59. The market for CMRS is experiencing new entry. For example, according to press reports, Nextel now offers ESMR integrated voice, paging, and two-way radio services in Northern California and Greater Los Angeles and expects to begin testing switched data services by the end of 1994. New entrants have a dominant incentive to cut price to gain market share. It makes no sense for them to charge high prices and to have few subscribers, so one would not expect them to take part even if there were a collusive agreement. Instead, their entry would undermine any agreement. Because incumbent suppliers can see that the market will inevitably be competitive in the future, they are unlikely to do things that reduce their ability to compete and their market shares in the future. It is likely that they would compete now to reduce costs, improve services, and win new subscribers.

60. Against these many conditions that would make a collusive agreement unlikely, I am aware of only one condition that is alleged to weaken competition. The CPUC states that "In California the cellular markets are dominated by a handful of providers who are partners in one market and act as competitors in another," and argues that "interlocking ownership interests between cellular carriers within and among markets in California" weaken competition (CPUC Petition at 28, ii).

61. The CPUC does not explain why it believes this ownership pattern facilitates collusion; the Commission has suggested simply that "These arrangements might result in the sharing of pricing information in joint marketing efforts or they might blunt the incentives to compete" (*CMRS Second Report* at ¶138). The CPUC appears to be arguing that when two companies have a joint venture in one or more antitrust markets, they are more likely to collude *in other antitrust markets*. This is speculative and does not support California's burden of showing that rates are unreasonable. Further, I know of no empirical evidence that this is the case. Certainly the incentives of the competitors are the same regardless of their participation in joint ventures elsewhere.

I. *Performance*

62. The CPUC has offered analyses and data that allegedly demonstrate that cellular carriers have been exercising market power. In this section, I examine numerous types of evidence that have been offered and find that none of them, individually or collectively, demonstrates the exercise of market power. Most of the claims about anticompetitive behavior are based on faulty economic analysis. By contrast, there is evidence of competitive behavior, and cellular customers have been benefiting from increasing service at declining real prices.

1. Efficient Allocation of Cellular Spectrum

63. The CPUC presents a seriously flawed analysis of the value of spectrum (CPUC Petition at 54-61). One cannot hope to analyze the performance of the markets in which cellular services compete without a correct understanding of the implications of the scarcity of cellular spectrum. Electromagnetic spectrum suitable for cellular communications is scarce; in other words, if it were given out free, there would not be enough to go around. This is obvious from the use of hearings, lotteries, and auctions to allocate spectrum licenses. As a result of inefficient Commission spectrum allocation policies, spectrum available for cellular service has been more scarce than spectrum available for certain other uses. As long as the Commission constrains the reallocation of spectrum to the uses for which it would have the greatest value to consumers, what is relevant to understanding the performance of the markets in which cellular services compete is the scarcity of spectrum that can be used for cellular and cellular-type services.

64. When a resource, such as spectrum, is scarce, the primary concern of economic policy should be to make sure that it is allocated efficiently among alternative uses. In the case of cellular spectrum, radio channels should be used only by customers who are willing to pay the "opportunity costs" of their calls. The use of a radio channel has opportunity costs because use by one person prevents use by another, or use by one person

degrades the quality of service for others because of blocking. The only practical way to achieve an efficient allocation of cellular spectrum is to price services at a level that covers opportunity costs. Suppose, for example, that there is sufficient spectrum to make only 100 calls (given a level of service quality). For simplicity assume there are no opportunity costs other than the fact that use of a radio channel for one cell prevents its use for another. Suppose that there are 200 people willing to pay $1 or more per call, of whom 150 are willing to pay $1.50 or more per call, and 100 are willing to pay $2 or more per call. For resources to be allocated efficiently, prices must be equal to $2 per call. Suppose, for example, that prices were set at $1. In that case, 200 people would try to make calls, half the calls would be blocked, and roughly 50 of the calls completed would be made by customers who value those calls at under $2 each. At the same time, there would be roughly 50 customers willing to pay $2 or more per call who would be unable to complete their calls. By raising the price to $2, one succeeds in allocating the available capacity to the people who are willing to pay the most for it.

65. The preceding example makes clear that resources would be allocated very inefficiently if the price of cellular service did not reflect the scarcity of spectrum, that is, the opportunity costs of calls in terms of other calls that would be foregone. From this, one can conclude: (a) In order for resources in the cellular industry to be allocated efficiently, prices must reflect the scarcity of spectrum, that is, the opportunity costs of spectrum in terms of foregone or degraded services for other cellular customers. (b) Whether the cellular company received its spectrum license free or purchased it in the market has no effect on the cellular service prices that are needed to achieve an efficient allocation of resources. It is nonsense to argue, as the CPUC does, that "it is not appropriate to impute a spectrum value. Imputing a spectrum value implies that cellular companies should earn returns on investments that, in most cases, they did not make" (CPUC Petition at 57). (c) In a competitive market, the prices for cellular service will reflect the competitive scarcity value of spectrum. This is efficient and in the public interest. (d) Under competi-

tion, the prices at which cellular licenses and systems are sold in the market will reflect the expected competitive scarcity value of spectrum. (e) In order to be meaningful for economic analysis, measures of the replacement cost of cellular systems must include the competitive scarcity value of cellular spectrum. (f) In order to be meaningful for economic analysis, rates of return and q-values (to be defined below) must be based on replacement costs that include the competitive scarcity value of spectrum.

66. The CPUC has argued that "The fact that cellular license values reflect more than scarcity of spectrum is evidenced by comparison with the license value of other spectrum allocations. If spectrum scarcity was the only or primary determinant of license value, we would expect the value per-MHz of licensed spectrum to be roughly equivalent" across uses (CPUC Petition at 54-55). This makes no economic sense. When there are constraints on the reallocation of spectrum among uses, the relative market values per MHz of spectrum allocated to two different uses will depend heavily on the relative demand for those two services, as well as differences in rate regulation and other costs. Furthermore, to achieve an efficient allocation, cellular service prices must reflect the scarcity value of cellular spectrum to other cellular users, not simply the value in non-cellular uses where spectrum may have a lower market value as a result of the Commission's inefficient spectrum allocation policies.

2. Output and Capacity

67. Cellular capacity, geographic coverage, and output have expanded rapidly throughout the past decade, both in California and nationally. Cellular plant and equipment in California are estimated to have increased from $1.01 billion in 1990 to $1.96 billion in 1993, while the number of California cellular subscribers is estimated to have increased from 540,000 at the end of 1989 to 1.35 million at the end of 1992 (Cellular Carriers Association of California (CCAC), Ernst & Young estimates). McCaw believes that competing cellular carriers offer service to more than 90 percent of California residents. Nationally, the number of cellular subscribers increased from near zero in 1984 to 6.4 million in

June 1991 and 19 million in the first half of 1994 (Hausman at 10; *Washington Post*, Sept. 6, 1994, at B4, citing the Cellular Telephone Industry Association). Besen *et al.* report that "Growth in cellular airtime also has been substantial, although it has been slower than the growth in number of subscribers because later subscribers have tended to use the service less intensively than earlier adopters" (Stanley M. Besen, Robert J. Larner, and Jane Murdoch, "The Cellular Service Industry: Performance and Competition," Charles River Associates, 1992, at 1).

3. Pricing

68. The real prices of cellular service, adjusted for inflation, declined during each portion of the past decade for which I am aware of systematic studies. Besen *et al.* (at 2) report that on average in the ten largest cellular service areas real prices for access and 250 minutes per month of prime time use declined by 38 percent during 1983-1991. Another study reports that on average real prices for 150 minutes of air time per month declined by 27 percent or more during 1985-91 in the top 30 cellular markets (U.S. General Accounting Office, *Telecommunications: Concerns About Competition in the Cellular Telephone Service Industry*, 1992 (GAO), at 22-24). Hausman (at 13) reports that real prices declined about 10-12 percent per year during 1987-92. A CCAC study reportedly found that, depending on market size and level of usage, real prices decreased by an average of 12 percent to 30 percent in California during 1990-93, based on the lowest-cost pricing plan available (CPUC, Decision 94-08-022, *Investigation on the Commission's Own Motion into Mobile Telephone Service and Wireless Communications*, I. 93-12-007, Aug. 3, 1994 (CPUC Decision), at 39). At the same time, customers have benefited from expanding service areas.

69. In a study using data for 1989 and 1991, Hausman found that prices of cellular service were not lower in states that regulated those prices than in states that did not regulate them. He found that prices were 5 to 16 percent higher in states that required advance notice tariff filings for price changes (Hausman at 10).

70. In spite of this evidence of competitive performance, the CPUC argues that price levels, and the behavior of prices over time, indicate that cellular carriers have been exercising market power. For example, the CPUC indicates that "Cellular rates of major California carriers remain among the highest in the nation" (CPUC Petition at 45-46). Even if true, that would not suggest anticompetitive behavior. It should be noted that the CPUC also reports that "in 1992 Sacramento had among the nation's *lowest* cellular rates" (CPUC Petition at 46, emphasis added). Also, California probably has among the highest prices in the nation for many goods and services. The CPUC has failed to offer an analysis of prices that holds the determinants of competitive prices—demand and costs—constant, and thus prices in California may be explained by higher demand or higher costs. If demand for cellular service is high, resources will be wasted if prices do not reflect the greater scarcity of spectrum, as I have discussed above. Similarly, if costs for cellular service are high, resources will be wasted if prices do not reflect those costs.

71. As further evidence of the exercise of market power, the CPUC alleges that the rates of the two cellular carriers in a market are often uniform, and that such uniformity raises questions about competition (CPUC Petition at 38). However, the Cellular Carriers Association of California found that in California competitors charge uniform rates only in the case of basic service in Los Angeles (CPUC Decision at 39). Furthermore, there are differences among the discount pricing plans under which many subscribers obtain service in California. In any case, similarity of prices for similar services does not carry with it any suggestion of anticompetitive behavior. One expects a tendency toward similarity of prices for similar services in a competitive market, and regardless of differences in the cost structures of the competitors.

72. Curiously, the CPUC argues that the introduction of discount pricing plans has not been pro-competitive. The CPUC reports that "The analysis we undertook was unable to determine whether rates statewide went down as a result of the increased use of discount plans" during 1989-1993 (CPUC Petition at 43). This is nonsense. An increasing share of

subscribers obtained service under discount plans (CPUC Decision at 40). From this one can infer that the effective prices of discount plans were below the expected prices of basic plans for a substantial share of users, taking account of conditions and termination fees in the discount plans.

73. As further evidence of the exercise of market power, the CPUC argues that prices have not declined as much as capital and operating costs (CPUC Petition at 35). However, the comparison offered does not use an appropriate measure of capital costs, which should reflect replacement costs of cellular systems, including startup losses and intangible assets. Moreover, to avoid wasteful use of scarce spectrum, the price charged to each cellular user must reflect the opportunity cost of spectrum to other potential users, as I have discussed in ¶¶63-66. Thus, increasing demand could explain an increase in prices relative to costs even when providers were behaving competitively.

74. Evidence on the price elasticity of industry demand for cellular service shows that cellular prices have not been at monopoly levels. An industry demand curve for cellular service measures the total demand for services from all cellular providers in a market, as opposed to the demand for the services from just one provider. The price elasticity of demand at a point along a demand curve measures how responsive the quantity demanded is to a change in price. If the price elasticity of demand is equal to one, then a one percent increase in price leads to a one percent reduction in quantity demanded. This implies that total revenue (price times quantity) is not changed by a small price increase. If the price elasticity is less than one, a one percent increase in price leads to a reduction in quantity demanded of less than one percent. This implies that total revenue will increase if price is increased. It is common for an industry demand curve to be characterized by a price elasticity of demand of less than one at low price levels and for the elasticity of the curve to increase as the price level is increased.

75. A price elasticity of less than one is consistent with competitive pricing and inconsistent with monopoly pricing. Hausman concluded

that cellular systems typically operated at a point along the industry demand curve for cellular services at which the price elasticity of demand was substantially less than one (Hausman at 14). Hausman's finding implies that cellular systems were charging prices substantially below the monopoly level. This can be demonstrated as follows: If they had charged higher prices, given an elasticity of demand of less than one they would have increased their revenues (see ¶74). They would also have sold less output, and this would have enabled them to reduce their costs. Thus, a higher price would have increased profits both by increasing revenues and reducing costs. From this Hausman infers that cellular suppliers were not colluding to raise prices to the monopoly level.

4. Innovation

76. In addition to declining real prices, cellular systems appear to have been performing well in other dimensions. There has been substantial technological change, permitting better service (for example, reduced interference and fewer blocked and dropped calls), new services (for example, information services, voice mail, personalized traffic routing, and data services such as remote monitoring), and higher capacity and lower costs (for example, digital conversion). There have been many innovations in pricing and other aspects of plans used to market services (for example, pricing plans aimed at high and low use customers and occasional callers, discounts for usage outside the central business district, and equipment discounts and free air time for new customers).

5. Rates of Return

77. As evidence that cellular systems have been exercising market power, the CPUC argues that they enjoy high accounting rates of return (CPUC Petition at 46-51). This line of argument is fatally flawed, and is contradicted by the CPUC itself. First, some systems have low rates of return, according to the CPUC *itself* (CPUC Petition at 47). Second, incorrect measures of capital are used to compute the rates of return, so the rates are not appropriate for economic analysis. One should use replace-

ment costs rather than book values, and one should include intangible assets. Also, as in many other industries, new entrants into cellular service operate at a loss initially. The CPUC *itself* reports that "The Santa Barbara market apparently took years to mature and produced gradually higher returns as the market matured and more customers were added to the system" (CPUC Petition at 48). Similarly, a study by the CPUC *itself* reportedly found that in the early years of operations, cellular carriers tended to lose money (CPUC, Division of Ratepayer Advocates, *Phase II Comments on Regulation of Cellular Radiotelephone Utilities*, 1989, reported in GAO at 26). These start-up losses should be capitalized and included in a firm's rate base. Accounting rates of return also ignore the fact that spectrum is a scarce asset that belongs in the rate base, as I have explained in ¶¶63-66. The CPUC *itself* has pointed out that:

> Accounting rates of return for wholesale carriers do not in themselves reveal whether profits are due to scarcity of available radio spectrum, uncompetitive pricing, or the ordinary returns on investment that may be earned due to the riskiness of the cellular industry. (CPUC, Decision 90-06-025, *Investigation on the Commission's Own Motion into the Regulation of Cellular Radiotelephone Utilities*, 1990, at 93, cited by GAO at 28.)

78. Even if income and capital were properly measured, simple comparisons of rates of return are likely to be misleading. First, nothing relevant can be inferred from a high ratio of income to capital unless an industry is in long-run equilibrium, and it is safe to say that the cellular industry is not in long-run equilibrium. Second, even in long-run equilibrium, the ratio of income to capital will depend considerably on risk, which varies among industries. Relatively high rates return can be expected where risks are high. Third, even in long-run equilibrium, what one expects to be equalized, other things equal, are *expected* rates of return, not the particular rates of return actually earned in any particularly year or set of years.

6. q-ratios

79. The CPUC argues that the cellular phone industry's supposedly high value of q, the ratio of market value to replacement costs, indicates market power (CPUC Petition at 62-63, relying on Thomas W. Hazlett, "Market Power in the Cellular Telephone Duopoly," Aug. 1993, at 12-16; see also Thomas W. Hazlett, "Errors in the Haring & Jackson Analysis of Cellular Rents," Jan. 1994, at 16-28.) The estimates of q proposed do not provide reliable evidence of market power, however, because they suffer from both data and conceptual problems. (The data, which are for 1990, are from National Telecommunications Industry Association, *US. Spectrum Management Policy: Agenda for the Future*, 1991, App. D.)

80. First, these estimates of q are based on data for only a small part of the industry and for only one year, while q can vary greatly. Thus, they may not be a reliable guide to the value of q for the industry as a whole. The estimate of the replacement costs of the non-depreciated tangible assets in the denominator in the ratio is based on data from only four firms. The estimates of market value are based on acquisition prices of cellular licenses, which are available for only 24 of the several hundred cellular licenses in this country.

81. Because q is sensitive to general economic conditions, it can fluctuate widely over time. An example of the intertemporal variability of q is given by Summers, who found that in the two days from October 19 to October 21, 1987, the value of q for U.S. non-financial corporations rose by more than 10 percent (L. Summers, "Stock Prices, Inflation and q," Harvard University, updated October 1987). Intertemporal variability of q is a particularly serious problem for the NCRA and CPUC because they estimate q for cellular companies for only one year, 1990. The CPUC compares its estimates of q for the cellular industry to estimates for other industries for 1961 to 1985 (CPUC Petition at 63). Comparing estimates of q derived for different time periods does not help determine whether cellular carriers exercise market power.

82. Furthermore, q ratios should not be computed using only the cost of tangible assets as the denominator. Startup losses and intangible assets, such as customer goodwill, technical expertise, and a skilled management team, should be included. As a result of these errors in measuring replacement costs, the estimated values of q are biased upwards.

83. Moreover, even under competitive conditions the market value of cellular companies will reflect the scarcity value of spectrum that the Commission has allocated to cellular. The right to use this scarce spectrum is an important asset that is acquired in the purchase of a cellular company. Thus, like the estimates of rates of return discussed above, the estimates of q are biased upward because the scarcity value of spectrum is omitted from the measure of replacement capital costs.

84. It has been argued that in a competitive market the q ratio is equal to or near one. That is true only if q is accurately measured and if the market is in long run equilibrium. In a competitive industry, a firm's high profits are often an inducement to further investment, so a high q could indicate a need for additional investment to satisfy consumer demand (Ronald E. Shrieves, "The Use of Tobin's q," University of Tennessee, 1987). As investment in the industry grows, profit rates and q-ratios will fall, but investment is not instantaneous, and that process may take years. The role of high q-ratios as a signal of a need for additional investment in an industry explains why faster-growing industries tend to have higher values of q (Mark Hirschey, "Market Structure and Market Value," *Journal of Business,* Jan. 1985, 89-98; M.A. Salinger, "Tobin's q, Unionization, and the Concentration-Profits Relationship," *Rand Journal of Economics*, Summer 1984, 159-70).

85. The cellular market is not in long-run equilibrium. In fact, it is one of the fastest growing industries in the country with a rapid increase in subscribers, steadily improving technology, and the continued development of new sources of competition. Thus, a high value of q for the cellular industry would be neither surprising nor troublesome.

7. Capacity Utilization

86. The CPUC attempts to reach a conclusion that cellular carriers are exercising market power based on an analysis of capacity utilization (CPUC Petition at 51-54). The CPUC argues that the allegedly high existing prices and profits for cellular service are not consistent with competition unless cellular carriers are operating at "maximum capacity," which is evidently identified as a 100 percent "capacity utilization rate." The capacity utilization rate is defined by the ratio of (i) the average number of calls underway during peak hours on some fraction of days to (ii) the "maximum designed capacity," that is, the number of calls underway at which there would be some given probability of blocking.

87. An initial difficulty with the CPUC's analysis is that, as we have seen in ¶¶77-85, there is no persuasive evidence that cellular prices and profits are "high." Therefore, the premise for the CPUC's analysis is simply that operation below maximum capacity is inconsistent with competition. Indeed, the CPUC argues that "Basic economic principles dictate that when excess capacity exists, prices in a competitive market should drop." This statement implies that competitive prices will drop until excess capacity is eliminated.

88. The CPUC's position makes no sense as a general proposition because the CPUC has confused the concepts of *economic* capacity and *physical* capacity. In many businesses, utilization of full physical capacity can occur only at an increase in unit costs. Full *economic* capacity utilization, which is a long-run competitive equilibrium concept, generally takes place at levels of output significantly less than full physical capacity. If the CPUC were correct, all competitive industries would be producing at maximum capacity during at least some periods. The CPUC's reasoning would lead it to conclude, for example, that any industry that did not operate three full shifts at least part of the time was behaving anticompetitively. But unit costs are likely to be lower when capacity is used only half the time than when capacity is half as large and used all the time; consequently firms producing with lower utilization of physical capacity can

offer lower prices and drive the three-shift firms from the market. For example, if labor accounts for a substantial portion of costs, and if workers insist on being paid more to work at night, competition may lead to manufacturing during one or two shifts rather than three. In short, investment in "excess capacity" (meaning physical capacity in excess of normal operating output) may be efficient and can be expected to occur in competitive industries. If output increased beyond the point where unit costs are minimized, prices would have to rise.

89. Thus, one problem with the CPUC's analysis is that it has ignored the increasing short-run marginal costs of expanding usage of cellular systems beyond their economic levels of capacity utilization. An increase in cellular usage would involve at least three categories of additional costs. First, there would be out-of-pocket costs, such as the costs of customer assistance, that increase as the number of calls increases. Second, there would be marketing costs associated with increasing the number of subscribers. Third, cellular systems are subject to congestion. After some point, additional usage imposes costs on all users because blocking and dropping of calls increase and voice quality deteriorates. A carrier will take these congestion costs into account because they affect the demand for service and hence its revenue. Thus, under competition, there is no reason to expect that cellular carriers would cut prices until some arbitrarily defined physical "full capacity" was reached.

90. In a simple way, the CPUC's measure of capacity utilization does take account of congestion because "maximum designed capacity" incorporates an assumption about the level of blocking. However, the CPUC's definition of the capacity of a system is based on an arbitrary rule of thumb about the probability of blocking. The CPUC has produced no evidence that the assumed probability of blocking is in any way related to the level that would prevail under competition. In fact, competition would not produce the same probability of peak period blocking everywhere, as the CPUC's analysis implies. For a given allocation of spectrum, the efficient quality of service will depend on (i) the level of investment in the system, which in turn will depend on capacity costs and on de-

mand for air time and for higher quality of service during all time periods, and on (ii) operating costs and demand for air time and for higher quality of service during the peak periods in question. Since these determinants of the efficient quality of service will vary among systems and cells, there is not a single level of service quality, and hence of capacity utilization as measured by the CPUC, that is efficient in all circumstances.

91. In thinking about the level of blocking that would prevail under competition, one should keep in mind the incentives of cellular carriers to compete by offering higher quality service in order to satisfy or attract customers. For example, cellular systems are subject to unpredictable demands. The demand for calls is likely to increase as a result of such things as earthquakes, accidents, traffic jams, and weather conditions that slow traffic. In order to provide sufficient capacity to prevent an unacceptable level of service during such periods, one might expect that under competition cellular systems would make investment and pricing decisions that would result in a relatively low blocking probability during most peak periods. These blocking probabilities may not be close to those assumed by the CPUC's definition of "maximum designed capacity."

92. In addition to its attempts to measure "excess capacity" directly, the CPUC alleges that the number of subscribers per cell rose between 1985 and 1992. From this the CPUC infers that capacity was not fully utilized during that period. Even if the CPUC had inferred that capacity was not *efficiently* (instead of *fully*) utilized, the inference would be unjustified from the evidence. The number of subscribers per cell could have increased without any increase in capacity utilization. First, the average number of minutes of air time purchased per subscriber has declined as the number of subscribers has increased, because people with lower demands for cellular service have become subscribers as prices have declined (Besen *et al.* at 1). Second, cellular systems have developed techniques and made investments that have increased the capacity per cell (Hausman at 12).

93. From the proliferation of discount plans the CPUC draws the inference that carriers are trying to increase use of spectrum, and hence that carriers have not been "using their allocated spectrum to maximum capacity." This makes no sense at all. From the fact that suppliers in an industry reduce prices or engage in other new *pro-competitive* activities one cannot infer that they have been (let alone that they continue to be) exercising market power. In a competitive industry new forms of competition can be explained by such things as changes in technology and costs, changes in the nature of demand, and changes in marketing strategies. Competitive firms do not and cannot sit still.

8. Reseller Price Squeeze

94. The CPUC appears to believe that it can reduce prices to consumers in markets for mobile communications services by implementing policies that increase the share of retail sales made through independent resellers. This argument is fundamentally incorrect. Whether efficient or not, in order to reduce consumer prices, a regulatory policy (other than direct retail price controls) must increase capacity and output in the market. Resellers do not add capacity to the market. Regulations aimed at "protecting" resellers are likely to reduce returns for CMRS carriers, deter investment, and hence reduce capacity below the levels that would result from market forces. These regulations are also likely to increase the real costs of marketing cellular services. As a result, the CPUC's regulations are likely to increase prices to consumers.

95. The CPUC's rationale for regulations to protect resellers appears to be a concern that if it does not intervene cellular carriers will inflate wholesale prices and (in accounting terms) run their retail operations at a loss, putting a price squeeze on independent resellers. Thus, the CPUC mandates the wholesale-retail price margin, appears to be in the process of mandating unbundling of wholesale services and imposing controls on unbundled wholesale prices, and wishes to retain the authority to continue these regulations and impose others. The Commission itself is considering whether to impose on facilities-based carriers an obligation to in-

terconnect with switch-based resellers ("Notice of Proposed Rule Making and Notice of Inquiry," *In the Matter of Equal Access and Interconnection Obligations Pertaining to Commercial Radio Services*, CC Docket No. 94-54, RM-8012, rel. July 1, 1994, ¶128).[3]

96. The CPUC is concerned that cellular carriers have an incentive to limit the ability of resellers to compete in retail sales. But, as I have explained in ¶¶66-93, there is no persuasive evidence that exercise of market power by cellular carriers is a significant problem. Without such evidence, there is every reason to believe that, unless their incentives are distorted by government regulations, each cellular system has a powerful incentive to have each of the steps involved in providing service—including retail marketing as well as such things as call recordation and billing—done in the least-cost manner, whether this involves independent resellers or vertical integration or both. Minimization of costs contributes to profits both directly and by enabling the firm to reduce prices and increase sales. Under these circumstances, there is no reason to expect that decisions by CMRS providers relating to either bundling of services sold to resellers or prices charged to resellers will have an adverse effect on competition or consumer welfare.

97. To see why the CPUC's policy concern is misplaced, assume for purposes of this discussion that, absent regulation, the carriers would enjoy market power, and that independent resellers could perform an important competitive role in marketing mobile communications services. Even in these circumstances, the carriers would have no reason to engage in the behavior that the CPUC fears.

98. There are two reasons why the CPUC's concern is unwarranted. First, to the extent that the carriers have market power, there is no reason why they could not fully exploit that power by charging high prices for

---

3 I have concluded that there is no basis for imposing interconnection obligations on CMRS providers including cellular carriers. See my declaration submitted in CC Docket No. 94-54, Sept. 12, 1994.

their service. Their market power would not be enhanced by the practices feared by the CPUC. Unless carriers were the least-cost providers of relevant services, they would not increase their profits by vertically integrating into retail marketing or by requiring resellers to purchase bundled services, including services such as call recordation, from them. Second, if the carriers attempted to squeeze resellers that could play an important competitive role in marketing their services, or that could perform services such as call recordation at lower costs, this would increase the costs of providing services to consumers and reduce the quantity of mobile communications services sold, reducing the carriers' profits.

99. The CPUC has suggested that an alleged declining share of resellers in retail sales, in at least some areas, indicates that competition has been declining. The CPUC further appears to suggest that anticompetitive behavior by the cellular carriers is responsible for the declining share of resellers (CPUC Petition at 29-30). However, the share of resellers has no particular implications for competition. A McDonalds franchisee does not compete with McDonalds the franchiser, and the market share of independently owned McDonalds outlets, vis-à-vis company-owned stores, sheds no light whatever on the degree of competition faced by McDonalds. Furthermore, the market share of independent resellers has no direct implications for consumer well-being. In some markets suppliers are vertically-integrated into retailing, in some they use dual distribution systems and sell to consumers both directly and through independent resellers, in others they sell only through resellers, and in some markets some suppliers use one of these organizational forms and others use another. All these options are compatible with competition.

100. Also, the CPUC has provided no reason to believe that the declining share of resellers is the result of behavior—whether anticompetitive or not—by the cellular carriers. In fact, whatever has been happening to the share of resellers in California has occurred even though cellular carriers have been required to provide services to resellers at a mandatory margin below retail prices. If the share of resellers has been declining, the reasonable inference is that resellers are not as efficient as other forms of re-

tail distribution. Consumers are not hurt when the relative use of an inefficient form of distribution declines. Policies to encourage inefficient distribution will hurt consumers.

101. When a supplier, such as a facilities-based cellular provider, uses a dual distribution system in which it offers service both through company-owned retail outlets and through independent resellers, complaints by the independent resellers are common. Their existence is not evidence of anticompetitive behavior, as much antitrust law and commentary makes clear (Phillip Areeda and Herbert Hovenkamp, *Antitrust Law, 1993 Supplement*, Little Brown, 1993, at 808-14; Owen and Braeutigam, chap. 1). A complaint may be nothing more than an effort to obtain service at an artificially low price.

9. Research Results

102. The CPUC cites various studies as support for its conclusion that cellular carriers have been exercising market power (CPUC Petition at 26-27). However, in at least one case the stud cited does not contain the evidence that the petition suggests it does. Citing a Congressional Budget Office (CBO) report (*Auctioning Radio Spectrum Licenses*, 1992, at 26-27), the CPUC states that "Research on the cellular market has found that rates are in excess of competitive levels and that they are consistent with non-competitive duopoly behavior." However, examination of the CBO report reveals that the key support for its conclusion is merely an assertion that the "difference between the monthly operations cost of service and monthly revenue is by most accounts more than sufficient to cover fixed capital and marketing costs, and to account for very high profits. Financial analysts (Greenberg and Lloyd) estimate that if the current duopoly is maintained and rate-of-return regulation is not imposed, the return on investment in plant and equipment could range from 40 percent to almost 100 percent" (at 26-27, parenthesis added). I have already explained the deficiencies of relying on accounting rates of return on tangible investments in ¶¶77-78. Furthermore, the CBO report on which the CPUC relies misrepresents Greenberg and Lloyd's analysis. Greenberg

and Lloyd argue that in the future rates of returns on tangible assets are likely to be upwards of 40 percent. However, they argue that future rates of return of almost 100 percent would be possible only if cellular were a shared monopoly in the future. They do *not* believe this condition will be met, however, at least in part because they predict that 40 percent of overall subscriber growth will go to new entrants during 1996-2000 (Greenberg and Lloyd at 2, 20).

J. *Conclusions on Market Structure and Performance*

103. Regardless of concentration levels, there is no sound empirical basis for a conclusion that cellular systems have been exercising significant market power. The CPUC's alleged evidence of anticompetitive behavior does not survive careful economic analysis. There is evidence of competition, and concentration will fall substantially over the next several years. Consequently, there is no empirical basis for believing that there is a problem with market performance that would warrant the substantial costs that would be imposed by regulation of CMRS pricing. Thus, the Commission should continue its historical forbearance from economic regulation of this industry and should deny the CPUC petition.

IV. Effectiveness of Regulation

104. The CPUC has presented no convincing evidence that its regulation of cellular carriers, or that of any state, has provided significant benefits to consumers.

105. Some states have been regulating cellular service prices while others have not. If price regulation benefited consumers, it should be possible for the CPUC to demonstrate that prices are just and reasonable in states with price regulation while they are not in states without such regulation, other things equal.

106. The CPUC has not attempted to provide such an empirical justification for rate regulation. In fact, a study by Hausman comparing prices in regulated and unregulated states shows that state regulation of the

CMRS industry has *not* reduced prices. In fact, prices were 5 to 16 percent higher in states that required advance notice tariff filings than in states that did not regulate prices (Hausman at 10).

107. The ineffectiveness of state regulation of the cellular industry is not surprising. In many other industries regulation has not helped, and in fact has harmed, consumers. Winston recently examined evidence on the effects of deregulation of industries including airlines, railroads, trucking, and telecommunications. He found that in each of these industries consumers were better off after deregulation (Clifford Winston, "Economic Deregulation: Days of Reckoning for Microeconomists," *Journal of Economic Literature,* Sept. 1993, at 1284).

108. In the period from about 1975 to 1984, the Federal government deregulated a number of industries on the basis of a consensus among scholars and policy makers that regulation, on the whole, failed to improve consumer welfare, and in many cases reduced it. Among the reasons for this conclusion was the fact that special interests were often overrepresented in the regulatory policy-making process, compared to the consumer interest, making predictable but often specious arguments to protect their parochial interest in continuing regulation. Consequently, prices and services in regulated industries departed, often considerably, from those that would have prevailed in the markets that regulators had displaced. Even though those markets were only imperfectly competitive, their performance seemed likely to improve as a result of deregulation. And so, on the whole, it did (Winston; Sam Peltzman, "The Economic Theory of Regulation after a Decade of Deregulation," *Brookings Papers on Economic Activity: Microeconomics,* 1989, 1-41; Roger G. Noll and Bruce M. Owen, *The Political Economy of Deregulation: Interest Groups in the Regulatory Process,* American Enterprise Institute, 1983, at 3-65).

V. Costs of Rate Regulation

109. State regulation of prices charged by CMRS providers would have no benefits. It would, however, result in substantial costs. First, regulated

prices would inevitably be below the efficient level in many circumstances. This is inevitable because regulators simply lack the resources to determine what price levels are efficient, and they lack the resources to change regulated prices as cost and demand conditions change. Furthermore, regulators are likely to base regulated prices on faulty economic analysis. For example the CPUC appears to believe that prices should be set with reference to the historical cost of tangible assets, neglecting other replacement costs, including the scarcity value of spectrum. This would cause prices to be set at inefficiently low levels, would cause scarce resources to be wasted, and would harm consumers. An illustration of how prices that are set below the efficient level would cause resources to be wasted is given in ¶64.

110. Price regulation also limits the ability of regulated firms to respond to changes in technology, cost and demand conditions, and deters new investments, quality improvements, introduction of new services, and entry by reducing returns on pro-competitive activities. The distorting effects of price regulations that limit returns on investments are likely to be greatest in industries such as CMRS that are characterized by rapid growth, technological change, and relatively high risk.

111. In industry after industry, regulation has restricted the introduction of new products and new sources of competition. For example, Commission regulations in the late 1960s and early 1970s delayed the growth of cable television (Owen and Wildman at 215). Other industries in which regulation was used to prevent or restrict competition include international telecommunications, title insurance, surface freight transportation, and airlines (Owen and Braeutigam; Peltzman).

112. It is also important to remember that government regulations involve substantial administrative costs both for the industries being regulated and for the government.

VI. The Issue of Interim Regulation

113. The CPUC concedes that markets for mobile communications services will be sufficiently competitive in the future as not to require regulation. The CPUC states "We envision in the not too distant future market forces of competition will police the mobile market and allow for an orderly withdrawal of government oversight" (CPUC Petition at 80, quoting CPUC I.93-12-007, slip op. at 2). Nonetheless, the CPUC wants to regulate in the interim. Such supposedly temporary regulation would be unwise.

114. *First*, as shown above, there is no evidence that regulation has been warranted or effective even in the past when the market was quite concentrated. Further, mobile communications services remain in their infancy, with rapidly growing demand and continual product, process, marketing and rate design innovations. This is not a market in which one would expect to find stable cooperative arrangements among the competitors, even if it is assumed that they are duopolists in the relevant market.

115. *Second*, as I discuss in Section V, price regulations impose high costs, particularly in an industry undergoing rapid change.

116. *Third*, the CPUC is petitioning for broad discretionary authority to engage in a range of regulatory activities. In these circumstances, one must consider what the CPUC might do with the authority it requests. As recently as August 3, 1994, the CPUC imposed new cellular rate regulations that are likely to harm consumers, including obligations that wholesale cellular tariffs be unbundled and that new wholesale rates applicable to roaming services be established (CPUC Decision). Evidently, the CPUC is now considering further regulations that would adjust cellular price caps to prevent "excessively high rates of return" (CPUC Petition at 81). I have two particular reasons for concern. First, both conceptually and empirically, the economic analysis in the CPUC petition is very weak. This casts doubt on the ability of the CPUC to carry out behavioral regulation in a way that would be in the public interest. Second, there is

evidence that the CPUC is not sufficiently motivated by concern for economic efficiency and consumer well-being. In particular, the CPUC views the protection of resellers as an important goal of regulation, and has used detailed wholesale pricing regulations that apparently subsidize them, even though resellers do not increase market capacity. Now resellers have a vested interest in maintaining their privileged access to what may be discriminatory low prices, and they express this interest in the political process. When they complain about bulk discounts that are available, in practice, only to high-volume affiliates of the wholesalers, the resellers are in effect asking for protection from competition from these affiliates, either in the form of a discriminatory low price applicable to low-volume resellers, or in the form of umbrella pricing of high-volume service to the affiliates.

117. *Fourth*, differences in regulation among states may lead cellular firms to distort investment and innovation decisions. A cellular firm operating in more than one state might invest and innovate sooner in states that do not have rate regulation than in states that do. Consumers in regulating states may suffer from these distortions. Furthermore, regulations in some states are likely to have adverse spillover effects in other states that do not regulate. For example, price controls in some states are likely to reduce the returns to improvements in service that would make sense only if they were put into effect in all states in which a carrier operates, and thus such improvements are likely to be deterred or delayed. This outcome does not appear to been intended by Congress.

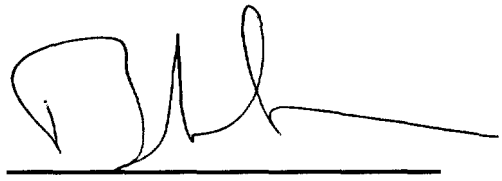
118. For all these reasons, there is ample reason to suspect that even "interim" regulation will be harmful and no convincing evidence that regulation is necessary to cure any existing problem that is within its power to solve.

VII. Conclusion

119. For the reasons given above, I have concluded that decisions on pricing of CMRS services are best left to the market rather than being sub-

jected to state regulation. There is no persuasive evidence that government price controls would have significant benefits, but they would have substantial costs. Approval of continuing state price regulation would therefore be likely to harm consumers. Neither cellular systems nor other CMRS providers have unilateral market power. Regardless of concentration levels, conditions in markets for CMRS are not conducive to successful collusion, and there is no persuasive evidence that CMRS providers have been exercising significant market power. To the contrary, there is evidence of sufficient competition to warrant reliance on market forces rather than government regulation. Moreover, concentration will fall substantially over the next several years. Consequently, there is no empirical basis for believing that there is a problem with market performance that would warrant regulating CMRS pricing. Overall, I conclude there is no basis for the Commission to alter its conclusion that competition is sufficient to justify forbearance with regard to regulation of CMRS pricing. Nothing about California requires an exception to these conclusions.

I declare under penalty of perjury that the foregoing is true and correct.



Bruce M. Owen

September 19, 1994

EXHIBIT B