

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

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

**FIRST REPORT AND ORDER AND  
SECOND NOTICE OF PROPOSED RULE MAKING**

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By the Commission:

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## I. INTRODUCTION

1. By this action, we adopt allocations for and propose rules governing the use of 50 megahertz of spectrum, at 2390-2400 MHz, 2402-2417 MHz, and 4660-4685 MHz, that has been transferred from Federal Government to private sector use. In particular, we are providing 25 megahertz for use by unlicensed devices and the Amateur service and 25 megahertz for Fixed and Mobile operations. Specifically, we are allocating the 2390-2400 MHz band for use by unlicensed Personal Communications Services (PCS) devices, providing for continued use of the 2402-2417 MHz band by devices operating in accordance with Part 15 of our Rules, allocating both of these bands for use by the Amateur service on a primary basis, and allocating the band 4660-4685 MHz for use by Fixed and Mobile services. The 2390-2400 MHz and 2402-2417 MHz bands will be governed by existing applicable rules. We are proposing rules for use of the 4660-4685 MHz band. The allocations adopted herein will benefit the public by providing for the introduction of new services and devices and the enhancement of existing services and devices. These new and enhanced services and uses will create new jobs, foster economic growth, and improve access to communications by industry and the American public.

## II. BACKGROUND

2. On August 10, 1993, the Omnibus Budget Reconciliation Act of 1993<sup>1</sup> (Reconciliation Act) was signed into law. The Reconciliation Act required that the Secretary of Commerce identify 200 megahertz of spectrum currently allocated for use by Federal Government agencies that could be transferred to private sector use. All of the 200 megahertz of spectrum recommended for reallocation must be located below 5 gigahertz, with at least 100 megahertz of this being below 3 gigahertz. The Reconciliation Act also required the Secretary of Commerce to issue within six months of its enactment a report making a preliminary identification of reallocable bands of frequencies and to issue within 18 months a final report recommending the spectrum for reallocation.<sup>2</sup> In its report making a preliminary identification of spectrum, the Department of Commerce was required to identify at least 50 megahertz of spectrum for immediate reallocation.<sup>3</sup> The remaining spectrum is to be made available over a ten-year period.<sup>4</sup>

3. In accordance with the requirements of the Reconciliation Act, on February 10, 1994, the Department of Commerce released its report making a preliminary identification of spectrum for reallocation (Preliminary Report).<sup>5</sup> The frequency bands identified for reallocation in the Preliminary Report are listed in Appendix A. Three of these frequency bands, 2390-2400 MHz, 2402-2417 MHz, and 4660-4685 MHz, were identified for immediate reallocation and are now available for private sector use.<sup>6</sup> The Reconciliation Act also requires that the Commission allocate, and propose regulations to assign, the 50 megahertz of spectrum that is immediately available no later than 18 months after its enactment (i.e., by February 10, 1995).<sup>7</sup>

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<sup>1</sup> Omnibus Budget Reconciliation Act of 1993, Pub. L. No. 103-66, 107 Stat. 312 (approved August 10, 1993).

<sup>2</sup> See Reconciliation Act, § 6001(a)(3), as codified at 47 U.S.C. § 923.

<sup>3</sup> At least one-half of the 50 megahertz identified for immediate reallocation must be below 3 gigahertz and all of it must be identified for exclusive non-Federal use.

<sup>4</sup> Reconciliation Act, § 6001(a)(3), as codified at 47 U.S.C. § 923(e)(2)(A).

<sup>5</sup> Preliminary Spectrum Reallocation Report, U.S. Department of Commerce, NTIA Special Publication 94-27, February, 1994.

<sup>6</sup> By letter dated October 27, 1994, the President of the United States notified the Chairman of the Commission that Federal Government frequency assignments in these bands have been withdrawn and that the National Table of Frequency Allocations has been modified to reflect the reallocation of these bands.

<sup>7</sup> Reconciliation Act, § 6001(a)(3), as codified at 47 U.S.C. § 925(a).

4. On May 4, 1994, we released a Notice of Inquiry (NOI) in this proceeding seeking information on potential applications for the 50 megahertz of spectrum that has been transferred from Federal Government use.<sup>8</sup> Following this, we released a Notice of Proposed Rule Making (NPRM) on November 8, 1994, proposing that all 50 megahertz of the transferred spectrum be allocated to Fixed and Mobile services.<sup>9</sup> We stated in the NPRM our belief that such a broad allocation would provide the greatest degree of flexibility, thereby allowing licensees to offer a wide range of services employing varying technologies.<sup>10</sup> We also indicated our belief that most services provided in this spectrum would meet the statutory criteria for auctions and proposed that licenses be offered through competitive bidding.<sup>11</sup> In addition to our basic proposal, however, we also discussed alternatives wherein these bands would be allocated to specific services.<sup>12</sup>

5. In response to our NPRM, we received 90 comments and 52 reply comments.<sup>13</sup> Several parties interested in providing commercial services supported our proposal for a Fixed and Mobile allocation scheme with licenses issued pursuant to competitive bidding.<sup>14</sup> However, most of the commenting parties oppose our proposal, based on a number of legal, technical, economic, and public interest arguments.<sup>15</sup> Most of the parties who oppose a general allocation also provide information regarding specific services that they believe should be accommodated in particular bands.<sup>16</sup>

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<sup>8</sup> Notice of Inquiry, 9 FCC Rcd 2175 (1994).

<sup>9</sup> Notice of Proposed Rule Making, ET Docket No. 94-32, 9 FCC Rcd 6779 (1994).

<sup>10</sup> Id. at 6780, para. 8.

<sup>11</sup> Id. at 6780-81, para. 9.

<sup>12</sup> Id. at 6781-83, paras. 12-22.

<sup>13</sup> See Appendices B and C.

<sup>14</sup> Comments of American Telecasting 4, Wireless Cable Association at 3-4, Wireless Holdings at 4-5, Leaco at 5, Pacific Bell Mobile at 1-2.

<sup>15</sup> See generally Comments of Alcatel Network Systems, American Petroleum Institute, APCO, AAR, County of LA, Forest Industries Telecommunication, ITA, LA County Sheriff, MRFAC, TIA, UTC, ARRL, WINForum, Apple, AT&T, Cincinnati Microwave, Compaq, EIA, Cylink, FSC, FLI, Metricom, Norand, Part 15 Coalition, Standard Microsystems, Symbol, Tetherless, Western Multiplex, Windata, Xircom, Loral/Qualcomm, Continental Airlines, In-Flight, MSTV, Motorola, and Bell Atlantic.

<sup>16</sup> A description of services proposed by commenters is contained in the discussion of comments for each band.

### III. DISCUSSION

6. Based on the record in this proceeding, we believe that an approach that provides spectrum for both unlicensed devices and Fixed and Mobile services would best serve the public interest. Taking into account the unique nature of some of the bands under consideration, the current communications environment, and the suggestions of the commenting parties, we find it is desirable to allocate 25 megahertz for specific services and devices and 25 megahertz for Fixed and Mobile operations. Specifically, we are allocating the 2390-2400 MHz band for use by unlicensed PCS devices, providing for continued use of the 2402-2417 MHz band by other unlicensed devices operating in accordance with Part 15 of our Rules, allocating both of these bands for use by the Amateur service on a primary basis, and allocating the band 4660-4685 MHz for Fixed and Mobile services. Comments and issues relating to each of the specific bands are discussed below.

### REPORT AND ORDER

#### 2390-2400 MHz

7. **Background.** Internationally, 2390-2400 MHz is allocated in Region 2<sup>17</sup> on a primary basis to the fixed, mobile, and radiolocation services, and on a secondary basis to the Amateur service.<sup>18</sup> Domestically, this band is currently allocated on a secondary basis to the Amateur service. In its Preliminary Report, the Department of Commerce expresses concern over the effect of future non-Government use on the National Astronomy and Ionospheric Center, which operates a planetary research radar at Arecibo, Puerto Rico at 2380 MHz. To protect radio astronomy operations, the Department of Commerce states that the 2390-2400 MHz band should not be used for airborne or space-to-Earth links, and that restrictions on terrestrial operations in the vicinity of the Puerto Rico planetary research radar facility may be necessary.<sup>19</sup>

8. **Comments.** As with the NOI in this proceeding, we received a number of comments from Amateur radio licensees and organizations.<sup>20</sup> The 2390-2400 MHz band lies

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<sup>17</sup> See 47 C.F.R. § 2.104(b)(2) for a description of Region 2.

<sup>18</sup> See Table of Frequency Allocations, 47 C.F.R. § 2.106.

<sup>19</sup> Preliminary Report, section 4 at 14-17.

<sup>20</sup> See generally Comments of A. Frank Adamson, Ph.D., American Radio Relay League (ARRL), L. Stephen Bell, Northern California Packet Association, Northern Amateur Relay Council of California (NARCC), Palomar Amateur Radio Club, Inc., Robert S. Bennett, Ph.D., San Bernardino Microwave Society (SBMS), Southern California Repeater and Remote Base Association (SCRRBA), Western States VHF-Microwave Society, and William A.

within the 2300-2450 MHz frequency range, which is referred to as the 13 cm band by the Amateur service community. The Department of Commerce has proposed reallocating 35 megahertz of spectrum, at 2300-2310 MHz, 2390-2400 MHz, and 2402-2417 MHz, out of the total 70 megahertz of spectrum currently available for use by the Amateur service on a secondary basis in the 13 cm band.<sup>21</sup> Amateur service commenters contend that sharing between commercial licensees and the Amateur service is generally not possible because of the density and location of commercial users. These commenters describe the important contributions that the Amateur service makes by providing emergency communications, educational opportunities, and radio communications research. They contend that continued access to all or most of the 13 cm band is important to the Amateur service, because the band provides an opportunity for growth as lower bands become increasingly congested or are allocated for services other than the Amateur service. Accordingly, the Amateur service commenters request that all or most of the portions of the 13 cm band reallocated from Federal Government use be made available for the primary or co-primary use of the Amateur radio service or that any displaced Amateur services be accommodated in alternative bands.<sup>22</sup>

9. Comments were also received from a wide variety of users of private radio spectrum, including public safety, industrial, and land transportation radio service user organizations. These commenters dispute our position that private users can obtain service through commercial radio providers or that they can compete for spectrum on the same basis as commercial providers.<sup>23</sup> Private users argue that commercial systems are designed to

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Burns, and Reply Comments of Amateur Radio Council of Arizona, ARRL, James S. Kaplan, NARCC, Radio Amateur Satellite Corporation, SBMS, SCRRBA, and Amateur Television Network.

<sup>21</sup> Preliminary Report at Section 5.

<sup>22</sup> A number of commenters representing Amateur interests have suggested that the Department of Commerce make available portions of the 2310-2390 MHz band for use by the Amateur Radio Service to accommodate displaced Amateur users, or that the portions of 2300-2310 MHz band not be transferred in exchange for transferring spectrum above and adjacent to 2417 MHz. Reallocation of additional or alternative spectrum must be addressed by the Department of Commerce and is outside the scope of this proceeding. We note, however, that in our August 9th report to the Secretary of Commerce, FCC 94-213, we provided an analysis of comments received in response to the Preliminary Report along with our own comments and recommendations for consideration by the Department of Commerce for incorporation in its final report.

<sup>23</sup> NPRM, 9 FCC Rcd at 6782, para. 16. See generally Comments of American Petroleum Institute (API), Association of Public Safety Communications Officials (APCO), Association of American Railroads (AAR), County of Los Angeles (County of LA), Forest Industries Telecommunication (FIT), Industrial Telecommunication Association, Inc. (ITA), Los Angeles County Sheriff's Department (LA Sheriff), Manufacturer Radio Frequency

provide mainstream communications and generally cannot provide the specialized communications or data transmission requirements of many private users.<sup>24</sup> A number of the advanced specialized needs of private users are described in a Petition for Rule Making filed by the Coalition of Private Users of Emerging Multimedia Technologies (COPE).<sup>25</sup> Further, commenters state that commercial providers naturally concentrate their coverage in densely populated areas where demand is highest and do not provide sufficient coverage for private users that often require complete coverage throughout rural areas or areas that do not conform to normal commercial licensing areas that are based on economic trading considerations. Private users, in particular public safety organizations, also contend that the service provided by commercial providers is not reliable enough to meet critical safety needs nor do commercial systems have sufficient capacity to meet demand during peak use periods, particularly during emergencies or disasters when wired communications may be affected. Public safety organizations point out that they cannot afford to wait for an open channel when loss of life or property is at stake. Private users also contend that they must be able to dynamically control their communications systems in order to meet changing demands. Finally, private users maintain that it is unreasonable to expect private entities to compete against commercial service providers in bidding for spectrum because private entities do not have the fiscal resources that commercial entities have and, particularly in the case of public safety and local governments, have a longer planning cycle than commercial providers.

10. In-Flight Phone Corp., Inc. (In-Flight) asserts that the 2390-2400 MHz band should be allocated for use by a ground-to-air, aeronautical audio/visual service (AAVS) to provide live multi-channel audio and video programming for airline passengers.<sup>26</sup> In-Flight

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Advisory Committee (MRFAC), Motorola, Inc. (Motorola), Personal Communications Industry Association (PCIA), Telecommunications Industry Association (TIA), UTC, Alcatel Network Systems, Inc., and Reply Comments of API, AAR, ITA, Motorola, and Alarm Industry Communications Committee (AICC).

<sup>24</sup> PCIA in particular provides several examples of communications requirements, such as the needs of railroads, overnight delivery companies, airlines, and other very large users, that PCIA contends cannot be met by commercial providers.

<sup>25</sup> COPE is a group consisting of a broad range of private land mobile users and user associations. In its petition, COPE argues that a need exists for an allocation of 75 megahertz of spectrum below 3 GHz for the development of an "Advanced Private Land Mobile Communications Service", which would accommodate the needs of private land mobile radio user communities for new operations such as advanced wireless imaging and decision processing/remote file access systems. COPE specifically suggests that spectrum be reallocated from the Federal Government, and it states that the most likely source of spectrum to accommodate private emerging technology needs lies in the spectrum to be reallocated under the requirements of the Reconciliation Act.

<sup>26</sup> In-Flight comments at 13-21.

had proposed this service in response to our NOI and we discussed AAVS as a possible use for this band in the NPRM.<sup>27</sup> Use of this band for AAVS is supported by American West Airlines, Capital Cities/ABC, and Continental Airlines.<sup>28</sup> Claircom Communications Group, L.P. (Claircom) generally supports a live audio/video service but urges that the Commission ensure that sufficient spectrum is made available to support several providers in a competitive environment and that the service be a two-way, interactive service.<sup>29</sup> A number of Amateur service commenters note that In-Flight was one of the few commenters that addressed the issue of sharing with the Amateur service and that AAVS might be an acceptable service provided that an AAVS/Amateur sharing arrangement could be developed.<sup>30</sup> Several commenters oppose allocating this band for AAVS, however, arguing that service would be limited to airline passengers rather than providing benefits to the broader population.<sup>31</sup>

11. Another option for this spectrum discussed in the NPRM was a proposal by Southwestern Bell (SWB) that the 2300-2310 and 2390-2400 MHz bands be paired and allocated for use in providing wireless local loop service, allowing local exchange carriers to provide wireless telephone service.<sup>32</sup> SWB filed additional comments bolstering its support for a wireless local loop service, claiming that allocation of this spectrum for such service would reduce overall installation costs for local telephone service, allow for faster introduction of new services, and allow faster recovery of operations in the event of a disaster.<sup>33</sup> Use of these bands for wireless local loop service is supported by Bell Atlantic, NYNEX, OPASTCO, Rochester Telephone, SR Telecom, TDS Telecommunications, the

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<sup>27</sup> NPRM, 9 FCC Rcd. at 6781, para. 12. We also note that, in an Ex Parte filing dated January 24, 1995, In-Flight states that AAVS could be provided at 4660-4685 MHz. In-Flight offers this as a possible alternative to providing AAVS at 2390-2400 MHz.

<sup>28</sup> American West comments at 1-2; ABC comments at 1-2; Continental Airlines comments at 2-4.

<sup>29</sup> See generally Comments of Claircom.

<sup>30</sup> See Reply Comments of the Amateur Radio Council of Arizona at 2, and ARRL at 13-16 and 29. ARRL has since, however, filed an Ex Parte presentation stating that sharing partners other than unlicensed PCS in the 2390-2400 MHz band, "are not promising." ARRL Ex Parte presentation dated January 26, 1995, at 2.

<sup>31</sup> Southwestern Bell (SWB) comments at 10; TDS Telecommunications Corp. (TDS) comments at 5; United States Telephone Association comments at 2.

<sup>32</sup> NPRM, 9 FCC Rcd. at 6781, para. 13.

<sup>33</sup> SWB comments at 1-6.

United States Telephone Association, and Tadiran Telecommunications.<sup>34</sup> These commenters claim that the 2300-2310 MHz and 2390-2400 MHz bands present an ideal and unique opportunity to implement wireless local loops because they can be paired to provide frequency division duplex operation, which is advantageous for wireless local loops because it would allow a system to serve twice the number of users per port transceiver compared to a system using time division duplex.<sup>35</sup> These commenters also state that these bands offer preferable propagation characteristics compared to spectrum above 3 GHz. These commenters also contend that it is not possible to provide wireless local loop service using spectrum allocated for Personal Communications Services (PCS) or the Basic Exchange Telecommunications Radio Service (BETRS) because of restrictions on use of those services. Avant-Garde claims that it currently provides a wireless local loop type service in the 38 GHz band, and that the benefits espoused by SWB as to the cost and reliability benefits of wireless local loops are indeed realistic.<sup>36</sup> Several commenters oppose allocating this spectrum for the use of wireless local loops because, they claim, it would not be a new service.<sup>37</sup>

12. Leaco Rural Telephone Cooperative (Leaco) states that the spectrum from the Federal Government should be used to provide interactive video, voice and data service in rural areas.<sup>38</sup> Pacific Bell Mobile supports a Fixed and Mobile allocation for the 2390-2400 MHz band and requests that we clarify that this band could be used as a source of additional PCS spectrum.<sup>39</sup>

13. The Loral/Qualcomm Partnership, L.P. (Loral Qualcomm) requests that the 2390-2400 MHz band be allocated for use by non-Geostationary (non-GSO) Mobile Satellite Service (MSS) Earth-to-space service links. Loral/Qualcomm states that the spectrum

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<sup>34</sup> Comments of Bell Atlantic at 2-3; NYNEX at 1-3; OPASTC at 2-3; Rochester Telephone at 1-2; SR Telecom at 2-5; TDS Telecommunications at 1-6; United States Telephone Association at 1-2 and; Tadiran Telecommunications at 2. Tadiran would also allocate the 2402-2417 MHz band for wireless local loops and would require that spread spectrum equipment be used. See also Reply Comments of Frontier Corporation, GTE, Interdigital Corporation, and the National Telephone Cooperative Association.

<sup>35</sup> See Comments of SWB at Appendix A.

<sup>36</sup> Avant-Garde comments at 2.

<sup>37</sup> In-Flight comments at 20-21, Apple comments at 8. Apple states that our Rules already adequately provide for this type of service. In-Flight claims that Section 7 of the Communications Act requires the Commission to prefer a new service over other types of service.

<sup>38</sup> Comments of Leaco at 1.

<sup>39</sup> Comments of Pacific Bell Mobile at 1-3.

currently allocated for MSS is insufficient to support the likely demand for MSS and that additional spectrum will soon be needed.<sup>40</sup> COMSAT Corporation (COMSAT) supports use of this band for MSS service uplinks.<sup>41</sup> We note, however, that in comments filed in response to the NOI in this proceeding, the American Mobile Satellite Corporation (AMSC) claimed that neither the 2390-2400 MHz nor the 2402-2417 MHz band was a viable candidate for providing MSS uplinks because of interference from ISM devices and Part 15 equipment operating in the 2400-2500 MHz band.<sup>42</sup> In reply comments to the NPRM, AMSC supports instead use of both the 2390-2400 MHz and the 2402-2417 MHz bands for MSS service downlinks.<sup>43</sup>

14. In our NPRM we raised the possibility of using either or both of the 2300-2310 MHz and 2390-2400 MHz bands to provide unlicensed PCS or to accommodate the Multipoint Distribution Service (MDS) that is currently provided in the 2150-2160 MHz band so that 2150-2160 MHz could be used for unlicensed PCS.<sup>44</sup> Apple Computer, Compaq Computer, Standard Microsystems, Software Publishers Association (SPA), and Symbol Technologies, Inc., support allocating the 2390-2400 MHz band for unlicensed Data-PCS (asynchronous PCS), citing the need for clear spectrum nationwide for implementation of nomadic devices that can be used anywhere at anytime.<sup>45</sup> Microsoft and IEEE support allocating 2390-2400 MHz for unlicensed use, but do not specify unlicensed Data-PCS.<sup>46</sup> Several wireless cable service providers have filed comments opposing relocating MDS from the 2150-2160 MHz band, stating that this service is still in its infancy and faces strong competition from cable companies, satellite broadcast services, and even telephone companies

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<sup>40</sup> Loral/Qualcomm comments at 2-4.

<sup>41</sup> COMSAT reply comments at 5.

<sup>42</sup> AMSC comments filed in response to NOI at 1-2.

<sup>43</sup> AMSC comments at 1-2. Such an allocation would conflict with the Preliminary Report's recommendation, which is supported by commenters in this proceeding, that the 2390-2400 MHz band not be used for space-to-Earth links. Preliminary Report, Section 4 at 14-17, comments of the National Research Council (NRC) at 5-7, comments of Cornell University and The National Astronomy and Ionosphere Center (Cornell) at 2-3, and comments filed in response to the NOI by Cornell University and NRC. AMSC argues, however, that these parties have not provided sufficient technical support for their position.

<sup>44</sup> NPRM, 9 FCC Rcd. at 6781, para. 14.

<sup>45</sup> Comments of Apple at 3-5; Compaq at 2-8; Standard Microsystems at 3 and; SPA at 6-8, reply comments of Symbol at 6-8.

<sup>46</sup> Comments of Microsoft at 5-6, and IEEE at 4.

that will provide video dial tone service. They argue that any disruption of service could be devastating to the industry and will be very expensive to implement.<sup>47</sup>

15. **Decision.** In the Second Report and Order in Gen Docket 90-314, concerning establishment of PCS, we determined that successful implementation of unlicensed PCS devices requires 40 megahertz of spectrum. Accordingly, we dedicated the band 1890-1930 MHz for use by unlicensed PCS devices, with 20 megahertz of spectrum each for asynchronous and isochronous operation.<sup>48</sup> Subsequently, in response to a number of petitions for reconsideration, we adopted a Memorandum Opinion and Order that modified the overall 2 GHz PCS allocation to better achieve our goals in developing the service. In doing so, however, we reduced the amount of spectrum dedicated for use by unlicensed PCS devices from 40 megahertz to 20 megahertz. We recognized that this would likely leave unlicensed PCS devices with insufficient spectrum to accommodate expected demand and indicated a commitment to pursue additional spectrum for such use.<sup>49</sup>

16. Considering the important contribution that we believe PCS will make in providing affordable, accessible communications for the public, we are committed to ensuring the successful implementation of such services. An important part of PCS will be the use of unlicensed devices to provide a wide variety of voice and data communications, particularly to interact with a larger information network. These devices have the potential to offer a portable "on-ramp" to the information highway that will be accessible to everyone. The potential for open access to the information infrastructure offered by unlicensed PCS devices will provide benefits, not only to commercial users, but also to individuals and private users. Accordingly, we believe that it is appropriate to fulfill our commitment to provide sufficient spectrum for unlicensed PCS data devices by allocating 2390-2400 MHz for use by unlicensed asynchronous PCS devices.<sup>50</sup> This band provides a unique opportunity to provide for these devices. As pointed out by several commenters, equipment manufacturers will need

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<sup>47</sup> Comments of Wireless Cable Association at 5; Wireless Holdings at 1-5 and; Home Box Office at 2-5.

<sup>48</sup> Amendment of the Commission's Rules to Establish New Personal Communications Services, Second Report and Order, Gen Docket No. 90-314, 8 FCC Rcd 7700, 7777, para. 185 (1993).

<sup>49</sup> Amendment of the Commission's Rules to Establish New Personal Communications Services, Memorandum Opinion and Order, Gen Docket No. 90-314, 9 FCC Rcd 4957, 4991, para. 87 (1994).

<sup>50</sup> Comments filed in support of allocating this spectrum for unlicensed PCS have all expressed the need for additional spectrum for asynchronous (data) use. We have received no comments requesting that 2390-2400 MHz be used for isochronous (voice and limited data) unlicensed PCS. We are not, however, making a determination at this time that there is not a need for additional spectrum for isochronous use.

to relocate existing fixed microwave users out of the 1910-1930 MHz band, which we previously dedicated for unlicensed PCS use, before that band can be widely used by unlicensed PCS devices, particularly nomadic devices. Our action today will provide spectrum for immediate implementation of unlicensed nomadic PCS data operations.

17. We will regulate these unlicensed PCS devices in accordance with Part 15 of our Rules. Devices operating under Part 15 have generally proven to be effective in operating in shared environments with other services, including in frequency bands shared with the Amateur service. We recognize the value of maintaining adequate spectrum for the Amateur service and we believe that the generally robust nature of PCS devices will make it feasible for unlicensed PCS devices and Amateur operations to operate on a shared basis in this band. In addition, both Apple and the ARRL believe that shared use of this band is possible.<sup>51</sup> Accordingly, we are providing for the continued availability of the 2390-2400 MHz band for Amateur operations, and are increasing the status of the Amateur service in this band to primary.<sup>52</sup> Considering past experience of Part 15 devices and Amateur service users operating in a shared environment, we do not believe that it is necessary to adopt specific provisions for protecting either of these operations.

18. While we have considered allocating this band for Fixed and Mobile services or for a number of specific services proposed by commenters in this proceeding such as, AAVS, wireless local loops, and MSS, we believe that use by new unlicensed PCS and continued use

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<sup>51</sup> Apple comments at 4-5 and 10, ARRL Ex Parte presentation dated January 26, 1995. Compaq argues that 2390-2400 MHz should be allocated for exclusive use by unlicensed PCS and that doing so will not excessively disrupt Amateur service operations. Compaq comments at 4. Compaq does not, however, provide details as to the potential for the Amateur service to adversely impact unlicensed PCS operations. Absent compelling information to the contrary, we believe that it is appropriate to provide continued access to the band by the Amateur service.

<sup>52</sup> While our decision today upgrades availability of the 2390-2400 MHz and 2402-2417 MHz bands for the Amateur service from secondary to primary, we are not making a determination at this time as to the continued availability of the 2300-2310 MHz band for the Amateur service. We intend to carefully consider the benefits of continued Amateur service access to 2300-2310 MHz in future decisions. In its January 26, 1995, Ex Parte presentation, ARRL requests that the Amateur service be given primary status in the entire 2390-2450 MHz band. The 2400-2402 MHz and 2417-2450 MHz portions of this band remain allocated for primary use by Federal Government stations and have not been identified for transfer to non-Government use. ARRL's request is, therefore, outside of the scope of this proceeding. We note, however, that the justification provided in the Department of Commerce Preliminary Report for not reallocating the 2400-2402 MHz portion was due to its current use by the Amateur service and we expect that such use will continue to be accommodated. See Department of Commerce Preliminary Report at 4-17.

by the Amateur service represents the greatest opportunity for using this band to benefit the public. We believe that allocation of this band for unlicensed PCS will lead to the development of new and unique devices and applications that can be provided in a cost effective manner and will be available to virtually every person in the nation.<sup>53</sup> Such devices will increase American productivity by allowing business to operate more efficiently and will allow more people to access information in a variety of ways from almost any location. Amateur service use of this band will allow these users to continue to develop radio communication technologies through experimentation, provide communications during emergencies and natural disasters, and provide education in the area of radio communication.

19. There are a number of additional reasons for using 2390-2400 MHz for unlicensed PCS as opposed to other proposed services. Concerning our proposal to allocate this band for Fixed and Mobile services, we believe that the recent allocation of 120 megahertz of spectrum at 2 GHz for general mobile services in the form of broadband PCS is sufficient to satisfy the needs of general mobile service providers in this frequency range at this time. Moreover, an allocation for Fixed and Mobile use would be incompatible with continued use of this band by the Amateur service.

20. The wireless local loop service proposed by Southwestern Bell is also incompatible with continued use of this band by the Amateur service. Although Southwestern Bell has addressed this concern, the solutions proposed would either result in a significant decrease in the amount of spectrum available to the Amateur service or would require allocation of alternate spectrum for the Amateur service. Further, we believe that wireless local loop service could be provided in spectrum allocated for broadband PCS in the 1850-1990 MHz band. Although our rules specify that Fixed services provided under PCS must be ancillary to mobile operations,<sup>54</sup> we have attempted to provide licensees with flexibility to determine how this spectrum is used and we would entertain waiver requests to provide primary Fixed service in this spectrum for certain applications if a licensee demonstrates that a Fixed service best meets the demands of an area.<sup>55</sup> We also note that a number of

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<sup>53</sup> Our decision should not be interpreted as a general policy statement regarding the relative merits of these various uses. It merely reflects our belief that, for reasons limited to this band and the communications environment at this time, the public will receive the greatest benefit from use of this band for unlicensed PCS. We also note that we have initiated a proceeding to pursue additional spectrum for MSS. See Amendment of Section 2.106 of the Commission's Rules to Allocate Spectrum at 2 GHz for Use by the Mobile-Satellite Service, Notice of Proposed Rule Making ET Docket No. 95-18, FCC 95-39, released January 31, 1995.

<sup>54</sup> 47 C.F.R. § 24.3.

<sup>55</sup> As we stated in determining what services could be provided under PCS, fixed services can generally be accommodated in other bands. Second Report and Order, Gen Docket 90-314, 8 FCC Rcd 7700, 7712, para. 23 (1993). A recent staff letter clarifying

proponents of the wireless local loop service have stressed the need for such service in rural areas. It seems likely that, in these rural areas, broadband PCS systems will have sufficient capacity to accommodate wireless local loops. This service could be provided either directly by the broadband PCS licensee or through a secondary provider operating under the licensee's authority.<sup>56</sup>

21. Regarding proposed use of 2390-2400 MHz for provision of an aeronautical audio/visual service (AAVS), we note that this service would be limited to airline passengers, rather than the general public. We believe that other spectrum or other alternative possibilities should be considered for such a service. For example, In-Flight has stated that AAVS could be accommodated in the 4660-4685 MHz band,<sup>57</sup> and, if an AAVS provider is able to obtain a nationwide license, AAVS can be provided as a Mobile service in that band. Finally, concerning possible use of this band for MSS, the Commission is currently considering allocation of an additional 70 megahertz of spectrum in the 2 GHz band and we believe this may be sufficient to satisfy MSS needs in this frequency range at this time.<sup>58</sup>

22. As discussed above, we received comments from a number of entities seeking use of this spectrum to satisfy the needs of private spectrum users, particularly as described in the Petition for Rule Making filed by COPE. Although we have not allocated this spectrum for private use, we believe that the types of uses provided by unlicensed PCS devices, as well as unlicensed devices operating under Part 15 of our Rules in the 2400-2483.5 MHz band, will meet some of the requirements described by COPE as they relate to data and information transfer.<sup>59</sup> In addition, we have released a report evaluating the needs of the public safety

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permissible uses of PCS spectrum, notes that the Commission intended the definition of PCS to be sufficiently inclusive to accommodate a wide range of services and technologies, including new and creative applications. Letter to A. Carroccio from R. Keeney, Chief, Wireless Telecommunications Task Force, Nov. 15, 1994, at 1.

<sup>56</sup> In addition, our Rules allow a PCS licensee to assign portions of its licensed PCS spectrum after January 1, 2000, provided it has met the five-year construction requirements. 47 C.F.R. § 24.229(d). Geographic partitioning to rural telephone companies is also permitted under Section 24.714 of the Commission's Rules.

<sup>57</sup> See In-Flight Ex Parte filing dated January 24, 1995.

<sup>58</sup> See Notice of Proposed Rule Making, ET Docket No. 95-18, FCC 95-39, released January 31, 1995.

<sup>59</sup> In addition, additional capacity for private systems may be gained through implementation of spectrum efficient technologies. See Replacement of Part 90 by Part 88 to Revise the Private Land Mobile Radio Services and Modify the Policies Governing Them, Notice of Proposed Rule Making, PR Docket No. 92-235, 7 FCC Rcd 8105 (1992).

community through the year 2010 and we will consider the recommendations in this report as additional spectrum becomes available.<sup>60</sup>

23. We will regulate unlicensed PCS devices in accordance with the technical standards currently embodied in Part 15, Subpart D of the Rules. Because we already have existing rules for unlicensed PCS in place, we believe that it is appropriate to apply them to devices that will use the 2390-2400 MHz band. Accordingly, the power levels, emission limits, and the spectrum etiquette for unlicensed PCS devices operating at 2390-2400 MHz shall be consistent with requirements for asynchronous devices operating at 1910-1920 MHz. Also consistent with use of the 1910-1920 MHz band, asynchronous devices operating in the 2390-2400 MHz band must have a bandwidth of 500 kHz or greater. Unlike the 1910-1930 MHz band, there are no incumbent users in the 2390-2400 MHz band that must be relocated prior to wide-spread use of the band for unlicensed PCS. Therefore, we will not require that unlicensed PCS devices operating at 2390-2400 MHz be coordinated through UTAM.<sup>61</sup>

24. We note that the Notice did not contain a specific discussion of technical rules for unlicensed PCS devices. However, we have concluded that an additional notice and comment period regarding rules for unlicensed PCS devices is unnecessary and would be contrary to the public interest. First, it is unnecessary because we already have rules in place governing the operation of unlicensed asynchronous PCS devices. Our action here merely provides additional spectrum for such use. Second, providing a notice and comment period would be contrary to the public interest because it would unnecessarily delay the availability of unlicensed PCS devices and the benefits that these devices will provide to the public. Accordingly, pursuant to Section 553 of the Administrative Procedures Act we find good cause for adopting these slight modifications to Part 15 of the Rules without notice and comment, 5 U.S.C. § 553(b)(3)(B).

### 2402-2417 MHz

25. The 2402-2417 MHz band is allocated internationally in Region 2 on a primary basis to the fixed, mobile, and radiolocation services, and on a secondary basis to the amateur service.<sup>62</sup> Domestically, the band is currently allocated on a secondary basis to the amateur service. The 2402-2417 MHz band lies within the 2400-2500 MHz band that is available for

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<sup>60</sup> See Federal Communications Commission, REPORT AND PLAN: MEETING STATE AND LOCAL GOVERNMENT PUBLIC SAFETY NEEDS THROUGH THE YEAR 2010, FCC 95-55, released Feb. 9, 1995.

<sup>61</sup> Prior to operation, unlicensed PCS devices at 1910-1930 MHz must be coordinated by the Unlicensed PCS Ad Hoc Committee for 2 GHz Microwave Transition Management (UTAM). See 47 C.F.R. § 15.307.

<sup>62</sup> See Table of Frequency Allocations, 47 C.F.R. § 2.106.

use by industrial, scientific, and medical (ISM) applications.<sup>63</sup> Radio services operating within this band must accept harmful interference that may be caused by ISM devices, which include a large number of microwave ovens commonly used in households. In addition, the 2400-2483.5 MHz band is available domestically for use by equipment authorized under Part 15 of the Rules.<sup>64</sup>

26. As described previously, the 2402-2417 MHz band lies within the Amateur service 13 cm band. Amateur comments regarding reallocation of portions of the 13 cm band have already been discussed in the preceding paragraphs,<sup>65</sup> and the points made with regard to reallocation of 2390-2400 MHz apply to this band as well.

27. We received very few comments recommending uses for the 2402-2417 MHz band other than for the Amateur service or continued Part 15 use. In general, commenters argue that use of the band for ISM equipment severely limits the band's utility for provision of commercial services. Several ISM equipment manufacturers express concern that allocating 2402-2417 MHz for a licensed commercial service, especially if licenses are issued via competitive bidding, could adversely affect ISM use of the band in the future.<sup>66</sup>

28. Only a few commenters support commercial use of 2402-2417 MHz. Tadiran urges that Part 15 use of the band be phased out and that the band be made available for implementation of wireless local loop service using spread spectrum technology.<sup>67</sup> Pegasus Communications, Inc. argues that the band should be used for a low power mobile service for video production use.<sup>68</sup>

29. Loral/Qualcomm, supported by AMSC and COMSAT, seeks use of the band for non-GSO MSS service links in the space-to-Earth direction, stating its belief that Part 15 and ISM use of the band will have minimal impact on MSS operations.<sup>69</sup> AMSC believes that

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<sup>63</sup> See Table of Frequency Allocations, 47 C.F.R. § 2.106. See also 47 C.F.R. Part 18.

<sup>64</sup> Part 15 provides for operation of unlicensed low-power devices.

<sup>65</sup> Para. 8, supra.

<sup>66</sup> Comments of Fusion Systems Corporation (FSC) at 4, Fusion Lighting, Inc. (FLI) at 1-2. Reply comments of SUNSAT Energy Council, International Space Power Program, American Institute of Aeronautics and Astronautics, and ETM Solar Works.

<sup>67</sup> Tadiran comments at 2-3.

<sup>68</sup> Pegasus comments.

<sup>69</sup> Loral/Qualcomm comments at 3, 4-5 AMSC reply comments at 2-3, and COMSAT reply comments at 5.

interference between MSS providers and other users of the band can be handled on a case-by-case basis.<sup>70</sup>

30. More than one-third of the comments received in response to the NPRM were filed by manufacturers of Part 15 devices, particularly manufacturers of wireless local area networks (LANs) and devices that interact with wireless LANs.<sup>71</sup> These commenters note that, since the Commission encouraged development of unlicensed spread spectrum systems in the 902-928 MHz, 2400-2483.5 MHz, and 5700-5825 MHz bands, the industry has responded with a wide variety of products, including digital cordless telephones, electronic article surveillance equipment, utility metering devices, fire and security alarm devices, wireless bar code readers, collision avoidance systems, and wireless LANs. They contend that these Part 15 devices provide the kind of spectrum efficient uses, new technologies, and open competitive markets that the Commission is trying to promote. The LAN MAN Standards Committee of the IEEE, IEEE 802, and other parties filed comments discussing the work that has gone into developing standards for wireless LANs based on current Part 15 Rules for this band. These commenters note that 2400-2483.5 MHz is increasingly available internationally for Part 15 type use and it is likely that the IEEE 802 standard will be used internationally. They argue, therefore, that it would undermine the nation's international competitiveness if the Commission adversely affects Part 15 use of the band. The commenters urge that the 2402-2417 MHz portion of the band be retained for Part 15 use without disruption by high power licensed systems. Some commenters argue that the status of Part 15 use should be raised to primary.

31. Several parties seeking spectrum for private uses urge that 2402-2417 MHz be allocated for licensed use by private radio services, particularly for advanced private systems as described by COPE.<sup>72</sup> On the other hand, API, TIA, UTC, and Motorola, all entities that are generally strong proponents of allocating spectrum for private radio services, oppose

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<sup>70</sup> AMSC reply comments at 3.

<sup>71</sup> See generally Comments of 3Com Corporation (3Com), Advanced Micro Devices, Inc. (AMD), Andrew Corporation (Andrew), Apple Computer, Inc. (Apple), AT&T, Brian Robinson, Cincinnati Microwave, Compaq Computer Corporation (Compaq), Consumer Electronics Group of the Electronics Industries Association (EIA), Cylink Corporation (Cylink), IEEE 802, International Business Machines Corporation (IBM), Metricom, Inc., Microsoft Corporation (Microsoft), Norand Corporation (Norand), Part 15 Coalition, Rockwell International Corp. (Rockwell), Standard Microsystems Corporation (SMC), Symbol Technologies, Inc. (Symbol), Tetherless Access LTD. (TAL), Western Multiplex Corporation (WMC), Windata, Inc., Wireless Information Networks Forum, Inc. (Winforum), Xircom, Inc. and Reply Comments of AMD, Apple, AT&T, Claircom Communications Group, L.P., Compaq, Cylink, Interdigital Communication Corporation, IBM, Micron Communications, Inc., Part 15 Coalition, Metricom, Symbol, Andrew, Proxim, Inc.

<sup>72</sup> Comments of County of LA at 3, FIT at 6, ITA at 11-12, and MRFAC at 8.

licensed use of 2402-2417 MHz, arguing instead that the band should remain available for use by Part 15 devices because of the broad utility of Part 15 equipment, including for private users.<sup>73</sup> UTC urges the Commission to place spread spectrum Part 15 devices into a new Part 16 and accord these devices primary status in the band.<sup>74</sup>

32. **Decision.** Commenters expressed only limited interest in use of the 2402-2417 MHz band for licensed commercial services. In contrast, there was significant concern expressed about maintaining use of the band by Part 15 devices. As described above, this band lies within 2400-2483.5 MHz, which is available for use by spread spectrum devices under Part 15 of our Rules. Eliminating Part 15 use of 2402-2417 MHz would severely reduce the amount of spectrum available to Part 15 devices, and could significantly impair the ability of Part 15 devices to operate in the 2400-2483.5 MHz band by forcing them to operate entirely in portions of the band most affected by ISM devices and by limiting their information capacity. These Part 15 devices provide a variety of consumer and business oriented services that benefit individuals, commercial services, and private spectrum users, and they also have applications for public safety and medical needs. Benefits include lower costs of energy through automatic meter reading and optimized power generation, low-cost broadband access to Internet services and other information networks for schools, libraries, telecommuters and home offices, mobility of telephonic and computer communications within offices and homes without extensive reconstruction and wiring, immediately installable video conferencing among and between buildings for educational instruction, health care monitoring and judicial procedures without construction of special studio facilities, safe transport of chemicals and petroleum products through low-cost and easily deployable pipeline monitoring services, and control for potentially tens of thousands of traffic lights, at less than one-third the cost of wireline solutions, to ease road congestion, and significantly reduce pollution and new street construction.<sup>75</sup> These and other applications of technologies implemented through Part 15 devices have the potential to benefit virtually every person and business in the nation, as well as to promote American competitiveness abroad. Considering the universal benefits provided by part 15 equipment, the potential growth for new technologies in this area, and the difficulty of implementing commercial services in this band, we find that the public is best served by providing for the continued availability of this band for Part 15 equipment.

33. One of the principal Part 15 uses being implemented in the 2400-2483.5 MHz band is wireless LANs. Commenters have provided sales figures demonstrating a rapidly expanding market for wireless LAN equipment with sales of \$200 million for 1994 and expected sales as high as \$2.5 billion dollars by 1998.<sup>76</sup> Disrupting Part 15 use of 2402-

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<sup>73</sup> Comments of API at 7-8; TIA at 2 and 10; UTC at 14; and Motorola at 10-14.

<sup>74</sup> UTC comments at 14.

<sup>75</sup> See, e.g., Cylink comments at 4.

<sup>76</sup> Comments of IBM at 11; Symbol at 5; and Norand at 6.

2417 MHz could affect the market as well as the ability of U.S. firms to compete in the worldwide market for wireless LANs. In addition, manufacturers would have to modify equipment designed to operate throughout the 2400-2483.5 MHz band at a time when considerable resources have been expended on equipment development but when manufacturers have not yet recouped their investment because the equipment is just now becoming widely available.

34. In addition to maintaining availability of 2402-2417 MHz for use by Part 15 equipment, we are also providing for continued use of this band by the Amateur service and upgrading the band from secondary to primary use by the Amateur service. Both Part 15 manufacturers and Amateur service licensees are familiar with operating in a shared radio environment, and we are unaware of any conflicts that have occurred between Part 15 devices and Amateur operations in this band. This action will essentially preserve the status quo regarding use of this band.<sup>77</sup>

35. We decline to allocate the band for other uses proposed by commenters. None of the parties that support use of this band for MSS support their belief that MSS is compatible with Part 15 or ISM use of the band. MSS is also not compatible with Amateur use of the band. In addition, we are currently considering allocation of an additional 70 megahertz of spectrum in the 2 GHz band that may be sufficient to satisfy MSS needs in this frequency range at this time.<sup>78</sup> Tadiran's proposal to use this band for wireless local loops is part of a larger proposal by Tadiran to allocate the 2300-2310 MHz, 2390-2400 MHz, and 2402-2417 MHz bands for spread spectrum wireless local loops that Tadiran states would meet the technical requirements for spread spectrum systems under Part 15 of our Rules.<sup>79</sup> However, we have made the 2390-2400 MHz band available for unlicensed PCS devices, and without that band Tadiran's plan would be incomplete. We believe that the public is benefitted more by allowing the greatest number of possible uses of this band under Part 15 of the Rules rather than by restricting use to one type of application. We note that Tadiran would be able to use this band for spread spectrum wireless local loops under Part 15 of our rules, although not on an exclusive basis. The proposal by Pegasus to use this band for video production use would result in relatively limited benefits to the public when compared to the amount and types use provided by Part 15 devices operating in this band. In addition, as we noted in our decision regarding the 2390-2400 MHz band, while we have not allocated this band for the

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<sup>77</sup> Our action today does not affect use of this band by ISM equipment. ISM use of this frequency band will continue in accordance with Part 18 of our Rules, 47 C.F.R. Part 18. Other radio services operating in this band must accept harmful interference which may be caused by ISM applications. See footnote 752 to the Table of Frequency Allocations, 47 C.F.R. § 2.106.

<sup>78</sup> See note 53, supra.

<sup>79</sup> Tadiran comments at 2-4.

exclusive use of private users, we believe that unlicensed devices operating under Part 15 of our Rules will meet some of the needs of private users.<sup>80</sup>

#### **4660-4685 MHz**

36. Internationally, 4660-4685 MHz is allocated in Region 2 on a primary basis for fixed, fixed-satellite, and mobile services.<sup>81</sup> This band is allocated domestically on a primary basis for non-government fixed-satellite service space-to-Earth links, with use limited to international inter-continental systems.<sup>82</sup> However, there is currently no non-Government use of this band.<sup>83</sup>

37. The Association for Maximum Service Television, Inc. (MSTV) in a joint filing with a number of television broadcast entities reasserts its request, discussed in the NPRM, that 4660-4685 MHz be allocated for use by the broadcast auxiliary service to support digital advanced television and possibly to relieve congestion in the 1990-2110 MHz band. MSTV claims that no other service has made a compelling argument for requiring use of the 4660-4685 MHz band and that implementation of advanced television will provide the greatest benefit to the public.<sup>84</sup> This is also supported by the Society of Broadcast Engineers, Inc.<sup>85</sup>

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<sup>80</sup> See para. 22, supra.

<sup>81</sup> See Table of Frequency Allocations, 47 C.F.R. § 2.106. Use of the fixed-satellite service (space-to-earth) at 4500-4800 MHz is subject to an allotment plan contained at Appendix 30B of the international Radio Regulations.

<sup>82</sup> See Table of Frequency Allocations, 47 C.F.R. § 2.106. The fixed-satellite service in this band is also subject to case-by-case electromagnetic compatibility analyses. See U.S. allocation footnote 245.

<sup>83</sup> An agreement with Canada requires that certain United States Government terrestrial line of sight and troposcatter systems be coordinated with Canada. This agreement also permits use of this band by airborne or other mobile stations but requires that such stations protect Canadian systems. See Sharing Arrangement Between the Department of Communications of Canada and the National Telecommunications and Information Administration of the United States Concerning the Use of the Band 4400-5000 MHz, signed August 29, 1986. Because this agreement was between the NTIA and the Canadian Department of Communications it will be necessary, in the future, to evaluate and renegotiate an agreement between the FCC and the Canadian Government for non-Government use of this band.

<sup>84</sup> MSTV comments at 2-10.

<sup>85</sup> Reply comments of the Society of Broadcast Engineers.

38. Other parties request that the band be allocated for private fixed microwave to accommodate systems being displaced from the 2 GHz PCS bands. They dispute our belief that adequate provision has been made to reaccommodate fixed microwave systems displaced by PCS.<sup>86</sup> These parties argue that additional spectrum for reaccommodation of displaced fixed microwave operations is needed. Alcatel claims that discrepancies between protection criteria for fixed microwave systems and fixed-satellite systems operating in the 3700-4200 MHz band limit the usefulness of that band for reaccommodation of fixed users displaced from the 2 GHz PCS band.<sup>87</sup> As noted by Alcatel, however, accommodation of displaced fixed point-to-point systems requires use of paired spectrum with sufficient frequency separation between pairs. Alcatel argues that at least 100 megahertz of spectrum is required to accommodate the necessary frequency pairs and urges the Department of Commerce to identify an additional 50 megahertz of spectrum in this frequency band for reallocation to private sector use.<sup>88</sup>

39. Loral/Qualcomm advocates using this band for Earth-to-space feeder links to support non-GSO MSS. Although this band is already allocated for Fixed Satellite Service (FSS) space-to-Earth links and is part of the FSS allotment plan in Appendix 30B of the international Radio Regulations, Loral/Qualcomm states that their proposal to implement reverse band working of this spectrum, without interfering with FSS operations, is supported by papers submitted to ITU-R Working Party 4A and Task Group 4/5.<sup>89</sup>

40. Several commenters suggest that this band be used to provide a variety of wireless interactive services. Proposals as to how this would be implemented vary. American Telecasting favors our proposal for a general allocation, with licenses awarded by auction, but it would have the Commission restrict eligibility to those entities already providing service to paying subscribers within a market.<sup>90</sup> Leaco Rural Telephone Cooperative, Inc. also favors a general allocation but wants rural telephone exchange carriers to have a preference for obtaining spectrum in certain areas.<sup>91</sup> Wireless Holding, Inc. and the Wireless Cable Association International both support our proposal for a very flexible

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<sup>86</sup> API comments at 8-9, Alcatel comments at 8-9.

<sup>87</sup> Alcatel comments at 8-9.

<sup>88</sup> Alcatel comments at 9. An additional 50 megahertz of spectrum, combined with the 4635-4660 MHz band that was also identified for reallocation in the Preliminary Report, would result in a total of 100 MHz.

<sup>89</sup> Loral/Qualcomm comments at 5-6.

<sup>90</sup> American Telecasting comments at 4-6.

<sup>91</sup> Leaco comments at 5-9.

allocation and urge us to not adopt overly restrictive eligibility or technical rules.<sup>92</sup> Finally, Tadiran proposes that 4660-4685 MHz be used for in-building communications.<sup>93</sup>

41. **Decision.** We are adopting a Fixed and Mobile allocation in the 4660-4685 MHz band. We have weighed the benefits of allocating this band for the services proposed by commenters, but remain convinced that the public will receive the greatest benefit by allocating the 4660-4685 MHz band to the Fixed and Mobile services, regardless of whether the ultimate use of this spectrum is for private services, non-subscriber services, or subscriber-based services .

42. A number of commenters argue that if we adopt such an allocation we would not fulfill our responsibility under Section 303 of the Communications Act which requires that we classify radio stations and prescribe the nature of the service to be rendered by each radio station.<sup>94</sup> As explained below, we believe that an allocation to Fixed and Mobile services is permissible under the Communications Act and, for the 4660-4685 MHz band, we find that a Fixed and Mobile allocation is in the public interest. Therefore, we reject the arguments advanced by commenters.

43. The Commission is required by the National Telecommunications and Information Administration Organization Act (NTIAO Act) to issue regulations to allocate the 50 megahertz of spectrum that the Secretary of Commerce identified and recommended for immediate reallocation from Government use no later than 18 months from enactment of the Reconciliation Act.<sup>95</sup> For purposes of this portion of the NTIAO Act, the term "allocation" is defined as "an entry in the National Table of Frequency Allocations of a given frequency band for the purpose of its use by one or more radiocommunication services" (emphasis added).<sup>96</sup> The Table of Frequency Allocations often contains allocations to more than one type of service<sup>97</sup> and such allocations are specifically authorized in this instance by the

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<sup>92</sup> Comments of Wireless Holdings, Inc. at 4-5, and the Wireless Cable Association International at 1-7.

<sup>93</sup> Tadiran comments at 2.

<sup>94</sup> See Comments of Continental Airlines at 2, FIT at 3, In-Flight at 3-6, MRFAC at 4, Metricom at 10-13, Motorola at 15-17, TIA at 4, UTC at 3 and Winforum at 8. 47 U.S.C. §§ 303(a), 303(b).

<sup>95</sup> Section 115(a) of the National Telecommunications and Information Administration Organization Act, 47 U.S.C. § 925(a).

<sup>96</sup> Section 111(1) of the National Telecommunications and Information Administration Organization Act, 47 U.S.C. § 921(1) (emphasis added).

<sup>97</sup> See 47 C.F.R. § 2.106.

NTIAO Act. Therefore, our allocation of the 4660-4685 MHz band to Fixed and Mobile Services is permissible and consistent with established practice.

44. We believe that such an allocation is consistent with the Commission's obligations under the Communications Act. The Commission has very broad authority under the Communications Act to allocate spectrum. Our authority derives from Section 303 of the Communications Act, which provides:

Except as otherwise provided in this Act, the Commission from time to time, as public convenience, interest, or necessity requires shall --

- (a) Classify radio stations;
- (b) Prescribe the nature of the service to be rendered by each class of licensed stations and each station within any class;
- (c) Assign bands of frequencies to the various classes of stations, and assign frequencies for each individual station . . . .<sup>98</sup>

Nothing in the language of Section 303 establishes or suggests any limitation or restriction on the Commission's discretion to prescribe the nature of the service to be rendered over radio frequencies or its authority to assign (or allocate) frequencies to the various classes of stations. Moreover, nothing in the language of Section 303 or its legislative history suggests that the Commission is prohibited from assigning spectrum to stations for more than one permissible use, or otherwise limits the Commission's discretion in making spectrum allocations that it deems to serve the public interest.<sup>99</sup> With respect to allocation decisions, courts have accorded "substantial deference" to Commission determinations.<sup>100</sup>

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<sup>98</sup> 47 U.S.C. § 303(a)-(c)

<sup>99</sup> Other sections of the Communications Act support the view that Congress expected the Commission to utilize some amount of spectrum for particular types of services. See, e.g., 47 U.S.C. § 309(b) (referring to fixed point-to-point microwave stations, industrial radio positioning stations, and aeronautical stations); 47 U.S.C. § 319 (distinguishing between amateur stations, mobile stations, public coast stations, privately owned fixed microwave stations, common carrier stations, and broadcast stations). Nevertheless, these sections cannot be read to limit the Commission's discretion to permit the use of some spectrum for more broadly defined services.

<sup>100</sup> See National Ass'n of Regulatory Utility Commissioners v. FCC, 525 F.2d 630, 636 (D.C. Cir.), cert. denied, 425 U.S. 992 (1976); see also Telocator Network of America v. FCC, 691 F.2d 525, 549 (D.C.Cir. 1982).

45. Commission precedent also supports the permissibility of allocating spectrum in a manner that allows for its use by a broadly defined service. In 1986, the Commission allocated 2 MHz of spectrum for a new General Purpose Mobile Service (GPMS) accessible to all land mobile, maritime mobile, and aeronautical mobile uses.<sup>101</sup> In that instance, the Commission found that its GPMS allocation served the public interest.<sup>102</sup> The Commission rejected claims that such an allocation was unlawful, noting that "[n]othing in Sections 303(a)-(c) suggests the Commission is not permitted to take into account marketplace forces when exercising its spectrum allocation responsibilities under the public interest standard."<sup>103</sup> Our current approach is also similar to that taken in our Emerging Technologies proceeding, ET Docket No. 92-9. In that proceeding, the Commission allocated 220 megahertz of spectrum to the Fixed and Mobile services and identified it for use by emerging technologies. Later, we permitted PCS providers to use 140 megahertz of this spectrum.<sup>104</sup> We disagree with the contention made by some commenters that the current approach differs from that applied in allocating spectrum for PCS.<sup>105</sup> While we envision service rules designed to accommodate a variety of uses, as with PCS, we have no intention of abdicating our responsibility to provide a regulatory structure that is sufficient to provide for use of the spectrum that is in the public interest. The necessary extent of such a structure is explored in the Notice of Proposed Rule Making section of this item.

46. Our allocation is also not so broad as to permit use of the 4660-4685 MHz band for any purpose. Allocation to the Fixed and Mobile services will allow licensees to use the spectrum to provide any Fixed service, including Aeronautical Fixed, fixed point-to-point, and fixed point-to-multipoint systems, and any Mobile service, including Aeronautical mobile, Land mobile, or Maritime mobile service. The allocation would not, however, allow licensees

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<sup>101</sup> Amendment of Parts 2 and 22 of the Commission's Rules Relative to Cellular Communications System, Report and Order, GEN Docket Nos. 84-1231, 84-1233, 84-1234, 2 FCC Rcd 1825, 1841 (1986), recon. denied, 2 FCC Rcd 6830 (1987).

<sup>102</sup> Id. at 1840.

<sup>103</sup> Id. at 1839. We note that this flexible use spectrum was never licensed. We ultimately reallocated this spectrum for narrowband personal communications services (PCS).

<sup>104</sup> See generally Amendment of the Commission's Rules to Establish New Personal Communications Services, GEN Docket No. 90-314, Memorandum Opinion and Order, 9 FCC Rcd 5031 (1994).

<sup>105</sup> A broad variety of services are permitted under PCS. See Section 24.3 of the Rules which permit PCS licensees to, "provide any mobile communications service on their assigned spectrum. Fixed services may be provided only if ancillary to mobile operations. Broadcasting as defined by the Communications Act is prohibited." 47 C.F.R. § 24.3.

to use the spectrum for Broadcast services, Radiolocation services, or any Satellite services, including the Broadcast or Mobile Satellite Service.<sup>106</sup>

47. Although the majority of commenters oppose our proposal, we note that we did receive support for a Fixed and Mobile allocation. Wireless Holdings, Leaco Rural Telephone Cooperative (Leaco), American Telecasting, Pacific Bell Mobile Systems, and the Wireless Cable Association (WCA) support a fixed and mobile allocation for some or all of the spectrum under consideration and have expressed an interest in providing commercial services.<sup>107</sup> Several of these commenters would restrict licensee eligibility to some degree.<sup>108</sup> Additionally, UTC believes that a Fixed and Mobile allocation for commercial services is appropriate, provided that the needs of private users are satisfied in bands specifically set aside for private users.<sup>109</sup>

48. In this instance, we find that an allocation for Fixed and Mobile services is not only permissible under the Communications Act, but will also serve the public interest, regardless of whether the ultimate use of the spectrum is for private or commercial services. We believe that such an allocation will ensure that the spectrum is used for services that are most highly valued by the licensees and/or their customers. While we expressed our belief in the Notice that services provided under such an approach would most likely meet the statutory criteria for auctions and that such an allocation would be economically beneficial to users and provide operators with incentives to develop and introduce innovative service features and technologies,<sup>110</sup> the benefits of this type of allocation extend beyond those services offered by commercial, subscriber based providers. If potential licensees indicate that the principal use of this spectrum will not involve receipt by the licensee of compensation from subscribers, thus making this spectrum not subject to auction, we maintain

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<sup>106</sup> We note that Broadcast Auxiliary services are not considered a Broadcasting service as defined in Section 2.1 of our Rules, 47 C.F.R. § 2.1. See also para. 53, infra.

<sup>107</sup> Comments of American Telecasting 4, Wireless Cable Association at 3-4, Wireless Holdings at 4-5, Leaco at 5, Pacific Bell Mobile at 1-2.

<sup>108</sup> American Telecasting states that eligibility should be limited to "those who already offer service to paying subscribers in the particular area." American Telecasting comments at 6. Leaco would permit rural telephone companies to obtain licenses in some instances without participating in a auction, subject to the rural telephone company paying an amount based on the average price paid for auctioned spectrum. Leaco comments at 5-9. Pacific Bell Mobile Systems merely requests that the Commission not prohibit use of this band for accommodation of fixed microwave systems that are displaced from the 1850-1990 MHz band by broadband PCS. Pacific Bell Mobile System comments at 2.

<sup>109</sup> UTC comments at 9-11.

<sup>110</sup> NPRM, 9 FCC Rcd. at 6780, para. 9.

that the underlying principles would continue to support an allocation to Fixed and Mobile services. Such an allocation thus will enable the greatest variety of services to be developed and used by the public.

49. Many commenters contend that the Commission may not allocate spectrum to both Fixed and Mobile services and use competitive bidding to assign licenses in that allocation because such action would violate the provisions of Section 309(j) of the Communications Act.<sup>111</sup> We disagree with commenters who suggest that the Commission has allocated spectrum to Fixed and Mobile services based on the impermissible purpose of raising funds for the United States Treasury through auctions.<sup>112</sup> We also disagree with commenters' arguments that our proposal to use competitive bidding in the NPRM alters spectrum allocation criteria and procedures established by the other provisions of the Communications Act.<sup>113</sup> Further, as explained supra, the Commission is afforded broad discretion in allocating spectrum in the public interest from Section 303 and other provisions of the Act. In this proceeding, we have decided to adopt an allocation to the Fixed and Mobile services. As we previously discussed, there is precedent for the Commission to employ an allocation to more than one service and provide a licensee great latitude as to how that spectrum is used, even before the Commission had auction authority.<sup>114</sup> Since both the statute and precedent provide adequate support to allocate frequency bands to both Fixed and Mobile services, we are able to conclude that we have not "alter[ed] spectrum allocation criteria and procedures established by the other provisions of [the] Act . . . ." The Commission's adoption of an allocation to the Fixed and Mobile Services is unrelated to our proposal to auction this allocation.

50. While we are proposing below to use auctions as an assignment mechanism based on our preliminary conclusion, based on the record, that services will likely meet the necessary criteria, we have also requested comment as to other services that might be provided under a Fixed and Mobile allocation.<sup>115</sup> If we determine that it is not reasonably likely that the principal use of this spectrum would meet the criteria for assigning licenses through auctions, or that it would better serve the public interest to provide some or all of this spectrum for non-subscriber-based Fixed and Mobile, including private services, it will be necessary to use an alternate assignment method.

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<sup>111</sup> See Comments of APCO at 2-3, AAR at 7, FIT at 3, TIA at 3-6, UTC at 7-8, Motorola at 15-17, and Winforum at 8.

<sup>112</sup> Comments of API at 13, APCO at 6, TIA at 4, UTC at 7, WinForum at 7, Compaq at 13, MSTV at 11, and Motorola at 15-17. 47 U.S.C. § 309(j)(7)(A).

<sup>113</sup> 47 U.S.C. § 309(j)(6)(A).

<sup>114</sup> See para. 45 supra, discussing allocation of spectrum for GPMS and for PCS.

<sup>115</sup> See para. 66, infra.

51. Traditional license assignment methods used to award licenses in mutually exclusive situations included random lotteries and comparative hearings. The Commission's authority to use random selection was generally limited by the Budget Act to situations where the Commission has determined that the principal use of the spectrum does not involve providing service to subscribers.<sup>116</sup> Therefore, if the Commission determines that the principal use of the spectrum is reasonably likely to involve service to subscribers, the Commission may assign licenses in mutually exclusive situations by using competitive bidding or comparative hearings. If the Commission determines that the principal use of the spectrum is not reasonably likely to involve service to subscribers, then we may assign licenses in mutually exclusive situations using previously established methods of random selection or comparative hearing.<sup>117</sup>

52. Some commenters claim that our proposal is inconsistent with our stated objective of providing competition in the provision of new services because different licensees could provide different services and would not, therefore, be in direct competition.<sup>118</sup> Other commenters argue against our proposal, claiming that customers must be ensured of a variety of services, and that the only way to ensure such variety is for the Commission to prescribe what services will be provided in each frequency band.<sup>119</sup> We believe that our proposal for a Fixed and Mobile allocation would provide for a variety of services and would result in competition. Given the wide variety of voice, data, and video services that have been or are now being developed, we believe that licensees will offer various services most demanded by consumers depending on the demographics of a specific area, technical restrictions on use of a specific band, and on existing services currently provided in an area. Licensees under such an allocation plan can be far more responsive to changing consumer demands than can the Commission. Offering licensees the opportunity to offer a wider variety of services, and to modify the types of services offered in response to changing customer demands, results in competition to provide the services most demanded by customers at prices that are deemed reasonable by the marketplace. This results in a much broader form of competition than just direct price competition for a strictly prescribed set of services.

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<sup>116</sup> 47 U.S.C. § 309(i)(1).

<sup>117</sup> The Commission will also need to determine the criteria for mutually exclusive applications. For instance, licenses may be mutually exclusive if accepted during a previously established "window" of time. Alternatively, we could accept applications on a first-come, first-served basis and only applications received on the same day would be considered mutually exclusive. In the case of many private services, we have established frequency coordination requirements to assist in the assignment process. See 47 C.F.R. § 90.175.

<sup>118</sup> In-Flight comments at 8-10.

<sup>119</sup> Comments of ITA at 5-6.

53. Regarding specific uses proposed by commenters, we are not persuaded by arguments that we have not sufficiently provided for accommodation of fixed microwave systems that will be displaced by PCS. This topic was the focus of much consideration in our proceeding identifying spectrum for emerging technologies and commenters have provided no substantive support to demonstrate that sufficient spectrum for relocation has not been identified. Further, reaccommodation of these fixed microwave systems requires paired channels. At this time, there is no other spectrum available that we could pair with 4660-4685 MHz. Several parties seek use of this spectrum for Broadcast Auxiliary services. While these commenters state that this spectrum is needed to support advanced television and to relieve congestion in the 1990-2110 MHz band, it also is possible that these entities could implement more spectrum efficient operations in the spectrum currently available for Broadcast Auxiliary. Moreover, we note that Broadcast Auxiliary services are permissible under a Fixed and Mobile allocation<sup>120</sup> and are not, therefore precluded from obtaining licenses under the allocation we have adopted for this band. Commenters have also suggested that this band be used to accommodate MSS feeder links. The issue of identifying and evaluating the viability of frequency bands for use by MSS feeder links is under consideration in our proceeding preparing for WRC-95, IC Docket No. 94-31.<sup>121</sup> We also note that the 25 megahertz of spectrum under consideration would not be sufficient, by itself, to satisfy the feeder link spectrum requirements for any of the MSS systems currently being proposed by potential MSS providers. Accordingly, we decline to adopt a specific allocation for this spectrum.

54. A number of entities support a Fixed and Mobile allocation for this band, expressing their desire to use the spectrum for such consumer oriented applications as interactive video, voice, and data.<sup>122</sup> Adoption of a Fixed and Mobile allocation for this band will allow licensees to provide a wide variety of applications based on public demand in any particular geographic area. While we anticipate that, under this Fixed and Mobile allocation, most applications provided will be commercial in nature, this allocation does not preclude use of the band for non-subscriber services and we will continue to develop the record in this proceeding to determine whether or not it is likely that the principal use of this spectrum will be for services that meet the statutory criteria for auctions. Considering the potential for providing a variety of applications in this band, we conclude that the allocation we are adopting in this Order will provide the greatest benefit to the public through the introduction of new applications and the enhancement of existing services.

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<sup>120</sup> See Table of Frequency Allocations, 47 C.F.R. § 2.106. A specific example is the entry for 1990-2110 MHz which is allocated for Fixed and Mobile use and is currently used for provision of Broadcast Auxiliary services, particularly for electronic news gathering.

<sup>121</sup> Preparation for International Union World Radiocommunication Conferences, Second Notice of Inquiry, IC Docket No. 94-31, FCC No. 95-36, released January 31, 1995.

<sup>122</sup> See comments of Leaco, WCA, Wireless Holdings, and American Telecasting.

## NOTICE OF PROPOSED RULE MAKING

### 2390-2400 MHz

55. Because we already have rules in place governing unlicensed PCS it is not necessary for us to seek additional comment on service rules.<sup>123</sup> There are, however, several issues with respect to use of this band that we do seek comment on. We note that the existing service rules effectively preclude operations that would combine 2390-2400 MHz with the adjacent 2400-2483.5 MHz band for use as a single, large Part 15 band. We request specific comment on whether some allowance should be made to accommodate operations that combine use of these bands. Commenters pursuing combined use of these bands should provide recommendations on appropriate technical standards.

56. The National Research Council (NRC) and Cornell University have requested that aeronautical use of 2390-2400 MHz be specifically prohibited in order to protect space research operations that are conducted at 2380 MHz. In addition, NRC requests that terrestrial use of 2390-2400 MHz be prohibited within 100 miles of the National Astronomy and Ionospheric Center (NAIC) at Arecibo, Puerto Rico. We are sensitive to the need to protect important space research operations at 2380 MHz. We agree with regard to aeronautical use, and therefore we propose to specifically prohibit aeronautical use of unlicensed PCS devices operating at 2390-2400 MHz. However, the potentially nomadic nature of unlicensed PCS devices makes it difficult to effectively prevent use of these devices within a given distance of a particular site. We also believe that the relatively low power of these devices should provide sufficient protection to space research operations in all but the most unusual circumstances. Accordingly, we are not proposing to restrict use of unlicensed PCS devices in the vicinity of the NAIC. We request comment on whether our proposal provides reasonable protection to space research operations and, if not, what steps should be taken to provide greater protection.

57. Finally, as we stated above, we believe that unlicensed PCS and Amateur service use of 2390-2400 MHz will generally be compatible and that it is unnecessary to propose any formal standards for sharing between these services in this band.<sup>124</sup> We request comment on whether this is appropriate or whether there is a need to restrict certain uses by either the Amateur service or unlicensed PCS devices that might be particularly disruptive, or whether we should seek to implement for coordination of Amateur/PCS use. Commenters addressing this issue should be specific as to what uses might be particularly disruptive and as to how shared use of the band could be enhanced.

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<sup>123</sup> See para. 23, supra.

<sup>124</sup> See para. 17, supra.

## 2402-2417 MHz

58. Both the Amateur service and Part 15 devices operating at 2402-2417 MHz continue to be governed in accordance with current applicable technical and operational rules.<sup>125</sup> However, we seek comment on whether any changes should be made to our rules to facilitate use of this band by the Amateur service and Part 15 devices. Several commenters suggest increasing the status of Part 15 devices and one commenter, UTC, proposes that a Part 16 be created.

59. We note that NRC requests that, in order to protect space research operations, aeronautical use of 2402-2417 MHz be prohibited and that terrestrial use of devices at 2402-2417 MHz be prohibited within 30 miles of the NAIC.<sup>126</sup> Also, NRC expresses concern that harmonic emissions from 2412-2418 MHz may interfere with radio astronomy use of the 4825-4835 MHz band.<sup>127</sup> While we are currently maintaining the existing use of this band, we request comment on whether any of these restrictions should be implemented. Commenters addressing this issue should provide full support for their positions, including what effect such restrictions will have on the ability of Part 15 devices and the Amateur service to use this band.

## 4660-4685 MHz

### **A. Service Rules**

#### **1. General Wireless Communications Service**

60. We propose to create a new service for licensing of the 4660-4685 MHz band. This new service, which would be included in a new Part of the Commission's Rules, would allow a licensee to provide any Fixed or Mobile service, consistent with the allocation for this band and our proposed rules described below. We propose to name this new service the General Wireless Communications Service (GWCS). We believe that this proposal will provide licensees a sufficient opportunity to meet the spectrum needs of consumers. For example, licensees could use this spectrum for dispatch service, point-to-point microwave, aeronautical audio/visual service, wireless local loop services, and terrestrial fixed and mobile auxiliary broadcast operations. As we have noted, Broadcast services, Radiolocation services,

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<sup>125</sup> UTC comments at 15, Motorola comments at 10-14, Metricom comments at 13-14.

<sup>126</sup> NRC comments at 7.

<sup>127</sup> NRC comments at footnote 10.

and Satellite services (including the Mobile Satellite Service) would not be included in the General Wireless Communications Services category.<sup>128</sup> We seek comment on this proposal.

61. We note that in addition to the Fixed and Mobile allocation we have adopted in the First Report and Order, 4660-4685 MHz is allocated on co-primary basis for non-government fixed-satellite service (FSS) space-to-Earth links with use limited to international inter-continental systems and subject to a case-by-case electromagnetic analysis in accordance with US footnote 245 of the Table of Frequency Allocations. In the NOI in this proceeding we requested comment on the necessity of maintaining the US245 restrictions on FSS use of this band, considering that it would no longer be available for Federal Government use.<sup>129</sup> We received no comments addressing this issue. To facilitate the shared use of this band, we propose to maintain the restrictions set forth in US footnote 245 on use of 4660-4685 MHz. We request comment on this proposal. Commenters that support eliminating the restriction should fully describe how FSS service use would be compatible with Fixed and Mobile GWCS services .

## 2. Designation of Specific Services

62. Although we are proposing to establish a new service classification for the intended purpose of enhancing the ability of service providers to meet a variety of user needs, we also acknowledge the possibility of better accommodating these needs by prescribing rules that provide for utilization of the 4660-4685 MHz frequency band only by specific services. We seek comment on such an alternative approach.

63. Interested parties who oppose our proposed establishment of a GWCS category should suggest various ways in which use of the 4660-4685 band could be limited to specific services. For example, we seek comment on (1) what services should be treated as eligible, in connection with our assignment of channels in the band; (2) whether we should divide channels in the band in a manner which assigns Fixed services exclusively to certain channels and Mobile services exclusively to remaining channels in the band; (3) whether we should establish priorities for Fixed service or Mobile service use of some or all of the channels established in the band; and (4) whether we should assign some or all channels established in the band for exclusive use by private Fixed or Mobile Services. Proponents of this alternative approach for designating services in the 4660-4685 MHz frequency band should provide facts and arguments supporting their view that such an approach will better serve the Commission's objectives and the public interest than would the establishment of a General Wireless Communications Service that would permit use for these and additional applications.

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<sup>128</sup> See para. 46, supra.

<sup>129</sup> NOI, 9 FCC Rcd at 2177, n. 23.

## B. Use of Spectrum

64. As discussed above, we believe that our proposed General Wireless Communication Service will benefit the public by providing licensees the opportunity to use the spectrum as they find appropriate. We tentatively conclude that it is likely that these uses will principally involve the provision of subscriber-based services, thus enabling us to propose competitive bidding as the assignment method for this spectrum.<sup>130</sup> Section 309(j)(2)(A) of the Communications Act provides that competitive bidding may be used by the Commission to assign spectrum if the "principal use" of the spectrum involves, or is reasonably likely to involve, the transmission or reception of communications signals to subscribers for compensation.<sup>131</sup> In the Competitive Bidding Second Report and Order, we established a general framework for evaluating whether particular service classifications can be considered to be used principally for the provision of subscriber-based services, and we seek comment regarding whether that general framework should be used with regard to the assignment of spectrum in the 4660-4685 MHz band.<sup>132</sup>

65. In the Competitive Bidding Second Report and Order, we concluded that we will determine principal use by comparing the amount of non-subscription use made by the licensees in a service as a class with the amount of subscriber-based use "on the basis of information throughput, time, or spectrum."<sup>133</sup> We found that the competitive bidding assignment method is permissible if "at least a majority of the use of a Commission regulated service or class of service [is] for service to subscribers for compensation."<sup>134</sup> In arriving at this approach, we rejected the notion that we must examine individual applications to determine each licensee's intended use of the spectrum.

66. Given the record before us, we believe that it is reasonable to conclude that the principal use of this spectrum under our proposed General Wireless Communications Service

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<sup>130</sup> See paras. 68-69, *infra*.

<sup>131</sup> See 47 U.S.C. § 309(j)(2)(A). See also Implementation of Section 309(j) of the Communications Act -- Competitive Bidding, Second Report and Order, PP Docket No. 93-253, 9 FCC Rcd 2348, 2353 para. 30, (1994) (Competitive Bidding Second Report and Order), *recon.*, Second Memorandum Opinion and Order, 9 FCC Rcd 7245 (1994) (Competitive Bidding Reconsideration Order).

<sup>132</sup> See Competitive Bidding Second Report and Order, 9 FCC Rcd at 2353-54, paras. 30-36.

<sup>133</sup> *Id.* at 2354, para. 32. Given the fact that "there is no way to anticipate . . . all of the possible uses of the electromagnetic spectrum", we explicitly retained the ability to use any of these measurement criteria in evaluating particular service classifications. *Id.* at n.21.

<sup>134</sup> *Id.* at 2354, para. 32.

will involve or is reasonably likely to involve the receipt by the licensee of compensation from subscribers in return for enabling those subscribers to receive or transmit communications signals. As we have described, a number of commenters state that they seek use of this spectrum for such subscriber based services, including for interactive wireless cable and other wireless data, voice, and interactive services.<sup>135</sup> A number of commenters, however, propose uses of this spectrum, such as for private or broadcast auxiliary services, that would not be subscriber-based. Accordingly, while we believe that it is reasonably likely that the principal use of this spectrum under our proposed General Wireless Communications Service will be for subscriber based services, we request further comment on this tentative conclusion. Commenters addressing this issue should fully describe the service that they contemplate for the spectrum, whether the service would be Fixed or Mobile, and whether it would be private (for a licensee's internal use), commercial (subscriber-based), or non-common carriage but subscriber-based.

67. To help us make an accurate determination regarding the extent to which this spectrum will be used for subscriber-based services, we request that commenters describe their spectrum needs and provide an indication of the degree of competition expected within a particular geographic service area. Commenters should also describe as accurately as possible the types of geographic areas in which they anticipate operating in (e.g., rural, urban, top 50 markets), since the likelihood of subscriber use may vary among geographic areas.

### C. Assignment Methods

#### 1. Competitive Bidding

68. Sections 309(j)(1) and 309(j)(2) of the Communications Act<sup>136</sup> permits auctions where mutually exclusive applications for initial licenses or construction permits are accepted for filing by the Commission and where the principal use of the spectrum will involve or is reasonably likely to involve the receipt by the licensee of compensation from subscribers in return for enabling those subscribers to receive or transmit communications signals.<sup>137</sup> As we stated in the preceding section, we believe that the principal use of this spectrum will meet

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<sup>135</sup> See para. 40, supra. In addition it is unclear at this time whether AAVS, which In-Flight, in its January 24, 1995, Ex Parte filing, states can be provided at 4660-4685 MHz, would be considered a subscriber based service. In its Ex Parte filing, In-Flight merely states that "it is likely that AAVS will be largely advertiser supported." In-Flight Ex Parte filing at footnote 2. This appears to suggest that there will be at least some subscriber support for this service.

<sup>136</sup> 47 U.S.C. §§ 309(j)(1), 309(j)(2).

<sup>137</sup> For a discussion of our preliminary assumptions regarding the principal use of this spectrum, see paras. 64-67, supra.

these requirements.<sup>138</sup> In addition, Section 309(j)(2)(B) requires the Commission, before it may adopt the use of auctions to award licenses, to determine that use of competitive bidding will promote the objectives described in Sections 1 and 309(j)(3) of the Communications Act. We tentatively conclude that the use of competitive bidding to assign licenses in the 4660-4685 MHz band will promote these objectives. We believe that auctioning licenses in this band will lead to more speedy initiation of services than would use of comparative hearings, and that auctions will place licenses in the hands of those who value the spectrum most highly. Thus, competitive bidding will promote the availability, to all the people of the United States, of a rapid, efficient, nationwide, and worldwide telecommunications system with adequate facilities at reasonable charges, satisfying the objectives of Section 1 of the Communications Act.

69. Section 309(j)(3) of the Communications Act sets forth Congress's four objectives for competitive bidding, as follows:<sup>139</sup>

- (A) the development and rapid deployment of new technologies, products, and services for the benefit of the public, including those residing in rural areas, without administrative or judicial delays;
- (B) promoting economic opportunity and competition and ensuring that new and innovative technologies are readily accessible to the American people by avoiding excessive concentration of licenses and by disseminating licenses among a wide variety of applicants, including small businesses, rural telephone companies, and businesses owned by members of minority groups and women;
- (C) recovery for the public of a portion of the value of the public spectrum made available for commercial use and avoidance of unjust enrichment through the methods employed to award uses of that resource; and
- (D) efficient and intensive use of the electromagnetic spectrum.

We tentatively conclude that using a system of competitive bidding for assignments in the 4660-4685 MHz band will promote these four objectives. First, our experience with the auction program being used to award licenses to provide both narrowband and broadband PCS leads us to believe that auctions will, more quickly than other licensing schemes, lead to the development and rapid deployment of new technologies, products and services, thus satisfying the objective expressed in Section 309(j)(3)(A). Second, we believe that, with the benefit of the comments solicited below with respect to the treatment of "designated entities," we will be able to adopt competitive bidding rules that will advance the objectives of Section

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<sup>138</sup> See para. 66, *supra*.

<sup>139</sup> See 47 C.F.R § 309(j)(3).

309(j)(3)(B) relating to the promotion of economic opportunity and the dissemination of licenses among a wide variety of applicants. Third, use of auctions to assign 4660-4685 MHz band licenses will clearly advance the goals of Section 309(j)(3)(C) by enabling us to recover for the public a portion of the value of the public spectrum and avoid problems of unjust enrichment.<sup>140</sup> Finally, as we stated in the Competitive Bidding Second Report and Order, auctions tend "to reinforce the desire of licensees to make efficient and intensive use of . . . spectrum. Auctions make explicit what others are willing to pay to use the spectrum, and the licensees' need to recoup the out-of-pocket expenditure for a license should provide additional motivation to get the most value out of the spectrum."<sup>141</sup> As noted above, we anticipate that any system of competitive bidding we adopt would be designed to lead to the assignment of licenses to those parties who value the licenses most highly and who thus can be expected to make efficient and intensive use of the spectrum, as contemplated by Section 309(j)(3)(D). In light of the foregoing, we tentatively conclude that competitive bidding should be used to award licenses in the 4660-3685 MHz band in the new General Wireless Communications Service if mutually exclusive applications are filed. We request comment regarding this tentative conclusion.

## 2. Other Assignment Methods

70. Although we are proposing the use of a system of competitive bidding to assign licenses for the General Wireless Communications Service in the 4660-4685 MHz band, we also seek comment regarding whether we should utilize a different assignment method.<sup>142</sup>

### *a. Spectrum Principally Used for Subscriber-Based Services*

71. If the principal use of spectrum in the band is reasonably likely to involve subscriber-based services, then we have the discretion to use a system of competitive bidding to assign licenses in the band if we determine that auctions will promote the objectives delineated in the Communications Act.<sup>143</sup> If we determine, in a case in which the principal use of spectrum in the band is reasonably likely to involve subscriber-based services, that those objectives would not be promoted by the use of a system of competitive bidding, then our only alternative is to use comparative hearings as a means of assigning all licenses in the band.

72. Thus, parties favoring the use of comparative hearings as the method for licensing subscriber-based services should address these issues in their comments. First, commenters

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<sup>140</sup> See also para. 98, *infra* (proposed regulatory safeguards to prevent unjust enrichment).

<sup>141</sup> Competitive Bidding Second Report and Order, 9 FCC Rcd 2358, para. 58.

<sup>142</sup> See, e.g., 47 C.F.R. §§ 1.972, 1.973, 22.131(c)(1).

<sup>143</sup> See 47 U.S.C. §§ 151, 309(j)(3).

should address the soundness of our tentative conclusion that use of competitive bidding in this instance will promote the objectives established in the Communications Act. Commenters should present arguments, for example, illustrating the manner in which the use of competitive bidding would fail to promote the development and rapid deployment of new technologies and services, would fail to enhance economic opportunity and competition, or would be deficient in promoting efficient and intensive use of the public spectrum. In addition, commenters may present arguments regarding comparative hearings as a mechanism for ensuring the rapid deployment of new technologies and services<sup>144</sup> and for recovering "for the public . . . a portion of the value of the public spectrum resource made available for commercial use . . . ." <sup>145</sup> If such comments lead us to conclude that our tentative conclusions regarding the extent to which competitive bidding promotes the objectives of the Act are not sound, then we will prescribe comparative hearings as the method for assigning licenses in the 4660-4685 MHz band. However, our tentative decision to use a system of competitive bidding to assign licenses in the 4660-4685 MHz band reflects our view that comparative hearings would not be an effective method for this purpose, in part because our "experience with comparative hearings has shown they usually are prolonged."<sup>146</sup> Further, "[a]s a general matter . . . we are reluctant to substitute our judgment for the wisdom of the marketplace by dictating outcomes based on assessment of the relative merits of applicants' service proposals."<sup>147</sup> We seek comment on these tentative views.

*b. Spectrum Not Principally Used for Subscriber-Based Services*

73. The Communications Act provides that the Commission has the discretion to use a system of random selection to grant licenses involving a use of the spectrum in cases of mutually exclusive applications if the Commission has determined that the principal use of the spectrum will not involve subscriber-based services.<sup>148</sup> Alternatively, the Commission could employ comparative hearings to grant licenses in such cases.

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<sup>144</sup> See 47 U.S.C. § 309(j)(3)(A).

<sup>145</sup> See 47 U.S.C. § 309(j)(3)(C).

<sup>146</sup> Amendment of the Commission's Rules to Establish Rules and Policies Pertaining to a Mobile Satellite Service in the 1610-1626.5/2483.5-2500 MHz Frequency Bands, Notice of Proposed Rulemaking, CC Docket No. 92-166, 9 FCC Rcd 1094, 1114, para. 40 (1994) (MSS Notice).

<sup>147</sup> Amendment of the Commission's Rules to Establish Rules and Policies Pertaining to a Mobile Satellite Service in the 1610-1626.5/2483.5-2500 MHz Frequency Bands, Report and Order, CC Docket No. 92-166, FCC 94-261, at para. 66, released Oct. 14, 1994 (MSS Report and Order).

<sup>148</sup> See 47 U.S.C. § 309(i).

74. As indicated in our previous discussion, we have reached the tentative view that, based on the record thus far established in this proceeding, it is reasonable to conclude that the principal use of spectrum in the proposed General Wireless Communications Service will involve or is reasonably likely to involve the receipt by licensees of compensation from subscribers in return for enabling those subscribers to receive or transmit communications signals. If, however, the pleadings in response to this Notice demonstrate that there is not a reasonable basis for expecting that the principal use of the spectrum will be for subscriber-based services, then we must determine whether to employ lotteries or comparative hearings as the assignment method for licenses in the band.

75. We tentatively conclude that, if we determine that the principal use of the proposed General Wireless Communications Service or other service in the 4660-4685 MHz band will not be for subscriber-based services, then the public interest will be better served through the use of a random selection method to assign licenses in the band. It is our tentative view that a lottery system would be preferable to comparative hearings because it would expedite the grant of licenses and would be capable of resulting in the provision of adequate service to users.<sup>149</sup> If a system of random selection is used to award licenses in the 4660-4685 frequency band, we propose to implement this system in essentially the same manner as the framework we are proposing in this Notice for a system of competitive bidding.<sup>150</sup> That is, the rules we propose for channelization and aggregation of frequency blocks, for license areas, and for applicant eligibility in the case of a system of random selection are the same as in the case of auctions. We seek comment on this proposed general

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<sup>149</sup> See MSS Notice, 9 FCC Rcd at 1118, para. 46. In assessing the relative merits of lotteries and comparative hearings for granting licenses for public mobile services and certain other services, we have found that a system of random selection is preferable:

Although this Commission is always chary of imposing new regulations on the communications industry, we believe in this case that the benefits of the lottery regulations far outweigh their costs. Lotteries will help speed provision of service to the public by eliminating the costly and time consuming comparative hearings while still maintaining some relative advantage for minorities and others underrepresented in the ownership of mass media facilities. The Commission holds great hope for lotteries .

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Amendment of the Commission's Rules to Allow the Selection from Among Certain Competing Applications Using Random Selection or Lotteries Instead of Comparative Hearings, Second Report and Order, 93 FCC 2d 952, 997, para. 131 (1983), recon. denied, 49 Fed. Reg. 49466 (Dec. 20, 1984).

<sup>150</sup> See paras. 77-83, infra.

framework. We also seek comment on specific procedural rules we might establish for lotteries.<sup>151</sup>

### 3. Mutual Exclusivity

76. One important aspect of any assignment method is determining whether applications are mutually exclusive. The Communications Act states that "[n]othing in [Section 309(j)], or in the use of competitive bidding, shall . . . be construed to relieve the Commission of the obligation in the public interest to continue to use engineering solutions, negotiation, threshold qualifications, service regulations, and other means in order to avoid mutual exclusivity in application and licensing proceedings . . . ."<sup>152</sup> We propose to use a 30-day filing window or other application cut-off method to allow for competing initial applications.<sup>153</sup> Because the 4660-4685 MHz band is currently unlicensed and the Commission has proposed to use defined service areas for each license, we need not be concerned at this time about situations where an application to modify a station authorization is mutually exclusive with an initial license application. We seek comment on this proposal, particularly whether some other type of filing group would be more appropriate for determining whether initial applications are mutually exclusive. For example, with private services, in particular, the Commission has often attempted to reduce the possibility of mutual exclusivity between initial applicants by adopting "first come, first served" procedures<sup>154</sup> and utilizing frequency coordinators.<sup>155</sup>

#### **D. Channelization; Aggregation**

77. We propose that the 4660-4685 MHz band be licensed in five blocks, each of which would be 5 megahertz wide. Many of the subscriber based uses discussed by commenters for this band, such as interactive video, voice, and data, as well as non-subscriber based uses such as auxiliary broadcast or private services, require relatively wide bandwidth. In order to provide licensees as much opportunity as possible to obtain the amount of spectrum they need to offer their particular service, we propose to permit licensees to obtain multiple 5 megahertz blocks. Based on available information about the likely services to be provided in this band, we tentatively conclude that no licensee would need more than 15 megahertz in a single market area. Therefore, we propose to limit a single entity from obtaining more than three of these blocks in a single geographic licensing area. We request

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<sup>151</sup> See, e.g., 47 C.F.R. §§ 1.821-1.825, 1.972, 1.1601-1.1603.

<sup>152</sup> 47 U.S.C. § 309(j)(6)(E).

<sup>153</sup> See, e.g., 47 C.F.R. § 22.131.

<sup>154</sup> See, e.g., 47 C.F.R. § 1.953.

<sup>155</sup> See, e.g., 47 C.F.R. § 90.175.

comment on this proposal and whether an alternative channelization plan might be more beneficial. Commenters should provide the specifics of any alternative channelization plan if they believe an alternative plan is appropriate and should provide full support for their views. In particular, interested parties who have advocated particular applications for the 4660-4685 MHz frequency band, in earlier comment rounds in this proceeding, are invited to present facts and arguments supporting channelization plans that may be more conducive to the service applications they favor.

78. We also propose that, regardless of the specific service to be provided, this spectrum will not count against the 45 MHz spectrum cap that applies to certain commercial mobile radio service (CMRS) licensees.<sup>156</sup> We propose this for two reasons. First, this band is at a substantially higher frequency than any currently available mobile radio system. As a result, it is unlikely that off-the-shelf equipment to provide services competitive with CMRS services will be available for use in this band within the next few years. Second, unlike all other allocations for two-way CMRS services, this allocation is for a single, unpaired frequency band. Although it may be possible in the future to provide a CMRS service that is competitive with existing or planned CMRS services on unpaired spectrum, we do not believe that this will be feasible in the near future. Consequently, until it is feasible to offer services competitive with existing and planned CMRS services on this new band, we believe it would be premature to include spectrum assignments in this band toward the spectrum cap adopted in the CMRS proceeding. We request comment on this proposal.

#### **E. License Area**

79. Under our Fixed and Mobile allocation, we propose that all licenses issued be based on Major Trading Areas (MTA).<sup>157</sup> Because we have adopted an allocation that allows

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<sup>156</sup> Implementation of Section 3(n) and 332 of the Communications Act -- Regulatory Treatment of Mobile Services, Third Report and Order, GN Docket No. 93-252, 9 FCC Rcd 7988, 8109-10, para. 263 (1994), recon. pending (The spectrum cap currently applies to personal communications services, specialized mobile radio services, and cellular services.).

<sup>157</sup> MTAs are defined in the Rand McNally 1992 Commercial Atlas & Marketing Guide 36-39 (123d ed. 1992). There are 47 MTAs, as defined by Rand McNally. Following the approach we have taken with regard to other services in which we have used MTA license areas, we propose to separate Alaska from the Seattle, Washington, MTA so that Alaska would be licensed as a separate MTA-like area. We also propose to license separately the following additional MTA-like areas:

- (1) Guam and the Northern Mariana Islands.
- (2) Puerto Rico and the United States Virgin Islands.

for use of the spectrum by any Fixed or Mobile service, we cannot determine the most appropriate size of the service area based on the type of service to be offered. Therefore, we believe that it is important to balance our desire to provide areas small enough to deploy niche services, or services aimed at rural or relatively rural areas, while providing a large enough area for those licensees that wish to provide wide-area or regional service. We tentatively conclude that MTAs provide the best compromise in this situation. We do not propose to restrict the number of MTAs in which a party may obtain a license. Thus, a licensee may aggregate licenses to offer a regional or nationwide service.

80. On the other hand, because the MTA may be too large for some licensees, we propose to permit licensees to lease the rights to operate a general wireless communication system within portions of their authorized geographic service area or transfer a portion of their license to geographically partition their service area, allowing another party to be licensed in the partitioned area. Of course, such a transfer would be subject to Commission approval as required by the Communications Act<sup>158</sup>. We request comment on these proposals. In particular, we request that commenters address specific procedures for leasing or partitioning a geographic area. For example, should the Commission use partitioning procedures similar to those used for cellular licenses and adopted for broadband PCS licenses? Should the Commission develop leasing procedures similar to those we use for FM subcarriage? Entities that believe that licensing should be based on areas other than MTAs should fully support their alternative proposal.

81. If we determine that a mix of subscriber, non-subscriber, and private-based services is likely in the 4660-4685 MHz band, we may issue licenses based on different geographic regions for different portions of the bands or for different areas of the Nation.

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(3) American Samoa.

Thus, we propose to license a total of 51 MTA or MTA-like areas on each spectrum block. We note that Rand McNally & Company owns the copyright to Major Trading Area and Basic Trading Area Listings, which list the BTAs contained in each MTA and the counties within each BTA, as embodied in Rand McNally's Trading Area System MTA/BTA Diskette, and geographically represented in the map contained in Rand McNally's Commercial Atlas & Marketing Guide. The Personal Communications Industry Association and Rand McNally have recently entered into an agreement regarding the use of Rand McNally's market area designations (*i.e.*, Basic Trading Areas and Major Trading Areas) for the licensing of various mobile radio services. Services in the millimeter wave spectrum in the 4660-4685 MHz frequency band are not covered by this agreement. The listings of the Major Trading Areas, including the counties, parishes, and census divisions that comprise each MTA, are available for public inspection in the Office of Engineering and Technology's Technical Information Center, 2nd Floor, 2000 M Street, N.W., Washington, D.C.

<sup>158</sup> 47 U.S.C. § 310(d).

For example, we could issue MTA licensees for 4660-4675 MHz and issue BTA licenses for 4675-4685 MHz, or we could issue MTA licenses in highly populated areas such as the Northeast and Southern California where subscriber based services may be more likely to be offered and BTA licenses in all other geographic areas. We seek comment on these alternative service area proposals.

82. Commenters that seek spectrum for non-subscriber based services should address the issue of whether we should allow licensees to sell or lease their excess capacity. We propose that licensees offering non-subscriber based services not be permitted to lease or transfer control of any part of its license for at least 5 years from the date the license is granted. Also, because non-subscriber-based entities might obtain potentially valuable licenses for free if a system of competitive bidding is not used, to ensure that such entities do not acquire such spectrum for speculative purposes, we propose that a licensee offering a non-subscriber based service not be permitted to lease excess capacity for at least 5 years after initial authorization.<sup>159</sup> We believe that such a requirement will help protect against speculators obtaining licenses. In addition, we propose that, if we determine that a licensee is providing a subscriber based service under a license issued under the presumption that the service to be provided was non-subscriber based, the license would be immediately forfeited. Alternatively, we request comment on whether such a licensee should be made to pay the U.S. Treasury an amount of money based on the auction price of a comparable license. Commenters supporting the latter approach should provide as much detail as possible as to how the value of the license should be determined and whether payment should include some unjust enrichment payment<sup>160</sup> (e.g., the value of the license plus 10 percent).

#### **F. Eligibility**

83. If we determine that it is reasonably likely that the services to be provided will be commercial services, we propose no restrictions on eligibility to apply for licenses in this band other than those foreign ownership restrictions that apply to CMRS and common carrier fixed system licensees,<sup>161</sup> and the restriction on foreign governments or their representatives related to the holding of private mobile radio service licenses.<sup>162</sup> Although rural telephone companies would be eligible, we do not propose to treat them differently than other applicants. Thus, we will not allow rural telephone companies to obtain licenses without

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<sup>159</sup> See 47 C.F.R. § 90.733(d).

<sup>160</sup> See 47 U.S.C. §§ 309(i)(4)(C), 309(j)(4)(E).

<sup>161</sup> 47 U.S.C. § 310(b).

<sup>162</sup> 47 U.S.C. § 310(a).

participating in an auction, as suggested by Leaco.<sup>163</sup> We seek comment on these proposals. We also request that commenters seeking spectrum for non-commercial services provide as complete information as possible regarding eligibility restriction that should apply.

## G. Competitive Bidding Issues

84. We have proposed that, to the extent that we determine that it is reasonably likely that some or all of the 4660-4685 MHz band will be used for services that meet the criteria for issuing licenses pursuant to auctions, we will use auctions to issue licenses. Accordingly, we wish to fully explore issues related to competitive bidding.

### 1. Competitive Bidding Design

#### a. *General Competitive Bidding Principles*

85. The Competitive Bidding Second Report and Order, as modified by the Competitive Bidding Reconsideration Order, established the criteria to be used in selecting which auction design method to use for each particular auctionable service. Generally, we concluded that awarding licenses to those parties who value them most highly will foster Congress' policy objectives. In this regard, we noted that since a bidder's ability to introduce valuable new services and to deploy them quickly, intensively, and efficiently increases the value of a license to that bidder, an auction design that awards licenses to those bidders with the highest willingness to pay tends to promote the development and rapid deployment of new services and the efficient and intensive use of the spectrum.<sup>164</sup>

86. Based on the foregoing, we concluded that where the licenses to be auctioned are interdependent and their value is expected to be high, simultaneous multiple round auctions would best achieve the Commission's goals for competitive bidding.<sup>165</sup> We also noted, however, that simultaneous multiple round auctions may not be appropriate for all licenses.

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<sup>163</sup> Leaco comments at 7-9. We note that we have already taken significant steps to help rural telephone companies obtain PCS spectrum, including increasing from 20 percent to 40 percent the cellular attribution threshold for rural telephone companies with non-controlling cellular interests in their service areas and allowing broadband PCS licenses to be geographically partitioned. See Implementation of Section 309(j) of the Communications Act -- Competitive Bidding, Fifth Report and Order, PP Docket No. 99-253, 9 FCC Rcd 5532, 5597-99, paras. 148-153 (1994) (Competitive Bidding Fifth Report and Order), recon., Fourth Memorandum Opinion and Order, 9 FCC Rcd 6858 (Competitive Bidding Fourth Memorandum Opinion and Order), Fifth Memorandum Opinion and Order, 10 FCC Rcd 403 (1994) (Competitive Bidding Fifth Memorandum Opinion and Order).

<sup>164</sup> See Competitive Bidding Second Report and Order, 9 FCC Rcd at 2360-61, para. 70.

<sup>165</sup> See id. at 2367, paras. 109-111.

For example, where there is less interdependence among licenses, there is less benefit to auctioning them simultaneously. Similarly, we explained that when the values of particular licenses to be auctioned are low relative to the costs of conducting a simultaneous multiple round auction, we may consider auction designs that are relatively simple, with low administrative costs and minimal costs to the auction participants.<sup>166</sup>

*b. Competitive Bidding Methodology for Licenses in the 4660-4685 MHz Band*

87. We believe that simultaneous multiple round bidding should be the preferred method for licensing of the proposed 5 MHz-wide MTA spectrum blocks. Based on the record in this proceeding and our experience with the auctioning of other licenses, we expect the proposed licenses to be of sufficient value to warrant the use of simultaneous auctions. We further believe that the value of these MTA licenses for certain contemplated uses will be significantly interdependent because of the desirability of aggregation across spectrum blocks and geographic regions. Simultaneous multiple round bidding will allow bidders to express the value of the interdependency among licenses better than if licenses are auctioned separately. Moreover, simultaneous multiple round bidding will provide bidders with the opportunity to pursue back-up strategies that enable them most efficiently to obtain the license combinations which satisfy their service needs. Therefore, we tentatively conclude that simultaneous multiple round bidding is most likely to award MTA licenses to bidders who value them the most highly and who are most likely to deploy new technologies and services rapidly. We ask commenters to address this tentative conclusion and whether any other competitive bidding designs might be more appropriate for the licensing of this spectrum, particularly if the number of mutually exclusive applications actually received for the individual MTA blocks suggests that the blocks are not substantially interdependent.

88. Assuming we use simultaneous multiple round auctions for these licenses, we also seek comment on which blocks should be auctioned together, the intervals between rounds in each auction, and the sequencing of each auction. The importance of the choice of license groupings increases with the degree of interdependence among the individual licenses or groups of licenses to be auctioned. Grouping interdependent licenses together and putting them up for bid at the same time will facilitate awarding licenses to bidders who value them the most highly by providing bidders with information about the prices of complementary and substitutable licenses during the course of an auction. Based on these principles, our tentative view is that all 255 licenses (51 MTA licenses on each of 5 spectrum blocks) should be auctioned simultaneously because of the relatively high value and significant interdependence of the licenses. We seek comment on this tentative analysis and on possible alternatives for grouping of licenses.

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<sup>166</sup> See *id.* at 2367, paras. 112-113.

c. *Combinatorial Bidding*

89. Combinatorial bidding is an auction method which allows bidders to bid for multiple licenses as all-or-nothing packages, *e.g.*, all licenses nationwide on a particular spectrum block, with the licenses awarded as a package if the combinatorial bid is greater than the sum of the high bids on the individual licenses in the package. The advantages and disadvantages of combinatorial bidding were carefully analyzed in the Competitive Bidding Second Report and Order.<sup>167</sup> We indicated particular concern about the complexity and cost of combinatorial bidding and the potential of such auctions to award licenses in combinations even though they may be of greater value if awarded separately. Thus, while recognizing the potential benefits of combinatorial bidding in facilitating aggregations, we concluded that much of that same benefit could be obtained through the use of simultaneous auctions without the complexity and potential distortions of combinatorial bidding. We stated that we did not then plan to use combinatorial bidding in simultaneous multiple round auctions, such as we are proposing here. Nevertheless, we also recognized that the Congressional mandate in Section 309(j)(3) of the Communications Act implies that we should periodically reevaluate the efficiency of auction designs and, where appropriate, test alternative methodologies.<sup>168</sup> For reasons that we will explain below, we believe that it may be appropriate to allow bidders to submit combinatorial bids for nationwide aggregations of MTA licenses in the 4660-4685 MHz band. We request comment on whether to allow combinatorial bidding for this band and ask commenters to address the specific options described below.

90. For some of the services proposed in the comments in this proceeding (*e.g.*, air/ground and MSS feeder links), it may be necessary or at least highly desirable that spectrum used in such applications be licensed to the same entity nationwide. While geographic aggregation is generally facilitated in a simultaneous auction, a business plan that depends critically on winning every MTA license on a particular block nationwide may be at a disadvantage absent combinatorial bidding even if it represents the highest valued use of the spectrum. This problem could arise because of the increased risk a bidder attempting to aggregate nationwide may face if the total price of the aggregation rose above its value to that bidder, but the bidder is not outbid on all its high bids so it is forced either to withdraw its remaining high bids late in the auction and possibly incur a bid withdrawal penalty or pay too much for the remaining licenses that do not provide complete nationwide coverage. Increased risk could discourage nationwide bidders from fully expressing the value of nationwide aggregations, causing the spectrum ultimately to go to lower valued uses.

91. One way to overcome this difficulty would be to allow the submission of nationwide combinatorial bids for all MTA licenses on the same spectrum blocks. By limiting combinatorial bids to nationwide aggregations, we would reduce the complexity

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<sup>167</sup> *Id.* at 2366-67, paras. 98-115.

<sup>168</sup> 47 U.S.C. § 309(j)(3).

concern about unlimited combinatorial bidding that we expressed in the Second Report and Order. However, there is still the concern, also expressed in the Second Report and Order, that the auction results could be biased in favor of nationwide aggregations under this approach. An inefficient outcome could occur if a combinatorial bid exceeded the sum of individual MTA high bids and the MTA bidders, individually acting as "free riders," were unable collectively to raise their total bid above the combinatorial bid even though they collectively valued the licenses more highly. This might happen if some MTA bidders did not increase their bids on the expectation that others in the group would increase their bids sufficiently to beat the combinatorial bid. A possible method of addressing the free rider problem would be to set bid increments on individual licenses so as to proportionally allocate any gap between the sum of the highest individual bids and the highest combinatorial bid in a round. For example, if the sum of the highest individual bids were \$100 and the highest combinatorial bid were \$110, the minimum bid increment on individual licenses would be 10 percent of the previous high bid. A potential difficulty with this approach is that it may set the minimum bid price on certain individual licenses above the maximum amount any bidder is willing to pay, although the sum of the maximum amount bidders are willing to pay for licenses individually exceeds the greatest amount any bidder is willing to pay for all the licenses as a group. Another way to address the free rider problem would be to establish a bidding premium for the combinatorial bid. For example, for a nationwide bid to be accepted, it must be at least 5 percent more than the sum of the individual bids. The bidding premium could be used either in conjunction with the proportional bid increment approach or separately. We seek comment on these proposals for the use of combinatorial bidding in the 4660-4685 MHz band.

92. Other auction designs might also be used to facilitate combinatorial bidding. One approach would be an "Electronic Interactive Combinatorial Auction" (EICA) using the "Adaptive User Selection Mechanism" (AUSM) as developed by Banks, Ledyard and Porter and proposed by NTIA.<sup>169</sup> In a laboratory setting the stand-by queue in the AUSM mechanism has been an effective mechanism for enabling bidders for individual items or smaller packages to coordinate bids against bidders for larger packages. Although the stand-by-queue facilitates coordination it does not solve the free rider problem in theory, and the laboratory results may not generalize to FCC auctions where bidders have employed leading game theorists to exploit the rules. We request comment on the feasibility of using this type of auction design. In particular, commenters should address whether the use of such an auction design may violate our collusion rules.<sup>170</sup>

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<sup>169</sup> J.S. Banks, J.O. Ledyard, and D.P. Porter, "Allocating Uncertain and Unresponsive Resources: An Experimental Approach," 20 RAND JOURNAL OF ECONOMICS 1-22 (1989). Ex parte submission of NTIA, February 28, 1994. See also Competitive Bidding Second Report and Order, 9 FCC Rcd at 2365-66, paras. 99-105.

<sup>170</sup> See para. 100, infra.

*d. Bidding Procedures*

93. We also seek comment on bidding procedures to be used in the 4660-4685 MHz auctions, including bid increments, duration of bidding rounds, stopping rules, and activity rules. Assuming that we use simultaneous multiple round auctions, we generally propose to use the same or similar bidding procedures to those used in simultaneous multiple round bidding for MTA-based PCS licenses.<sup>171</sup> We seek comment, however, on whether any variations on these procedures should be adopted for licenses in the 4660-4685 MHz band.

2. Procedural, Payment, and Penalty Issues

94. In the Competitive Bidding Second Report and Order, as modified by the Competitive Bidding Reconsideration Order, the Commission established general procedural, payment, and penalty rules for auctions, but also stated that such rules may be modified on a service-specific basis.<sup>172</sup> As discussed below, we generally propose to follow the procedural, payment, and penalty rules established in Subpart Q of Part 1 of the Commission's Rules,<sup>173</sup> but seek comment on whether any service-specific modifications of these rules are needed based on the particular characteristics of the 4660-4685 MHz band licenses.

*a. Upfront Payments*

95. As in the case of other auctionable services, we propose to require participants in the 4660-4685 MHz auction to tender to the Commission in advance of the auction, a substantial upfront payment as a condition of bidding in order to ensure that only serious, qualified bidders participate in auctions and to ensure payment of the penalty (discussed infra) in the event of bid withdrawal or default. We seek comment on whether the standard upfront payment formula of \$0.02 per pop per MHz for the largest combination of MHz-pops a bidder anticipates bidding on in any single round of bidding is appropriate for these licenses. We also seek comment on the appropriate minimum upfront payment for applications. In the Competitive Bidding Second Report and Order, we established a minimum upfront payment of \$2,500, but we also indicated that the minimum amount could be modified on a service-specific basis.<sup>174</sup> We seek comment on whether the standard or some alternative amount is appropriate for the licenses in the 4660-4685 MHz band.

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<sup>171</sup> See, e.g., Competitive Bidding Fifth Report and Order, 9 FCC Rcd at 5541-56, recon., Competitive Bidding Fourth Memorandum Opinion and Order, 9 FCC Rcd at 6859-6864.

<sup>172</sup> See Competitive Bidding Reconsideration Order, 9 FCC Rcd at 7249-50, paras. 23-26.

<sup>173</sup> 47 C.F.R Part 1, Subpart Q.

<sup>174</sup> Competitive Bidding Second Report and Order, 9 FCC Rcd at 2379, para. 180.

*b. Down Payment and Full Payment for Licenses Awarded by Competitive Bidding*

96. The Competitive Bidding Second Report and Order generally required successful bidders to tender a 20 percent down payment on their bids to discourage default between the auction and licensing and to ensure payment of the penalty if such default occurs.<sup>175</sup> We concluded that a 20 percent down payment was appropriate to ensure that auction winners have the necessary financial capabilities to complete payment for the license and to pay for the costs of constructing a system, while at the same time not being so onerous as to hinder growth and diminish access. We therefore propose to require that winning bidders for 4660-4685 MHz licenses supplement their upfront payments with a down payment sufficient to bring their total deposits up to 20 percent of their winning bid(s). We seek comment on whether this is an appropriate requirement for licensing of this service, and whether 20 percent represents an appropriate level of payment. In addition, we ask commenters to address whether any special provisions, for example a reduced down payment, should be adopted for designated entities, and if so, for which specific categories of designated entities and why.<sup>176</sup>

*c. Bid Withdrawal, Default, and Disqualification*

97. We propose to adopt bid withdrawal, default, and disqualification rules for 4660-4685 MHz licensing based on the procedures established in our general competitive bidding rules. Under these procedures, any bidder who withdraws a high bid during an auction before the Commission declares bidding closed, or defaults by failing to remit the required down payment within the prescribed time, would be required to reimburse the Commission in the amount of the difference between its high bid and the amount of the winning bid the next time the license is offered by the Commission, if the subsequent winning bid is lower. A defaulting auction winner would be assessed an additional penalty of three percent of the subsequent winning bid or three percent of the amount of the defaulting bid, whichever is less. In the event that an auction winner defaults or is otherwise disqualified, we propose to re-auction the license either to existing or new applicants. The Commission would retain discretion, however, to offer the license to the next highest bidder at its final bid level if the default occurs within five business days of the close of bidding. We seek comment on these proposed procedures.

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<sup>175</sup> Id. at 2381-82, paras. 190-192.

<sup>176</sup> See paras. 101-115, infra.

### 3. Regulatory Safeguards

#### a. *Unjust Enrichment Provisions*

98. The Budget Act directs the Commission to "require such transfer disclosures and anti-trafficking restrictions and payment schedules as may be necessary to prevent unjust enrichment as a result of the methods employed to issue licenses and permits." We therefore propose to adopt the transfer disclosure requirements contained in Section 1.2111(a) of our rules for all 4660-4685 MHz licenses obtained through the competitive bidding process. In addition, we propose specific rules governing unjust enrichment by designated entities, which are discussed below. Generally, applicants transferring their licenses within three years after the initial license grant will be required to file, together with their transfer application, the associated contracts for sale, option agreements, management agreements, and all other documents disclosing the total consideration received in return for the transfer of its license. We seek comment on these proposals.

#### b. *Performance Requirements*

99. The Budget Act requires the Commission to "include performance requirements, such as appropriate deadlines and penalties for performance failures, to ensure prompt delivery of service to rural areas, to prevent stockpiling or warehousing of spectrum by licensees or permittees, and to promote investment in and rapid deployment of new technologies and services."<sup>177</sup> In the Competitive Bidding Second Report and Order, we decided that it was unnecessary and undesirable to impose additional performance requirements, beyond those already provided in the service rules, for all auctionable services. Our proposed 4660-4685 MHz service rules contain specific performance requirements, such as the requirement to construct and provide service within a specific period of time. Thus, we do not propose to adopt any additional performance requirements for competitive bidding purposes. We seek comment on this proposal.

#### c. *Rules Prohibiting Collusion*

100. In the Competitive Bidding docket, we adopted special rules prohibiting collusive conduct in the context of competitive bidding.<sup>178</sup> We indicated that such rules would serve the objectives of the Budget Act by preventing parties, especially the largest

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<sup>177</sup> 47 U.S.C. § 309(j)(4)(B).

<sup>178</sup> 47 C.F.R. § 1.2105(c). Competitive Bidding Second Report and Order, 9 FCC Rcd 2386-88, paras. 221-226; Competitive Bidding Reconsideration Order, 9 FCC Rcd at 7254, paras. 50-53; Implementation of Section 309(j) of the Communications Act -- Competitive Bidding, Memorandum Opinion and Order, PP Docket 93-253, 9 FCC Rcd 7684, 7687-89, paras. 8-12 (1994).

firms, from agreeing in advance to bidding strategies that divide the market according to their strategic interests and disadvantage other bidders. We propose to apply these rules to the 4660-4685 MHz service. Under these procedures, bidders will be required to identify on their applications all parties with whom they have entered into any consortium arrangements, joint ventures, partnerships, or other agreements or understandings that relate to the competitive bidding process. Bidders will also be required to certify that they have not entered into any explicit or implicit agreements, arrangements, or understandings with any parties, other than those identified, regarding the amount of their bid, bidding strategies or the particular properties on which they will or will not bid. We seek comment on the proposal to continue to implement our rules prohibiting collusive conduct. Specifically, commenters should address whether any procedures for combinatorial bidding would necessitate changes in our rules prohibiting collusive conduct.<sup>179</sup>

#### 4. Treatment of Designated Entities

##### *a. Introduction*

101. In authorizing the Commission to use competitive bidding, Congress mandated that the Commission "ensure that small businesses, rural telephone companies, and businesses owned by members of minority groups and women are given the opportunity to participate in the provision of spectrum-based services."<sup>180</sup> The statute requires the Commission to "consider the use of tax certificates, bidding preferences, and other procedures" in order to achieve this congressional goal.<sup>181</sup> In addition, Section 309(j)(3)(B) provides that in establishing eligibility criteria and bidding methodologies the Commission shall promote "economic opportunity and competition . . . by avoiding excessive concentration of licenses and by disseminating licenses among a wide variety of applicants, including small businesses, rural telephone companies, and businesses owned by members of minority groups and women." Finally, Section 309(j)(4)(A) provides that to promote these objectives, the Commission shall consider alternative payment schedules including installment payments.

102. In the Competitive Bidding docket, we established eligibility criteria and general rules that would govern the award of special provisions for small businesses, rural telephone companies, and minority- and women-owned businesses (collectively, "designated entities"). We also established a menu of possible special provisions that could be awarded to designated entities in particular services, including installment payments, spectrum set-asides, bidding credits, and tax certificates. In addition, we set forth rules to prevent unjust enrichment by designated entities seeking to transfer licenses obtained through use of one of these special provisions.

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<sup>179</sup> See para. 92, *supra*.

<sup>180</sup> 47 U.S.C. § 309(j)(4)(D).

<sup>181</sup> *Id.*

103. In keeping with the general parameters set forth in the Competitive Bidding docket, we propose specific measures and eligibility criteria for designated entities in the 4660-4685 MHz service designed to ensure that such entities are given the opportunity to participate both in the competitive bidding process and in the provision of service in the 4660-4685 MHz band. We seek comment on these proposals, and specifically on identifying special provisions that are tailored to the unique characteristics of the service or services that might be offered in the 4660-4685 MHz band and will create meaningful incentives and opportunities in the service for small businesses and businesses owned by minorities and/or women.

*b. Businesses Owned by Women and Minorities*

(1) Specific Special Provisions

104. Based on the list of special provisions for designated entities established in the Competitive Bidding Second Report and Order, we propose to utilize bidding credits and installment payments to encourage participation by businesses owned by women and minorities in auctions for the 4660-4685 MHz band. We tentatively conclude that affording businesses owned by women and minorities bidding credits and installment payments for licenses in the 4660-4685 MHz band is the most cost-effective and efficient means of achieving Congress' objective of ensuring an opportunity for these designated entities to participate in the provision of service in the 4660-4685 MHz band, while preserving the advantages of competitive open bidding. We propose that installment payments be available on all of the licenses in this spectrum and that bidding credits be available as an additional encouragement for licenses on one of the proposed 5 MHz spectrum blocks. We seek comment on this proposal.

105. Apart from Congress' directive, we believe that ensuring the opportunity for women and minorities to participate in providing service in the 4660-4685 MHz band is important for the telecommunications industry. The record in the Competitive Bidding docket reflects a severe underrepresentation of women and minorities in telecommunications.<sup>182</sup> The record in the docket also shows that women and minorities have particular difficulties obtaining capital.<sup>183</sup> Given this history of underrepresentation of minorities and women in telecommunications and the inability of these groups to access financing, we find that the best way we can accomplish the statutory mandate is to provide bidding credits and installment payments exclusively to minority- and women-owned businesses.

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<sup>182</sup> See Competitive Bidding Fifth Report and Order, 9 FCC Rcd at 5575-78, paras. 103-107.

<sup>183</sup> Id. at 5573-75, paras. 98-102. The findings made and discussion in the Competitive Bidding Fifth Report and Order on this subject are incorporated here by reference.

106. In determining the appropriate amount of the bidding credit, we propose to consider several factors. First, our analysis of the telecommunications industry suggests the possibility that incumbent telecommunications providers may be able to utilize existing infrastructure and thus enjoy economies of scope in the provision of many of the services that may develop in this spectrum. Therefore, these incumbents may have the ability to bid more than first-time operators. Second, as indicated in the Competitive Bidding docket, we note that very few incumbent telecommunications providers are owned by minorities or women, so that a substantial discount may be necessary to put these designated entities on equal footing with incumbents in bidding for these licenses.

107. Finally, we consider the bidding credits established for businesses owned by minorities and women in other contexts. For the Interactive Video and Data Service and the nationwide narrowband PCS licenses, the bidding credit afforded to minority- and/or women-owned businesses was 25 percent. In the nationwide narrowband PCS auction, none of the licenses was won by minority or women-owned bidders, suggesting that the bidding credit may have been insufficient. In contrast, in the regional narrowband PCS auction, we used a higher bidding credit of 40 percent for businesses owned by women and minorities, regardless of size, on all regional narrowband PCS licenses on two channels. In addition to those bidding credits, we adopted an installment payment plan for women and/or minority owned businesses that obtain a regional narrowband PCS license on the same two channels.<sup>184</sup> The result of the narrowband auction was that 11 of the 30 licenses went to women or minority-owned firms.

108. We propose a bidding credit of 25 percent that would be available on one of the five proposed spectrum blocks. We seek comment on the appropriateness of the proposed bidding credits and installment payments for auctions in the 4660-4685 MHz band. In particular, commenters should address whether it is sufficient to provide installment payments as financial assistance solely to small businesses, which will include small businesses owned by women and minorities and rural telephone companies that meet the small business definition.

109. It is difficult to assess whether the greater participation by women and minorities in the regional narrowband PCS auction was attributable to the higher bidding credit or installment payments, or the combination. However, based on informal comments by several of the bidders in that auction, it appears that installment payments may have been the more effective method of attracting capital, possibly because it shifts some of the financial risk of future failure of these enterprises to the Government. Our proposal to use installment payments for all of the licenses in the 4660-4685 MHz band should result in significant participation by minorities and women and may reduce the need for bidding credits.

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<sup>184</sup> Implementation of Section 309(j) of the Communications Act -- Competitive Bidding, Order on Reconsideration, PP Docket No. 93-253, 9 FCC Rcd 5306, 5306-07 (1994).

Comments are requested on this proposal. We also seek comment on the exact nature of the installment payment plan we should adopt in this context.

110. To prevent unjust enrichment by women and minorities trafficking in licenses acquired through the use of bidding credits or installment payments, we propose imposition of a payment requirement on transfers of such licenses to entities that are not owned by women or minorities. Female and minority-owned businesses seeking to transfer a license to an entity that is not owned by women or minorities would be required to reimburse the government for the amount of the bidding credit, plus interest at the rate imposed for installment financing at the time the license was awarded, before the transfer will be permitted. The amount of the penalty would be reduced over time so that a transfer in the first two years of the license term would result in a payment of 100 percent of the value of the bidding credit; in year three of the license term the payment would be 75 percent; in year four the penalty would be 50 percent and in year five the payment would be 25 percent, after which there would be no payment.

## (2) Eligibility Criteria

111. In the Competitive Bidding Second Report and Order, we adopted eligibility criteria for businesses desiring to benefit from the established special provisions for designated entities. Specifically, we determined that in order to be deemed a business owned by minorities and/or women, minorities or women must have at least 50.1 percent equity ownership and a 50.1 percent controlling interest in the designated entity. For limited partnerships, we determined that the general partner must be a minority and/or a woman (or an entity 100 percent owned and controlled by minorities and/or women) that owns at least 50.1 percent of the partnership equity. We also indicated that, for the most part, the interests of minorities and women in designated entities would be calculated on a fully-diluted basis.<sup>185</sup> In the broadband PCS context, we also established an alternative definition for minority- and female-owned businesses.<sup>186</sup> We seek comment on whether either of these definitions is appropriate for purposes of determining designated entity eligibility in the 4660-4685 MHz band, or whether we should adopt an alternative definition. We also propose to apply to the 4660-4685 MHz applicants the same affiliation and attribution rules for calculating equity and stock ownership that we have previously adopted in the PCS context. We propose to require the establishment of a "control group" for women and minority-owned firms and would require that the control group maintain both de facto and de jure control of an applicant.<sup>187</sup> We seek comment on this proposal.

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<sup>185</sup> Competitive Bidding Second Report and Order, 9 FCC Rcd at 2396, para. 277.

<sup>186</sup> See 47 C.F.R. § 24.720(c).

<sup>187</sup> See, e.g., Competitive Bidding Fifth Memorandum Opinion and Order, 10 FCC Rcd at 446-51, paras. 77-86.

c. *Small Businesses*

(1) Specific Special Provisions

112. Based on the list of special provisions for designated entities established in the Competitive Bidding Second Report and Order, we seek comment on whether to adopt installment payments for small businesses bidding for licenses in the 4660-4685 MHz band. The record in the Competitive Bidding proceeding suggests that the most significant barrier for small business participation in the auctioning of 4660-4685 MHz spectrum will be access to adequate private financing to ensure their ability to compete against larger firms in the competitive bidding process. In the Competitive Bidding Second Report and Order, we concluded that a reduced down payment requirement coupled with installment payments is an effective means to address the inability of small businesses to obtain financing and will enable these entities to compete more effectively for the auctioned spectrum.<sup>188</sup> We seek comment on whether such a mechanism would be an appropriate special provision for small businesses bidding for licenses in the 4660-4685 MHz band, and on whether any additional or alternative special provisions should be provided for small businesses in the 4660-4685 MHz context.

113. To ensure that large businesses do not become the unintended beneficiaries of installment payment provisions meant for small businesses, we also propose to make the unjust enrichment provisions adopted in the Competitive Bidding Second Report and Order applicable to installment payments by small business applicants. Specifically, if a small business making installment payments seeks to transfer a license to a non-small business entity during the term of the license, we will require payment of the remaining principal balance as a condition of the license transfer. We seek comment on this proposal including whether additional unjust enrichment provisions are necessary for the 4660-4685 MHz band.

(2) Eligibility Criteria

114. In the Competitive Bidding Second Report and Order, we adopted the existing SBA net worth/net income size standard as the generic eligibility criteria for small businesses.<sup>189</sup> Under this definition, an entity would qualify as a small business if its net worth is not in excess of \$6 million with average net income after Federal income taxes for the two preceding years not in excess of \$2 million. For broadband PCS, however, we defined a small business as any firm, together with its attributable investors and affiliates, with average gross revenues for the three preceding years not in excess of \$40 million.<sup>190</sup> In the Competitive Bidding Reconsideration Order, we concluded that it was more appropriate to

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<sup>188</sup> See Competitive Bidding Second Report and Order, 9 FCC Rcd at 2390, para. 238.

<sup>189</sup> Id. at 2395-96, para. 271.

<sup>190</sup> 47 C.F.R. § 24.720(b).

define the eligibility requirements for small businesses on a service-specific basis because of the diversity of services that may be subject to competitive bidding and the varied spectrum costs and build-out requirements associated with each service.<sup>191</sup> We contemplated that such an approach would allow us to take into account the capital requirements of each particular service in establishing the appropriate threshold. We therefore seek comment on whether we should utilize the SBA definition initially adopted in the Competitive Bidding Second Report and Order or, in the alternative, adopt a gross revenue standard like that used in the broadband PCS context. We ask commenters who believe that a gross revenue standard should be used as the eligibility criteria for small businesses to address the gross revenue threshold appropriate for the 4660-4685 MHz context along with any estimates of costs associated with build-out requirements. We also propose to apply to the 4660-4685 MHz applicants the same affiliation and attribution rules for calculating revenues that we have previously adopted in the PCS context. We seek comment on this proposal.

*d. Rural Telephone Companies*

115. We seek comment on whether we should provide bidding credits or other special provisions for rural telephone companies. Because it is unclear what specific uses may emerge in the 4660-4685 MHz band, it is difficult to assess the likelihood that such services would be attractive for implementation by rural telephone companies. We are similarly unable to determine with any certainty the potential prices these licenses may bring in rural areas. If prices in such areas are low, they should not present significant barriers to rural telephone companies. Also, under one possible approach, the degree of flexibility we would afford in the use of this spectrum, including provision for partitioning or leasing spectrum, should assist in satisfying the spectrum needs of rural telephone companies at low cost. Finally, as with other incumbent providers of telecommunications services, rural telephone companies may be able to benefit from the use of their existing infrastructure in the provision of certain services in this spectrum. Such economies of scale would give rural telephone companies an advantage in the bidding for such licenses. For these reasons, we do not believe that special preferences are needed to ensure adequate participation of rural telephone companies in the provision of services in this spectrum. However, comments on this analysis are requested.

*e. Additional Special Provisions*

116. In addition to the special provisions proposed above for the various classes of designated entities, we seek comment on whether additional special provisions should be adopted that would enhance our goal of ensuring their participation in the competitive bidding process for licenses in the 4660-4685 MHz band. We request that commenters give particular attention to the alternatives described below.

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<sup>191</sup> Competitive Bidding Reconsideration Order, 9 FCC Rcd at 7269, para. 145.

(1) Reduced Upfront Payments.

117. In the Competitive Bidding Second Report and Order, we concluded that upfront payment requirements would ensure that bidders are qualified and serious and would provide the Commission with a source of funds in the event of default or bid withdrawal.<sup>192</sup> We also noted that reduced upfront payments may be particularly appropriate for auctions of spectrum specifically set aside for designated entities as a means of encouraging participation in the auctions, particularly by all eligible designated entities. As a result, in adopting competitive bidding procedures for broadband PCS, we reduced the upfront payment requirement for the entrepreneurs' blocks, observing that requiring full compliance with the upfront payment requirement could discourage auction participation by designated entities.<sup>193</sup> We seek comment on whether there should be a similar reduction in upfront payment for any class of designated entities for any licenses auction in the 4660-4685 band. In addition, we ask commenters to address the costs and benefits with respect to auction administration and designated entity participation associated with a reduced upfront payment for licenses in the 4660-4685 band in the absence of a spectrum set-aside.

(2) Entrepreneurs' Block

118. Finally, we seek comment on whether to facilitate designated entities' participation in providing service in the 4660-4685 MHz band by designating one 5 MHz spectrum block as an "entrepreneurs' block." Even considering the special provisions for designated entities discussed above, we remain concerned in light of our experience with PCS that designated entities may have difficulties competing for 4660-4685 MHz licenses against large firms with significant financial resources. We seek comment on this analysis. We also seek comment on whether the Commission should establish an entrepreneurs' block or blocks if we license the spectrum in different size blocks.

119. If we adopt an entrepreneurs' block approach, we also seek comment on how eligibility for the block should be defined. In the first instance, we ask commenters to address whether applicants other than designated entities should be eligible to bid for entrepreneurs' block licenses. In our broadband PCS rules, we required entrepreneurs to comply with financial caps on the assets and gross revenues of the applicant, its affiliates, and major investors. These caps were set at a higher level than the caps for designated entity small businesses, but were nevertheless intended to exclude large, well-financed entities from eligibility. We seek comment on whether the same financial caps should be applied for determining eligibility for 4660-4685 MHz entrepreneurs' block licenses.

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<sup>192</sup> Competitive Bidding Second Report and Order, 9 FCC Rcd at 2377, 2379, paras. 169, 176.

<sup>193</sup> Competitive Bidding Fifth Report and Order, 9 FCC Rcd at 5599-5600, para. 154.

120. We also seek comment on how designated entities should be treated within the entrepreneurs' block in terms of eligibility criteria and special provisions. Specifically, we ask commenters to address whether the definitions for small businesses and businesses owned by minorities and/or women should be different for purposes of determining eligibility for the entrepreneurs' block, what specific special provisions should be afforded to designated entities within the entrepreneurs' block, what type of attribution and affiliation rules should apply, and what additional measures are needed to protect against unjust enrichment. We also seek comment on what special provisions designated entities should receive within an entrepreneurs' block. For example, one alternative would be to provide bidding credits to designated entities within the block. In addition, small businesses and minority- and/or women-owned businesses within an entrepreneurs' block could be afforded an installment payment option combined with reduced upfront payments. We seek comment on these alternatives and on other special provisions that may be appropriate.

## **H. Technical Rules**

121. The fact that we are proposing a new radio service for this band that can be used to provide any mobile or fixed communications service, regardless of whether that service is subscriber based or not, argues for general and minimal technical restrictions. Generally, different types of technical parameters would be used depending on whether the system involves fixed or mobile communications. Because this spectrum may be used for either, we must develop technical operating parameters that can accommodate both fixed and mobile services. To this end, we tentatively conclude that the rules adopted for PCS provide the best model for this new band. Specifically, we propose to limit the field strength at licensees' service area boundaries to 55 dBu unless licensees operating in adjacent areas agree to higher field strengths along their mutual border.<sup>194</sup> Licensees would be expected to coordinate their operations at the service area boundaries. Unlike PCS, where we required the power of any emission outside of the licensee's frequency block to be attenuated below the transmitter power (P) by at least 43 plus  $10\log_{10}(P)$  or 80 decibels, whichever is less, we do not propose to establish adjacent-channel interference limits at the frequency boundaries between licensees in this band. Instead, we would encourage licensees to resolve adjacent channel interference problems.

122. We believe this approach provides licensees with the maximum amount of technical flexibility. We do, however, propose to require licensees to attenuate the power below the transmitter power (P) by at least 43 plus  $10\log_{10}(P)$  or 80 decibels, whichever is less, for any emission at the edges of the 4660-4685 MHz band. We request comment on these proposals and any other technical rules that commenters believe are appropriate. We are especially interested in knowing whether the proposed signal strength limit is appropriate

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<sup>194</sup> The minimum field strength required for a good quality service for mobile reception in an urban environment is 35 dBu (CCIR Report 358-5) and the proposed 55 dBu field strength limit allows 20 dB additional for location variability.

to provide co-channel protection to systems operating in adjacent areas, while still providing licensees adequate signal strength to serve the geographic area for which they are licensed. We also request comment on whether a maximum transmitter power or maximum effective radiated power is necessary or whether licensees should be permitted to use any power that they believe is appropriate, provided that they do not exceed the maximum permissible field strength at the border of their licensed area. In addition, we specifically request comment on the feasibility of our proposal to not limit out of band emissions. Commenters addressing this issue should consider the effect that unlimited transmitter power may have on out of band emissions. Commenters should also specifically address the need for out of band emission at the edges of the entire 4660-4685 MHz (this is as opposed to a limit on out of band emissions within the band but between spectrum blocks. If commenters desire different or additional interference criteria, we request that they include very specific alternative proposals and rationale.

### **I. License Term**

123. The Communications Act allows the Commission to establish a license term of up to 10 years, except for television or radio broadcasting stations, which may have a license term of up to 5 and 7 years respectively.<sup>195</sup> Previously, the Commission has established a 10 year license term for CMRS, but has used a 5 year license term for private services. For services in the 4660-4685 MHz band, we propose to establish a term of 10 years for licenses in this band, with a renewal expectancy based on that of PCS and cellular telephone licensees. This relatively long license term, combined with a high renewal expectancy, should help provide a stable regulatory environment that will be attractive to investors and, thereby, encourage development of this new frequency band. We note, however, that commenters have proposed using this band for auxiliary broadcast service and the statute requires that the term of any license for the operation of any auxiliary broadcast station or equipment must be concurrent with the term of the license for such primary television station.<sup>196</sup> Therefore, commenters should address whether we should allow differing license terms in this band. We seek comment on our general proposal and any other viable alternatives that commenters may suggest.

### **J. Construction Requirements**

124. The very wide array of potential services that could be offered in this band makes it very difficult to develop construction requirements that can be applied fairly and equitably, without skewing the workings of the market. We also recognize our responsibility to assure that spectrum we assign is used effectively. Therefore, we propose to require build-out rules modeled on those adopted for broadband PCS. Specifically, we propose that within

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<sup>195</sup> 47 U.S.C. § 307.

<sup>196</sup> 47 U.S.C. § 307(c).

five years, licensees in this band offer service to one-third of the population in area in which they are licensed. Further, licensees would have to serve two-thirds of the population in the area in which they are licensed within ten years of being licensed. Failure by any licensee to meet these construction requirements will result in forfeiture of the license and the licensee will be ineligible to regain it. We request comment on this proposal and on whether it could unnecessarily limit the type of services provided. For instance, if a potential licensee wished to provide AAVS in this band, would such a service be able to meet the proposed construction requirements? We also request comment on whether these requirements are appropriate for private radio licensees who may not have to serve particular population segments within their service area. In addition, we seek comment on whether the Commission should establish a licensee defined service area, such as a cellular geographic service area (CGSA) which would allow the Commission to license areas to a different party where the existing licensee has not constructed. Such a proposal might encourage licensees to cover a larger geographic area or allow a new license to provide a service where the existing licensee believes that it is uneconomical to provide service in that area.

### **K. Regulatory Status**

125. The Communications Act and Commission regulation often apply differing requirements based on the type of service and the regulatory status of licensees. For example, common carriers are generally subject to the provisions of Title II of the Act, but other licensees are not subject to these provisions. Also, Section 309 requires that the Commission provide public notice of tentative selectees for licenses and allow interested parties 30 days to file Petitions to Deny license applications for common carriers. As discussed above, the statute limits foreign ownership of common carrier licensees, but prohibits only foreign governments from obtaining private licenses. In addition, recent changes to the Communications Act have created different standards for Fixed and Mobile services for determining the regulatory status of a licensee. The Budget Act of 1993 created new statutory categories for mobile services: commercial mobile radio service (CMRS) and private mobile radio service (PMRS). CMRS is defined as a mobile service that "is provided for profit and makes interconnected service available (A) to the public or (B) to such classes of eligible users as to be effectively available to a substantial portion of the public. . . ." <sup>197</sup> The statute provides that commercial mobile radio services are treated as common carriers, but allows the Commission the authority to forbear from regulating certain section of Title II. <sup>198</sup> The statute also preempts state regulation of rates and entry for both CMRS and PMRS, but allows states to petition the Commission for authority to regulate the rates of CMRS

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<sup>197</sup> 47 U.S.C. § 332(d)(1). See also Implementation of Sections 3(n) and 332 of the Communications Act, Regulatory Treatment of Mobile Services, Second Report and Order, GN Docket No. 93-252, 9 FCC Rcd 1411 (1994) (CMRS Second Report and Order).

<sup>198</sup> Specifically, the Commission may forbear from applying any section of Title II, except Sections 201, 202, and 208. Communications Act, § 332(c)(1)(A).

providers. For Fixed services, however, the Commission applies a judicial standard for determining whether a licensee is providing a common carrier service.<sup>199</sup> The Commission does not have the express authority to forbear from applying any provision of Title II to Fixed service common carriers. In addition, in the absence of a Commission decision to preempt, states are not preempted from regulating the intrastate rates or intrastate entry for Fixed common carrier services.<sup>200</sup>

126. We have decided to propose a new GWCS for the 4660-4685 band that would allow licensees to provide a variety or combination of Fixed and Mobile services. Under this service, both Fixed and Mobile applications would be permitted and an individual licensee could provide a number of Fixed and Mobile services. We note that, under our proposed approach, it may be difficult to determine the regulatory status of each licensee. We propose to rely on applicants to specifically identify the type of service or services they intend to provide, and that they include sufficient detail to enable the Commission to determine if the service will be Fixed or Mobile, and whether it will be offered as a commercial mobile radio service, a private mobile radio service, a common carrier Fixed service, or a private Fixed service. We note that the type of radio service provided may depend on our conclusions after reviewing the record in this proceeding. For instance, licensees may not be permitted to provide subscriber based services in this spectrum or in portions of this spectrum depending on the rules we ultimately adopt. We request comment on the most efficient manner in which to administer the requirements of the Communications Act and our rules, and grant licensees as much operational flexibility as possible.

127. We request comment on whether the Commission should develop a new application long form for this general allocation or require an applicant to be responsible for filing the appropriate license application based upon the nature of the service designated by the applicant. Based on the showing made in the application form and actual service provided, the licensee would be subject to those rules and statutory requirements that apply to such service. We seek comment on this proposal. We also request that commenters address whether it is necessary for the Commission to require licensees to notify the Commission if they change the type of service offered using some or all of their licensed spectrum even though the new use would be permissible under our rules.

#### **L. Licensing Issues**

128. We request comment on whether the Commission is required or should find it is in the public interest to adopt additional licensing rules in order to comply with the statutory requirement that we adopt assignment rules before August 10, 1995. For example, Section

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<sup>199</sup> See *National Association of Regulatory Utility Commissioners v. FCC*, 525 F.2d 630, 642 (D.C. Cir.), cert. denied, 425 U.S. 999 (1976) (NARUC I).

<sup>200</sup> See *Louisiana Public Service Commission v. FCC*, 476 U.S. 355 (1986).

309(b)(1) of the Communications Act requires all applications for common carrier station authorizations (other than minor amendments excepted under Section 309(c)) to be placed on public notice for 30 days prior to grant, and Section 309(d) allows petitions to deny to be filed against such applications during the public notice period. Because some licensees may provide common carrier service, we seek comment on whether the Commission should adopt public notice and petition to deny procedures for some or all applicants in the 4660-4685 MHz band. If we do adopt such procedures, we propose to use rules similar to those contained in Section 22.130 of our Rules. We seek comment on this proposal. We also seek comment on whether to adopt rules regarding the amendment of applications and/or license modifications.

129. Finally, we request comment on whether any existing application or regulatory fees would apply if we develop a new service. In addition, we note that Section 310(d) of the Communications Act provides that no construction permit or station license may be transferred, assigned, or otherwise disposed of without Commission approval based on a finding that the public interest, convenience, and necessity will be served by the transaction. We request comment on specific rules we should adopt in order to implement this provision of the Communications Act for purposes of licensing services in the 4660-4685 MHz frequency band.

#### **IV. ORDERING CLAUSE**

130. IT IS ORDERED that Parts 2 and 15 of the Commission's Rules and Regulations IS AMENDED as specified in Appendix F, effective 30 days after publication in the Federal Register. Authority for issuance of this Report and Order and Second Notice of Proposed Rule Making is contained in Sections 4(i), 303(g), 303(r), 309(j), 332(a), and 403 of the Communications Act of 1934, as amended, 47 U.S.C. §§ 154(i), 303(g), 303(r), 309(j), 332(a), and 403, and Section 115(a) of the National Telecommunications and Information Administration Organization Act, 47 U.S.C. § 925(a).

#### **V. PROCEDURAL MATTERS**

##### Ex Parte Rules - Non-Restricted Proceeding

131. This is a non-restricted notice and comment rule making proceeding. Ex parte presentations are permitted, except during the Sunshine Agenda period, provided they are disclosed as provided in Commission rules. See generally 47 C.F.R. §§ 1.1202, 1.1203, and 1.1206(a).

##### Regulatory Flexibility Analysis

132. The analysis required by the Regulatory Flexibility Act of 1980, 5 U.S.C. Section 608, is contained in Appendices D and E.

### Comment Dates

133. Pursuant to applicable procedures set forth in Sections 1.415 and 1.419 of the Commission's Rules, 47 C.F.R. §§ 1.415 and 1.419, interested parties may file comments on or before March 20, 1995 and reply comments on or before April 4, 1995. To file formally in this proceeding, you must file an original and four copies of all comments, reply comments, and supporting comments. If you want each Commissioner to receive a personal copy of your comments, you must file an original plus nine copies. You should send comments and reply comments to Office of the Secretary, Federal Communications Commission, Washington, DC 20554. Comments and reply comments will be available for public inspection during regular business hours in the FCC Reference Center, Room 239, 1919 M Street, N.W., Washington, DC 20554.

### Contact Persons

134. For further information concerning this proceeding, contact Steve Sharkey, Office of Engineering and Technology, (202) 739-0723, or Martin D. Liebman, Wireless Telecommunications Bureau, (202) 418-0620.

## FEDERAL COMMUNICATIONS COMMISSION

William F. Caton  
Acting Secretary

## APPENDIX A

### NTIA Preliminary Spectrum Reallocation Plan

Bands Identified for Reallocation	Reallocation Status	Reallocation Schedule
1390-1400 MHz	Exclusive	January 1999
1427-1432 MHz	Exclusive	January 1999*
1670-1675 MHz	Mixed	January 1999**
1710-1755 MHz	Mixed	January 2004
2300-2310 MHz	Exclusive	January 1996
2390-2400 MHz	Exclusive	Immediate
2402-2417 MHz	Exclusive	Immediate
3650-3700 MHz	Mixed	January 1999
4635-4660 MHz	Exclusive	January 1997*
4660-4685 MHz	Exclusive	Immediate

\* Protection for a limited number of facilities would be required for an additional period of time.

\*\* Limited immediate use of this spectrum would be considered.

## **APPENDIX B**

### **Comments Filed in Response to the NPRM in ET Docket No. 94-32**

1. 3Com Corporation (3Com)
2. A. Frank Adamson, Ph.D.
3. Advanced Micro Devices, Inc. (AMD)
4. Alcatel Network Systems, Inc. (Alcatel)
5. Amateur Television Network
6. American Radio Relay League, Incorporated (ARRL)
7. American Petroleum Institute (API)
8. American Telecasting, Inc. (ATI)
9. American West Airlines (AWI)
10. Andrew Corporation (Andrew)
11. Apple Computer, Inc. (Apple)
12. Association of Public-Safety Communications Officials International (APCO)
13. Association for Maximum Service Television, Inc and Other Major Television Broadcast Entities (MSTV)
14. Association of American Railroads (AAR)
15. AT&T Corp. (AT&T)
16. Avant-Garde Telecommunications, Inc. (AGT)
17. Bell Atlantic
18. Brian Robinson
19. Capital Cities/ABC, Inc. (ABC)
20. Cincinnati Microwave, Incorporated (CMI)
21. Claircom Communications Group, L.P. (Claircom)
22. Compaq Computer Corporation (Compaq)
23. Consumer Electronics Group of the Electronics Industry Association (EIA)
24. Continental Airlines (Continental)
25. Cornell University
26. County of Los Angeles (L.A. County)
27. Cylink Corporation (Cylink)
28. David R. Couch
29. Digital Ocean, Inc.
30. Forest Industries Telecommunications (FIT)
31. Fusion Systems Corporation (FSC)
32. Fusion Lighting, Inc. (FLI)
33. Home Box Office (HBO)
34. IEEE 802, the LAN MAN Standards Committee (IEEE)
35. In-Flight Phone Corporation (In-Flight)
36. Industrial Telecommunications Association, Inc. (ITA)
37. International Business Machines Corporation (IBM)
38. International Microwave Power Institute
39. L. Stephen Bell
40. Leaco Rural Telephone Cooperative, Inc. (Leaco)
41. Loral/Qualcomm Partnership, L.P. (LQP)

42. Los Angeles County Sheriff's Department (LA Sheriff)
43. Manufacturers Radio Frequency Advisory Committee, Inc. (MRFAC)
44. Metricom, Inc. (Metricom)
45. Microsoft Corporation (Microsoft)
46. Mike Cheponis
47. Motorola, Inc. (Motorola)
48. National Research Council (NRC)
49. Norand Corporation (Norand)
50. Northern California Packet Association (NCPA)
51. Northern Amateur Relay Council of California, Inc. (NARCC)
52. NYNEX Telephone Companies (NYNEX)
53. Organization for the Protection and Advancement of Small
54. Telephone Companies (OPASTCO)
55. Pacific Bell Mobile
56. Part 15 Coalition
57. Palomar Amateur Radio Club, Inc. (PARC)
58. Pegasus Communications Inc. (Pegasus)
59. Personal Communications Industry Association (PCIA)
60. Radio Amateur Satellite Corporation
61. Robert S. Bennett, PH.D.
62. Rochester Telephone Corporation (Rochestertel)
63. Rockwell International Corporation (Rockwell)
64. San Bernardino Microwave Society (SBMS)
65. Software Publishers Association
66. Southern California Repeater and Remote Base Association (SCRRBA)
67. Southwestern Bell Telephone Company (SWB)
68. SR Telecom Inc. (SRT)
69. Standard Microsystems Corporation (SMC)
70. Symbol Technologies, Inc. (Symbol)
71. Tadiran Telecommunications LTD (Tadiran)
72. TDS Telecommunications Corp.
73. Telecommunications Industry Association (TIA)
74. Tetherless Access Ltd. (TAL)
75. United States Telephone Association (USTA)
76. US West Communications (US West)
77. UTC
78. Western Multiplex Corporation (Western Multiplex)
79. Western States VHF-Microwave Society (Western States)
80. William A. Burns
81. Windata, Inc. (Windata)
82. Wireless Holdings, Inc. (HWI)
83. Wireless Information Networks Forum, Inc. (WINForum)
84. Wireless Cable Association International, Inc. (WCAI)
85. Xircom, Inc. (Xircom)

**Late Filed Comments in Response to NPRM**

86. Federal Highway Administration
87. Larus Corporation
88. New York University
89. Solectek Corporation
90. University of Arizona

## APPENDIX C

### Reply Comments Filed in ET Docket 94-32

1. Advanced Micro Devices, Inc.
2. Alarm Industry Communications Committee
3. Alcatel Network Systems, Inc.
4. Amateur Radio Council of Arizona
5. American Institute of Aeronautics and Astronautics
6. American Mobile Satellite Corporation
7. American Petroleum Institute
8. American Radio Relay League, Incorporated
9. American Telecasting, Inc.
10. Andrew Corporation
11. Apple Computer, Inc.
12. Association of American Railroads
13. AT&T Corp.
14. Claircom Communications Group, L.P.
15. Compaq Computer Corporation
16. Comsat Corporation
17. Cox Enterprises, Inc. and Comcast Corporation
18. Cylink Corporation
19. ETM Solar Works
20. Frontier Corporation
21. GTE Service Corporation
22. In-Flight Phone Corporation
23. Industrial Telecommunications Association, Inc.
24. Interdigital Communications Corporation
25. International Business Machines Corporation
26. International Space Power Program
27. James S. Kaplan
28. Metricom, Inc.
29. Micron Communications, Inc.
30. Mike Cheponis
31. Motorola, Inc.
32. National Telephone Cooperative Association
33. National Assoc. of Broadcasters & the Assoc. for Max. Service TV
34. Northern Amateur Relay Council of California, Inc
35. Part 15 Coalition
36. Personal Communications Industry Association
37. Radio Amateur Satellite Corporation
38. San Bernardino Microwave Society
39. Society of Broadcast Engineers, Inc.
40. Southern California Repeater and Remote Base Association
41. Southwestern Bell Telephone Company
42. Space Studies Institute

43. SR Telecom Inc.
44. SUNSAT Energy Council
45. Symbol Technologies, Inc.
46. Tetherless Access LTD.
47. Texas A&M University
48. United States Telephone Association
49. UTC
50. William A. Burns

**Late filed Reply Comments**

51. Amateur Television Network
52. Proxim, Inc.

## APPENDIX D

### FINAL REGULATORY FLEXIBILITY ANALYSIS

**1. Need and purpose of this action:** This Report and Order allocates 50 megahertz of spectrum that was transferred from Federal Government to private sector use. Transfer and allocation of this spectrum was required by the Omnibus Budget Reconciliation Act of 1993.

**2. Summary of the issues raised by the public comments in response to the Initial Regulatory Flexibility Analysis:** There were no comments submitted in response to the Initial Regulatory Flexibility Analysis.

**3. Significant alternatives considered:** Commenters in this proceeding supported allocating the spectrum under consideration for a number of various services. These services include wireless local loops, a ground-to-air aeronautical audio/video service, mobile satellite service, private services, unlicensed PCS devices, other unlicensed devices, amateur service, interactive data, audio and video services, fixed service, mobile services, and broadcast auxiliary services. This Report and Order considers all of these uses and provides analysis regarding each. As a result of this analysis, the Commission determined that the action taken in this Report and Order would provide the most beneficial use of the spectrum under consideration.

## APPENDIX E

### FURTHER INITIAL REGULATORY FLEXIBILITY ANALYSIS

1. **Reason for Action:** The proposals for technical rules service rules, and licensing mechanisms proposed herein are for use of spectrum that has been Transferred from Federal Government to private sector use. The Commission adopted allocations for this spectrum on February 7, 1995. Accordingly, these proposals are necessary to provide a structure for non-Government entities to use the spectrum.

2. **Objectives:** The Commission seeks to provide service, technical rules, and to issue licenses, for use of this spectrum in a manner that provides the greatest potential benefit to the public by providing for the introduction of new services and the enhancement of existing services. These new and enhanced services will create new jobs, foster economic growth, and improve access to communications by industry and the American public.

3. **Legal Basis:** The legal basis for these rule changes is found in Sections 4(i), 303(g), 303(r), 309(j), 332(a), and 403 of the Communications Act of 1934, as amended, 47 U.S.C. §§ 154(i), 303(g), 303(r), 309(j), 332(a), and 403 and Section 115(a) of the National Telecommunications and Information Administration Organization Act, 47 U.S.C. § 925(a).

4. **Reporting, Recordkeeping, and Other Compliance Requirements:** The proposals under consideration in this Notice of Proposed Rulemaking may impose certain reporting and recordkeeping requirements on licensees and others utilizing this spectrum.

5. **Federal Rules Which Overlap, Duplicate or Conflict With These Rules:** None.

6. **Description, Potential Impact, and Number of Small Entities Involved:** Many small entities could be positively affected by this proposal because the proposal will provide for the introduction of new, competitive communications and will foster new technologies resulting in new jobs, economic growth, and improved access to communications by industry, including small entities. The full extent of the impact on small entities cannot be predicted until various issues raised in the proceeding have been resolved. After evaluating the comments filed in response to the Notice, the Commission will examine further the impact of all final rules in this proceeding on small entities and set forth its findings in the Final Regulatory Flexibility Analysis.

7. **Any Significant Alternatives Minimizing the Impact on Small Entities Consistent with the Stated Objectives:** This Second Notice of Proposed Rule Making solicits comments on a variety of alternatives, including as to how our licensing mechanism, service rules, and technical rules can but structured to serve a variety of needs.

## APPENDIX F

### Final Rules

A. Part 2 of Chapter I of Title 47 of the Code of Federal Regulations are amended as follows:

#### **PART 2 - FREQUENCY ALLOCATIONS AND RADIO TREATY MATTERS; GENERAL RULES AN REGULATIONS**

1. The authority citation for Part 2 continues to read as follows:

**AUTHORITY: Sec. 4, 302, 303, and 307 of the Communications Act of 1934, as amended, 47 U.S.C. Sections 154, 302, 303 and 307, unless otherwise noted.**

2. Section 2.106, the Table of Frequency Allocations, is amended to read as follows:

a. In the 2390-2450 MHz band and the 4500-4800 MHz band, revise all columns to read as follows:

**§ 2.106 Table of Frequency Allocations.**

\* \* \* \* \*

International table		United States table		FCC use designators		
Region 1-allocation MHz	Region 2-allocation MHz	Region 3-allocation MHz	Government	Non-Government	Rule Part(s)	Special-use frequencies
(1)	(2)	(3)	Allocation MHz (4)	Allocation MHz (5)	(6)	(7)
2300-2450 FIXED. MOBILE. Amateur. Radiolocation.	2300-2450 FIXED. MOBILE RADIOLOCATION. Amateur.		2300-2310 RADIOLOCATION. Fixed. Mobile. US253 G2	2300-2310 Amateur.  US253	Amateur (97).	
			2310-2360 Mobile. Radiolocation. Fixed. 751B US276 US327 US328 G2 G120	2310-2360 BROADCASTING- SATELLITE. Mobile. 751B US276 US327 US328		Digital Audio Radio Services
			2360-2390 MOBILE. RADIOLOCATION. Fixed. US276 G2 G120	2360-2390 MOBILE.  US276		
			2390-2400 G122	2390-2400 AMATEUR.	Radio Frequency Devices (15). AMATEUR (97).	
			2400-2402 RADIOLOCATION. 664 752 G2	2400-2402 Amateur. 664 752	Amateur (97).	
			2402-2417 664 752 G122	2402-2417 AMATEUR. 664 752	AMATEUR (97). Radio Frequency Devices (15).	
664 751A 752	664 750B 751 751B 752		2417-2450 RADIOLOCATION. 664 752 G2	2417-2450 Amateur. 664 752	Amateur (97).	



b. The text of footnote G2 is revised and the text of footnote G122 is added to read as follows:

**Government (G) Footnotes**

\* \* \* \* \*

G2 In the bands 216-225, 420-450 (except as provided by US 217), 890-902, 928-942, 1300-1400, 2300-2390, 2400-2402, 2417-2450, 2700-2900, 5650-5925, and 9000-9200 MHz, the Government radiolocation is limited to the military services.

\* \* \* \* \*

G122 The bands 2390-2400, 2402-2417 and 4660-4685 MHz were identified for immediate reallocation, effective August 10, 1994, for exclusive non-Government use under Title VI of the Omnibus Budget Reconciliation Act of 1993. Effective August 10, 1994, any Government operations in these bands are on a non-interference basis to authorized non-Government operations and shall not hinder the implementation of any non-Government operations.

\* \* \* \* \*

B. Part 15 of Chapter I of Title 47 of the Code of Federal Regulations are amended as follows:

**PART 15 - RADIO FREQUENCY DEVICES**

1. The authority citation for Part 2 continues to read as follows:

**AUTHORITY: Sec. 4, 302, 303, 304, and 307 of the Communications Act of 1934, as amended, 47 U.S.C. sections 154, 302, 303, 304, and 307.**

2. The Table of Contents of Part 15, Subpart D, is revised to read as follows:

\* \* \* \* \*

**Subpart D -- Unlicensed Personal Communications Services Devices**

\* \* \*

15.321 Specific requirements for asynchronous devices operating in the 1910-1920 MHz and 2390-2400 MHz bands.

\* \* \* \* \*

3. Section 15.301 is revised to read as follows:

**§ 15.301 Scope.**

This subpart sets out the regulations for unlicensed personal communications services (PCS) devices operating in the 1910-1930 MHz and 2390-2400 MHz frequency bands.

4. Section 15.303, paragraph (g) is revised to read as follows:

**§ 15.303 Definitions.**

\* \* \* \* \*

(g) *Personal Communications Services (PCS) Devices [Unlicensed]*. Intentional radiators operating in the frequency bands 1910-1930 MHz and 2390-2400 MHz that provide a wide array of mobile and ancillary fixed communication services to individuals and businesses.

\* \* \* \* \*

5. Section 15.311 is revised to read as follows:

**§ 15.311 Labelling requirements.**

In addition to the labelling requirements of Section 15.19(a)(3), all devices operating in the frequency band 1910-1930 MHz authorized under this subpart must bear a prominently located label with the following statement:

Installation of this equipment is subject to notification and coordination with UTAM, Inc. Any relocation of this equipment must be coordinated through, and approved by UTAM. UTAM may be contacted at [insert UTAM's toll-free number].

6. Section 15.319 is amended by revising the first sentence of paragraph (a) to read as follows:

**§ 15.319 General technical requirements.**

(a) The 1910-1920 MHz and 2390-2400 MHz bands are limited to use by asynchronous devices under the requirements of Section 15.323. \* \* \*

\* \* \* \* \*

7. Section 15.321 is amended by revising paragraphs (a) and (b) and the first sentence of paragraph (e) to read as follows:

**§ 15.321 Specific requirements for asynchronous devices operating in the 1910-1920 MHz and 2390-2400 MHz bands.**

(a) Operation shall be contained within either or both of the 1910-1920 MHz and 2390-2400 MHz bands. The emission bandwidth of any intentional radiator operating in these bands shall be no less than 500 kHz.

(b) All systems of less than 2.5 MHz emission bandwidth shall start searching for an available spectrum window within 3 MHz of the band edge at 1910, 1920, 2390, or 2400 MHz while systems of more than 2.5 MHz emission bandwidth will first occupy the center half of the band. Devices with an emission bandwidth of less than 1.0 MHz may not occupy the center half of the band if other spectrum is available.

\* \* \* \* \*

(e) The frequency stability of the carrier frequency of intentional radiators operating in accordance with this section shall be  $\pm 10$  ppm over 10 milliseconds or the interval between channel access monitoring, whichever is shorter. \* \* \*

\* \* \* \* \*