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

In the matter of	)	Gen. Docket 90-314
	)	ET Docket 92-100
Amendment of the Commission's Rules to Establish New	)	
Personal Communications Services	)	PP-35-40, PP-79-85

To: The Commission

REPLY COMMENTS OF BELLSOUTH

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SUMMARY

BellSouth reiterates its commitment to the prompt development of *new* PCS services which are different from traditional cellular service. A number of commenters, however, argue that PCS should not be so differentiated and market forces alone should be relied upon to define PCS. This "flexible allocation" approach violates the Communications Act by abrogating the main purpose for which Congress created the FCC; that is, to make spectrum allocation decisions based on public need for particular services and to police the use of that spectrum under specific performance and basic qualifying standards. Further, by not adopting any performance standards, the award of a PCS license would effectively become the award of a perpetual license, thus violating the Act's prohibition on granting licensees a property right in the use of the spectrum.

The "flexible allocation" approach is also inconsistent with the record in this proceeding which fully supports differentiating PCS from cellular. The PCS experiments and record demonstrate that PCS should be defined as a low power microcellular service which primarily serves densely populated pedestrian areas and in-building users. BellSouth supports use of the waiver process or the designation of certain areas outside MSA boundaries to accommodate rural PCS use.

Some commenters have sought imposition of entry restrictions on particular classes of potential providers, such as telephone companies or cellular licensees. However, open eligibility best serves the speed of deployment, universality, diversity of service and competitive delivery goals of this proceeding.

Cellular carriers cannot provide both cellular and new PCS services with the current 25 MHz cellular allocation. Cellular service requirements preclude use of any significant amount of cellular spectrum for PCS purposes. Moreover, the main purposes of the cellular and PCS spectrum allocations, technologies and services are very different. Cellular carriers have no "first mover" advantage and not restricting their eligibility for PCS licenses is actually pro-competitive. Local exchange carriers should also be eligible for PCS licenses. Their participation will ensure a competitive supply of low-cost

infrastructure for PCS services which is essential to the service's success. In addition, no legitimate competitive concerns are posed by LEC eligibility.

Contrary to the BellSouth position, some commenters support using PCS licensing areas larger than MSAs and RSAs. However, MSAs and RSAs are appropriate because (i) the record demonstrates that PCS will be predominantly localized service; (ii) market consolidations, if any, should occur based on factors specific to PCS and this natural reconfiguration of the market can only occur if the Commission starts with smaller rather than larger areas; (iii) stand-alone RSA systems have proven viable; and (iv) Commission administration of the licensing process will be greatly facilitated by use of the established MSA/RSA service area model, thus speeding deployment of service. Use of a blended license area approach violates the goal of competitive delivery of PCS services on a "level playing field."

Finally, the Commission should adopt PCS interconnection policies modeled on those applicable to cellular systems. Certain cable companies argue that the Commission should use this proceeding as a means to far more intrusively regulate telephone company interconnection. Those commenters ignore the Commission's already clearly articulated policy of requiring reasonable interconnection terms, the clear limits on the Commission's jurisdiction, and issues regarding access to their own facilities. They also ignore the fact that competition with the local exchange has been greatly increased in recent years. BellSouth submits that a wholesale review of interconnection issues in this proceeding would needlessly delay the deployment of PCS.

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BellSouth Corporation, BellSouth Telecommunications, Inc., and BellSouth Enterprises, Inc. (collectively "BellSouth") hereby submit their Reply Comments in the captioned docket.

INTRODUCTION

BellSouth demonstrated in its Comments that its proposed regulatory regime, including draft rules and regulations, would further the core goal of the proceeding — creation of *New* Personal Communications Services ("PCS"). BellSouth advocated that the Commission should go beyond cellular service and encourage the introduction of *new* services and technologies that would enhance U.S. competitiveness internationally. To that end, BellSouth urged the Commission to adopt the following proposal:

- Define PCS as a new low-power "microcell" service providing inexpensive, convenient, localized wireless services.
- Authorize five 20 MHz licensees, provide a 20 MHz band for unlicensed PCS, allow the use of 10-20 MHz for wireless local loop applications, and provide 3 MHz of spectrum at 900 MHz for narrowband PCS.
- Use MSAs and RSAs as the market areas for licensing purposes.
- Maintain open eligibility for licenses, in order to ensure wide participation by a diverse group of providers, including cable television operators, telephone companies, cellular carriers, competitive access providers, and others.
- Use auctions for awarding licenses, with no restrictions on alienation of licenses.

Many commenters supported these proposals. Given the volume of comments, however, this Reply will limit itself to four areas: the definition of PCS; eligibility; service areas; and interconnection issues.

I. PCS SHOULD BE DEFINED AS A NEW LOW-POWER WIRELESS SERVICE

BellSouth has advocated that to be consistent with the goal of this proceeding and the *Emerging Technologies* docket,[1] PCS should be defined as a new low-power microcellular service. A wide variety of commenters agree that the purpose of this proceeding should be to create a new service and not merely clone cellular.[2] Some commenters, however, argue that PCS should not be defined. They propose that market forces alone, to the exclusion of any real Commission direction or oversight, be relied upon to drive whatever service a PCS licensee provides because no particular service market can yet be identified.[3] This "flexible allocation" approach violates the Act and is not consistent with the record of the proceeding.

A. The "Flexible Allocation" Approach Violates the Communications Act

The Commission operates under the following statutory scheme:

- In allocating spectrum, the Act states that the Commission "shall — [c]lassify radio stations" and "[p]rescribe the nature of the service to be rendered by each class of licensed stations and each station within any class; [a]ssign bands of

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[1] *Redevelopment of Spectrum to Encourage Innovation in the Use of New Technologies* ("*Emerging Technologies*"), Gen. Docket 92-9, *First Report and Order and Third Notice of Proposed Rulemaking*, FCC 92-437 (Oct. 16, 1992) ("*Emerging Technologies R&O*"); *Further Notice of Proposed Rulemaking*, FCC 92-357 (Sept. 4, 1992); *Notice of Proposed Rulemaking*, 7 FCC Rcd. 1542 (1992).

[2] *See, e.g.*, Comments filed by the American Petroleum Institute, Cellular Service, Inc., Cox Enterprises, Inc., CNet, Inc., the Ericsson Corporation, Florida Cellular RSA Limited Partnership, GTE Corporation, Lincoln Tel. & Tel. Co., Matushita Communications Industrial Corp. of America, United States Telephone Association, the Utilities Telecommunications Council, and others.

[3] *See, e.g.*, Comments of the Cellular Telecommunications Industry Association ("CTIA") at 8-17 and Telocator at 13-15.

frequencies to the various classes of stations and assign frequencies for each individual station and determine the power which each station shall use. . . ." [4]

- Licenses are granted to qualified applicants [5] to use spectrum for a term of years, renewable only if the licensee has satisfied the specified service obligations. [6]

Throughout this proceeding, BellSouth has advocated limited reliance upon market forces to accelerate the availability to the public of new radio services. BellSouth, however, has not advocated that the Commission abdicate its statutory responsibilities by ignoring the primary spectrum allocation function which Congress entrusted to it: that is, to identify whether there is a need to allocate (or redevelop) spectrum and to decide the purpose for which such spectrum should be primarily devoted. The Commission is charged by Congress with deciding the specific radio frequencies to be used for particular communications services. Indeed, the reason for the Commission's very existence is to make decisions as to the best use of scarce, publicly-owned spectrum. [7] The flexible allocation approach violates this statutory imperative. [8]

Moreover, the Commission has previously considered and rejected such an open-ended approach. In Docket No. 84-1231, the Commission proposed an allocation of 24 MHz which would not have been

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[4] 47 U.S.C. § 303(a), (b), and (c). These requirements are not permissive. The Act states that the FCC "shall" do all of the above. In *AT&T v. FCC*, 978 F.2d 727, 735 (D.C. Cir. 1992) (quoting *MCI Telecommunications Corp. v. FCC*, 765 F.2d 1186, 1191 (D.C. Cir. 1985)), the court recently confirmed that the term "shall" is the language of command when used in the Communications Act. Slip op. at 15.

[5] *See* 47 U.S.C. § 308(b) which states in pertinent part: "applications for station licenses, or modifications or renewals thereof, shall set forth such facts as the Commission by regulation may prescribe as to citizenship, character, and financial, technical, and other qualifications of the applicant to operate the station;. . . the frequencies and the power desired to be used. . . ."

[6] *See* 47 U.S.C. §§ 301 (licensing requirement to use spectrum); 304 (waiver by licensee of any property right); 307 (specific license terms).

[7] *See FCC v. RCA Communications Inc.*, 346 U.S. 86, 93 (1953).

[8] The Commission has in the past unsuccessfully attempted to rely on competitive forces alone to satisfy its public interest obligations. *FCC v. RCA*, 346 U.S. at 96-97; Hawaiian Tel. Co. v. FCC, 498 F.2d 771, 777 (D.C. Cir. 1974); *FCC v. Sanders Bros. Radio Station*, 309 U.S. 470, 473 (1940).

limited to any particular service.[9/] Applicants for different services (*e.g.*, the private land mobile radio and cellular services) would have applied for the undesignated block of spectrum and the lottery winner would then determine how the spectrum would be used. A Senate Committee responded that the flexible allocation proposal "*is not authorized by law. The Communications Act requires the Commission to award spectrum by making discrete allocations of spectrum to each service as the public interest requires.*" [10/] The Commission thereafter allocated spectrum to individual services instead of pursuing the flexible allocation concept.[11/] Subsequently, Commissioner Quello observed elsewhere that:

> "Flexible allocation" is a concept that is, at best, oxymoronic. My dictionary defines allocate as "to set apart for a particular purpose . . ." (emphasis added). Such a concept, I believe, presents serious legal and procedural issues that must be thoroughly examined.
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> Under the Communications Act of 1934, as amended, the Commission has an obligation to allocate spectrum after affording notice and opportunity to comment. Flexible allocation would seem to circumvent the Commission's role in fulfilling its obligation and, thus, would be of questionable authority under the Act.[12/]

The flexible allocation would also lead to discriminatory results because specific service and technical rules which apply to other services would not apply to PCS licensees. Under the flexible allocation approach, a PCS licensee could escape such regulation even when operating identically to these other services. Clearly, the Act does not contemplate creating a regulatory "no-man's land" for one service, and the FCC does not have the power to exempt its licensees through regulatory manipulation

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9/ *Notice of Proposed Rulemaking*, Gen. Docket 84-1231, 50 Fed. Reg. 3809 at ¶¶ 31-46 (Jan. 28. 1985).

10/ S. Rep. No. 301, 99th Cong., 2d Sess. 34 (1986) (emphasis added).

11/ *900 MHz Reserve Band Allocations*, Gen. Docket 84-1231, *Report and Order*, 61 Rad. Reg. 2d (Pike & Fisher) 165 (1986), *recon.*, 63 Rad. Reg. 2d (Pike & Fisher) 1783 (1987). The Commission did reserve a 2 MHz band for flexible use, the so-called "General Purpose Mobile Radio Service" band, consisting of 901-902 MHz and 940-941 MHz. 61 Rad. Reg. 2d (Pike & Fisher) 193-98. This was an abortive attempt at flexible allocation, because the spectrum was to be assigned by auction, not lottery, and in the absence of auction authority the Commission never conducted the further rulemaking needed for implementation. The "general purpose" spectrum has now been included in the spectrum to be allocated for narrowband PCS in this proceeding.

12/ *See Flexible Paging Allocation*, 2 FCC Rcd. 2795, 2802 (1987) (Comm. Quello concurring).

from obligations and responsibilities that attach to others operating in a virtually identical manner. The D.C. Circuit has specifically warned, "we reject those parts of . . . [Commission] Orders which imply an unfettered discretion in the Commission to confer or not confer common carrier status on a given entity, depending upon the regulatory goals it seeks to achieve." [13/]

If the Commission feels it has an insufficient record upon which to determine the primary service obligations and technical requirements of PCS licensees, it should, as the Act contemplates, authorize further experiments [14/] before compromising the rights of existing licensees in the 2 GHz band. After all, the Commission has found this portion of the band heavily used by licensees who provide "important and essential functions" [15/] and are complying with specific service and technical rules.

Finally, the flexible allocation approach would also have the effect of granting licenses in perpetuity, with no check on unsatisfactory performance by a licensee. If PCS licensees do not have any obligation to provide a particular form of service, there will be no reasoned basis upon which to take away the license. If the licensee's only obligation is to provide some form of wireless communication service, every licensee will have met its obligation by turning on a single transmitter, thereby earning a renewal expectancy. [16/] With no further service obligations or performance benchmarks, there would be essentially no basis for denying a renewal expectancy or judging a renewal applicant against challengers.

[13/] *NARUC v. FCC*, 525 F.2d 630, 644 (D.C. Cir), *cert. denied*, 425 U.S. 992 (1976). *See also National Ass'n of Broadcasters v. FCC*, 740 F.2d, 1190, 1201 (D.C. Cir. 1984) which struck down the FCC's attempt to place DBS in a regulatory no-man's land without satisfactorily distinguishing the service from broadcasting. The court later affirmed a new Commission order better describing why DBS was functionally different from broadcasting and therefore deserved to be treated differently. *See N.A.B. v. FCC*, 849 F.2d 665 (D.C. Cir. 1988).

[14/] *See* 47 U.S.C. § 303(g).

[15/] *Emerging Technologies, R&O* at ¶ 21.

[16/] For example, at renewal time, the Commission could not merely declare that a PCS licensee has acted contrary to the public interest without judging the licensee against some performance standard. *See* 47 U.S.C. § 309(e). In the cellular service, licensees are subjected, on renewal, to an analysis of whether they have used the spectrum for its intended purpose and have substantially complied with the rules governing the service. *See Cellular Renewals*, 7 FCC Rcd. 719 (1992).

Renewals would effectively become automatic, giving PCS licensees a perpetual license in violation of the Communications Act.[17/]

B. The Record Developed Here Supports Establishment of a Low-Power Microcell Service Which Primarily Serves Pedestrian and In-Building Users

The service limits which the Commission decides to impose must comport with the purpose of this proceeding and the record.[18/] No commenter has suggested why 2 GHz PCS service will work particularly well at cellular-like high power. On the other hand, there appears to be general agreement that PCS must utilize "low-cost, lightweight, portable telephony"[19/] and therefore must use low power transmitters which target densely populated, highly localized areas.[20/] Moreover, a primary service market has been identified: densely populated settings where there is much pedestrian traffic and in-building uses.[21/] The record also establishes that PCS and cellular architecture will differ substantially.[22/] For example, Omnipoint states that: "Building large cells *anywhere* in the network

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17/ *See* 47 U.S.C. §§ 301, 304.

18/ The Seventh Circuit recently held that the Commission's newly adopted "Fin-Syn" rules failed to satisfy the following well-established test: "The agency must examine the relevant data and articulate a satisfactory explanation for its action including a 'rational connection between the facts found and the choice made.'" *Schurz Communications, Inc. v. FCC*, No. 91-2350, 71 Rad. Reg. 2d (P&F) 693, 696 (7th Cir. Nov. 5, 1992) *(quoting Motor Vehicle Mfrs. Ass'n v. State Farm Mutual Automobile Ins. Co.*, 463 U.S. 29, 43 (1983)).

19/ *See* Comments of American Personal Communications Comments at 5, n.6. The other two tentative pioneer preference grantees agree on this point. *See Personal Communications Services (Pioneer's Preference)*, 71 Rad. Reg. 2d (Pike & Fisher) 683 (1992). Cox asserts that "[t]he key . . . is the availability of an inexpensive handheld portable unit that is light in weight." Cox Comments at 3 (quoting with approval, *Cellular Communications Systems*, 86 FCC 2d 469, 484 (1981)). *See also* Comments of Omnipoint Communications, Inc. at 7 ("The good news is that the use of microcells will also allow the use of lower powered handsets, which will in turn allow them to be lighter [and] cheaper. . . . ").

20/ *See, e.g.*, Comments of the U.S. Small Business Administration at 6; CNet, Inc. at 4, Ericsson Corporation at 15-16; GTE Corp. at 20-22. Cox adds that "[PCS] likely will not provide the same high power vehicular services capable of high speed handoff." *Cox Comments* at 4.

21/ *See, e.g.*, Cox Comments at 4 ("In Cox's view, PCS will be suited to provide excellent portable, pedestrian service.). *See also* Comments of Ericsson at 6; CTIA Comments (results of in-building tests in attachment entitled, Microcellular Propagation at 1850 MHz and 900 MHz); and CNet Comments at 4.

22/ *See, e.g.*, Cox Comments at 4 ("Because [PCS] market need will differ [from cellular], network designs for PCS may be very unlike those of cellular operators.").

destroys the ability to use low cost, long talk time, wireline quality handsets. (This is becoming known in the industry as the Gresham's law of RF — *i.e.*, high power anywhere drives out the benefits of low power everywhere.)" [23]

The PCS experimental record itself has largely revolved around low-power microcellular tests. [24] Specifically, the experimental record is as follows:

- As of October 8, 1992, there were 243 PCS experiments authorized or proposed for the 1850-1990 MHz frequency band. The proposed ERP of 218 applications/authorizations could be verified. [25]
- 177 of the 218 experiments proposed an ERP of 1 watt or less; 25 proposed experimental systems to operate between 1 mW and 900 mW ERP; 152 proposed systems with an ERP of 1 watt.
- 12 PCS systems proposed between 1.5 and 5 watts ERP; 17 proposed to operate at 10 watts ERP; 7 at 50 watts; 4 at 100 watts; and 1 at 200 watts ERP. [26]

Taking into account the overall record in this proceeding, the following clear differences emerge between cellular service and PCS:

Cellular at 800 MHz	PCS at 2 GHz
Better for vehicle hand-off and high power usage; less good for in-building usage; modified Carey propagation model acceptable.	Better for smaller areas at lower power; better in-building properties; alternative propagation model to Carey needed.
Architecture characterized by relatively scarce large cells and high power transmitters covering large areas.	Architecture characterized by a multitude of microcells operating at low power over a more localized area.
Cost structure of each cell: because of need to serve high speed vehicles traveling over large areas, service involves relatively high costs and complex technology.	Cost structure of each cell: much lower cost structure because of need to serve smaller areas with less mobile, more concentrated subscribers and need for portability.

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[23] Omnipoint Comments at 14 (emphasis in original).

[24] *See NPRM*, 7 FCC Rcd. 5676, 5720; *see also* Commissioner Quello, Global Alliances in Telecommunications: Partnership for Progress, Address at Intelevent 92, Cannes, France (October 21, 1992).

[25] Twenty-five authorizations or applications could not be located in the Commission's files. Because the proposed power for these PCS experiments could not be determined, they have not been included here.

[26] A number of applicants at authorized high power stated that they intended to operate at lower power.

Cellular at 800 MHz	PCS at 2 GHz
Cell sites: characterized by tall towers which are expensive and difficult to obtain (*e.g.*, zoning).	Cell sites: characterized by low height, low-cost sites which are easier to obtain.
Primary market: service to vehicles. High power needed to serve wide vehicular traveling area.	Primary market expected: service to pedestrians and in-building usage. Low power allows larger number of subscribers to be accommodated in given bandwidth in smaller, densely populated areas.
Telephony: in-vehicle units, transportables, and portables.	Telephony: small, inexpensive and light-weight hand-held portables cannot be high power.
Transmission method: primarily analog.	Transmission method: entirely digital.
Interference: no spectrum sharing concerns; high power generates many border controversies and requires complex intra-system coordination.	Interference: lower power cells allows spectrum sharing with OFS service to be feasible and makes intra- and inter-system coordination far easier.

The Commission has indicated here that the goal is to create and encourage the development of new wireless services. Rationally connecting that goal with the record compels creation of (i) a low power microcell service differentiated from cellular service and, (ii) a primary service requirement to serve pedestrians within highly localized areas and in-building users.[27/] Any other scheme departs from the main objective of this proceeding and the record. As BellSouth has already indicated, if the Commission wishes to merely increase cellular competition, a new proceeding should be initiated to compile an appropriate record and establish rules predicated on the "level playing field" concept.

Some commenters have also argued that low power is not appropriate for rural PCS applications. PCS licensees, however, are free to request waivers in unique rural settings. These cases should not predominate, however, because the comments reflect a clear consensus that PCS is most likely to be used in densely populated urban settings and that it is also difficult from an interference standpoint to use high and low power cells in the same area. Alternatively, the FCC could exempt RSAs that are not adjacent to MSA boundaries from the low power restriction.

[27/] Service flexibility to serve emerging wireless service markets as they are identified can be authorized on a secondary basis.

II. ELIGIBILITY FOR PCS LICENSES SHOULD BE OPEN TO ALL, AND NO CLASSES OF PROVIDERS SHOULD BE DEEMED INELIGIBLE

A. Open Eligibility Would Best Serve the Commission's Goal of Introducing New Services and Technologies

Some commenters have sought the imposition of entry restrictions on particular classes of potential providers, such as telephone companies [28] or cellular licensees.[29] BellSouth urges the Commission not to yield to these commenters' demands for protection from the workings of the competitive marketplace.

The Commission should adopt a policy of open eligibility, which will lead to a highly diverse body of service providers and service offerings. Each class of potential service providers — cable television operators, telephone companies, cellular carriers, interexchange carriers, competitive access providers, new entrants — has a unique contribution to make to the development of PCS. The categorical exclusion of any class of competitors will necessarily diminish the diversity of the PCS marketplace. This would inevitably lead to a lessening of service innovation, because each excluded group would have addressed the needs of the marketplace in a different way. Consumers — and the entire industry — would thus be denied the benefit of the excluded group's approach.

In addition, the Commission faces a high legal hurdle in categorically excluding particular classes of companies from PCS eligibility. The starting point for any analysis should be that all potential PCS providers should be treated alike, unless there is a demonstrated reason for distinguishing among them.[30] Any distinction in treatment must be based on facts in the record, relevant to the purposes of the Communications

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[28] *E.g.*, Comments of Cox, PCN America, Inc., Personal Communications Network Services of New York, Inc., Sprint, Tandy Corp., Teleport Denver, Ltd., Vanguard Cellular Systems, Inc., and Viacom International, Inc..

[29] *E.g.*, Comments of Adelphia Communications Corp., et al., Advanced Cordless Technologies, Inc., the U.S. Department of Justice, MCI Telecommunications Corp., NTIA, PCN America, and Viacom.

[30] *Melody Music, Inc. v. FCC*, 345 F.2d 730, 732-33 (D.C. Cir. 1965).

Act,[31] and sufficiently substantial to justify unequal treatment under the law.[32] These standards cannot be met with respect to the exclusion of cellular carriers and telephone companies.

B. Cellular Carriers Should Be Eligible for PCS Licenses

1. A Cellular Licensee Cannot Provide Both Vehicular Service and Large-Scale Microcell Service on the Current 25 MHz Allocation

Some commenters have assumed that cellular licensees could offer services "substantially similar to PCS" within their existing cellular allocation and accordingly should not be eligible for PCS licenses.[33] However, the record demonstrates that cellular carriers have significant inherent limits on their ability to provide low-priced, mass-market microcell service over their existing systems.

Cellular licensees have a primary service obligation: to provide nationwide-compatible vehicular service. It is true that cellular carriers are rapidly introducing new digital technologies that will increase their systems' capacity, and they are experimenting as well with forms of low-mobility PCS as an auxiliary service offering. Nevertheless, their continuing obligation to provide analog cellular service imposes a severe restriction on their ability both to complete the transition to digital cellular and to meet the expected demand for new, mass-market services as well. Much of the cellular frequency band must remain in standardized cellular channel sets, leaving few contiguous bands for optimum PCS use. In addition, cellular service imposes significant investment requirements for cellular network architecture, which is not as efficient as PCS architecture, again limiting the availability and use of cellular spectrum for new PCS technologies.[34]

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[31] *Id.*

[32] *Beach Communications, Inc. v. FCC*, 959 F.2d 975, 985-87 (D.C. Cir. 1992), *cert. granted*, 113 S.Ct. 594 (1992). Because the Commission has placed a high value in this proceeding not only on diversity but also on speedy delivery of service, the exclusion or restriction of any class of PCS providers in terms of licensing eligibility will clearly result in extended litigation. At a minimum, the pendency of such litigation would clearly have the effect of placing a cloud on any licenses awarded, and would significantly delay implementation of service. Accordingly, since the Commission seeks to speed the delivery of PCS service, it would be prudent to avoid disenfranchising any potential class of PCS provider.

[33] *See, e.g.*, Justice Department Comments at 29.

[34] The limitations faced by cellular providers are described by John E. DeFeo, President and Chief Executive Officer, U S WEST New Vector Group, Inc., in a letter to Commissioner Andrew C. Barrett, dated January 15, 1992, at 4, 7 (filed in Gen. Docket 90-314) (emphasis in original):

(continued...)

In fact, the Cellular Telecommunications Industry Association ("CTIA") concludes that only 5 MHz can be freed up for new, auxiliary services, after reserving 10 MHz for analog cellular service and another 10 MHz for digital cellular.[35] With only 5 MHz, cellular carriers will be able to offer niche forms of PCS as auxiliary services, as well as engage in PCS experimentation, but the minimal amount of cellular spectrum available for this use means that they cannot even begin to offer a wide array of new services for the mass market.

An economic study performed by the FCC's Office of Plans and Policy ("OPP") validates this conclusion. In a "working paper" entitled, *Putting It All Together: The Cost Structure of Personal Communications Services,*[36] OPP economist David P. Reed addressed the ability of cellular carriers to provide PCS from an economic viewpoint. First, the OPP Study acknowledges that the embedded base of

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[34](...continued)

> Current analog cellular providers that have exhausted their spectrum must continue to serve their embedded base of analog customers and have limited ability to take advantage of new digital technologies that expand frequency utilization. . . . [M]uch of the cellular frequency band will have to remain carved up into 30 KHz channels in standardized sets, leaving few contiguous frequency bands that can be optimally used for technologies more suitable for new PCS services.
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> In addition, the cellular licensees' obligations to continue providing analog and digital cellular service means that a portion of their investment must be sunk into a system whose network architecture is not as efficient as one designed specifically for the emerging PCS technologies, and is geared to market segments that are more limited in size than the PCS market. . . .
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> * * *
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> . . . Only through access to a new spectrum allocation will cellular licensees be able to provide a full array of new services side-by-side with cellular service, with prices and functionalities that will meet customer needs. *Cellular licensees must be given the incentive to invest in and upgrade their existing networks*[,] and to remain viable and growing companies by providing new and emerging services to serve new and emerging markets, these businesses need assurance that they will be eligible to compete for new spectrum allocations to meet their customer needs.

[35] Thomas Wheeler, *Monday Memo*, Broadcasting (Dec. 21, 1992) at 19. Mr. Wheeler is President of the Cellular Telecommunications Industry Association. *See also* Comcast Comments at 10-11 (spectrum will continue to be needed for analog service for many years because smaller systems may not upgrade to digital technology and to ensure service to roamers).

[36] David P. Reed, *Putting it All Together: The Cost Structure of Personal Communications Services*, 28 OPP Working Paper Series (November 1992) ("OPP Study").

analog customers will make it difficult for cellular licensees to offer new digital PCS services within their existing allocation:

> One problem facing cellular operators seeking to enter PCS markets will be the evolution of their existing networks, which employ analog radio systems, to the new digital technologies of PCS networks. Analog base stations and handsets will have to be replaced by digital equipment. Because this transition would be too costly to accomplish in a single flash-cut, the amount of spectrum allocated for use by analog equipment must be phased-out over time. In this regard new PCS suppliers will be at an advantage relative to cellular operators because they can deploy state-of-the-art digital radio systems over the full spectrum allocation without having to manage a transition of technologies. [37/]

Accordingly, the OPP Study concludes that without access to additional spectrum beyond the 25 MHz of cellular spectrum, "cellular operators could be precluded from implementing these technologies." [38/]

Moreover, OPP found that allowing cellular carriers to use 2 GHz spectrum for PCS, rather than a portion of their cellular spectrum, would be beneficial:

> [S]ome economies of scope between PCS and cellular services could be more fully exploited with the additional spectrum. In particular, cellular operators could take advantage of natural propagation characteristics by using 2 GHz spectrum to deliver PCS using microcells, while continuing to use their 800 MHz frequencies for mobile services. [39/]

The OPP Study also found that the annualized cost per subscriber of delivering PCS and cellular services would be lower if the cellular carrier has access to more than the current 25 MHz of cellular spectrum. [40/]

[37/] *Id.* at 58.

[38/] *Id.* at 57.

[39/] *Id.* at 57-58.

[40/] Specifically, OPP projected a cost savings of $50 per subscriber if the carrier has access to 40 MHz instead of 25 MHz. OPP Study at 41-42 & Figure 18. This result is based on use of a technology similar to that proposed by Bellcore, which would permit use of low-cost handsets. Use of a more efficient technology would lessen the advantage of a larger spectrum allocation, but would require a more expensive handset, which would reduce the market potential. *See id.* at 24-25, 41. OPP found that the cost function is "U-shaped" — *i.e.*, per-subscriber network costs are higher when only a small amount of spectrum is available for either PCS or cellular service. *Id.* at 40-41. Thus, if only 25 MHz is available, costs are lowest when 10-12 MHz are used for PCS and the remaining 13-15 MHz are used for cellular; if 40 MHz is available, costs reach their lowest point when 18-26 MHz are devoted to PCS and 14-22 MHz are used to provide cellular service. *Id.* at 42 (Figure 18). While the OPP Study did not specifically project the cost improvement that would result if cellular licensees had access to an additional 20 MHz, as BellSouth advocates, its analysis suggests that the savings would be even greater than with an additional 15 MHz. *Id.* at 42. Moreover, OPP's analysis did not take into account additional costs that would result from the use of spectrum in two disparate frequency bands (*i.e.*, 800 MHz and 2 GHz). *Id.* at 42 n.31. If sufficient 2 GHz spectrum is made available for PCS, *i.e.*, 20 MHz, these costs would be minimized because segmentation of the spectrum into

(continued...)

Cellular carriers have a primary obligation to use their 25 MHz allocations to provide cellular service, including analog and digital service. Whether or not the FCC continues to mandate analog service, cellular licensees simply cannot afford to "'Betamax' millions of customers who bought analog phones."[41] In short, little spectrum is available to cellular carriers within their current allocations to provide new, innovative PCS services. Accordingly, there is no reason why PCS eligibility should be premised on lack of affiliation with a cellular licensee in the same market.

2. Cellular Carriers Have an Incentive to Supply New, Innovative Services and Will Play a Pro-Competitive Role in PCS

The core goal of this proceeding is the introduction of new services and technologies. As BellSouth demonstrated in its Comments, this goal can best be accomplished by the adoption of eligibility rules that give licensees incentives to design PCS networks that complement, rather than merely duplicate, existing services. Disqualification of cellular licensees in the areas where they currently operate would undermine this goal by reducing the level of competition among licensees to introduce new services and technologies.

In fact, cellular carriers have a *greater* incentive than other potential PCS providers to provide new, innovative services. As current providers of macrocellular mobile and portable service, cellular carriers will use PCS systems to offer services that they cannot now provide or to meet the needs of a different type of customer than those who subscribe to cellular service.[42] A PCS system will be most profitable for a cellular licensee by opening up *new* business opportunities: (i) offering new services to existing cellular subscribers that can most economically be provided using different technologies, architectures, or spectrum and (ii) providing new services that will appeal to a mass consumer market.

Cellular PCS licensees will naturally tend to expand the universe of available services by offering new and innovative PCS services. Accordingly, they will design PCS networks with tomorrow's needs in mind,

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[40](...continued)
a 25 MHz block at 800 MHz for cellular and a 20 MHz block at 2 GHz for PCS, would minimize the need for multi-band frequency agility.

[41] Wheeler, *Monday Memo, supra.*

[42] *See* OPP Study at 57.

needs that cannot be met with the existing cellular system architecture. PCS licensees who are not in the cellular business in a given market do not fully share this incentive to innovate and may offer cellular-like service in addition to (or instead of) providing new services. Including cellular carriers as PCS licensees will, therefore, give the other PCS licensees incentives to "push the envelope" toward innovative services faster and more intensely. Cellular carriers will thus stimulate competition among all PCS licensees to meet a wide variety of customer needs.

3. Competitive Reasons Do Not Justify Excluding or Limiting Cellular Carriers from PCS

Some have suggested that cellular licensees should either be ineligible for PCS licenses or should be eligible only for a reduced amount of spectrum. [43] Virtually all of the proposals to restrict cellular carrier participation are premised on the unfounded assumption that cellular and PCS operators will largely be direct competitors. [44]

The calls for limiting cellular carriers' eligibility are based on what Cox Enterprises describes as the "incorrect assumption . . . that PCS is nothing more than digital cellular, and that it will be directly competitive with current cellular service." [45] Instead, as BellSouth demonstrated in its Comments, the principal purposes of cellular and PCS spectrum allocations, technologies, and services are very *different*: cellular systems provide a communications service designed principally to serve users in rapidly moving vehicles, while PCS systems will be designed principally to serve pedestrians and in-building users. [46]

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[43] *See, e.g.*, OPP Study at 57-59.

[44] OPP Study at 57. The Justice Department also took the position that a local exchange carrier should be permitted to hold either a cellular license or a PCS license, but not both, based on its mistaken assumption that cellular licensees were fully capable of providing PCS-equivalent service. *See* Justice Department Comments at 29-30.

[45] Cox Comments at 19.

[46] BellSouth Comments at 6-20. If the Commission now wants to increase the number of cellular competitors, it should initiate a proceeding to do so, based on a proper record, and should make the new cellular licensees subject to the same rules as existing licensees. This is not the proper forum for such a decision, however, for the reasons stated in BellSouth's Comments at 67-69.

The signaling protocols, technology, equipment, and system architecture on which cellular systems are based are not designed to serve vast numbers of pedestrians in a microcell environment and cannot readily be adapted to do so if mobile service is continued.[47] Because of these inherent service differences, a cellular system cannot be truly competitive with PCS for portable users in high-usage residential and business areas, while PCS cannot be truly competitive with cellular for vehicular traffic. Thus, while a large number of cellular customers use portable handsets, these users are treated by a cellular system essentially as if they were located in stationary or slow-moving vehicles. Cellular system capacity faces a major constraint in that a single cell serves a much larger area than a microcell and can therefore serve but a fraction of the number of pedestrian users that could be served by a grid of microcells covering the same area. When fully developed, a cellular system might serve an entire downtown business district with a handful of cells, while a PCS system could have hundreds of microcells. The cellular system, on the other hand, will offer service in areas with relatively low residential or business density in order to ensure highway coverage.

While cellular and PCS systems will compete to some degree for the business of portable handset customers, that competition will be limited. Portable customers will choose from two very different types of wireless service, and the market can be expected to become segmented into two (or more) distinct groups of customers. PCS will offer smaller handsets, longer talk-time, lower price, better service availability in high-usage areas, and specialized in-building services such as wireless PBX; cellular will offer the advantages of ubiquitous service throughout high- and low-usage areas, both in the city and the countryside, as well as vehicular compatibility, but at a higher price and with more cumbersome telephony. For most users, one of the two services will better meet their needs.

The different nature of the two services eliminates any justification for counting cellular and PCS spectrum together against a set limit, as OPP has suggested in the name of "fairness". Moreover, the Commission has not proposed any limitation on PCS eligibility for other providers of mobile or portable

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[47] In cellular, there is, of course, ongoing experimentation with microcells for specified purposes, for instance, to cover special events taking place in a stadium environment, to fill-in coverage holes created by unique topography, etc.

services such as SMR operators, even though their services are also forms of PCS in the generic sense, to the same extent as cellular. To single out cellular licensees for eligibility restrictions, while leaving untouched all other entities using spectrum to provide services falling within the generic definition of PCS, would be unreasonable.[48/] Given that there is no inherent difference between cellular and other licensees in their ability to provide services that might generically be classified as PCS such a restriction would deny equal protection of the law to cellular carriers.[49/]

Moreover, in other similar situations when a new service or spectrum allocation has been made, the Commission has not adopted eligibility restrictions or limited the total amount of spectrum available to existing private or common carrier land mobile service providers. Thus, the fact that a given entity holds a cellular license does not affect its eligibility or the amount of spectrum it may be authorized to hold in the Public Mobile Radio Service or vice versa. There are no eligibility or spectrum limitations for SMR licenses based on whether or not an entity has other non-SMR mobile or portable communications licenses.[50/] Similarly,

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48/ *Melody Music*, 345 F.2d at 732-33.

49/ *See Beach*, 959 F.2d at 985-87.

50/ The Commission does restrict the eligibility of wireline telephone companies to hold specialized mobile radio licenses, but that restriction applies whether or not they hold any radio licenses in cellular or any other competing service. 47 C.F.R. § 90.603(c). (As noted, the SMR restriction does not apply to non-wireline cellular licensees.) In 1986, the Commission proposed to eliminate the wireline restriction as lacking any legitimate basis. *Notice of Proposed Rulemaking*, PR Docket 86-3, 51 Fed. Reg. 2910 (1986).

In mid-1992, however, the Commission terminated the proceeding and kept the rule in place, saying it wanted to permit a better evaluation of the effects of consolidation in the SMR industry and the competitive position of that industry with respect to common carrier mobile services. *Specialized Mobile Radio (Wireline Eligibility Restriction)*, PR Docket 86-3, *Order*, 70 RR 2d 1471, 1472 (1992), *petitions for recon. pending, petition for review filed sub nom. BellSouth, Inc. v. FCC*, No. 92-1334 (D.C. Cir. filed August 3, 1992).

Recently, the Commission proposed a recodification of this policy as part of a recodification of all of its private land mobile radio rules into a new Part 88. *Replacement of Part 90 by Part 88*, PR Docket 92-469, *Notice of Proposed Rulemaking*, FCC 92-469 (November 6, 1992). The Commission claimed that it was leaving the wireline issue "to a future proceeding covering wireline eligibility in all bands." *NPRM*, at 17. Nevertheless, the Commission proposed rules excluding wireline-controlled entities from both existing and new specialized mobile radio bands. *Id.* at 58, 254. In attempting to defer comments on the wireline eligibility issue, the Commission gave no indication when the "future proceeding" will be initiated, and it neither explained why it could not simply initiate such a proceeding nor acknowledged the total lack of a rationale for continuing the wireline restriction in force.

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a private carrier paging licensee is fully eligible for a common carrier paging license, and vice versa, even though the two paging services are virtually identical. In short, it would be a marked break with past practice for the Commission to impose cross-service radio license eligibility restrictions. In light of this history, for the FCC to impose PCS eligibility restrictions on cellular carriers merely because they have 25 MHz of spectrum in a related service would send a "danger signal" to a reviewing court that the Commission is arbitrarily and capriciously changing its approach. [51/]

4. Cellular Carriers Do Not Have a "First Mover Advantage"

OPP argues that cellular carriers should be restricted in eligibility for PCS licenses because their position in the market gives them a head start, or as OPP puts it, a "first mover advantage." OPP claims that "[a]llowing [cellular carriers] to gain the benefits from additional spectrum would make it more difficult for new entrants to establish themselves in the market." [52/]

This argument is specious. First of all, it is questionable whether cellular carriers will have any "first mover advantage" at all, given the substantial differences between the two services and between the sophisticated communications-oriented cellular customer base and the mass-market PCS customer base. While some cellular users may be "early adopters" of PCS, the ultimate market for PCS will be far more extensive than cellular. A cable operator's customer base is typically far broader than a cellular carrier's, and is more representative of the market for a low-cost consumer service such as PCS than that of a cellular carrier. Yet there is no suggestion that cable operators be ineligible to receive PCS licensees. [53/] In addition, from a

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Eligibility is directly at issue in this docket and must be decided on the basis of the record here. The Commission may not classify PCS as a private radio service and thereafter automatically apply the now obsolete wireline restriction applicable to SMRs.

[51/] *Greater Boston Television Co. v. FCC*, 444 F.2d 841, 851-52 (D.C. Cir. 1970), *cert. denied*, 403 U.S. 923 (1971); *accord National Black Media Coalition v. FCC*, 775 F.2d 342, 355-56 (D.C. Cir. 1985), *Office of Communication of United Church of Christ v. FCC*, 707 F.2d 1413, 1425 (D.C. Cir. 1983).

[52/] OPP Study at 57.

[53/] In fact, one commenter even argued for a cable set-aside. *See Cablevision Systems Corp. Comments* at 13-14.

technical viewpoint, entities receiving PCS pioneers' preferences will have an even greater "first mover advantage," yet the PCS pioneers will be preferred, rather than excluded. There is no reason cellular carriers should be treated differently.

Moreover, even those with a supposed "head start" do not necessarily derive any substantial advantage from it in the long term. IBM, for example, virtually invented the personal computer industry, yet it has failed to maintain a leading position in that business. Another example is cellular service: Intensive competition has resulted in little or no long-term advantage to the first-licensed cellular system in a market. In fact, in many fields, *later* entrants have a distinct advantage, in that they can learn from the mistakes of the earlier entrants. Moreover, later entrants often benefit from a "free rider" effect — the first entrants have high initial equipment and market development costs, while later entrants have lower equipment costs that result from standardization and mass-production and can take advantage of the consumer awareness generated by the efforts, and at the expense, of earlier entrants.

Finally, even if cellular carriers were to derive some advantages in PCS from their customer base, market presence, and experience, allowing them to hold PCS licenses would actually help fulfill one of the major goals of this proceeding — speed of deployment.

C. Local Exchange Carriers Should Be Eligible for PCS Licenses

1. To Ensure a Competitive Supply of Low-Cost Infrastructure Local Exchange Companies Should Be Eligible on the Same Basis as Cable Operators

It is critical to the success of PCS that there be a low-cost source for the infrastructure that will support the service. This requires taking advantage of existing networks to the maximum extent possible. The OPP Study found that the networks of local exchange telephone companies, cable television companies, and to some extent cellular carriers offer substantial cost advantages in the establishment of PCS infrastructure:

> [T]he economies of scope found between PCS and both telephone and cable television services (and potentially cellular services as well) change the form of the cost structure for PCS. Using existing infrastructure exchanges fixed costs for variable costs in the cost function. As a result, the economies of scope not only lower the investment initially necessary to provide PCS, they could reduce the level of subscription where economies of scale are exhausted to 10 percent of the household[s] . . . .

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> In contrast, an independent firm — an entrepreneur or small company that obtains a PCS license but does not own any existing infrastructure in the subscriber loop — probably would not choose to construct a stand-alone PCS network. Results indicate the fixed costs of a PCS network using microcells are high in relation to the fixed costs of providing PCS using existing infrastructure. This cost differential is especially dramatic at the low levels of penetration which are to be expected during the first few years of deployment.[54]

In most communities, there are only two readily available sources of infrastructure in place that can be readily adapted to support PCS: local telephone companies and cable television systems. As recognized by OPP, the cost of developing PCS infrastructure makes stand-alone network development unlikely. Thus, the cost-effective establishment of a PCS infrastructure requires the utilization of existing network infrastructure, the cost of which can be shared with other services — *i.e.*, networks that offer economies of scope in combining PCS with other services. Local exchange carriers and cable operators alone have ubiquitous communications networks in place throughout most areas that are likely targets for PCS development.

OPP found that telephone companies and cable operators have similar advantages in supporting PCS networks. Telephone companies offer "the key strategic advantages of ubiquitous network presence for transport and switching facilities, in addition to an advanced signalling network and intelligence nodes."[55] A cable operator's network "offers a ubiquitous, alternative medium of transport for PCS in residential areas. Through a fortuitous coincidence, the upgrade of the existing cable networks to a fiber backbone architecture to improve cable television service also provides cable operators an opportunity to deploy dark fiber that can be used to distribute PCS."[56]

Substantial improvements will be needed to make existing local exchange and cable networks optimal for the delivery of PCS. By deeming both infrastructure providers eligible for PCS licenses, the Commission can further the goal of upgrading the nation's telecommunications infrastructure to meet the needs of the

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[54] OPP Study at 43-44.

[55] *Id.* at 32.

[56] *Id.* at 35.

twenty-first century.[57] However, if one of the two most likely sources of PCS infrastructure, the telephone company, is deemed ineligible for a PCS license, there is a substantial danger that the other source, the cable operator, would have an inappropriate advantage. By using its existing cable plant to support its PCS system, the cable operator could take advantage of economies of scope, allowing it to deploy more rapidly and economically than independent PCS licensees. Thus, if the local exchange carriers are excluded from PCS eligibility, there is a danger that PCS may become dominated by cable companies, regardless of the number of licenses the Commission issues.

It is essential that the Commission ensure license eligibility for all potential infrastructure providers, including telephone companies. If telephone companies and cable operators are equally eligible for PCS licenses, there will be an opportunity for the timely development of competing cost-effective delivery systems. This would ensure that similarly situated infrastructure providers are treated alike[58] and will promote the Commission's goal of competitive delivery of services.

2. Competitive Concerns Do Not Warrant Restrictions on Local Exchange Carrier Eligibility

Some commenters have urged that telephone companies be excluded from PCS eligibility for competitive reasons. It is noteworthy that OPP, the Department of Justice, and the National Telecommunications and Information Administration do not share this view. BellSouth submits that there is no merit to these arguments.

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[57] *See* Steven Pearlstein, *Shifting the Debate on the Economy*, Washington Post, Dec. 20, 1992, at H1, H5 ("'Infrastructure' now includes . . . fiber networks for voice and data transmission and databases that take the old public library into the 21st century."); *see also* Progressive Policy Institute, *Mandate for Change* 78 (1992), which states:

> It is estimated that we could boost U.S. productivity and increase our national output by over $300 billion by 2010 if we replaced copper wires with new fiber optic cables capable of vastly increasing the amount of information transmitted into businesses and homes. . . . A new communications infrastructure built upon fiber optics would unleash a new wave of entrepreneurial energy and job creation.

[58] *See Melody Music*, 345 F.2d at 732.