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BEFORE THE
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In the Matter of		
Reorganization and Revision of Parts 1, 2, 21, and 94 of the Rules to Establish a New Part 101 Governing Terrestrial Microwave Fixed Radio Services	)	WT Docket No. 94-148
Amendment of Part 21 of the Commission's Rules for the Domestic Public Fixed Radio Services	)	CC Docket No. 93-2
McCaw Cellular Communications, Inc. Petition for Rule Making	)	RM-7861
Amendment of Part 101 of the Commission's Rules to Streamline Processing of Microwave Applications in the Wireless Telecommunications Services	)	WT Docket No. 00-19
Telecommunications Industry Association Petition for Rule Making	)	RM-9418

To: The Commission

COMMENTS OF APCO

The Association of Public-Safety Communications Officials-International, Inc. ("APCO") hereby submits the following comments in response to the Commission's Notice of Proposed Rule Making in the above-captioned proceeding, FCC 00-33, released February 14, 2000.[1]

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1. *Reorganization and Revision of Parts 1, 2, 21, and 94 of the Rules to Establish a New Part 101 Governing Terrestrial Microwave Fixed Radio Services; Amendment of Part 21 of the Commission's Rules for the Domestic Public Fixed Radio Services; McCaw Cellular* (continued...)

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I. INTRODUCTION

APCO is the nation's oldest and largest organization whose primary function includes promoting the safety of life and property through the efficient and effective use of radio communications within the public safety arena. Most of its 14,000 individual members are state or local government employees involved in the management, design, and operation of police, fire, emergency medical, local government, highway maintenance, forestry conservation, disaster relief, and other public safety communications systems.

The *Part 101 NPRM* addresses a wide-variety of issues, some of which are extremely important to APCO because public safety entities have specialized needs and requirements that microwave radio systems are designed to meet. Public safety agencies are among the most extensive users of Private Operational Fixed Service microwave facilities. The most common use of microwave frequencies by public safety entities is to link numerous fixed transmitter sites necessary for wide-area mobile radio systems. The current trend in public safety system design and management is towards the development of such wide-area, multi-agency and multi-jurisdictional public safety systems because it represents an efficient and cost-effective use of spectrum. In fact, the Commission has encouraged the use of wide-area systems to promote the rapid development and deployment of innovative services and to facilitate interoperability.[2] Much of the development of

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1. (...continued)
Communications, Inc. Petition for Rule Making; Amendment of Part 101 of the Commission's Rules to Streamline Processing of Microwave Applications in the Wireless Telecommunications Services; Telecommunications Industry Association Petition for Rulemaking, Memorandum Opinion and Order and Notice of Proposed Rule Making, FCC 00-33, WT Docket No. 00-19, RM-9418 (Feb. 14, 2000) ("*Part 101 NPRM*").

2. *See Report and Plan for Meeting State and Local Government Public Safety Agency Spectrum Needs Through the Year 2010*, Report and Plan, 10 FCC Rcd 5207, 5246-47 (continued...)

wide-area systems is currently taking place in the 800 MHz mobile radio bands. The new public safety allocation of 24 MHz in the 700 MHz band will also be used primarily for wide-area multi-agency systems. Because of the propagation characteristics of these bands, public safety entities will have a need for a greater number of transmit sites to provide necessary coverage and, thus, adequate microwave spectrum to link those sites.

Public safety and other private operational fixed entities also have a special need for point-to-point microwave frequencies to link fixed command centers. Typical links operating in the microwave bands involve communications between one fixed transmitter and one fixed receiver, and links are generally paired to provide a two-way path. State and local governments use microwave frequencies to interconnect remote radio transmitter sites, *e.g.*, offices, police stations, highway maintenance operations, command and 911 centers. A shortage of microwave spectrum would threaten the ability of these entities to fully discharge their duty to protect the lives and property of all Americans.

The Commission seeks comments in its "reinvention efforts" to find spectrum that can be auctioned for emerging technologies regarding various licensing options for microwave spectrum above 2 GHz. The Commission acknowledges that the auctioning of microwave spectrum presents a special challenge because of the following factors: (1) the lower frequency bands are significantly encumbered, particularly in urban areas, and the relocation of 2 GHz microwave licensees into the 6 GHz and 11 GHz bands has further burdened this spectrum; (2) the expansion of satellite services

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2. (...continued)
(1995) (stating that "a growing number of public safety agencies have invested considerable time and money to develop wide-area multi-agency trunked public safety radio systems," and that "we will continue to encourage all public safety agencies to consider this option to help them better met their wireless communications requirements").

allocated to spectrum above 2 GHz is limiting the options of those parties that are in need of terrestrial microwave spectrum; (3) the demand for spectrum above 2 GHz is growing as microwave spectrum is being used as the backbone infrastructure for cellular, PCS, and other commercial mobile radio service providers; (4) microwave spectrum is being used for fixed point-to-multipoint backbone support for services such as Local Multipoint Distribution Service; and (5) the spectrum above 2 GHz is fertile ground for advanced telecommunications applications.[3] Given these competing factors, the Commission is seeking comment on how it can modify Part 101 general licensing rules with respect to the microwave spectrum above 2 GHz in a way that is consistent with its implementation of the Balanced Budget Act of 1997 ("Budget Act").[4] Specifically, the *Part 101 NPRM* seeks comment on four options intended to modify Part 101 licensing procedures.

II. NONE OF THE AUCTION OPTIONS PROPOSED BY THE COMMISSION ADDRESSES THE UNIQUE NEEDS OF PUBLIC SAFETY ENTITIES.

The Budget Act amended Section 309(j) of the Communications Act of 1934 to require the Commission to award mutually exclusive applications for initial licenses or permits using competitive bidding procedures, with the exception of licenses and construction permits for *public safety radio services*, digital television service for existing analog television licensees, and non-commercial educational radio and television stations.[5] In addition, Section 309(j)(6)(E) of the Communications Act states that, in determining whether auctions are appropriate, the Commission

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3. *Part 101 NPRM*, ¶ 75.

4. Balanced Budget Act of 1997, Pub. L. No. 105-33, § 3002, 111 Stat. 251 (1997).

5. 47 U.S.C. § 309(j)(1)(emphasis added).

has the "obligation in the public interest to continue to use engineering solutions, negotiation, threshold qualifications, service regulations, and other means to avoid mutual exclusivity in application and licensing proceedings."[6] However, in the *Part 101 NPRM*, the Commission is hardly attempting to "avoid" mutual exclusivity. To the contrary, the Commission appears to be grasping for any means possible to manufacture mutual exclusivity where none currently exists, which is contrary to Congressional intent.

The following sections address each of the Commission's proposed options for imposing auctions on microwave spectrum.

A. OPTION 1: AUCTION FOR GEOGRAPHIC AREA LICENSEES

Under the first option, the Commission would license Part 101 microwave spectrum based on a channelization plan and geographic service area through the use of auctions to choose among mutually exclusive applications.[7] Incumbent licensees would retain primary status for their current operations but could not expand their service areas without the consent of the appropriate geographic area licensee.[8] Coordination between or among geographic licensees will require the licensees in each geographic area to develop agreements with each other on how to utilize their spectrum to achieve the most efficient and effective use in each geographic area.[9]

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6. 47 U.S.C. § 309(j)(6)(E).

7. *Part 101 NPRM*, ¶ 77.

8. *Id.*

9. *Id.*

All existing public safety bands are exempt from auction pursuant to the express will of Congress.[10] As APCO has stated in other proceedings, the cost of radio spectrum should never stand in the way of the basic communications needs of public safety agencies. However, with geographic licensing, public safety agencies would have no choice but to purchase spectrum rights from the ultimate auction winners. That would be little more than a "back door" application of auctions to public safety users; exactly what Congress wanted to avoid.

Geographic licensing by way of auctions would therefore cap any growth for public safety incumbents, preventing them from providing essential services necessary for the protection of life, health, and property. Public safety entities already face a serious shortage of spectrum for fixed microwave and other uses and, as noted above, will need additional microwave spectrum in the future to provide infrastructure for new wide-area mobile systems and for implementing new communications technologies.[11] Yet, geographic licensing, as suggested by the Commission, would block public safety agencies from obtaining new interference-free microwave channels. Although incumbents might be able to lease spectrum from successful bidders, such arrangements would place the incumbents at their mercy.

Furthermore, geographic licensing is not the most appropriate or efficient licensing scheme for fixed point-to-point services. Public safety and other private operational fixed microwave users are not seeking to blanket a wide-area and/or market. Instead, they are trying to link specific service points (*e.g.*, radio system transmitter sites, command and control facilities) in an effort to conduct

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10. *See* 47 U.S.C. § 309(j)(2)(A).

11. Some of these microwave needs were examined in 1996 by the Public Safety Wireless Advisory Committee. *See* PSWAC Final Report, Volume II, Appendix D, Spectrum Requirements Subcommittee Summary, page 701 (Sept. 11, 1996).

their public safety or other critical infrastructure obligations. Perhaps geographic licensing is appropriate for point-to-*multipoint* types services, but it has no purpose in licensing of point-to-point services, other than as a facade to "manufacture" mutual exclusivity.

Finally, geographic licensing would create a great level of uncertainty for equipment vendors in these bands because the band plans and technical parameters for the use of the spectrum could change at the whim of the new licensee. The design and development of equipment requires stable standards to be in place. Any changes would require additional time to develop new standards in order to protect the incumbent systems from harmful interference. This could ultimately harm public safety users because it could reduce equipment availability and increase the cost of equipment.

B. OPTION 2: REALLOCATION OF INCUMBENTS

Under the second option, the Commission would relocate licensees so that spectrum is free and clear for licensing by auction, using a channelization plan and geographic service area.[12] This approach would be similar to the reallocation of portions of the 2 GHz band.[13]

APCO opposes this option. Many public safety systems across the nation depend upon fixed microwave facilities to provide critical infrastructure for mobile radio and other emergency communications operations. Aside from imposing potential cost on taxpayers, relocation of incumbents would be contrary to the public interest as there is a lack of sufficient alternative spectrum. Moreover, even if the Commission is able to identify additional spectrum, the

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12. *Id.* ¶ 77.

13. *See Redevelopment of Spectrum to Encourage Innovation in the Use of New Telecommunications Technologies*, First Report and Order and Third Notice of Proposed Rule Making, 7 FCC Rcd 6886 (1992).

Commission must take into consideration the propagation characteristics of such substitute spectrum. Higher frequency bands require shorter path lengths to maintain reliability, which in turn may require the use of additional sites to connect fixed locations. However, in many cases, finding new sites is impossible (at any cost) due to geography or political/legal barriers such as zoning.

C. OPTION 3: COMBINATION OF AUCTIONS AND TRADITIONAL LICENSING ON A GEOGRAPHICAL AND SPECTRUM SEGMENTATION BASIS

Under the third option, the Commission would identify certain bands in which incumbent licensees could retain co-primary status, and other bands in which incumbents would have secondary status vis-a-vis new licensees authorized pursuant to a licensing scheme based on a channelization plan and geographic service area, and assigned by auctions.[14] As an example of proposed sharing, the Commission points to the reuse of existing DBS spectrum in the 12.2-12.7 GHz band for terrestrial video, as well as the proposed sharing of frequency bands between satellite users and fixed terrestrial systems. APCO opposes this option because the sharing scheme often prevents terrestrial fixed microwave systems from obtaining additional frequencies for future expansions. For example, the Commission's recent reallocation of the 18 GHz band followed this approach, and has resulted in a net loss of spectrum for fixed microwave services.[15] In addition, the sharing complications and the administration of such a regime would present some very difficult problems that would have to be addressed and solved before such option is feasible.

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14. *Part 101 NPRM*, ¶ 77.

15. *See* Redesignation of the 17.7-19.7 GHz Frequency Band, Blanket Licensing of Satellite Earth Stations in the 17.7-20.2 GHz and 27.5-30.0 GHz Frequency Bands and the Allocation of Additional Spectrum in the 17.3-17.8 GHz and 28.75-25.25 GHz Frequency Bands for Broadcast Satellite-Service Use, IB Docket No. 98-172, FCC 00-212, *Report and Order* (rel. June 22, 2000).

D. OPTION 4: RETAIN EXISTING SITE-BY-SITE LICENSING BUT SOLVE MUTUALLY EXCLUSIVE APPLICATIONS BY AUCTION

Under the fourth option, the Commission would retain the current licensing approach utilizing a variety of channelization plans and site-by-site licensing, but use auctions to resolve mutually exclusive applications.[16] Such an approach would hardly ever be invoked and, in any event, is simply not appropriate for fixed microwave licensees. As the Commission recognized, mutually exclusive situations rarely, if ever, occur under the current licensing scheme because applicants are responsible for coordinating interference issues prior to filing for a license application.[17] APCO reminds the Commission of its statutory obligation to "continue to use engineering solutions, negotiation, threshold qualifications, service regulations, and other means to avoid mutual exclusivity in application and licensing proceedings."[18] The use of auctions to avoid mutual exclusivity in light of the Commission's own assertion that mutual exclusivity "rarely, if ever, occurs" in the microwave spectrum above 2 GHz is contrary to this statutory obligation.

III. IF THE COMMISSION DECIDES TO LICENSE MICROWAVE SPECTRUM THROUGH AUCTIONS, THERE SHOULD BE A FREQUENCY SET-ASIDE FOR PUBLIC SAFETY ENTITIES.

In the event that the Commission decides to license microwave spectrum through auctions, APCO urges the Commission to set aside frequencies for public safety use. As the Final Report of

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16. *Id.*

17. *Id.* ¶ 75; *see also* 47 C.F.R. § 101.103(d) (specifying traditional coordination procedures for site-based facilities).

18. 47 U.S.C. § 309(j)(6)(E).

the Public Safety Wireless Advisory Committee to the Commission and National Telecommunications and Information Administration (NTIA) indicated:

> PSWAC stated in its Final Report to the FCC and NTIA, "the responsibilities of public safety users to meet their mission critical obligations require, among other things, (1) dedicated capacity and/or priority access available at all times (and in sufficient amounts) to handle unexpected emergencies, (2) highly reliable (redundant) networks which are engineered and maintained to withstand natural disasters and other emergencies; (3) ubiquitous coverage within a given geographic area; (4) and unique terminal equipment (mobile or portable units) designed for quick response in emergency situations.[19]

As previously discussed, state and local governments use microwave frequencies to interconnect remote radio transmitter sites, and other locations such as police stations, highway maintenance operations, command and 911 centers. As the need to expand their systems increase, the need for additional microwave spectrum to link transmit sites for mobile radio systems also increases. For the reasons described above, public safety users will be blocked from access to auction spectrum. Therefore, if there is to an auction for microwave spectrum, there must be a set-aside for public safety entities.

Remarkably, the Commission asks in this context whether "*any* of the services licensed under Part 101 come within the Balanced Budget Act's definition of 'public safety radio services.'"[20] The Commission obviously knows that there are thousands of microwave stations licensed to state and local government public safety agencies across the nation, all of which fall within the definition of "public safety radio services." The specific number of such licensees can be ascertained from the Commission's own database. The more difficult number to determine is the number of licensees who are not Public Safety Pool eligibles under Part 90, but nonetheless fall within the broader

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19. PSWAC Final Report, Volume I, § 1.22.

20. *Part 101 NPRM*, ¶ 81.

definition of "public safety radio services" which are exempt from auction pursuant to the Budget Act. APCO will leave it to others with a more direct interest in the answer to compile that necessarily vague data.

. The relevant issue for APCO is whether Public Safety Pool eligibles and others that meet the Budget Act's definition of "public safety radio services" should be consolidated for purposes of allocating microwave spectrum, or kept separate. Because the radio frequencies allocated for microwave have become highly congested in many areas, APCO recommends that a portion of the auction-exempt spectrum be set-aside solely for use by Public Safety Pool eligibles. Otherwise, there is a risk that scarce spectrum will be quickly consumed by business entities that nevertheless qualify as "public safety radio services." Those services are broadly defined in the Budget Act to include, at least in some situations, for-profit entities such as railroad, utility, and pipeline companies. While such entities have an important safety role, the Commission must continue to give priority to governmental entities created by the public itself for the purpose of protecting public safety. Therefore, APCO suggests that within a "public safety radio services" set-aside that there be a subset of frequencies reserved only for those entities that are also Public Safety Pool eligibles. Of course, where spectrum is not available within those specific channels, Public Safety Pool eligibles should free to also seek channels in other portions of the "public safety radio service" set aside.

IV. SHARED BANDS

The Commission also seeks comment regarding the proper treatment of spectrum such as the frequencies between 2450 MHz and 2500 MHz, which currently are available for public safety use on a shared basis with other services. For instance, the 2450-2483.5 MHz band is shared by TV

Broadcast Auxiliary Services (Part 74), Cable Relay Service (Part 78), Private Land Mobile Radio Services (Part 90), and Fixed Microwave Services (Part 101), and these services are subject to different limitations on antenna requirements, channelization, bandwidth, and type acceptance.[21] While fixed microwave users under Part 101 must coordinate their use with other fixed microwave users, broadcast auxiliary users must use local coordinators who do not coordinate with Part 101 users. Furthermore, there is no requirement for Part 90 licensees to engage in frequency coordination.[22]

Sharing allows multiple users with different coverage and capacity requirements to effectively use the same frequencies and increases the amount of frequency reuse that is possible compared to set distance separations. However, new entrants are often "squeezed in" to specific areas. A sharing-oriented approach means that private system users must be able to tolerate interference and manage potential blocked access to channels. However, the shared used of frequencies also means that users and systems have to be coordinated in order to minimize interference and allow as many systems as possible to use the band. Failure to have consistent technical standards, especially in regards to frequency coordination, makes it extremely difficult for public safety entities to perform critical emergency operations.

For instance, public safety entities are increasingly using the 2450-2483 MHz band for live airborne video transmission pursuant to Part 90. Broadcasters use the band for similar auxiliary operations pursuant to Part 74. Public safety airborne video enables agencies to coordinate responses to crimes in progress, directing police officers in pursuit situations, battling building and

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21. *Id.* ¶ 40.

22. *Id.*

forest fires, controlling civil disturbances, responding to hostage and barricade situations, addressing terrorist threats, and other emergency response situations. However, although operators in the TV Broadcast Auxiliary Services and public safety agencies are required to operate on a shared, non-exclusive basis in the 2450-2483 MHz band,[23] it is not unusual for broadcasters in densely populated areas to consume most of the frequencies. Moreover, the cumbersome frequency coordination process imposed by the broadcasters makes it virtually impossible for public safety entities to obtain immediate use of the band in unanticipated emergency situations.

For these reasons, APCO supports a clarification of Section 74.602(a)(1) and 90.20(d)(73) of the Commission's Rules to ensure that broadcasters and public safety licensees have co-equal status in the 2450-2483 MHz band.[24] However, regardless of any clarification of the rules governing the 2450-2483 MHz band, that band demonstrates the difficulty of forcing public safety agencies to share frequencies with other users, especially for temporary or mobile operations that require constant coordination to avoid interference, such as airborne video. Therefore, public safety entities must have dedicated radio spectrum as they should be given priority in emergency situations that pose imminent threats to the safety of life, health, and property.

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23. *See* 47 C.F.R. §§ 74.602(a)(1), 90.20(d)(73).

24. The County of Los Angeles, the City of Los Angeles, the City of Long Beach, and the City of Burbank, California submitted a Request for Declaratory Ruling regarding the use of the 2450-2483 MHz band for public safety operations on September 1, 1999.

CONCLUSION

APCO opposes all of the auction options proposed by the Commission because they do not address the unique needs of public safety entities. The Commission must avoid creating mutual exclusivity where none exits. Therefore, APCO urges the Commission to adopt a licensing scheme for microwave spectrum above 2 GHz that will allow public safety and other fixed operational microwave entities to expand their operations to fulfill their obligations. To this end, the Commission should establish a set-aside, where possible, for public safety entities.

Respectfully submitted,

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