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

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

ET Docket No. 92-9 ✓

To: The Commission

DUPLICATE  
FILE

REPLY COMMENTS

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July 7, 1992

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REPLY COMMENTS

Pursuant to Section 1.415 of the Commission's Rules, Alcatel Network Systems, Inc. ("ANS"), by its attorney, hereby replies to the comments submitted in the above-captioned Notice of Proposed Rule Making, 7 FCC Rcd 1542 (1992) ("NPRM").<sup>1</sup>

I. SUMMARY

In the NPRM, the Federal Communications Commission ("Commission" or "FCC") proposes reallocating 220 MHz of spectrum between 1.85 and 2.20 GHz for emerging telecommunications technologies, including Personal Communications Services ("PCS"). To make room for these emerging technologies, the Commission, in the NPRM, proposes a phased-in migration of existing common carrier and private op-fixed 2 GHz microwave users to bands above 3 GHz. Instead of proposing specific rules governing operation by these displaced users in the higher bands, the Commission contemplates allowing such operation under a "blanket" waiver of existing rules. Prospective fixed microwave users would be limited to operating at 2 GHz on a secondary basis.

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<sup>1</sup> The deadline for filing Reply Comments in this proceeding was extended to July 8, 1992. Order Denying Request To Defer Comment Dates (DA 92-694, released June 4, 1992).

Numerous issues are raised in the NPRM, including: (1) the need to reallocate spectrum for PCS and other emerging technologies; (2) the appropriateness of clearing the 2 GHz band for such new technologies instead of reallocating spectrum in other bands; (3) the acceptability of the bands above 3 GHz for displaced 2 GHz users; and (4) the means to facilitate a fair and prudent transition plan for introducing new technologies into the 2 GHz band and for migrating incumbent users to other bands. Not surprisingly, substantial interest in and intense debate over these issues has resulted.

From the over 125 parties filing comments on the NPRM, a detailed mosaic of positions emerges.<sup>2</sup> Once these various positions are distilled, certain fundamental issues present themselves for further consideration before the proposals made by the Commission in the NPRM can be resolved:

- Manifest uncertainty exists among 2 GHz common carrier and private op-fixed users over their possible eviction. This uncertainty is driven by the fact that the 2 GHz band propagation, channelization, path length, frequency coordination, loading and other standards meet the incumbent users' needs while analogous standards for the bands above 3 GHz do not.
- There is no consensus among the parties that the proposed reallocation, or that any reallocation, is necessary to promote the development of PCS and other emerging technologies. Questions are raised over whether the 2 GHz band or some other band is appropriate for these services and over whether the Commission fully will weigh the costs of migrating proven existing 2 GHz users against the purported benefits to be gained from unknown and unproven new technologies.

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<sup>2</sup> Appendix A lists all the parties filing comments on the NPRM and identifies how they are referenced herein.

- Even if some form of reallocation is adopted, there is no agreement as to how the transition effectuating this fundamental change should proceed. Myriad proposals, ranging from ad hoc negotiations, to prescribing specific time periods before incumbent users must move, to permitting indefinite co-primary status for existing and new users, are presented.

Clearly, there is a lot of work to be done. Solutions to these problems must be found. Until the questions raised in the comments on the NPRM are answered, the Commission will not have an adequate foundation to implement a reallocation. Any attempt by the Commission to do otherwise would be premature and would be subject to reversal as an arbitrary and capricious act.

ANS has provided a critical missing piece to this puzzle. A material omission in the Commission's formula for reallocating spectrum to accommodate emerging technologies is its failure to propose specific rules for displaced current and prospective 2 GHz users operating in the bands above 3 GHz. Recognizing the problems created by this failure, ANS took the initiative and filed a Petition for Rule Making ("ANS Petition") to propose specific rules for co-primary use of all available bands by private op-fixed and common carriers, eligibility, band channelization, modulation efficiency standards and minimum channel loading, minimum path lengths, frequency coordination criteria, and antenna standards.<sup>3</sup>

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<sup>3</sup> The ANS Petition was placed on Public Notice for comment as RM-8004 (DA 92-705, released June 2, 1992). In addition to the record being developed on the NPRM and on the ANS Petition, other related pleadings have been filed. On March 31, 1992, the Utilities Telecommunications Council ("UTC") filed a Petition for Rule Making (RM-7981) ("UTC Petition") requesting deferral of action on the NPRM until the Commission proposes rules for fixed microwave user operation above 3 GHz. Comments filed on the UTC Petition mirror the comments filed on the NPRM. In general, parties are concerned that the Commission will not have enough data to make a reasoned decision regarding the proposed 2 GHz reallocation. On April 10, 1992, the Association of American Railroads, Large Public

Faced with the daunting task of digesting and reconciling the numerous positions taken on its NPRM, the Commission must not lose sight of how the ANS Petition will help. A major obstacle for the Commission to clear before it could establish any band reserve for emerging technologies is the unequivocal reluctance of the existing 2 GHz users to move.

Although ANS agrees with these incumbent licensees that the status quo is preferable because the technical attributes of the 2 GHz band are most suitable for their uses, it also recognizes that certain compromises might be necessary in order to stimulate PCS and other apparently beneficial services. If existing 2 GHz licensees can be convinced that rule changes will be made so that their operation on bands above 3 GHz would not compromise the reliability or quality of service, necessitate any unplanned expenditures, or create inefficiencies in spectrum utilization, the level of opposition to the proposed reallocation could be decreased or eliminated entirely.

More importantly, once this legitimate threshold of opposition is positively addressed, a path can be cleared to work out the other controversial issues associated with the NPRM -- how much spectrum, if any, must be allocated for emerging technologies; what other bands, if any, must be reallocated; and how long and under what conditions should a transition take to complete. Only then can the Rubicon created by the Commission in the NPRM successfully be crossed.

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Power Council and the American Petroleum Institute collectively filed a Petition to Suspend Proceeding. On May 1, 1992, UTC filed a Petition for Issuance of Further Notice of Proposed Rulemaking requesting that the Commission initiate a detailed investigation of alternative frequency bands to accommodate emerging technologies.

Given the important role to be played by ANS' Petition in eliminating the uncertainty felt by the targeted 2 GHz users, the Commission is obligated to make absolutely sure that the proposals therein are fully evaluated. Placing the ANS Petition on Public Notice for comment is only the first step in fulfilling this obligation. The Commission also must be careful not to lose sight of the ANS Petition's importance amidst all the posturing and rhetoric that will continue to impede progress towards achieving its twin goals of "facilitating the continuing development of new communications technologies" while "minimizing [the] impact on existing services."<sup>4</sup>

The Commission must not be detoured by such parochial issues as what PCS should be authorized, or when such new licensees can enter the 2 GHz band, or whether the National Telecommunications and Information Administration ("NTIA") has the right to release spectrum without Congress' approval. Instead, the Commission's eye must remain on the prize. Consequently, in a separate Notice of Proposed Rulemaking, or in a Further Notice of Proposed Rulemaking in this proceeding, the Commission must, at a minimum, aggressively and expeditiously develop a full public record regarding the ANS Petition to ensure that the potentially orphaned 2 GHz users could find safe harbor should the need arise.

## II. THE PROPOSALS IN THE NPRM GENERATED SUBSTANTIAL INTEREST BUT NO CONSENSUS

The record in this rulemaking is pockmarked with criticism and with inconsistent and self-indulgent arguments. These criticisms are predictable and generally fall into two

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<sup>4</sup> NPRM, 7 FCC Rcd at 1543.

competing camps: (1) PCS and related entrepreneurs support the NPRM because there is a demand for their services and because the 2 GHz band is an ideal home for their proposed operations; and (2) 2 GHz users and related entrepreneurs oppose the NPRM because their needs are given short shrift, because alternative bands for new technologies are ignored, and because the bands above 3 GHz are incongruent with their spectrum requirements. However, with the singular exception of ANS' Petition, notably absent from the record of this proceeding are positive and unifying suggestions intended to meet the needs of all affected interests.

#### **A. THE NEED TO REALLOCATE THE 2 GHz BAND IS CONTROVERSIAL**

At the core of the NPRM is the debate over whether a reallocation is needed to promote emerging telecommunications technologies, and, if so, whether the 2 GHz band is the right candidate for such reallocation. Based upon the arguments made in the comments on the NPRM, both sides require further evaluation.

Obviously, resolution of this core issue will determine the success or failure of the proposed reallocation for emerging technologies made in the NPRM. For the Commission to assume the mantle of Solomon and negotiate through this stalemate, it must be able to reassure the 2 GHz users that any necessary migration to other bands is not contrary to their interests. Armed with the ANS Petition, the Commission will be in a much better position to pull off this diplomatic feat.

##### **1. Arguments justifying the 2 GHz band reallocation.**

Those parties favoring reallocation of the 2 GHz band claim that PCS and other so-called emerging technologies would serve the public interest by stimulating useful and

innovative communications tools and that a specifically designated contiguous block of spectrum would promote their development:

[T]he creation of emerging technology bands is necessary and appropriate to encourage the provision of new technologies and services to the public and encourage the larger and more effective use of radio in the public interest.

\* \* \* \* \*

[T]he potential market will not be uncovered, and the productivity and efficiency gains from wireless office systems will not be realized, unless the Commission provides a more reliable frequency allocation than the existing cordless telephone frequencies and other "secondary use" frequencies available for unlicensed use under Part 15 of the FCC rules.<sup>5</sup>

Fostering competitiveness on a global scale is another reason given by several parties for adopting the NPRM.<sup>6</sup> Citing the importance of PCS and the vast global market expected for PCS products and services,<sup>7</sup> Time Warner admonishes the Commission that

[e]xpeditious action is important to ensure that PCS service providers in the United States are able to compete with foreign service providers whose countries are moving aggressively to allocate PCS spectrum. For the same competitive reasons, the FCC also should ensure that the domestic PCS allocation is compatible with international allocations.<sup>8</sup>

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<sup>5</sup> NATA at 2, 4. See also Rolm at 15; WINForum at 2; PCS/New York at 37-38; Apple Computer at 3; TRX at 9; H-P at 1; Cylink at 2; Baltimore Gas at 2; Ericsson at 2; Impulse at 2; Interactive at 4.

<sup>6</sup> Keeping pace with international PCS developments is, according to the Commission, a cornerstone of the proposed reallocation. NPRM, 7 FCC Rcd at 1543.

<sup>7</sup> Time Warner at 6.

<sup>8</sup> Time Warner at 4. See also Ameritech at 4; IEEE - LAN at 7; Northern Telecom at 4; Ericsson at 2.

Selection of the 2 GHz band, as the potential future home for PCS and other new technologies, generally is endorsed by proponents of the reallocation. The amount of spectrum, available capacity, propagation characteristics, and status of compatible equipment in this band all are factors contributing to this endorsement.<sup>9</sup>

2. Emerging technologies do not justify the 2 GHz band reallocation.

Equally forceful are the opponents of the proposed 2 GHz reallocation. They take issue with clearing the 2 GHz band for unproven technologies at the expense of proven and reliable common carrier and private-op fixed microwave users.

Criticism is leveled at the Commission for providing a "very meager and sometimes confused explanation as to how it determined that there is a 'need' for emerging technologies bands."<sup>10</sup> Indeed, the Commission's "method of assessing the spectrum requirements for emerging technologies appears to be nothing more than a guess at upcoming spectrum needs."<sup>11</sup>

One of the marked candidates for relocation, Atlantic City, is

concerned with the lack of review by the Commission concerning the need for these "emerging technologies". There has been virtually no discussion on what benefits the emerging technologies would have on the public as they force basic services to vacate their present frequencies. [Atlantic City] believes that the Commission has shown what amounts to a total disregard for the services provided by the existing facilities of the 2 GHz band as well as the impact a relocation

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<sup>9</sup> AT&T at 4; Rolm at 15-16; Ameritech at 3; IEEE - USA at 1; Spectralink at 2; Northern Telecom at 5; Millicom at 4; USTA at 2; SCS at 4.

<sup>10</sup> UTC at 2.

<sup>11</sup> UTC at 14.

would create in deference to a yet to be defined emerging technology.<sup>12</sup>

Frustrating opponents of the proposed reallocation is that the Commission seems determined to promote, at their expense, technologies which have not been identified and which have not experienced measurable market success.

The Commission...found that the entire 220 megahertz band should be allocated for emerging technologies. In reaching this conclusion, the Commission has overlooked two essential intermediate steps. Before the Commission decides to allocate the entire 220 megahertz for emerging technologies, it must make a definitive finding that all of this spectrum is required to accommodate emerging technologies. Additionally, before the Commission can make a definitive finding concerning how much spectrum is required for emerging technologies, it must define with some precision the emerging technologies that should be accommodated.<sup>13</sup>

Moreover, the Commission, in the NPRM, "fails to consider whether the new services suggested for the 'emerging technologies' band would provide any benefits which outweigh the benefits provided by existing 2 GHz users...."<sup>14</sup> Similarly, Metropolitan Water complains that the

Commission will see that the nebulous bundle of benefits which might accrue in the future from new technology development

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<sup>12</sup> Atlantic City at 9. Furthermore, UTC is disturbed by the lack of tangible information about the emerging technologies being championed by the Commission. UTC states that the Commission fails to identify the technologies that would be implemented or their individual merits. UTC at 3. See also CTIA at 3.

<sup>13</sup> Metropolitan Water at 19-20 (footnotes omitted). See also Questar at 18.

<sup>14</sup> UTC at 4.

cannot compete for public value with the health/safety services now provided through 2 GHz microwave systems....<sup>15</sup>

Demand for PCS also is suspect. Numerous parties belittle the Commission for proposing the 2 GHz reallocation to support emerging technologies without having any empirical evidence that there is a pent-up demand for such services.

[N]either the Commission nor the new technology proponents have offered a clear showing that serious studies have been conducted concerning actual near-term demand levels for the proposed services which the Commission seeks to accommodate.

\* \* \* \* \*

It is premature, at best, for the Commission to consider reallocating spectrum to new uses which are commercially unproven when the operations now conducted in the targeted spectrum support large-scale public interest tasks. Certainly, the Commission must realize that the protection of human well being is at least equal to the value of the possible promise of benefits which might be delivered by the proposed new technologies should a market for such technologies develop in the future.<sup>16</sup>

Absent documented evidence that demand for PCS exists, several parties also question if the 220 MHz proposed for reallocation is excessive:

It has not been sufficiently or factually demonstrated that the emerging technologies will actually need 200 MHz of spectrum, nor has it been shown that the most economical and effective

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<sup>15</sup> Metropolitan Water at 10. See also AAR at 6, quoting the Commission's Chief Scientist, Dr. Stanley, as admitting that the value of PCS still is up in the air: "I don't think we fully understand [PCS]."

<sup>16</sup> El Paso Natural Gas at 4-5 (footnote omitted). See also Questar at 15-19; Telesciences at 13; Metropolitan Water at 18; Edison Electric at 4; Public Service at 11; Century Telephone at 11; Interstate Natural Gas at 7.

way to facilitate the development of these technologies is by clearing spectrum and relocating existing users.<sup>17</sup>

Rather, these opponents refer to the lack of success in the United Kingdom for a commercial PCS, CT-2 Telepoint, as further reason not to reallocate the 2 GHz band:

CT-2 Telepoint no longer exists. The final CT-2 Telepoint licensee has still to launch its service. Today, the yet-to-launch PCN providers are proceeding very cautiously to verify market demand before committing huge amounts of capital. Cellular providers, however, continue to serve the premium mobility users.

Given the qualifications of the companies involved in the original process, and the amount of spectrum made available for those services, it becomes apparent that factors other than spectrum availability must have played a significant role in these "emerging technologies" service failures. A major factor was the lack of demand for the services provided. Providing a spectrum reserve will not guarantee successful services using emerging technologies unless they meet the expectations of the consumers.

\* \* \* \* \*

GTE suggests that the FCC review the U.K. experience and not allocate spectrum to specific services until such time that demand for those services makes allocation of scarce spectrum worthwhile, given the costs of providing those services with the best alternative technology.<sup>18</sup>

For these reasons, serious doubt exists whether the proposed reallocation would be in the public interest.

In view of the uncertainties over (1) the services and technologies that might use these bands; (2) the interference

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<sup>17</sup> SWB at 2. See also Questar at 19.

<sup>18</sup> GTE at 7-8.

potential of these technologies; and (3) the ability of new technologies to share with existing fixed microwave systems, UTC reiterates that the "spectrum reserve" concept cannot be implemented as proposed.<sup>19</sup>

Proceeding with additional rulemakings, including the ANS Petition, will alleviate this concern. At a minimum, the Commission must engage in the equivalent of a "line-item budget review" and reassess all the factors that initially prompted its proposal.

**B. IF REALLOCATION IS APPROPRIATE, IT IS UNCERTAIN  
IF IT SHOULD BE IN THE 2 GHZ BAND**

What bothers 2 GHz users most is that the Commission, in the NPRM, violates the principle that "if it's not broke, don't fix it." These users want to remain in a band that has served them well and that has enabled them to serve the public well. They do not want to be moved to bands above 3 GHz which do not have the attributes that makes the 2 GHz band so appropriate for their needs.

Proven services and technologies which are vital to the public, and which are operating efficiently and effectively, should not be summarily displaced for what may be a futile effort to accommodate speculative new services and technologies for which there is no demand, no proven market and no equipment.<sup>20</sup>

In addition, opponents of the proposed reallocation point to the availability of alternative candidate bands for emerging technologies. Strong and relatively unanimous support exists for requiring the Commission to explore these alternatives before reaching a final decision.

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<sup>19</sup> UTC at 3.

<sup>20</sup> Edison Electric at 3.

**1. The 2 GHz band best serves the incumbent users' needs.**

If there is a consensus among the parties to this proceeding, it is that the 2 GHz band is "being utilized effectively and in the public interest as it is currently allocated."<sup>21</sup> Operation on the 2 GHz band is supported by path lengths that are longer than those that are available in other bands and that consequently permit more economical interconnection of network facilities over greater distances.<sup>22</sup> In large part, this effectiveness is a function of the favorable propagation characteristics and high level of reliability available:<sup>23</sup>

Existing users are not wedded to use of the 1850-2200 MHz spectrum simply because they were there first. They are wedded to use of this band to the extent that: ... it may be the only band capable of satisfying the legitimate reliability requirement for long-distance communications....<sup>24</sup>

As Montana Power aptly characterizes the 2 GHz band, "there is no technology that can perform these essential communications functions...as rapidly, reliably and economically as microwave."<sup>25</sup>

**2. Migration would threaten reliable service.**

Take it from those in the trenches -- the electric cooperatives and utilities, gas pipeline operators, law enforcement agencies, cellular and other common carriers, hospitals

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<sup>21</sup> Coastal at 12.

<sup>22</sup> Centel at 4-5.

<sup>23</sup> Montana Power at 2; Atlantic City at 3.

<sup>24</sup> API at 31.

<sup>25</sup> Montana Power at 3-4.

and railroads -- the hallmark reliability and quality of their networks would be jeopardized significantly if reallocation moved them to the bands above 3 GHz on a "blanket" waiver basis.<sup>26</sup> Even such unbiased and expert observers as the Department of Energy and NTIA are concerned about this scenario occurring.<sup>27</sup>

A strong message has been sent by users of the 2 GHz band. The impact of the proposed reallocation on their networks and upon the availability of reliable and efficient safety, medical and other beneficial services has been underestimated dramatically:

The difficulty of relocating incumbent licensees from the proposed 2 GHz bands has been seriously underestimated. The significant public safety and environmental protection responsibilities of many incumbents call into question the desirability of even slightly compromising the performance of those microwave systems.<sup>28</sup>

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<sup>26</sup> UTC at 31 ("[I]f the utility industry is forced to abandon this band, the reliability of its communications facilities will be significantly degraded which, in turn, will have a direct and adverse impact on the protection of the utility plant and reliability of utility service to the public"). See Cooperative at 1; Western at 2; ConEdison at 1; Central Power at 1-2; DWP at 1; KAMO at 1; PacifiCorp at 2; PPC at 1; Sho-Me at 2; SWEPCO at 1; Sunflower at 1; Tacoma at 1; Tarrant County at 3; Virginia Coop at 2; Atlantic City at 5; El Paso Natural Gas at 2; Metropolitan Water at 5-6; Enron at 5; Edison Electric at 5, 9, 18; AAR at 3; Texas Gas at 4; National Ocean Industries at 1; Interstate Natural Gas at 2; TRX at 10. Common carriers also are quite vulnerable to the proposed reallocation. See PacTel at 2-3; SBC at 7, 20-21; GTE at 12; NTCA at 3; MCI at 1; Centel at 4, 11; Harris at 11; Bluegrass Cellular at 1; ALLTEL at 2; Rocky Mountain at 3; Huffman at 2; Telocator at 13.

<sup>27</sup> DOE at 2-5; NTIA at 3. Uncertainty over the future of these 2 GHz services because of this proposal is having an adverse impact in the marketplace. Atlantic City at 15 (the "proposal has already exacted a toll on the current users of the 2 GHz [band because vendors] are currently considering or ceasing to manufacture new equipment, product lines and expansion of features for users of this spectrum"); APS at 2; UTC at 76; Harris at 1.

<sup>28</sup> Texas Gas at 4.

This reliability and quality would be threatened because the higher bands require shorter path lengths (primarily due to multipath fading and rain attenuation).<sup>29</sup> The need for shorter path lengths forces the microwave user to install additional hops, which increases costs and which creates site availability problems:

**[F]requencies above 3 GHz do not have the same long-distance transmission characteristics of 2 GHz spectrum, [thus] replacement with higher range frequencies will force Metropolitan to implement numerous "relay points" in order to provide an acceptable alternative to the service it now receives from the targeted spectrum. The addition of each such relay point further reduces the reliability of Metropolitan's communications network....[T]he rights-of-way which would be required for construction of additional "relay points" will be prohibitively expensive....Moreover, the cost of reconfiguring Metropolitan's network would be staggering.<sup>30</sup>**

Indeed, this is no idle or insignificant problem. One pipeline company comments that the

threat of disruption [to its] pipeline throughput caused by the possible loss of suitable microwave spectrum is of grave concern, since the resulting unavailability of natural gas could

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<sup>29</sup> See, e.g., OCOM at 3-4; APPA at 12-13. Various parties suggest that 2 GHz licensees and emerging technology licensees could share the band on a co-primary basis for a specific or indefinite period of time. APC at 4; Associated PCN at 4; Rolm at 15; Comsearch at 11-12; Telocator at 4-5; OCOM at 17. However, 2 GHz licensees oppose such sharing because it would create unnecessary potential for harmful interference to their operations. Atlantic City at 10; AAR at 5; Questar at 9. The Commission needs to study the sharing issue further, but it must not be sidetracked by this controversy from proceeding with such critical matters as the ANS Petition.

<sup>30</sup> Metropolitan Water at 7. See also Atlantic City at 5 (relocation would require it "to complete a re-engineering of its backbone communication system and eliminate normal use of the Company's mobile radio system during the cut over period to the new communication system"); Enron at 5; UTC at 31; Telocator at 5.

cause serious hardships to schools, industry, hospitals and private homes and could even endanger lives and property.<sup>31</sup>

Moreover, UTC warns that precipitous action could be disastrous:

**[O]nce the relocation of existing 2 GHz users is complete, the process is not readily reversible. Existing critical utility operations in the 2 GHz band should not be disrupted prior to an extensive and reasoned analysis of the proposed services for the 2 GHz band, as well as a comprehensive review of the impact of relocating the 2 GHz users. It is premature and one-sided to target at this time a single band without first reviewing alternative bands and without determining the precise impact of implementing the new services and resettling all users in each of the bands under review.**<sup>32</sup>

Under these circumstances, 2 GHz users understandably are strongly encouraging the Commission meticulously to balance the public safety and other beneficial services they provide against the significant costs that would be incurred if they are evicted.<sup>33</sup> As Questar puts it, the "Commission must realize that protection of human health and/or safety

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<sup>31</sup> El Paso Natural Gas at 2. See also Metropolitan Water at 6 (relocation "will have dangerous ramifications for the public health and safety as well as for the environment"); Virginia Coop at 1-2; GTE at 12-13; Edison Electric at 9 ("[B]ecause of the critical functions served by the 2 GHz facilities...any disruption of these facilities could have a substantial negative impact on the integrity of individual electric systems and the entire electric network. This could result in the less reliable and more costly provision of electricity."); UTC at 31; AAR at 3; Huffman at 2; National Ocean Industries at 1; Texas Gas at 4; Interstate Natural Gas at 2.

<sup>32</sup> UTC at 9 (footnote omitted). See also Montana Power at 2 ("it's not good policy to reallocate the spectrum and later evaluate the precise impact of implementing the new services"); SBC at 28.

<sup>33</sup> The Commission acknowledges that "it must be especially meticulous in its cost-benefit analysis when deciding among services competing for the same portion of the spectrum when one of the services already occupies the desired frequencies." AAR at 12.

is of greater value than possible benefits which might be delivered by proposed new technologies."<sup>34</sup>

3. The bands above 3 GHz are not appropriate.

Fear over loss of the 2 GHz band is exacerbated by the recognition that the Commission's alternative -- relocation to the bands above 3 GHz -- is not, at this time, feasible. This fear is precipitated by the Commission's nonchalant approach to the needs of the potentially displaced 2 GHz users. In the NPRM, the Commission proposes that, under a "blanket" waiver of the eligibility requirements to operate in the bands above 3 GHz, all displaced common users and private op-fixed users would be subjected to the same technical and coordination procedures currently applicable in such higher bands.<sup>35</sup> As NTIA recommends, the "Commission should...ensure that rules are in place so that any spectrum made available in other bands to current users permits them to provide reliable service with a minimum of technical and regulatory burdens."<sup>36</sup>

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<sup>34</sup> Questar at 7. See PSMC at 5; Enron at 7; Edison Electric at 3; UTC at 4-7, 31; Montana Power at 3; Interstate Natural Gas at 6. This balancing of competing spectrum proposals should weigh in favor of protecting existing public safety 2 GHz users instead of in favor of services, like PCS, which are more in the nature of a convenience or luxury. 47 U.S.C. Section 332 (1991). See also UTC at 6 n.5; API at 22.

<sup>35</sup> NPRM, 7 FCC Rcd at 1545. Similarly, in the NPRM, the Commission suggests that "other reasonable alternatives for fixed microwave, such as fiber, cable and satellite communications" are available for displaced 2 GHz users, thereby increasing their level of protection if the migration is required. Id. at 1544. This assumption is condemned by all sides and should be eliminated as a basis for implementing any reallocation. See, e.g., ANS at 23-25; Bluegrass Cellular at 2; Virginia Coop at 1; Atlantic City at 6; API at 17-20; ALLTEL at 4; El Paso Natural Gas at 15-16; Questar at 5-7; APPA at 3-6; PSMC at 19-20; Metropolitan Water at 7-8; Edison Electric at 14; MCI at 3.

<sup>36</sup> NTIA at 7.

Several factors contribute to this fear. Path length characteristics, reliability standards, channelization and loading requirements, cost, and common carrier/private carrier eligibility issues are materially different for the 2 GHz band than for the bands above 3 GHz. Inexplicably, in the NPRM, the Commission is indifferent to these issues. As ANS points out in its Comments on the NPRM, this attitude is unacceptable and must be re-directed:

**Fixed private and common carrier microwave users provide crucial telecommunications services for local exchange carriers, cellular telephone companies, utilities, railroads, petroleum companies, financial institutions, and state and local governments. Essential public health and safety services depend upon the continuous reliable availability of these 2 GHz facilities.**

**In its determination to promote personal communications services ("PCS") and other emerging technologies, the Commission does not propose specific rules in the NPRM governing provision of service by the potentially displaced 2 GHz users in the bands above 3 GHz. Rules to ensure efficient use of the spectrum are forgotten. Requirements for the 2 GHz users' low and medium capacity systems in the primarily high capacity bands above 3 GHz are ignored.**

**Absent prudent consideration of these issues, it is impossible to determine whether the emerging technologies reallocation would serve the public interest. Regrettably, all the Commission does in the NPRM for 2 GHz users is propose a "blanket" waiver whereby they can relocate to "any of the higher frequency fixed microwave bands" under current coordination and channelization criteria. Furthermore, this proposal is based upon assumptions and data compiled by the Commission's Office of Engineering and Technology ("OET"), which are highly questionable because OET exhibits only cursory knowledge of microwave fundamentals and microwave frequency planning practice.<sup>37</sup>**

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<sup>37</sup> ANS at 2 (footnotes and citations omitted).

Unlike the Commission's proposed "blanket" waiver for displaced 2 GHz users, ANS' proposed rules are spectrally efficient, sensitive to the displaced microwave users' needs and operations, and conducive to expanding the spectrum available for both common carrier and private op-fixed microwave users. Specifically, in its Petition, ANS proposes:<sup>38</sup>

1. Reallocating the 3.6-3.7 GHz band, currently allocated on a shared basis to government use (aeronautical radionavigation and radiolocation on a primary basis) and to non-government use (fixed satellite downlink on a primary basis and radiolocation on a secondary basis), so that fixed point-to-point non-government service could be provided by private-op fixed and common carriers on a co-primary basis.

2. Reallocating the point-to-multipoint section of the 10.55 to 10.68 GHz band to permit point-to-point applications by both private-op fixed and common carriers on a co-primary basis.

3. Reallocating the following bands to permit use by both private op-fixed and common carriers on a co-primary basis:

- 4 GHz (3.7-4.2 GHz).
- Lower 6 GHz (5.925-6.425 GHz).
- Upper 6 GHz (6.525-6.875 GHz).
- 11 GHz (10.7-11.7 GHz).

4. Adopting specific rule changes to Parts 2, 21, 25 and 94, which would:

- effectuate such proposed reallocations;
- define eligibility;
- prescribe band channelization, minimum path lengths, minimum channel loading, and minimum capacity for bandwidth used;
- establish frequency coordination criteria; and

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<sup>38</sup> For a complete description of ANS' proposed rule changes, see ANS Petition, Attachment 1.

- **establish antenna standards.**

As detailed in numerous comments on the NPRM, the bands above 3 GHz currently do not meet operating specifications for 2 GHz users. The bands above 3 GHz primarily are channelized for high-capacity systems. However, the 2 GHz bands are populated mostly by low and medium capacity systems. Provision must be made in the bands above 3 GHz for the displaced low and medium capacity systems without wasting spectrum. ANS proposes such channelization.

ANS' proposal is specifically efficient. It subdivides existing channels according to need. For the first time, fixed point-to-point microwave bands are channelized to be congruent with the user's actual and anticipated requirements. Access to this spectrum no longer would be based upon whether the user is a common or private op-fixed carrier, but instead would be open on a co-primary basis to both classes of users.

By proposing such across-the-board sharing of the 3.6 to 3.7, 4, lower 6, upper 6, 10 and 11 GHz bands, both common carrier and private op-fixed microwave users will have access to more spectrum than they have presently. Common carriers would have access to an additional 350 MHz in the upper 6 GHz band and 100 MHz each in the 3.6 to 3.7 and the 10 GHz bands. Moreover, common carrier access to the 4 GHz and lower 6 GHz bands would be re-enfranchised because of ANS' eligibility and channelization proposals. Private op-fixed carriers would have access to an additional 2120 MHz of spectrum.<sup>39</sup>

Given these significant differences between the 2 GHz band and the bands above 3 GHz, the Commission's "blanket" waiver will not work. Promulgation of specific rule

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<sup>39</sup> See ANS Petition at 4.

changes to reflect these differences is imperative because such rules are integral to facilitating the 2 GHz reallocation and the corresponding migration of incumbent users to other bands.

ANS, in its Petition, proposes these necessary rule changes. These changes address reallocation of the 3.6 to 3.7, 4, lower and upper 6, 10, and 11 GHz bands under Part 2, frequency diversity limitations, antenna characteristics, minimum system loading, frequency band channel allocations, minimum path length requirements, frequency planning and coordination criteria, bandwidth limitations, power limitations and automatic transmit power control.

ANS' concern with the Commission's "blanket" waiver proposal is reinforced by an overwhelming number of comments on the NPRM. If there was any chance at all for the Commission to marshal support from 2 GHz users for its proposed reallocation, it was dashed by the insensitivity of the "blanket" waiver approach.

The Commission's proposal to force new 2 GHz licensees to migrate to higher frequency bands and other [sic] is short-sighted and incomplete, and its estimate of the proposed costs of relocation is far too low.

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The Commission's conclusion that the higher bands can accommodate the displaced 2 GHz users is fundamentally flawed. Two principal relocation bands identified...are the 4 and 6 GHz common carrier bands.... However, the technical rules applicable to these bands, which the Commission said "will continue to apply," contain channelization and loading requirements which make their use wholly [unacceptable].<sup>40</sup>

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<sup>40</sup> AAR at 34-36 (footnotes omitted).

**Spectral efficiency** -- Prudent spectrum management is an indispensable tool for 2 GHz users. Consequently, the primary criterion for determining where to relocate 2 GHz band users must be spectrum efficiency.<sup>41</sup> As Comsearch warns, the "key" to relocating the 2 GHz users is "proper frequency engineering" because "little success will be realized in effecting such relocations without proper spectrum management...."<sup>42</sup>

**Proper channelization** -- The single most important issue created by the Commission's "blanket" waiver approach is ensuring that channelization in the higher bands meets the needs of displaced 2 GHz users. As the expert National Spectrum Managers Association emphasizes:

**[C]areful development of microwave channel plans and their efficient utilization is important. Appropriate channelization will enable optimal use of spectrum by the combination of wideband and narrowband systems.**<sup>43</sup>

Spectral efficiency in the bands above 3 GHz never will materialize if displaced 2 GHz users are forced, under a "blanket" waiver, to operate under the current channelization scheme for the higher bands. Simply put, the large capacity channel bandwidths above 3 GHz do "not provide a good 'fit' for the relatively narrow channel bandwidths of 2 GHz OFS and common carrier systems."<sup>44</sup>

**[To] be successful, [private op-fixed and common carrier bands above 3 GHz] should be rechannelized to accommodate both**

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<sup>41</sup> USTA at 6.

<sup>42</sup> Comsearch at 3-4.

<sup>43</sup> NSMA at 2.

<sup>44</sup> IEEE-USA at 3 n.5.

narrowband and wideband applications, and prior coordination...should be required in all bands.

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Presently, the [common carrier] bands above 3 GHz are channelized for 20-40 MHz channels, and the [private op-fixed] bands above 3 GHz are channelized for 5-10 MHz channels. Most [private op-fixed] applications do not have sufficient capacity to require even a 20 MHz channel. In addition, many [private op-fixed] users argue that narrowband requirements must be met, and that to do so with the existing channel arrangements in both the [private op-fixed] and [common carrier] bands above 3 GHz would be inefficient. Rechannelizing all bands above 3 GHz to accommodate both narrowband and wideband operations would thus facilitate relocating from the 1.85 - 2.20 GHz band. However, rechannelization must be carried out in an orderly manner that addresses the needs of wideband and narrowband operation.<sup>45</sup>

As detailed above, ANS proposes this necessary channelization scheme. For each band to be reallocated, under ANS' proposal, specific channelization would be implemented for low, medium, and high capacity displaced 2 GHz and incumbent higher band users.

Co-primary sharing -- Available spectrum in the bands above 3 GHz is limited. These bands are gerrymandered so that only private op-fixed or common carriers have access to specific spectrum allocated to that class of carrier. With the proliferation of digital radios capable of operating on different frequency bands regardless of traffic characteristics, private op-fixed and common carriers will be able to share these bands on a co-primary

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<sup>45</sup> Comsearch at 5-6 (footnotes omitted). See also Harris at 10-11; IEEE - USA at 3; PSMC at 16; SBC at 6; GTE at 17; NYNEX at 3; MCI at 2; UTC at 49-52; USTA at 7.