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FEDERAL COMMUNICATIONS COMMISSION
OFFICE OF THE SECRETARY

September 8, 1993

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HAND DELIVERY

The Honorable James H. Quello
The Honorable Ervin S. Duggan
The Honorable Andrew C. Barrett
Federal Communications Commission
1919 M Street, N.W. Eighth Floor
Washington, D.C. 20554

Re: GEN Docket No. 90-314
ET Docket No. 92-100
Ex Parte Presentation

Gentlemen:

PCS Action is pleased to present to you our Vision for PCS, a refutation of CTIA's recently submitted PCS "white papers," and related materials.

Of greatest concern to the members of PCS Action is the allegation that the studies relied upon by PCS Action to demonstrate that a 40 MHz license allocation is required were manipulated and false. These allegations are wrong.

The reports speak for themselves. The COMSEARCH studies support our contention that license allocations of 40 MHz are crucial for the timely and competitive implementation of PCS.

The particular study attacked by CTIA was done by COMSEARCH, and we understand that COMSEARCH is corresponding directly to you to correct the record.

Congress has provided regulatory parity in its recent legislation to ensure that new competitors will be regulated in a manner similar to cellular licensees. Now it is time for the FCC to provide these new competitors with spectrum parity. This can only be done with 40 MHz allocations and large license

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areas. These allocations are essential if PCS is to bring new and competitive wireless services to the American public.

Thank you for your continued interest in this matter.

Very truly yours,

Ronald L. Plesser

cc:

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September 8, 1993

A VISION OF THE FUTURE

The FCC faces a choice in the creation of new personal communications services ("PCS"). This is a choice of visions. Will PCS fulfill the vision of new wireless networks as an integral part of the new national infrastructure or will it be a little frosting on the cake of existing mobile voice services?

The members of PCS Action -- telecommunications equipment manufacturers, entrepreneurs, multi-media companies, an interexchange carrier and a cellular service provider -- believe the choice is clear:

> An expansive vision of PCS will best serve the public interest and the dynamic needs of American telecommunications in the 21st century at a low cost by providing high-quality digital wireless communications to a mass market (60 million Americans within the next ten years).

The needs of American telecommunications in the 21st century are best served by a PCS industry capable of providing not only wireless and portable voice communications but increasingly sophisticated (though still inexpensive enough for a mass market) data and video transmission services as well.

This expansive vision requires a system of high-capacity, wide-area wireless networks: a system of 40 MHz licenses in large license areas.

Such a system would introduce vigorous competition into the wireless telecommunications market, saving the consumer billions of dollars and encouraging the service innovations that will keep the United States in the forefront of this burgeoning global industry.

Make no mistake: those who say they share this vision, but then demand limited band width and many small licenses, are either being short-sighted or disingenuous.

This has been the position of the Cellular Telecommunications Industry Association ("CTIA"). They have

two goals: one is to obtain additional spectrum for themselves and the second is to limit the creation of wireless services that will compete with them in a meaningful way. Nine cellular companies control 90 percent of today's cellular subscribers in the United States in large regional areas with license allocations of 25 MHz of clear spectrum.

It is not surprising, therefore, that the CTIA not only wants its members to get a total of 45 MHz but is promoting that the new competitors have only 20 MHz of cluttered spectrum broken down into 734 MSAs and RSAs and that there be so many of these fractionalized licenses in each market that none will be well financed. The consistent theme throughout their recently submitted "white papers" is to limit and fractionalize the emergence of competitors to these services. In our view, their statements have contained many misstatements and exaggerations.

The promise of new technologies has been realized by some in our society, but not by all. Cellular services are used by approximately 12 million Americans. The cost of cellular services remains outside of the grasp of most Americans today even as cellular provides the promise of digital communications tomorrow.

The vision of PCS shared by PCS Action members includes small, low-power telephones and data devices that can be shared by millions of individuals in a market with little capacity limitation. They will, therefore, be available to the mass market at mass market prices. This means 60 to 70 million PCS customers. Cellular prices, too, will come down as a result of competition.

This vision includes making routine the ability to perform any communications task at the time and place of one's choosing. It includes, for example, a portable newspaper with voice and video built in. A person in an office, in a car, in a train, in a house, or on a boat could, through the use of a portable device, call up a favorite newspaper, magazine, or new form of data service. The information would be current as of the time of the use, not as of when the newspaper went to press.

The choices faced by the Commission entail risks. On the one hand, the risk is that the Commission may grant more spectrum to PCS providers than they may ultimately need. We believe that this will not be the case and have demonstrated that even after microwave congestion is eased, 40 MHz will be necessary to enable PCS both to provide new data and imaging services and to compete with the local loop.

On the other hand, the risk of granting too little spectrum is that PCS will be stopped before it can even start. Too little spectrum will mean too little investment, too much interference with existing microwave users, too little channel capacity to accommodate a mass market, and too little band width to make possible the wireless data and video transmission services that are part of the PCS promise. Again the choice is clear.

The amount of spectrum allocated to PCS will critically affect the timing of PCS deployment, which in turn will determine the viability of PCS as an industry. Delays in clearing spectrum due to a limited spectrum allocation will keep PCS from launching until the end of the decade. By then, PCS may find itself chasing a market that the current cellular duopolists will have captured. The loser here would be the American public with less competition, fewer new jobs, and a small vision of PCS. The choice is clear: to create PCS as a big vision.

Forty MHz Per License

Of all the issues facing the Commission as it authorizes personal communications services, the most crucial are the size of the spectrum allocation to be authorized for PCS licensees and the size of the market areas.

The amount of spectrum PCS licensees will be permitted to utilize will determine the number of Americans who can be served by PCS and the cost of that service, the speed with which PCS will be deployed, the voice quality PCS will be able to attain, whether highly demanded PCS data transmission will be feasible, and whether PCS will be a viable competitor to cellular telephony and, ultimately, the local exchange -- in short, whether PCS will succeed or fail.

The members of PCS Action believe strongly that an allocation of 40 MHz per PCS licensee is necessary. An allocation of 40 MHz per licensee is not excessive or extravagant; it is simply the allocation that the science underlying PCS demands. Many of the major manufacturers that will design and build PCS equipment agree that a 40 MHz assignment per licensee is imperative to permit PCS to be implemented quickly and efficiently in the United States, particularly given the Commission's Emerging Technology decisions grandfathering incumbent public safety microwave systems. This allocation is consistent with the vision American consumers hold for PCS, as well as with PCS assignments by our international competitors, which are moving ahead to implement PCS this year with allocations of clear

spectrum that are effectively larger than any option being considered by the Commission.

CTIA has taken particular aim at this issue, and has sought to attack the foundation of the 40 MHz argument and has asserted that 20 MHz is sufficient. They in particular accuse PCS Action of manipulating a study done by COMSEARCH. They base their attack on subsequent studies completed by COMSEARCH for Bell Atlantic and GTE. Attached to this paper is a detailed refutation of CTIA's attack of the April COMSEARCH study. The studies are totally consistent and indicate that 20 MHz licenses would significantly delay the introduction of PCS services. Moreover, the studies indicate that PCS will be implemented more rapidly and effectively with 40 MHz licenses.

Again, it is not surprising that CTIA is seeking 20 MHz for each license. That will result in 45 MHz for them if they obtain licenses and, for everyone else, 20 MHz of cluttered spectrum that will never be totally clear given the presence of public service users.

Size of License Area and Number of Licenses Issued

The size of the license area and the number of licenses assigned in each license area are additional important issues. Licenses should be assigned on the basis of large areas; MSAs, RSAs, and BTAs are far too small. It would be counterproductive to build a national infrastructure from many small license areas that are simply traded in a private auction after the public auction has taken place.

This was the case with cellular where 734 licenses were issued. Nine companies now control more than 90 percent of today's cellular subscribers in the United States. This consolidation was done in post-license acquisitions. The same thing might happen in PCS if too many small licenses are awarded. But, even if PCS can overcome obstacles never faced by cellular -- that is, consolidating while competing against entrenched wireless providers already in place -- this method of achieving large service areas is terribly inefficient and results in speculators pocketing sums lost forever to the federal treasury.

PCS can succeed only if it is able to realize the economies of scale that have proven necessary in the existing wireless industries. As the annual reports of various cellular providers show, wider area systems cost less to operate. The key to operating economies is a large service area.

Moreover, today's consumer expects wireless services to be completely mobile. Consumer demand has led cellular

evolution to wider geographic coverage with increasing movement toward the development of seamless nationwide roaming capabilities. Major providers of wireless services recognize that the geographic scope of their service must keep pace with consumer expectations. For example, in disclosing last month the nation's fifth largest merger ever, AT&T and McCaw announced their goal of nationwide wireless service.

Thus, large geographic areas for PCS are competitively essential. PCS cannot provide the effective price and service competition to existing mobile service providers if PCS is marginalized in small, ineffective licensing areas.

Moreover, each PCS market should be served by two, or at most three, PCS licensees. PCS will be launched in a market already dominated by wireline and cellular telephone services. Balkanizing PCS by issuing too many licenses would keep any PCS licensee from competing effectively. Too many licenses would consign our new industry to the margins of the marketplace. The very first page of CTIA's fourth so-called "white paper" illustrates the marginalization that would occur and the weak competition to entrenched service providers that would result from too many PCS licenses.

The issuance of too many PCS licenses will also slow service to the public. As the number of PCS providers grows, unit costs to the providers rise, or service quality declines, or both. As a consequence, licensees will conclude that their potential offering is not a viable business and will either withdraw from the market or seek to consolidate efforts with other licensees. The net effect is to delay entry and service to the public.

PCS License Eligibility

The rapid deployment of new technologies and the development of a new telecommunications infrastructure are critical national goals. PCS is an important element of both goals and could add significantly to the level of competition in less-than-fully-competitive telecommunications services markets, thereby benefitting the public. In particular, PCS could provide LEC-equivalent wireless local loop services and services competitive with the services currently provided by cellular. The encouragement of competition is a long-standing Commission goal.

Simply stated, existing cellular service providers do not have any incentive to fully develop services that will compete with the services they already provide. PCS Action believes that the Commission should adopt rules prohibiting potential PCS competitors from being eligible to hold a PCS

license in the markets where they provide and dominate competing services.

PCS Action believes that the FCC must take steps to ensure that PCS is a competitive service providing diversity in wireless communications. Because competition is nullified when an entity is pitted against itself, PCS Action believes that cellular incumbents and their affiliates should be free to apply for PCS licenses anywhere in the country <u>except</u> in their home region. A cellular incumbent or its affiliate should be able to apply for a PCS license <u>only</u> if the applicant serves less than 20 percent of the population to be served by the PCS license.

PCS Action's position on cellular eligibility echoes the recommendations of key federal agencies, which uniformly favor prohibiting cellular companies from bidding on PCS licenses covering their own service areas:

National Telecommunications and Information Administration:

> "[W]e recommend that the Commission promote competition among PCS and cellular providers by initially prohibiting the acquisition of PCS licenses by cellular providers in their own service areas . . . . [T]he Commission should review this limitation, in light of subsequent market developments, three years after initially assigning PCS licenses."[1/]

U.S. Department of Justice:

> "[T]he FCC should not at this time permit any firm to control both a cellular and a PCS license in the same geographic area. That restriction, which should be reexamined in a definite time period (<u>e.g.</u>, four years), we believe, should apply equally to both wireline and non-wireline cellular licensees."[2/]

1/ Comments of the National Telecommunications and Information Administration at 27, FCC GEN Dkt. No. 90-314 & ET Dkt. No. 92-100 (Nov. 9, 1992).

2/ Comments of the U.S. Department of Justice at 29-30, FCC GEN Dkt. No. 90-314 & ET Dkt. No. 92-100 (Nov. 9, 1992).

U.S. General Accounting Office:

> "In allocating the spectrum and granting licenses for the new personal communications services, the FCC should consider establishing a policy that gives first preference to firms that are not current cellular telephone service providers in a given market area . . . ."[3/]

The benefits that could be brought to PCS by experienced cellular service providers, moreover, would not be lost by adoption of this proposal. A cellular licensee and its affiliates barred from becoming a PCS licensee in one market would be eligible in other markets where it did not have an overwhelming presence. An out-of-region cellular licensee would have a greatly diminished incentive and opportunity to conduct its PCS operations in an anti-competitive manner, and therefore, should not be barred from participation under all circumstances.

Conclusion

The vision of a new competitive voice and data network requires the allocation of 40 MHz of spectrum for large market areas. The primary opposition to this proposal has been from various entrenched incumbents seeking to protect themselves from effective competition.

The public interest here dictates the creation of rules that will foster the vision of PCS as a large scale voice and data service available to a mass market. There must be 40 MHz licenses in large service areas to realize this vision.

3/ U.S. General Accounting Office, "Telecommunications: Concerns About Competition in the Cellular Telephone Service Industry" at 42 (GAO/RCED-92-220 July 1992).

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REFUTATION OF CTIA'S SPECTRUM-RELATED WHITE PAPERS

CTIA incorrectly contends that the April study by COMSEARCH "was manipulated" to support the views of PCS Action.[1]

CTIA's Charges of "Manipulation" Are Wrong

COMSEARCH is an independent frequency coordination firm. It conducted the April study[2] on its own, following discussions held at the February 25, 1993 Telocator Technical & Engineering meeting. No one commissioned, funded, or sponsored the study. Indeed, PCS Action did not even exist when COMSEARCH undertook its study.

PCS Action, however, in its original white paper submitted to the Federal Communications Commission, has cited this study as support for one of the principal rationales justifying the allocation of 40 MHz licenses for PCS. The April COMSEARCH study confirms that the allocation of 20 MHz will make the timely roll-out of PCS impossible.

CTIA has asserted that a more recent study, sponsored by a CTIA member, refutes the April study's conclusions.[3] CTIA states that the April study's power specification for handsets (1 watt) was too high and the technology assumed (time division duplex or "TDD") was inappropriate. When COMSEARCH's model is applied using lower power and assuming different technology, CTIA asserts that the microwave interference "disappears."

This is flatly wrong, partly because in focusing on handset power levels, the CTIA ignored base station power. With base station power levels factored in, the interference characteristics stay virtually the same, even assuming lower handset power. As both the April and the recent COMSEARCH studies indicate, 20 MHz allocations for PCS will make timely roll-out of PCS impossible, while 40 MHz allocations will promote timely implementation of PCS.

PCS Action has fairly presented the April Comsearch study. In fact, Mark Fowler, President of Bell Atlantic Personal Communications, a sponsor of the new study and member of CTIA, has disavowed CTIA's charges of manipulation:

"[W]e're distressed about CTIA's characterization of the PCS Action white paper as involving manipulation to produce [the April COMSEARCH study's] conclusions."[4]

* * *

CTIA incorrectly asserts that the new COMSEARCH study shows (a) that far less potential for interference exists between PCS systems and microwave incumbents than indicated by the April study and (b) that the April study's conclusion's are invalid.

The Studies Reached Consistent Results

The results of the new study are thoroughly consistent with the results and conclusions of the April study:

- The studies conclude that operation of PCS in 20 MHz or 40 MHz bands is feasible *if* sufficient microwave users are relocated and that smaller allocations require the relocation of more microwave users before PCS can be deployed -- a process that delays the deployment of PCS.

- The timing of microwave relocations is crucial to the rapid deployment of PCS, and 40 MHz allocations will facilitate deployment of PCS because they offer PCS operators more time to relocate microwave incumbents who are willing to move.[5]

  - The April study showed that a 40 MHz allocation plan would require the relocation of 3 microwave users to launch PCS, as compared to 14 microwave users under a 20 MHz allocation plan.[6]

  - The new study showed that a 40 MHz allocation plan would require the relocation of 5 microwave users to launch PCS, as compared to 22 microwave users under a 20 MHz allocation plan.[7]

The Relocation of Microwave Incumbents is Unavoidable

The results of the new study do not reveal a lesser spectrum interference problem.

- Indeed, the April study required fewer relocations to make spectrum available than did the new study.[8]

- A comparison of the relocations required in each study indicates that, to *begin* operating PCS under a

20 MHz allocation plan, the new study required nearly 60 percent more relocations to make spectrum available: relocations of 22 microwave links versus relocations of only 14 microwave links.[9]

CTIA's "Vanishing" Act

CTIA contends in its showcase illustration that relocation of only three microwave paths yields the virtual disappearance of microwave interference. In fact, the new study shows that the interference zones do not totally disappear: the relocations yield 7.5 MHz (not 10 MHz) of available spectrum.[10]

- Moreover, the April study showed that the same three relocations were required to yield the minimum spectrum necessary throughout the MSA to operate a PCS system in that license block.[11]

"Spectrum Clearing" versus "Spectrum Sharing"

The relocation of three microwave links per block does not diminish the challenge of microwave congestion. Even if CTIA were correct that microwave interference could "disappear" with the relocation of three microwave links per block, CTIA's contention fails to undercut the conclusion that clearing the PCS band of most microwave users would be necessary to deploy PCS if a 20 MHz allocation plan were adopted.

If projected nationally, requiring each of five PCS licensees (in each of the 734 license areas proposed by CTIA[12]) to relocate three microwave links in order to start offering PCS would require the simultaneous relocation of all microwave incumbents, including the grandfathered public safety agencies (5 x 734 x 3 = 11,010).[13]

Sound Assumptions Underlie The April Study

The April study used an operating power level that would approximate a worst case scenario for a system that is likely to be deployed.

- A worst case but realistic operating power level is essential because microwave incumbents generally do not use "average" values in predicting interference into their systems.[14]

- The April study's operating power level is consistent with the 1 watt maximum transmit power of DCS 1800 and other systems that are being developed. The

1 watt base station assumed in the April study is, if anything, a smaller value than that which actually may be deployed.

- CTIA focused on the different assumptions for the power level of handsets, which do not affect the power level of base stations. Yet, in both studies, the interference caused by the base stations -- not the handsets -- was the determinative factor in assessing how many incumbent microwave users would need to be relocated,[15] which explains why both studies reach similar results.

Further, the use of TDD technology over FDD also was sound. Even Southwestern Bell, a CTIA member, has concluded in a recent study that use of FDD worsens the interference problem and that the "ideal" PCS radio technology for dense sharing environment would use TDD.[16]

* * *

CTIA incorrectly (a) characterizes microwave incumbency in the PCS band as a "short-term problem" affecting only the 11 largest cities, (b) asserts that large spectrum blocks do nothing to solve the interference problem, and (c) suggests that the process of relocating incumbent public safety agencies will be quick and easy, inexpensive, and automatically successful.

Microwave Incumbency Is Not A "Short-Term Problem"

Microwave incumbency will remain a problem for PCS operators well into the year 2000 -- it is no "short-term problem." For the 20 percent of incumbents that are public safety agencies, the incumbency problem could last indefinitely.

The process for relocating microwave incumbents will require negotiation between multiple parties, coordination and planning by engineers, and approval by the FCC. The process of performing the frequency coordination, engineering, licensing, and installation today often takes 18 months for a single link. The delay would be inordinate if thousands of links were being relocated in the same time frame. There simply are not enough qualified engineers in this country to make such a simultaneous relocation -- or anything remotely close to simultaneous -- possible.

Microwave incumbency will remain a problem for PCS operators well into the year 2000 given that:

- Thousands of microwave links must be relocated,[17]

- Microwave incumbents may not be involuntarily relocated for three years from the commencement of PCS licensing,[18]

- Thousands of public safety incumbents are grandfathered permanently and may never be relocated involuntarily,[19] and

- FCC resources required for approval of the relocation plans are limited.

Microwave Interference Is Not Solely A Large City Phenomenon

Microwave users operate throughout the United States, in mid-sized cities, small towns, and rural areas. While most of the 734 MSAs and RSAs have some part of the 1850-1990 MHz band occupied by microwave incumbents, 175 MSAs have every frequency in that band already occupied by microwave users.

For example, cities such as Orlando, Florida, with 36 paths (32 of which are public safety), Tulsa, Oklahoma, with 24 paths, and Bismarck, North Dakota, with 15 paths, have significant microwave congestion. The fact is that microwave density can be high even in lesser populated areas.

The Benefits of a 40 MHz Allocation Plan

Spectrum blocks of 40 MHz will permit PCS licensees to deploy services rapidly, operate viably, and achieve the public benefits expected of PCS.

Twenty MHz allocations will cripple the deployment of PCS. With only a 20 MHz spectrum block, a single incumbent microwave user can block all access to spectrum in an important market segment within a licensee's service area.[20]

A 20 MHz plan would result in extensive disruption, requiring relocation of approximately 50 percent of the 10,000 existing microwave links, including 100 percent of the public safety links, within three years of licensing just to initiate service.[21]

- Too-small spectrum allocations would require all PCS licensees to be working to relocate microwave users at essentially the same time!

  * Equipment for relocation bands, which are just now being rechannelized by the Commission, would

have to be produced in mass quantities in time for this relocation.

* Innumerable engineers would have to be deployed to effectuate the relocation.

By comparison, a 40-MHz allocation provides room for the operation of PCS without interference by opening up at least twice as much usable spectrum as would allocations of 20 or 30 MHz[22/], and by requiring less initial relocation of public safety microwave users than would allocations of 20 or 30 MHz.[23/]

The Process of Relocating Incumbent Public Safety Agencies Will Be Slow, Expensive, Uncertain, and Incomplete

Public safety agencies have been clear in stating their opposition to relocation: as a matter of principle, not money, they will not move out of the PCS spectrum.[24/]

Those public safety incumbents willing to move will hold all of the leverage in the negotiation process: they do not have to return the phone calls of PCS operators, let alone move, in order to survive, while PCS operators must pay them merely to launch service.

Even if negotiations can be completed successfully, the logistics of relocating microwave licensees would cause significant time delays. Consequently, too-small allocations for PCS would necessitate a nationwide band-clearing strategy -- time-consuming relocations will be necessary in every major market in virtually the same time frame.

* * *

CTIA ignores other arguments unrelated to microwave congestion that also support 40 MHz allocations for PCS.

PCS: More Than Voice Services

Forty MHz is necessary so that PCS can offer a wide range of high-speed data services and information services.[25/]

PCS has always been envisioned as providing more than mere voice applications. Data applications envisioned range from facsimile and E-mail to broadband data, advanced intelligent network services, and multimedia. Information services would include graphics, imaging, and compressed video in real time.

These new applications will require significant bandwidth. If these new services must contend for less than 40 MHz of shared spectrum, it is unlikely that PCS will be able to provide them.

PCS: Mass Market, High-Quality, Mobile Voice Services

Allocations of 40 MHz of spectrum are needed to accommodate the demand for PCS, which is estimated to be six times greater than for current cellular services, and to provide wireline-quality voice transmission.[26]

- One study has found that about 50 MHz of clear spectrum per licensee would be required to meet the demand for PCS in the United States.[27]

- Other countries have recognized these facts and have allocated 30 MHz (Germany) to 50 MHz (United Kingdom) of clear spectrum for PCS.

NOTES

1/ See CTIA, "PCS White Paper No. 3: Justifying 40 MHz PCS Allocations--'Study' Was Based on Invalid Assumptions," Aug. 25, 1993.

2/ See Comsearch, "Spectrum Allocations and Their Impact on Microwave User Relocations: A Case Study," April 12, 1993 (hereinafter referred to as the "Comsearch Microwave Relocation Case Study").

3/ Both Bell Atlantic and GTE commissioned Comsearch to conduct recent studies. Both studies assumed similar technology for 20 MHz blocks, but only the GTE study applied them to the April study, i.e., to 20 MHz, 30 MHz, and 40 MHz blocks. Because the only new study that CTIA has chosen to reproduce in its "white paper" is that of GTE, this document refers to the GTE study only.

4/ PCS News (Sept. 2, 1993).

5/ See Comsearch Microwave Relocation Case Study.

6/ See Comsearch, "Spectrum Allocations and Their Impact on Microwave User Relocations: A CDMA Study of Detroit," § 4.1 (Aug. 17, 1993) (hereinafter referred to as the "GTE Study").

7/ Id.

8/ A careful block-by-block comparison of the relocations required in the April study and those required in the new study indicates that, on the whole, the April study required fewer relocations to make spectrum available.

Nevertheless, the number of relocations required to make spectrum available for PCS throughout the Detroit MSA is essentially the same for both studies. For example, under a 20 MHz allocation plan, to make 50 percent of the block available throughout the MSA, the GTE Study required relocation of 22 microwave links, one less than required by the April study. See GTE Study, Fig. 4.1-1.

Under a 40 MHz allocation plan, on the other hand, to begin operating with at least 25 percent of the block available throughout the MSA, the GTE Study required relocation of five microwave links, two more than required by the April study. See id. Fig. 4.1-2. Ten years after licensing, when 75 percent of the block would be needed throughout the MSA, both studies required relocation of 26 microwave links. See id.

9/ See GTE Study Fig. 4.1-1.

10/ See GTE Study Fig. 3.2-8 (discussing Block D, 1960 - 1970 MHz).

11/ See Comsearch Microwave Relocation Case Study, Fig. 4.2-1.

12/ CTIA, "PCS White Paper No. 1: Cellular/IVDS Service Areas for PCS Means Faster Service," Aug. 11, 1993.

13/ In reality, because the degree of microwave congestion varies in different regions of the country, to launch PCS under a 20 MHz allocation scheme would require the relocation of approximately 7,000 microwave incumbents, not 10,000 or 11,000.

14/ See "Compatibility Test of PCN America Spread Spectrum with Point-to-Point Microwave System," Houston Area Microwave Users Group, July 23, 1991.

15/ See GTE Study § 3.1 ("with this set of assumptions the mobile part of the PCS system did not appear to be very interesting"); see also id. §§ 3.2-3.4 (results fo base stations for 20, 30, and 40 MHz allocations).

16/ Southwestern Bell Corp., "1.9 GHz PCS Shared Spectrum Availability Analysis for Selected Locations in Houston, Texas," Aug. 18, 1993 (discussed at "Overall Observations and Conclusions 2").

17/ There are approximately 10,000 microwave links in the PCS band. Assuming that a system can begin operating with less than the full spectrum block allocation available for use and migrate microwave users off other parts of the allocated block as demand and cash flow increases, Comsearch has estimated that the minimum clear spectrum everywhere in the license area needed to operate PCS starts at 25 percent of the allocation within three years of licensing and evolves to 75 percent of the allocation within 10 years after licensing. See Comsearch Microwave Relocation Case Study at § 3.0. Federal law requires the FCC to begin licensing PCS by 1994.

18/ See Third Report and Order and Memorandum Opinion and Order, ET Dkt. No. 92-9 (released on Aug. 13, 1993).

19/ See id. Approximately twenty percent of the 10,000 microwave incumbents are public safety agencies.

20/ Microwave licensees typically use two 10 MHz channels -- a total of 20 MHz -- that will correspond PCS allocations. See Comsearch, "Analysis of the 20 MHz, 30 MHz & 40 MHz PCS Block Allocations," filed with Comments of MCI Telecommunications

(Footnote continued on the next page)

(Footnote continued from the previous page)

20/ Corp. (FCC Gen. Dkt. No. 90-314, Nov. 9, 1992) (hereinafter "Comsearch Analysis of PCS Allocation Plans").

21/ See Comsearch Microwave Relocation Case Study at § 5.0.

22/ See Comsearch Analysis of PCS Allocation Plans.

23/ See Comsearch Microwave Relocation Case Study at § 5.0.

24/ See, e.g., Statement of Capt. B. E. Wenke of Los Angeles County Sheriff's Dep't, FCC En Banc Hrng. (Dec. 5, 1991) at 5 (questions the usefulness of compensation schemes for relocation of microwave users, especially in regions where a "lack of available spectrum in appropriate bands" exists).

25/ See PCS Action, Inc., "White Paper on PCS Spectrum Issues," at 12-13 (July 21, 1993).

26/ See id. at 11-12.

27/ See Telocator PCS Technical and Engineering Committee, "Telocator Spectrum Estimates for PCS Report: An Analysis of Clear Spectrum Required to Support Emerging PCS Services" at 3 (1992).

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POSITION ON LICENSE ALLOCATION

PCS Action consistently has held that the Federal Communications Commission must issue PCS licenses of 40 MHz if PCS is to be implemented expeditiously and reach its full potential as a large-scale voice and data service available to a mass market.

For the same reasons, PCS Action has further advocated that PCS licensing should be implemented in large areas. Markets that approximate LATAs, MSAs (metropolitan statistical areas), RSAs (rural service areas), and BTAs (basic trading areas) fall far short of the large service areas needed for effectual deployment of PCS. Moreover, PCS Action has advocated that there should be no more than three PCS licenses per market.

PCS Action also has argued that, to encourage new competition in mobile telecommunications, the Commission should place a single, reasonable restriction on the eligibility of cellular telephone companies for new PCS licenses.

Specifically, we have recommended that cellular companies be eligible for PCS licenses within their existing service regions only in cases where such companies control cellular telephone access to 20 percent or less of the population. We have proposed that cellular companies be eligible for PCS licenses without restriction outside their cellular service regions.

In order to proceed with the rapid deployment of PCS, and in an effort to help the Commission resolve various PCS spectrum assignment issues, PCS Action now proposes the following formulation for PCS licensing:

1) Two 40 MHz PCS licenses should be awarded for large license areas. Cellular companies could bid for either of these licenses if they control less than 20 percent of the population in the service area.

2) Spectrum should be allocated for unlicensed PCS.

3) Spectrum may also be made available to other services and providers including small businesses, minority- and women-owned enterprises, and rural telephone companies.

4) The new competitors referenced in Points 1 through 3 above should have first priority for PCS spectrum, as the National Telecommunications and Information Administration, the Department of Justice, and the General Accounting Office have all recommended.

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- Omnipoint Corporation
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