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NOTE: An Erratum is attached to the end of this document

Federal Communications Commission (F.C.C.)  
FCC 92-333

IN THE MATTER OF  
AMENDMENT OF THE COMMISSION'S RULES TO  
ESTABLISH NEW PERSONAL COMMUNICATIONS SERVICES

GEN Docket No. 90-314  
ET Docket No. 92-100

RM-7140, RM-7175, RM-7617, RM-7618, RM-7760, RM-7782, RM-7860, RM-7977, RM-7978, RM-7979, RM-7980  
PP-35 through PP-40, PP-79 through PP-85

Adopted: July 16, 1992; Released: August 14, 1992

NOTICE OF PROPOSED RULE MAKING AND TENTATIVE DECISION

Comment Date: November 9, 1992

Reply Comment Date: December 9, 1992

**\*\*1 \*5779** By the Commission: Commissioner Quello concurring and issuing a statement; Commissioners Marshall and Barrett issuing separate statements.

Separate Statement of Commissioner James H. Quello

RE: Amendment of the Commission's Rules to Establish New Personal Communication Services.

Today's action is a significant step forward in the process of making personal communications services (PCS) available to the public. Although I support this action, there are some aspects of this Notice that need additional attention. I am asking that participants in this proceeding address the specific concerns listed below.

The Commission recognizes that PCS is likely to be a family of services with a potential for a wide variety of applications. Without defining PCS more specifically than a family of services, the Commission is moving forward with specific proposals on PCS market size and eligibility. Such proposals, however, may have the unintended effect of limiting the full potential of PCS applications. Consequently the Commission may be moving to structure the PCS market prematurely. Nonetheless, I recognize the need to move forward, and I encourage participants not only to address the proposals in the Notice, but also to present alternative proposals on PCS market size and eligibility criteria.

The Notice proposes four options for PCS service areas. One option not included in the Notice is the 734 cellular licensing areas. Cellular licensing areas were recently used in determining markets for the Interactive Video and Data Services. (See [7 FCC Rcd 1360 \(1992\)](#)) Since some PCS operators are likely to use microcellular technology, perhaps smaller service areas would be more appropriate. Furthermore, smaller service areas may facilitate delivery of PCS to rural areas in a timely manner. I encourage commenters to address the possible option of 734 PCS service areas.

This Notice is significant not only for what it proposes for PCS, but also for what it proposed to do to the cellular industry. In my opinion, the proposals affecting the cellular industry have the potential to allow telephone companies with cellular subsidiaries to do anything they choose with their 25 MHz cellular allocation. If there is an interest or need to restructure the cellular industry, then perhaps the Commission should consider issuing a separate proceeding in this matter.

Regarding licensing, the Notice proposes a 10 year license term for PCS. It appears that licensees' responsibilities depend on how licensees are selected. For example, if licensees are selected under a lottery scheme, construction requirements may be imposed. Under the auction proposal, PCS licensees would have no requirements other than protecting existing 1.8-2.2 GHz licensees from interference. Since license terms are for 10 years, a decade could pass before the Commission reclaims a license granted under the auction proposal due to failure to construct. This approach is taking the flexible use of spectrum concept to new levels that may not necessarily be in the public interest. I look forward to commenters' views on this issue.

**\*\*2** While on the subject of licensing, I encourage commenters to submit proposals designed to strengthen the lottery process. Construction requirements, financial showings and antitrafficking provisions are just a few examples of how the lottery process can be improved. I believe sound lottery criteria will stem the tide of speculative applicants and the application mills.

Finally, regarding auctions or competitive bidding, I am not convinced that those with the deepest pockets always have the most innovative ideas, especially when it comes to technology. What effect do auctions have on those who create new spectrum efficient technologies, but are unable to afford to compete for spectrum? What will auctions argue that the dollar value of spectrum will flow directly to the national treasury. There is some truth in that statement. In the American economy, however, it is more likely that profits derived from private transactions would be reinvested in the private market, creating employment opportunities, thereby sustaining American industry. This economic scenario has the potential of serving broad segments of the public. Alternatively, the possibility of auction coupled with the proposal for national licenses (as proposed in the Notice) suggests that winners will be interested in serving only the most lucrative markets. Is this trickle-down spectrum management? What happens to mid-sized on rural markets? Again, I am concerned about the ability of small businesses to compete for spectrum under an auction proposal. I am interested in commenters' views on the merits of auctions as well as the specific questions contained on how auctions should be structured, if Congress grants the Commission authority to test the auction concept.

#### **\*5678** I. INTRODUCTION

1. Today the Commission takes a significant step towards making personal communications services (PCS) a reality. This Notice seeks comprehensive comment on how we should structure the regulatory treatment of PCS, including a variety of possible spectrum allocation and licensing schemes, so as to bring that family of services known as PCS to the public expeditiously and with the least amount of regulatory delay.

2. The increasing availability of mobile communications over the past decade is freeing business and residential consumers from the physical constraints of a wholly wired telecommunications network. Cellular, together with paging and other complementary services, brought mobility to the Nation's telecommunications services for the first time. In licensing mobile services, the Commission has squarely placed its faith in competitive markets and service flexibility as the best path to provide greater choice and low prices for consumers—a faith which has been amply justified by the nationwide availability of cellular service; the competition among cellular providers for customers; the diverse array of service and equipment options; and the aggressive behavior of cellular providers in implementing new technologies such as digital transmission and providing a variety of new services using the cellular spectrum.

**\*\*3** 3. The revolution in mobile and portable technologies has continued unabated in the decade since cellular first was authorized. Significant technological advances have expanded substantially the number and types of wireless telecommunications services that can be made available to the American people. These services include advanced forms of cellular telephone service, in addition to advanced digital cordless telephone service, portable facsimile services, wireless

private branch exchange (PBX) services, and wireless local area network (LAN) services, among others. These services are potentially revolutionary; depending on their application, they can be used through the existing public switched network or through alternative local networks such as cable television systems. PCS can even exist independently of local wired networks, filling gaps in existing communications and creating new markets.

4. The advent of PCS will have a great impact on the future development and configuration of all telecommunications networks by improving significantly their flexibility and functionality. Many PCS applications should create new markets and in others provide competition for the first time. PCS also could provide a greater overall level of competition in many already competitive segments of the telecommunications industry. The many applications of PCS also could increase productivity and efficiency across a broad array of industries and have a positive **\*5679** impact on the international competitiveness of the Nation's economy.

5. The Commission has devoted significant effort and resources in gathering information on PCS and educating itself on this communications development. Following the submission of comments in the Notice of Inquiry in this proceeding, the Commission issued a policy statement on PCS, held an en banc hearing on PCS, and opened a proceeding designed to make available spectrum in the 2 GHz band for a variety of emerging technologies including PCS.

6. It is essential that our decisions on PCS spectrum and regulatory structure furnish PCS providers the ability to reach and serve existing and new markets in an economic and responsive manner. We intend to ensure that all mobile services are provided with the highest quality at low-cost, reasonable rates to the greatest number of consumers, consistent with the goals of the Communications Act. Our experiences with mobile communications, as well as our information about the developing PCS services, lead us to conclude that we should attempt to optimize and balance four values in providing spectrum and a regulatory structure for PCS:

- universality;
- speed of deployment;
- diversity of services; and
- competitive delivery.

7. Fulfillment of the goals listed above also should ensure that PCS deployment and delivery does not become bogged down in a regulatory morass that may delay the delivery, or even threaten the existence, of PCS. The years-long process culminating in cellular's birth is one of the prime examples of how the Commission's regulatory processes can be manipulated to delay the initiation of a new service. We are determined to avoid that result in this proceeding. We will resolve the many issues and proposals presented here in a thorough and reasoned manner, but one that also allows PCS to be brought to the public with the least possible regulatory delay.

## II. BACKGROUND

**\*\*4** 8. The Commission initiated this proceeding in 1989 after receiving several petitions for rule making. The Commission has since issued a Notice of Inquiry and a Policy Statement, held an en banc hearing that addressed PCS, and proposed allocating spectrum for emerging technologies, including PCS. The Commission also made recommendations and participated in negotiating **\*5680** international allocations that recognize and permit use of this spectrum for PCS.<sup>1</sup> Various telecommunications companies also have been active in participating in our PCS proceedings, and over 100 companies are conducting more than 150 experiments pursuant to experimental licenses to develop and test PCS services and technologies.

## Commission Actions

## Petitions and Notice of Inquiry

9. This proceeding was initiated after the Commission received petitions for rule making from Cellular 21, Inc. (Cellular 21) and PCN America, Inc. (PCN America)<sup>2</sup> requesting that the Commission allocate spectrum for the implementation of new personal communication services.<sup>3</sup> On June 14, 1990, the Commission adopted a Notice of Inquiry (Notice) soliciting comment on a broad array of issues that address making PCS available to the American public.<sup>4</sup> Most commenters to the Notice support the Commission's decision to initiate a rulemaking on PCS and predict great demand for PCS services or devices such as CT-2, PCNs, wireless PBXs, wireless data transfer and advanced paging.<sup>5</sup> However, incumbent users of the 2 GHz spectrum express concern that the introduction of PCS would have an adverse effect on their current operations.

**\*5681** 10. Subsequent to the Notice, the Commission received a number of related petitions that proposed new PCS services or technologies. On February 13, 1991, Apple Computer, Inc. proposed that 40 MHz from the 1850-1990 MHz band be allocated for high-speed local-area data communications services connecting personal computers (Data-PCS).<sup>6</sup> Because the petition proposed a service significantly different than that addressed in the Notice, we accepted this petition and received separate comment on it. With the record before us, it appeared that the services proposed by Apple came within the PCS family of services defined in our Policy Statement, *infra*, and accordingly we incorporated the petition into this Docket when we adopted the Policy Statement.<sup>7</sup> More recently, on March 26, 1992, Broadband Communications Corporation filed a petition for rulemaking proposing use of 2 GHz spectrum for competitive-access wireless local loops. We would classify wireless local loop service as a type of PCS, and because Broadband proposes use of the same spectrum being considered herein, the substance of Broadband's proposal is incorporated in this proceeding.

11. We also have received ten separate petitions for rulemaking that request using the 930-931 MHz advanced paging reserve for a variety of new applications, principally advanced paging and messaging services. These petitions have been or are being accepted, consolidated within ET Docket No. 92-100, and considered in this Notice of Proposed Rule Making.<sup>8</sup> However, if **\*5682** it appears that ET Docket No. 92-100 will be delayed by this action, we will consider separating ET Docket No. 92-100 from this combined proceeding.

**\*\*5** Policy Statement

12. On October 24, 1991, the Commission adopted a Policy Statement and Order to provide preliminary guidance for the development of PCS in the United States and to serve as a basis for an en banc hearing on PCS.<sup>9</sup> In the Policy Statement and Order, the Commission recognized that the concept of PCS has grown in scope and complexity since the initial PCS petitions were filed with the Commission. Therefore, the Commission stated that it intends to broadly define PCS to encompass a family of services that would include services other than voice, such as data, imaging, and other new services. The Commission also stated that it would adopt regulations that promote the rapid development of PCS, encourage significant flexibility in the development of technologies and services, and promote competition in PCS and in telecommunications in general.

13. The Commission further set the framework for PCS by concluding that an adequate amount of spectrum should be made available for PCS to foster the development of innovative and competitive markets. It stated that the allocation should facilitate local, regional, national and international uses and that the spectrum should be allocated in phases to prevent early developments precluding later ones. Finally, it stated that important equipment, cost, and international considerations suggest that a portion of the spectrum to be allocated for PCS should come from the 1.8 to 2.2 GHz band.

## En Banc Hearing

14. In the Policy Statement and Order the Commission recognized that the record in this proceeding did not provide sufficient information on the many difficult regulatory issues for the Commission to propose tentative regulations. Therefore, on December 5, 1991, the Commission held an en banc hearing to \*5683 further develop the record. Testimony was solicited on the following topics: definition of service, including the types of service anticipated and the potential demand for each service type; spectrum requirements, including the amount of spectrum required, where it should be located in the spectrum, and the ability to share with incumbents; technologies, including the degree of technical flexibility that should be granted PCS licensees, the role of unlicensed devices, and the need for mandated standards; and regulatory issues, including the method of assigning licenses, the size and location of service areas, and the advantages and disadvantages of common versus private carriage for PCS.

15. In addition to the testimony of the panelists, the Commission received 134 comments that addressed the issues raised at the hearing. The presentations and comments confirm that there is significant interest in PCS and strong support for a substantial spectrum allocation for PCS. Commenters argue that such an allocation is required to provide the many developing services that American consumers are demanding and to allow American manufacturers to develop equipment that could be marketed throughout the world. Commenters also argue that an allocation is required to provide competition to existing cellular services. Some commenters raise concerns that an allocation in the 2 GHz fixed microwave bands would result in interference to incumbent users and require them to replace these communications links, but other commenters argue that the 2 GHz fixed microwave bands could be shared.

#### \*\*6 Emerging Technologies Spectrum

16. On January 16, 1992, the Commission adopted a Notice of Proposed Rule Making in ET Docket No. 92-9, proposing to allocate 220 megahertz of spectrum between 1850 and 2200 MHz to meet the spectrum requirements of innovative new services, such as PCS, made feasible by emerging technologies.<sup>10</sup> The Commission found that allocating spectrum for emerging technologies would further its Congressional mandate to encourage the provision of new technologies and services to the public,<sup>11</sup> encourage the larger and more effective use of radio in the public interest,<sup>12</sup> and complement our recently adopted Pioneer's Preference rules<sup>13</sup> \*5684 intended to foster the development of new technologies and services.

#### Related Matters

##### WARC-92

17. A worldwide allocation for PCS was discussed at the International Telecommunication Union (ITU) World Administrative Radio Conference in Torremolinos, Spain. At the conference it was decided to maintain the primary fixed and mobile allocations at 2 GHz in Region 2,<sup>14</sup> add additional mobile-satellite service (MSS) allocations in the 1930-2010 and 2120-2200 MHz bands, and add a footnote stating that future public land mobile telecommunications systems (FPLMTS), which are similar in concept to PCS, are expected to use the 1885-2025 MHz and 2110-2200 MHz bands on a worldwide basis.<sup>15</sup>

##### PCS Experiments

18. The Commission has authorized over 150 PCS experimental licenses in the past three years. These experiments are developing and testing equipment in several different frequency bands. A number of the experiments also are authorized to perform market studies on a variety of technologies and service concepts. The services or devices being tested include CT-2, CT-2 Plus, \*5685 CT-3, PCN, Wireless PBX, and Wireless Local Loop.<sup>16</sup>

19. The modulation schemes and access technologies being tested include frequency division multiple access (FDMA)<sup>17</sup>, time division multiple access (TDMA)<sup>18</sup>, and narrowband and broadband spread spectrum technologies with associated code

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