

Further, the FCC is not correct in its statement that at the proposed power levels PCS users will experience interference prior to 2 GHz microwave users. This statement ignores the fact that the user with the more complex modulation technique often will be first to experience interference. For example, if a fixed microwave licensee is 64 QAM and the unlicensed PCS device is 4 QAM, the microwave licensee, using the more complex modulation scheme, will be the first to encounter interference.

UTC urges the Commission to adopt the proposed requirement of Section 15.253(d) that unlicensed PCS devices be required to monitor a frequency prior to transmitting. UTC objects, however, to the extent of the FCC's proposed exemption from the monitoring requirement for systems operating in the 1910-1920 MHz band. The FCC has not provided any explanation for this proposal, and in view of the wider bandwidth and higher operating powers proposed for systems operating in the 1910-1920 MHz band, monitoring is even more essential. UTC also recommends that the FCC require unlicensed PCS devices to use adaptive power control as a method of reducing interference to microwave systems. UTC therefore recommends adoption of Section 15.253(d)(4) as proposed.

2. **The FCC Must Mandate A Consortium of PCS Manufacturers/Vendors To Pay Relocation Costs**

As described above, a fundamental concern of 2 GHz microwave users with the FCC's proposal to allow unlicensed PCS within the 2 GHz band is the inability of existing microwave users to seek reimbursement for relocation from this part of the band. UTC believes that the only method by which existing users can be assured of reimbursement of relocation expenses is if all manufacturers/vendors of unlicensed PCS equipment were required to join a consortium that guaranteed the costs of 2 GHz relocation prior to grant of FCC equipment certification. As the 1910-1930 MHz band is relatively lightly loaded it should be feasible for such a consortium to determine the total cost of clearing the entire band.^{5/} Moreover, these costs could be substantially reduced if the FCC allowed the existing microwave users in this band to relocate on a co-primary basis to another portion of the 2 GHz band.^{6/}UTC also believes that

^{5/} FCC licensing records indicate there are fewer than 500 frequency paths licensed in the 1910-1930 MHz band. Using the FCC staff's low-end estimate of \$125,000 per station, the total cost to unlicensed PCS vendors to clear the 1910-1930 MHz band would be about \$63 million. With an estimated 60 million PCS users within 10 years (NPRM, para. 26), costs to relocate microwave users from the 1910-1930 MHz band would add only about \$1 to the cost of each PCS device.

^{6/} In its R&O/TNPRM in ET Docket No. 92-9, the FCC specifically suggested as part of its transition plan that existing microwave users of the 2 GHz band allocated for unlicensed PCS be able to relocate to other portions of the 2 GHz band.

relocation cannot be limited to urban areas, since unlicensed PCS devices could be deployed anywhere at any time.

If unlicensed PCS is allowed into the 1910-1930 MHz portion of the 2 GHz band when microwave licensees still occupy that portion of the band, an industry committee is needed to establish standards for unlicensed PCS. As with the formation of interference standards for licensed PCS, there should be a single standard-setting committee for unlicensed PCS and participation in that committee must be balanced between users (both PCS and microwave) and manufacturers. UTC therefore suggests that TIA is the only appropriate standard-setting body.

As an alternative to the formation of an industry standard-setting committee, UTC suggests that the FCC adopt standards for unlicensed PCS through a negotiated rulemaking process involving representatives of the major parties to this proceeding.

**G. More Detailed 2 GHz PCS-to-PCS
Interference Standards Are Needed**

The Commission desires to provide PCS operators with as much flexibility as possible in designing their systems, and therefore proposes that PCS systems be designed not to exceed

a signal level of 47 dBu at the licensees' service area.
This proposal is acceptable.

UTC generally agrees with the Commission that PCS licensees should attempt to work out interference problems among themselves rather than resorting to Commission action. However, a formal mechanism administered or approved by the FCC will be required to resolve disputes among PCS licensees.

III. PCS SERVICE STRUCTURE MUST PROVIDE NON-COMMERCIAL OPTIONS

A. Need For PCS Service

UTC concurs that licensing of PCS could prove beneficial to many different types of service users. Given the broad nature of the PCS concept, some type of PCS application is likely to be pertinent to an almost endless list of individuals and industries. The utility industry, among others, has numerous uses for PCS technology, with additional uses constantly developing. As evidenced by UTC's research into the near-term future needs of its members for mobile communications capacity, large numbers of utilities are counting on implementation of advanced mobile data systems and land mobile systems, allowing person-to-person communications, to become the focus of their critically important telecommunications systems. A PCS allocation would be uniquely suited to assist utilities in developing these

necessary communications systems. Other utility uses for PCS frequencies include demand side management and distribution automation, which continue to have more and more significance to both utilities and the public. In addition, other important utility uses include remote meter reading and automated mapping/facilities management.

B. The PCS Definition Should Be Flexible To Include All Wireless Access Services

The FCC proposes to define PCS as mobile or portable radio communications services which could provide services to individuals and business, and could be integrated with a variety of competing networks. UTC concurs with the FCC's proposed definition as it includes the flexibility to accommodate all forms of wireless services. Under the FCC's proposed definition, all forms of mobile use would be permitted, as well as ancillary fixed operations. The NPRM also suggests that even some primarily "fixed" operations, such as "wireless access" technologies for the local telephone loop, would be permissible uses of PCS. UTC concurs with this expansive definition and urges the Commission to retain this flexibility in the final rules.

C. The FCC Should Allocate 110 To 140 MHz of Spectrum For PCS

The FCC notes that ET Docket No. 92-9 reserves 220 MHz of 2 GHz spectrum for emerging technologies. The NPRM

proposes to allocate 110 MHz of 2 GHz spectrum and 3 MHz of 900 MHz spectrum for PCS services. UTC requests that the FCC allocate between 110 and 140 MHz of the emerging technology spectrum for PCS use. The specific spectrum allocation structure proposed by UTC would provide an allocation of 20 MHz for private, internal, non-commercial uses; 10 MHz available for use by local exchange carriers and other eligibles, 20 MHz for unlicensed uses; and between 60 and 90 MHz for other licensees, depending on the number of providers and the size of spectrum blocks to be licensed.

1. 2 GHz Allocation

(a) **The FCC Must Establish A 20 MHz Spectrum Block For Non-Commercial Use**

Between 90 and 120 MHz of spectrum should be allocated for licensed PCS use. Twenty megahertz (20 MHz) of this licensed PCS spectrum should be reserved for non-commercial, internal use by traditional Private Radio Service eligibles. Utilities and other users need spectrum for advanced internal communications systems. These requirements must be supported apart from the commercial uses that the FCC has contemplated exclusively thus far in its PCS rulemaking. In order to promote the FCC's stated goals for PCS, particularly diversity of services available to the public,^{1/} the

^{1/} NPRM, at para. 6.

Commission should reserve a significant amount of spectrum for non-commercial PCS systems.

Inherent in the creation of the private radio services is the FCC's recognition that the nature of spectrum use by internal systems is important in and of itself, and most often cannot be accommodated by obtaining service from commercial service providers. Further, many private radio users are unable to compete with commercial entities for frequencies. Utilities use telecommunications systems to relay critical information needed to control the safe and efficient delivery of essential public services, potentially affecting every person in every geographic area in the nation. Utility control of these facilities is essential to ensure the reliability of the utility communications. Commercial facilities are not suitable alternatives for utility applications of new technology. Further, as the FCC previously recognized, utilities face unique budgetary, engineering and regulatory problems which delay their ability to act immediately to implement necessary telecommunications systems.^{8/} Thus, these considerations may unfairly tip the balance against utilities in terms of their ability to compete with commercial entities for acquisition and development of new technology spectrum.

^{8/} Notice of Proposed Rulemaking in Docket No. 87-5, 2 FCC Rcd 553 (1987), para. 47.

Allocation of a non-commercial block will ensure licensing of more service providers than licensing of only commercial systems, regardless of the number of commercial licenses the FCC eventually determines to authorize in each geographic area. Some non-commercial entities may need less spectrum than commercial ventures, so UTC suggests non-commercial users be permitted to request the amount of spectrum they foresee will be required, up to an established cap. Using this plan would allow the optimum number of non-commercial applicants to be licensed in a given block of spectrum.

Non-commercial entities would use PCS frequencies primarily for their own internal purposes. Thus, licensing a non-commercial block of spectrum would increase the number of service providers or options available to the public. A dual commercial/non-commercial PCS licensing scheme would allow the introduction of additional service options into the PCS marketplace which could develop more diverse service offerings and technology applications. Traditional, commercial PCS providers are likely to focus on how to maximize economies of scale and to produce profitable services to meet the common requirements of the largest number of customers.^{2/} Non-commercial users will be able to

^{2/} Report and Order in PR Docket No. 89-552, 6 FCC Rcd 2356, 2361 (1992).

focus on development of innovative uses of technology to meet their own highly specialized requirements.

The need for spectrum allocations for both public and private radio uses was identified by the FCC when it reallocated 800/900 MHz UHF-TV broadcasting spectrum and divided it for use by both private trunked radio operations and common carrier cellular radio.^{10/} More recently, the FCC recognized the benefits of encouraging maximum experimentation and innovation by non-commercial systems when it allocated spectrum for another technological advancement, narrowband 220-222 MHz operations, reinforcing the need for both types of spectrum allocations.^{11/}

^{10/} See generally First Report and Order and Second Notice of Inquiry, Docket No. 18262, 35 Fed. Reg. 8644 (June 4, 1970); Second Report and Order, 46 FCC 2d 752 (1974); reconsidered, Memorandum Opinion and Order, 51 FCC 2d 945 (1975); Order (on further reconsideration), FCC 78-854 (1978); aff'd sub nom. NARUC v. FCC, 525 F.2d 630 (D.C. Cir. 1976), cert. denied, 425 U.S. 992 (1976).

^{11/} In its Report and Order in PR Docket No. 89-552, outlining service rules for the use of the 220-222 MHz band, the FCC stated:

Commercial/non-commercial set asides will promote the widest variety of advanced narrowband development. Operators of commercial systems are best situated to develop and implement narrowband systems quickly, stimulated by profit motive. On the other hand, operators of large non-commercial systems are capable of producing technological advancements that carriers will not pursue because of a concern regarding market size or prior investments. The widely-ranging needs of both commercial and non-commercial licensees will encourage experimentation and innovation.

(continued...)

Unlike the commercial allocation, the FCC should not divide the non-commercial allocation into discrete service areas (e.g., Major Trading Areas or LATAs). Instead, non-commercial users should be permitted to request licensing for the specific areas in which they require spectrum. If mutually exclusive applications are filed, the FCC should hold lotteries to license the frequencies.

**(b) At Least Three Commercial Providers
Should Be Licensed**

The FCC should license at least three commercial providers in addition to non-commercial systems licensed on a separate non-commercial block of frequencies.

(c) Size of Spectrum Blocks

UTC recommends authorization of three commercial service providers, each authorized to use up to 30 MHz of spectrum.^{12/} Spectrum blocks for licensees in the non-commercial allocation should be flexible to meet the applicant's demonstrated needs.

^{11/}(...continued)

6 FCC Rcd 2356, 2361 (1992).

^{12/} Based upon the disappointing results of PCN America's experiments using wideband CDMA overlaid on existing microwave systems, UTC urges the Commission not to license wideband CDMA PCS systems.

As an alternative to three commercial allocations of up to 30 MHz each, the FCC could authorize a larger number of licensees with varying blocks of spectrum, subject to appropriate coordination with microwave channelization schemes, such as two 30 MHz licenses, two 10 MHz licenses and two licenses of five MHz each. This method would allow a greater number of licensed PCS service providers, thereby increasing competition, and could encourage the smaller and possibly more innovative service providers to apply who might otherwise be discouraged from competing with the expected industry heavyweights for PCS licenses. If this method is adopted, the FCC should consider limiting the amount of spectrum or number of spectrum blocks per geographic area for which a single entity may apply, or for which it may be licensed.

(d) Block Allocations

If the FCC authorizes three licensees to operate on 30 MHz of spectrum each, UTC supports the proposed frequency block pairs outlined in the NPRM. Should the FCC authorize a division of one 30 MHz spectrum block into four smaller spectrum blocks as suggested above, one of the block allocations would require modification. Other adjustments to spectrum block sizes would require similar adjustments to the block allocations.

UTC agrees that PCS licensees should be permitted to use flexible channelization of the assigned frequency blocks, so as not to hamper use of a particular technology or service.

(e) Unlicensed Devices

UTC acknowledges that the availability of unlicensed spectrum for unlicensed PCS use would provide opportunities for virtually unlimited use of varied technologies by numerous entities. However, prior to any unlicensed spectrum allocation, the FCC must resolve the issue of protecting existing microwave users from interference in unlicensed spectrum. This issue was discussed in Section II, above. Thus, while UTC supports the concept of unlicensed PCS, UTC urges the Commission to proceed cautiously in allocating shared spectrum for unlicensed PCS devices.

2. Negotiations Between PCS Licensees And Microwave Users Must Be Consistent With "Transition Plan" of ET Docket No. 92-9

The FCC adopted the main points of UTC's proposed transition framework in its September 17, 1992 Report and Order (R&O) and Third Notice of Proposed Rulemaking (Third Notice) in ET Docket 92-9, the "Spectrum Reserve" proceeding. UTC continues to support the concepts outlined in its comments and reply comments in Docket 92-9 and will provide

further comment on the transition framework in response to the FCC's Third Notice in that docket.^{13/}

3. The FCC Should Apportion A Non-Commercial 900 MHz Allocation

If the FCC allocates spectrum in the 900 MHz band for PCS, UTC requests the FCC apportion one MHz of the spectrum for non-commercial, internal use by traditional private radio eligibles. Just as utilities and other private radio users have need for private 2 GHz PCS systems, an allocation at 900 MHz would also assure that private users would have access to these new technologies without having to compete for spectrum with commercial entrepreneurs.

4. PCS Support Spectrum Is Unnecessary

UTC tentatively agrees that adequate spectrum already exists for PCS support services. If each licensee has up to 30 MHz of spectrum, PCS licensees should have sufficient spectrum for "support" operations within their primary frequency allocations. If it is decided that additional spectrum is needed for PCS support, UTC suggests the 37-38.6 GHz band, since it is already allocated for fixed operations.

^{13/} Since the Commission previously announced that the outcome of Docket 90-314 would be contingent on the outcome of ET Docket No. 92-9, and since the transition rules for existing 2 GHz microwave users are still under development in the context of Docket 92-9, the Commission should request comment on PCS transition rules, if at all, only after Docket 92-9 is concluded.

Allocation of higher bands would also be most consistent with the FCC's goals of encouraging development of higher microwave bands, and would seem well-suited to the very short path distances required for PCS cell site interconnect.

D. Licensing Issues

1. PCS Service Areas

(a) 2 GHz Service Areas

As indicated in Section (C)(1)(a), above, the FCC should not define specific service areas for the non-commercial PCS systems. The purpose of the non-commercial spectrum block is to allow additional users to employ PCS technologies under conditions which meet their needs, since commercial providers may not be willing or able to meet their specialized requirements. Thus, non-commercial licensees would require spectrum only in the areas needed to support their underlying business operations. Any predivision of non-commercial spectrum into service areas could result in an inefficient use of spectrum.

For the remaining commercial spectrum allocations, UTC recommends the FCC divide spectrum by LATAs. Division among Major Trading Areas would also be acceptable. Given the FCC's experience in licensing cellular, and the subsequent consolidation of licenses, UTC does not favor licensing on the basis of Basic Trading Areas. Although the FCC noted

that smaller service areas could encourage diversity of technical and service innovation, UTC notes that these goals could better be achieved by authorizing a non-commercial spectrum block and authorizing several smaller, five or ten MHz commercial licenses. This subdivision would allow more market entrants, who presumably would emphasize different aspects of PCS. Licensing only large blocks of spectrum for commercial use over large service territories virtually ensures that only the most profitable, and inexpensive to implement, technologies will be introduced into the marketplace.

UTC opposes licensing commercial spectrum on a nationwide basis, since this option would concentrate access to spectrum and services in a single licensee, skewing the competitive balance. In addition, licensing PCS spectrum on a nationwide basis could discourage the swift implementation of service since a single licensee would be responsible for implementing service across the entire nation, which would require large amounts of time, resources and coordination. Nationwide licensing would also tend to promote the development of PCS service only in the metropolitan areas. It would be more spectrum efficient to attempt to divide the task of service implementation among many licensees by authorizing only smaller service areas.

UTC requests the FCC to adopt identical service areas for each of the licenses granted. For example, if the FCC were to license three commercial providers on channel blocks of 30 MHz of spectrum each, the FCC should license each channel block on a per-LATA basis, instead of authorizing a nationwide license on channel block A, LATA licenses on channel block B, and licenses divided by Major Trading Areas on channel block C. Such an intermixture of service territories might create competitive anomalies. Rather than building competitive imbalances into the rules, the FCC should attempt to create an even playing field from the outset and let the market determine the mix of service and the size of operating areas.

(b) 900 MHz Service Areas

The 900 MHz spectrum should be allocated in the same manner as the FCC divides the 2 GHz spectrum, i.e., by LATAs or Major Trading Areas. Any non-commercial 900 MHz spectrum should not be predivided, as explained previously in the context of 2 GHz non-commercial spectrum.

2. Eligibility Requirements

(a) Incumbent Cellular Licensees Should Not Be Excluded From PCS Licensing

Permitting PCS licensing of incumbent cellular carriers would allow these carriers to make use of economies of scale,

arguably to the benefit of the consumer public. Although there is potential for anticompetitive behavior, UTC favors licensing of incumbent cellular carriers both within and outside of their existing service areas, since the benefits of cellular participation in their service areas may outweigh anticompetitive concerns.

(b) Local Exchange Carriers Should Have Access To A 10 MHz Block of PCS Spectrum

UTC would not be opposed to allowing local exchange carriers (LEC) to have access to up to 10 MHz of 2 GHz spectrum for PCS within their service areas, whether or not the LECs have cellular holdings. UTC would favor limiting LECs to a separate 10 MHz spectrum block, which would also be open for licensing to other non-LEC eligibles. UTC would not be opposed to LECs holding licenses in the 900 MHz PCS band, with safeguards.

(c) Limits on Holding Multiple Licenses

UTC supports the option of allowing the FCC to decide questions regarding license mergers on a case-by-case basis, perhaps providing guidelines or recommendations, instead of caps on total spectrum amounts or other limitations.

3. Term of License Should Be 10-Years

UTC concurs with the FCC's conclusion that a 10-year license term with a high renewal expectancy would be the best option for PCS licensing.

4. Lotteries Must Be Used To Select PCS Licensees

UTC supports use of lotteries to select licensees for both non-commercial and commercial PCS licenses. UTC does not support use of a "postcard lottery" described by the FCC, since this simplified lottery would invite the massive application speculation the FCC is trying to circumvent. UTC instead favors adoption of the FCC's second lottery option -- to require applicants to include complete financial and technical showings with every application, to limit applicants to those with sufficient financing, experience and interest. The FCC need only check the qualifications of winning applicants. UTC suggests the FCC conduct a second lottery if winning applicants fail to qualify upon review of financial and technical showings.

UTC cautions the FCC that, should the lottery licensing option be selected, interests of fairness would require the FCC to carefully establish the criteria necessary to make the financial and technical showings well in advance of the expected filing date, to enable the showings to be included with the applications. UTC suggests the FCC first conduct a

rulemaking proceeding on the appropriate showings and settle the inevitable challenges to its conclusions prior to accepting applications for PCS services. It is difficult to hold applicants to certifications as to qualifications when the qualifications change after the applications are filed.^{14/}

UTC also supports other measures suggested by the FCC to reduce the filing of large numbers of applications, such as relatively short filing windows, more stringent entry requirements, narrow eligibility requirements, submission of engineering documentation, a business plan or firm financial commitment letter, strict construction and operation requirements and resale restrictions. Again, UTC urges the FCC to analyze these issues fully prior to accepting applications for PCS frequencies.

With regard to lottery fees, UTC urges the FCC to adopt a reasonably high fee structure which discourages entities from applying if they are not serious applicants, but is not prohibitive for good faith applicants. UTC notes that if the FCC adopts a blanket licensing concept, licensing an entity for a large territory and as many sites as is necessary to fill it, the FCC should formulate a fee structure which

^{14/} See Memorandum Opinion and Order in PR Docket No. 89-552, 7 FCC Rcd 4489 (1992).

charges a fee for each site the licensee actually constructs under the blanket license.

5. Competitive Bidding Should Not Be Used

UTC opposes use of competitive bidding in any form for licensing of either the non-commercial PCS block or the commercial PCS frequencies. The FCC does not yet have the authority to use competitive bidding to license frequencies, and obtaining Congressional authority could be time consuming and delay implementation of PCS service. Use of competitive bidding also is highly prejudicial to entities other than those which are large organizations with vast resources. Among commercial entities, only those with the most money could afford PCS licenses. PCS licenses are a much sought-after commodity and would likely sell for inflated prices, particularly since the communications industry is inexperienced in the competitive bidding process. After funding the purchase of a license, only the largest and most powerful entities would be able to finance or obtain financing to construct a PCS system. Smaller entities would be discouraged from applying for licenses. Non-commercial entities, too, would be unable to compete with deep-pocket commercial entities for valuable spectrum. The use of competitive bidding would encourage only the existing cream of the telecommunications crop to apply for PCS licenses,

thereby defeating the possibility of developing a diversity of services and service providers on the PCS spectrum.

Any use of competitive bidding to license commercial PCS frequencies would further support the need for a non-commercial block of PCS spectrum, since development of non-commercial uses of the spectrum would be stifled by the inability of non-commercial entities to battle commercial entities for spectrum. As noted above, UTC favors use of lotteries to select licensees in the non-commercial spectrum block.

6. License Modifications Must Reflect Additional Base Stations

UTC urges the FCC to require licensees to modify all licenses to reflect all base station sites not initially authorized by the FCC. If PCS licensees are permitted to deploy base stations, or increase base station mobile loading without prior Commission authorization, there will be no mechanism available to ensure frequency coordination with fixed microwave stations.

E. PCS Regulatory Issues

1. PCS Should Be Regulated On A Private Carrier Basis

UTC recommends that PCS licensees be regulated on a private carrier basis. If PCS is expected to be a family of

diverse service offerings, it will need the flexibility inherent in the private radio regulatory scheme. Further, PCS must be able to serve the internal communications requirements of specific industries and thus cannot be constrained by the limits of common carrier regulation. Moreover, private carrier status could speed the deployment of PCS by allowing licensees greater ability to negotiate innovative service arrangements with existing 2 GHz microwave users.

In order to encourage innovation and the rapid development of PCS the FCC should not impose any federal rate regulation on PCS, irrespective of whether it is regulated on a private or common carrier basis. Further, the FCC should preempt state and local rate and entry regulation of PCS licensees. As a Title III service that is expected to be a nationwide ubiquitous service, state entry and rate regulation could frustrate the potential of PCS.

2. **PCS Licensees Should Be Permitted To Interconnect With The Public Switched Telephone Network**

UTC supports giving PCS licensees a federally protected right of interconnection to the public switched telephone network at a point of their own choosing. Interconnection rights are the only method whereby the FCC can guarantee that PCS systems will be able to develop to their fullest

potential as communications networks. Moreover, the Commission has held that "a telephone subscriber has a federal right...to interconnect to the public telephone network and use it in ways that are privately beneficial if they are not publicly detrimental."^{15/}

UTC opposes any action by the Commission that would mandate a particular type of interconnection for PCS other than ensuring that all similarly situated PCS licensees obtain equally favorable interconnection rights and terms from the local exchange carriers.

F. Technical Standards for 900 MHz PCS

1. 900 MHz PCS Power and Antenna Height Limits Are Excessive And Could Cause Interference

The power and antenna height limits proposed for 900 MHz PCS are excessive and may result in some interference to adjacent radio services. UTC recommends that the Commission require 900 MHz PCS systems to utilize adaptive power control in order to minimize potential interference.

^{15/} Memorandum Opinion and Order in the Matter of Atlantic Richfield Company, 3 FCC Rcd 3089 (1988), aff'd Public Utility Commission of Texas v. FCC, 886 F.2d 1325 (1989).

2. **900 MHz PCS Out-Of-Band Emissions
Need To Be Restricted**

The Commission proposes to adopt out-of-band emission limits for 900 MHz PCS that are essentially identical to the Commission's existing out-of-band emission limits for 900 MHz paging operations. These emissions limits are not sufficiently stringent. These same standards are not adequate to protect against interference from paging operations in bands adjacent to those used by utility multiple address systems (MAS) receivers operating in the 928-929 MHz band.

G. **Interoperability and Roaming Are Needed**

In order to allow PCS licensees the flexibility to determine which PCS services are the most needed and to provide those services by the most advantageous technology, the Commission tentatively proposes not to require intersystem operability among different licensees. UTC disagrees with Commission's tentative decision. From the perspective of the utility industry, both as PCS licensee and third-party end user, some level of interoperability among PCS systems would be highly beneficial. This would allow for better coverage of large utility service areas; mutual aid; economies of scale in purchasing; and the ability to pick and choose among different vendors. Further, a certain degree of

interoperability and roaming would seem to be necessary for the type of ubiquitous PCS service the Commission envisions.

H. PCS Must Be Fully Evaluated Concerning RF Hazards

As a general matter UTC would urge the Commission to fully evaluate the potential hazards of PCS operating in the 2 GHz microwave band prior to making any authorizations, particularly in light of the fact that PCS is expected to be deployed as a consumer service and on a large scale.

I. International Issues

The Commission states that it needs to expedite the licensing and development of PCS in the 2 GHz band in order to ensure that the U.S. does not fall behind the rest of the world and jeopardize its role as a leader in advanced telecommunications technologies. The transition framework that the Commission has adopted in ET Docket No. 92-9 will allow the development of PCS in the near term.

However, UTC notes that the need for a large international allocation to facilitate worldwide roaming is questionable. Only a relatively small percentage of the world's population travels internationally on a regular basis. It is sufficient that allocations are generally consistent.