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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	)	ET Docket No. 92-9

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To: The Commission

COMMENTS OF THE AMERICAN PUBLIC POWER ASSOCIATION

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AMERICAN PUBLIC POWER ASSOCIATION**

Pursuant to Section 1.415 of the Commission's Rules, the American Public Power Association (APPA) hereby respectfully submits its comments on the Notice of Proposed Rule Making (NPRM), FCC 92-90, released February 7, 1992, in the above captioned matter.

I. Introduction

APPA is the national service organization representing more than 1,750 local, publicly owned electric utility systems throughout the country.

Approximately 50 publicly owned electric utilities operate fixed microwave systems in the 1.85-1.99, 2.13-2.15, and 2.18-2.20 GHz (2 GHz) bands. These facilities range in size and complexity from simple, one-path analog systems to multichannel digital systems spanning more than 900 total miles. APPA members use these facilities for real-time control, monitoring, and dispatch of electric generation and transmission facilities, as well as long- and medium-haul remote data and voice communications. Typical usage would include: (1) remotely detecting, isolating, and clearing fault conditions on high-power transmission lines within milliseconds, thereby preventing blackouts and loss of lives and property; (2) bringing nuclear, thermal, and hydroelectric generation stations on- and off-line to instantaneously

match system capacity with demand; (3) forwarding critical telemetry data between and among a utility's substations, operations control centers, generation stations, and other utilities; and (4) controlling mobile radio base stations and other radio systems used for load control, environmental monitoring, and nuclear plant operations.

Nearly 800,000 megawatts of generating capacity in North America is controlled by this communications network which relies heavily on microwave facilities in the 2 GHz band. While not all electric utilities have microwave systems in this band, the interconnected nature of the national electric grid makes each communication link, regardless of which utility operates it, critical to the operation of the entire grid. Reliability of the communications network used for these purposes is absolutely essential to the continued safe operation of this grid.

The Federal Energy Regulatory Commission has adopted a policy of encouraging "wheeling" to promote electric utilities' access to cheaper sources of wholesale power. Wheeling involves the use of this grid to move power generated at one location to a utility which is not directly tied to the generation source by its own transmission system. As the use of wheeling increases, the reliability of the communications network which ties the grid together will become even more critical.

In the future, the reliability of this communications infrastructure will not only have to be maintained, it will have to be improved. Failure to do so would threaten the public health and safety.

II. The 1850-2200 MHz Band Should Not be Reallocated For the Creation of a Spectrum Reserve

APPA opposes a reallocation of spectrum in the 1850-2200 MHz band for the creation of a spectrum reserve for development of emerging technologies for the following reasons:

1. Use of Other Communications Media or Leased Circuits Would Reduce Reliability

In its NPRM in Docket 92-9, the Commission proposes that other communications media, such as fiber optic cable or satellite communications, or circuits leased from common carriers are possible alternatives for incumbent 2 GHz licensees. After reviewing each of these alternatives, APPA finds all of them to be unacceptable for replacing the 2 GHz microwave facilities employed by publicly owned electric utilities.

To maintain continuous electric service for the nation's consumers, utilities must have continuous access to their system command, control, and monitoring systems. Common carrier circuits cannot provide the required reliability necessary to maintain system control because of the divided responsibility for the communications system.

Service restoration priorities of electric utilities are based on human safety and plant protection considerations. The utility is ultimately responsible for ensuring safety and mitigation of losses during outages. Relying on another entity to be responsible for such a critical area of electric utility operations is unacceptable.

A direct line of responsibility is required by electric utilities during emergencies to avoid finger-pointing in lieu of problem resolution. To make this situation worse, lessors of communications may rely on more than one other communications system or may routinely reroute communications signals through other systems, further obscuring the party responsible for restoring service.

APPA recently surveyed its members with 2 GHz microwave systems. Among the questions posed was the following: "If you were no longer able to operate in this spectrum, what percent of your existing system could be readily replaced by common carrier circuits?" Most electric utilities found common carrier circuits to be unacceptable for any of their existing 2 GHz traffic. Only four respondents indicated that even a minimum amount of highly selected traffic could be directed to such circuits -- one respondent indicated 4 percent, two indicated 5 percent, and one indicated 20 percent. Typical of the comments received was that of Public Utility District No. 1 of Chelan County, Washington: "The critical nature of our communications often does not allow us to use a third party, such as a common carrier." Obviously, the use of common carrier circuits is not an acceptable alternative.

Electric utilities must also have instantaneous communications capability for their system command, control, and monitoring systems. The probability of a catastrophic power system failure increases dramatically as the delay in fault-clearing increases. Such a delay can lead to widespread blackouts, injury, and loss of life. Communications for electric utility operational control systems must meet these demanding conditions.

This need for real-time control of the electric grid makes use of satellite communications systems unacceptable. The long distances involved in transmitting signals from earth to a satellite and back to earth result in delays in receipt of signals of up to 500 milliseconds from the time of transmission. Time intervals of only 5 to 20

milliseconds are typically budgeted by utility design engineers for these purposes. Due to the delays inherent in satellite communication systems, these systems will not work for high-speed electric utility operations such as transmission system protective relaying.

This conclusion is supported by the Commission's Office of Engineering and Technology (OET) in its spectrum study prepared in advance of the NPRM, which found: "The echo and delays associated with satellite communications may make this alternative less desirable for some applications, such as real-time control."[1]

The "split responsibility" problems associated with leased common carrier communications sytems apply to satellite communications systems, as well.

APPA members found that fiber optic cable, like leased common carrier circuits, would be practical for only a small portion of highly select traffic currently carried on their 2 GHz microwave systems. Installation difficulties make this medium unacceptable in remote, mountainous, or rocky terrain, which constitutes a major portion of the land area currently traversed by electric utilities' microwave systems. This is particularly true for 2 GHz systems, which are typically

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1/ See "Creating New Technology Bands for Emerging Telecommunications Technology," OET/TS 92-1 (January, 1992), p. 30.

installed in such terrain because they are capable of supporting longer paths from transmitter to receiver.

These installation difficulties would force utilities to install the cable on their overhead transmission systems, making them susceptible to weather-induced outage, such as lightening strikes or cable breaks due to high winds. To obtain the degree of system reliability required by electric utilities, path diversity would have to be employed, leading to additional feasibility questions involving terrain and cost.

2. Replacing 2 GHz Microwave Systems with Fiber Optic Cable or Satellite Transmission Would Be Impractically Expensive

Even if the inherent reliability problems of fiber optic cable and satellite transmission systems could be resolved, the expense of these options make them financially infeasible.

The OET Study estimated that fiber optic cable could be installed at a cost ranging from $15,000 from $40,000 per mile. However, APPA members with experience in installing fiber optic cable believe this estimate is substantially understated. Their experience indicates that the average installed cost of fiber optic cable is $10 per foot, or nearly $53,000 per mile.

Regardless of whose estimates are utilized, even the OET Study acknowledged that fiber optic systems cost substantially more than microwave systems: "We recognize, however, that for many existing

operations, fixed microwave continues to offer a significant cost savings over the deployment of fiber for long distances, especially when right-of-way problems exist or the fiber route is through rocky or rough terrain."[2] Most utilities opted to install 2 GHz microwave systems because their communications systems were spanning long distances through rough and rocky terrain.

The use of satellite transmission services is also an expensive proposition. According to the OET study, satellite transponder costs are about $50,000 per month for 10 MHz.[3] Further, the OET study does not address whether sufficient transponder capacity exists on properly located satellites to serve the needs of incumbent 2 GHz licensees.

3. Lack of Suitable Frequencies in Other Private Microwave Bands

Although the NPRM asserts in Paragraph 20 that "there appears to be adequate capacity in the higher frequency bands that are allocated to fixed microwave services," further study shows that this is not the case.

The OET Study compiled a list of 2, 4, and 6 GHz microwave facilities. Plotting the location of the existing 4 and 6 GHz transmitters on a 2 degree grid blocks, the study determined the existing number of transmitters within each block for the 50 largest

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2/ Ibid.

3/ Ibid.

Metropolitan Statistical Areas (MSAs). The study then determined "benchmark" estimates of the spectrum capacity within these blocks on the basis of the zones with the highest number of transmitters. "The benchmark selection was based on the assumption that if there are several blocks throughout the country where the same or higher number of transmitter populations are achieved then this number or benchmark should be achievable in any location."[4]

Using these benchmarks as the estimate of ultimate transmitter capacity for any given 2-degree block, the study then calculated the estimated available capacity of each block within the 50 MSAs. Available capacity was estimated by subtracting the number of existing transmitters in individual bands from the estimated capacity of each band in that block.

Before accepting this approach, it should be pointed out that this theory of determining the remaining capacity of 4 and 6 GHz bands is based on a very questionable assumption. As the OET Study notes, "the use of benchmarks as an indicator of available capacity may overstate or understate the actual capacity available in given areas. For example, differences in topography and routing of microwave systems may affect the availability of capacity."[5] This theory assumes that the advantages and disadvantages of terrain, atmospheric conditions, and physical structures generally balance out in a nationwide study. Thus, if Los

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4/ Ibid., p. 24.

5/ Ibid., p. 13.

Angeles can support 546 transmitters in the 6525 MHz band per block, any 2-degree block in any MSA in the country can support at least 500 transmitters in the 6525 GHz band. This is a very big assumption on which to base the reliability of the nation's entire electricity infrastructure -- an assumption which APPA is not willing to make.

However, even if one accepts this questionable theory, the study's own numbers show inadequate capacity in the only acceptable alternative band in at least 12 cities. As previously established, use of common carrier microwave is not an acceptable substitute for 2 GHz private microwave systems, and the NPRM did not address entry of private microwave facilities into the 4 GHz and 6 GHz common carrier microwave bands. If all 2 GHz systems were to be relocated to the 6 GHz private microwave band, there would actually be a shortage of channels in the New York City, Houston, Sacramento, Washington, Dallas-Fort Worth, Baltimore, San Francisco, New Orleans, Los Angeles, Pittsburgh, Philadelphia, and Chicago MSAs.[6]

4. Switching to Higher Frequencies Would be Costly

APPA's survey confirmed that conversion of the existing 2 GHz systems to higher frequencies would be expensive. Twenty-one respondents estimated it would cost a total of $79 million to convert their systems to higher frequencies. Several APPA members were unable to estimate their cost of conversion.

6/ Derived by comparing the number of transmitters in the 2 GHz band with the available capacity in the 6525 MHz band, as listed in Table 4 of the OET Study, pp. 26-27.

The OET Study concluded that the cost of relocating all 2 GHz microwave facilities to frequencies above 3 GHz would range from $750 million (if conversion did not occur until existing equipment had totally depreciated) to $2.75 billion (if all existing 2 GHz microwave facilities were converted to higher frequencies immediately). Again, these estimates are based on some questionable assumptions. First, they assume that the useful life of "frequency sensitive" 2 GHz equipment is 15 years, when the study showed that some existing equipment is already as much as 20 years old. Second, they assume that the value of the equipment should be reduced to reflect the portion of its useful life still remaining. Third, they assume this equipment is equally distributed over its 15-year life cycle, and that the average age of the equipment is, therefore, 7.5 years. Fourth, they assume the lower estimate of $125,000 for replacement of frequency sensitive equipment at each facility, rather than the higher estimate of $150,000 or even an average of this range. Finally, they assume that the average costs per facility of frequency coordination, antenna upgrades, improvements to antenna structures, and other relocation costs would be $25,000, when figures reported in the OET Study showed these costs could range as high as $53,000 per site.[7] If any one of these five assumptions is incorrect, the estimated costs could be grossly understated.

This estimate is far below that supplied by the Office of Management and Budget (OMB). The Administration's FY 1992 budget assumed net receipt of $2.5 billion from the auction of 30 MHz of Federal spectrum controlled by the National Telecommunications and Information Administration (NTIA). These net receipts were based on OMB's estimate

that it would cost $67 million per MHz to relocate existing users of the spectrum to other frequencies.[8] Using the OMB estimate, it would cost $14.74 billion to reallocate 220 MHz of the 2 GHz spectrum.

5. Converting to Higher Frequencies Would Be Impractical in Many Instances

The NPRM suggests that it is technically feasible for incumbent 2 GHz licensees to relocate to higher frequencies. The Commission based this conclusion on the OET Spectrum Study. However, this conclusion is fatally flawed for several reasons.

First, while acknowledging that 2 GHz systems are capable of supporting longer path lengths than higher frequencies, the study found that the average 2 GHz path length was about the same as the average path length of 6 GHz systems. Thus, the study concluded, 2 GHz systems could convert to the 6 GHz band with minimal technical difficulties.

The shortcoming in this analysis is that it relies on averages. The OET Study notes that, while the average path of a 2 GHz system is 17 miles, individual path links range from less than one mile to more than 100 miles.[9] No one would seriously suggest that a 6 GHz system could support a path length in excess of 100 miles. Consequently, while the 6

7/ OET/TS 92-1, pp. 31-33.

8/ See "Auctioning Radio Spectrum Licenses," Congressional Budget Office (March, 1992), p. 14.

9/ OET/TS 92-1, pp. 9 and 18.

GHz band might support some of the existing path lengths of the incumbent 2 GHz licensees (assuming spectrum is available in the 6525 MHz band), it will not support all path lengths.

Second, the conclusion that 2 GHz systems can be converted to 6 GHz by changing the radios, cabling and antenna is based on the OET Study's conclusion that the increased signal fade at 6 GHz will be more than compensated for by the increased gain of 6 GHz antenna. The study asserts that even in Houston, where weather conditions and proximity to water create the worst fading conditions, microwave operators have used the 6 GHz band as effectively as the 2 GHz band for their communications needs.[10]

APPA members with both 2 GHz and 6 GHz facilities disagree with this conclusion, however. Their experience has shown that, while some facilities in some locations may be designed from scratch to provide reliable 6 GHz service, many of their existing 2 GHz paths could not be converted to 6 GHz and provide the degree of reliability required by the demanding specifications of electric utilities. Particular problems are noted in long paths located in mountainous terrain or over water, particularly sea water. In these demanding conditions, sometimes even a system built from scratch to 6 GHz design specifications cannot provide the reliability available from 2 GHz systems. For example, Santee Cooper recently constructed a 6 GHz loop along South Carolina's Atlantic seaboard. The utility concluded that, to date, the results have shown that the 6 GHz band did not meet its reliability needs satisfactorily.[11]

Santee Cooper engineers explained that temperature inversions and high humidity have occasionally caused fading in excess of the system design.

Some of the long 2 GHz paths might be shortened to provide the required reliability at 6 GHz. However, this would entail additional expense. In addition, it assumes that additional tower and repeater sites are available. APPA members indicated that in several instances it would be impossible to construct additional tower and transmitter facilities, due to terrain, flight path restrictions, and environmental restrictions.

Conversion of 2 GHz systems would also require some tower reconstruction. The higher gain antenna required for 6 GHz systems are heavier, and this additional weight would exceed tower loading capacity in several instances. Other APPA member systems, such as the Lower Colorado River Authority, indicated that heights of some towers would have to be increased. Tower reconstruction will also increase the cost of spectrum reallocation. Again, however, zoning, air space, and environmental restrictions may make tower reconstruction impossible at any cost.

III. There Are Alternatives To Reallocation of 2 GHz Microwave Facilities

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10/ Ibid., p. 17.

11/ See "Testimony of Robert E. Rainear" before the Communications Subcommittee, Committee on Commerce, Science, and Transportation, U.S. Senate (June 3, 1992), p. 3.

There are at least three alternative bands below 3 GHz controlled by the Commission which would, separately or in conjunction, provide adequate spectrum for the introduction of emerging technologies utilizing state-of-the-art equipment. Specifically, the 1.99-2.11 GHz, 2.45-2.5 GHz, and 2.5-2.69 GHz bands would all meet the needs of emerging technologies, as described in the NPRM.

APPA supports the Petition for Issuance of Further Notice of Proposed Rule Making filed with the Commission by the Utilities Telecommunications Council (UTC) on May 1, 1992. This petition seeks to establish these bands as the spectrum reserve for emerging technologies. Information set forth by the UTC in this petition, along with the comments filed by UTC in conjunction with the NPRM, set forth in great detail the reasons why these bands would serve as acceptable spectrum reserves for emerging technologies.

In addition to these bands controlled by the Commission, the 1710-1850 MHz band controlled by the NTIA would meet these criteria, as well. NTIA is completing a spectrum utilization study that will show how much of this band is already available without relocating any existing Federal users. Legislation has already passed the U.S. House of Representatives and is pending before the U.S. Senate which would direct that at least 200 MHz of NTIA spectrum be made available for reallocation by the Commission. The Commission should withhold action on the NPRM at least until the NTIA has completed its spectrum

utilization study to determine how much spectrum might already be available in the 1710-1850 MHz band, plus how much additional spectrum might be freed up by relocating existing Federal users of this band.

If spectrum in the 1710-1850 MHz band is made available for emerging technologies, existing usage of this band by the Tennessee Valley Authority and the Bonneville, Western, and Southwestern Power Administrations must be protected. As with publicly owned and investor-owned electric utilities, reliability of the microwave command, control, and monitoring systems of the Federal power agencies is essential to the nation's electric power grid. The reliability of this microwave control system must not be compromised, whether the facilities are operated by Federal agencies, publicly owned or investor-owned electric utilities. The Commission should establish strict interference standards if this spectrum is made available to emerging technologies.

IV. Proposals for Transition Period Fall Short

In the NPRM the Commission proposed a defined "transition period" of 10-15 years, during which time incumbent 2 GHz licensees would be encouraged to negotiate with new service providers seeking access to the 2 GHz band. The Commission proposed a market-based approach to encourage compensation of incumbent licensees by new technology providers for expenses involved in vacating the 2 GHz band. To "encourage" this transition of private microwave licensees from the 2 GHz band, the NPRM would downgrade incumbent licensees from co-primary to secondary status at the end of the transition period. An exception

is made, however, for state and local government licensees, who would be granted indefinite co-primary status. However, the NPRM provides that any new licenses or license modifications sought by state and local government licensees would be granted on a secondary basis. Finally, the NPRM seeks comment on whether the Commission should issue tax certificates to encourage incumbent licensees to abandon their fixed microwave facilities and utilize alternative, non-radio media. APPA submits the following comments on these issues:

1. Complete Compensation of Incumbent Users Should be Required Before Transfer of License

APPA supports a market-based approach to negotiations between incumbent licensees and new service providers for access to 2 GHz frequencies and licenses. Such an approach will encourage those 2 GHz fixed microwave systems which can relocate to other spectrum or alternative media to do so, freeing up spectrum in the band for either emerging technologies or other uses.

In the NPRM the Commission expressed some concern about encouraging financial "windfalls for the incumbent 2 GHz licensees." Utilities are not speculators. Proceeds from negotiations for a 2 GHz license would be an above-the-line contribution in aid of construction of a replacement communications system. Costs associated with constructing and operating a new communications system would be an above-the-line expense. All above-the-line income and expense is included in the rate base of a utility. To the extent that any negotiations with a prospective new technology user results in compensation which exceeds

costs associated with constructing a new communications system, the excess revenue would reduce power rates. Thus, the benefits would be captured by consumers, or rate payers. The Federal Energy Regulatory Commission recently modified the uniform system of accounts to handle regulatory assets, which is what FCC 2 GHz licenses would be considered.

Any final rule making should clearly require that all direct and indirect expenses incurred by an incumbent 2 GHz licensee in vacating the band and constructing a replacement communication system be fully compensated by the new service provider seeking the spectrum before the frequency is surrendered to the prospective user. The NPRM assurance in Paragraph 22 that "to the extent possible...some or all of these costs (should) be paid" is not adequate. Similarly, Paragraph 26 states that the NPRM "would encourage reaccommodation and underwriting of the costs of transition for the 2 GHz users" [emphasis added]. The final rule must not equivocate in this manner.

2. Granting Indefinite Co-Primary Status to only One Class of Incumbent Users Will Destroy Market for Equipment Suppliers

The NPRM provides that state and local government entities with 2 GHz licenses would be granted indefinite co-primary status. However, any new licenses or license modifications sought by a state or local government would be issued on a secondary basis. APPA opposes this provision of the NPRM for two reasons.

First, issuance of new or modified licenses on a secondary basis is not necessary to prevent speculation or band crowding. As previously stated, public utilities are not speculators, and have nothing to gain by such actions. Further, the OET Study found that "there has not been significant recent growth in the installation of private fixed microwave facilities" in the 2 GHz band.[12] If there has been no significant growth, there is no need to preclude the issuance of new or modified licenses on a co-primary basis.

Further, the isolation of only state and local government microwave systems on the 2 GHz band will ultimately constitute de facto band clearing of microwave facilities. With such a small number of facilities to service in the 2 GHz band, equipment manufacturers will abandon this market for sectors with growth potential. The "indefinite co-primary" status offered state and local governments in the NPRM is an empty promise for APPA's members.

3. Tax Certificates Will Not Benefit All Incumbent Licensees

In the NPRM the Commission asked for comments on whether tax certificates should be awarded to fixed microwave licensees who receive financial compensation from an entity seeking to use the spectrum for new technology as part of an agreement to surrender their license and use other, non-radio alternative media. APPA is opposed to this

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12/ OET/TS 92-1, p. 32.

proposal, because it would benefit some incumbent 2 GHz licensees, but not others.

APPA's members are publicly owned entities. For the most part they are state or local government entities, such as a state trust authority or utility department of a city government. Some APPA members are rural electric cooperatives. None of these entities are subject to Federal income tax. Consequently, Commission issuance of tax certificates as an incentive to give up radio licenses would not benefit APPA's members who are incumbent 2 GHz licensees. Any incentives granted by the Commission to facilitate transition should be available to and readily usable by all incumbent 2 GHz licensees. The proposal to issue tax certificates fails this test and should not be implemented.

V. Actions To Be Taken if the 2 GHz Band Is Reallocated

APPA urges that if the 2 GHz band is reallocated for emerging technologies, the Commission should grant indefinite co-primary status for all existing 2 GHz microwave systems and should permit reasonable system modifications and expansions.

Several representatives of emerging technologies have indicated that enough spectrum is available in the 2 GHz band for introduction of these technologies without ordering the band cleared of incumbent licensees. For example, the President of American Personal Communications, Inc. recently testified before a Senate subcommittee that, by utilizing the new Frequency Agile Sensing Technology,

widespread installation of personal communications networks would require the relocation of only a very few 2 GHz microwave links in a very few cities. These relocations could be effected by private negotiations between the parties, and the party seeking access to the frequency would compensate the incumbent licensee for all relocation costs, he testified.[13]

In light of this information, the NPRM proposal that incumbent 2 GHz licenses should revert to secondary status after a transition period is unnecessary. Instead, incumbent licensees should be granted indefinite co-primary status with emerging technologies, and reasonable system modifications and expansions should be allowed. The Commission should adopt rules providing for voluntary negotiations between incumbent licensees and new service providers in those rare instances when an in-use frequency is needed by the emerging technology. If the parties are unable to arrive at a settlement, Commission rules should allow the new service provider to seek resolution before the Commission. In those instances where the incumbent licensee can relocate to another frequency without a deterioration in reliability of service, the Commission should decide the issue on the basis of which party can better serve the public necessity and convenience at the contested frequency. However, in no case should the incumbent licensee be forced to relocate to another frequency if the relocation would result in any decrease in the reliability of electric service.

13/ See "Testimony of Wayne Schelle" before the Communications Subcommittee, Committee on Commerce, Science, and Transportation, U.S. Senate (June 3, 1992).

In all cases where an incumbent user relocates to another communications medium or to a higher frequency, whether by negotiation or by Commission order, Commission rules should require the new service provider to compensate the incumbent licensee for all direct and indirect costs associated with such relocation.

If the 2 GHz band is opened to emerging technologies on a co-primary basis with incumbent users, the Commission should establish strict standards to insure that the reliability of incumbent licensees' systems is not compromised by interference or crowding. In no circumstance should new services in the band be authorized on an unlicensed basis or any other basis where existing users would be unable to secure reimbursement for relocation or identify interference sources.

VI. The 1710-1850 MHz Band Should Be Made Available for Displaced 2 GHz Users

APPA urges the Commission and the NTIA to commence discussions to open the 1710-1850 MHz Federal government spectrum for use by displaced 2 GHz users on a co-primary, non-interference basis.

Legislation which has passed one house of Congress and is pending before the other would direct NTIA to make available to the Commission at least 200 MHz of spectrum for reallocation. As previously established, NTIA expects to complete within 60 days a spectrum allocation study which will show how this band is currently utilized.

Incumbent 2 GHz licensees could relocate to this band with a minimum of expense and disruption of service. Propagation characteristics between the 1710-1850 GHz band and the 2 GHz spectrum utilized by private microwave facilities are almost identical. In most cases conversion to the lower-frequency band would require only that frequency control crystals be changed. In all instances the existing antenna, towers, and cabling can be retained. Because of the almost identical propagation characteristics, existing paths could be utilized, eliminating the need for construction of additional repeaters, as would be required in many instances under the NPRM.

The Commission and NTIA should immediately begin discussions to open this band to displaced 2 GHz users to the extent that spectrum is available. Later, the two agencies can make arrangements for relocation of existing Federal users of the NTIA band to free more spectrum for this use. However, APPA is compelled to again stress the importance of maintaining the use of the 1710-1850 band by the Tennessee Valley Authority (TVA) and the Federal power marketing administrations on a co-primary, non-interference basis. Displaced 2 GHz users, with proper frequency coordination, could coexist with TVA and the other Federal power marketing agencies in the 1710-1850 band.

VII. The Commission Should Open the 4, 6, and 11 GHz Bands for Private Microwave Use

APPA supports the Utilities Telecommunications Council (UTC) Petition for Rule Making filed March 31, 1992, to make the 4 GHz, 6 GHz, and 11 GHz common carrier bands available for routine licensing in the

Private Operational Microwave Service under Part 94. The Commission should adopt appropriate channeling plans and technical standards to ensure that these bands are adequate to meet the needs of existing and future private microwave systems.

While APPA does not believe incumbent 2 GHz users can make broad use of these bands because of the differences in propagation characteristics previously identified, some systems with short path links or specialized communications needs might be able to relocate part, or, in very rare instances, all of their existing 2 GHz systems in these other bands. However, relocation to these bands will require the action of the Commission sought by UTC in its March 31, 1992 Petition.

VIII. Conclusion

APPA is opposed to the use of the 2 GHz band as a spectrum reserve for emerging technologies. The practical effect of the NPRM is to clear the band of all incumbent microwave licensees, including state and local government agencies. The NPRM has failed to identify adequate alternative spectrum of acceptable reliability for relocation of electric utility microwave systems. Alternative media such as fiber optic cable and satellite communications systems are neither reliable nor economically feasible for electric utility command, control, and monitoring communications systems.

As an alternative, APPA supports indefinite co-primary status for incumbent 2 GHz licensees and new technologies. The Commission should consider alternative bands as a spectrum reserve, including the 1710-1850 MHz band allocated by the NTIA. Finally, APPA has no objections to voluntary relocation of incumbent licensees in conjunction with free-market negotiations with propspective new technology providers. However, the Commission should adopt rules which will require compensation of all direct and indirect relocation costs of the incumbent licensee before the spectrum is relinquished to the new technology user.

Wherefore, The Premises Considered, the American Public Power Association respectfully requests the Commission to consider these Comments in acting on the subject Notice of Proposed Rule Making.

Respectfully submitted,

AMERICAN PUBLIC POWER ASSOCIATION

By: Ted Coombes

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