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

In the Matter of	)	
	)	
Allocation of Spectrum Below	)	ET Docket No. 94-32
5 GHz Transferred From	)	
Federal Government Use	)	

To: The Commission

COMMENTS OF THE AMERICAN RADIO RELAY LEAGUE, INCORPORATED
IN RESPONSE TO NOTICE OF PROPOSED RULE MAKING

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SUMMARY

The American Radio Relay League, Incorporated (the League), the national association of amateur radio operators in the United States, hereby respectfully submits its comments in response to the Notice of Proposed Rule Making (the Notice), FCC 94-272, 59 Fed. Reg. 59393, released November 8, 1994. The Notice proposes to allocate the first 50 MHz of spectrum that was preliminarily identified by the National Telecommunications and Information Administration (NTIA) as being subject to immediate reallocation from Federal Government use. These segments include 2390-2400 MHz, 2402-2417 MHz, and 4660-4685 MHz. The League's interest is in the Amateur Radio Service's public service use of the 2390-2400 MHz and 2402-2417 MHz segments, and the Amateur-Satellite Service continued use of the 2400-2417 MHz segment.

The League requests that the Amateur Service be given primary allocation status at 2402-2417 MHz, and that it be given at least co-primary status at 2390-2400 MHz. Because NTIA also specifically carved out the 2400-2402 MHz segment for amateur use, it is desirable to make the entire segment, 2390-2450 MHz, amateur primary. Furthermore, the League urges that any fixed or mobile service station that is granted an assignment at 2390-2400 MHz, through lottery or as the result of a specific allocation, must be required to protect the Amateur Service from interference and must tolerate any interference received from amateur stations.

Overall, the League requests that the Commission not make any additional allocations in the 2390-2417 MHz band. Instead, it should grant the Amateur Radio and Amateur-Satellite Services primary allocation status in that band; and the League further requests that the Commission continue to work with NTIA to find alternative spectrum for reallocation, other than 2300-2310, 2390-2400, and 2402-2417 MHz, which might be in compliance with the specific terms of the Omnibus Budget Reconciliation Act.

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Allocation of Spectrum Below 5 GHz Transferred From Federal Government Use	)	**ET Docket No. 94-32**

To: The Commission

COMMENTS OF THE AMERICAN RADIO RELAY LEAGUE, INCORPORATED
IN RESPONSE TO NOTICE OF PROPOSED RULE MAKING

The American Radio Relay League, Incorporated (the League), the national association of amateur radio operators in the United States, by counsel and pursuant to Section 1.415 of the Commission's Rules, hereby respectfully submits its comments in response to the Notice of Proposed Rule Making (the Notice), FCC 94-272, 59 Fed. Reg. 59393, released November 8, 1994. The Notice proposes to allocate the first 50 MHz of spectrum that was preliminarily identified by the National Telecommunications and Information Administration (NTIA) as being subject to immediate reallocation from Federal Government use. These segments include 2390-2400 MHz, 2402-2417 MHz, and 4660-4685 MHz. The Notice proposes alternative allocation plans for these segments, as per the mandates of the Omnibus Budget Reconciliation Act of 1993, Pub. L. No. 103-66, 107 Stat. 312 (August 10, 1993). In the interests of the Amateur Radio Service in the continued public service use of

the 2390-2400 MHz and 2402-2417 MHz segments[1],[2] which stand to be adversely affected by this proceeding, the League states as follows:

I. Introduction

1. The Notice in this proceeding reflects the difficult position in which the Commission has been placed, by a flawed preliminary reallocation plan of NTIA. This plan apparently will not change, despite overwhelming critical comments from both the public and the Commission, addressed to NTIA. These comments make it abundantly clear that the proposed reallocation of the 2.4 GHz segments is not in accordance with the requirements of the Reconciliation Act in at least two respects. Though Congress specifically provided for and required inclusion of the public and the Commission in the determination of what frequency spectrum is most appropriate for reallocation to meet the goals of the Reconciliation Act,[3] NTIA has not modified its preliminary reallocation proposal to comply with the Reconciliation Act following receipt of adverse comment by the Commission and the public. Nor did it offer a meaningful mechanism for public

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[1] The League has no direct interest in the 4660-4685 MHz segment, as it is not an amateur allocation.

[2] The 2390-2400 MHz and 2402-2417 MHz segments will be referred to herein collectively as "the 2.4 GHz segments."

[3] See, the Reconciliation Act, Sections 113(d)(2) and (3).

determination of alternative spectrum for reallocation from government use. Instead, NTIA has continued to propose the reallocation of spectrum at 2.4 GHz that offers little, if any, opportunity for accommodation of new advanced telecommunications technologies. It does, however, inexorably entail the serious disruption of existing and near-term planned Amateur and Amateur-Satellite operation, directly contrary to the specific instructions and the obvious intent of Congress in the Reconciliation Act. Worse yet, NTIA did not even attempt to comply, before the issuance of the preliminary reallocation plan or since that time, with the requirement of the Reconciliation Act that NTIA conduct a study of the feasibility of sharing between the Amateur Service and commercial users. See, the Reconciliation Act, at §113(c)(3)(C).

2. In evaluating the NTIA preliminary allocation plan with respect to the 2.4 GHz segments, viewed, as it must be, in the harsh light of public comment, the plan fails to comply with the terms of the Reconciliation Act. The Commission has already specifically determined that there can be no additional non-government reallocation of the 2390-2400 MHz segment without serious disruption of amateur use[4]. It has also specifically

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[4] In the "Report From The Federal Communications Commission To Ronald H. Brown, Secretary, U.S. Department Of Commerce, Regarding The Preliminary Spectrum Allocation Report", FCC 940213, released August 9, 1994 (the FCC Report), the Commission stated, with respect to both the 2300-2310 MHz and 2390-2400 MHz segments:

> The largest factor affecting use of these bands is their existing availability for use by the Amateur Service (footnote omitted). Congress specifically sought to avoid disruption of existing use of Federal Government frequencies by amateur radio licensees (footnote

determined that there is no significant utility of the 2402-2417 MHz segment for new, advanced technologies, given the extensive current deployment of the band for Part 18, Part 15 and Part 97 uses.[5] The Commission has already concluded, therefore, that the proposed NTIA reallocation of the 2.4 GHz segments cannot, within the parameters set by Congress, provide additional spectrum for advanced technologies, which is the fundamental purpose of the Reallocation in the first place. Notwithstanding the Commission's reasonable entreaties to NTIA to reconsider its preliminary allocation proposal for the 2.4 GHz segments,[6] there is no indication that NTIA intends to fulfill its obligations under the Reconciliation Act, by identifying alternative spectrum for immediate reallocation. By identifying for reallocation spectrum to which the Commission already has significant access and into which

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> omitted). We agree with commenters that there is a substantial likelihood that reallocation of the 2300-2310 MHz bands to commercial or local government use could cause serious disruption to Amateur service use of these bands.
>
> (FCC Report, at 17)

[5] The FCC Report, with respect to the 2402-2417 MHz segment, stated as follows:

> Considering the potentially adverse effects on the amateur radio service and on use of the band by devices operating under Part 15, as well as the difficulties in using this band because of the amount of noise from ISM devices, we believe that reallocation of this band presents less value to the private sector than any other band identified for reallocation in the Preliminary Report.
>
> (FCC Report, at 20)

[6] See, the FCC Report, at p.30, paragraph 70.

the Commission has already placed large numbers of licensees and non-government users, NTIA has subverted the entire intent of Title VI of the Reconciliation Act.

3. The Commission, having advised NTIA that alternative spectrum would comport with Congress' instructions, must nonetheless now determine what, if anything, to do with the 2.4 GHz segments that may be finally reallocated for purely private sector use, notwithstanding their lack of utility for new, advanced technologies. The League requests that the Amateur Service be given primary allocation status at 2402-2417 MHz, and that it be given at least co-primary status at 2390-2400 MHz. Because NTIA also specifically carved out the 2400-2402 MHz segment for amateur use, it is desirable to make the entire segment, 2390-2450 MHz, amateur primary.[7] Furthermore, the League urges that any fixed or mobile service station that is granted an assignment at 2390-2400 MHz, through lottery or as the result of a specific allocation, must be required to protect the Amateur Service from interference and must tolerate any interference received from amateur stations.

II. Background

4. Title VI of the Reconciliation Act specifies, as one of its objectives, communications licensing and spectrum reallocation

[7] The allocation status of the 2417-2450 MHz segment is beyond the scope of this proceeding. While the utility of this segment for commercial users (other that Part 15 and Part 18 uses) is not great, amateurs can continue to make good use of it, and elevation of the amateur allocation there to non-government primary is desirable as well.

improvement to increase the efficiency of spectrum use and the effectiveness of the spectrum management process. Another goal is to promote and encourage the use of new spectrum based technologies in telecommunications applications. Accordingly, the Secretary of Commerce was directed to prepare a report, to be submitted to the President, Congress and the FCC, identifying and recommending the specific spectrum for reallocation. Among the specifications for the 200 MHz of spectrum to be reallocated was that it must be **"most likely to have the greatest potential for productive uses and public benefits under the 1934 Communications Act if allocated for non-Federal use".**[8] That report was prepared and released in February, 1994. It identified, as half of the first 50 MHz to be made available for private sector use immediately, the 2.4 GHz segments.

5. The Reconciliation Act, however, specifically recognized the potential disruption of amateur occupancy of shared government spectrum. All amateur allocations between 225 MHz and 24 GHz are shared with Government users at present, and it was acknowledged by Congress that NTIA, in preliminarily identifying spectrum for reallocation, might look first to that which is already shared with non-government users. The Amateur Service has enjoyed a cooperative sharing arrangement with Government users in UHF and microwave bands, and the substitution of non-government services for Government users in those shared bands would inevitably disrupt

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[8] See, the "Preliminary Spectrum Reallocation Report", February, 1994, NTIA Special Publication 94-27, at page 1-3.

that sharing arrangement. Therefore, Congress specifically delineated the criteria for NTIA's selection of frequencies in the Reconciliation Act. Specifically, the Act, at what is now codified as 47 U.S.C. §923(c), specifies that, in identifying the frequencies for reallocation, the Secretary of Commerce **shall** seek to avoid three adverse results: (i) serious degradation of Federal Government services and operations; (ii) excessive costs to the Federal Government and users of Federal Government services; and (iii) excessive disruption of existing use of Federal Government frequencies by amateur radio licensees. At 47 U.S.C. §923(c)(3)(C), the Act specifies that the Secretary shall consider, in analyzing the benefits from a particular reallocation, "the extent to which, in general, commercial users could share the frequency with amateur radio licensees..." Finally, as one of the five grounds for substitution or withdrawal of proposed reallocation frequencies, the Act, at 47 U.S.C. §924(b)(2)(E) lists the circumstance in which the reallocation will disrupt the existing use of a Federal Government band of frequencies by amateur radio licensees. Thus, three distinct sections of the Reconciliation Act clearly establish that among the major concerns of Congress is the prohibition of disruption of amateur use of shared Government spectrum. This means that there cannot, consistent with the Act, be any net loss of available spectrum for which the Amateur Service has legitimate current and specific near-term future use; and if the addition of non-government services would be disruptive of those uses, alternative reallocation spectrum would have to be identified. If

such a finding is made, alternative spectrum would have to be specified.

6. NTIA's preliminary allocation report, however, failed utterly to substantively fulfill NTIA's obligation to determine, much less assess, the needs and interests of the Amateur Service in the 2.4 GHz segments and at 2300-2310 MHz (the latter slated for reallocation at a later date as part of the remaining 150 MHz to be reallocated under the Reconciliation Act). After identifying the nature of the Amateur Service,[9] and determining the types of uses amateurs make of various allocations (none of the overview was specifically relevant to the 2.4 GHz allocations), NTIA merely assumed, without citation to any authority, that amateur use of the 2.4 GHz segments was "light" **relative to other amateur allocations:**

> An important factor to consider is the current allocation in these bands to the amateur service on a secondary basis. In accordance with the Title VI requirements, any possible reallocation must take into account whether sharing with commercial uses might have a detrimental effect on the amateur service. However, amateur use of these bands is believed to be very light in comparison to the lower amateur radio frequency bands. A representative of the American Radio Relay League, an association of amateur licensees, advised NTIA, through the NTIA Spectrum Planning and Policy Advisory Committee, that increasing use is expected of the 2300-2310 and 2390-2450 MHz bands for high speed computer data links, amateur satellite, amateur TV, and other wide-band amateur applications. In the 2300-2450 MHz bands, the amateur service has 70 MHz of allocated spectrum on a secondary basis. Specific amateur-satellite frequencies currently used in the amateur-produced OSCAR satellites are located in the 2400-2402 MHz range.
> (preliminary report, at p. 4-16)

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[9] See, the Preliminary Report, at pp. 3-5, 3-6.

In the section of the preliminary report explaining the reallocation plan, NTIA stated, with respect to the Amateur Service, as follows:

> The only frequency bands used by amateur licensees that are proposed for reallocation are in the 2300-2450 MHz range, referred to as the 13 cm band by the amateur community. Within this range, the amateur service is allocated a total of 70 MHz on a secondary basis to the Federal radiolocation service. The reallocation plan identifies three portions of this range, 2300-2310, 2390-2400 and 2402-2417 MHz, which represent a total of 35 MHz of spectrum for reallocation. This could reduce by one-half the spectrum available for the amateur service in the 13 cm band. However, these bands are believed to be very lightly used by radio amateurs, as compared to lower frequency bands. Because of the importance of specific frequencies in the range 2400-2402 MHz for amateur satellite operations, these frequencies were excluded from consideration. It is expected that the amateur community can satisfy the majority of their spectrum requirements in the 13 cm band in the remaining 35 MHz.
>
> (Preliminary Report, at 5-12)

There is no citation for the assumptions made in the foregoing paragraph, and it is apparent that NTIA made no real study of the amateur uses in the band, or the short-term needs of the Amateur Service in the band, before arriving at the preliminary conclusion that amateur use of the 2.4 GHz segments was "light".[10] Furthermore, in its cavalier suggestion that the needs of the Amateur Service for use of the 2.4 GHz band could be met in the

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[10] In fact, discussions with NTIA staff after the issuance of the preliminary report indicate that the staff considered only a few sources, such as the League's Repeater Directory, in determining amateur uses of the band, which are, alone, quite insufficient in determining amateur occupancy. The errors in the assumptions made by NTIA are revealed by the substance of the Comments received by NTIA and by the Commission in public comment received on the Preliminary Report, and in response to the Notice of Inquiry in this proceeding, released May 4, 1994.

remaining 35 MHz, NTIA ignored its own studies (as the Commission has acknowledged) which conclude that use of the remaining amateur (secondary) segment, at 2417-2450 MHz (and the 2402-2417 MHz segment as well) is exceptionally difficult for any licensed service, due to the presence of Part 18 and Part 15 devices.[11] It is simply not possible, on the facts that NTIA had before it, to conclude that the needs of the Amateur Radio Service lost at 2300-

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[11] The FCC Report, at 18, cites Appendix E of the Preliminary Report, which reviewed the sharing possibilities of licensed services with microwave ovens at 2402-2417 MHz:

> As discussed in the Preliminary Report, the 2400-2500 MHz band is occupied by over 80 million microwave ovens, which are ISM devices. The Preliminary Report includes in its Appendix E an analysis of possibilities for sharing with microwave ovens. This analysis concludes that the high level of noise created by microwave ovens between 2425-2475 MHz renders successful use of this frequency range by a licensed communication service unlikely. The analysis goes on to conclude, however, that the noise below 2425 MHz is significantly less and that advanced modulation techniques, such as spread spectrum, should be able to penetrate the noise below 2425 MHz. We disagree. An examination of the charts showing measurements for Green Mesa, near Boulder, Colorado, and at Flagstaff, Arizona indicate that the noise in the 2400-2420 MHz range is only 10 to 15 dB below the noise at the center of the ISM band. Using NTIA's assertion that noise in the center of the band is 20 to 40 dB above receiver threshold noise, the noise in the 2400-2420 MHz band is still 5 to 30 dB above receiver threshold noise. This would make it extremely difficult for any licensed communication system to operate and would greatly reduce the advantages of using advanced technologies. The gain in capacity generally realized by advanced technology systems would have to be traded for providing resilience to interference from microwave ovens. TIA has submitted a study demonstrating that, because of the noise created by ISM devices that operate in this band, implementing a communications system in this band will cost up to 50 times as much as a system operating in a band without interference from ISM devices.
>
> FCC Report, at 18-19.

2310 MHz, 2390-2400 MHz, and 2402-2417 MHz, could in any way be supplanted by residual use of 2417-2450 MHz. Such is not likely, and NTIA's own studies revealed it.

7. Finally, at page E-6 of the Preliminary Report, NTIA stated, in summary, as follows:

> The amateur radio service is also allocated for the (2400-2450 MHz) band on a secondary basis. Overall use by the amateur community cannot be easily determined; however, it is believed to be at a much lower activity level than at lower frequency bands. Several amateur-satellite downlinks in the OSCAR satellite series have been successfully used in the 2400-2402 MHz band.

The admission of NTIA that it has essentially no information about the use of the 2.4 GHz segments by amateurs is tantamount to an admission that it cannot comply, and has not complied, with the protection requirements for amateurs set forth in the Reconciliation Act. Furthermore, the conclusion that amateur use of the 2.4 GHz band is light relative to that in the saturated amateur allocations below 2.3 GHz, while correct, is not meaningful. Congress did not require that the amateur allocation at 2.4 GHz be completely saturated in order to entitle amateur use to protection there. Nor did it require that the amateur use be as extensive as in the most heavily used amateur allocations in order to be protected. Rather, the obligation on NTIA, and now on the Commission, is to avoid excessive disruption of the amateur uses in the band. It cannot have determined what excessive disruption is on the facts before it at the time of the Preliminary Report.

8. The League, in comments filed with NTIA May 11, 1994, noted that nowhere in the four corners of the Preliminary Report had NTIA

conducted the mandatory study of amateur/commercial sharing in the proposed reallocated bands. It urged NTIA to conduct a preclusion study based on information about present and near-term future amateur uses of the segments proposed for reallocation, and determine sharing options involving a range of commercial uses, including new technologies, from information on hand or available from FCC files. Absent such a study, in which the League offered to participate, the Preliminary Report fails to discharge the obligation of the Secretary of Commerce pursuant to the Reconciliation Act.

9. The Commission's Notice of Inquiry in this proceeding was the first opportunity to determine the range of possible commercial uses of the band, and to begin to assess their respective compatibilities with amateurs.[12] The information gleaned from the Inquiry was thus important in determining what compatibilities existed between commercial services and amateur operation in the 2.4 GHz segments. The comments received by the Commission with respect to these segments revealed that generally, there was little

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[12] One specific concern expressed by the League to NTIA was the effect on compatible sharing in the 2.4 GHz segments between amateurs and non-government services where the frequency assignment method is competitive bidding. If a primary allocation user paid for access to the reallocated spectrum, it would be easy to see that the secondary allocation would be difficult to use. Normal principles of spectrum sharing and accommodation for any secondary use would not apply. This would be especially problematic if the successful competitive bidder is permitted resale opportunities for access to the spectrum. In any such situation, there would be no real possibility of voluntary frequency coordination, between fixed and mobile services, or between mobile services.

marginal utility in the 2402-2417 MHz band,[13] and that existing uses of the 2390-2400 MHz band will, according to NABER, make "commercial sharing with the amateur service...difficult."[14] The comments of the Forestry Conservation Communications Association stated that the spectrum in the 2.4 GHz range entails a "danger of RF interference from microwave ovens and other ISM devices" which will "restrict the usefulness of the band" and that "(s)econdary amateur use may also be a problem because of the difficulty of

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[13] For example, Motorola stated that there is no marginal utility to either of the 2.4 GHz segments:

> As noted in Motorola's comments to the NTIA's Preliminary Report, the 2402-2417 MHz (band) is already heavily used for non-government operations, particularly by consumer microwave ovens and other industrial, scientific and medical ("ISM") devices. The Preliminary Report indicates that the existing noise floor of the band is approaching -100 dBm in several major markets and, given the anticipated increase in the deployment of Part 15 devices in this band, is expected to continue rising (footnote omitted). This level of interference will necessitate higher powered devices to overcome the ambient noise. The net result is higher costs and size of equipment and poorer quality communications services.
>
> The 2390-2400 MHz band suffers similarly due to its close proximity to the 2450 MHz ISM band. Figures E-3 and E-4 of the Preliminary Report show that the noise level measured in this band is within 3 dB of that found within the 2402-2417 MHz band. Thus, devices operating in this band also suffer a cost and size penalty with respect to other competing services.
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> Motorola Comments, at 6.

[14] NABER comments in response to Notice of Inquiry, at 17-18.

identifying sources of interference."[15] While most of the commenters in response to the Notice of Inquiry in this proceeding failed to analyze the possible impact on amateur use of the 2.4 GHz segments, those which did, such as Motorola, NABER and others, accurately noted the almost complete lack of utility of the 2.4 GHz segments for additional commercial services, especially new technologies.

10. Based on comments filed with NTIA in response to the Preliminary Report,[16] the Commission sent the FCC Report to the Secretary of Commerce on August 9, 1994. The FCC Report accurately reflected the comments of the Amateur community on the Preliminary Report, and drew the conclusions discussed hereinabove in paragraph 2. Basically, though acknowledging the task of NTIA, the Commission suggested a significantly different reallocation plan. To the extent that alternative frequency bands (in lieu of the 2.4 GHz segments) were suggested by the Commission, such as 225-230 MHz and 380-400 MHz,[17] the League supports the Commission's alternative plan. This would obviate any need to reallocate 2300-2310 MHz, 2390-2400 MHz or 2402-2417 MHz from government use. As the

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[15] Comments of the Forestry Conservation Communications Association, at 2.

[16] There is no indication that the FCC Report to NTIA was based on the comments received in response to the Notice of Inquiry in this proceeding, though the comments and reply comments in response to the NOI were filed more than a month before the FCC Report was released.

[17] See Table 2 of the FCC Report, at p. 31.

Commission has specifically noted, 2390-2400 MHz and 2402-2417 MHz cannot be reallocated without significant disruption of amateur use of the band; and 2402-2417 MHz, in addition, offers little, if any, utility for new advanced technologies. In two respects, the FCC Report noted, NTIA has not complied with specific Reconciliation Act requirements.

III. The Notice Proposal

11. With the foregoing as a background, it is impossible to conclude that any additional use can be made of the 2.4 GHz segments. The Notice suggests, at paragraph 8, that the Commission believes that the way to put reallocated spectrum to its best and most valued use, and to benefit the public the most, is to adopt a "broad and general" allocation. This approach, the Notice claims, would allow for the flexible use of these bands, so that licensees could offer a wide range of services employing varying technologies. The analogy is to the redevelopment of 2 GHz spectrum for new telecommunications technologies, in Docket 92-9.[18] That proceeding is not at all applicable as an allocations model for the use of the 2.4 GHz segments. The spectrum at 2 GHz in the Docket 92-9 proceeding was made available by moving all existing licensees

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[18] See, Redevelopment of Spectrum to Encourage Innovation in the Use of New Telecommunications Technologies, ET Docket No. 92-9, 7 FCC Rcd. 6886 (1992), Second Report and Order, 8 FCC Rcd. 6495 (1993); Third Report and Order and Memorandum Opinion and Order, 8 FCC Rcd. 6589 (1993); Memorandum Opinion and Order, 9 FCC Rcd. 1943 (1994). See also, Amendment of the Commission's Rules to Establish New Personal Communications Services, Docket 90-314, 9 FCC Rcd. 5031 (1994).

in that segment, to make spectrum available for new services. In this proceeding, on the other hand, the Commission is asked whether or not to add new services to bands already used by Part 15, 18 and 97 users. This is not a matter of moving existing licensed services out of a frequency band in order to replace them with new services. If it were, the flexible allocation structure that the Notice envisions would be a reasonable approach. Instead, new layers of users are being envisioned over existing users. There is no possibility of a flexible allocation structure with the fluid user base now in place. At 2390-2400 MHz, amateurs would presumably be able to continue to operate. Above 2402 MHz, the band segment proposed for reallocation is significantly in use for consumer electronic devices, mobile and fixed amateur stations, and Part 18 ISM devices, none of which are in predictable locations, and none of which can be completely protected from interference, nor offer any interference protection whatsoever from licensed users added to the mix. A "flexible allocations structure" works where there are not already present in the band a number of mobile, or unlicensed users. That is not the case in these bands.

12. The difficulties with a flexible allocations approach would be heightened significantly by a plan to provide for assignments by competitive bidding. As discussed above, competitive bidding works as an assignment mechanism for spectrum that is not to be shared with other users. Where the sharing partner is a service, such as the Amateur Service, in which there are no specific frequency assignments, the inevitable result is that the

successful bidder claims entitlement to the assigned frequencies, and will not expect to have to share them. Nor in such a case is there a good means of voluntary frequency coordination between shared amateur users and individual licensees, as there is no commonality of interest between and among the successful bidders for the spectrum.[19] The Commission's Notice expresses an overall desire to foster a "competitive market structure" providing for competition in the provision of new services. This, however, is fundamentally in conflict[20] with the concept of protecting existing, and expanding, users of shared spectrum from interference from newcomers. The 2.4 GHz segments are simply not the place for a flexible allocations scheme, competitive bidding, or a competitive market structure, given the existing non-government users of the bands.

13. The only type of allocations plan that could work in the 2.4 GHz segments is a specific allocation for particular uses, which are either compatible with Part 97 users (at 2390-2400 MHz)

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[19] Neither, necessarily, is there any nexus between who the successful bidders are at an auction of the spectrum and the "services that are most highly valued by the public", as the Commission claims at paragraph 11 of the Notice. Services provided by the Amateur Service, for example, are completely unrepresented by bidders at competitive bidding events. The same is true with respect to public safety and other non-commercial, non-government services.

[20] Not to put too fine a point on it, any generalized allocation plan to "Fixed and Mobile Services" is not in compliance with the Reconciliation Act requirements for use of the spectrum, and at the same time for protection of existing users of the spectrum.

and existing Part 15, 18 and 97 users (at 2402-2417 MHz), or which are required to conduct mandatory prior coordination with Amateurs in the bands prior to operation.[21] Failing that, the only means of proceeding in light of the obligations on the Commission under the Reconciliation Act are to find substitute spectrum for reallocation for new services, or leave the Amateur Service, Part 15 devices, and Part 18 ISM devices as the only users of the 2.4 GHz segments.

14. The Commission, at paragraph 11 of the Notice, does indeed acknowledge that a flexible allocation plan for the fixed and mobile services would be difficult to implement given the existing amateur users in the band, and the Part 15 and 18 users at 2402-2417 MHz. The Commission therefore has specifically asked for identification of alternative specific services that are compatible with existing users. Listed in the Notice are the In-Flight Phone Corporation proposal for an aeronautical audio/visual service (AAVS), a wireless local loop service, unlicensed PCS or MDS, or IVHS systems. None of the specific proposals are for use of the 2402-2417 MHz band. Representative providers of the above services responded to the Notice of Inquiry in this proceeding. The only entity responding to the NOI, however, which made any attempt to establish compatibility with the Amateur Service was the In-Flight Phone Corporation. Others, such as Southwestern Bell, which sought

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[21] The League understands that at least one entity, In-Flight Phone, has developed a plan for use of 2390-2400 MHz which it claims is compatible with existing amateur operation in the band. The League is not averse to compatible sharing partners, provided that the allocation status of amateurs is co-primary with the new user, and that no assignments be made without showing of advance coordination with the Amateur Service.

to establish a wireless local loop service, conceded that there was no compatibility between this use and amateur use of the same segments.

15. Overall, the League appreciates the Commission's determination to protect amateur uses of the 2.4 GHz segments, as expressed at Paragraph 20 of the Notice.[22] The Notice poses certain alternative means of accommodating amateur operation in the 2.4 GHz segments:

> We therefore solicit information on several options. One approach for accommodating amateur service use of these bands is to maintain a secondary allocation for the amateur service in all or part of this spectrum. Another approach is to make the amateur service the primary user in a portion of this spectrum while either maintaining a secondary allocation in the remaining portions of the bands or eliminating the other portions from the amateur service. We also solicit information on the degree of disruption to the Amateur Service that would result if all or part of this spectrum was removed from the amateur service. We request comment on these options, including the ability of various radio services to share spectrum with the amateur service.
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> (Notice, at paragraph 20, p.9)

Taking these issues in order, the maintenance of a secondary allocation for the Amateur Radio Service in each of the allocations is not sufficient in light of the Commission's consideration of

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[22] It must be absolutely understood, however, that NTIA has not complied with the Reconciliation Act, as discussed above. NTIA did <u>not</u> appropriately consider the uses made by the Amateur Service of the 2390-2400 MHz, or 2402-2417 MHz bands. Its conclusion that the needs of the Amateur Service can be adequately met in the 2400-2402 and 2417-2450 MHz bands was baseless and incorrect. Nor was the required study of amateur and commercial service sharing compatibility ever conducted by NTIA. The League believes that NTIA must reconsider the proposed reallocation of 2390-2400 MHz and 2402-2417 MHz, and must identify alternative spectrum for reallocation, per the terms of the Reconciliation Act.

additional commercial services in the 2.4 GHz segments.[23] The Amateur-Satellite Service, specifically, has near-term needs for 10 MHz-wide downlink bands, paired with the uplink frequencies at 1260-1270 MHz, 3400-3410 MHz (in Regions 2 and 3 only) and 5650-5670 MHz. Because the band 2400-2450 MHz is subject to somewhat greater ISM noise at the upper end than at the lower end, the most useful segment for those downlink bands is at 2400-2420 MHz. The Amateur Service requires spectrum for expanded amateur television operation at 2390-2400 MHz as well, especially at 2390-2396 MHz, per the band plan adopted for the Amateur Service in 1991.[24] Increased reliance on this segment for amateur fast-scan television (ATV) is based on spectrum taken from the Amateur Service at 420-430 MHz above Line A, and given the interference difficulties with ATV operation at 912-918 MHz. Other uses, detailed in League comments in response to the Notice of Inquiry in this proceeding,[25]

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[23] There are references in the Notice, at several junctures, to consideration of the allocation status of the 2300-2310 MHz segment. That segment is not presently under consideration in this docket proceeding, and the League will not comment substantively on amateur use of that segment now. However, virtually all amateur weak-signal propagation studies and long-range communications in that band occurs in the vicinity of 2304 MHz. Perhaps more than in any other segment, amateur operation at 2300-2310 MHz would require extensive protection from interference by any new non-commercial services under consideration.

[24] As detailed in the League's comments in response to the Notice of Inquiry in this proceeding, amateur television, especially at 2.4 GHz, is playing an increased role in amateur emergency communications activities.

[25] See the Comments of the American Radio Relay League, Incorporated, filed May 11, 1994, at p. 13.

include control and auxiliary links,[26] high-rate data, packet data, FM repeaters, and other uses. While much AM television operation is centered at 2390-2396 MHz, the FM television operation is conducted higher in the band, but with repeater channels in the 2409-2427 MHz range.

16. While maintenance of a secondary allocation status in some portions of the 2390-2417 MHz segment might be tolerable, depending on the specific primary user involved, the bulk of the amateur needs in the band could not be accommodated by that alone. Assuming for the moment that the 2.4 GHz segments provide any opportunity for additional uses (an assumption which is not supported in the comments received from the public and cannot be presumed) the uses referenced in the Notice would, essentially by definition, require significantly more of the load capacity of the band than did Federal Government uses. The net result would be a diminution, if not absolute de facto preclusion, of amateur use of the band. Such is not tenable in view of the requirements of the Reconciliation Act.

17. The second alternative, to make the Amateur Service primary in a portion of the allocation and continue a secondary allocation in the remainder, is not unreasonable, depending of course on the segments chosen for primary status. The Commission

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[26] As discussed more thoroughly in the FCC Report at pages 7 and 8, paired fixed links exist, especially in Southern California, at 2300-2310 MHz and 2390-2400 MHz. Because of the separation necessary between these pairs, loss of access to those two segments would preclude the use completely.

should not make the same mistake as has NTIA thus far, which is to assume that the frequencies 2417-2450 MHz are in any sense a sufficient substitute for continued amateur use of 2390-2400 MHz (and 2300-2310 MHz). If there is to be a primary allocation for amateurs, it should be, at the very least, 2390-2396 MHz, 2300-2305 MHz, and 2400-2410 MHz, with continued sharing of the remainder, preferably on a co-primary basis. A replacement allocation, perhaps at 2360-2390 MHz, should be considered at the same time, to accommodate those amateur uses which suffer the diminished utility of the residual secondary allocations. Elimination of the amateur secondary allocation in any portion of these bands is not acceptable to the League, because it constitutes a diminution of an allocation that is increasingly required for experimentation and refinement of new data technologies, amateur television, data links, and most especially, Amateur-Satellite operation.[27]

18. The League's prior submissions to the Commission in this docket proceeding, and the discussion hereinabove, are sufficient

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[27] The Commission should recall as well that the international allocations for the Amateur-Satellite Service require consideration by the Commission in any decision in this proceeding. In many countries in all three regions, the entire band 2300-2450 MHz is allocated to the Amateur Service, and 2400-2450 MHz is allocated to the Amateur-Satellite Service. Satellites in the Amateur-Satellite Service are in lower or elliptical orbits which cover the entire earth., albeit not all regions simultaneously. Consequently, the frequencies used by amateur satellites must be available worldwide. Thus, unlike terrestrial applications, or those involving geostationary satellites, allocations of spectrum to the Amateur-Satellite Service must be made consistently throughout the world, rather than on a national or regional basis. Therefore, any decisions with regard to allocations for the Amateur-Satellite Service made in the United States must be coordinated with other governments.