

Rico for a total of 49 regional licenses). This option would provide greater scale economies than Option 1, but a more restricted opportunity for participation. Populations within these areas range from 1.1 to 26 million.⁴³

Option 3: The 194 telephone LATAs. In addition to providing the opportunity for participation by a relatively large number of firms, this option may facilitate efficient integration of PCS into the local telephone infrastructure.

Option 4: Nationwide. This option would maximize economies of scale and scope as well as the other benefits of large service areas, as discussed above, but would allow the smallest number of firms to participate. Nationwide U.S. licensees may also be better able to compete in foreign markets, which are licensed almost exclusively on a nationwide basis.

61. Comment is requested on the relative merits of all proposed service area options. Also, since we intend to grant at least three PCS licenses per area, we could license different spectrum blocks using different size service areas. Parties are asked to address the merits of this approach as well. If the Commission is authorized to use competitive bidding, the exact size of PCS service areas also could be determined through the competitive bidding process. The mechanism by which this could work is explained more fully in Appendix E.

62. 900 MHz Service Areas. It also appears that large regional or nationwide service areas would provide for flexibility in the design and implementation of 900 MHz PCS systems. We note that the 900 MHz petitioners request both nationwide and regional services. Therefore, for reasons identical to those addressed above with regard to 2 GHz, for 900 MHz operations we also solicit comment on the four options listed above for service areas. We additionally solicit comment on whether having a mix of regional and nationwide service providers would provide competition in the provision of narrowband PCS services and encourage a diversity of such services. Comment on these or alternative proposals should include details such as allocation schemes, service area definitions, and licensing requirements.

Eligibility Requirements

63. Incumbent Cellular Licensees. We expect that PCS and cellular licensees serving the same areas, while not offering an identical package of services, will compete on price and quality. This will benefit consumers by lowering prices, improving service and increasing the availability of innovative products.

⁴³Rand McNally, p. 40.

64. It could be argued, however, that such competitive benefits may be reduced if cellular incumbents are permitted to acquire PCS licenses within their service areas. Incumbent cellular operators might limit entry for some period of time by acquiring licenses from potential competitors (either after issuance by lottery or comparative hearing, via the resale market, or initially, if licenses are competitively bid).⁴⁴ This would reduce the number of independent competitors in the market and raise antitrust concerns. Concerns about competition would not be raised, however, if cellular service providers were to acquire PCS licenses outside their current service areas.

65. In this regard, we note that the General Accounting Office, in a recent report on competition in the cellular telephone market, concluded that the current market structure "may provide only limited competition," and that "[a] policy that favors the allocation of spectrum to new firms, rather than to existing cellular telephone carriers in each market, would seem to serve the public interest by providing additional competition and potentially lower prices for consumers."⁴⁵ The actual impact on competition of permitting cellular providers to hold PCS licenses, of course, would vary with the number of PCS licenses granted. If we grant five PCS licenses in each market, the competitive impact would be less than if only three licenses were granted per market.

66. While permitting cellular operators to acquire PCS licenses within their service areas could facilitate anticompetitive behavior, it also may lead to greater production efficiencies. There may be some economies of scope between PCS and cellular service to the extent that a single firm holding both a cellular and a PCS license would have lower unit costs than would two firms separately holding each license. It is likely that cellular phone companies will provide (microcell) PCS services in the bands now used for cellular service. Yet, if they also were permitted to use spectrum at 2 GHz, their PCS costs

⁴⁴The greater the anticipated price reduction as a result of competition, the more willing an incumbent would be to bid to deter a new entrant. Consider the case of a single incumbent and a single identical potential entrant. If entry had no effect on price, but merely divided up the market, the value of a new license would be the same to an entrant as to an incumbent seeking to exclude the entrant. On the other hand, if entry resulted in a price reduction and a reduction in total industry profits, the loss to the incumbent would be greater than the gain to the new entrant, so the incumbent would be willing to bid more to exclude the new entrant.

⁴⁵General Accounting Office, Concerns About Competition in the Cellular Telephone Industry, July 1992, pp. 2, 4.

might be less than those of a separate PCS provider because their existing cellular infrastructure could be shared with PCS service.

67. We propose to allow cellular providers to obtain PCS spectrum licenses outside of their cellular service areas. However, we ask for comment on whether cellular providers also should be allowed to obtain PCS spectrum within their cellular service areas.⁴⁶ Specifically, we seek comment on the impact on competition if cellular operators are permitted to obtain PCS licenses in their cellular operating areas. We also ask for comment on whether the amount of PCS spectrum held by cellular licensees should be limited, if they are allowed to hold any such spectrum.⁴⁷ We further request comment on whether cellular providers should be eligible to hold licenses for the 900 MHz PCS services also proposed herein.

68. Commenters arguing that cellular licensees should be barred from holding PCS licenses in their service areas also are asked to address whether the eligibility prohibition also should include firms affiliated with a cellular operator through joint marketing or other agreements which do not involve ownership but nevertheless may facilitate anticompetitive pricing agreements. Under this option, such an affiliate of a cellular licensee would be prohibited from acquiring a PCS license in any area in which the cellular licensee provides service.

69. We also ask for comment on whether the cellular service rules should be further liberalized to allow cellular firms to make better use of their existing frequencies. In 1988 we amended Part 22 of our rules to allow cellular carriers to implement advanced cellular technologies and to provide auxiliary common

⁴⁶In the event we do not allow cellular providers to obtain PCS spectrum in their service areas, we propose to adopt the ownership standard that governs applications for cellular service for markets beyond the top 120 Rural Service Areas. See 47 C.F.R. Section 22.921(b). Under this standard, no party with an ownership interest, direct or indirect, in a cellular license could have an ownership interest, direct or indirect, in a PCS licenses serving the same geographic area, except that interests less than one percent would not be considered (or less than five percent for publicly-traded corporations). We ask for comment on this standard. We also ask for comment on whether a de minimis exception for minor geographic overlaps between cellular and PCS service areas would be appropriate.

⁴⁷See para. 81 for ways that the amount of spectrum held by cellular licensees, among others, could be limited.

carrier services using their assigned cellular spectrum.⁴⁸ Thus, cellular licensees are permitted to provide a broad range of services beyond cellular radio telephone services, including many of the kinds of services envisioned for PCS.

70. Our intention is to foster a market environment in which cellular and PCS licensees compete with a variety of telecommunications services, including cellular. Therefore, we propose to revise Section 22.930 of our rules to state explicitly that cellular licensees may provide PCS-type services, such as wireless PBX, data transmission and telepoint services. We also propose to remove the prior Commission notification requirement to allow cellular carriers to respond more effectively to competition from PCS providers. We seek comment on these proposals and any other action the Commission could undertake in order to ensure that cellular providers are not unnecessarily hindered from using their cellular frequencies to provide PCS-types of service. We specifically ask whether cellular carriers should remain bound to provide AMPS service.⁴⁹ We also ask what impact the removal of

⁴⁸See Amendment of Parts 2 and 22 of the Commission's Rules to Permit Liberalization of Technology and Auxiliary Service Offerings in the Domestic Public Cellular Radio Telecommunications Service, Report and Order, 3 FCC Rcd 7033 (1988). Under these rules, cellular licensees may provide advanced cellular technologies and auxiliary common carrier services on a secondary basis to conventional cellular service, without prior Commission authorization. Cellular systems using advanced cellular technologies or providing auxiliary common carrier services are not subject to various technical rules governing conventional cellular service, provided that these systems do not interfere.

The Commission recently has taken a number of other actions to further liberalize service rules. More recently, in March of this year we authorized licensees to expand their service areas within their markets, during the five year fill-in period, without prior Commission approval. See Amendment of Part 22 of the Commission's Rules to Provide for Filing and Processing of Applications for Unserved Areas in the Cellular Service and to Modify Other Cellular Rules, Second Report and Order, 7 FCC Rcd 2449 (1992). In May of this year, we proposed to further liberalize cellular rules in a number of ways, including elimination of the bar on provision of non-BETRS fixed service. See Revision of Part 22 of the Commission's Rules Governing the Public Mobile Services, Notice of Proposed Rule Making, 7 FCC Rcd 3658 (1992).

⁴⁹We also note that Telocator has petitioned the Commission to expand cellular licensees' flexibility to permit new non-common carrier services. We plan to address this issue separately. See Petition for Rule Making by Telocator to Amend the Commission's Rules to Authorize Cellular Carriers to Offer Auxiliary and Non-Common Carrier Services, RM-7823, filed on September 4, 1991.

the service requirement would have on compatibility and roaming, and what the effect would be on subscribers who currently own analog mobile units.

71. Local Exchange Carriers. PCS is likely to be both a complement and potentially a competitor to local wireline exchange service. Initially, we expect that PCS primarily will complement LEC-provided wire loops, while over time PCS may become a full fledged competitor to wireline services.

72. As is true of any evolving telecommunications service, PCS growth will be fostered by efficient interconnection with the public switched network. One concern that has been raised is that if LECs are permitted to supply PCS within their service territories, they may have incentives to discriminate against competitors requesting interconnection as well as to cross-subsidize PCS provision from expenditures ostensibly made to serve rate-regulated wireline customers.

73. On the other hand, these dangers could be minimized by non-structural safeguards against discrimination and cross-subsidy. Perhaps more importantly, there may be significant economies of scope between PCS and the LEC wireline network which would not be realized if LECs were prohibited from providing PCS service within their current wireline service areas. For instance, LECs may naturally desire to develop their networks using wireless tails or wireless loops wherever they are more economical than wireline connections. Given that wireline plant may be a substitute for spectrum in the provision of PCS, particularly for backhaul functions and wireless tails, the LECs may be able to achieve competitive unit costs for certain types of PCS even utilizing significantly less spectrum than held by other PCS licensees.⁵⁰

74. Moreover, allowing LECs to provide service within their current service areas may encourage them to develop their wireline architectures in a PCS-friendly way. This also could benefit all PCS users if the Commission required that this more efficient network structure be made available to all PCS providers on the same basis as available to the LEC.

75. We tentatively conclude there is a strong case for allowing LECs to provide PCS within their respective service areas. Due to the separate subsidiary requirements imposed upon

⁵⁰Although most large LECs own or are affiliated with a cellular telephone system which now has access to spectrum, the separate subsidiary regulatory requirements for BOCs (which guard against cross-subsidy and discrimination problems) prevent in the case of the BOCs any ownership integration as a means of exploiting economies of scope.

the BOCs, however, approximately eighty percent of the LEC industry (and their customers) would be precluded from realizing any economies of scope between their wireless and wireline telephone services. For these reasons, the likely efficiency gains from integrated provision of PCS seem to be far greater for LEC local loop operations than for cellular operations. We therefore ask comment on the options that follow.

76. Given these potential efficiencies, we ask for comment on allowing LECs to hold PCS licenses, except where barred by their cellular holdings, if such a bar is adopted.⁵¹ Where a LEC holds cellular spectrum, it may be able to capture the necessary economies of scope through use of that spectrum, rather than newly assigned PCS spectrum. Certain rule changes, however, may be necessary before these potential economies of scope could be realized. In addition to the general liberalization of cellular rules discussed above, we ask for comment on eliminating the BOC separate subsidiary requirement for cellular telephone service.

77. A second option that we propose for comment is to allow a LEC to acquire some 2 GHz spectrum for PCS within their service areas, but less than the amount proposed for other licensees.⁵² We tentatively conclude that 10 MHz may be sufficient for the initial deployment of a PCS system integrated with a wireline local operating company. We request comment on whether a greater amount of spectrum would be necessary, or whether a lesser amount would be sufficient.

78. We see three ways in which a 10 MHz block could be provided. First, we could allocate an additional 10 MHz to PCS (possibly 1895-1900 MHz and 1975-1980 MHz) from the proposed emerging technologies band.⁵³ Second, we could divide PCS spectrum blocks and allow LECs to acquire a portion. A third option would be to allow LECs to lease or purchase up to 10 MHz in the aftermarket.⁵⁴

⁵¹The LEC would be charged with filing an adequate plan for non-structural safeguards against discrimination and cross-subsidization before beginning PCS service on an integrated basis.

⁵²They would not be barred from holding 2 GHz PCS licenses outside their service areas.

⁵³See note 10, supra.

⁵⁴Commencement of service by LECs under any of these alternatives would be contingent on the LEC implementing an acceptable plan for non-structural safeguards against discrimination and cross-subsidization.

79. It should be made clear that this would not be a LEC set-aside. Any applicant, otherwise eligible, would be able to apply for spectrum under this option. We also request comment on whether a LEC with a cellular license should be eligible for this 10 MHz of PCS spectrum, even if cellular licensees are not otherwise allowed to acquire PCS spectrum in their service areas.

80. Finally, we seek comment on the applicability of the eligibility rules proposed above to cellular and LEC eligibility to hold licenses in the 900 MHz PCS band. We note that such services, unlike those proposed for implementation at 2 GHz, will not provide sufficient capacity to compete with existing wireline and cellular networks.

81. Limits on Holding Multiple Licenses. In promoting competition among PCS suppliers and between PCS and other telecommunications operators, we may limit the total spectrum acquired or utilized by PCS licensees. One means of doing this would be to limit operators to just one license each. This, however, quite possibly could result in some firms sacrificing significant economies of scale and scope. A more flexible option, which still could achieve the goal of preventing undue market concentration, would be to cap the total spectrum which a PCS licensee could acquire or use (by any means), at, for example, 35 or 40 MHz. A third option would be to follow the current practice in cellular and to not set any specific standard, instead allowing the Commission to decide license merger questions on a case-by-case basis. We seek comment on these alternatives.

Licensing Mechanism

82. The Commission currently has two options for selecting among mutually exclusive PCS applications: comparative hearings and lotteries. A third option, competitive bidding, would be available if Congress enacts enabling legislation.⁵⁵ We tentatively conclude that comparative hearings would not be an appropriate licensing mechanism for PCS because they are likely to be slower and more costly, both to the government and applicants, than the other licensing alternatives. We seek comment, however, on whether lotteries or competitive bidding (if authorized by Congress) would be the most appropriate mechanism for licensing PCS. We also ask for comment on possible reforms of the lottery process and possible competitive bidding rules as discussed below.

83. Whatever selection method the Commission adopts, we propose a 10-year license term with a renewal expectancy similar to the one applied to cellular telephone licenses. Without a relatively long license term and a high renewal expectancy

⁵⁵Analyses of these three licensing mechanisms are at Appendix D.

investors would be reluctant to make investments in equipment, training and marketing specific to a particular PCS system.

Lotteries

84. Since 1982, the Commission has used random selection to assign a variety of non-broadcast licenses.⁵⁶ Lotteries generally have proved to be superior to comparative hearings because they have been completed in less time and have used less resources of both applicants and the Commission. Nevertheless, lotteries also have flaws. Although the cost per applicant is less for lotteries than comparative hearings, the total private application cost may be high because so many applicants tend to apply. Large numbers of applications are also costly for the Commission to process and could create delays in issuing licenses. Lotteries for land mobile licenses in the 220 MHz band, for instance, attracted over 175 nationwide and 58,000 local applicants. Because PCS licenses are potentially far more valuable than those in the 220 MHz band, lotteries for PCS are likely to attract even more applications.

85. The Commission could attempt to reduce the costs and delays associated with lotteries in a number of ways. One option would be to require that a lottery application contain only minimal information, i.e., a "postcard lottery." The winning applicant could be given 30 days to demonstrate that it meets all financial, technical and other eligibility requirements. These qualifications would be similar to those used in the 220 MHz proceeding for nationwide system applications.⁵⁷ A second option would be to require complete financial and technical showings on every application, in order to limit filings to well-financed and experienced applicants. We would expect far fewer applications under this second option than in a postcard lottery. Yet a postcard lottery could result in a smaller total expenditure of resources by industry and the Commission because the cost of preparing, handling and storing each application would be less. We seek comment on the relative merits of these two approaches.

86. Under either approach, we propose that the Commission check the qualifications only of the winning applicants. This would reduce the Commission's license processing costs and benefit the public interest by reducing unnecessary delays. If this approach is adopted, the Commission must have a plan for selecting an alternate licensee if the initial lottery winner proves to be unqualified. One option would be to pick contingent winners in the initial lottery. Another option would be to run a second lottery. The first option would appear to present the least cost

⁵⁶See 47 C.F.R. § 1.972.

⁵⁷See Report and Order, PR Docket No. 89-552, 6 FCC Rcd 2356 at 2363 (1991).

to applicants and to the Commission, and was used in the initial cellular lotteries. However, it was found to have the unintended consequence of providing the contingent winners with the incentive to challenge the qualifications of the winner, thus delaying the issuance of a license and increasing total private and public expenditure on the licensing process. To avoid creating such an incentive the Commission changed to a system of choosing only one lottery winner for each cellular market and conducting another lottery if that winner was found to be unqualified. We seek comment on these alternative approaches.

87. We also seek comment on other methods to reduce the costs and delays associated with lotteries. Among the measures that could be used to limit the number of lottery applications are short filing windows, stricter entry, narrow eligibility requirements, and including the submission of engineering documents, a business plan for construction and operation, and a firm financial commitment letter. Strict construction and operation requirements as well as resale restrictions are also options.⁵⁸

88. We note, however, that such measures may not completely eliminate the problem of large numbers of applicants. Several such measures were used for the private land mobile services in the 220 MHz band. (1) In effect, the Commission created a short filing window for this service by considering applications to be mutually exclusive only if received on the same day. This induced most applicants to file on the first day the Commission opened the filing window, which was only two days after notice appeared in the Federal Register. (2) Some blocks of spectrum were set aside for non-commercial use. (3) Winners of non-commercial national licenses were required to construct at least one base station in a minimum of 70 markets within five years of licensing and prohibited from transferring their licenses during the entire ten-year license term. (4) Winners of commercial national licenses were given 2, 4, 6, and 10 year construction benchmarks. (5) Transfer or assignment of commercial national licenses is prohibited before 40 percent of licensee's system has been constructed. Despite these and other measures, approximately 175 nationwide and 58,000 regional applications were received for licenses in the 220 MHz band.

89. We also propose that if lotteries are used, application fees be calculated using a procedure similar to that used by the

⁵⁸For purposes of this item, by "resale restrictions" we mean restrictions on transfer of the PCS license.

Private Radio Bureau in licensing the 220 MHz band.⁵⁹ In that proceeding, application fees for nationwide authorizations were computed using the basic \$35 fee for a Private Land Mobile radio call sign multiplied by the number of call signs needed (one call sign per channel per market). This resulted in an application fee of \$24,500 for a 10-channel nationwide system license. Applying the same methodology to 2 GHz PCS would result in an application fee of approximately \$3 million, for example, for a nationwide license to operate on one of the 30 megahertz blocks if such licenses are authorized. This figure is based on an assumption of 1200 channel pairs (12.5 kHz bandwidth) times 70 markets (as assumed for 220 MHz nationwide licenses) times \$35 per call sign, yielding a total application fee of \$2.94 million.

90. Using different assumptions about technology, market penetration, and amount of spectrum, a \$35 charge per call sign could result in a different application fee for a nationwide PCS license.⁶⁰ For example, with 50 kHz channels there would be 300 channels pairs available in 30 MHz. Assuming a channel could be reused every 10 cells, each cell potentially could have 30 channel pairs. If there were 4,000 PCS cell sites nationwide (approximately the current number of cellular cell sites), a nationwide PCS system would have about 120,000 call signs. Multiplying this by \$35 per call sign would result in an application fee of \$4.2 million. Similar calculations would be made for 900 MHz assignments.

Competitive Bidding

91. Although the Commission does not currently have competitive bidding authority, legislation is pending that would grant the Commission limited authority. Competitive bidding is used by government agencies in other contexts. For instance, it is used to award the right to drill for oil and gas in the outer continental shelf.⁶¹ It also is used to award federal coal leases.⁶² Competitive bidding also is being used increasingly by foreign governments to assign spectrum licenses. New Zealand has made extensive use of competitive bidding to award spectrum licenses. It has put up for competitive bid broad spectrum

⁵⁹See Report and Order, PR Docket No. 89-552, 6 FCC Rcd 2356 (1991); Memorandum Opinion and Order, PR Docket No. 89-552, adopted June 18, 1992.

⁶⁰These calculations assume that PCS is defined as a private radio service. If it is classified as common carrier, a fee of \$230 per transmitter would apply.

⁶¹43 U.S.C. §§ 1331-1356.

⁶²30 U.S.C. § 181.

management rights as well as television and radio channels.⁶³ The United Kingdom also has recently employed competitive bidding to award broadcasting rights, but in conjunction with a public interest determination.⁶⁴

92. We seek comment on how best to implement competitive bidding, if it is authorized by Congress and the Commission decides to employ it for PCS. Specifically, as detailed in Appendix E, we ask for comment on different approaches, including sealed vs. oral bidding, the sequence of bidding, minimum bid requirements, payment methods, deposits, license renewal, and the organization which should conduct the bidding.

License Modifications

93. We propose that applicants initially not be required to specify antenna sites for each base station. We ask for comment, however, on whether licensees should be required to apply for modification of licenses to specify any base station sites not initially authorized by the Commission.⁶⁵ This could assist us if there are any subsequent processing steps required for such sites, including special administrative requirements (which, in some cases, include approval prior to construction) for the following types of facilities: (1) facilities that are within 125 miles of a fixed microwave receive site (see technical interference standards at paragraph 115 below); (2) facilities that may have a significant environmental effect;⁶⁶ (3) facilities that require notification to the Federal Aviation Administration;⁶⁷ (4) facilities that require prior coordination because of their proximity to the United States borders.⁶⁸

⁶³National Telecommunications and Information Administration, U.S. Spectrum Management Policy, February 1991, pp. 93-95.

⁶⁴First, sealed bids were accepted, then the Independent Television Commission evaluated the bidders' ability to provide high-quality programming. About half the franchises were not awarded to the highest bidder. Congressional Budget Office, Auctioning Radio Spectrum Licenses, March 1992, p. 13.

⁶⁵We specifically ask whether such requirements would impose an undue regulatory burden, especially in light of our proposals regarding cellular carriers. See paras. 69-70.

⁶⁶See 47 C.F.R. §§ 1.1307, 1.1308, 1.1311, and 1.1312.

⁶⁷See 47 C.F.R. §§ 17.7 through 17.17.

⁶⁸Generally, this includes facilities to be constructed north of Line A or east of Line C. See 47 C.F.R. § 90.7.

Regulatory Issues

Regulatory Status

94. One of the most important issues presented by the introduction of PCS is the regulatory classification of those who will be licensed to provide PCS. As we have indicated, we expect PCS to be a highly competitive service. We anticipate that PCS licensees will develop and offer a wide variety of services, some narrowly targeted to specific customer groups or niche markets, others more broadly targeted. These services will be subject to substantial competition, both from other PCS services offered under the rules we adopt in this proceeding and from the wide range of radio-based services currently offered: cellular services, specialized mobile radio services, paging services, wireless in-building services, cordless phones, and others. Service providers will have a strong incentive to offer attractive services and prices because any customer will have numerous service options from which to choose. Thus, regardless of whether PCS is determined to be a private or common carrier service, there will be no captive customers who must take the service from a monopoly (or near monopoly) service provider, and government rate and service regulation should not be necessary to protect customers from monopoly abuse. Accordingly, regardless of the regulatory classification, we tentatively conclude that PCS should be subject to minimal regulation.

95. We seek comment on whether PCS should be classified as a common carrier or private land mobile radio service. Commenters should focus their analysis on the statutory definition of private land mobile radio service set forth in Sections 3(gg) and 332(c) of the Communications Act, 47 U.S.C. §§ 153(gg), 332(c). The Commission has determined that, under these sections, the test for private land mobile service is that a licensee not resell interconnected telephone service for profit.⁶⁹ We specifically ask for comment on whether prospective providers of PCS intend to or should be allowed to resell interconnected telephone service for a profit.

⁶⁹Fleet Call, Inc., 6 FCC Rcd 1533, 1537, recon. dismissed, 6 FCC Rcd 6989 (1991); American Teltronix, 3 FCC Rcd 5347 (1988), recon. denied, 5 FCC Rcd 1955, 1956 (1990); Amendment of Part 90, Subparts M and S, of the Commission's Rules, 3 FCC Rcd 1838, 1840 (1988), recon. denied, 4 FCC Rcd 356 (1989); Amendment of Part 90 of the Commission's Rules to Prescribe Policies and Regulations to Govern the Interconnection of Private Land Mobile Radio Systems, 93 FCC 2d 1111, 1115 (1983), on recon., 49 Fed. Reg. 26066 (1984), aff'd by judgement sub nom. Telocator v. FCC, 764 F.2d 926 (D.C. Cir. 1985) (Table).

96. If PCS is determined to be a private land mobile service, PCS licensees would not be considered common carriers for any purpose under the Communications Act. 47 U.S.C. § 332(c)(2). PCS licensees would be authorized to offer service indiscriminately to eligible users on a commercial basis. 47 U.S.C. § 332(c)(1). PCS licensees also would not be subject to the restrictions on foreign ownership established in Section 310(b) of the Act. Consistent with our existing regulatory treatment of private land mobile services, if we determine that PCS appropriately is classified as a private land mobile service, we propose not to impose any federal rate regulation on providers. In addition, state and local entry and rate regulation of PCS as a private land mobile service would be prohibited by statute. 47 U.S.C. § 332(c)(3). PCS would, in essence, be indistinguishable from any other private land mobile radio service. We request comment on this analysis.

97. We also ask for comment on regulatory issues that would flow from classification of PCS as common carriage. Given that we intend to license multiple service providers, as well as the fact that PCS will be competing with other providers of land mobile service such as cellular radio, SMR service and paging, it is likely that PCS will be a highly competitive service. Accordingly, if PCS licensees were to be classified as common carriers, we tentatively conclude that they should be treated as non-dominant carriers under our Competitive Carrier decisions, and not be subject to tariff regulation at the federal level.⁷⁰ We ask for comment on whether, and to what degree, we should preempt state and local regulation of PCS if we classify PCS as a common carrier service. In this connection, we ask for comment on whether the intrastate components of PCS could be severed technically or otherwise from the interstate components for regulatory purposes and, if not, whether state or local regulation

⁷⁰See Policy and Rules Concerning Rates and Facilities Authorizations for Competitive Carrier Services, Notice of Inquiry and Proposed Rulemaking, CC Docket No. 79-252, 77 FCC 2d 308 (1979); First Report and Order, 85 FCC 2d 1 (1980); Further Notice of Proposed Rule Making, 84 FCC 2d 445 (1981); Second Report and Order, 91 FCC 2d 59 (1982); recon. FCC 83-69, released March 21, 1983; Second Further Notice of Proposed Rulemaking, FCC 82-187, released April 21, 1982; Third Further Notice of Proposed Rule Making, Mimeo No. 33547, 48 Fed. Reg. 28,292 (June 21, 1983); Third Report and Order, 48 Fed. Reg. 46,791 (October 15, 1983); Fourth Report and Order, 95 FCC 2d 554 (1983); Fourth Further Notice of Proposed Rule Making, 49 Fed. Reg. 11,856 (March 28, 1984); Fifth Report and Order, 98 FCC 2d 1191 (1984); Sixth Report and Order, 99 FCC 2d 1020 (1985); rev'd MCI v. FCC, 765 F.2d 1186 (1985). See also Tariff Filing Requirements for Interstate Common Carriers, Notice of Proposed Rule Making, CC Docket No. 92-13, 7 FCC Rcd 804 (1992).

of the intrastate components would thwart or impede the federal policies underlying the interstate provision of PCS.⁷¹

98. PCS is, of course, evolving and it is likely that a variety of services will be offered under the rubric of PCS, some of which may constitute private land mobile service and some of which may constitute common carrier land mobile service. We ask for comment on this possibility, including whether PCS licensees should be eligible to provide service either on a common carrier or private basis.⁷²

Interconnection

99. Questions concerning interconnection of PCS with the public switched telephone network (PSTN) arise regardless of whether PCS providers are treated as private or common carriers.⁷³ Thus, another issue on which we seek comment is the way in which PCS carriers may obtain interconnection with the PSTN. In this respect, regardless of whether we classify PCS as a private or common carrier service, we propose to confirm explicitly that PCS licensees have a federally protected right to interconnection with the PSTN.⁷⁴

⁷¹See Louisiana Public Service Comm'n v. FCC, 476 U.S. 355, 375 n.4 (1986); Maryland Public Service Comm'n v. FCC, 909 F.2d 1510 (D.C. Cir. 1990); California v. FCC, 905 F.2d 1217 (9th Cir. 1990); Illinois Bell Telephone Co. v. FCC, 883 F.2d 104 (D.C. Cir. 1989); National Ass'n of Regulatory Utility Commissioners v. FCC, 880 F.2d 422 (D.C. Cir. 1989); Public Utility Comm'n of Texas v. FCC, 866 F.2d 1325 (D.C. Cir. 1989); North Carolina Utilities Comm'n v. FCC, 552 F.2d 1036 (4th Cir.), cert. denied, 434 U.S. 874 (1977); North Carolina Utilities Comm'n v. FCC, 537 F.2d 787 (4th Cir.), cert. denied, 429 U.S. 1027 (1976).

⁷²See Wold Communications, Inc. v. FCC, 735 F.2d 1465 (D.C. Cir. 1984).

⁷³By "interconnection" we mean to include the terms and conditions of interconnection and the rates charged for use of PSTN facilities (access).

⁷⁴See, e.g., 47 U.S.C. §§ 201(a), 332(a)(1); Public Utility Comm'n of Texas v. FCC, 866 F.2d 1325 (D.C. Cir. 1989); Lincoln Telephone & Telegraph Co. v. FCC, 659 F.2d 1092 (D.C. Cir. 1981); Declaratory Ruling, The Need To Promote Competition and Efficient Use of Spectrum for Radio Common Carrier Services, 2 FCC Rcd 2910 (1987), recon. denied, 4 FCC Rcd 2369 (1989); Amendment of Part 90, supra note 69. Of course, as noted above, if PCS is classified as a private land mobile service, interconnection could not be resold for a profit.

100. As to the specific type of interconnection, our preliminary views are influenced by our belief that different PCS providers may want to provide differing levels of service. Some may seek to provide a very simple and inexpensive service one step up from cordless telephone service, with no ability to roam between different service providers or service areas and with limited or no handoff capabilities. Others may want to provide a level of service equalling or surpassing that currently offered by cellular carriers. Still others may not desire to interconnect with the PSTN at all. Thus, different PCS providers may desire different types of interconnection. Because we cannot predict precisely how different PCS providers may want to interconnect with the local exchange carriers (LECs), we do not think it wise to mandate any particular type of interconnection between them.

101. Accordingly, we ask whether the PCS provider should be entitled to obtain a type of interconnection that is reasonable for the particular PCS system and no less favorable than that offered by the LEC to any other customer or carrier. Such a policy would further our federal goal of ensuring the development of PCS service. Moreover, if the LEC already is providing this interconnection service to another customer or carrier, it is technically feasible for the LEC to provide such interconnection to a PCS provider.

102. The intent of this policy is to ensure that a PCS provider is not discriminated against by the LEC. We seek comment on this proposal, and its likely efficacy as applied to PCS service generally. We also specifically request comment on any unique interconnection situations or anomalies PCS might present that would require a different policy. For example, we ask for comment on whether more specific requirements may be necessary in certain circumstances and on whether interconnection rights would differ depending on whether PCS is classified as a common carrier or private service. Finally, we seek comment on the protections to which a PCS provider would be entitled under Sections 201(b) and 202(a) of the Communications Act.

103. It appears that separate interconnection arrangements for intrastate and interstate services may well be infeasible for PCS, just as separate access facilities for state and interstate calling would be infeasible in the case of "plain old telephone service." We also are concerned that permitting state interconnection policies to govern PCS interconnection rights could thwart or impede the development of interstate PCS service. There may be certain circumstances, however, in which preemption would not be necessary. Accordingly, we tentatively conclude that the kinds of PCS interconnection with the PSTN should, in most cases, be determined at the federal level. We also tentatively conclude that state and local regulation of the kinds of interconnection to which PCS providers are entitled should be

preempted.⁷⁵ With respect to rates for interconnection, we propose not to preempt state and local regulation at this time. If it develops that state or local rate regulation thwarts or impedes the federal purposes underlying PCS -- e.g., if interconnection rates are set so high as to preclude development of PCS service -- we would consider preemption at that time.⁷⁶ We seek comment on these proposals concerning preemption of state regulation governing the terms, conditions and rates for PCS interconnection with the PSTN. We also ask parties to address the extent to which preemption is necessary for different types of interconnection arrangements. For example, parties should address the extent to which our decisions concerning federal authority over cellular interconnection should apply to PCS.

Technical Standards

104. We recognize that the technical standards that we are proposing below assume a spectrum allocation in the 2 GHz band as proposed in ET Docket No. 92-9. As stated previously at paragraph 32, we are proposing an allocation for PCS that is consistent with the proposal in ET Docket No. 92-9 and we recognize that the proposals set forth in this proceeding are contingent upon the final outcome in that docket.

105. We are proposing a technical framework that will permit significant flexibility in the design and implementation of PCS systems, devices and services. We recognize that many PCS concepts are still being developed and that many PCS technologies are at their inception. The PCS experimental authorizations

⁷⁵See note 71 supra.

⁷⁶See, e.g., Declaratory Ruling, supra, note 74, 2 FCC Rcd at 2912. To the extent that PCS providers may use forms of interconnection with the PSTN that were or have not been developed primarily for PCS, however, we believe that the preemption decisions otherwise applicable to the terms, conditions and pricing of those forms of interconnection should govern. For example, if the Commission were to adopt the expanded interconnection proposal described in the Notice of Proposed Rulemaking issued last year in Expanded Interconnection with Local Telephone Company Facilities, 6 FCC Rcd 3259 (1991), then any preemption decisions adopted in that context would govern. Under this approach, existing decisions concerning the scope of federal authority over cellular interconnection would control. See The Need to Promote Competition and Efficient Use of Spectrum for Radio Common Carrier Services, 2 FCC Rcd 2910 (1987) (Interconnection Ruling), aff'd on recon., 4 FCC Rcd 2369 (1989). See also Policy Statement on Interconnection of Cellular Systems, 59 RR 2d 1283 (1986).

granted by the Commission include a diverse array of PCS concepts from wide area mobile voice and data services to wireless office devices. The technologies under investigation in the experiments include a variety of spread spectrum as well as conventional modulation techniques. Both 900 MHz and 2 GHz approaches are represented. We believe that our approach to technical standards should provide the opportunity for these PCS services and technologies to develop fully.

106. In October 1991, as part of the PCS Policy Statement and Order, supra, the Commission stated that it would establish a PCS advisory committee to help resolve such technical issues as transmission standards, interference control, inter and intra industry protocols, and roaming. The potential benefit of such a committee is that it may produce results that are objective and responsive to the Commission's specific needs. Since then, however, several developments have caused us to reassess the need for a formal advisory committee, including the work of several industry standards bodies on PCS and the large volume of useful information that has resulted from the experimental licenses. In particular, the industry standards bodies seem to serve the functions that the Commission might logically assign an advisory committee, such as development of, and making recommendations for, interoperability and interconnectivity standards. Therefore, we tentatively conclude that an FCC advisory committee on PCS is not necessary at this time.

107. At the same time, we believe that some technical regulation is necessary to prevent interference between different systems. We recognize that the 2 GHz spectrum proposed for PCS is likely to be shared with existing fixed microwave users to some extent. Therefore, to protect the fixed microwave operations we are proposing a number of technical restrictions, such as power and height limits, and restrictions on the energy radiated by PCS operations into a microwave receiver.⁷⁷ For unlicensed 2 GHz devices, we are proposing operation in a region of the 2 GHz band that is relatively lightly loaded by fixed microwave operations. Furthermore, unlicensed devices will be subject to stringent power output limits. We believe that these technical restrictions will ensure that existing microwave operations do not experience

⁷⁷As discussed later, we are proposing to extend interference criteria currently used between private microwave systems to protect those systems from PCS operations. We also are proposing to limit emissions beyond the 2 GHz band edges (see proposed Section 99.413) to further minimize the interference potential of PCS systems. We request comment on whether emission limits additionally need to be specified for each PCS licensee's authorized band edge and whether such limits could replace or be used in conjunction with the current microwave interference criteria.

harmful interference from either licensed or unlicensed operations. We also are proposing technical limits to govern interference between PCS operations in adjacent geographical regions. For 900 MHz PCS operations, we are proposing to regulate antenna height, radiated power and out-of-band emissions.⁷⁸

108. We believe that this flexible approach to technical standards will encourage the development of the broadest range of PCS services and devices; foster the most economic and efficient use of the spectrum; and ensure that existing services and PCS operations are protected from interference.⁷⁹

2 GHz Licensed Operation

109. Protection of Fixed Microwave Operations. A principal concern in the proposal to authorize PCS in the 2 GHz band is that existing fixed microwave operations be protected if spectrum is shared. Our analysis and studies submitted by the commenters indicate that the 2 GHz band is not fully used in all areas and that PCS operations may be implemented in many areas without affecting current fixed microwave operations. In other instances, however, existing use of the spectrum will require negotiations to allow the implementation of PCS. It is essential therefore that the rights of the existing 2 GHz operators to protection from interference be clearly defined.

110. Currently, protection among fixed microwave operations is contained in Part 94 of the Commission's Rules⁸⁰ and further described in EIA/TIA's publication TSB10-E.⁸¹ This publication

⁷⁸Several parties in this proceeding have drawn attention to the need to develop a plan for allocating telephone numbering resources to new PCS services. We recognize the importance of numbering plan issues, including numbering plans applicable to PCS, and we intend to address these issues in a separate proceeding.

⁷⁹We note that several commenters suggested ways that the Commission could encourage the industry to expedite its work on developing uniform standards. Although we do not propose to require specific standards at this time, commenters are free to suggest areas in which specific standards may be beneficial and ways to expedite this process should it become necessary in the future.

⁸⁰See, for example, Section 94.63, "Interference protection criteria for operational fixed stations," 47 C.F.R. § 94.63.

⁸¹See Electronic Industries Association/Telecommunications Industry Association's Telecommunication System Bulletin, "Interference Criteria for Microwave Systems in the Private Radio Services," TSB10-E, November 1990.

provides methodology and criteria for coordinating microwave radio systems in the Private Radio Services. We believe that the level of protection provided under our rules and through the use of TBS10-E is appropriate and propose, in general, to provide microwave users with this same level of protection for interference from PCS operations.

111. We note, however, that the TSB10-E methods and procedures are based on interference between private fixed microwave systems, and must be modified to take into account PCS base and mobile operations. We are proposing that each PCS licensee determine the potential interference by calculating the signal level from each proposed co-channel and adjacent channel PCS base station and associated mobiles at the inputs of all fixed microwave receivers within the coordination zone defined below.⁸² The total power level into the microwave receiver would be determined by assuming straight power addition of the signals from all of the PCS licensee's stations.

112. To make this determination, PCS licensees would be required to calculate the total PCS power level at the subject microwave receiver from each PCS base station and its associated mobile and portable stations. The proposed analytical method for making this determination is described in Appendix F. If the total PCS power level at the microwave receiver exceeded the standards of TSB10-E, then the PCS licensee would be required to make the changes necessary to its system to bring it into conformance with the TSB10-E standard. When additional base stations are added to the system each licensee would again have to ensure that its total system is within the TSB10-E standard. Alternatively, the PCS operator would be permitted to certify to the Commission that the licensee of an affected microwave system has agreed to the proposed PCS operation.

113. We solicit comment on this proposed method of determining potential interference to microwave operations. We would like comment on whether these methods should include a probability term related to the number of PCS transmitters likely to be in simultaneous operation. Specifically, we would like comment on whether TSB10-E is overly conservative and whether there are other methods capable of providing more flexibility in

⁸²The 2 GHz private microwave band is divided into 5 MHz and 10 MHz wide overlaid channels. See 47 C.F.R. § 94.65(b). This overlay scheme creates co-channel, interstitial channel and adjacent channel relationships. For fixed microwave services, bulletin TSB10-E describes interference criteria for these three situations. Overlaying a PCS channeling plan consisting of 15 MHz wide channels results in system relationships that are not covered by this bulletin. We request comment on applying bulletin TSB10-E to these new channel relationships.

the design of PCS systems and still providing adequate protection to the incumbent fixed microwave operations. In this regard we note that the Telecommunications Industry Association is in the process of developing a new microwave coordination criteria. This new document proposes two different coordination criteria depending on the path length of the microwave system. A C/I criteria is proposed for short and medium paths and the existing 1 dB threshold criteria contained in Part 94 is proposed for longer paths. Such an approach may have some advantages for sharing between microwave and PCS operations. It would allow PCS operations to take into account some of the extra protection margins of short and medium path length microwave systems. We solicit comment on such an approach. We also solicit comment on whether our proposed straight power addition to determine total power at the microwave receiver is overly conservative or if some other method would more accurately reflect the total power received.

114. 2 GHz Power and Antenna Height Limits. The method proposed to calculate PCS power at the input to the fixed station receiver takes into account the radiated power and antenna height of the PCS base and mobile stations and should be valid for any PCS power or antenna height. Thus, in principle, the control of interference to fixed stations does not depend on the imposition of specific limits on PCS power and antenna height. However, with very high PCS powers and antenna heights, there may be an increased risk of interference because of the statistical variations in propagation and other factors used in the calculations. Therefore, some upper limit on PCS power and antenna height may be prudent, while taking into account our desire to provide maximum flexibility in the design of PCS systems.

115. Most of the PCS experiments that we have authorized employ small cell configurations utilizing relatively low power base stations with antennas relatively close to the ground. The mobile units in these experiments are relatively low power. If we assume that these experimental systems are indicative of the kinds of systems that actually will be deployed, a maximum base station power of 10 watts (EIRP) and antenna height of 91 meters (300 feet) above average terrain, and a maximum mobile power of 2 watts (EIRP) may be sufficient.⁸³ Therefore, as one option, we solicit comment on whether these values of power and antenna height should be adopted as maximum limits for PCS.

⁸³Consistent with the practice followed in bulletin TSB10-E, we have chosen in this section to refer to radiated power as the equivalent power radiated from an isotropic antenna (EIRP) rather than the power radiated from a half-wave dipole (ERP). The relationship between the two quantities is as follows:
 $P(\text{EIRP}) = 1.64 \times P(\text{ERP})$ or $P_{\text{dB}}(\text{EIRP}) = P_{\text{dB}}(\text{ERP}) + 2.15 \text{ dB}$.

116. On the other hand, it is not clear that the experimental systems represent the full range of possible PCS system designs for which there may be a market demand. In particular, there may be a demand for larger cells to accommodate high speed vehicular subscribers and to provide low cost coverage over large, sparsely populated areas. Such systems may require power and antenna heights similar to, or possibly greater than, that permitted in 800 MHz cellular systems. Cellular systems are allowed to utilize base station powers up to 500 watts with antenna heights up to 152 meters (500 feet), and even higher antennas are permitted with a corresponding reduction in power. Cellular mobiles are permitted up to 7 watts (ERP) of radiated power.⁸⁴ Therefore, as a second option, comment is requested on whether PCS power and antenna height limits should be comparable to those used for cellular, perhaps as high as 1000 watts and 600 meters (1969 feet) for base stations and up to 200 watts (EIRP) for associated mobiles.

117. Coordination Distance. We are proposing to require that PCS operations be coordinated with any existing fixed microwave operations within interference range of the PCS operations. The coordination distance specified in TSB10-E for new fixed microwave stations is 201 kilometers (km) (125 miles). With a PCS power and antenna height limit of 10 watts and 90 meters (295 feet), as discussed in paragraph 115, above, 201 km (125 mile) would provide a reasonable coordination distance based on the TSB10-E standard to typical microwave operations with receive sites up to 1000 meters (3280 feet) above average terrain. Because most fixed microwave receivers are sited less than 1000 meters (3280 feet), we believe that this requirement would adequately protect the fixed microwave service. Therefore, we propose that if we limit the PCS base station power and antenna height to 10 watts and 90 meters (295 feet), we set a fixed coordination range of 201 km (125 miles). That is, we would require parties desiring to implement PCS operations to demonstrate protection to all co-channel and adjacent channel microwave receivers within 201 km (125 miles) of any PCS base station. PCS operators would be required to perform the interference calculations described in Appendix F for each microwave receiver within this area and to coordinate with the licensees of any affected stations.

118. If PCS stations are permitted greater powers and antenna heights, as discussed above in paragraph 116, a larger coordination distance would be necessary to reflect the increased area of potential interference. With a wider range of permissible powers and antenna heights, we propose to specify coordination distance as a function of the power and antenna height proposed to be used in the PCS system, rather than as a single number.

⁸⁴See 47 U.S.C. §§ 22.904 and 905.

119. Again we propose to use the TBS10-E standard and a typical microwave receiver with a site of up to 1000 meters (3280 feet) above average terrain to determine coordination distances. However we re-emphasize that a PCS operation may not cause interference to any fixed microwave operation even if the affected microwave system is beyond the coordination distances listed below. Accordingly, the following coordination distances would apply for various combinations of PCS base station power and antenna heights:

Table 1

Coordination Distances In Kilometers (Miles)

EIRP (Watts)	PCS Base Station Antenna Height Above Average Terrain in Meters (Feet)				
	90 (295)	120 (394)	150 (492)	300 (984)	
600 (1969)					
10	201 (125)	206 (128)	211 (131)	225 (140)	246 (153)
20	228 (142)	233 (145)	237 (147)	251 (156)	274 (170)
50	262 (163)	267 (166)	272 (169)	286 (178)	309 (192)
100	290 (180)	294 (183)	298 (185)	314 (195)	336 (209)
200	315 (196)	320 (199)	325 (202)	339 (211)	364 (226)
500	351 (218)	356 (221)	359 (223)	375 (233)	399 (248)
1000	377 (234)	381 (237)	386 (240)	402 (250)	425 (264)

120. 2 GHz PCS-to-PCS Interference Standards. Interference among PCS systems potentially may occur between systems operating on co-frequency blocks (co-channel interference) or on adjacent frequency blocks (adjacent channel interference). One method for reducing that potential would be to specify specific interference limits. However, as stated above we wish to provide PCS operators with as much flexibility as possible in designing their systems. To provide flexibility in the cellular service, the Commission adopted rules that allowed the cellular licensees to design co-channel systems using new technologies as long as they did not exceed a signal level of 39 dBu at their boundaries.⁸⁵ We believe that a similar approach should be used for co-channel PCS systems. This would provide a degree of co-channel protection among PCS operators and still allow flexibility in the design of systems. Therefore, we propose that PCS systems be designed not to exceed a signal level of 47 dBu at the licensees' service area

⁸⁵See Report and Order, GEN Docket No. 87-390, 3 FCC Rcd 7033 (1988).

boundaries.⁸⁶ Licensees would be expected to coordinate their operations at the service area boundaries. With regard to adjacent channel interference we propose not to establish interference limits at the frequency boundaries between PCS systems, but instead to allow PCS licensees to work out mutually agreeable interference concerns. Since we may create large service areas and may assign large amounts of spectrum, we believe this approach will be feasible. We solicit comment on this approach. On the other hand, if commenters feel that more detailed rules are needed, we request that they provide specific limits and reasons why they should be adopted.

Power Limits for 2 GHz Unlicensed Devices

121. The principal intent of our technical requirements is to ensure that interference between PCS and existing microwave systems is minimized to the greatest extent possible. At the same time, we also desire to provide designers of PCS with the technical flexibility to develop a wide array of products to meet consumer needs. We believe that by proposing general power output limits for unlicensed devices our goals of protecting microwave users and providing flexibility for PCS would be met. It appears that transmitter power output limitations along with our choice of using the 1910 to 1930 MHz frequency band would minimize the potential for interference between unlicensed PCS devices and microwave operations.

122. We have proposed above a channelization plan to accommodate three broad categories of PCS devices. This channelization plan provides for channel bandwidths of 10 MHz, 1.25 MHz and 100 kHz. Taking into account these channel bandwidths, we are proposing the following requirements:

<u>Channel Bandwidth</u>	<u>Proposed Peak Power Limit</u>
10 MHz	1 watt ⁸⁷
1.25 MHz	100 milliwatts
100 kHz	20 milliwatts

⁸⁶The minimum field strength required for a good quality service for mobile reception in an urban environment is 35 dBu (CCIR Report 358-5). Okamura 1968 cited a standard deviation (location variability) due to shadowing, etc. of 9.4 dB. Therefore, for 90% coverage the required median field strength is 35 dBu + (1.28 x 9.4) = 47 dBu, based on a standardized normal distribution found in any introductory book on statistics. The comparable calculation for the 900 MHz cellular band would be 28 dBu + (1.28 x 8.3) = 38.6 dBu, which is rounded to 39 dBu.

⁸⁷We also propose that the spectral power density not exceed 1.5 mW in any 3 kHz bandwidth. See proposed Section 15.253(b) (1) (iv).

We are also proposing to require a reduction in the permitted power when the antenna gain exceeds certain values. Further details are provided in the proposed rules attached in Appendix A.

123. We tentatively conclude that the power limits we are proposing for PCS devices on an unlicensed basis are sufficient to protect microwave operations in most situations. We believe that the power limits are sufficiently low so that generally the unlicensed PCS device would receive interference before it could cause harmful interference to a microwave operation. This should also deter the use of microwave frequencies that are presently occupied. We request comment, however, on whether other technical requirements should be placed on the operation of unlicensed devices. For example, should such devices be required to automatically monitor the spectrum before transmitting? Should mobile operation be restricted such that mobiles can only transmit under the control of a base station? Specific technical proposals are contained in Appendix A. Commenters are requested to address the practicality and cost implications of the proposed technical requirements.

124. Notwithstanding the measures taken to minimize the risk of interference to Part 94 operations, we recognize that under certain conditions it may not be feasible to eliminate the risk of potential interference to Part 94 operations without completely restricting PCS use. In such situations, manufacturers of unlicensed PCS equipment, perhaps together with groups of prospective PCS users, may have an incentive to negotiate relocation agreements with certain microwave licensees in order to gain access to a broader market. Comment is requested on the feasibility of such transactions. We also request comment on whether it would be preferable for detailed standards for unlicensed PCS devices to be developed by an industry committee, and if so, whether there exists a suitable industry committee that already is addressing these issues.⁸⁸ Such a committee might investigate the desirability of designing unlicensed PCS equipment with adaptive power controls or with the capability to automatically monitor the spectrum and prevent transmission if the spectrum is occupied. Such a committee could also serve as a focus for negotiating the relocation of existing Part 94 licensees within the 1910-1930 band.

⁸⁸The Electronic Industries Association's Subcommittee on Digital Cellular Systems, TR-45.3, is an example of an industry committee. This committee has produced an interim standard, "Cellular System Dual-Mode Mobile Station-Base Station Compatibility Standard."

900 MHz Operation

125. 900 MHz PCS Power and Antenna Height Limits. We believe the Commission's existing rules regulating technical standards for common carrier and private paging services (both nationwide and regional) provide an appropriate basis for 900 MHz PCS power and antenna height limits.⁸⁹ We note that services similar to those envisioned by the 900 MHz petitioners already operate in segments of spectrum adjacent to each of the three bands being considered in this proceeding. In addition, many of the 900 MHz petitioners have stated that they believe existing paging antenna height-power limits would be appropriate for their yet-to-be-finalized PCS systems. Accordingly, we propose that the nationwide 900 MHz PCS systems adhere to power limits identical to those of Section 22.505(c)(2) of the Commission's rules, which sets limits for nationwide paging. Regional 900 MHz PCS would be required to adhere to an antenna height-power reduction table identical to that of Section 22.505(b) of the rules.⁹⁰ Thus, nationwide 900 MHz PCS systems would be limited to a maximum effective radiated power (ERP) of 3500 watts, with no restriction (other than FAA requirements) on HAAT. Regional systems would be restricted to antenna height-power limits in accordance with the following table:

⁸⁹See 47 C.F.R. Part 22, Subpart G and Part 90, Subpart P.

⁹⁰Essentially identical limits apply to private paging operations. See 47 C.F.R. § 90.494(f). The Commission recently proposed to replace the antenna height - power reduction table in Section 22.505(b) with a limit on the size of the service contour. See proposed Section 22.535(c) in Notice of Proposed Rule Making, CC Docket No. 92-115, 7 FCC Rcd 3658 (1992). We invite comment as to whether a similar limit is preferable to the antenna - height power reduction table.