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In the Matter of	)	
	)	
Amendment of the Commission's	)	GEN Docket No. 90-314
Rules to Establish New	)	
Personal Communications	)	RM-7140, RM-7175, RM-7618
Services	)	

**UTAM PLAN FOR FINANCING  
AND MANAGING 2 GHZ MICROWAVE RELOCATION**

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## **EXECUTIVE SUMMARY**

The FCC has allocated 20 MHz of spectrum at 1910-1930 MHz for unlicensed PCS systems and devices. These new telecommunications offerings hold the promise of important benefits for our economy, educational institutions, health care systems, businesses and individual consumers. To achieve this vision, the manufacturers of new wireless equipment and networks must assume the multi-million dollar task of relocating several hundred microwave links currently operating in the allocated spectrum and to protect those links from interference until the entire band is available for unrestricted deployment of unlicensed PCS.

The FCC designated UTAM, Inc. to develop a plan for funding and managing the relocation of microwave links from the unlicensed PCS spectrum. As a result of intensive efforts by its members, UTAM's voting members are pleased to present a consensus blueprint for fulfilling these duties. As detailed below, the Plan was unanimously approved by the UTAM Board after many months of work and contributions from all its members. UTAM believes that the proposed approach affords a sound and expeditious path to deploying all forms of unlicensed PCS consistent with protecting the legitimate interests of microwave licensees.

**Funding the Microwave Relocation.** UTAM estimates that approximately \$67 million will be required from unlicensed

PCS manufacturers to fund the relocation of microwave links operating in the unlicensed PCS spectrum as well as a number of potentially affected links in adjacent licensed PCS spectrum. These relocation costs will be primarily financed through a clearing fee charge of \$20 on each intentional radiator requiring a Part 15.311 FCC label. Manufacturers will pay this fee through arrangements with UTAM to purchase labels that must be placed upon their equipment. Other funding sources include voluntary "kickstart" funds of several million dollars from several UTAM members.

With these funding sources, demand studies conducted for UTAM show that all of the microwave links in the unlicensed PCS spectrum can be relocated in six to twelve years. This schedule is based upon funding considerations consistent with the realities of the FCC's rules for public safety links, which comprise roughly one-fourth of the links in the unlicensed band. Full deployment cannot occur for seven years if a public safety licensee avails itself of its full relocation rights.

**Managing the Microwave Relocation.** UTAM will begin the band clearing process by first focusing upon the relocation of microwave links in the center of the unlicensed PCS allocation and then moving outward to the edges of the allocation. Accordingly, band clearing efforts will start at 1920 MHz, which is the dividing line between the allocation for isochronous devices (1910-1920 MHz) and asynchronous

devices (1920-1930 MHz). A segment self-financing approach will be pursued under which clearing fees from isochronous devices will be used for clearing the isochronous allocation and clearing fees from asynchronous devices will be used for clearing the asynchronous allocation. UTAM will also establish its priorities based upon clearing the largest business population per dollar expended. This process will promote the fastest and most equitable clearing of the spectrum.

**Coordination of Unlicensed PCS Prior to Complete Band Clearing.** Under the FCC's Rules, unlicensed PCS can be deployed prior to complete band clearing so long as no harmful interference is caused to incumbent microwave operations. This necessitates (a) systems for verifying the location of an unlicensed PCS system or device to confirm that no interference will occur; and, (b) mechanisms to ensure that an unlicensed PCS system or device will be disabled if someone attempts to relocate the system or device from its verified location. The UTAM Plan sets forth detailed location verification procedures as well as a disablement test suite to ensure compliance with these obligations. In addition, UTAM has conducted an interference feasibility study of the country which shows that limited deployment of coordinatable systems and devices is probable in some areas subject to aggregate power levels and that

deployment in other parts of the country cannot occur without site specific frequency coordination.

**Earliest Possible Deployment of Nomadic Systems or Devices.** The Commission has required UTAM to devote attention to ensuring the fastest practicable deployment of nomadic systems and devices, particularly data systems and devices. Nomadic systems or devices are those that cannot be deployed consistent with the location verification and disablement requirements. To fulfill this responsibility, UTAM's band clearing approach of focusing on the center of the 1910-1930 MHz allocation could offer a possible means of permitting early nomadic deployment by clearing segments of the isochronous and asynchronous frequencies across the entire nation. UTAM is exploring possibilities for nomadic deployment prior to complete clearing of 1910-1930 MHz on these limited segments in both the isochronous and asynchronous allocations.

**Resolution of Disputes.** UTAM has committed to adhere to the requirements of the FCC's Rules regarding microwave relocation and the coordination of unlicensed PCS equipment. Where disputes over UTAM's obligations arise, UTAM will pursue good faith private negotiations and alternative dispute resolution procedures to the greatest extent possible. UTAM will also use its best efforts to assist parties in addressing any interference complaints. Disputes

that cannot be resolved will be brought to the Commission's attention for appropriate action.

**Conclusion.** UTAM believes that its Plan will achieve the Commission's goals for unlicensed PCS. The Plan is fair to all interested parties while permitting the prompt deployment of unlicensed PCS products, including nomadic devices. Accordingly, UTAM requests that the Commission expeditiously approve the Plan to allow the deployment of important new unlicensed PCS systems and devices.

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**UTAM PLAN FOR FINANCING  
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UTAM, Inc., pursuant to the Commission's Second Report and Order and Memorandum Opinion and Order in the above-captioned docket,<sup>1</sup> hereby submits its plan for financing and managing the relocation of incumbent microwave systems from the unlicensed PCS spectrum. These consensus proposals, which were adopted by unanimous vote of UTAM's Board of Trustees, represent a responsible and practicable approach to resolving the unique problems associated with deployment of unlicensed PCS. Because deployment of unlicensed PCS cannot occur until its plan is approved, UTAM urges that public comment and agency review be conducted on an expedited basis.

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<sup>1</sup> Amendment of the Commission's Rules to Establish New Personal Communications Services, 8 FCC Rcd 7700 (1993) (hereinafter "Second Report and Order"), recon., FCC 94-144 (June 13, 1994) (hereinafter "Memorandum Opinion and Order").

**I. OVERVIEW**

Unlicensed Personal Communications Services will make up an important part of the PCS offerings which are becoming available to the American public. Studies have shown that there is great demand for these low power and highly portable mobile devices and systems. In addition, unlicensed PCS will provide significant public benefits by improving the nation's telecommunications infrastructure, affording new capabilities to consumers, expanding the communications tools available to particular sectors, such as educators and health care professionals, increasing business productivity, creating employment opportunities, and ensuring U.S. competitiveness in the global marketplace.

UTAM, Inc. was created to solve the unique problems facing the unlicensed PCS industry. In order to deploy unlicensed devices and systems which are by nature easily portable, microwave licensees currently operating in the Emerging Technologies Spectrum must be relocated to other frequencies because of the potential for interference to their microwave operations from unlicensed devices. However, as the spectrum is unlicensed, no one manufacturer has an incentive to relocate the microwave links because all manufacturers have equal rights to the cleared spectrum.<sup>2</sup>

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<sup>2</sup> As used hereinafter, "cleared spectrum" means spectrum which is available for unrestricted unlicensed PCS deployment because all in-band and out-of-band microwave  
(continued...)

In order to equitably collect the funds needed to relocate the microwave users and manage the relocation process, industry members proposed that UTAM act under FCC authority on behalf of the entire industry.

In its PCS orders, the FCC allocated 20 MHz of spectrum between 1910 and 1930 MHz for unlicensed devices, with 1920-1930 MHz designated for isochronous applications and 1910-1920 MHz for asynchronous applications. The Commission also adopted the manufacturer's recommendations and named UTAM the frequency coordinator for the unlicensed PCS spectrum, conditioned on its submission of a plan for the financing and clearing of the unlicensed spectrum. Among these responsibilities is ensuring the rapid deployment of nomadic devices, particularly nomadic data devices.

UTAM submits that its Plan is a reasonable and responsible attempt to implement the FCC's mandate to make unlicensed PCS a reality: UTAM's proposals constitute the least intrusive set of deployment requirements consistent with both (1) protecting incumbent microwave systems from interference, and (2) generating sufficient revenue from early coordinatable PCS deployment to expedite the availability of nomadic PCS devices and the benefits of unlicensed PCS generally. As such, this filing represents an

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<sup>2</sup>(...continued)  
links potentially affected by interference have been relocated or otherwise protected.

appropriate balancing of the Commission's PCS rules and policies.

UTAM's financing plan set forth in Section IV below addresses the costs of fulfilling UTAM's obligations under the FCC's orders. UTAM has identified four general categories of costs: microwave relocation, frequency coordination, general administrative expenses, and reimbursement of advance clearing fee payments with interest. Microwave relocation costs include the provision of comparable facilities and associated expenses for both in-band and adjacent channel systems and are expected to total approximately \$67 million. Frequency coordination costs will include interference analyses and fees for site specific coordinations for individual deployments. General administrative costs, which cover employee and office expenses, other overhead, and legal and consulting fees are likely to amount to about \$1 million in the first year and approximately \$2 million annually for subsequent years.

UTAM will primarily finance these costs through clearing fees imposed on each unlicensed PCS system and device. After extensive research and debate, UTAM determined that the most equitable and practical fee structure is a fixed charge on each device which carries an FCC Part 15.311 label. This fee structure has the advantage of being easy to administer. The clearing fees, in addition to the revenues collected for frequency coordination, will fund UTAM's relocations and

administrative operations. Moreover, to initiate the band clearing process, UTAM expects to receive kick start funds from several companies. Credits and interest on these advance payments can be recovered at the rate of 15% of UTAM's annual clearing fee revenues during the first four years and 30% thereafter.

To fulfill the responsibilities placed on it by the FCC's PCS orders, UTAM has evaluated a number of alternative methodologies for implementation of its band clearing plan. In response to the suggestions of industry participants, UTAM has considered: segment self-financing, where the revenues earned from clearing fees in each band segment would finance the clearing of microwave links only from that segment; arbitrary geographic clearing; clearing based on the increase in potential customers (population) per dollar expended in relocation costs; revenues earned per dollar of relocation costs; clearing by incumbent loading in 10 MHz block segments; and clearing market areas by population.

As explained below, UTAM has combined two of these approaches: segment self-financing and clearing market areas based on the increase in potential business customers per dollar expended in relocation costs. In addition, UTAM will concentrate its resources to clear the spectrum between 1915-1925 MHz first in order to create an area of clear spectrum for deployment of products. This clearing strategy will be fair to all products and manufacturers, yield the most

revenue, and allow for the fastest overall clearing of the unlicensed band.

In order to fulfill its obligation to expedite the deployment of nomadic Data-PCS devices, UTAM has devoted significant resources to evaluating the rapidity by which spectrum blocks can be cleared as well as other mechanisms to render at least some cleared frequencies available for nomadic deployment. UTAM recognizes that the ET rules permit a public safety licensee to extend the negotiation and relocation process for up to seven years, including five years for negotiations, one year for the construction of new facilities, and one additional year for proving out the new facilities. However, UTAM has determined that, by starting the clearing process at 1920 MHz and working outward in the band, it may be possible to free up a block of frequencies for nomadic deployment prior to full band clearing.

UTAM is now studying whether there are mechanisms that can be employed to allow nomadic deployment in a portion of the spectrum at such time as UTAM is successful in clearing 1915-1925 MHz. Nonetheless, the factor most crucial to the deployment of both voice and data nomadic PCS products will necessarily be the sale of coordinatable devices in numbers that are adequate to ensure a sufficiently large revenue stream to finance the expeditious relocation of incumbent microwave licensees.

To maximize both the number of deployable coordinatable devices and the speed with which they can be deployed, UTAM has developed a Disablement Test Suite to aid manufacturers in complying with the interference avoidance requirements imposed by the FCC. In addition, UTAM has commissioned an established coordinator to develop interference assessment analyses depicting the interference environment in all areas of the United States. Further refinements to these analyses will designate each county, MSA, or other geographic area as one of two zones, Zone 1 or Zone 2. In Zone 1 areas, limited deployment of coordinatable devices will be permitted with monitoring of the number of devices deployed so as not to exceed authorized aggregate power levels. Many of these areas will be rural or at least non-urban because there are fewer microwave systems in those environments.

In Zone 2 areas, restricted deployment will be permitted only after site specific coordination. In all of its relocation and coordination activities, UTAM will follow TSB-10-F (Bulletin 10-F) and established PCN procedures. UTAM is also participating in ongoing work with TIA's TR.14.11 Committee and with NSMA.

If any disputes arise as a result of relocation or frequency coordination issues, UTAM, through the use of negotiations and alternative dispute resolution procedures, will make every effort to resolve them. The FCC would serve as a forum of last resort if such efforts are unsuccessful.

When the unlicensed spectrum is cleared or "there is little risk of interference to the remaining incumbents"<sup>3</sup> and all costs of the relocations are recovered, UTAM's goals will have been achieved. A frequency coordinator will no longer be necessary because unlicensed PCS devices and systems will then be permitted to be deployed freely. At this point, UTAM's certificate of incorporation contemplates that the corporation will be dissolved, with any remaining assets distributed according to a plan approved by UTAM's members.

## II. IMPORTANCE OF UNLICENSED PCS

### A. Unlicensed PCS Will Provide Substantial Public Benefits

In its Personal Communications Services ("PCS")<sup>4</sup> proceedings, GEN Docket No. 90-314, the Federal Communications Commission ("FCC" or "Commission") has allocated spectrum for new unlicensed Personal Communications Services.<sup>5</sup> In this manner, the Commission has sought to "foster the rapid introduction of new PCS technologies by permitting manufacturers to experiment with, and directly market to the general public, products using new designs and technologies, without the delays associated with the licensing of a radio

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<sup>3</sup> Second Report and Order, 8 FCC Rcd at 7739.

<sup>4</sup> A glossary of relevant terms is appended hereto as Attachment G.

<sup>5</sup> Memorandum Opinion and Order, ¶¶ 207-08.

service."<sup>6</sup> UTAM's efforts have been directed to the realization of this vision.

Unlicensed PCS encompasses a diverse array of highly portable and mobile wireless data, voice and messaging devices and systems that operate at low power. Demand for these products -- which include personal digital assistants, laptop computers, wireless PBXs, wireless LANs, improved cordless phones, portable facsimile machines, and a variety of other in-building or "on site" business and consumer-oriented applications -- is already substantial. Indeed, the demand is growing rapidly as consumers increasingly look to new unlicensed technologies to increase their quality of life by providing sophisticated yet affordable wireless communications products and services suitable for use in a mobile and transient environment.

Unlike licensed PCS, which generally focuses on wide area service, unlicensed PCS fills a void for "on-site" or campus wide service. Portable units at low power may talk directly to other portable units or through a site-located system. Nomadic devices, products which can be used anywhere when not connected to a central access point, will also enable new applications. With the need for licensing and attendant delay removed, prospective customers will be able

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<sup>6</sup> Amendment of the Commission's Rules to Establish New Personal Communications Services, 7 FCC Rcd 5676, 5693 (1992) (Notice of Proposed Rule Making and tentative decision) (hereinafter "PCS NPRM").

to purchase equipment with ease and convenience. As a result, these flexible and innovative offerings will meet many of the existing and future telecommunications needs of both consumers and businesses.

Unlicensed PCS offers tremendous additional public benefits as well. Deployment of these new technologies provides opportunities for United States manufacturers to improve the nation's telecommunications infrastructure, offering expanded networks and services to better meet the nation's communications needs. Moreover, implementation of unlicensed PCS will foster American competitiveness abroad and promote continued American leadership in global telecommunications markets. This role will be particularly significant as other countries similarly move to authorize deployment of these systems and devices.

Unlicensed PCS will bring the benefits of untethered access to millions of telecommunications customers in office and other workplace environments, increasing the efficiency of American business. It will also provide flexible, cost-effective mechanisms to supplement and extend NII/Information Superhighway initiatives for numerous business, education, and health care applications. Business applications include bringing affordable wireless communications portability to offices and factories. The potential educational and health care applications of unlicensed PCS are also enormous. Indeed, a demand study performed by BIS Strategic Decisions

for UTAM found a large demand for unlicensed PCS products in the government and health care sectors of the economy.

In the education area, unlicensed PCS devices and systems will improve school administration through their use in school attendance, course registration, distribution of scheduling information, and test administration with immediate grading feedback. These devices will also facilitate student learning in several ways. First, students will have on-line wireless access to library collections, databases, and information sources, such as the Internet. This will be especially helpful to students in schools with limited resources, giving students in those schools access to the same materials enjoyed by students in better equipped schools through one wireless device.

Second, students will be able to collaborate on projects with their classmates using either handheld or desktop devices. Using similar devices, teachers will be able to monitor students' work as they complete assignments during class and give specialized instruction to certain students without leaving their desks, which can be important in large classes. In addition, unlicensed PCS products will enhance personal security, which is an area of concern for students and parents everywhere, by improving the monitoring of school facilities and assisting both students and teachers in responding more quickly to emergency situations.

American health care will also benefit from unlicensed PCS devices and systems. Patient monitoring within a health care facility is ideally suited for unlicensed PCS devices. Although there is not at this time sufficient spectrum available to allow the simultaneous monitoring of all patients in a sizable medical facility, monitoring of vital functions while the patient is transported through the hospital would be possible. Doctors and nurses will be able to access lab reports and medical databases from anywhere in the facility, including from the patient's bedside.

Because unlicensed devices will be able to carry images, health care workers will be able to receive complex diagnostic and other information, as well as communicate with specialists working in other facilities. This will be of particular benefit to hospitals in rural areas with limited access to specialized medical care. As in education, the administration of medical facilities will be improved significantly through the use of unlicensed devices and systems for improved messaging, admitting, billing, and security procedures.

Because of the number of uses anticipated for these products, demand is expected to be very high. Unlicensed PCS deployment will strengthen the American economy by increasing productivity and creating a variety of new jobs and opportunities in the telecommunications industry in both the manufacturing and management sectors.

**B. Unique Problems Facing Unlicensed PCS Deployment**

Before the deployment of unlicensed PCS can begin, several complex issues must be resolved. The unlicensed PCS spectrum is currently home to hundreds of licensed 2 GHz microwave facilities. In order to deploy the full range of PCS products, these licensees must be relocated to other bands which have been rechannelized by the Commission for microwave operations or to alternative facilities.<sup>7</sup> In the unlicensed band, all incumbent microwave licensees, except for public safety licensees, will be afforded a one year mandatory negotiation period that will commence with a written request for negotiation with a specific microwave licensee by UTAM.<sup>8</sup> Public safety systems will have a four year voluntary negotiation period followed by one year mandatory relocation period.<sup>9</sup> If an agreement is not reached by the end of the mandatory negotiation period, UTAM may ask the FCC to have the licensees involuntarily relocated and such licensees will not be eligible for tax certificates.<sup>10</sup>

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<sup>7</sup> Redevelopment of Spectrum to Encourage Innovation in the Use of New Telecommunications Technologies, 8 FCC Rcd 6495, 6500 (1993) (Second Report and Order) (hereinafter "Spectrum Redevelopment Order").

<sup>8</sup> Id.

<sup>9</sup> Public Safety licensees were previously exempt from relocation. Redevelopment of Spectrum to Encourage Innovation in the Use of new Telecommunications Technologies, 9 FCC Rcd 1943, (1947-48) (1994) (Memorandum Opinion and Order) (hereinafter Spectrum Redevelopment MO&O).

<sup>10</sup> Id. at 1949

Each relocated microwave licensee is entitled to "comparable alternative facilities" to replace its 2 GHz links and the unlicensed PCS providers intending to use the vacated frequencies must pay all costs associated with the relocation.<sup>11</sup> As discussed in detail below, these costs will be very substantial, in the neighborhood of \$67 million.

In the licensed band, the costs of relocating each microwave system will be absorbed by the PCS licensee who obtains the exclusive right to use that system's frequency in its area of operation. But, because unlicensed PCS spectrum "belongs" to all prospective providers and users of unlicensed PCS, no one company can or would take overall responsibility for assuming the band clearing tasks. Thus, a centralized effort to raise the necessary funding and manage the relocation process is clearly required.

While band clearing will undoubtedly be a time consuming process, demand for unlicensed PCS exists now. To meet this demand, and to provide a revenue stream to fund the clearing process, the industry proposed permitting limited, coordinated deployment of qualifying unlicensed PCS systems and devices in a manner that will avoid interference to incumbent microwave systems. Again, a central entity to administer such coordination is necessary.

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<sup>11</sup> Redevelopment of Spectrum to Encourage Innovation in the use of New Telecommunications Technologies 8 FCC Rcd 6589, 6603-08 (1993) (Third Report and Order) (hereinafter "Third Report and Order") (1993).

In response to these unique challenges, the Unlicensed PCS Ad Hoc Committee for 2 GHz Microwave Transition and Management ("the Committee") was formed in January 1993 to facilitate the transition of the unlicensed spectrum from use by microwave operators to unlicensed PCS. The Committee invited and received broad participation from the manufacturing industry and numerous other parties interested in the relocation of microwave operators and the deployment of unlicensed PCS.<sup>12</sup> It further established the goal of preparing a comprehensive proposal for addressing the problems facing unlicensed PCS deployment and presenting it to regulators for consideration.

The Committee presented its report and recommendations to the Commission on May 14, 1993, setting forth a number of steps for making unlicensed PCS a reality.<sup>13</sup> First, the Committee recommended establishment of an open industry entity to assume relocation and spectrum management functions pursuant to Section 332 of the Communications Act. Under the Commission's equipment authorization rules, all unlicensed

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<sup>12</sup> Participants in the Committee included, among others: AT&T/NCR, Alcatel, Ericsson, IBM, Intel, LOCATE, Metrocall, Motorola, Northern Telecom, Omnipoint, North American Telecommunications Association, Personal Communications Industry Association, ROLM, Rose Communications, SpectraLink, Telesciences, and U S West.

<sup>13</sup> FCC Report and Recommendations of the Unlicensed PCS Ad Hoc Committee for 2 GHz Microwave Transition and Management, GEN Docket 90-314 (May 14, 1993) (hereinafter "Recommendation of the Unlicensed PCS Ad Hoc Committee").

device manufacturers would be required to contribute equitably to the entity's cost compensation fund. The Committee further proposed that the Commission permit the early deployment of coordinatable unlicensed PCS devices and systems on an entity-managed, spectrum sharing basis prior to complete band clearing. This would provide required revenue streams to support band clearing. Finally, the Committee included proposed rules to govern the equipment authorization process.

C. The Second Report and Order and the Memorandum Opinion and Order

In its Second Report and Order and Memorandum Opinion and Order, the FCC adopted many of the Committee's recommendations for promoting unlicensed PCS deployment. The Commission allocated 20 MHz of spectrum from 1910-1930 MHz for unlicensed products. Asynchronous products were allocated the 1910-1920 MHz band and isochronous equipment was assigned 1920-1930 MHz.

UTAM, Inc., the corporate successor to the Committee,<sup>14</sup> was named the frequency coordinator for the transition of the 1910-1930 MHz band from fixed microwave service to unlicensed PCS, conditioned upon submission and Commission approval, after public comment, of a plan for financing and managing

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<sup>14</sup> See Section III, infra.