments of Arizona Board of Regents for Arizona State University et al. at 4-19; Comments of Illinois Institute of Technology at 3, Appendices I, II and III and numerous other comments filed by ITFS licensees and educational organizations.

As discussed by NITV and numerous commenters, the educational wireless broadband services currently being brought on line will serve not only schools, but also learners in the home and workplace.[63] NITV urges the Commission to recognize the promise of ubiquitous broadband streaming video and data transfer for teaching students of all ages and backgrounds in locations throughout the country that cannot or will not be served by cable and DSL. By preserving the ITFS and MDS allocations at 2.5 GHz, the Commission will enable the ITFS/fixed wireless broadband partnership to bridge the "digital divide" with educational broadband services that would otherwise be unavailable. The "digital divide" is not a matter of affordability. As discussed in comments filed by the Public Utility Commission of Texas ("PUC"), broadband services are entirely unavailable in some areas. As the PUC stated, "[t]hroughout the country, policy makers are struggling to identify techniques that will encourage the deployment of advanced and broadband services to customers in rural areas. One of the most promising distribution methods is the use of fixed wireless technology . . . ."[64] The Commission should not now squander the potential of wireless educational broadband services, which are on the verge of being delivered to unserved and underserved areas (to benefit all learners but particularly the undertaught), in return for the mere promise of mobile service providers to launch new services with uncertain demand.

VI. Conclusion

Mobile service providers have utterly failed to demonstrate the need for an allocation of 160 MHz of spectrum for 3G services. Assuming *arguendo* there is a need for some additional spectrum, the record in this proceeding demonstrates that the 1.7 GHz band is strongly preferred by mobile services providers. The record also convincingly demonstrates the overwhelming

[63] *See* NITV Comments at 13-17.

difficulties inherent in relocating licenses occupying the 2.5 GHz band and associated spectrum at 2150 – 2162 MHz.

NITV and other educators must lease portions of their authorized ITFS spectrum in order to facilitate the use of the spectrum to provide educational services. The Commission has carefully encouraged the leasing of ITFS capacity and, in combination with recently promulgated rules for the licensing of "two-way" facilities, has prompted billions of dollars of investment by fixed wireless broadband providers while protecting the educational purpose of the spectrum. If the Commission were to unwind these rules on the basis of mobile wireless interests' unproven need for 3G spectrum, numerous existing and proposed educational services will be undermined and billions of dollars will have been wasted.

Unless the ITFS reservation in the 2.5 GHz band is protected and a forced march avoided, countless existing educational services will cease and the power of the Internet to serve students and teachers through fixed wireless connections, especially those who are unserved or underserved, will be lost. Spectrum-grabbing mobile interests must be tamed and the temptation to trade our reservation of educational frequencies, at the expense of American education, must be checked. NITV urges the Commission to move quickly to remove ITFS and MDS from consideration for reallocation for 3G mobile services.

[64] Comments of the Public Utility Commission of Texas at 2.

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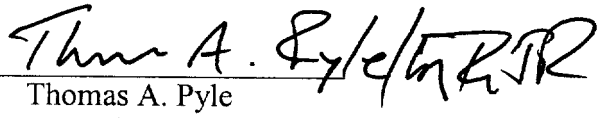
By: 

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