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May 28, 1999

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Ms. Magalie R. Salas
Secretary
Federal Communications Commission
The Portals
445 Twelfth Street, S.W.
Washington, D.C. 20554

DOCKET FILE COPY ORIGINAL

Re: Cellular Telecommunications Industry Association's Petition for Forbearance From Commercial Mobile Radio Services Number Portability Obligations, WT Docket No. 98-229; and Telephone Number Portability, CC Docket No. 95-116

Dear Ms. Salas:

On behalf of the Telecommunications Resellers Association ("TRA"), enclosed for inclusion in the referenced proceedings is a copy of the Reply Comments of the Personal Communications Industry Association, filed February 10, 1999, in WT Docket No. 98-205.

I have hereby submitted two copies of this notice to the Secretary, as required by the Commission's rules. Please return a date-stamped copy of the enclosed (copy provided).

Please contact the undersigned if you have any questions.

Respectfully submitted,

Linda L. Oliver

Linda L. Oliver
Counsel for Telecommunications
Resellers Association

Enclosure

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

In the Matter of	)	
	)	
1998 Biennial Regulatory Review	)	
Spectrum Aggregation Limits	)	WT Docket No. 98-205
for Wireless Telecommunications Carriers	)	
	)	
Cellular Telecommunications Industry	)	
Association=s Petition for	)	
Forbearance From the 45 MHz	)	
CMRS Spectrum Cap	)	
	)	
Amendment of Parts 20 and 24 of	)	WT Docket No. 96-59
the Commission=s Rules -- Broadband PCS	)	
Competitive Bidding and the Commercial	)	
Mobile Radio Service Spectrum Cap	)	
	)	
Implementation of Sections 3(n) and	)	GN Docket No. 93-252
332 of the Communications Act	)	
	)	
Regulatory Treatment of Mobile Services	)	

REPLY COMMENTS
OF
THE PERSONAL COMMUNICATIONS INDUSTRY ASSOCIATION

By: Mary McDermott, Senior Vice President
Chief of Staff, Government Relations

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Government Relations

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Date: February 10, 1999

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SUMMARY

The Personal Communications Industry Association, Inc. (APCIA≅), hereby respectfully submits its Reply Comments in the above-captioned proceeding.

It is clear from a review of the initial Comments that it is too early to alter the existing spectrum cap. The two-way voice market continues to be dominated by cellular carriers, and no commenting party offered any credible evidence to demonstrate otherwise. In its Reply Comments, PCIA supplies additional statistical information demonstrating that PCS operators have a zero market share (measured by subscribers) in 49% of the top 200 markets, and in no top 200 market does the combine total of all operating PCS licensees yet exceed 25% of mobile two-way voice subscribers. Thus, the cellular concentration in every market exceeds the level at which even CTIA admits demonstrates Amarket power.≅

Any alteration of the spectrum cap at this time would dramatically alter the business plans of small PCS operators which are just now building out their systems. More importantly, any change at this time would dramatically impact the PCS auction which the Commission is about to conduct. The spectrum cap has created new competitors, new services and rapid digitization of existing networks. Therefore, PCIA can only conclude that the Commission must not amend, delete or forebear from enforcement of the spectrum cap at this time.

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

In the Matter of	)	
	)	
1998 Biennial Regulatory Review	)	
Spectrum Aggregation Limits	)	WT Docket No. 98-205
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Competitive Bidding and the Commercial	)	
Mobile Radio Service Spectrum Cap	)	
	)	
Implementation of Sections 3(n) and	)	GN Docket No. 93-252
332 of the Communications Act	)	
	)	
Regulatory Treatment of Mobile Services	)	

To: The Commission

REPLY COMMENTS
OF
THE PERSONAL COMMUNICATIONS INDUSTRY ASSOCIATION

The Personal Communications Industry Association, Inc. (APCIA≅), through counsel and pursuant to Section 1.415 of the Commission=s Rules, hereby respectfully submits its Reply Comments in the above-captioned proceeding.

The majority of commentors agree with PCIA and urge the Commission to retain its 45 MHz

broadband CMRS spectrum cap.[1] They believe that the cap on local spectrum holdings is the critical catalyst to the creation and expansion of multiple, independent wireless voice networks. PCIA agrees wholeheartedly with the conclusions of Sprint PCS as to the positive impact of the cap.

> The spectrum cap has played and continues to play a critical role in the development, and maintenance, of competition in the mobile telephone market. Because the cap guarantees that there will be at least four facilities-based CMRS licensees in every market, the Commission can adopt "hands off" deregulatory policies toward the CMRS market. This deregulatory policy in turn provides the public with the additional benefits of unfettered competition in the CMRS market, lower prices, innovative services and features, and diverse pricing plans designed to meet the diverse needs of consumers.[2]

The competitive wireless voice market created by the Commission when it authorized PCS is still in its early stages. The comments confirm that it is entirely too early to remove or modify the cap. The Commission should revisit the cap in two years in the next Biennial Review process with a focus on the structure of the market in terms of subscribers and independent networks.

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[1]See, for example, the Comments of America One Communications, Inc.; MCI Worldcom, Inc.; Southern Communications Services, Inc.; DiGiPH, Inc.; Northcoast Communications, LLC; Sprint PCS; Telecommunications Resellers Association; Telephone And Data Systems, Inc.

[2]Sprint PCS Comments at 4.

The concentrated nature of the mobile two-way voice market in terms of subscribers is readily apparent. To date, PCS operators have a zero market share (measured by subscribers) in 49% of the top 200 markets; PCS operators have a 15% or less market share in 82% of the top 200 markets and a 20% or less market share in 96% of the top 200 markets. In no top 200 market does the combined total of all operating PCS licensees yet exceed 25% of mobile two-way voice subscribers.[3] Clearly, cellular operators still dominate. Cellular operators= subscribership levels meet or exceed 35% in each of the top 200 markets reviewed by PCIA; 35% is a level that CTIA has warned could permit a firm to exercise "market power".[4] To lift the cap now would ensure that these concentration levels would only increase, leaving consumers with far fewer choices for independent mobile voice providers.

I. IT IS SIMPLY TOO EARLY TO REMOVE THE CAP

A. The Spectrum Cap Promotes Innovation, Spectrum Conservation And Lower Costs to Consumers

[3]Calculations based on market data provided to PCIA by Telecompetition, Inc. See Attachment A and Section II of this pleading.

[4]CTIA Comments at 6; See also, CTIA Petition at 12. CTIA defines market power as the unilateral power of a firm to raise prices of a good or service.

The comments supporting immediate elimination of the cap are long on claims, but short on specifics.[5] Importantly, there is no concrete evidence demonstrating that any wireless competitor is having any difficulty providing any service in any market due to the cap. In fact, Sprint PCS, the nations largest PCS operator, sees no need to eliminate the cap to promote new service offerings. Nor has any carrier used anywhere near 45 MHz in a market to serve its customers. Sprint PCS goes on to explain that carriers who might be approaching the cap can use second and third generation technology that vastly increases the capacity of their networks without the need to load CMRS spectrum or purchase competing wireless networks.[6] Clearly, permitting large amounts of spectrum (and the accompanying networks) to be held by any one company may permit that company to achieve certain internal efficiencies and increase profits but, it is the public interest which is being considered in the Commission=s review of the spectrum cap, not the interests of individual competitors.[7]

In its Comments, AT&T Wireless Services, Inc. ("AT&T") correctly notes that the Commission is searching for new ways to facilitate competition in the CMRS marketplace. AT&T argues, however, that eliminating the spectrum cap and attribution rules would help realize these

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[5]See, for example, AT&T=s allegation that the attribution rules "...create a disincentive to invest in new wireless services." AT&T Comments at 10-12. AT&T=s sole example is where it could not invest more heavily in three wireless "affiliates" because of the attribution rules. AT&T alleges that this prevents the entities from acquiring capital to build-out the systems. However, elimination of the cap would not provide more capital to these entities for a build-out, it would only result in a sale of the companies before they ever built their respective systems. AT&T=s argument is counter to GTE Service Corp.=s ("GTE") argument that there is sufficient access to capital for smaller systems. GTE Comments at 16.

[6]Sprint PCS Comments at 5, 14-15.

[7]*BellSouth Corporation v. FCC*, No. 97-1630 (1st Cir.) (Jan. 8, 1999).

"ambitious" goals.[8] However, elimination of the cap clearly does not facilitate competition, it only facilitates consolidation. It is the Commission=s task in this proceeding to determine whether there are currently sufficient, established, embedded competitors so that elimination of the cap will not impair a competitive marketplace. The facts clearly demonstrate that the necessary level of embedded competition has not yet been achieved.[9]

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[8]AT&T Comments at n.4.; BellSouth Comments at para. 48. See also, GTE Comments at 22-23; Western Wireless Corporation ("Western") at ii.

[9]See, Section II, infra. Attached to AT&T=s Comments is an analysis performed by Economists Incorporation ("EI"), utilizing for statistical purposes a "market" consisting of 205 MHz of spectrum. However, there are three fundamentals flaws in this analysis. First, as stated in PCIA=s original comments, this type of analysis assumes that all 205 MHz has been constructed, which is far from the case. Second, EI includes narrowband spectrum in its analysis, which is not part of the spectrum cap. Third, EI includes in the relevant market all SMR spectrum. Inclusion of more than the Upper 200 SMR channels in a spectrum cap analysis is flawed because much of the "lower" spectrum is presently occupied by non-CMRS and non-SMR systems, and will become even more saturated with such users after completion of the Upper 200 SMR channel relocation.

The cap has not demonstrably hindered development of new technology or services in any way. Bell Atlantic Mobile, Inc. (ABAM≅), BellSouth Corporation and others argue that new spectrum must be made available to meet the demand for wireless services.[10] PCIA agrees, and as related in PCIA=s initial Comments, PCIA believes that the spectrum cap should not limit the ability of any carrier to participate in these new and exciting markets. The cap should remain for now only with regard to existing broadband, two-way spectrum (consisting of PCS, cellular and SMR spectrum). The cap does not now apply in any other CMRS spectrum bands.

As additional spectrum is made available for additional wireless services and technologies, carriers will have access to this spectrum. Even for broadband two-way spectrum, the cap should be increased proportionately to reflect any new spectrum allocated for these purposes. If the Commission believes that these advanced wireless services are not getting out to the public, it should conduct a follow-on inquiry to its recent Section 706 Report to Congress to consider a new spectrum allocation strategy or removal of other barriers to the dissemination of advanced wireless services.

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[10]BAM Comments at 22-27. BAM=s comparison of the broadband two-way wireless spectrum cap to the lack of similar controls for LMDS is inapposite. The two services do not compete for the same customers, and the services have a different purpose and genesis. BAM=s comparison failed to note the spectrum cap (albeit expressed in a different form).

In fact, the efficiencies in spectrum use and declining prices seen to date are a direct result of the cap. AT&T claims those efficiencies arise because wireless competitors have a "direct economic incentive to maximize output," because "the cost of adding additional subscribers is nearly negligible."[11] However, it is clear that the marketplace competition created by the spectrum cap accelerated the digitization of existing services,[12] and without this competition there would have been no direct economic incentive to maximize output. The success of the broadband wireless two-way market, which has only just begun, is the direct result of the spectrum cap, and that success should not now be sacrificed before embedded competition becomes a reality in this market.

The Commission should take particular note of Sprint PCS=s argument that deployment of second generation equipment makes the spectrum cap less intrusive.[13] The spectrum cap has in fact created additional competitors in a market, which has forced existing competitors to make more efficient with their own spectrum assignments. Without this marketplace pressure, there will no longer be the Adirect economic incentive≅ to utilize the assigned spectrum in the most efficient manner.

Several parties argue that aggregation of spectrum in a single market of more than 45 MHz helps realize economies of scale and scope.[14] However, while there may be economies for the licensee, this only translates into economies for the public if the licensee reduces the price for service. Prices will be driven to competitive levels only if there are embedded competitors in the market, and elimination of the cap at this time will injure competitors= start-up efforts. Where the spectrum cap

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[11]AT&T Comments at n. 33.

[12]The Commission reports that 71% of the United States population is now covered by digital cellular service. *Third Annual CMRS Competition Report* at 30.

[13]Sprint Comments at 12-13.

has been truly shown to be an obstacle in specific situations, the Commission has demonstrated its ability to consider waivers.[15]

[14]See, for example, Comments of Western at 8-9.
[15]See, Comments of Triton Cellular Partners, L.P. (ATriton≡).

B. The Commission is Still in the Midst of Creating New PCS Competitors

Elimination of the cap as the Commission is about to embark on the auction of hundreds of C, D, E and F Block Broadband PCS licenses is particularly inappropriate. The Commission only recently announced auctions for 356 C, D, E and F Block Broadband PCS licenses.[16] The auction is scheduled for March 23, 1999. This auction is primarily aimed at smaller companies who will have an opportunity to obtain spectrum under designated entity rules.[17] These PCS entrepreneurs should not be forced to participate in an auction with so much uncertainty as to the fundamental structure of market. The Commission cannot, in all fairness, leave subject to doubt the fundamental issue of market structure while these entrepreneurs are attempting to assess their cost and profitability scenarios.

Apart from uncertainty as to the cap, C Block designated entities face extraordinary challenges in implementing a PCS business plan. Lifting the cap would radically alter the competitive landscape for these entrepreneurs. Yet, designated entities in the up-coming March PCS auctions - in fact, almost all current designated entity license holders - would be left with no Aexit strategy≡ in the face of these changed circumstances, other than to sell to another designated entity.

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[16]Public Notice, DA-98-204 (rel. December 23, 1998, corrected January 21, 1999).

[17]Several small companies support continuation of the spectrum cap, including America One Communications, Inc., DiGiPH, Inc. and Northcoast Communications, LLC

If the Commission intends to change its designated market structure in such a dramatic way, it must do so well in advance for that spectrum in order for potential bidders to accurately assess the value of auctioned licenses. It would be fundamentally unfair to bidders risking significant sums in reliance on the market structure and competitive outlook engendered by the current spectrum cap to change the rules so dramatically now.[18]

II. THE MARKET FOR MOBILE TWO WAY VOICE SERVICES IS EXTRAORDINARILY CONCENTRATED

As PCIA and others explained in their initial comments, the spectrum cap is still necessary to ensure that emerging PCS competitors have the ability to survive in a market dominated by incumbent cellular operators. Without the cap in this early phase of market development, new PCS companies would have little or no chance to create and sustain independent networks and services that provides consumers with the mobile voice choices favored by the Commission. As Attachment A starkly demonstrates, PCS is still in the early stages of development. In almost 50% of the top 200 MSAs, consumers yet have no alternatives to cellular service. In 53% of these markets, all PCS operators combined have 10% or less of customer share. PCS operators serve as much as 15% of two-way voice subscribers in 82% of the markets and 20% or less of subscribers in 96% of the top markets. PCS providers= combined subscribership share exceeds 20% in only 3% of the top 200 MSAs. In no MSA does the combined PCS operator subscribership share exceed 2% of subscribers. On average, PCS holds a 7.6 percent market share in the top 200 MSAs.

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[18]The pendency of this large auction also shows the nascent status of PCS roll-out. Sixteen percent (16%) of PCS licenses will be auctioned in March and only then will licensees begin network build-out and begin commercial operations.

Cellular operators= dominant position is borne out by estimates from other sources. Based upon recent RCR subscribership estimates, for example, cellular system operators still control the dominant share of the two-way voice market in the very top markets.[19] In each of these top markets, all PCS operators combined have an average subscribership share of only 12 percent. The United States Commerce Department also recognizes that continued predominance of cellular operators, despite the rapid growth of PCS networks.[20]

A. This Market Is Concentrated By Any Measure

The Commission=s spectrum cap is based on the Herfindahl-Hirschman Index (AHHI≅), used by the U.S. Department of Justice to assess the consequences of mergers among competing firms. In 1996 the Commission used an HHI index based on spectrum capacity, rather than market share, to analyze the market and establish a cap at a time when PCS operators had no market share. Now that PCS licenses have been granted and many systems are in operation, it is possible to observe Herfindahl index numbers based on actual market share.

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[19]See Attachment B.

[20]U.S. Industry & Trade Outlook >99, U.S. Department of Commerce/International Trade Administration, at 30-12, 30-13.

At the request of PCIA, Telecompetition Inc. of San Ramon, California provided subscribership estimates for the top 200 markets.[21] PCIA asked HAI Consulting to conduct selected HHI analysis based on the Telecompetition subscriber data in Attachment A chosen from the Top 200 MSA/CMSAs. HAI selected two markets at random from each quartile and computed market share Herfindahl indices for each.[22] The results shown in Table 1 are not surprising. In no case is there an HHI less than 3,000, well above the U.S. Department of Justice threshold for a highly concentrated market.[23] Moreover, in every case, the leading firms have a share that exceeds 35 percent, the level which according to CTIA is A . . . recognized to be necessary for undue market power.≅[24]

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[21]Telecompetition relies on a variety of public data sources, including financial analyst and Commission reports.

[22]Telecompetition provides data for cellular, PCS and SMR/ESMR but does not provide shares for each carrier in each category. HAI assumed that within each category, individual carriers are the same size. Telecompetition uses FCC data to identify markets where PCS carriers have entered. In some cases the FCC data may not reflect the presence of relatively new entrants. These entrants will likely have achieved only a small number of customers so the conclusions reached here would not change.

[23]The HHI=s shown in Table 1 are consistent with those calculated by John B. Hayes and submitted as an attachment to the Comments of Sprint PCS. Although derived from different data sources (thus the values are not identical), the conclusions are inescapably the same - the markets continue to be highly concentrated.

[24]CTIA Comments at 6.

TABLE 1

CSA/MSA Rank	CSA/MSA Name	HHI Score
7	Detroit-Ann Arbor-Flint, MI	3172
38	Salt Lake City-Ogden, UT	3282
61	Harrisburg-Lebanon-Carlisle, PA	4433
93	York, PA	4428
107	Corpus Christi, TX	4437
129	Duluth-Superior, MN-WI	3257
152	Medford-Ashland, OR	4432
191	Altoona, PA	4426

These data show that HHI=s based on current market shares[25] are well above a theoretical floor of 1343, suggesting that the competitive benefits from PCS build-outs are far from fully realized.[26] As additional competitive capacity comes on line, competition in the wireless business will

[25]HAI has examined two markets where data was available to determine what the impact is on HHI=s due to staggered entry by PCS operators. The number of subscribers ascribed to PCS by Telecompetition has been pro-rated among PCS carriers based on the number of months they have been in service, the results for Detroit and Denver are:

Market	PCS Carriers	HHI without pro-ration	HHI with pro-ration
Detroit	2	3172	3173
Denver	3	3180	3181

The effect of pro-ration appears to be minimal at this time.

[26]HHI of 1343 is based on theoretical capacity of cellular and PCS spectrum in a given market where each cellular carrier has 25 MHz, three PCS carriers have 30 MHz each, three other PCS carriers have 10 MHz each, and an SMR carrier with 10 MHz. Each carrier is presumed independent of the others and spectral capacity equals subscriber capacity. We do not believe it would be appropriate to add other spectrum capacity to this computation. As the Commission has recognized, paging and other spectrum available for other, generally private carrier, mobile services would not allow an adequate substitute for existing cellular, PCS or ESMR spectrum.

increase. On the other hand, mergers or acquisitions involving large firms in local markets could reverse the process by which competition is emerging in wireless markets. Given the current market structure and the lack of demonstrable efficiencies, acquisitions that exceed the existing cap are highly likely to fail antitrust and public interest review.

See *Report and Order*, WT Docket No. 96-59, 11 FCC Rcd 7824 (1996)(A*Spectrum Cap Order*≅). This scenario is consistent with the AAtomized Market≅ presented by the Commission in the *Spectrum Cap Order*. Appendix A of the *Spectrum Cap Order* presented a number of spectrum licensing scenarios and calculated the HHI index for each. The "Atomized Market" provided the lowest index. It is interesting to note that the HHIs in Table 1 are all in the range of those calculated in Appendix A for scenarios where there is no spectrum cap.

The proponents of eliminating the cap argue that the cap is unnecessary given the availability of antitrust and public interest review by the Commission. However, the cap serves a very useful purpose. First, it provides market participants and potential bidders with useful information to the extent that the Commission is unwilling to allow individual markets to be dominated by a single firm or a few very large ones. Second, the cap preserves scarce Commission enforcement resources by eliminating unnecessary merger reviews that would most certainly fail.[27] This also conserves the resources of third parties that would be forced to participate in Commission proceedings in order to protect their interest in a competitive market. This is particularly true for PCS entrepreneurs and designated entities, who would have to divert scarce capital away from network development to oppose mergers on antitrust grounds. The spectrum cap is a cost-effective and pro-competitive substitute for case-by-case Commission review during this period of PCS market development.

At some point, after systems are built and robust wireless competition is well established, it may be reasonable to drop the cap and judge industry consolidation on a case-by-case basis. In the meantime, the cap appears to be a low-enforcement cost rule that is working.[28]

B. The Spectrum Cap is Working

PCIA also asked HAI, Inc. to review the economic analysis of CTIA and other commentors in this proceeding. HAI=s findings are reflected in the following analysis of competition:

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[27]The highly probability of failure would not necessarily deter firms from trying to push the envelope. This is particularly true given that elimination of the cap might be seen by some as weakened resolve on the part of the Commission to enforce the pro-competitive goals underlying the cap.

[28]Where small market overlaps trigger the cap, the Commission could consider exceptions on a case by case basis.

CTIA=s claim that the CMRS market is sufficiently competitive relies principally on a 1993 study by Besen and Burnett, which purports to show that the mobile telephone market was competitive even before PCS carriers entered.[29] While PCIA believes that mobile telephone competition is growing, PCIA does not agree that the market was competitive prior to PCS entry. Returning the two-way mobile wireless market to only two competitors would return the HHI to its previous high level, A... defeating a major purpose of the Commission in creating broadband PCS -- to bring more competition into the concentrated mobile telephony market.≡[30]

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[29]See, Stanley M. Besen and William B. Burnett, AAn Antitrust Analysis of the Market for Mobile Telecommunications Services, December 8, 1993 (ABesen and Burnett≡).

[30]*Spectrum Cap Order* at para. 98.

An analysis conducted by Hatfield Associates, Inc. in 1993 addressed competition in the cellular duopoly in great detail.[31] The reality is that prior to licensing PCS carriers, the cellular market was a capacity-constrained duopoly. Due to a series of mergers among carriers, licenses were concentrated in a small group of firms, implying that firms faced each other in multiple markets. The result was a lack of price competition and high cellular prices and profits.

Although the Hatfield Associates analysis predated the Besen and Burnett paper cited by CTIA, it responded to many of the wireless competition arguments made by Besen in conjunction with other Charles River Associates analysis in earlier papers.[32] Evidence cited by those who believed the market was competitive was faulty. For example, advocates of the competition hypothesis claimed that unstable market shares showed that the market was competitive. In fact, these unstable shares were the result of the head start given to the B license carriers.[33] However, the best evidence

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[31]See, Daniel Kelley, AAn Efficient Market Structure for Personal Communications Services,≅ September 13, 1993, pp. 6-19. This paper was filed by MCI with an *ex parte* presentation in General Docket 90-314.

[32]See, for example, Stanley M. Besen, Robert J. Larner and Jane Murdoch, An Economic analysis of Entry by Cellular Operators Into Personal Communications Services, November 1992.

[33]Both the GSA and the Department of Justice reached the contemporaneous conclusion

that the cellular duopoly was not performing well is the increase in price competition that has occurred since PCS entry, at least in major markets.[34]

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that cellular markets were not competitive. See, Report to Henry Reid, U.S. Senate, Concerns About Competition in the Cellular Telephone Service Industry, 1992. See also, AGAO Witness Tells Senate Panel That Cellular Duopoly Inhibits Competition,≅ Telecommunications Reports, January 18, 1993, p. 17. The Department of Justice cited these findings in its comments supporting the development of PCS. See, U.S. Department of Justice, Reply Comments, General Docket No. 90-314, December 9, 1992.

[34]In the Third Annual CMRS Competition Report the Commission referenced a number of industry reports that showed declining service prices at least in part as a result of competition. Third Annual CMRS Competition Report, at 19-20.

HAI concludes that PCS entry has stimulated a great deal of competition. As a consequence, wireless markets are performing much better than they were before the introduction of PCS. This competition is the result of actual entry by independent firms. The process of introducing competition to wireless markets has not run its course. Many PCS systems, particularly in smaller markets, have not yet been built.[35] Allowing control over spectrum to become more concentrated at this early stage in the development of the market would likely reduce competition.

HAI disagrees with the analysis by the Robert W. Crandall and Robert H. Gertner to the effect that the addition of a single PCS carrier is sufficient to produce fully competitive PCS markets.[36] The market is currently experiencing the rapid growth of new competitors along with the availability of capacity available for new entrants. If the market is allowed to stabilize at a three firm oligopoly equilibrium through acquisitions of new entrants by the incumbents, the recent price competition that Crandall and Gertner document could be reduced or eliminated.[37]

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[35]Indeed, there are 356 returned and reclaimed PCS licenses to be auctioned in FCC Auction #22, scheduled to begin March 23, 1999.

[36]See, Declaration of Robert W. Crandall and Robert H. Gertner, filed with the Comments of Bell Atlantic Mobile, Inc.

[37]PCIA also notes that in 1994 the RBOCs presented statistical and econometric analysis purporting to show that cellular markets were performing competitively prior to the entry of PCS operators. See, Affidavit of Richard S. Higgins and James C. Miller III and Affidavit of Jerry A. Hausman in U.S. v. Western Electric, Civ. Action No. 82-0192-HHG, June 20, 1994 (Bell

CTIA points out that:

> Notably, many CMRS carriers have expended significant resources in recent months to build out their networks. In these situations, such firms may have excess capacity that permits them to increase their output in the near term while incurring relatively few additional costs. Under such circumstances, this is >precisely the situation in which economic analysis indicates that vigorous price competition is most likely, and that collusion is unlikely.=[38]

Companies= Motions for Generic Wireless Waivers). There is no reason to believe that the current RBOC sponsored econometric studies are any more accurate than the earlier ones.

[38]CTIA Comments at 8 (citing Besen and Burnett).

CTIA=s argument is in fact an argument for retaining the spectrum cap. Economic analysis indicates that in a concentrated market with significant barriers to entry, acquisition by an established firm of a new entrant with excess capacity will likely dampen competitive forces. In other words, CTIA can not rely on the presence in the market of a few firms with excess capacity as an excuse for eliminating a rule that would allow these very firms to be acquired by existing competitors.[39]

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[39]There is no question that barriers to entry in this market are high. Allocated spectrum is limited. If a new entrant or existing operator is acquired, there are no others waiting in the wings with available spectrum to enter if competition wanes. In addition, acquiring an existing carrier with a fairly developed network may also decrease the number of available antennae sites for a new entrant. While the number of independent site owners offering multi-tenant capacity is increasing, many of the more desirable hill-tops and roof-tops in urban areas are owned or leased on a long term basis by existing carriers. To the extent there is no single effective alternative to an existing carrier=s site, a new carrier (presuming they somehow find spectrum) may be forced

III. CONCLUSION

The 45 MHz spectrum cap continues to promote new investment, diverse services and the roll out of new competition in the mobile two-way voice communications market. As the Commission has only recently recognized and the subscriber data indicates, PCS licensees are still in the process of becoming full-fledged competitors to incumbent cellular operators. The Commission should not

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to erect multiple sites to achieve the same coverage. Thus, they would be at a cost disadvantage to the incumbent carrier.

Charles Jackson=s analysis for BAM argues if a significant amount of CMRS spectrum is consolidated, more CMRS spectrum would be quickly forthcoming. See, ACMRS Capacity: Expanded Use and Expanded Spectrum≅, Declaration of Dr. Charles L. Jackson, filed with the Comments of BAM. However, the particular spectrum bands discussed by Jackson are already being used by existing licensees that will not quickly or easily relinquish their rights. The time needed for rulemaking, spectrum allocation, and network construction could delay the entry of new competitors by five to ten years. This also presumes that CMRS licensees can make an effective case for additional spectrum over the needs of private mobile system operators, such as public safety entities, or those seeking spectrum for fixed services.

Finally, a number of comments noted that the spectrum cap could prevent CMRS carriers from implementing new services, in particular fixed access service for ILEC competition. There are a number of spectrum allocations available to CMRS carriers (LMDS, DEMS, 38 GHz and MMDS) suitable for fixed access purposes. Given how many larger CMRS carriers are also ILECs (including Bell Atlantic, GTE and SBC) it is doubtful that it is a shortage of spectrum that has kept them from instituting extensive wireless competitive local access.

change or modify the very market structure that makes this evolution to robust two-way voice competition possible. Clearly, the spectrum cap may impact the current courting between wireless companies. These private business desires to consolidate broadband voice markets should not, however, serve as a reason to short circuit Commission efforts to create new, independent and viable PCS networks.

Respectfully submitted,

PERSONAL COMMUNICATIONS
INDUSTRY ASSOCIATION, INC.

By: _____

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ATTACHMENT A

MARKET DATA REPORT

for
PCIA

Revised 1-1-99

Contact: Customer Service
Telecompetition, Inc.
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San Ramon, CA 94583

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PCIA Subscriber Estimates

MSA / CMSA	Wireless: Voice: Basic Service PCS subs (M)	Wireless: SMR/ ESMR subs (M)	Wireless: Voice: Basic Service Cellular subs (M)	PCS + SMR + Cellular subs (M)	% PCS of Total
Hartford, CT	0.0000	0.017	0.267	0.284	**0.0%**
Grand Rapids-Muskegon-Holland, MI	0.0000	0.020	0.243	0.263	**0.0%**
Harrisburg-Lebanon-Carlisle, PA	0.0000	0.010	0.148	0.158	**0.0%**
Allentown-Bethlehem-Easton, PA	0.0000	0.008	0.134	0.142	**0.0%**
Springfield, MA	0.0000	0.009	0.134	0.142	**0.0%**
Youngstown-Warren, OH	0.0000	0.009	0.131	0.140	**0.0%**
Sarasota-Bradenton, FL	0.0000	0.007	0.122	0.129	**0.0%**
Stockton-Lodi, CA	0.0000	0.008	0.118	0.127	**0.0%**
Colorado Springs, CO	0.0000	0.007	0.113	0.120	**0.0%**
Lancaster, PA	0.0000	0.008	0.111	0.119	**0.0%**
Fort Wayne, IN	0.0000	0.007	0.112	0.119	**0.0%**
Daytona Beach, FL	0.0000	0.014	0.097	0.112	**0.0%**
Shreveport-Bossier City, LA	0.0000	0.008	0.098	0.106	**0.0%**
Kalamazoo-Battle Creek, MI	0.0000	0.007	0.097	0.104	**0.0%**
Lakeland-Winter Haven, FL	0.0000	0.006	0.097	0.104	**0.0%**
Melbourne-Titusville-Palm Bay, FL	0.0000	0.005	0.096	0.102	**0.0%**
Lexington, KY	0.0000	0.006	0.095	0.101	**0.0%**
Fort Myers-Cape Coral, FL	0.0000	0.006	0.094	0.100	**0.0%**
York, PA	0.0000	0.006	0.089	0.095	**0.0%**
Lansing-East Lansing, MI	0.0000	0.006	0.087	0.092	**0.0%**
Davenport-Moline-Rock Island, IA-IL	0.0000	0.006	0.085	0.091	**0.0%**
Rockford, IL	0.0000	0.006	0.085	0.091	**0.0%**
Reading, PA	0.0000	0.006	0.084	0.090	**0.0%**
Beaumont-Port Arthur, TX	0.0000	0.006	0.080	0.085	**0.0%**
Pensacola, FL	0.0000	0.005	0.078	0.083	**0.0%**
Salinas, CA	0.0000	0.005	0.077	0.082	**0.0%**
Saginaw-Bay City-Midland, MI	0.0000	0.005	0.077	0.082	**0.0%**
Springfield, MO	0.0000	0.006	0.075	0.081	**0.0%**
Santa Barbara-St. Maria-Lompoc, CA	0.0000	0.004	0.077	0.081	**0.0%**
	Wireless: Voice: Basic	**Wireless: SMR/ ESMR**	**Wireless: Voice: Basic**	**PCS + SMR + Cellular**	**% PCS of Total**

	Service PCS		Service Cellular		
Evansville-Henderson, IN-KY	0.0000	0.005	0.075	0.080	0.0%
Peoria-Pekin, IL	0.0000	0.005	0.075	0.079	0.0%
Corpus Christi, TX	0.0000	0.005	0.073	0.078	0.0%
Utica-Rome, NY	0.0000	0.004	0.069	0.073	0.0%
Fort Pierce-Port St. Lucie, FL	0.0000	0.004	0.066	0.070	0.0%
Binghamton, NY	0.0000	0.004	0.066	0.070	0.0%
Visalia-Tulare-Porterville, CA	0.0000	0.004	0.064	0.068	0.0%
Charleston, WV	0.0000	0.004	0.062	0.067	0.0%
Huntington-Ashland, WV-KY-OH	0.0000	0.004	0.061	0.065	0.0%
Roanoke, VA	0.0000	0.004	0.060	0.064	0.0%
Elkhart-Goshen, IN	0.0000	0.005	0.059	0.064	0.0%
Erie, PA	0.0000	0.004	0.058	0.062	0.0%
New London-Norwich, CT	0.0000	0.004	0.057	0.060	0.0%
South Bend, IN	0.0000	0.004	0.057	0.060	0.0%
Ocala, FL	0.0000	0.004	0.054	0.058	0.0%
Fort Collins-Loveland, CO	0.0000	0.003	0.053	0.057	0.0%
Barnstable-Yarmouth, MA	0.0000	0.003	0.051	0.055	0.0%
Odessa-Midland, TX	0.0000	0.003	0.051	0.054	0.0%
Provo-Orem, UT	0.0000	0.003	0.050	0.053	0.0%
San Luis Obispo-Antascadro-Paso Rbles,CA	0.0000	0.003	0.050	0.052	0.0%
Killeen-Temple, TX	0.0000	0.003	0.050	0.052	0.0%
Naples, FL	0.0000	0.004	0.048	0.052	0.0%
Lubbock, TX	0.0000	0.003	0.048	0.052	0.0%
Amarillo, TX	0.0000	0.003	0.048	0.051	0.0%
Lynchburg, VA	0.0000	0.003	0.047	0.050	0.0%
Waco, TX	0.0000	0.003	0.046	0.049	0.0%
Yakima, WA	0.0000	0.003	0.046	0.049	0.0%
Longview-Marshall, TX	0.0000	0.003	0.045	0.048	0.0%
Springfield, IL	0.0000	0.003	0.045	0.048	0.0%
Johnstown, PA	0.0000	0.002	0.042	0.045	0.0%
Medford-Ashland, OR	0.0000	0.003	0.041	0.044	0.0%
Chico-Paradise, CA	0.0000	0.002	0.041	0.043	0.0%
Tyler, TX	0.0000	0.003	0.040	0.042	0.0%
Topeka, KS	0.0000	0.003	0.040	0.042	0.0%
St. Cloud, MN	0.0000	0.003	0.038	0.041	0.0%
	Wireless: Voice: Basic Service PCS	**Wireless: SMR/ ESMR**	**Wireless: Voice: Basic Service Cellular**	**PCS + SMR + Cellular**	**% PCS of Total**
Mansfield, OH	0.0000	0.002	0.038	0.041	0.0%
Champaign-Urbana, IL	0.0000	0.003	0.038	0.040	0.0%

Joplin, MO	0.0000	0.003	0.036	0.039	**0.0%**
Lake Charles, LA	0.0000	0.002	0.036	0.038	**0.0%**
Richland-Kennewick-Pasco, WA	0.0000	0.002	0.036	0.038	**0.0%**
Merced, CA	0.0000	0.002	0.036	0.038	**0.0%**
Parkersburg-Marietta, WV-OH	0.0000	0.002	0.035	0.038	**0.0%**
Lima, OH	0.0000	0.002	0.035	0.038	**0.0%**
Jamestown, NY	0.0000	0.002	0.035	0.037	**0.0%**
Bellingham, WA	0.0000	0.002	0.035	0.037	**0.0%**
Santa Fe, NM	0.0000	0.002	0.035	0.037	**0.0%**
Benton Harbor, MI	0.0000	0.003	0.034	0.037	**0.0%**
Houma, LA	0.0000	0.002	0.034	0.037	**0.0%**
Redding, CA	0.0000	0.002	0.034	0.036	**0.0%**
Sioux City, IA-NE	0.0000	0.003	0.033	0.035	**0.0%**
Fort Walton Beach, FL	0.0000	0.002	0.033	0.035	**0.0%**
Janesville-Beloit, WI	0.0000	0.002	0.033	0.035	**0.0%**
Lafayette, IN	0.0000	0.002	0.033	0.035	**0.0%**
Pittsfield, MA	0.0000	0.002	0.032	0.034	**0.0%**
Clarksville-Hopkinsville, TN-KY	0.0000	0.002	0.032	0.034	**0.0%**
Wausau, WI	0.0000	0.002	0.031	0.033	**0.0%**
Rocky Mount, NC	0.0000	0.002	0.030	0.033	**0.0%**
Eau Claire, WI	0.0000	0.002	0.030	0.032	**0.0%**
Charlottesville, VA	0.0000	0.002	0.030	0.032	**0.0%**
Terre Haute, IN	0.0000	0.002	0.030	0.032	**0.0%**
Glens Falls, NY	0.0000	0.002	0.029	0.031	**0.0%**
Rochester, MN	0.0000	0.002	0.029	0.031	**0.0%**
Decatur, AL	0.0000	0.002	0.029	0.031	**0.0%**
Laredo, TX	0.0000	0.002	0.029	0.031	**0.0%**
La Crosse, WI-MN	0.0000	0.002	0.029	0.031	**0.0%**
Altoona, PA	0.0000	0.002	0.029	0.031	**0.0%**
Monroe, LA	0.0000	0.002	0.029	0.031	**0.0%**
Jackson, MI	0.0000	0.002	0.028	0.030	**0.0%**
Decatur, IL	0.0000	0.002	0.028	0.030	**0.0%**
Steubenville-Weirton, OH-WV	0.0000	0.002	0.028	0.030	**0.0%**
Bloomington-Normal, IL	0.0030	0.002	0.031	0.036	**8.5%**

	Wireless: Voice: Basic Service PCS	**Wireless: SMR/ ESMR**	**Wireless: Voice: Basic Service Cellular**	**PCS + SMR + Cellular**	**% PCS of Total**
W. Palm Bch-Boca Raton, FL	0.0243	0.013	0.234	0.272	**8.9%**
Brownsville-Harlingen-San Benito, TX	0.0050	0.003	0.046	0.054	**9.2%**
Mcallen-Edinburg-Mission, TX	0.0074	0.004	0.068	0.080	**9.2%**
Appleton-Oshkosh-Neenah,	0.0114	0.008	0.096	0.115	**9.9%**

WI					
Madison, WI	0.0122	0.007	0.103	0.122	**10.0%**
Bakersfield, CA	0.0143	0.007	0.121	0.142	**10.0%**
Fresno, CA	0.0207	0.012	0.174	0.207	**10.0%**
Nashville, TN	0.0325	0.017	0.269	0.319	**10.2%**
Florence, AL	0.0038	0.002	0.028	0.034	**11.4%**
Dothan, AL	0.0040	0.002	0.029	0.035	**11.5%**
Mobile, AL	0.0145	0.006	0.105	0.126	**11.5%**
Tuscaloosa, AL	0.0044	0.002	0.032	0.039	**11.5%**
Montgomery, AL	0.0092	0.004	0.066	0.080	**11.6%**
Huntsville, AL	0.0096	0.004	0.069	0.083	**11.6%**
Las Vegas, NV-AZ	0.0405	0.018	0.285	0.343	**11.8%**
Sheboygan, WI	0.0046	0.002	0.031	0.038	**12.0%**
Green Bay, WI	0.0091	0.005	0.061	0.075	**12.1%**
Reno, NV	0.0119	0.005	0.081	0.098	**12.2%**
NY-N. NJ-Long Island, NY-NJ-CT-PA	0.6595	0.298	4.438	5.395	**12.2%**
Chattanooga, TN-GA	0.0162	0.008	0.108	0.132	**12.3%**
Scranton-Wilkes-Barre-Hazleton, PA	0.0216	0.010	0.143	0.174	**12.4%**
Panama City, FL	0.0046	0.002	0.030	0.036	**12.7%**
Greensboro-Winston Salem-High Point, NC	0.0475	0.019	0.305	0.372	**12.8%**
Tucson, AZ	0.0243	0.009	0.155	0.189	**12.9%**
Charlotte-Gastonia-Rock Hill, NC-SC	0.0499	0.020	0.316	0.386	**12.9%**
Modesto, CA	0.0151	0.006	0.095	0.117	**13.0%**
Sacramento-Yolo, CA	0.0582	0.021	0.368	0.447	**13.0%**
San Diego, CA	0.0885	0.032	0.558	0.678	**13.0%**
Gainesville, FL	0.0063	0.003	0.039	0.048	**13.1%**
Phoenix-Mesa, AZ	0.1033	0.044	0.643	0.791	**13.1%**
Tallahassee, FL	0.0085	0.003	0.053	0.065	**13.1%**
San Francisco-Oakland-San Jose, CA	0.2553	0.098	1.581	1.934	**13.2%**
El Paso, TX	0.0205	0.008	0.125	0.154	**13.3%**
	Wireless: Voice: Basic Service PCS	**Wireless: SMR/ ESMR**	**Wireless: Voice: Basic Service Cellular**	**PCS + SMR + Cellular**	**% PCS of Total**
Wichita, KS	0.0198	0.008	0.120	0.147	**13.5%**
Tulsa, OK	0.0297	0.012	0.179	0.220	**13.5%**
Asheville, NC	0.0073	0.003	0.044	0.054	**13.5%**
Austin-San Marcos, TX	0.0404	0.016	0.241	0.297	**13.6%**
Houston-Galveston-Brazoria, TX	0.1630	0.066	0.967	1.195	**13.6%**
Wilmington, NC	0.0068	0.002	0.041	0.050	**13.7%**

Fayetteville, NC	0.0093	0.003	0.055	0.068	**13.7%**
Hickory-Morganton-Lenoir, NC	0.0149	0.007	0.087	0.109	**13.7%**
Columbus, GA-AL	0.0088	0.003	0.052	0.064	**13.7%**
Norfolk-Virginia Beach-Newprt News,VA-N	0.0545	0.019	0.323	0.396	**13.8%**
Los Angeles-Riverside-Orange County, CA	0.5163	0.195	3.032	3.743	**13.8%**
Atlanta, GA	0.1477	0.052	0.864	1.064	**13.9%**
Richmond-Petersburg, VA	0.0411	0.016	0.237	0.295	**14.0%**
Raleigh-Durham-Chapel Hill, NC	0.0387	0.014	0.225	0.277	**14.0%**
Johnson City-Kingsport-Bris., TN-VA	0.0179	0.007	0.102	0.127	**14.1%**
Cleveland-Akron, OH	0.1199	0.046	0.684	0.850	**14.1%**
Boston-Worcester-Lawrence, MA-NH-ME-CT	0.2540	0.102	1.440	1.796	**14.1%**
Eugene-Springfield, OR	0.0117	0.004	0.066	0.082	**14.3%**
Macon, GA	0.0113	0.004	0.063	0.079	**14.3%**
Canton-Massillon, OH	0.0154	0.005	0.087	0.108	**14.3%**
Augusta-Aiken, GA-SC	0.0102	0.003	0.058	0.071	**14.3%**
Savannah, GA	0.0107	0.004	0.060	0.074	**14.4%**
Knoxville, TN	0.0252	0.009	0.141	0.175	**14.4%**
Athens, GA	0.0053	0.002	0.029	0.036	**14.5%**
Toledo, OH	0.0265	0.010	0.145	0.182	**14.5%**
Memphis, TN-AR-MS	0.0389	0.014	0.214	0.268	**14.5%**
Columbus, OH	0.0613	0.022	0.337	0.420	**14.6%**
Lafayette, LA	0.0140	0.005	0.077	0.096	**14.6%**
Baton Rouge, LA	0.0220	0.008	0.120	0.149	**14.7%**
Seattle-Tacoma-Bremerton, WA	0.1405	0.046	0.765	0.951	**14.8%**
Birmingham, AL	0.0351	0.011	0.190	0.236	**14.8%**
Dayton-Springfield, OH	0.0401	0.005	0.223	0.268	**15.0%**
Washington-Baltimore, DC-MD-VA-WV	0.2820	0.090	1.495	1.866	**15.1%**
	Wireless: Voice: Basic Service PCS	**Wireless: SMR/ ESMR**	**Wireless: Voice: Basic Service Cellular**	**PCS + SMR + Cellular**	**% PCS of Total**
Salt Lake City-Ogden, UT	0.0508	0.018	0.263	0.333	**15.3%**
Minneapolis-St. Paul, MN-WI	0.1458	0.051	0.721	0.917	**15.9%**
Duluth-Superior, MN-WI	0.0106	0.004	0.052	0.066	**15.9%**
Spokane, WA	0.0181	0.006	0.089	0.113	**16.0%**
Portland-Salem, OR-WA	0.0952	0.030	0.469	0.594	**16.0%**
Chicago-Gary-Kenosha, IL-IN-WI	0.4208	0.143	2.031	2.594	**16.2%**

Cincinnati-Hamilton, OH-KY-IN	0.0910	0.029	0.440	0.560	**16.3%**
Tampa-St. Petersburg-Clearwater, FL	0.1041	0.030	0.505	0.639	**16.3%**
Miami-Fort Lauderdale, FL	0.1602	0.050	0.759	0.969	**16.5%**
Denver-Boulder-Greeley, CO	0.1230	0.039	0.582	0.744	**16.5%**
Orlando, FL	0.0742	0.024	0.350	0.448	**16.5%**
Jacksonville, FL	0.0506	0.017	0.237	0.304	**16.6%**
St. Louis, MO-IL	0.1272	0.038	0.593	0.759	**16.8%**
Lincoln, NE	0.0120	0.004	0.056	0.071	**16.8%**
Philadelphia-Wil-Atl Cty, PA-NJ-DE-MD	0.2554	0.072	1.180	1.508	**16.9%**
San Antonio, TX	0.0659	0.019	0.301	0.386	**17.1%**
Omaha, NE-IA	0.0366	0.012	0.166	0.214	**17.1%**
Oklahoma City, OK	0.0504	0.015	0.228	0.293	**17.2%**
Dallas-Fort Worth, TX	0.2498	0.075	1.113	1.438	**17.4%**
Las Cruces, NM	0.0066	0.002	0.029	0.037	**17.5%**
Albuquerque, NM	0.0355	0.010	0.153	0.199	**17.9%**
Milwaukee-Racine, WI	0.0957	0.029	0.407	0.531	**18.0%**
Detroit-Ann Arbor-Flint, MI	0.2947	0.073	1.251	1.619	**18.2%**
Buffalo-Niagara Falls, NY	0.0716	0.019	0.291	0.382	**18.8%**
Syracuse, NY	0.0460	0.012	0.185	0.243	**18.9%**
Albany-Schenectady-Troy, NY	0.0571	0.015	0.229	0.301	**19.0%**
Rochester, NY	0.0664	0.017	0.265	0.349	**19.0%**
Cedar Rapids, IA	0.0118	0.003	0.045	0.060	**19.5%**
Kansas City, MO-KS	0.1141	0.030	0.425	0.569	**20.1%**
New Orleans, LA	0.0809	0.018	0.277	0.376	**21.5%**
Pittsburgh, PA	0.1498	0.030	0.497	0.677	**22.1%**
Louisville, KY-IN	0.0717	0.015	0.232	0.319	**22.5%**
Indianapolis, IN	0.1149	0.022	0.347	0.484	**23.7%**
Des Moines, IA	0.0355	0.007	0.102	0.145	**24.5%**

KEY ASSUMPTIONS

Sources Consulted: Solomon Smith Barney "Mobile Metrics" Spring 1998, DLJ "Wireless Communications" 11-98, FCC WTB Database 1-5-99 update to PCS Buildout Schedule, ATIVA Research Tools, Equifax, 1998 Multimedia Telecommunications Market Review (MMTA), RC

ATTACHMENT B

COMPARISON OF SUBSCRIBER LEVELS IN LARGEST CELLULAR MSAS*

	Cellular MSA	Estimated Cellular Subscribers (mill.)	Cellular Subs. As A % Of Total Market Cellular/PCS Subs.	Estimated PCS Subscribers (mill.)
1	Los Angeles	2.5	84%	0.4
2	New York	1.9	84%	0.3
3	Chicago	1.8	83%	0.3
4	Miami	1.4	93%	0.1
5	Wash/Balt.	1.3	77%	0.3
6	San Francisco	1.2	83%	0.2
7	Detroit	1.1	93%	0.08
8	Philadelphia	1.1	93%	0.08
9	Boston	1.1	94%	0.07
10	Atlanta	1.0	90%	0.1
11	Dallas	0.9	78%	0.2
12	Houston	0.9	89%	0.1
13	Seattle	0.7	91%	0.06
14	San Diego	0.6	85%	0.09**
15	Phoenix	0.6	93%	0.04
16	Tampa	0.6	90%	0.06
17	Minneapolis	0.6	92%	0.05
18	Denver	0.6	87%	0.08
19	St. Louis	0.5	92%	0.04
20	Sacramento	0.5	90%	0.05**

* - All Subscriber Estimates from RCR Magazine 1998 Top 20 List, December 28, 1998
All Estimates Rounded

** - Does not appear in RCR ranking of Top 40 PCS markets. Estimate taken from Telecompetition estimates

QUALIFICATIONS OF HAI CONSULTING, INC.
ALAN J. BOYER AND DANIEL KELLEY

1. We have been asked by the Personal Communications Industry Association (APCIA≅) to address arguments raised in the comments in WT Docket No. 98-205.

1. QUALIFICATIONS

2. Alan J. Boyer is a Senior Consultant at HAI Consulting, Inc.(AHAI≅), of Boulder Colorado. He received a Bachelor of Arts degree in Business Administration from San Francisco State University in 1978 and attended the graduate telecommunications program at the University of Colorado. His professional experience includes ten years with Fidelity Investments in Boston, spent principally with their wireless communications subsidiary Advanced MobileComm, Inc. (AMI). While with AMI he oversaw regulatory affairs, directing their participation in a number of Commission proceedings including the development of PCS rules. Since joining HAI, he has performed critical analysis and cost modeling for a number of different wireless segments, including PCS, AMPs, SMR and LMDS. His resume is attached.

3. Daniel Kelley is Senior Vice President of HAI Consulting, Inc. He received a Bachelor of Arts degree in Economics from the University of Colorado in 1969, a Master of Arts degree in Economics from the University of Oregon in 1971 and a Ph.D. in Economics from the University of Oregon in 1976. His professional experience began in 1972 at the Antitrust Division of the U.S. Department of Justice where he analyzed mergers, acquisitions and business practices in a number of industries, including telecommunications. While at the Department of Justice, he was a member of the U.S. v. AT&T economics staff. In 1979, he moved to the Federal Communications Commission ("FCC") where he held positions as Senior Economist in the Common Carrier Bureau

and the Office of Plans and Policy, and also served as Special Assistant to the Chairman. After leaving the FCC, he was a Project Manager and Senior Economist at ICF, Incorporated, a public policy consulting firm. From September 1984 through July of 1990, he was employed by MCI Communications Corporation as its Director of Regulatory Policy. He has conducted economic and policy studies on a wide variety of telecommunications issues, including local exchange competition, dominant firm regulation, cellular radio competition and the cost of local service. He has filed papers or Declarations in the Commission=s PCS auction proceeding, and in the PCS licensing proceeding. He has advised foreign government officials on telecommunications policy matters and has taught seminars in regulatory economics in a number of countries.

4. He has testified on telecommunications issues before this Commission, the California, Colorado, Connecticut, Florida, Georgia, Hawaii, Maryland, Massachusetts, Michigan, New York, Oregon, Pennsylvania and Utah Commissions, as well as the Federal-State Joint Board investigating universal service reform. His resume is attached

STATEMENT OF QUALIFICATIONS

Daniel Kelley

PROFESSIONAL EXPERIENCE:

Senior Vice President, HAI Consulting, Inc., Boulder Colorado (current position).
Conducting economic and applied policy analysis of domestic and international telecommunications public policy and business issues. Recent projects have included advising Central and Eastern European Governments on privatization and competition matters, assisting a private client with entry into the long distance market in Mexico, analyzing competitive conditions in cellular radio markets, analyzing the economics of cable television regulation, analyzing the prospects for local competition and measuring the economic cost of local service.

Director of Regulatory Policy, MCI Communications Corporation, 1984-1990.
Responsible for developing and implementing MCI's public policy positions on issues such as dominant carrier regulation, Open Network Architecture, accounting separations and Bell Operating Company line of business restrictions. Also managed an interdisciplinary group of economists, engineers and lawyers engaged in analyzing AT&T and local telephone company tariffs.

Senior Economist and Project Manager, ICF Incorporated, 1982-1984.
Telecommunications and antitrust projects included: forecasting long distance telephone rates; analysis of the competitive effects of AT&T's long distance rate structures; a study of optimal firm size for cellular radio markets; analysis of the FCC's Financial Interest and Syndication Rules, and competitive analysis of mergers and acquisitions in a variety of industries.

Senior Economist, Federal Communications Commission, 1979-1982.
Served as Special Assistant to the Chairman during 1980-1981. Advised the Chairman on proposed regulatory changes in the broadcasting, cable television and telephone industries; analyzed legislation and drafted Congressional testimony. Coordinated Bureau and Office efforts on major common carrier matters such as the Second Computer Inquiry and the Competitive Carrier Rulemaking. Also held Senior Economist positions in the Office of Plans and Policy and the Common Carrier Bureau.

Staff Economist, U.S. Department of Justice, 1972-1979.
Analyzed proposals for restructuring the Bell System as a member of the economic staff of U.S. v. AT&T; investigated the competitive effects of mergers and business practices in a wide variety of industries.

EDUCATION:

1976	Ph.D. in Economics	University of Oregon
1971	M.A. in Economics	University of Oregon
1969	B.A. in Economics	University of Colorado

PUBLICATIONS AND COMPLETED RESEARCH:

"Cable and Wireless Alternatives to Residential Local Exchange Service," Berkeley Conference on Convergence and Digital Technology (1997), with Alan J. Boyer and David M. Nugent.

"A General Approach to Local Exchange Carrier Pricing and Interconnection Issues," Telecommunications Policy Research Conference, (1992), with Robert A. Mercer.

"Gigabit Networks: Is Access a Problem?" IEEE Gigabit Networking Workshop (1992).

"Advances in Network Technology" in Barry Cole, ed., After the Break-Up: Assessing the New Post-AT&T Divestiture Era (1991).

"Alternatives to Rate of Return Regulation: Deregulation or Reform?" in Alternatives to Rate Base Regulation in the Telecommunications Industry, NARUC (1988).

"AT&T Optional Calling Plans: Promotional or Predatory" in Harry M. Trebing, ed., Impact of Deregulation and Market Forces on Public Utilities: The Future Role of Regulation (1985).

_____"The Economics of Copyright Controversies in Communications" in Vincent Mosco, ed., Policy Research in Telecommunications (1984).

"Deregulation After Divestiture: The Effect of the AT&T Settlement on Competition," FCC, OPP Working Paper No. 8 (1982).

"The Transition to Structural Telecommunications Regulation," in Harry M. Trebing, ed., New Challenges for the 1980's (1982), with Charles D. Ferris.

"Social Objectives and Competition in Common Carrier Communications: Incompatible or Inseparable?" in Harry M. Trebing ed., Communications and Energy in Transition (1981), with Nina W. Cornell and Peter R. Greenhalgh.

"An Empirical Survey of Price Fixing Conspiracies," Journal of Law and Economics (1974), with George A. Hay. Reprinted in Siegfried and Calvari, ed., Economic Analysis and Antitrust Law (1978) and the Journal of Reprints for Antitrust Law and Economics (1980).

TESTIMONY:

Federal Communications Commission, Application of Cellular Communications of Cincinnati, July 25, 1983 (with Robert J. Reynolds): Optimum firm size in the cellular radio market

Maryland Public Service Commission, Case No. 0450-Phase II, May 31, 1983: Access charge implementation issues

New York Public Service Commission, Case No. 28425, June 1983: Access charge implementation issues

Florida Public Service Commission, Docket No. 820537-TP, June 30, 1983, November 4, 1983, April 9, 1984, June 4, 1984, September 7, 1984, October 25, 1984 and August 15, 1985: Access charge implementation issues

Pennsylvania Public Utility Commission, Docket No. R-832, August 5, 1983: Pennsylvania Bell Rate Case

New Jersey Board of Public Utilities, Docket No. 83-11, February 20, 1984: Access charge implementation issues

New York Public Service Commission, Case 88-C-102, March 2, 1990: Alternative Operator Service Issues

California Public Service Commission, A.90-07-015, July 10, 1990: AT&T Deregulation

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New York Public Service Commission, Case 28425, October 8, 1990: IntraLATA Dial 1 Competition

Massachusetts Department of Public Utilities, DPU 90-133, October 17, 1990: AT&T Deregulation

Georgia Public Service Commission, 3905-U, November 16, 1990: Incentive Regulation

California Public Service Commission, I-87-11-033, September 23, 1991: IntraLATA Competition

Georgia Public Service Commission, Docket No. 3987-U, January 31, 1992: Cross-Subsidy

Colorado Public Utilities Commission, Docket No. 92R-050T, August 24, 1992: Collocation

Connecticut Department of Public Utility Control, Docket No. 9106-10-06, September 25, 1992:

Infrastructure
Maryland Public Service Commission, Case No. 8584, Phase II, July 21, 1995: Local Competition.

Connecticut Department of Public Utility Control, Docket No. 95-06-17, September 8, 1995: Local Competition .

Federal-State Joint Board on Universal Service, CC Docket No. 96-45, June 5, 1996: Cost Modeling.

Colorado Public Utilities Commission, Docket No. 96A-287T, September 6, 1996: Arbitration.

Oregon Public Service Commission, Dockets ARB 3 & 6, October 14, 1996: Arbitration.

Hawaii Public Utilities Commission, October 17, 1996: Arbitration.

Michigan Public Service Commission, October 24, 1996: Arbitration.

New York Public Service Commission, Case No. 28425, May 9, 1997: Access charges.

Colorado Public Utilities Commission, Docket No. 97F-175T, July 18, 1997: Access Charges.

Utah Public Service Commission, Docket No. 97-049-08, October 2, 1997: Access charges.

Connecticut Department of Public Utility Control, Docket No. 96-04-07, February 10, 1998; Access Charges.

ALAN J. (JOE) BOYER

HAI Consulting, Inc.
Senior Consultant **March 1996 B Present**
Integrating industry, regulatory and technical experience, analysis and recommendations have been provided to a variety of telecommunications industry participants. Clients have included AT&T, MCI, CableLabs and PBS. Specializing in wireless topics, projects have included business and economic modeling, business plan creation, FCC spectrum auction management, and due diligence for acquisitions and financial offerings.

Fidelity Capital Telecommunications and Technology Group,
Advanced MobileComm, Inc. **Boston, MA**
Director, Spectrum and Technology Planning **June 1991 B March 1996**
Director of Research **January 1987 - June 1991**
Senior member of the management team within the Telecommunications and Technology Group of Fidelity Capital, a wholly owned subsidiary of Fidelity Investments. Responsible for a range of regulatory, business development, and strategic planning functions focusing on developing wireless and wireline business opportunities. During the period covered, was actively involved in cellular, PCS and SMR projects.

Fidelity Systems Company, **Boston, MA**
Senior Communications Analyst **January 1986 - January 1987**
Principal analyst in Fidelity=s Voice Engineering Group during a major expansion of telecommunication systems supporting Fidelity Investment's financial services business.

General Telephone of California, **Long Beach, CA**
Various Positions **June 1978 - August 1984**
Performed various supervisory and craft roles in Special Services and Operator Services.

EDUCATION
California State University, San Francisco
BA, with Honors, in Business Administration granted 1978. Emphasis in International Finance
University of Colorado, Boulder
Course work completed for MS in Telecommunications, 1984-85.

Papers and Lectures/Presentations
AEnduring Local Bottleneck II≅ (ELB II), 1997, with Daniel Kelley and David Nugent.

Spectrum Management in the United States, University of Colorado, Boulder CO, June 1998

Broadband Access, The New Frontier of Local Access Competition, Second Annual Telecommunications Law Conference, Austin TX, April 1998.

The FCC Auction Process, PCIA Part 90 Educational Session, Las Vegas NV, April 1998.

Local Exchange and Broadband Access Competition B Work in Progress, Texas Telecom Summit, Austin TX, December 1997.

PCS as a Wireless Alternative to Residential Local Exchanges Service, Telecommunications Policy Research Conference, Alexandria VA, September 1997.

Bytes in Flight B Broadband Wireless Services, Boulder Chamber of Commerce Technology Brown Bag, Boulder CO, August 1997.

Wireless Local Loop In the United States, Frost and Sullivan Fourth Annual Outlook For the Mobile Communications Industry, Dallas TX, January 1997.

PCS Technology and Market Overview, Association of Colorado Telecommunications Professionals, Denver CO, December 1996.