

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

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**FEDERAL COMMUNICATIONS COMMISSION
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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)
)
Petition for Rulemaking of the Cellular)
Telecommunications Industry Association)
Concerning Implementation of WRC-2000:)
Review of Spectrum and Regulatory Requirements)
for IMT-2000)
)
Amendment of the U.S. Table of Frequency)
Allocations to Designate the 2500-2520/2670-)
2690 MHz Frequency Bands for the Mobile-)
Satellite Service)

ET Docket No. 00-258

RM-9920

RM-9911

To: The Commission

COMMENTS OF NORTHERN ARIZONA UNIVERSITY FOUNDATION

Northern Arizona University Foundation ("NAUF"), by its counsel, hereby submits its comments in response to the Commission's Notice of Proposed Rule Making and Order in the above-captioned proceeding (the "NPRM"), FCC 00-455, released January 5, 2001.

In the NPRM the Commission proposes the reallocation of various frequency bands below 3 GHz to support the introduction of new advanced wireless services, including third generation ("3G") wireless systems. Among the frequencies which the Commission suggests for possible reallocation is the 2500-2690 MHz band. NAUF submits these comments in opposition to any reallocation of the 2500-2690 MHz band from its current use for the Instructional

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Television Fixed Service (“ITFS”), Multipoint Distribution Service (“MDS”) and Multichannel Multipoint Distribution Service (“MMDS”).

I. INTRODUCTION

NAUF and Northern Arizona University. NAUF is a private foundation devoted to supporting the mission and goals of Northern Arizona University (the “University”). The University is a state-chartered institution with its main campus in Flagstaff, Arizona. The Arizona Board of Regents has charged the University with delivering high-quality upper-division courses and undergraduate programs to all rural and, where authorized, metropolitan counties in the State. It also is charged with providing graduate education programs throughout Arizona. NAUF provides fundamental support for the University’s endeavors to fulfill this mission.

The University is a national leader in distance education, delivering instructional material throughout Arizona via its “NAUNet” system. NAUNet includes a two-way television system used both to supplement instruction from on-site faculty and to provide primary instruction where no faculty is present.¹ NAUNet operates 25 active distance learning sites, with seven additional sites operated by NAUNet partners (such as State universities and community colleges). These sites include small, isolated communities and schools like Chinle, Ganado, Tuba City and Kayenta High School (Navajo), Hopi High School, and the Hualapai Indian Family Center at Peach Springs, as well as cities like Prescott, Bullhead City, Holbrook and Show Low. Approximately 94 undergraduate and graduate courses are taught each semester via NAUNet.

¹ Other learning media used in NAUNet include films, compact discs, computer software, CD-ROMs, and Internet and Web-based materials to supplement and enhance instruction.

The University also programs a full-time educational channel on Echostar. This channel offers educational and public interest programming to five million direct-to-home broadcast satellite subscribers nationwide.²

The University and programs sponsored by NAUF have received numerous awards for educational programming. Examples include Telecon XVI (1996) for Elementary Spanish, grades 1-6; the National Information Infrastructure Association Semifinalist Award (1996); the Arizona Distance Learning Association's Best Practices Awards (1999) for both the University's interactive television delivery system and programming, and The Universityhouse Channel on Echostar's DISH Network; and The Lost Children's Network's Most Outstanding Coverage of America's Lost Children -- 2000, for broadcasts responsible for the recovery of lost children.

NAUF itself is the licensee of and operates eight ITFS systems outside the State of Arizona. By virtue of the support NAUF provides to the University and NAUNet, and its own operation of ITFS facilities, NAUF has considerable expertise in designing and providing distance learning facilities.

The Instructional Television Fixed Service. ITFS channels are used to provide important educational services to students and teachers in schools, colleges, universities and governmental agencies nationwide. These services are provided in rural areas, the inner city, low income and other areas where financial or educational resources are insufficient to provide on-site primary instruction. The use of ITFS facilities allows school districts and educational institutions to maximize their limited resources, and to make educational and training materials available to a wider geographic area and more people than would otherwise be possible. Hundreds of

² The programming is available on Echostar Channel 9411.

thousands, if not millions, of students and adults are regular beneficiaries of educational and training services provided in the 2500-2690 MHz band.

Although traditionally used to provide one-way television service, recent advances in digital technology now allow the use of ITFS channels, and MDS and MMDS channels, to provide high speed, fixed wireless broadband services. These developments have allowed or will allow ITFS (and MDS and MMDS) licensees to enhance and expand the educational services they provide and to bring high-speed internet and broadband access to those who otherwise might not have access to such services, or for whom access would be long-delayed.

II. THE COMMISSION SHOULD NOT REALLOCATE THE 2500-2690 MHZ BAND

In Interim Report, Spectrum Study of the 2500-2690 MHz Band, November 15, 2000 (“Interim Report”),³ the Commission’s staff noted several problems in reallocating the 2500-2690 MHz band, exclusively or on a shared basis, for 3G wireless systems:

- The band is currently used to provide educational services in schools, health care centers and a variety of other institutions.
- The band is heavily licensed throughout the country and incumbent ITFS, MDS and MMDS licensees are “ramping up for full operational use in the very near term.”
- The band “is in a state of rapid evolution by incumbent ITFS and MDS licensees.”⁴
- Use of the band varies among different geographic areas, which presents serious challenges to developing band sharing or segmentation options that could apply nationwide without disrupting ITFS and MDS use.⁵

³ The FCC Interim Report is a joint staff report issued by the Office of Engineering and Technology, Mass Media Bureau, Wireless Telecommunications Bureau and International Bureau.

⁴ *Interim Report* at ii.

- Allowing mobile wireless systems (e.g., 3G) access to the band would raise technical and economic difficulties for incumbents and could adversely affect the economics of existing and planned service to rural areas.
- Allowing 3G systems to share the band would require large co-channel separations to avoid extensive interference to incumbent licensees and their systems.
- Industry has invested billions of dollars in the band to develop high-speed Internet access and other broadband data systems. While this investment offers a significant opportunity for further competition with cable and digital subscriber line (DSL) services, this opportunity would be lost if the band were reallocated.

The Commission's guiding principles for spectrum management include a recognition that strict adherence to flexible allocations may interfere with other important objectives. Principles for Reallocation of Spectrum to Encourage the Development of Telecommunications Technologies for the New Millennium, Policy Statement, FCC 99-354, released November 22, 1999, at 4 ("Policy Statement"). These include the provision of public services that market forces may not otherwise make adequate provision for. Id. The distance learning and other educational services that ITFS licensees provide are such services. Left alone, market forces will not provide them. Preserving the 2500-2690 MHz allocation for ITFS, on the other hand, will continue to ensure access to this spectrum by schools, universities, colleges and other educational institutions. This is the very type of "public interest" judgment that the Commission is charged with making. See id.

Many of the educational services offered through ITFS facilities are underwritten or paid for, at least in part, with revenue that licensees receive from excess capacity lease agreements

⁵ Examples of these problems include the provision of a variety of analog and digital one-way and two-way services; ITFS and MDS licensing based on different authorized service or interference protection areas; extensive leasing arrangements between the two services; and flexible plans for channel utilization where combined ITFS/MDS two-way systems will coexist with incumbent one-way systems. *Id.*

with MDS and MMDS service providers. Most of these agreements originally contemplated using ITFS channels in combination with MDS and MMDS channels to provide wireless cable television service as an alternate or competitor to wired cable television systems. While this is no longer the case, the development of two-way digital transmission capability has spurred development of the 2500-2690 MHz band into an alternate means of providing wireless high-speed Internet access and other broadband data transmission capabilities.

Currently, high-speed broadband services are offered primarily through cable and DSL service, at relatively high subscriber prices.⁶ The Commission has identified certain groups in our society whose access to advanced high-speed services would be impaired if deployment were left to market forces alone: Those residing in rural areas, particularly outside population centers; inner city consumers; low-income consumers; minority consumers; and Native Americans. *Id.*

Most if not all of these groups are actual or potential beneficiaries of ITFS services. Existing and planned ITFS/MMDS facilities, and the favorable propagation characteristics of the 2500-2690 MHz band, offer the opportunity for the provision of advanced internet access to rural areas, to inner city neighborhoods, to Indian reservations, and to other underserved areas that the Commission recognizes are least likely to receive cable modem and DSL services.

These same broadband capabilities offer opportunities for improving and expanding educational offerings and opportunities for ITFS licensees. The broadband capacity is fast enough to support a vast array of content, including two-way real-time video, streaming video, Internet access and other bandwidth intensive applications. It also allows the construction of

⁶ As of December 31, 1999, there were approximately 1.0 million subscribers of advanced two-way services (at least 200 Kbps in both directions). Of these, approximately 875,000 subscribed to cable-based services and 115,000 subscribed to asymmetric DSL. The remaining approximate 10,000 subscribed to other media. *FCC Issues Report on the Availability of High-Speed and Advanced Telecommunications Services*, News Release, August 3, 2000.

wide area networks at a reasonable cost. Schools and educators seek to exploit the full potential that the new technology offers for educational opportunities.⁷

The reallocation of all or a portion of the 2500-2690 MHz band for commercial 3G wireless services would have a severe impact on the ability of ITFS and MMDS licensees to provide and expand these services. The Commission's staff has already noted the intensive use of the spectrum for ITFS and MDS systems, and the significant potential for extensive interference to those systems in the absence of large co-channel separation distances. The Commission has not identified other frequencies to which the ITFS and MDS licensees could relocate. Assuming such spectrum exists (although NAUF does not know where), the cost and disruption of a forced relocation could preclude or significantly delay the delivery of educational services and the implementation of high speed broadband access. A shared-use arrangement is no better since there are only a few geographic areas where incumbent systems do not currently use spectrum. See Interim Report at iii. Thus, any reallocation of the 2500-2690 MHz band will have an adverse impact on important public services.

III. OTHER FREQUENCIES ARE AVAILABLE FOR 3G SERVICES

The Commission identified in the NPRM numerous other frequency bands which are available for advanced wireless systems without having to impinge on the 2500-2690 MHz band. These include the possible reallocation for mobile and fixed services spectrum in the bands 1710-1755 MHz and 2110-2150 MHz, for a total of 85 MHz. NPRM at paras. 32, 40-44.

⁷ Examples include home access to learning modules for school children that cable and DSL services do not provide, access to advanced placement courses, home access to professional development materials for teachers to improve their skills, access to classes leading to a college or advanced degree where attending college is impractical, and teacher access to broadband material to enrich a course.

Likewise, within the 806-960 MHz band more than 70 megahertz of spectrum is already used for cellular service and upgradable for 3G. NPRM at para. 36. Within the 1850-1910/1930-1990 MHz band, approximately 40 megahertz was the subject of the recently completed PCS Blocks C and F auctions, and the winners in that auction can put this spectrum to use for advanced wireless systems. See NPRM at para. 37. Within the 746-806 MHz band, which comprises television channels 60-69, the Commission has reallocated 30 MHz that is available for 3G use. It is scheduled for auction in September 2001. See NPRM at para. 38.⁸ Thus, the Commission has identified a total of 225 MHz that is available for 3G use within recently auctioned or soon to be auctioned spectrum.

In addition, the 698-746 MHz band, now used for television channels 52-59, will become available at the end of the transition to digital television, which is currently scheduled to occur on December 31, 2006. As the Commission is doing with the 746-806 MHz band, it could reallocate and even auction the 698-746 MHz band prior to the end of the digital television transition so the frequencies are available for other uses as soon as they are released.

In combination, the foregoing frequency bands total 273 MHz -- far more than 160 MHz, which the ITU has said is needed by 2010 for advanced wireless systems. See NPRM at para 26.

To the extent some of these frequency bands are not immediately available for 3G use, it provides the Commission and licensees of this spectrum the flexibility to respond to the actual

⁸ Although the NPRM references the auction as commencing March 6, 2001, subsequent to release of the NPRM the Commission delayed the auction until September 2001.

need for spectrum to accommodate 3G and other service needs in the future.⁹ Certainly, no consensus exists at present concerning the level of consumer demand for future 3G systems. See e.g., NPRM at para. 31. After much initial euphoria in Europe, where the initial licensing of spectrum in Germany and the United Kingdom for 3G brought in large sums, subsequent auctions brought in far less than expected or were even terminated prior to conclusion.¹⁰ Service providers also are questioning the extent to which consumers will purchase 3G services.¹¹ Given the availability of other spectrum sufficient to accommodate 3G services, and recent trends indicating less potential demand for 3G than initially contemplated, there exists no reason for the Commission to precipitously reallocate the 2500-2690 MHz band.

IV. CONCLUSION

ITFS licensees using the 2500-2690 MHz band are currently providing important distance learning and other educational services. These ITFS frequencies, used in conjunction with MDS frequencies in the same band, offer the best chance to bring high-speed broadband Internet access to areas and people that the Commission has identified as the least likely to receive such services if deployment is left to market forces alone. The value of the educational

⁹ As the Commission notes, “it is not Commission policy to set aside a certain amount of spectrum restricted to a given technology - such as 3G. Instead, we intend to identify a flexible allocation for the provision of advanced wireless services” NPRM at para. 27. “We believe that reserving spectrum in the United States exclusively for 3G mobile is not the best approach and that the determination of the best use of these bands should be left to market forces.” NPRM at para. 33.

¹⁰ *See e.g.*, “Only Fakirs Need Apply,” *The Economist*, February 1, 2001 (printed from www.Economist.com) (“As another contest for third-generation mobile telephone licenses in Europe fizzles, the industry faces a massive bout of retrenchment”).

¹¹ *See e.g.*, “Experts Voice Doubt Over 3G,” Reuters, November 29, 2000, (printed from www.wired.com/news/business); “Weak Reception, U.S. Lagging Behind in Wireless, And That May be Just as Well,” *New York Times*, January 29, 2001, page C1.

services that ITFS licensees provide and the potential for helping to bridge the digital divide are not easily quantifiable in a market sense, nor are market forces likely to provide for their operation. Applying the equitable principles the Commission recognized in its *Policy Statement*, the Commission should refrain from taking any action that would reallocate any part of the 2500-2690 MHz band, whether on a shared or segmented basis, for 3G.

Respectfully submitted,

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