

**Before The
FEDERAL COMMUNICATIONS COMMISSION
Washington, D.C. 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)
2500-2650 MHz Bands)

WT Docket No. 03-66
RM-10586

**JOINT COMMENTS OF
STANFORD UNIVERSITY and NORTHEASTERN UNIVERSITY**

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SUMMARY

In these Joint Comments, Stanford University and Northeastern University urge the Commission to continue to support instructional usage of spectrum in the 2500-2690 MHz band and to develop a revised spectrum plan and transition plan for the Instructional Television Fixed Service (“ITFS”) that is consistent with the needs of educators and goals of the service. Both Stanford and Northeastern operate mature ITFS networks that transmit hundreds of hours of programming a week to enrolled students and post-graduate students in their respective communities.

Stanford and Northeastern generally support the Commission’s proposals to reconfigure the band plan to permit advanced mobile and fixed services while maintaining spectrum for high power, point-to-multipoint services. However, Stanford and Northeastern are concerned that the instructional purpose of ITFS is being minimized in the proposed revisions and the transition process could become overly burdensome for educators.

Stanford and Northeastern recommend that an instructional usage requirement for ITFS licensees be maintained. The Commission should consider raising the current requirement to make it more consistent with the instructional purpose of the service and the express commitment to instructional usage made by ITFS licensees.

A revised band plan for ITFS and MDS with three segments separated by guardbands appears to offer the most flexibility. However, setting aside only 42

MHz for high power, point-to-multipoint transmissions does not appear adequate to serve the needs of ITFS systems. For example, both Stanford and Northeastern do not expect that spectrum reserved for cellularized data systems will be useful for their educational missions, and both would prefer to obtain more than one channel each in the band segment reserved for high power, point-to-multipoint services.

The Commission can address this concern by adopting some form of priority system for ITFS licensees in selecting channels for high power services, or by expanding from the outset the number of channels available for high power services.

Moreover, ITFS licensees of grandfathered E- and F-Channel stations and ITFS licensees of H-Channel stations should participate fully in obtaining access to channels for high power, point-to-multipoint services.

The spectrum assignments within each market should not be left to a default plan, except as a last resort. The licensees of each market should be authorized to develop their own spectrum assignment plan within the limits of the overall band plan adopted by the Commission for 2500-2690 MHz. The Commission must also allow sufficient time for the licensees to develop a transition plan. If ITFS licensees must outlay funds for new equipment and/or transition costs, as seems likely, they need time to budget for these expenditures and to bring their plans for development of ITFS networks into compliance with the new regulatory regime. At least four years should be provided for individual markets to develop transition plans in voluntary and mandatory negotiations, and at least another three years should be provided to accomplish the transition itself.

If a party desires to transition a market more rapidly, such a “proponent” should be allowed to fund a transition in accordance with the transition plan developed by licensees in the market. A proponent who may not even be licensed to operate in market should not be empowered to decide the services that the licensees in the market can provide.

Stanford and Northeastern generally agree that service areas for cellularized services should be fixed. Services for traditional high power, point-to-multipoint services should continue to be based on the protected service area concept that has been used in the past.

The Commission should not make ITFS spectrum available to unlicensed devices. There does not appear to be any demonstrated need for spectrum in the 2500-2690 MHz band for unlicensed usage, and such usage does not appear at this time to advance an instructional service. Moreover, the potential proliferation of unlicensed devices in the band poses too great a risk of interference to ITFS stations that generally operate at low power levels. The Commission should focus its efforts to ensure that sufficient spectrum is available for instructional uses.

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**JOINT COMMENTS OF
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Pursuant to Section 1.415 of the Commission's Rules (47 C.F.R. § 1.415), The Board of Trustees of the Leland Stanford Junior University ("Stanford") and Northeastern University ("Northeastern") submit the following comments on the Notice of Proposed Rulemaking ("NPRM") in the above-referenced docket.¹ The NPRM proposes substantial changes in the spectrum plan and service rules governing the Multipoint Distribution Service ("MDS") and Instructional Television Fixed Service ("ITFS"). Many of the proposals are derived from the "White Paper" submitted by the Wireless Communications Association International ("WCA"),

¹ *Notice of Proposed Rulemaking*, FCC 03-56 (released Apr. 2, 2003), published at 68 Fed. Reg. 34560 (June 10, 2003).

National ITFS Association (“NIA”) and the Catholic Television Network (“CTN”),² although the Commission is seeking comments on alternative proposals as well.

Stanford has been licensed to operate an ITFS system in the San Francisco Bay Area for over 30 years. The Stanford Center for Professional Development through the Stanford Instructional Television Network (“SITN”) transmits hundreds of courses each year in a variety of engineering and scientific subject areas to enrolled university students. SITN transmits 350 programming hours per week over five ITFS channels. Stanford also provides for-credit coursework to enrolled students at business sites throughout the Bay Area and non-credit instructional programming to several thousand more students, for a combined total of over 6,000 industry students participating in over 250 Stanford University graduate programs and courses.

Northeastern is the licensee of ITFS Station KYP-23 (Channels B1-4) in Boston, Massachusetts. Northeastern transmits credit and noncredit courses in arts and sciences, business administration and wellness education, engineering and engineering technology as well as complete graduate degree programs in electrical and computer engineering on a live, interactive basis to approximately 2,000 students located at Northeastern’s suburban Boston campuses. In addition, at least 3,000 persons employed at corporate receiving locations involved in diverse high

² See *id.*, App. C; Public Notice (RM-10586), DA 02-2732 (released October 17, 2002).

technology industries enroll in Northeastern to receive both credit and continuing education ITFS programming.

Stanford and Northeastern are generally supportive of the process to reconfigure the ITFS and MDS spectrum plan to achieve greater spectrum efficiency and to revise the ITFS and MDS rules to enable new and advanced wireless services to be provided in the 2500-2690 MHz band. With the advent of digital technologies, licensees of ITFS and MDS spectrum have the ability to greatly improve and expand the services that can be offered over their licensed stations. Admittedly, to achieve those new services in the 2500-2690 MHz band, the existing regulatory paradigm must change. The questions raised in this proceeding address that change, including how to achieve the original goals of the ITFS spectrum reserve while ensuring that the spectrum is used efficiently, how to accommodate licensees that want flexibility to offer new services, and how to ensure that the new regulatory regime itself is comprehensive, transparent and protective of incumbents' operations and expectations.

Designing a new regulatory regime for ITFS and MDS is an enormous task and the drafters of the White Paper have clearly given it much consideration and effort. Unfortunately, many licensees have only had the opportunity to see the end result and have not had the opportunity to work through the permutations and discussions that led the drafters to the recommendations in the White Paper, nor to have their concerns and comments incorporated. Moreover, Northeastern and Stanford are concerned that, in the effort to improve the ability of some parties to

use the spectrum for cellularized data services, the educational goals of the original ITFS spectrum reserve are being minimized and the regulatory regime itself is becoming so complicated as to make the transition and new rules incomprehensible.³

Stanford and Northeastern commend the Commission for seeking debate on multiple proposals and keeping open the major issues involved in MDS/ITFS reconfiguration. Accordingly, while supporting reconfiguration generally, Northeastern and Stanford offer the following comments from the perspective of mature ITFS systems that have expectations of continuing to use their assigned spectrum for ITFS purposes.

I. THE REQUIREMENTS FOR HOLDING ITFS SPECTRUM SHOULD INCORPORATE AN INSTRUCTIONAL COMPONENT.

The ITFS spectrum was intended to provide schools, colleges and other educational institutions with spectrum to serve their students through distance education. In prior proceedings, the Commission has repeatedly emphasized that the educational purpose of the ITFS spectrum should not be impaired.⁴ The same

³ The last industry-sponsored proposal for fixed two-way services suffered from similar ailments. *See* White Paper, at 3-10. Now, even the WCA, NIA and CTN refer to the current rules resulting from that proposal as a sinking ship, "the Titanic." Reply Comments of WCA, NIA and CTN (RM-10586), at 11 (filed Nov. 29, 2002).

⁴ *See, e.g., 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, 19115 (1998) (modification of the Commission's ITFS rules must continue to provide benefits to the educational community).

policy should apply to the new regulatory regime. Changes to the spectrum designated for ITFS should be consistent with the long-standing purpose and goals of ITFS.

Accordingly, the Commission should retain spectrum in the 2500-2690 MHz band designated for “instructional” purposes. Identifying “ITFS” spectrum will become more difficult if ITFS licensees hold separated spectrum assignments, used for different services. On the other hand, there are some educational institutions that would like to use spectrum for video programming and others that would like to implement (or permit their lessees to implement) a cellularized data network. Both uses can serve the original goals of the ITFS spectrum reserve, and there is sufficient spectrum in the 2500-2690 MHz band to accommodate both types of ITFS systems. For example, the rights and obligations of “ITFS” spectrum can be imposed on the user as opposed to being assigned to the spectrum.

The Commission raises a valid concern that the current rules only require an ITFS licensee to use 5% of its assigned spectrum for instructional purposes.

(NPRM, ¶ 109.) It has always been the case that an entity that is licensed for and allowed to retain ITFS-designated spectrum is expected to make a commitment to instructional usage. Selecting what that level of commitment should be is difficult because ITFS licensees include many different institutions with differing purposes and constituencies and because the Commission has found that spectrum leasing activity supports instructional uses. But, a licensee that holds 24 MHz of ITFS spectrum, and only uses the spectrum 5% of the time for instructional purposes,

while leasing the remaining for commercial services, is potentially denying other instructional institutions the opportunity to use “ITFS” spectrum for instructional purposes. Accordingly, in adopting rules to transition ITFS licensees to a new band plan, the Commission should retain an instructional usage requirement for ITFS and raise the level of commitment to be consistent with the goals of the revised band plan. As licensees transition to the new band plan, they should decide whether to abide by that level of commitment or to transition to spectrum holdings more consistent with their level of commitment to instructional uses or commercial activities.⁵

II. THE NEW ITFS/MDS BAND PLAN SHOULD BE TRANSPARENT AND DESIGNED TO ACCOMMODATE INCUMBENT SERVICES.

The Commission generally desires to reconfigure the 2500-2690 MHz band to permit high power, downstream transmissions and low-power, cellularized fixed and mobile services. (NPRM, ¶ 49-54.) Of the various reconfiguration proposals identified, a three-segment plan similar to that identified in the White Paper appears to offer the best alternative.

The proponents of the White Paper proposed to divide the 2500-2686 MHz band into three segments: (1) the Lower Band Segment (“LBS”) with twelve 5.5

⁵ The Commission may decide that currently more spectrum than necessary is reserved for instructional uses. A reduction could take place gradually by imposing instructional usage requirements on spectrum licensed to existing ITFS entities, and allowing some percentage of the current ITFS spectrum to be transferred to commercial entities without the instructional use requirement.

MHz channels at 2500-2566 MHz, (2) the Middle Band Segment (“MBS”) with seven 6 MHz channels at 2572-2614 MHz, and (3) the Upper Band Segment (“UBS”) with twelve 5.5 MHz channels at 2620-2686 MHz. (NPRM, ¶ 50.) This proposal includes 6 MHz Transition Bands between the LBS and MBS and between the MBS and UBS. In this proposal, “unless otherwise agreed,” each four-channel ITFS station would be reconfigured with one 6 MHz channel in the MBS, three 5.5 MHz channels in either the LBS or UBS, and 1.5 MHz in a Transition Band. The 6 MHz channels in the MBS are designed for high power, point-to-multipoint programming services, while the 5.5 MHz channels in the LBS and UBS are designed to be used in low-power “cellularized” systems with multiple base stations.

Stanford and Northeastern are concerned that, for fully operational, mature ITFS systems, this new band plan would present difficulties because of the potential loss of access to channels for high power, downstream transmissions.⁶ The loss of high power channels could require reconfiguration of the Stanford and Northeastern systems and, if not otherwise covered during the transition process, significant costs for purchase of new equipment. Moreover, the current capability of Stanford and Northeastern to grow and develop their ITFS stations from, for example, four channels to eight or sixteen digital video programming streams transmitted from a central location would be jeopardized. In short, Stanford, Northeastern and potentially many other ITFS licensees could end up with

⁶ Cf. Comments of Stanford University (RM-10586), at 7-8 (filed Nov. 14, 2002).

spectrum in the LBS and UBS that is not particularly useful for their specific educational missions.

Currently, Stanford has nine teleclassrooms and five programming channels. Northeastern operates four teleclassrooms and eight (digitized) programming channels. Classes that cannot be transmitted live are taped for playback. Stanford plans to bring three or four additional teleclassrooms on line in the next two years. Even digitized, Stanford could not accommodate all its current and planned simultaneous teleclasses on one or two MBS channels.

While Stanford currently has plans in place to migrate to digital equipment, and Northeastern has already done so, both have not found 5:1 compression adequate for instructional programming. Testing at 5:1 produced unsatisfactory quality and delay. Moreover, Stanford currently uses talk-back channels in the main channels, and compression resulted in student calls to the classroom after the teacher had moved on to another topic. Accordingly, one MBS channel will not accommodate either Stanford's or Northeastern's current and planned systems.

The Commission has asked whether the Internet can be used as a substitute means of transmission for instructional video programming. (NPRM, ¶ 114.) For the immediate future, the answer is "no." Currently, Stanford's and Northeastern's ITFS programming streams attempt to replicate as closely as possible the classroom environment, transmitting not only the teacher, but also the written handouts, in-class chalk or white board writings, and other video streams that may be used as pedagogical tools. In contrast, effective "classes" over the Internet are generally

limited in transmission capabilities, usually to just a view of the teacher, and feedback is linear and often delayed. At this time, a wireless data service would simply not have the sensitivities, redundancies and speed available to support an instructional classroom. This is especially true in areas of engineering and healthcare where precise understanding of all classroom material is essential for student comprehension. Therefore, obtaining LBS/UBS spectrum will not provide the same capabilities as existing ITFS spectrum or spectrum in the MBS.

There are several ways to address these concerns about access to MBS channels. For example, different band plan configurations could be deployed in different markets to accommodate the varying spectrum needs of licensees from market-to-market. This solution, however, could result in a patchwork of band plans that may make it difficult for transition to the new plan as a result of varying interference patterns. Also, varying band plans from market to market could make it more difficult for an effective secondary market in spectrum. Individual markets generally should use a band plan that best serves the needs of their licensees, and, if the interference issue can be resolved, this solution may be workable.

Stanford has previously suggested that the new rules could give licensees a firm right to elect what channels they retain under a modified spectrum plan.⁷ If necessary, a priority system could be used, based, for example, on the number of hours of programming offered over each existing ITFS channel and/or the number of

⁷ *See id.*

students served. A priority in channel selection would ensure that stations using ITFS spectrum as it was originally intended to be used will not be penalized for doing so, and will have the same capability and opportunity to grow the system as they do now. However, developing rules for establishing “priorities” in the selection process may prove difficult and contentious.

Another solution would be to increase the number of MBS channels available from the outset to ensure that there is sufficient spectrum available for high power use, which was, after all, the original use for which the 2500-2690 MHz band was designated. For example, if 60 MHz each were assigned to the LBS, MBS and UBS, separated by 3 MHz guard bands (between the LBS and MBS and the MBS and UBS),⁸ then there would be 10 6-MHz channels in the MBS to accommodate high power, point-to-multipoint transmissions, and the LBS and UBS spectrum could be assigned in 5 MHz segments (12 each in LBS and UBS), making the LBS and UBS band plans more consistent with the band plans adopted for PCS.⁹ This arrangement would result in three additional channels in most markets (34 instead of 31 channels) in either the MBS or LBS/UBS, which, after all reassignments to incumbents had been accomplished, could be made available in an auction.

There is recognized value in having a uniform nationwide band plan. But, neither the Commission nor the drafters of the White Paper can know ahead of time

⁸ See NPRM, App. C, note 636.

⁹ The size of the LBS and UBS channel assignments does not appear particularly critical to the White Paper proposal. See NPRM, note 83.

the plans of all ITFS and MDS licensees under a new band plan. By creating ample opportunity at the outset for satisfaction of plans for both high-power and low-power services, the Commission can help ensure that more incumbents than not meet their spectrum needs under the new band plan.

III. SPECTRUM ASSIGNMENTS MUST BE DEVELOPED BY LICENSEES WITHIN EACH MARKET.

Another important aspect of the band plan is determining spectrum assignments for incumbents. The proponents of the White Paper proposed a default plan which essentially maps each incumbent's four 6-MHz channel assignments into one MBS channel, three LBS or UBS channels and a small segment of the guardband, resulting a one-to-one correspondence between the total MHz of spectrum held in the old and new band plans. Given that the intended *uses* of the MBS and LBS/UBS are different, the one-to-one mapping plan simply will not address the goals of individual licensees in various markets. Assignments in the band plan should be consistent with the intended future uses of the various spectrum segments, rather than the legacy of the existing band plan.

In this regard, the Commission must be mindful that the proposed reconfiguration of MDS/ITFS is unlike other frequency relocation plans. In this case, the Commission is proposing to transition incumbents from more than just one frequency to another, or one bandwidth to a smaller bandwidth. Rather, the proposed reconfiguration involves changing the services provided by incumbents (high-power video vs. low-power data), the operation of their stations (point-to-multipoint vs. fixed and mobile cellularized), and the service capabilities (spectrum

for a single set of high-power services vs. two sets of frequencies for high-power and low-power services). The Commission is also making possible educational services that have not previously been possible for these licensees. The Commission is essentially creating a completely new service with a variety of station types and transferring licensees from another service into the new service, whether or not they asked for the transfer. Under these circumstances, the Commission must give incumbents an opportunity to decide whether or how they will use the new services and what spectrum those decisions demand.

For example, in addition to the concern about obtaining adequate ITFS spectrum in the MBS, there may be MDS licensees whose operational model relies on two-way data or voice flow who object to an assignment of only three channels in LBS or UBS, or in assignment of all such channels in either the LBS or UBS. If a licensee were assigned a channel or channels in the LBS for subscriber terminal transmissions and channels in the UBS for base station transmissions, it may be able to develop its own FDD-based two-way data service without relying on the other licensees for access to spectrum in one band or the other. The "default" plan submitted by WCA, NIA and CTN appears designed to give control of the use of the LBS/UBS channels to a single commercial entity, because no one licensee may be able to develop its own data system.

A "default" plan cannot be the starting point for deciding spectrum rights of incumbents under the new band plan. A default plan should be reserved for markets that cannot or will not come to agreement. Similarly, the Commission

should not award the right to decide a market plan to a “Proponent,” who may not even hold spectrum rights in the market.¹⁰ The Commission must allow the licensees in a market to develop their own spectrum assignment plan within the boundaries of whatever overall band plan is adopted. Otherwise, the Commission will transform a regime with eight to ten independent licensees to a regime where one entity has control over the use of 190 MHz. That result does not advance ITFS, distance education, or the individual needs of Stanford and Northeastern.

IV. THE COMMISSION MUST ALLOW SUFFICIENT TIME FOR THE TRANSITION TO A NEW BAND PLAN.

The transition to the new band plan is perhaps the most difficult and critical aspect of the reconfiguration of the 2500-2690 MHz band. Assuming that the Commission adopts a three-segment band plan, the “transition” is primarily for existing high power, operational services to be relocated into the MBS. To reach that point, each licensee must know what channels it will be using and what stations it must protect from interference; each licensee must obtain equipment to accommodate those channels (purchased by or for the licensee) and define its operations to meet required protection levels; and each licensee must transition from the existing operational status to the operational status under the revised band plan.

This will be a complicated process, and the WCA, NIA and CTN are oversimplifying when they analogize the ITFS/MDS transition to the relocation of

¹⁰ See White Paper, at App. B.

microwave incumbents from the PCS bands.¹¹ In the microwave relocation situation, each microwave station was simply being relocated to another frequency band. In this case, the proposed revisions to the ITFS/MDS band plan involve a revision to the *services* that can be offered over the spectrum and a reconfiguration of the existing station operations.

The transition plan proposed by WCA, NIA and CTN is unlikely to help most ITFS licensees.¹² Under the White Paper plan, ITFS and MDS stations would continue to operate as is after adoption of the new regulatory regime unless and until a “Proponent” decides to transition an individual market.¹³ The Proponent would essentially decide the plan for reconfiguration of the market and would be required to pay for and arrange for relocation of existing ITFS programming tracks into programming tracks on MBS spectrum and to replace or retune all operational ITFS receive site equipment.¹⁴ The Proponent would not necessarily be required to obtain new equipment for the station.¹⁵ While waiting for Proponent, ITFS licensees could continue to operate and modify their stations, but would be required

¹¹ See Reply Comments of WCA, NIA and CTN (RM-10586), at 14 (filed Nov. 29, 2002).

¹² See White Paper, App. B.

¹³ *Id.*, at 1.

¹⁴ *Id.*, at 5-9.

¹⁵ *Id.*, at 10-11.

to protect from interference unbuilt cellularized systems in the same or neighboring markets.¹⁶

The defects of the coalition transition plan are readily apparent. It is indefinite when, and uncertain whether, any particular market will ever be transitioned. In the meantime, unbuilt stations will continue to occupy spectrum, and the Proponent will be under no obligation to help such stations transition because there are no receive site downconverters to retune or programming tracks to relocate. Meanwhile, operational licensees that want to expand or improve facilities will be required to protect hypothetical stations that may never be built. When a station is transitioned—involuntarily—the Proponent has great discretion how the transmitting facilities will be reconfigured. And, if the ITFS licensee wanted to transition from high power video to an instructional Internet service, the Proponent would appear to be under no obligation to provide transition services.

If ITFS licensees must outlay funds for new equipment or transition costs (some costs would have to be assumed even under the White Paper proposal), they need sufficient time to budget for these expenditures and bring their plans for development of ITFS networks into compliance with the new regime. Moreover, if the Commission does adopt a new regulatory regime for ITFS, it will never be effectuated unless the Commission sets guidelines and goals for its implementation. On the assumption that the Commission will attempt to implement the goals

¹⁶ *Id.*, at 2 n.2.

identified in the NPRM (¶¶ 32-43), Stanford and Northeastern offer the following suggestions for the transition process.

Initially, the channel identification process (or, old-to-new mapping process) must be undertaken collectively within each market. It cannot be left to a single entity that may have no connection to the market at all other than a desire to avoid interference in a neighboring market. The Commission should establish a market boundary within which the licensees of ITFS/MDS transmitters must develop a consensus plan for their new channel assignments by a date certain. That plan should be served on all licensees that have either a transmitter or PSAs within the market. While some limits must be placed on the channel rights that can be obtained under the new rules, a default mapping plan should only be used if some period of time passes without the licensees developing a plan on their own, or if a “safe harbor” is needed for a group of licensees to transition to a new band plan without causing interference to non-participating stations. When the market plan is set, the affected licensees should be able to establish the period of time within which to transition, with perhaps a Commission-imposed deadline.¹⁷

Once a band plan has been adopted, the Commission can allow a “proponent” to fund and coordinate the transition of the market along the lines suggested by the

¹⁷ Greenmailers are a perennially-noted problem in these discussions. The Commission’s rules for the transition should obligate licensees to negotiate in good faith and should provide explicit mechanisms for licensees to bring complaints to the Commission for enforcement actions. Penalties could involve involuntary transitions to a specific band plan and/or loss of spectrum rights.

White Paper. A proponent may be motivated to undertake such a transition by its desire to provide new services in that or a neighboring market and the transition is necessary to avoid interference. However, the proponent should be required to adhere to the band plan adopted by the market-based licensees.

If a proponent decides to transition a market, the Commission should ensure that it covers all costs to provide “comparable facilities” for the existing services and operations of the ITFS station, including quality and reliability of the signal.

Stanford and Northeastern have already invested substantial revenues in development of their ITFS systems, and further improvements are in progress. The proponent of a market change should be required to cover all the costs necessary for an ITFS licensee to operate an equivalent system, including the equipment for the transmitters, video/audio encoding systems, receive sites, and studio-to-transmitter links, if affected by the change. The Commission should consider adopting a specific equipment replacement standard for situations in which the proponent and licensee cannot reach an agreement voluntarily, which at least requires replacement of existing facilities by comparable facilities in terms of throughput, reliability and operating costs.¹⁸

For the transition time line, the Commission must provide sufficient time for educational institutions to prepare for the operational transition and budget for

¹⁸ See, e.g., 47 C.F.R. § 101.73(d).

costs associated with relocation.¹⁹ Coordination of the timing of transition is needed to avoid downtime for licensees and interference into existing operations. While the actual cut-over may not take much time, the design, installation, testing and debugging processes can take several months.

To address these goals, several years are needed from the time the new rules are adopted until the new band plan actually becomes effective. The Commission should provide at least two years from the date the new rules are adopted for each market to develop its own band plan in voluntary negotiations. Another two years should be provided for mandatory negotiations, so that, at the latest, a band plan for the market will be in place within four years. At least another three years should be provided as a transition period, after which no renewals will be granted for stations operating under the old regime and any stations operating under the old band plan and rules will be deemed secondary to stations operating in accordance with the new band plan and rules.

At any time after the market plan has been adopted by the market licensees, a proponent could be permitted to transition the market so that the proponent can begin providing services more rapidly within that market or a neighboring market. A commercial service entering the market during that time period should be required to reimburse the proponent a proportionate cost of the transition.

¹⁹ Even if relocated under the White Paper plan, there would be many costs associated with an ITFS system that a Proponent may not cover.

V. SERVICE AREAS SHOULD REFLECT THE USES OF SPECTRUM.

The Commission also asks whether it should adopt the White Paper's proposal to transition all MDS and ITFS licensees to fixed geographic service areas ("GSAs"). (NPRM, ¶ 87.) For each incumbent licensee with a station assigned to specific transmitter coordinates, the GSA would be its existing protected service area ("PSA"), or the equivalent, that is, essentially a 35-mile radius circle around the transmitter coordinates. Where PSAs overlap, due to the historical development of ITFS and MDS stations, the White Paper suggests that the overlap portion would be divided evenly, and each licensee would receive its exclusive share.²⁰ For unassigned ITFS spectrum, the Commission proposes to license the spectrum by BTAs, similar to the licenses offered for unassigned MDS spectrum. (NPRM, ¶ 62.)

Assignment of service areas under a new ITFS/MDS band plan presents another difficult issue. For channels assigned in the MBS, the proposal to use 35-mile radius GSAs is essentially no change from existing practice. But, imposing GSAs upon LBS/UBS channels is more convenient than logical. PSAs were designed for high power, central point transmission systems. LBS/UBS channels will be used for cellularized transmission systems, and so, could be assigned service areas on a different basis.

²⁰ See White Paper, at 20-21.

The assignment of the 35-mile radius for PSAs was originally based on a service area for programming channels. The arbitrary halving of overlap areas (“splitting-the-football”) does not necessarily take into account the service base that a station might have developed for its programming business. Although the affected parties could agree on a different boundary, the proposal to facilitate “cellularized” mobile services creates an economic incentive for licensees to hold on to as much geographic area as possible without regard to whether it is part of another licensee’s instructional programming service area. The Commission should therefore allow MBS service areas to continue as is in PSAs, unless otherwise agreed by the parties, while using the “split-the-football” approach only for LBS/UBS services.²¹

VI. ITFS E-, F- AND H-CHANNEL LICENSEES SHOULD BE TREATED AS EQUALS TO ITFS LICENSEES IN OTHER CHANNEL GROUPS.

ITFS E- and F-Channel licensees should participate in spectrum reassignments on the same basis as ITFS licensees of other channel groups, and the Commission should eliminate the restrictions currently attached to grandfathered stations in the new regulatory regime.²² Grandfathered ITFS stations, in theory, share their channels with commercial MDS stations, whose licenses were awarded

²¹ *Cf. id.* (proposing differing protection requirements for MBS and LBS/UBS operations).

²² *See id.*, at 51 (recommending elimination of the restrictions on grandfathered ITFS E-/F-Channel stations).

by lottery.²³ Currently, an MDS station cannot be built in the same geographic location unless it can fully protect from interference the grandfathered ITFS station's receive sites.²⁴ Since the MDS licensee may have no ability to actually use the channels under the existing rules, the ITFS licensee's access to spectrum should not be impaired as a result of the transition to the new band plan and service areas.

As the licensee of an H-Channel that carries ITFS programming, Stanford recommends that the incumbent licensees of H-Channels be assigned the right to obtain a channel in the MBS. Licensees of H-Channels used as ITFS video programming channels should not be excluded from obtaining a 6 MHz channel in the MBS. Rather, ITFS H-Channels should be treated like ITFS channels in other channel groups. This will ensure the instructional services of ITFS licensees with H-Channels used as ITFS Channels will not be disrupted.

VII. THE COMMISSION SHOULD NOT ALLOW UNLICENSED DEVICES ACCESS TO ITFS SPECTRUM.

The Commission has asked whether it is feasible and/or beneficial to allow unlicensed devices access to "current white space" in the ITFS band "on a primary basis." (NPRM, ¶¶ 79-82.) Section 301 of the Communications of 1934 precludes

²³ See *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 Service*, 94 FCC 2d 1203 (1983).

²⁴ See 47 C.F.R. § 21.902(b).

the operation of “unlicensed” devices except on a secondary basis.²⁵ Therefore, the Commission must either be proposing to license Part 15-type devices in this spectrum or to make the spectrum available on a secondary basis.

Northeastern and Stanford generally oppose any plan to reallocate spectrum to another service and thereby reduce the amount of spectrum available for ITFS, and oppose any plan that would grant unlicensed devices access to spectrum in use by ITFS stations. The potential proliferation of unlicensed devices, particularly in urban areas, poses too great a risk of aggregated interference to licensed systems. ITFS systems operate at relatively low power levels. Since they operate in a band with essentially no other co-primary services, the interference threshold is very low. Introduction of unlicensed devices would change this environment, and make it more difficult of ITFS licensees to maintain current operations.

Moreover, the Commission has not pointed to any need to make additional spectrum available for unlicensed devices. The Commission has just proposed an additional allocation of 225 MHz for unlicensed devices in the 5 GHz band, nearly

²⁵ See *Amendment of Part 15 of the Commission’s Rules Governing Restricted Radiation Devices*, 13 RR 1543, 1544 (1955) (Part 15 requires radiation to be “kept within certain fixed limitations” so that unlicensed operations will not “have interstate effects bringing such operations within the purview of those which must be licensed under Section 301 of the Communications Act”); see also *Amendment of Parts 15 and 90 of the Commission’s Rules to Provide Additional Frequencies for Cordless Telephones*, 10 FCC Rcd 5622, 5625 (1995) (unlicensed cordless telephones operate at low power and are unlikely to interfere with licensed operations).

doubling the amount of available Part 15 spectrum at 5 GHz.²⁶ And, earlier this year, the Commission decided that the 1910-1920 MHz band was not being used sufficiently by unlicensed services and reallocated the spectrum.²⁷ These examples confirm that there is no current need for the proposed assignment of ITFS spectrum for unlicensed use.

Assigning spectrum to unlicensed devices does not benefit the instructional missions of Stanford and Northeastern. There are already adequate means for communicating between classrooms and remote reception sites in the ITFS service. It is very unlikely that ITFS licensees could use the Internet to transmit the same instructional programming streams, and, therefore, developing another wireless transmission path for communications between user and the classroom is really not necessary. It is much more important for the Commission to retain sufficient ITFS spectrum for high power, point-to-multipoint transmissions than to attempt to develop some new unlicensed instructional service.

²⁶ See *Revisions of Parts 2 and 15 of the Commission's Rules to Permit Unlicensed National Information Infrastructure (U-NII) Devices in the 5 GHz Band*, ET Docket No. 03-122, FCC 03-110 (released June 4, 2003).

²⁷ See *Amendment of Part 2 of the Commission's Rules to Allocate Spectrum Below 3 GHz for Mobile and Fixed Services to Support Introduction of New Advanced Wireless Services, Including Third Generation Wireless Systems*, 18 FCC Rcd 2223, 2247 (2003).

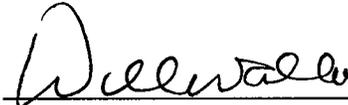
VIII. CONCLUSION

The Commission should continue to adhere to its longstanding support for the instructional goals of ITFS stations and should adopt rules for the new regulatory regime for ITFS consistent with the principles set forth above.

Respectfully submitted,

THE BOARD OF TRUSTEES OF THE
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NORTHEASTERN UNIVERSITY



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September 8, 2003

CERTIFICATE OF SERVICE

I, William D. Wallace, hereby certify that I have on this 8th day of September, 2003, caused to be served true and correct copies of the foregoing "Joint Comments of Stanford University and Northeastern University" upon the following persons via hand delivery:

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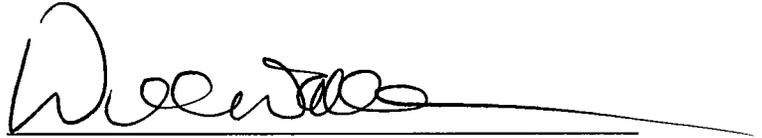
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A handwritten signature in black ink, appearing to read "William D. Wallace", with a long horizontal line extending to the right.

William D. Wallace