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

FCC 94-265

In the Matter of	)	
	)	
Amendment of the Commission's Rules to Establish New Personal Communications Services	)	GEN Docket No. 90-314
	)	RM-7140, RM-7175, RM-7618
	)	

THIRD MEMORANDUM OPINION AND ORDER

Adopted: October 19, 1994; Released: October 19, 1994

By the Commission:

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I. INTRODUCTION AND EXECUTIVE SUMMARY

1. By this order we amend in minor respects our broadband Personal Communications Services ("PCS") regulatory structure to better achieve the four primary goals of this proceeding: competitive delivery, a diverse array of services, rapid deployment, and wide-area coverage. We take this action in response to ten petitions for reconsideration or clarification of the policies and rules we adopted in a June 1994 Memorandum Opinion and Order in this proceeding.[1] We first summarize the petitions and our disposition of them.

2. Comcast Corporation ("Comcast") and the Cellular Telecommunications Industry Association ("CTIA") ask us to alter rules that determine the extent to which entities holding substantial ownership interests in cellular licenses also may hold 30 MHz PCS licenses in overlapping cellular and PCS service areas. We deny these petitions. Our goals for PCS reflect a balance of numerous considerations, including affirmatively promoting competition as well as preventing anticompetitive behavior in the auction process and the PCS marketplace. The petitioners offer no persuasive rationale for changing our rules to reflect a different balance. The record persuades us, however, to modify those rules in one respect. We will permit entities with attributable, but non-controlling cellular interests to bid on in-market 30 MHz PCS licenses, subject to post-auction divestiture of their non-compliant cellular interest in order to remain in compliance with our cellular/PCS cross-ownership rules. This modification furthers our policy of maximizing opportunities for cellular participation in PCS while safeguarding the PCS market and the auction process against the potential for anticompetitive conduct.

3. The Personal Communications Industry Association ("PCIA") requests that we adopt rules requiring PCS licensees to share the cost of relocating microwave licensees operating in the 1850-1990 MHz PCS bands. PCIA's cost sharing proposal is incomplete, and we believe that its adoption might hamper potential bidders' efforts to value spectrum accurately as well as generate litigation before this Commission to resolve ambiguous aspects. Further, we believe a more complete record is necessary for us to fully evaluate the costs and benefits of the proposal and to consider additional, related aspects. For these reasons we deny PCIA's petition without prejudice. PCIA or other interested parties may submit a separate petition for rulemaking to address this subject if they desire to do so.

4. Point Communications Company ("Point") requests that PCS service areas be based on Department of Commerce BEA Economic Areas" ("BEAs"), rather than Major Trading Areas ("MTAs") and Basic Trading Areas ("BTAs"). Point also requests that entrepreneur block spectrum be varied from market to market and that we make all PCS licensees subject to Open Network Architecture ("ONA") regulation. We deny these requests. The record

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[1] See Memorandum Opinion and Order, FCC 94-144, June 13, 1994, *summarized* 59 FR 32820 (June 24, 1994); Erratum, GEN Docket No. 90-314, Mimeo Number 44006 (released July 22, 1994) (hereafter jointly Broadband PCS Reconsideration). Appendix B lists parties that filed petitions for reconsideration, oppositions or comments, and replies.

provides no persuasive basis for concluding that greater public interest benefits will result from switching PCS service areas from MTAs/BTAs to BEAs. Point's claim that varying entrepreneur block spectrum will benefit small entities by forcing large PCS providers to develop technologies and equipment for all bands also is unpersuasive. Adopting Point's proposal likely will harm licensees by making the PCS market unnecessarily complex from technical and operational standpoints. Finally, whether ONA regulation is appropriate for the PCS marketplace is outside the scope of this proceeding.

5. The Puerto Rico Telephone Company ("PRTC") requests that we reverse our decision to establish two separate BTAs in Puerto Rico. The record does not convince us that Puerto Rico is a single economic unit, as PRTC claims, and we deny its petition. We note that this decision does not preclude a party from aggregating the two Puerto Rico BTAs into a single service area.

6. The Association of Independent Designated Entities ("AIDE") requests that we clarify PCS licensees' rights to use of the terms MTA and BTA, which are subject to copyrights held by Rand McNally. In particular, AIDE asks that we determine whether the substance of certain correspondence between AIDE and Rand McNally regarding the use of those terms, which was entered into the record of this proceeding by AIDE, comports with our decision to employ the terms to denote PCS service areas. In effect, AIDE asks us to render an adjudicatory-type advisory opinion about the meaning of a licensing agreement between Rand McNally and other commercial interests regarding the use of MTA/BTA terminology. We decline to address this issue. It is our practice not to render such opinions, particularly in rulemaking proceedings, and the record provides no basis for departing from that practice here.

7. Spatial Communications, Inc. and ArrayComm, Inc. (jointly "SCI/ArrayComm"), and Omnipoint Corporation ("Omnipoint") seek changes to and clarification of various technical PCS rules. SCI/ArrayComm's understanding that base station transmitter output power limits apply to each individual antenna comports with our interpretation, and we grant its petition to that extent. We deny without prejudice SCI/ArrayComm's request to express limits on transmitted power in terms different from those in our existing rules because that request is not sufficiently developed to allow consideration of all its implications. We also deny Omnipoint's requests regarding the modulation mask defined for isochronous unlicensed PCS devices because their adoption would result in excessively rigid standards for out-of-band emissions. In response to Omnipoint's requests regarding our rule governing the modulation mask for isochronous unlicensed PCS devices, however, we are modifying that rule to address concerns expressed by Omnipoint as well as parties that opposed its petition for reconsideration.

8. A coalition of broadcast interests (hereinafter "MSTV")[2] requests that we impose special operating requirements on PCS licensees operating in Block C, in order to protect adjacent channel broadcast auxiliary service ("BAS") receiver sites. This block is reserved for designated entities. We deny this request because existing rules are adequate to safeguard such operations.

9. Cellsat, Inc. ("Cellsat") asks that PCS Blocks F and C (1970-1990 MHz) be allocated domestically for Mobile Satellite Service ("MSS") on a secondary basis, and that the 2160-2180 MHz band be allocated domestically for MSS on a primary basis, in order to create an opportunity for hybrid terrestrial-satellite operations on those frequencies. We deny Cellsat's request because our MSS proceeding is a more appropriate forum to consider these issues. [3]

II. BACKGROUND

10. On June 9, 1994, in response to 67 petitions for reconsideration of the Second Report and Order in this proceeding,[4] we adopted the Broadband PCS Reconsideration decision that allocated 120 MHz for licensed broadband PCS and 20 MHz for unlicensed PCS devices in the 1850-1990 MHz band and provided service rules for the operation of this service and equipment.[5] We revised the allocation plan to significantly lower equipment costs, lower the cost of relocating incumbent users, simplify spectrum aggregation, and preserve spectrum for worldwide MSS operations.[6] We also adopted a band plan that provides for three 30 MHz licenses (Blocks A, B, and C) and three 10 MHz licenses (Blocks D, E, and F), all of which are within the 1850-1990 MHz band. We provided that the A and B Blocks be licensed within 51 service areas based on the Major Trading Areas (MTAs) and that the C, D, E, and F Blocks be licensed within 493 smaller service areas based on the

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[2] The parties to this petition for reconsideration are: Maximum Service Television, Inc., Capital Cities/ABC, Inc., CBS Inc., Fox Inc. & Fox Broadcasting Stations, Inc., the National Association of Broadcasters, Inc., National Broadcasting Company, Inc., Public Broadcasting Service, the Radio-Television News Directors Association, and the Society of Broadcast Engineers.

[3] See Broadband PCS Reconsideration, supra n.1 at para. 97.

[4] Second Report and Order, GEN Docket No. 90-314, 8 FCC Rcd 7700 (1993)(hereafter PCS Second Report and Order).

[5] See Broadband PCS Reconsideration, supra n.1. Previously in this proceeding we adopted: Notice of Inquiry, 5 FCC Rcd 3995 (1990); Policy Statement and Order, 6 FCC Rcd 6601 (1991); Notice of Proposed Rule Making and Tentative Decision, 7 FCC Rcd 5676 (1992); Erratum, 7 FCC Rcd 5779 (1992); Second Report and Order, 8 FCC Rcd 7700 (1993).

[6] See PCS Reconsideration Order at para. 27.

Basic Trading Areas (BTAs) set forth in the 1992 Rand McNally Commercial Atlas & Marketing Guide.[7]

11. We reduced the allocation for unlicensed PCS devices to 20 MHz at 1910-1930 MHz, but committed to initiating a proceeding in the near future to examine allocation of additional spectrum for unlicensed PCS operations. Within this band, we adopted a 1.25 MHz channelization scheme for isochronous (voice) devices and eliminated channelization requirements for asynchronous (data) devices.

12. Additionally, we continued to permit all eligible entities to acquire PCS spectrum up to a cap of 40 MHz. We retained our five percent equity attribution threshold for PCS licenses, so that the same entity may not own more than five percent of PCS licenses holding more than 40 MHz within the same area. We also retained our cellular attribution threshold of 20 percent equity ownership of a cellular licensee and our service area overlap test of 10 percent of the population of the relevant PCS market, so that the same entity generally may not own more than 20 percent of the cellular license and more than 5 percent of PCS license(s) that would place the entity above the spectrum limit in an overlapping service area. We relaxed the eligibility rules to permit entities with attributable interests in cellular companies whose combined cellular geographic service areas (CGSAs) overlap between 10 and 20 percent of the PCS service area population to submit bids for more than 10 MHz of PCS spectrum provided that, prior to the auction, they commit to divest themselves of sufficient cellular interests to come into compliance with our eligibility rules within 90 days of license grant.

13. We provided that stock, partnership and other financial interests and relationships will be considered in determining attributable interests for purposes of our PCS spectrum caps. We raised from a 20 percent to a 40 percent non-controlling interest the threshold for determining attributable cellular equity ownership for rural telephone companies, small businesses, and businesses owned by minorities and women, which collectively are termed "designated entities" in our rules implementing 47 U.S.C. § 309(j). We increased from a 20 percent to a 40 percent non-controlling interest the threshold for determining attributable cellular equity ownership to allow non-designated entities to make non-controlling investments in PCS licenses owned and controlled by minority- and women- owned businesses. We permitted entities with attributable cellular interests covering 10 or more percent of the population in a PCS service area to acquire 10 MHz of PCS spectrum within the PCS service area and, after January 1, 2000, to acquire an additional 5 MHz for a total of 15 MHz of PCS spectrum in their cellular service areas. We pledged to examine management contracts and spectrum leases in the CMRS docket for the purpose of determining whether other interests in PCS licenses should be limited in order to foster vigorous competition.

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[7] See id. at para. 75.

14. Further, we relaxed construction requirements to provide that (a) 30 MHz broadband PCS licensees must provide coverage to one-third of their service area population within five years of initial licensing and two-thirds within ten years and (b) 10 MHz licensees must provide coverage to twenty five percent of their service area population within five years of initial licensing, or submit a showing of equivalent or substantial service. We increased the maximum power level permitted for broadband PCS base stations to 1640 watts equivalent isotropically radiated power (e.i.r.p.), which is equivalent to 1000 watts effective radiated power (e.r.p.). We retained with minor amendment rules ensuring compliance with minimum standards for exposure to radio frequency (RF) energy emitted by PCS devices. We committed to initiate a proceeding in the near future to allocate additional spectrum for MSS and to work toward having additional spectrum allocated to MSS at the World Radio Conference to be held in 1995 (WRC-95).

15. Previously, we adopted a Second Report and Order in the regulatory treatment of mobile services proceeding that concluded, inter alia, that broadband PCS is presumptively a commercial mobile radio service (CMRS).[8] In the emerging technologies proceeding we also adopted rules that subject all incumbent facilities in the 1850-1990, 2110-2150, and 2160-2200 MHz bands to mandatory relocation if an emerging technology provider, e.g., a PCS licensee, requires the spectrum.[9]

16. Subsequent to adopting the MO&O, we adopted a Fifth Report and Order in the competitive bidding proceeding that establishes the service specific rules for selecting broadband PCS[10] licensees and adopted a Further Order on Reconsideration in the instant proceeding that amended our PCS attribution rules to employ a "multiplier" to determine

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[8] PCS providers, however, may offer private PCS service if they demonstrate a reasonable basis for overcoming the CMRS presumption. Additionally, local exchange carriers (LECs) are required to provide reasonable and fair interconnection for all CMRS providers, including PCS licensees. See Second Report and Order, GEN Docket No. 93-252, 9 FCC Rcd 1411 (1994)(hereafter CMRS Second Report and Order), petitions for reconsideration pending.

[9] See Memorandum Opinion and Order, ET Docket No. 92-9, 9 FCC Rcd 1943 (1994), petition for reconsideration pending. The emerging technologies proceeding, ET Docket No. 92-9, established the transition rules that PCS licensees and UTAM, Inc. will employ to gain use of spectrum currently being used by point-to-point microwave facilities. Previously in ET Docket No. 92-9, we adopted: First Report and Order and Third Notice of Proposed Rule Making, 7 FCC Rcd 6886 (1992); Second Report and Order, 8 FCC Rcd 6495 (1993); and Third Report and Order and Memorandum Opinion and Order, 8 FCC Rcd 6589 (1993), on reconsideration, 9 FCC Rcd 1943 (1994).

[10] See Fifth Report and Order, PP Docket No. 93-253, FCC 94-178 (Released July 15, 1994).

how interests in cellular and broadband PCS licensees held indirectly through intervening corporate entities should be attributed.[11]

III. DISCUSSION

A. Attribution and Cellular Eligibility

17. In the Broadband PCS Reconsideration, we retained our five percent equity attribution threshold for broadband PCS licenses so that the same entity may not own five or more percent of licenses constituting more than 40 MHz within the same area. In the Further Order on Reconsideration, we implemented a "multiplier" to determine when non-controlling interests in cellular and broadband PCS licensees held indirectly through intervening corporate entities should be attributed.[12] We also retained our cellular attribution threshold of 20 percent equity ownership of a cellular licensee and our service area overlap test of 10 percent of the population of the relevant PCS market, so that an entity wishing to participate fully in PCS generally may not own more than 20 percent of a cellular license, and not more than 5 percent of a PCS license(s), that would place the entity above the spectrum limit in an overlapping service area. However, we raised the threshold for attributing non-controlling cellular ownership for rural telephone companies, small businesses, and businesses owned by women and minorities from a 20 percent to a 40 percent interest .[13] We relaxed the eligibility rules to permit entities with attributable interests in cellular companies whose combined CGSAs overlap between 10 and 20 percent of the PCS service area population to apply for more than 10 MHz of PCS spectrum provided that, prior to the auction, they commit to divest themselves of sufficient cellular interests to come into compliance with our eligibility rules within 90 days of license grant.[14]

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[11] See Further Order on Reconsideration, GEN Docket No. 90-314, FCC 94-195, released July 22, 1994, *summarized* 59 FR 39704 (August 4, 1994), petition for reconsideration pending.

[12] For example, if Party A owns 10 percent of Company X, which owns 35 percent of, and controls, Company Y, which owns 25 percent of Licensee Z, then Company X's attributable interest would be 25 percent (100% x 25%) and Party A's effective interest would be 2.5 percent (10% x 100% x 25%). However, if Company X owns 35 percent of, but does not control, Company Y, then Company X's effective interest would be 8.75 percent (35% x 25%) and Party A's effective interest would be 0.875 percent (10% x 35% x 25%).

[13] See Broadband PCS Reconsideration at paras. 102-140.

[14] See id. at paras. 141-146.

Positions of the Parties

18. The Cellular Telecommunications Industry Association (CTIA) requests that the cellular-PCS ownership attribution standard be increased from 20 percent to 30-35 percent and that the population overlap standard be increased from 10 to 40 percent. CTIA claims that these higher limits would ensure competition without risking inadvertent harm to a nascent industry,[15] basing its claim on an antitrust market analysis it presented with a previous petition for reconsideration.[16] CTIA also presents an analysis of the impact of the population overlap standard on entities with attributable cellular interests in the top fifty BTAs, and in thirty other BTAs. Using these data as a baseline, the analysis purports to show how the number of entities barred from holding a 30 MHz in-market license under the current 10 percent overlap standard decreases as that percentage is increased to sequentially higher levels (*i.e.*, 20, 25, 30, 35, 40 percent). According to CTIA, the beneficiaries of raising the overlap standard would be "small cellular carriers" that are prevented by the current standard from "deliver[ing] on the promise of the information age to rural and small town America.[17]

19. Additionally, CTIA requests that the 35 MHz PCS cap be immediately raised to 40 MHz. If the Commission is not willing to immediately eliminate the 35 MHz cap, CTIA suggests that the cap be raised to 40 MHz one year after actual inauguration of services by a new PCS entrant in the relevant PCS service area.[18] Finally, CTIA requests that post-auction divestiture be made available to all cellular providers regardless of the degree of geographic overlap, instead of limiting post-auction divesture to cellular providers with a 10-to-20 percent overlap.[19]

20. Comcast Corporation (Comcast) requests that the attribution standard for purposes of cross-ownership and aggregation of spectrum be increased from 5 to 20 percent, provided that no more than a five percent voting interest is held, and the attribution standard be increased to 25 percent in publicly traded corporations, provided that no more than a 15 percent voting interest is held.[20] Comcast argues that the Commission has recognized that parties holding more than a five percent equity interest in a licensee may lack effective

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[15] See CTIA Petition at 4.

[16] See S. Besen, W. Burnett, An Antitrust Analysis of the Market for Mobile Telecommunications Services, Attachment to CTIA Petition for Reconsideration of the PCS Second Report and Order.

[17] See CTIA, Ex Parte Filing - Docket No. 90-314, August 2, 1994, at 1-3.

[18] See CTIA Petition at 6.

[19] See id. at 7.

[20] See Comcast Petition at 2.

control of the licensee, and cites our decision to allow cellular interests to own up to 20 percent and designated entities to own up to 40 percent of a cellular provider without being limited in PCS participation.[21] Comcast bases its request on the relaxed attribution standards for entrepreneurial companies, arguing that the same standard should apply to all PCS investors and that we should differentiate between mere ownership and exercise control of a cellular provider or PCS provider.[22] Additionally, Comcast requests that all cellular entities be permitted to bid on PCS spectrum, subject to the condition that any disqualifying cellular interests be divested within six months of the PCS license award.[23] This request is based on the assertion that allowing divestiture only to auction winners with 20 percent or less overlap is arbitrary.[24] Comcast argues that the 90 day divestiture requirement is unrealistic, given the need to locate buyers, negotiate the transaction, and obtain this Commission's approval.[25]

21. Six parties commented on cellular eligibility and ownership attribution issues.[26] Three commenters urge us to retain the current rules, and three support changes to the rules. Commenters urging us to maintain the current rules assert that no new arguments or facts have been raised to justify changing the rules, or that the arguments raised by CTIA and Comcast are insufficient to justify a rule change.[27] American Personal Communications (APC) states that current estimates indicate that it will take up to ten years to clear microwave facilities from the PCS band. This fact, according to APC, coupled with the fact that cellular companies currently have technological infrastructure and marketing in place, places new PCS licensees at an initial competitive disadvantage.[28] APC also states that our bright-line attribution standards provide ease of administration, expedite the licensing process, and save the costs of disputing ownership structures and effective control.[29] APC

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[21] See id. at 3.

[22] See id. at 4 (citing Fifth Report and Order, PP Docket No. 93-253, FCC 94-178, released July 15, 1994, *summarized* 59 FR 37566.

[23] See id. at 8-9.

[24] See id. at 8.

[25] See id. at 9.

[26] Commenters on cellular eligibility and ownership attribution were: BellSouth Corporation, BellSouth Telecommunications, Inc., BellSouth Cellular Corp. (BellSouth), McCaw Cellular Communications, Inc. (McCaw), MCI, Pacific Bell Mobile Services (PacBell), APC, and Rural Cellular Association (RCA).

[27] See MCI Comments at 1; PacBell Comments at 4.

[28] See APC Comments at 4-5.

[29] See id. at 7-8.

further argues that relaxing the overlap and attribution standards could reduce the number of competitors in each market, to the detriment of consumer welfare.[30] Finally, APC asserts, our current rules limit the participation of those entities that have the greatest potential and incentive to compete less vigorously than possible, and provide for competition in each market.[31]

22. With respect to our rules on post-auction divestiture, commenters opposing a change point out that we limited post-auction divestiture to cellular entities having less than 20 percent overlap in order to guard against cellular operators with large overlap areas obstructing the licensing of new competitors by abusing the auction process. These parties argue that there would be no opportunity for competing bidders to determine whether a cellular provider's bid was sincere, or merely an attempt to increase the final price,[32] and that the possibility of such abuses would deter the entry of many potential bidders into the auction process, to the detriment of both competition and revenues.[33] Commenters also note that the 90-day divestiture requirement provides sufficient time for entities to divest their cellular holdings, especially as the 90 day period is in addition to the interval between the conclusion of auctions and the grant of the license. Commenters also contest the suggestion that it may be difficult to locate buyers, noting the existence of a ready-made market comprised of unsuccessful PCS bidders who, these commenters contend, are likely to be interested in acquiring cellular holdings.[34]

23. With respect to the PCS-cellular spectrum cap, commenters who oppose allowing cellular providers to immediately acquire 40 MHz of spectrum assert that the "head start" we are providing PCS providers is an attempt to compensate for the head start in clear spectrum, infrastructure, experience, and marketing enjoyed by cellular providers.[35] Further, these parties argue that the delay in allowing divestiture of 5 MHz blocks is based in part on the need to conduct further rule making to determine to what extent and in what fashion partitioning of PCS spectrum blocks is to be permitted.[36]

24. Other commenters support the elimination or easing of the restrictions on cellular participation in PCS. They maintain that reconsideration of our rules is appropriate because

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[30] See APC Comments at 5.

[31] See PacBell Comments at 4-5.

[32] See MCI Comments at 2; PacBell Comments at 3-4; APC Comments at 10.

[33] See APC Comments at 10.

[34] See APC Comments at 11.

[35] See APC Comments at 8; PacBell Comments at 6.

[36] See MCI Comments at 1-2.

of the adoption of auction rules[37] and the experience of the narrowband PCS nationwide auction. These parties assert that in most markets, cellular carriers will not qualify for the entrepreneur blocks because of the size of such carriers, and that this will assure at least two new PCS licensees using the entrepreneur blocks. They further assert that the fact that the winners in the narrowband PCS auction were all large companies already involved in paging, which is one type of narrowband PCS, demonstrates that companies already providing analogous services will value the spectrum most highly, and therefore will pay the most for it.[38] Accordingly, they contend that revenues to the Treasury will be maximized by the full participation of cellular incumbents, and the existence of designated entity and entrepreneurs' blocks will guarantee competition.[39] Further, these parties argue that allowing full participation will serve Congressional and Commission goals by ensuring efficient use of the spectrum, maximum recovery by the Treasury of the value of the spectrum, diversity in licensees (by including cellular incumbents) and rapid deployment of PCS.[40] These parties also contend that there is no evidence that cellular providers will behave in an anticompetitive fashion, and market analysis indicates that these companies will be unlikely to dominate the PCS market.[41] These assertions are the basis of BellSouth's argument that cellular companies should be allowed unrestricted access to PCS blocks, and McCaw Cellular Communications, Inc.'s (McCaw's) and Rural Cellular Association's (RCA's) support of CTIA's petition for setting the population overlap standard at 40 percent and the ownership attribution standard at 30-35 percent.[42] RCA further seeks to exempt rural cellular companies entirely from all limitations, arguing that rural cellular companies will provide quality mobile service and will not threaten competition because they are mere passive investors in cellular providers. RCA also argues that the Congress specifically directed the Commission to ensure licensing opportunities for rural cellular companies.[43]

25. With respect to post-auction divestiture, McCaw argues that all bidders should be allowed to bid and divest only upon winning. McCaw maintains that the existing low attribution thresholds create the possibility of an affiliate of a cellular company interfering with the cellular company's ability to hold a license, without the affected cellular company's

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[37] See Fifth Report and Order, PP Docket No 93-253, FCC 94-178, *summarized* 59 FR 37566 (July 22, 1994); Order on Reconsideration, PP Docket No. 93-253, FCC 94-217 (August 15, 1994).

[38] See BellSouth Comments at 6-8.

[39] See id. at 9-10.

[40] See id. at 10-17.

[41] See id. at 17-20.

[42] See id. at 5-21; RCA Comments at 1-2; McCaw Comments at 2-3.

[43] See RCA Comments at 3-5.

knowledge.[44] BellSouth asserts that entities with large cellular holdings will not be tempted to abuse the bidding process because they could win and be forced to pay the full price of the PCS license.[45]

26. McCaw echoes CTIA's assertion that the marketplace can best allocate the additional 5 MHz of spectrum at issue, and therefore urges us to eliminate the 35 MHz interim spectrum cap for cellular entities.[46] BellSouth asserts that the spectrum cap should be the only limit on cellular participation, and that our CMRS proceeding has established a 45 MHz cap on combined cellular, PCS, and SMR spectrum. It argues that 45 MHz should be the cap for cellular-PCS ownership because that is the cap adopted in the CMRS proceeding.[47]

27. BellSouth further advocates that we use its "multiplier" formula to determine attributable ownership. This formula multiplies spectrum in megahertz, population overlap, and percentage of ownership to arrive at its final attribution factor. BellSouth asserts that this formula produces a more accurate picture of ownership and control, and is consistent with our use of a multiplier in attributing interests to indirect owners.[48] Finally, BellSouth urges us to exempt LECs from attribution of their cellular spectrum when that spectrum is held by a separate subsidiary, claiming that it is forbidden by our rules from having any degree of control over BellSouth Cellular Corporation. BellSouth asserts that its proposal would permit LECs to provide PCS, and is fair because LECs have no control over their cellular subsidiaries.[49]

28. CTIA requests reconsideration of our decision to limit the option of auction participation followed by divestiture of disqualifying holdings to cellular providers whose population overlap is between 10 and 20 percent.[50] Comcast makes the same request, and further requests that we increase the time allowed for divestiture from 90 days to six months.[51] Both parties argue that there is no difference whether a cellular company holds

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[44] See McCaw Comments at 3.

[45] See BellSouth Comments at 28.

[46] See McCaw Comments at 6.

[47] See BellSouth Comments at 22 (citing Third Report and Order, Gen. Docket No. 93-252, FCC 94-212, adopted August 9, 1994).

[48] See BellSouth Comments at 36-37.

[49] See BellSouth Comments at 38-39.

[50] See CTIA Petition at 7-8.

[51] See Comcast Petition at 7-9.

more or less than 20 percent overlap, if it will divest itself of sufficient overlap in order to meet our requirements. CTIA specifically states that our concern that a cellular provider with more than 20 percent overlap might be tempted to interfere with the auction process is ill-founded, as such a cellular provider could find itself in the possession of a PCS license and be forced to quickly divest a large share of its cellular holdings. This argument is echoed by BellSouth and McCaw.[52]

29. Five parties replied on eligibility and attribution issues. APC and Pacific Bell Mobile Services (PacBell) urge us to maintain our current cellular eligibility and attribution standards, asserting that the entrepreneurs' blocks are insufficient by themselves to promote full competition in PCS,[53] that BellSouth's comments focus on revenues to the government without sufficient consideration of other Commission goals,[54] and that our current limits on cellular eligibility are necessary to provide opportunities for full competition in PCS.[55] In their replies, CTIA and Comcast essentially reiterate their petitions, advocating relaxation of the overlap and attribution thresholds,[56] asserting that cellular providers do not have a substantial competitive advantage over other entities in PCS,[57] and again urging a relaxation of the standards and timing of post-auction divestiture.[58] Ameritech proposes a mechanism whereby cellular providers would be allowed to divest any amount of interest to an interim independent trustee before the auction. After the auction, the trustee would dispose of the interest if the cellular provider won a PCS license, or would otherwise reconvey the interest to the cellular provider.[59] Ameritech claims that this would allow participation by cellular entities in PCS auctions, while maintaining Commission control over the auction process.[60]

Discussion

30. Our rules concerning ownership attribution and population overlap standards have been thoroughly debated and considered in earlier phases of this proceeding. The arguments

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[52] See CTIA Petition at 8; McCaw Comments at 3; BellSouth Comments at 27.

[53] See APC Reply at 3.

[54] See PacBell Reply at 3.

[55] See APC Reply at 4-5; PacBell Reply at 4-7.

[56] See CTIA Reply at 2-3; Comcast Reply at 2-4.

[57] See CTIA Reply at 3-8.

[58] See Comcast Reply at 5-9.

[59] See Ameritech Reply at 1-2.

[60] See id. at 5.

presented on the current record for revising those rules are in most essential respects repetitious, and we deny Comcast's and CTIA's petitions in major part on that basis. The record persuades us to modify our rules, however, to permit entities with attributable, non-controlling cellular interests to bid on in-market 30 MHz PCS licenses, on condition that they must divest prohibited cellular interests within 90 days of PCS license grant. We discuss these decisions more fully below.

31. Our principal goals for PCS include affirmatively promoting competition and preventing anticompetitive behavior.[61] The former goal flows from our explicit mandate under the Communications Act to promote competition in telecommunications and widely disseminate telecommunications licenses.[62] As such, arguments that our rules should be based wholly on the law of antitrust and corporate control are misplaced. Even if we agreed with the portrayal of antitrust law by Comcast, CTIA and their supporters (and we do not), antitrust and corporate control considerations are not the sole foundation of our rules. Rather, in accordance with our statutory mandate, those rules reflect a balance of many public interest considerations, including the need to provide parties other than existing cellular licensees an opportunity to participate in PCS. No party offers a persuasive rationale for rearranging those considerations to reflect a different balance.

32. Moreover, the petitioners' individual requests are flawed. We do not accept CTIA's unconditioned assertion that interests of 30-to-35 percent do not evidence control, which is not a uniformly supported position. For example, the Financial Accounting Standards Board ("FASB") explicitly states that an ownership interest above 20 percent presumptively demonstrates control unless evidence to the contrary is established.[63] Comcast's claim that it is unreasonable to set the PCS ownership attribution standard at 5 percent when the cellular attribution is higher ignores the reasoned basis for existing distinctions.[64] CTIA's request that we increase to 40 MHz the combined amount of attributable cellular/PCS spectrum an entity may hold immediately overlooks the fact that it is not possible, even if it were permitted, to acquire that spectrum combination given existing allocations and licensing

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[61] See Broadband PCS Reconsideration at para. 103.

[62] See 47 U.S.C. § 309.

[63] See FASB Accounting Principles Board Opinion No. 18 (1970).

[64] As we explained in the Broadband PCS Reconsideration, the attribution standard for cellular interests other than designated entities is set at 20 percent to account for our policy in the early days of the cellular industry to encourage the formation of settlement groups -- a historic anomaly that has no counterpoint in the PCS context. Attributions levels are set higher for designated entities in accordance with our statutory mandate to promote opportunities in PCS for such entities. See Broadband PCS Reconsideration at paras. 123-132.

mechanisms.[65] Arguments that raising the population overlap standard from 10 to 40 percent will not harm competition, and will actually increase competition in rural areas, are not well supported. Although CTIA submitted a study showing that smaller cellular carriers may benefit from increasing the overlap standard, the study also shows benefits flowing to very large carriers and covers fewer than 20% of total BTAs.[66] Such incomplete data and uneven results do not justify altering our rules.

33. We agree, however, that is is appropriate to modify our cellular elegibility rule (47 C.F.R. § 24.204) to create additional opportunities for entities with non-controlling, attributable in-market cellular interests to participate in PCS auctions, on condition that they divest prohibited cellular holdings within 90 days of PCS license grant. In the Broadband PCS Reconsideration, we limited the "bid but divest" option to entities with in-market cellular interests that overlap the population of a PCS service by less than 20 percent, on the theory that entities with larger overlaps may have incentives to delay the rapid introduction of PCS.[67] We are persuaded that the rule's exclusive emphasis on the degree of overlap is misplaced because the anticompetitive incentives the rule is designed to combat in the auction process are in principal part generated by the amount of the attributable cellular interest involved, and only secondarily by the degree of overlap. Indeed, our discussion of that rule at the time it was adopted explicitly recognized a link between the amount of the cellular interest involved and the possibility of anticompetitive abuse.[68] We now conclude that entities holding controlling interests have greater incentives to act anticompetitively in the auction process than entities with non-controlling interests, so we will retain the existing rule as it applies to attributable controlling interests. We will supplement Section 24.204, however, to permit non-controlling interests to participate in the auction process without regard to the degree of overlap. We define a "non-controlling" license interest to be one in which the holder has less than a 50 percent voting interest and there is an unaffiliated single holder of a 50 percent or greater interest.

34. Finally, we disagree with parties that claim our rules fail to provide an adequate post-auction period for winning bidders to divest prohibited cellular interests in order to

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[65] Cellular spectrum is allocated in blocks of 25 MHz, while PCS spectrum is allocated in blocks of 10 and 30 MHz, so no combination of cellular and PCS spectrum totals 40 MHz. The opportunity to achieve that total will exist when licensees are permitted to disaggregate spectrum, a process for which we have not yet adopted rules, although we are committed to addressing the legal and technical issues that must be resolved in order to adopt such rules. See Broadband PCS Reconsideration at paras. 66-71.

[66] For example, CTIA's analysis states that in the 18 BTAs that comprise the Chicago MTA, increasing the overlap standard to 30% creates licensing opportunities for eleven carriers, two of whom are Sprint and Southwestern Bell. See CTIA Exparte Filing, Aug. 2, 1994.

[67] Broadband PCS Reconsideration at paras. 141-146.

[68] See Broadband PCS Reconsideration Order at para. 143.

comply with our cellular/PCS cross-ownership rules.[69] We note that this period is more than just 90 days, because the period between winning the auction and issuance of license also must be considered. In addition, our rule extends well beyond the 90 days from grant of license period, discussed supra, because parties who are unable to divest within that time may satisfy the requirement by conveying a prohibited cellular interest to an independent trustee for an interim period. See 47 C.F.R. § 24.204(f)(3)(i). We take this opportunity to clarify that the trustee must divest that interest within six months from grant of license.

B. Microwave Relocation Cost Sharing

35. In 1992 we established a proceeding, ET Docket No. 92-9, for the purpose identifying spectrum for emerging technologies such as PCS. In the First Report and Order and Third Report and Order in that proceeding we established a plan for relocating incumbent licensees in emerging technology bands to other frequencies or alternative media.[70] Pursuant to that plan, PCS licensees are required to avoid interference to incumbent point-to-point microwave operations, and to fully compensate such licensees' relocation costs.

Positions of the Parties

36. PCIA requests that we mandate participation by PCS licensees in the 1850-1990 MHz band in a plan to share the costs occasioned by relocating microwave licensees in that band.[71] Absent mandatory cost sharing, PCIA argues, the spectrum-clearing efforts of early PCS market entrants will redound inequitably to the benefit of later entrants. PCIA asserts that we must establish cost sharing obligations prior to auctions so bidders can value spectrum accurately. According to PCIA, the three basic principles of a cost sharing plan should be:

> First, a cost sharing obligation should be predicated on a finding that a PCS licensee's operations would have caused interference to a microwave system's link path but for the relocation of that system.
>
> Second, when multiple PCS licensees benefit from relocation, individual PCS licensees should be required to pay a pro-rata share only of the documented, direct costs of relocation. These would be limited to the costs of supplying a microwave licensee with comparable facilities in a different band, and would not include any

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[69] See, e.g., Comcast Petition at 9.

[70] See First Report and Order and Third Notice of Proposed Rulemaking, ET Docket No. 92-9, 7 FCC Rcd 6886 (1992); Third Report and Order and Memorandum Opinion and Order , ET Docket No. 92-9, 8 FCC Rcd 6589 (1993).

[71] See PCIA Petition at 5-6.

premium costs an early PCS entrant might pay to accelerate a microwave licensee's relocation.

Third, a payment obligation should not arise until the time interference would be caused.

37. BellSouth, GTE, MCI, PacBell Mobile and UTAM support the principle of microwave relocation cost sharing. Although these parties offer mostly general statements of support, GTE echoes PCIA claim that establishing cost sharing obligations prior to auctions will enable bidders to value spectrum more accurately and, for this reason, the issue should be determined in this proceeding, rather than deferred to a future rulemaking.[72] In expressing its support, UTAM contends that PCIA's plan is similar to a proposal by UTAM earlier in this proceeding concerning relocation efforts in unlicensed PCS bands.[73]

38. UTC notes that while there is merit in the idea of establishing a cost sharing mechanism for microwave relocation in the 1850-1990 PCS band, the development of such a plan is beyond the scope of a petition for reconsideration in this proceeding, and is a subject more properly raised in a separate petition for rule making. UTC states that such a rulemaking could be instituted without delaying the roll-out of PCS. Moreover, UTC cautions that the development of a cost-sharing plan must not be allowed to adversely impact the market-based or individually negotiated aspects of the Commission's microwave transition plan.[74]

Discussion

39. We share UTC's reservations about the current undeveloped state of PCIA's proposal, and for that reason will deny PCIA's petition for reconsideration. We do so without prejudice to its cost sharing proposal, which PCIA and other interested parties are free to submit in a separate petition for rulemaking.

40. We take this action because while eliminating any "free rider" aspect of microwave relocation through mandatory cost sharing is an attractive idea in theory, PCIA's proposal simply is not sufficiently developed to warrant adoption at this time. Since the proposal's key terms are ambiguous, adopting it at this time likely would not assist potential bidders' efforts to value spectrum accurately. Indeed, such ambiguity may detract from those efforts. Moreover, such ambiguity increases the likelihood that this Commission will be called upon to adjudicate complex disputes that are almost wholly of a commercial nature *(e.g.*, whether a particular PCS licensee actually "benefitted" from a relocation, and to what extent; the

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[72] See GTE Reply at 2-3.

[73] See UTAM Reply at 1-3.

[74] See UTC Comments at 7.

amount of the "direct" costs of that relocation, as opposed to the "premium" costs; and the appropriate basis for measuring each PCS licensee's "pro-rata" share of such costs). We find in this record no persuasive argument for deploying our limited resources in this manner.

41. It bears emphasis that relocation costs are expected to be a relatively small portion of PCS licensees' total costs. Moreover, in the MO&O we significantly reduced microwave relocation cost burdens by revising the PCS band plan to provide for PCS operations in the comparatively less heavily loaded 1850-1990 MHz band, rather than in accordance with the band plan initially adopted in the Second Report and Order. Finally, we note that we recently made available to the public a wealth of information on microwave co-channel and adjacent channel usage in the 1850-1990 MHz band, thereby increasing the public's ability to value that spectrum accurately prior to auctions.

C. Service Areas

42. Point Communications Company (Point), the Association of Independent Designated Entities (AIDE), and Puerto Rico Telephone Company (PRTC) request modifications and/or clarifications of the service areas that we have adopted for PCS.

43. Revised Service Areas. Point requests that we use the Department of Commerce's "BEA Economic Areas" (BEAs)[75] to delineate all PCS licenses, on the ground that designated entities licensed to serve BTAs cannot compete with large companies licensed to serve MTAs. According to Point, BEAs provide equal service areas, and are small enough to create meaningful opportunities for designated entities, while large enough to attract major spectrum bidders. Alternatively, if BEAs are not employed, then Point requests that the Commission subdivide some MTAs, particularly those on the West Coast.[76] Finally, Point requests that we vary the spectrum blocks designated for entrepreneurs from market to market. Point contends that if designated entities were to have larger corporations on their frequency blocks in other markets, the companies would ensure that the smaller ones do not lag in technological or service development.[77]

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[75] In its comments to the Notice of Proposed Rule Making and Tentative Decision in this proceeding, the National Telecommunications and Information Administration (NTIA) proposed that PCS be licensed using the 183 "economic areas" defined by the Department of Commerce's Bureau of Economic Analysis (BEA). NTIA stated that each of these economic areas generally consists of a Metropolitan Statistical Area (MSA) or a similar area that serves as a center of economic activity and surrounding counties that are economically related to the center.

[76] See Point Petition at 1-4.

[77] See id. at 5.

44. In the PCS Second Report and Order, we based the service areas for broadband PCS on MTAs and BTAs. We concluded that a combination of MTA and BTA service areas would promote the rapid deployment and ubiquitous coverage of PCS and a variety of services and providers. We also stated our belief that a combination of MTA and BTA service areas would maximize the benefits of having both large and small service areas. [78]

45. In the Broadband PCS Reconsideration, we further addressed the possibility of using BEAs as the PCS service areas. We acknowledged that identical geographic areas could impose more initial competitive parity, but stated that such a plan was likely to foreclose cellular providers and prove too large for many designated entities to finance. Congress has mandated that we provide areas that promote opportunity for a wide variety of applicants,[79] and we determined that the two tier system provided by the use of MTAs and BTAs best met this mandate.[80]

46. MCI Telecommunications Corporation (MCI) and PacBell address Point's petition. Both simply assert that Point's proposed BEA plan was proposed by NTIA in the prior reconsideration, discussed in the Broadband PCS Reconsideration and there rejected. Both commenters state that this issue has been dealt with adequately.[81] MCI adds that any reconsideration of service areas would inevitably delay the auction and licensing and inauguration of PCS.[82] No replies addressed this issue.

47. We have previously addressed Point's contentions respecting BEA-defined service areas in the PCS Second Report and Order and PCS Broadband Reconsideration, and Point has here offered no new information or argument to justify a change in our decision. Nor can we accept Point's assertion that varying the entrepreneurs' blocks from market to market will create blocks where entrepreneurs will occupy the same frequencies as larger companies in other markets, which will promote cooperation and assistance to the entrepreneurs from the large companies.[83] We specifically changed the frequency allocation to PCS to minimize the difficulty of switching frequencies within or between blocks. [84] Given the level of equipment technology available, we do not expect that sharing frequency blocks will provide any incentive to form the frequency block communities envisioned by Point. Rather, we

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[78] PCS Second Report and Order, 8 FCC Rcd at 7729-34 (paras. 64-78).

[79] See 47 U.S.C. § 309(j)(4)(C).

[80] See Broadband PCS Reconsideration at paras. 77-78.

[81] See MCI Comments at 4; PacBell Comments at 2-3.

[82] See MCI Comments at 4.

[83] See Point Petition at 5.

[84] See Broadband PCS Reconsideration at paras. 33, 35.

believe that if a licensee had different blocks in different service areas, it would generally tend to switch frequencies rather than establish a relationship with counterpart licensee(s) using the same frequencies elsewhere. For this reason, we do not believe that varying the spectrum for the entrepreneurs' block from market to market will have a salutary effect, and we decline to make such a change.

48. Permitted Use of MTAs/BTAs. AIDE requests that the Commission expand the rationale upon which we based PCS service areas on Rand McNally MTA/BTA definitions. AIDE suggests that we explicitly include Rand McNally's written clarification, as set forth in correspondence with AIDE's attorney, that a licensing agreement between Rand McNally and PCIA was intended to grant broad rights to potential users and repackagers of Rand McNally's MTAs and BTAs. No party addressed AIDE's request for clarification.

49. On February 10, 1994, PCIA and Rand McNally entered into a License Agreement.[85] Under this agreement, Rand McNally grants PCIA and all other interested parties "a nonexclusive license to reproduce, create derivative works from, publicly distribute and publicly display" the listing of counties that comprise Rand McNally's 487 BTAs and 47 MTAs, the BTA/MTA Map contained on pages 38-39 of the 1992 version of Rand McNally's Commercial Atlas & Marketing Guide, and derivative works created therefrom for the purpose of preparing documents in connection with PCS and other services, provided that the appropriate copyright legend is displayed.

50. On February 25, 1994, AIDE requested clarification from Rand McNally concerning the scope of the Licensing Agreement. [86] On March 10, 1994, Rand McNally stated that the License "Agreement was intended to grant broad rights to potential users and repackagers", regardless of whether "the use was carried out on a cost-recovery basis or profit-making basis". [87]

51. We have reviewed the Licensing Agreement between PCIA and Rand McNally and the Clarification of the Agreement between AIDE and Rand McNally. It is not our practice in rulemaking proceedings to clarify the meaning of private commercial contracts and related correspondence, and we have not been provided any persuasive reason to depart from that practice here. Our reasons for using the MTA/BTA system, the licensing agreement between Rand McNally and PCIA, and the related correspondence filed with AIDE's petition are matters of public record. We will let that record speak for itself, absent a demonstration that clarification is needed to further the public interest.

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[85] See AIDE Petition at Attachment B.

[86] See letter to Ms. Deborah Lipoff, Rand McNally, from William J. Franklin, AIDE Petition Attachment C.

[87] See letter from Deborah Lipoff, Rand McNally, to William J. Franklin, AIDE Petition Attachment D.

52. Local Service Areas in Puerto Rico. PRTC requests that the Commission reinstate the previously adopted unitary Puerto Rico BTA, arguing that Puerto Rico is in reality a single market. PRTC claims that the original BTA was appropriately tailored to the natural flow of commerce, arguing that the mountain range does not cause difficulties in travel nor separate the island into two areas. PRTC also states that the island is geographically one of the smaller BTAs. [88] Finally, PRTC states that a single BTA would facilitate the provision of lower cost service to all of Puerto Rico, arguing that the costs to consumers of constructing and operating a PCS network would be lower if the costs are shared by end users across the island than if consumers in the new, smaller BTAs must support an independent system serving the more thinly populated sectors of the island.[89]

53. In the PCS Second Report and Order, we established Puerto Rico as a single, BTA-like service area. In a petition for reconsideration of that decision, Pegasus Communications, Inc. (Pegasus), requested that we divide the Puerto Rico service area into two local service areas. Pegasus argued that due to the size and mountainous terrain of the island, Puerto Rico essentially is split in half, comprising two commercial centers: San Juan and Mayagüez-Ponce. Pegasus stated that these mountains make travel to San Juan difficult for Puerto Ricans located in the southern and western portions of the island, and therefore they must conduct essentially all commerce in the port cities of Mayagüez, Aguadilla, or Ponce. Pegasus also stated that the population of its proposed Mayagüez/Aguadilla-Ponce service area is more than one million and this area would be larger in population than several of the existing BTAs. Pegasus provided a list of municipios that it suggests constitute the Mayagüez/Aguadilla-Ponce service area, and suggested that the San Juan service area consist of all municipios not listed for the Mayagüez/Aguadilla-Ponce BTA-like service area.[90] No party responded to this petition. Accordingly, we adopted Pegasus' suggestion and established two separate service areas in Puerto Rico, one for Mayagüez/Aguadilla-Ponce and one for San Juan. We stated that this change recognizes the difficulties created by the mountain range separating these two areas and that we found this adjustment to be in the public interest. [91]

54. In response to PRTC's petition, Pegasus states initially that PRTC had ample opportunity to address the division of Puerto Rico into two BTAs in the previous reconsideration of the broadband PCS rules, and in failing to do so, lost the right to petition

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[88] PRTC Petition at 3-9.

[89] Id. at 9-11.

[90] The primary political divisions of Puerto Rico are termed "municipios." See 1990 Census of Population and Housing [,] Summary Population and Housing Characteristics [for] Puerto Rico, 1990 CPH-1-53, Issued November 1991 by the Bureau of the Census, at page A-5. In its petition, Pegasus translates "municipios" to be "counties." We use the term "municipios" to avoid confusion.

[91] Broadband PCS Reconsideration at para. 79.

here for a reversal of that decision.[92] Pegasus also asserts that PRTC presents no facts that justify its request to consolidate Puerto Rico into a single BTA,[93] and presents a number of geographical and economic factors which support the division of Puerto Rico into two BTAs.[94] PRTC replies that its petition is timely and proper at this stage of the proceeding, and would benefit the public interest.[95] PRTC also reiterates the facts presented in its petition, and asserts that they support the need for Puerto Rico to be a single BTA.[96] In a late-filed response, Pegasus seeks to rebut several of PRTC's factual assertions. [97]

55. We continue to believe that the division of Puerto Rico into two BTA-like service areas is appropriate for this service. We note that the 1990 census for Puerto Rico is 3,522,037.[98] The population of the new Mayagüez/Aguadilla-Ponce service area is 1,048,473 and the population of the new San Juan service area is 2,473,564. Only 49 of the 493 BTAs have a population greater than 1,048,473 and only 18 BTAs have a population greater than 2,473,564.[99] We find that the population of each of these service areas is sufficient to support broadband PCS services.[100] Additionally, we conclude that the patterns of local trade make the proposed division economically and geographically desirable. If PRTC is correct, and Puerto Rico is better served by a single, island wide BTA, this can be effected by networking the two BTAs into what amounts to a single structure. The two BTA plan allows for this, while at the same time allowing the two BTAs to be served separately if that is the best method. Hence, the current plan offers more choices, and allows the marketplace to decide which is the better choice. Nor do PRTC's arguments persuade us to

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[92] See Pegasus Comments at 2-3.

[93] See id. at 4-5.

[94] See id. at 6-10.

[95] See PRTC Reply at 3-6.

[96] See id. at 6-9.

[97] See Pegasus Response to Reply of PRTC. This response was late filed, and could have been dismissed for that reason, despite Pegasus' assertion that it reserved the right to rebut factual assertions by PRTC. For the sake of completeness of the record, however, we consider this response.

[98] See id. at 1.

[99] See Rand McNally 1992 Commercial Atlas & Marketing Guide, "Population, Income and Sales Data for the 150 Largest Basic Trading Areas," at page 44, Census 4/1/90 column.

[100] We note that Puerto Rico is licensed as five MSAs and seven Rural Service Areas (RSAs) in the Domestic Public Cellular Radio Telecommunications Service.

reinstate a unitary local service area for Puerto Rico.[101] Accordingly, we will maintain two BTA-like service areas in Puerto Rico for broadband PCS services.

D. Technical Issues

56. Licensed Service, Power Limits. In the Broadband PCS Reconsideration, we increased the maximum base station transmission limit from 100 to 1640 watts equivalent isotropically radiated power (EIRP) with an antenna height up to 300 meters height above average terrain (HAAT).[102] We adopted this amendment in order to improve PCS licensees' ability to configure their systems to best serve the needs of their customers and to compete with other mobile services such as cellular and wide-area SMR. Spatial Communications, Inc. and ArrayComm, Inc. (SCI/ArrayComm) make two, related requests. First, they ask that the rules governing limitations on transmitted power be redefined in units of power per unit bandwidth, rather than expressed as limits on individual transmitters (regardless of bandwidth). [103] SCI/ArrayComm argues that the current rules define transmitter power limits in a manner that favors the use of narrowband over wideband transmissions.

57. Second, however power limits are defined, SCI/ArrayComm states that by maintaining a power limit of 100 watts per transmitter the Commission may have inadvertently discouraged the use of smart antenna technology. SCI/ArrayComm asserts that applying low transmitter power limits to use of highly directional antenna technology will preclude larger and more economic cell sizes by restricting the effective range of "broadcast" control channels that determine the ultimate size of the coverage area.[104] SCI/ArrayComm requests the transmitter power limit of 100 watts apply to individual base station transmitters without regard to the number of such transmitters employed at each base station, the antenna element or elements to which each transmitter is connected, or the channels in which each

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[101] PRTC provides cellular telephone throughout Puerto Rico. Thus PRTC, like all in-market cellular operators, is initially limited to one 10 MHz BTA license in any geographic area of Puerto Rico. We note however that, under the current rules, PRTC can purchase a 10 MHz license in both BTAs and thus serve the entire island. We do not believe that the adopted licensing scheme greatly affects PRTC. However, we believe that a single BTA potentially could preclude many individuals and companies from competing against PRTC.

[102] Broadband PCS Reconsideration at paras. 172-174. Base station antennas may exceed 300 meters with a corresponding reduction in power. Mobile/portable stations are limited to 2 watts EIRP and must limit power to the minimum necessary for successful communications. See § 24.232 of the Commission's Rules.

[103] SCI/ArrayComm are developers of Spatial Division Multiple Access (SDMA) technology, which uses patented algorithms to implement "smart antennas" that assign specific antenna elements to track mobile users and selectively direct RF energy to them.

[104] SCI/ArrayComm Petition at 6.

transmitter is allowed to transmit. SCI/ArrayComm argues that this clarification is needed to ensure that the power limits do not unfairly disadvantage new technologies, such as smart antennas.[105]

58. Five comments address SCI/ArrayComm's request for clarification.[106] MCI, Motorola and Northern Telecom support the petition in part.[107] As to the definition of power limits, MCI recommends that the Commission, while maintaining the overall base station power limit of 1640 watts EIRP, give careful consideration to the proposed bandwidth-based method of defining power suggested by SCI/ArrayComm. MCI states that the Commission may wish to authorize the use of the SCI/ArrayComm formula as an alternative method, at the carrier's option. Motorola states that it is still analyzing the ramifications of adopting a "watts per hertz" standard. Northern Telecom states that it is concerned that, while the SCI/ArrayComm proposal to redefine the power limits does lead to an acceptable power level, the formulation of the new limits is unduly complicated and likely to lead to confusion. Sprint states that SCI/ArrayComm's complaint that expressing power limits in watts per channel favors narrowband channelization is inconsistent with its previous statement that its technology is compatible with all modulations.[108]

59. As to the "per transmitter" provision, Motorola states that it believes the current rules can be reasonably interpreted as indicating that the adopted power limits apply to individual base station transmitters without regard to the number of co-channel transmitters employed at each base station, but does not object to clarification of the rule. Northern Telecom supports clarification that the power limits apply to individual transmitters. APC asserts that our rules are clear on power limits and require no clarification.[109]

60. With respect to the redefinition issue, SCI/ArrayComm replies that, contrary to Sprint's statement, SCI/ArrayComm's concern is not about competitive advantages, but is intended to maximize flexibility in PCS system design.[110] Motorola indicates that, upon further analysis, it is convinced that the existing rule of 100 watts maximum transmitter

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[105] For clarity, SCI/ArrayComm adds that it should be acceptable for more than one base station transmitter to transmit 100 watts of power in the same RF channel at the same time as long as different antenna elements are used for each transmitter, i.e., power level as measured at the input to an antenna element. SCI/Arraycomm Petition at 6-7.

[106] Comments on this issue were filed by MCI, Motorola, Northern Telecom, APC and Sprint Corporation (Sprint).

[107] See Motorola Comments at 11; MCI Comments at 5; Northern Telecom Comments at 6-7.

[108] See Sprint Comments at 2-3.

[109] See APC Comments at 5.

[110] See SCI/ArrayComm Reply at 2-5.

power with a limit of 1640 watts maximum EIRP is adequate to provide design flexibility and excellent system performance.[111] Motorola supports the connection of multiple transmitters to an antenna array, provided the total EIRP does not exceed 1640 watts as averaged over a defined time interval so as not to exceed established interference criteria.[112] In response to SCI/ArrayComm's statement that the existing rules favor narrowband technologies, Motorola notes that many factors determine overall system design and performance capability and that this issue alone will not affect the introduction and use of wideband PCS technologies. It cites the number of wideband systems currently under development as evidence that the rules are flexible and technology-neutral. No reply comments address the "per transmitter" clarification.

61. Discussion. As an initial matter, we decline SCI/ArrayComm's request to redefine transmitter limits in power per hertz or power per unit bandwidth. While SCI/ArrayComm states that the current power per channel specification favors narrowband over wideband systems, the existing approach simply leaves to the licensee the determination how to balance the multiple design considerations in its system, from transmitter power and configuration to the gain achieved by receivers, without placing any overall limit on system power so long as its individual transmitters and field strength data comply with our rules. As Motorola observes, system design partakes of many considerations other than the power tradeoffs inherent in narrowband and wideband systems. [113] We find that our current definition of power limitations does not constrain licensees considering such choices; nor does it significantly favor one technology over another. Moreover, SCI/ArrayComm has not explained its contention that the rules discourage highly directional antenna technology in its petition or comments. For these reasons, we deny SCI/ArrayComm's request to redefine the transmitter power limits. [114]

62. As regards power levels per transmitter, antenna or antenna element, it was always our intent that the 100 watts per channel and 1640 watts EIRP requirements apply to these

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[111] See Motorola Reply at 4.

[112] Motorola does not provide technical details as to how this averaging should occur or the time interval that should be employed.

[113] For example, the material contained in the SCI/ArrayComm *ex parte* filing suggests that changing the regulations to specify power limits in terms of watts per hertz could significantly increase the transmission range of a PCS base station. This could have the further effect of increasing the potential for interference to existing microwave users, or possibly reducing interference compared to covering the same area with multiple, smaller sized cells employing omnidirectional systems. The implications of the proposed redefinition for coordination requirements of PCS licensees, including the potential for delays in providing service to the public, are not sufficiently developed on this record to support such a fundamental change as SCI/ArrayComm proposes.

[114] We stress that our denial is without prejudice to a subsequent petition for rule making, should SCI/ArrayComm or other parties wish to pursue these issues on a more fully developed record.