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

In the Matter of

Redevelopment of Spectrum to
Encourage Innovation in the
Use of New Telecommunications
Technologies

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ET Docket No. 92-9

**ORIGINAL
FILE**

To: The Commission

**COMMENTS OF THE
UTILITIES TELECOMMUNICATIONS COUNCIL**

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July 8, 1992

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Summary

UTC continues to view the Commission's spectrum reserve concept as a misguided effort to clear the 2 GHz band for unknown, future technologies. The FCC is simply unable to make a rational assessment of the public interest benefits to be obtained from unknown future services that would warrant a forced relocation of existing users from the band.

As numerous commenters note, the Commission must meet a heavy statutory burden to establish that the reallocation of the 2 GHz band is in the public interest, and that the vagueness and lack of detail comprising the FCC's proposal effectively preclude the FCC from meeting this burden. Further, commenters emphasize that the appropriate axiom to follow in this proceeding is that radio services that are essential to life and property, such as 2 GHz microwave, must be accorded more consideration than services that are more in the nature of a convenience or a luxury.

A fundamental flaw in the spectrum reserve concept is its lack of specificity regarding the new technologies to be implemented in the reserve. The Commission should have instituted a "Notice of Inquiry" requesting information on emerging technologies with anticipated spectrum requirements, and on the possible bands to be used to identify them. Once the FCC had amassed sufficient detailed information regarding various

proposed technologies and their spectrum requirements, it would then have been able to conduct case-by-case evaluations of these technologies, considering an array of bands for their use.

Many commenters agree that the NPRM and the OET Study, are result driven, and do not represent objective cost/benefit analyses of reallocating spectrum for new technologies. Numerous commenters argue that none of the factors enumerated by the FCC in guiding its band selection, either separately or in combination, prohibit the Commission's serious consideration of alternates to the 2 GHz band for a spectrum reserve. Under an objective analysis, the FCC would have targeted other bands where the operational, societal, and financial impact of a reallocation would be less severe.

In addition to its failure to adequately consider alternative bands for the spectrum reserve, a number of commenters catalogue a host of deficiencies and flaws in the OET Study's analysis concerning the feasibility of relocating existing 2 GHz users to higher microwave bands. Moreover, many commenters deem the NPRM's relocation proposals, such as a migration to the microwave bands above 3 GHz or a conversion to fiber optics, to be wholly inadequate to accommodate the needs of existing 2 GHz microwave users.

As several commenters observe, the Commission's proposed transition plan is unworkable. While the Commission's proposal for co-primary band sharing implies good-faith compromise and accommodation, the reality many of the comments express is that there is little in the way of hard, empirical evidence to suggest that new technologies can be introduced on a non-interference basis to fixed microwave systems. Moreover, as a practical matter co-primary status is meaningless without a specification of the interference criteria for band sharing, which is presently impossible absent an identification of the new technologies that will be permitted to share the band. UTC therefore urges the Commission to clarify co-primary status by proposing specific interference standards, or to clarify the interference protection rights of fixed microwave users by allowing new technologies to share these bands only on a secondary, non-interference basis.

Free market negotiations between licensed 2 GHz microwave users and new technology service providers should be permitted concerning reimbursement of relocation costs. However, as many commenters note, a crucial element regarding the equities of such an arrangement is that all 2 GHz microwave users must be licensed indefinitely on a primary basis. Moreover, because unlicensed radio services would be incompatible with a market-based relocation plan, such use should not be allowed in the band.

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Pursuant to Section 1.415 of the Federal Communications Commission's (FCC) Rules, the Utilities Telecommunications Council (UTC) hereby submits its reply comments with respect to the Notice of Proposed Rule Making (NPRM), 7 FCC Rcd 1542 (1992), in the above-captioned proceeding, in which the FCC proposes to reallocate 220 MHz of spectrum in the 1850-2200 MHz band as a "spectrum reserve" for new technologies. UTC, as the national representative on communications matters for the nation's electric, gas, water and steam utilities, also filed comments in this proceeding.

The various comments filed in this proceeding illustrate a number of problems with the FCC's proposal to reallocate spectrum in the 1850-2200 MHz band, as well as

with the Office of Engineering and Technology study^{1/} on which the FCC's reallocation proposal is based. UTC's reply comments address these issues, and also set forth the faulty reasoning behind the comments of parties supporting certain aspects of the FCC's proposal.

I. The Comments Confirm The FCC Has Not Determined A Need For A Spectrum Reserve Through Use Of Reasoned Rulemaking

A. The FCC Must Compare Benefits of Existing and Proposed Users.

Numerous commenters reiterate the principal concern stated by UTC in its comments. UTC noted that the FCC, pursuant to the Administrative Procedure Act and the Communications Act of 1934, as amended, is under an obligation to make a comparative evaluation between the public interest benefits provided by existing and proposed users of the 2 GHz band.^{2/} Because there are no identifiable services proposed as yet for the 2 GHz band, the FCC is unable to make an assessment of the probable public interest benefits to be obtained by these new services. Thus, the FCC is simply unable to determine whether use of the 2 GHz band by the proposed services or by the existing services in the band is the most propitious

^{1/} "Creating New Technology Bands for Emerging Telecommunications Technology," OET/TS 91-1 (January, 1992) (hereinafter "OET Study").

^{2/} UTC, pp. 4-5.

use for the public at large, and therefore is unable to rationally reallocate the spectrum. UTC also recognized that the FCC is prohibited from deferring resolution of important issues, such as the public interest benefits to be provided by the new services, until a later date, because all pertinent issues must be considered in a single, cohesive rulemaking proceeding.^{3/} Existing users in the 2 GHz band must not be forced to undergo the time, expense and coordination problems involved in a relocation of facilities if such relocation ultimately would prove to be unnecessary.^{4/}

Various commenters submitted similar arguments to the FCC. The Association of American Railroads (AAR) stated that the FCC must meet a heavy burden of establishing that the reallocation of the 2 GHz band is in the public interest--based on sound public policy--and that the vagueness and lack of detail comprising the FCC's proposal effectively precludes the FCC from meeting this burden.^{5/} UTC agrees with AAR's warning note to the FCC that "in its zeal to promote [a] new technology, the FCC [should not give] short shrift to ... its statutory obligations" to allocate spectrum in the public interest. National Ass'n

^{3/} UTC, p. 10.

^{4/} UTC, pp. 8-9.

^{5/} AAR, p. 3.

of Broadcasters v. FCC, 740 F.2d 1190, 1195 (D.C. Cir. 1984).^{5/} As the Large Public Power Council (LPPC) correctly summarized, not all legitimate demands for spectrum can be met and, consequently, the FCC must determine from a cost-benefit analysis the optimum use of spectrum.^{7/} It would be premature to terminate the primary status of existing users without answering whether existing users compose the most efficient and valuable use of the impacted spectrum.^{8/} UTC concurs with LPPC's determinations that in the instant docket the FCC has failed to make tentative public interest findings or to solicit the specific information which would be necessary to justify its selection of competing uses of spectrum; to perform a cost-benefit analysis; or to give special consideration to the important public safety purposes of the existing users of the spectrum.^{9/} The public interest benefits of many of the existing users of the 2 GHz spectrum are readily acknowledged.^{10/} It is difficult to surmise why the FCC chooses to ignore these benefits.

^{5/} AAR, p. 7.

^{7/} LPPC, p. 12.

^{8/} McCaw Cellular Communications, Inc. (McCaw), p. 2, 11.

^{9/} LPPC, p. 14.

^{10/} Comments of Harris Farinon Corporation - Farinon Division (Harris), p. 2; OCOM Corporation (OCOM), p. 2; and Centel, p. 1.

UTC joins AAR and LPPC in citing the traditional spectrum allocation procedures used, for example, in the Advanced Television (ATV) allocation proceeding as a stark contrast to the FCC's proposals to reallocate the 2 GHz band for emerging technologies.^{11/} In its Notice of Inquiry^{12/} proposing a spectrum allocation for ATV, the FCC specifically outlined its traditional spectrum allocation decision making framework,^{13/} which requires that to make a determination as to whether an allocation is in the public interest, the FCC must review, among other factors: (1) information as to the social and economic importance of a service, including its use for safety of life and protection of property purposes; and when relocation of a service is proposed, (2) data showing the costs and feasibility of the relocation, both technical and economic.^{14/} The FCC's procedures and proposals as currently formatted do not provide a forum for discussion of the social and economic importance of existing services in the 2 GHz band, either alone or as compared to the importance of proposed new services for the band. UTC

^{11/} AAR, pp. 10-13; LPPC, pp. 4-5.

^{12/} Notice of Inquiry, 2 FCC Rcd 5125, 5144 (1987).

^{13/} FCC's Office of Plans and Policy Working Paper No. 15, J.O. Robinson, "Spectrum Management Policy in the United States: An Historical Account" (April 1985) ("Spectrum Policy Paper").

^{14/} AAR, p. 10.

agrees that the FCC should perform meticulous cost-benefit analyses where services are competing for the same spectrum and concurs that the appropriate axiom to follow in this proceeding is that radio services which are essential to safety of life and property deserve more consideration than services in the nature of conveniences or luxuries.^{15/}

The unknown nature of the new services proposed to operate in the 2 GHz band effectively prohibits the FCC from making a reasoned, rational determination that relocating existing users from the 2 GHz band and allocating the band for new technologies is in the public interest.

UTC agrees with AAR that before it attempts to reallocate spectrum, the FCC must complete an analysis of the complex tradeoffs inherent in reallocating spectrum from different industries which use it for public health and safety and reliability purposes, for use by new services.^{16/} The FCC should evaluate whether its proposal would adversely impact the integrity or reliability of the nation's electric systems or require an increase in costs for electric services.^{17/} Since the FCC is able to consider only half of the factual package

^{15/} AAR, p. 12, citing Spectrum Policy Paper, Appendix A, p. 5.

^{16/} AAR, p. 15.

^{17/} Edison Electric Institute (EEI), p. 6.

required to make a sound decision as to the public interest aspects of future use of the 2 GHz band, its "preselection" of the 2 GHz band for new technologies^{18/} necessarily falls short of complying with the FCC's statutory directives.

UTC joins the American Petroleum Institute (API) in noting that the traditional public interest analysis from which the FCC departs in the instant proceeding is a straightforward weighing of the costs and benefits of proposed and existing services to determine the best choice for spectrum usage.^{19/} This service-by-service comparative procedure was used in the case of allocation decisions for Direct Broadcast Satellite, Interactive Video Data Service, and transfer of additional spectrum to the Private Land Mobile Radio Services and to mobile radio common carriers.^{20/} UTC supports API's view that the FCC's deviation from this traditional approach deprives existing users of their due process rights to meaningful participation in an allocation proceeding which might result in loss of their right to continue operating on 2 GHz spectrum.^{21/}

^{18/} AAR, p. 15.

^{19/} API, pp. 38-39.

^{20/} API, pp. 38-39.

^{21/} API, p. 41.

McCaw reiterates UTC's concern that the FCC's proposal implies existing operations in the 2 GHz band are less in the public interest than the unknown new services that will replace them.^{22/} The FCC's implication that existing services provide little to no public interest benefits is all the more difficult to accept when one considers the degree of uncertainty attached to all aspects of the new services which could be placed in the proposed spectrum reserve. The criteria for identifying an "emerging technology" eligible for assignment to the spectrum reserve have not been identified. Emerging technologies could include any number of technologies and services, many of which offer duplicative services.^{23/} The FCC appears to have concluded that any and every new service, without restriction, would be of better use to the public than the current services operating in the 2 GHz band. UTC agrees

^{22/} McCaw, p. 3.

^{23/} Although UTC strongly urges the FCC to conduct a public interest analysis of specific new technologies in comparison to existing 2 GHz users, UTC would support, if such a comparison did not occur and the FCC reallocated the spectrum for blanket use by emerging technologies, the proposal of Atlantic City Electric Company (Atlantic Electric) to require a review of the new technology situation in three years to determine whether expected emerging technologies have in fact surfaced or become viable, with a view toward modifying any uncompleted relocation of existing users in the band should the FCC's expectations of new service development not be fulfilled. Comments of Atlantic Electric, at 9. Indeed, such a review is required when future events do not bear out the Commission's earlier predictions. NAB v. FCC, 740 F.2d 1190, 1212 (D.C. Cir. 1984).

with Atlantic Electric that the FCC's proposal underestimates the value of existing services while overestimating the potential for emerging technologies.^{24/}

B. The FCC Should Have Structured Differently Its Efforts to Allocate Spectrum To New Services.

Instead of deferring detailed consideration of the types of technologies and services to be assigned to a spectrum reserve until after the amount and location of spectrum is established, the FCC should have begun by issuing a Notice of Inquiry requesting information on emerging technologies that are expected to require spectrum and on possible bands to be used to accommodate them or to house relocated users of the spectrum. Once the FCC had amassed detailed information regarding new technologies and possible spectrum alternatives, it would then have been able to conduct case-by-case evaluations of new technologies, considering an array of bands for their use.

The FCC should have requested that all new technology proponents submit proposals for emerging technologies in a standard format outlined by the FCC, specifying and justifying an amount of spectrum and a number of viable spectrum options for the technology. Many of the new services proposed or expected to emerge might not be

^{24/} Atlantic Electric, p. 15.

limited to operation in the 2 GHz band, but instead may be able to operate on a number of different frequency allocations. It is unnecessary to peremptorily stuff any and all new services into a spectrum reserve band created only after a pandemonious relocation of existing users.

Once the FCC received spectrum requests for new technologies and services, it should have screened the requests for viable proposals and dismissed those that are patently unworkable or which require further information. Requests which were similar or duplicative would have been consolidated.

The FCC should also have included in its Notice of Inquiry requests for detailed information about anticipated possible spectrum locations for new technologies, since there is no need to assign all new technologies to the same band. The FCC should have attempted to gather as much data on existing users in the focus bands as possible, including usage information on the density of users in various areas--whether the frequencies range from congested or sparsely used. Once the FCC had compiled frequency information from its Notice of Inquiry, it should have released its findings for comment, to ensure it had compiled all necessary information on the usage of the bands and their inherent relocation difficulties.

Once it had determined which services merit consideration for an allocation of frequencies and amassed information on frequency use patterns and problems, the FCC should have issued separate rulemaking notices for each service. In each rulemaking, the FCC should have been able to examine a number of frequency options for the proposed service. For each frequency considered in which there are existing users, the public interest benefits of the new services would have been weighed against the public interest benefits of the existing services.

The FCC should next have issued rulemaking notices outlining the benefits of each technology and requesting comparisons to the existing users in each of the option bands set forth by technology proponents and approved for consideration by the FCC on the basis of its research and accumulated data. The FCC's rulemaking notices should have specifically requested information on distinctions between urban and rural usage by both existing and the proposed users of the bands, to be factored into any decision on the necessity of reallocation and relocation. Only after the FCC it has before it a specific new technology can it make the necessary public interest comparisons to existing technologies in a number of bands, and select a band and make relocation adjustments if necessary. The FCC should have expressly delineated the public interest factors to be

reviewed prior to the submission of new technology proposals. Ultimately, using this approach, the FCC would have been able to choose a frequency band which is acceptable to the new technology proponents after a proper public interest analysis.

Overall, UTC would have recommended an integrated step-by-step approach to introduction of emerging technologies, beginning with a Notice of Inquiry, which would have allowed new services and existing users to participate in full-scale public interest comparisons. An example of the format UTC would have favored instead of the the FCC's concluding without input that a "spectrum reserve" should be established is the "spectrum refarming" initiative.^{25/} There, the FCC has issued a Notice of Inquiry on numerous policy and technical alternatives to collect information on the benefits and drawbacks -- with industry recommendations -- of particular strategies to achieve more efficient use of the spectrum. Before any resulting change is implemented, the FCC plans to issue a rulemaking notice requesting comment on the specifics of the proposal. The large-scale clearing of the 2 GHz band for unknown, untested new technologies and services, causing unprecedented disruption to the operations of

^{25/} Notice of Inquiry in PR Docket No. 91-170, 6 FCC Rcd 4126 (1991).

important, existing users of the band, would have benefitted from use of procedures similar to those employed in conjunction with spectrum refarming.

II. Spectrum Issues

A. FCC's Evaluative Factors Do Not Limit Review To the 1.85-2.20 GHz Band.

Regarding the criteria the FCC used to select the 2 GHz band as the target band in which to establish a spectrum reserve, UTC's comments sought to demonstrate that the Commission's five band selection criteria do not preclude consideration of alternate bands for the spectrum reserve. A number of comments confirm that the FCC's evaluative factors: (1) cost of equipment; (2) amount of spectrum; (3) feasibility of relocation; (4) non-government spectrum; and (5) international developments; do not limit the review of possible spectrum to the 1.85-2.20 GHz band.

UTC disputed the FCC's reasoning that it should not choose spectrum in a frequency range for which state-of-the-art equipment is not currently available due to high equipment costs which would delay introduction of new services.^{26/} UTC urged the FCC to consider positioning the spectrum reserve in higher bands, to encourage the

^{26/} UTC, pp. 12-13.

development of even more advanced technologies.^{27/} NYNEX supported this position, arguing that given the telecommunications industry's rapid innovative pace, it is highly probable that manufacturers will develop and introduce cost-effective equipment operating in higher bands once spectrum in these bands is allocated for emerging technologies.^{28/} Similarly, Hewlett-Packard anticipates the economical use of 6 GHz frequencies for PCS when foreseeable technology advances come to fruition.^{29/}

A number of commenters note that mobile communications systems above 3 GHz are already in various stages of development. For example, both API and the Interstate Natural Gas Association of America (INGAA) cite the use of the 17.9-19.7 GHz band by Motorola for a type of "data-PCS" service.^{30/} GTE Service Corporation (GTE) notes that AT&T has reported initial success in its experimental tests of PCS in the 6 GHz common carrier band. In light of AT&T's findings, GTE recommends that the FCC evaluate the use of the 6 GHz band more thoroughly prior to making any allocation decisions.^{31/}

^{27/} UTC, p. 13.

^{28/} NYNEX, p. 5.

^{29/} Hewlett-Packard, p. 4.

^{30/} API, p. 6; INGAA, p. 3.

^{31/} GTE, p. 9.

Designation of higher bands will not severely delay the implementation of new technologies, but instead may spur the pace of innovation beyond the status quo. UTC noted in its comments that the spectrum reserve is to be established for upcoming technologies and is not for immediate use.^{32/} It would be ten to fifteen years, under the original proposal, before new technologies would have exclusive primary access to the spectrum reserve band. Therefore, the time necessary to develop the capability to economically operate in the higher bands would be within the timeframe currently contemplated. Moreover, because many of the higher bands are less congested than the 2 GHz band, any additional costs in utilizing higher frequencies would be more than offset by the elimination of the need to pay a large number of relocation expenses.

In its NPRM, the Commission states that 220 MHz of spectrum will be needed for the initial development and implementation of emerging technologies. The basis for this statement is that over 376 MHz has been requested by proponents of various new and emerging technologies. Several commenters agree with UTC that the Commission's assumptions on the amount of spectrum to be required are flawed. As Southwestern Bell Corporation (SBC) points out, the mere fact that spectrum has been requested by

^{32/} UTC, p. 13.

proponents of new services is not conclusive evidence that the amount of spectrum requested is necessary to provide the services.^{33/} Moreover, a number of the spectrum requests are for similar or duplicative services and would require no more than a single spectrum allocation. SBC also suggests that the FCC should limit the amount of spectrum allocated to encourage innovation and spectral efficiency.^{34/}

The FCC's assumption that every spectrum request is equally worthy of an additional allocation of spectrum constitutes spectrum mismanagement. Innovators must be required to meet stringent public service thresholds if they expect to obtain an allocation of spectrum. Further, the Commission should not accept spectrum requests at "face value" but should instead require innovators of new services to be spectrally efficient. As proposed, the FCC's reallocation plan would be the largest reserve ever approved by the FCC.^{35/} Until the specific technologies to be implemented in the spectrum reserve are identified and the amounts of spectrum each requires are added together, the FCC cannot know the total amount of spectrum required. In the present docket, the Commission is unable

^{33/} SBC, p. 3.

^{34/} SBC, p. 15.

^{35/} SBC, p. 4.

to describe the new services, much less quantify the amount of spectrum these services would need. Therefore it is premature to identify the 2 GHz band on the basis of its having sufficient spectrum to meet the requirements of a spectrum reserve.

The third element considered by the Commission is the feasibility of relocating existing users. The FCC states that existing licensees must be able to relocate with a minimum of cost and disruption of service to consumers. However, as noted in UTC's comments, the NPRM does not consider and does not request comment upon the relative impact of relocating users from bands other than the 2 GHz band.^{36/} INGAA points out that the consequence of the Commission's narrow focus is that the actual range of spectrum analyzed by the Commission is insufficient to provide it with the full scope of information necessary to arrive at a reasoned and informed conclusion regarding the feasibility and appropriateness of relocating existing users from a particular band.^{37/} Thus, as UTC stated in its comments, since it has not requested this information, the FCC has effectively eliminated relocation feasibility from its criteria for a spectrum reserve target.^{38/}

^{36/} UTC, p. 14.

^{37/} INGAA, p. 2.

^{38/} UTC, p. 15.

The FCC next claims that the spectrum reserve must come entirely from non-Government spectrum. A number of commenters, however, assert that Government spectrum should be considered for emerging technologies.^{39/} LPPC, for example, maintains that it is likely that spectrum made available under "The Emerging Telecommunications Technology Act of 1991" (H.R.531/S.218) would be available for emerging technologies prior to the spectrum now being targeted by the FCC. LPPC points out that the legislation as currently drafted would require identification of 30 MHz within three years that could be reallocated immediately.^{40/}

While UTC takes no position on the ability of a particular Federal government band to support emerging technologies, UTC notes that the FCC is not precluded from jointly agreeing with the National Telecommunications and Information Administration (NTIA) on the use of Government-exclusive spectrum, or shared Government/Non-Government bands, such as the 3.6-3.7 GHz band, for emerging technologies. Moreover, the more logical course of action for the FCC would be to await the results of pending spectrum reallocation legislation prior to making an

^{39/} API, p. 12; OCOM, p. 14; AAR, p. 16; EEI, p. 12.

^{40/} LPPC, p. 21.