030 Orlando, FL
031 Miami-Fort Lauderdale, FL
032 Fort Myers-Cape Coral, FL
033 Sarasota-Bradenton, FL
034 Tampa-St. Petersburg-Clearwater, FL
035 Tallahassee, FL
036 Dothan, AL
037 Albany, GA
038 Macon, GA
039 Columbus, GA-AL
040 Atlanta, GA
041 Greenville-Spartanburg-Anderson, SC
042 Asheville, NC
043 Chattanooga, TN-GA
044 Knoxville, TN
045 Johnson City-Kingsport-Bristol, TN-VA
046 Hickory-Morganton, NC
047 Lexington, KY
048 Charleston, WV
049 Cincinnati-Hamilton, OH-KY-IN
050 Dayton-Springfield, OH
051 Columbus, OH
052 Wheeling, WV-OH
053 Pittsburgh, PA
054 Erie, PA
055 Cleveland-Akron, OH
056 Toledo, OH
057 Detroit-Ann Arbor-Flint, MI
058 Northern Michigan, MI
059 Green Bay, WI
060 Appleton-Oshkosh-Neenah, WI
061 Traverse City, MI
062 Grand Rapids-Muskegon-Holland, MI
063 Milwaukee-Racine, WI
064 Chicago-Gary-Kenosha, IL-IN-WI
065 Elkhart-Goshen, IN
066 Fort Wayne, IN
067 Indianapolis, IN
068 Champaign-Urbana, IL
069 Evansville-Henderson, IN-KY
070 Louisville, KY-IN
071 Nashville, TN
072 Paducah, KY
073 Memphis, TN-AR-MS
074 Huntsville, AL
075 Tupelo, MS
076 Greenville, MS

077 Jackson, MS
078 Birmingham, AL
079 Montgomery, AL
080 Mobile, AL
081 Pensacola, FL
082 Biloxi-Gulfport-Pascagoula, MS
083 New Orleans, LA
084 Baton Rouge, LA
085 Lafayette, LA
086 Lake Charles, LA
087 Beaumont-Port Arthur, TX
088 Shreveport-Bossier City, LA
089 Monroe, LA
090 Little Rock-North Little Rock, AR
091 Fort Smith, AR-OK
092 Fayetteville-Springdale-Rogers, AR
093 Joplin, MO
094 Springfield, MO
095 Jonesboro, AR
096 St. Louis, MO-IL
097 Springfield, IL
098 Columbia, MO
099 Kansas City, MO-KS
100 Des Moines, IA
101 Peoria-Pekin, IL
102 Davenport-Moline-Rock Island, IA-IL
103 Cedar Rapids, IA
104 Madison, WI
105 La Crosse, WI-MN
106 Rochester, MN
107 Minneapolis-St. Paul, MN-WI
108 Wausau, WI
109 Duluth-Superior, MN-WI
110 Grand Forks, ND-MN
111 Minot, ND
112 Bismarck, ND
113 Fargo-Moorhead, ND-MN
114 Aberdeen, SD
115 Rapid City, SD
116 Sioux Falls, SD
117 Sioux City, IA-NE
118 Omaha, NE-IA
119 Lincoln, NE
120 Grand Island, NE
121 North Platte, NE
122 Wichita, KS
123 Topeka, KS

124 Tulsa, OK
125 Oklahoma City, OK
126 Western Oklahoma, OK
127 Dallas-Fort Worth, TX
128 Abilene, TX
129 San Angelo, TX
130 Austin-San Marcos, TX
131 Houston-Galveston-Brazoria, TX
132 Corpus Christi, TX
133 McAllen-Edinburg-Mission, TX
134 San Antonio, TX
135 Odessa-Midland, TX
136 Hobbs, NM
137 Lubbock, TX
138 Amarillo, TX
139 Santa Fe, NM
140 Pueblo, CO
141 Denver-Boulder-Greeley, CO
142 Scottsbluff, NE
143 Casper, WY
144 Billings, MT
145 Great Falls, MT
146 Missoula, MT
147 Spokane, WA
148 Idaho Falls, ID
149 Twin Falls, ID
150 Boise City, ID
151 Reno, NV
152 Salt Lake City-Ogden, UT
153 Las Vegas, NV-AZ
154 Flagstaff, AZ
155 Farmington, NM
156 Albuquerque, NM
157 El Paso, TX
158 Phoenix-Mesa, AZ
159 Tucson, AZ
160 Los Angeles-Riverside-Orange County, CA
161 San Diego, CA
162 Fresno, CA
163 San Francisco-Oakland-San Jose, CA
164 Sacramento-Yolo, CA
165 Redding, CA
166 Eugene-Springfield, OR
167 Portland-Salem, OR-WA
168 Pendleton, OR
169 Richland-Kennewick-Pasco, WA
170 Seattle-Tacoma-Bremerton, WA

171 Anchorage, AK
172 Honolulu, HI
173 Guam and the Northern Mariana Islands
174 Puerto Rico and the United States Virgin Islands
175 American Samoa

APPENDIX E

REGIONAL ECONOMIC AREA GROUPINGS (REAGs)

The six geographic areas for Regional 220 MHz licensing are referred to as Regional Economic Area Groupings (REAGs), and are defined as follows:

REAG 1 (Northeast): REAG 1 consists of the following EAs: EA 001 (Bangor, ME) through EA 011 (Harrisburg-Lebanon-Carlisle, PA); and EA 054 (Erie, PA).

REAG 2 (Mid-Atlantic): REAG 2 consists of the following EAs: EA 012 (Philadelphia-Wilmington-Atlantic City, PA-NJ-DE-MD) through EA 026 (Charleston-North Charleston, SC); EA 041 (Greenville-Spartanburg-Anderson, SC-NC); EA 042 (Asheville, NC); EA 044 (Knoxville, TN) through EA 053 (Pittsburgh, PA-WV); and EA 070 (Louisville, KY-IN).

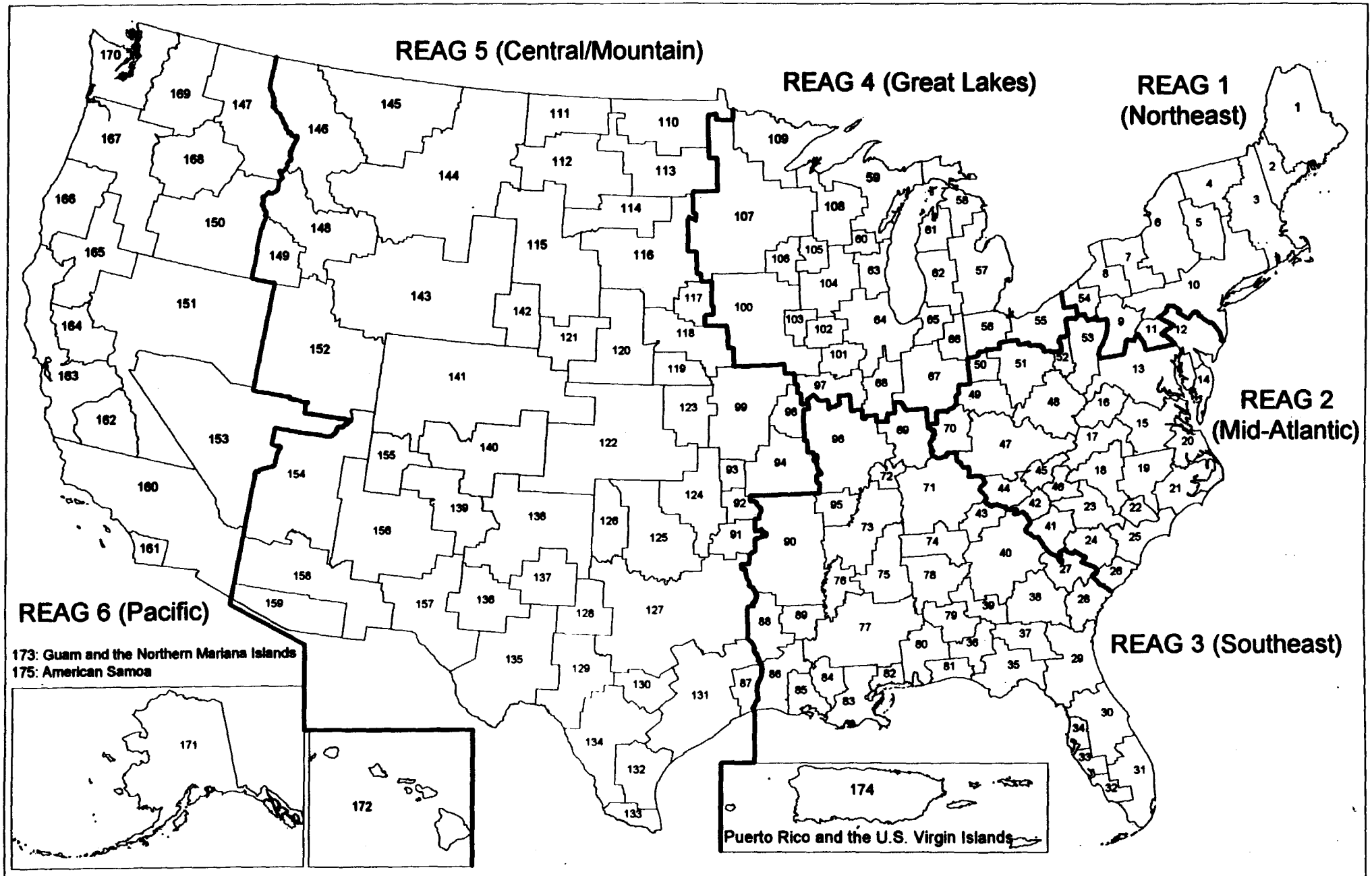
REAG 3 (Southeast): REAG 3 consists of the following EAs: EA 027 (Augusta-Aiken, GA-SC) through EA 040 (Atlanta, GA-AL-NC); EA 043 (Chattanooga, TN-GA); EA 069 (Evansville-Henderson, IN-KY-IL); EA 071 (Nashville, TN-KY) through EA 086 (Lake Charles, LA); EA 088 (Shreveport-Bossier City, LA-AR) through EA 090 (Little Rock-North Little Rock, AR); EA 095 (Jonesboro, AR-MO); EA 096 (St. Louis, MO-IL); and EA 174 (Puerto Rico and the U.S. Virgin Islands).

REAG 4 (Great Lakes): REAG 4 consists of the following EAs: EA 055 Cleveland-Akron, OH-PA) through EA 068 (Champaign-Urbana, IL); EA 097 (Springfield, IL-MO); and EA 100 (Des Moines, IA-IL-MO) through EA 109 (Duluth-Superior, MN-WI).

REAG 5 (Central/Mountain): REAG 5 consists of the following EAs: EA 087 (Beaumont-Port Arthur, TX); EA 091 (Forth Smith, AR-OK) through EA 094 (Springfield, MO); EA 098 (Colombia, MO); EA 099 (Kansas City, MO-KS); EA 110 (Grand Forks, ND-MN) through EA 146 (Missoula, MT); EA 148 (Idaho Falls, ID-WY); EA 149 (Twin Falls, ID); EA 152 (Salt Lake City-Ogden, UT-ID); and EA 154 (Flagstaff, AZ-UT) through EA 159 (Tucson, AZ).

REAG 6 (Pacific): REAG 6 consists of the following EAs: EA 147 (Spokane, WA-ID); EA 150 (Boise City, ID-OR); EA 151 (Reno, NV-CA); EA 153 (Las Vegas, NV-AZ-UT); EA 160 (Los Angeles-Riverside-Orange County, CA-AZ) through EA 173 (Guam and the Northern Mariana Islands); and EA 175 (American Samoa).

220 MHz Regional Economic Area Groupings (REAGs) and Their Constituent EAs



EAs delineated by the Regional Economic Analysis Division
Bureau of Economic Analysis, U.S. Department of Commerce
February 1995

Federal Communications Commission
Office of Engineering and Technology

APPENDIX F

INITIAL REGULATORY FLEXIBILITY ANALYSIS

As required by Section 603 of the Regulatory Flexibility Act (RFA), 5 U.S.C. § 603, the Commission has prepared an Initial Regulatory Flexibility Analysis (IRFA) of the expected impact on small entities of the policies and rules proposed in this *Fifth Notice of Proposed Rulemaking* (*Fifth Notice*). Written public comments are requested on the IRFA. Comments must be identified as responses to the IRFA and must be filed by the deadlines for comments on the *Fifth Notice* as provided in paragraph 347. The Secretary shall send a copy of the *Fifth Notice*, including the IRFA, to the Chief Counsel for Advocacy of the U.S. Small Business Administration in accordance with the RFA.[1]

Reason for Action: This rulemaking proceeding was initiated to secure comment on proposals to modify our 220 MHz service rules to permit partitioning of Phase I nationwide licenses. In addition, it seeks comment regarding disaggregation for all licensees in the 220 MHz service. The proposals advanced in the *Fifth Notice* are also designed to implement Congress' goal of giving small businesses the opportunity to participate in the provision of spectrum-based services in accordance with Sections 309(j) of the Communications Act of 1934, as amended (the Communications Act).[2]

Objectives: The Commission proposes to change its rules for the 220 MHz service to facilitate the efficient use of 220 MHz spectrum, increase competition, and expedite the provision of 220 MHz service. These proposals, in accordance with our statutory mandate, seek to increase the level of small business participation in the provision of 220 MHz services, particularly through the competitive bidding process.[3] The Commission considers whether to modify the existing 220 MHz service rules to provide for partitioning for Phase I 220 MHz licensees and to allow disaggregation of 220 MHz service spectrum for the first time. The Commission also proposes to establish license terms that permit 220 MHz service licensees to hold partitioned licenses and disaggregatees to hold disaggregated spectrum for the remaining duration of the original license term; and to establish construction requirements for 220 MHz service partitioning to ensure expedient access to 220 MHz service in partitioned areas to ensure coverage and to increase spectrum efficiency.

Legal Basis: The proposed action is authorized under Sections 4(i), 303(r) and 309(j) of the Communications Act of 1934, as amended.[4]

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[1] 5 U.S.C. § 603(a).

[2] 47 U.S.C. § 309(j); *see also* Section 257 Proceeding to Identify and Eliminate Market Entry Barriers for Small Businesses, Notice of Inquiry, 11 FCC Rcd 6280 (1996) (commencing implementation of 47 U.S.C. § 257).

[3] The Omnibus Budget Reconciliation Act of 1993 (Budget Act), Pub. L. No. 103-66, Title VI, § 6002.

[4] 47 U.S.C. §§ 154(i), 303(r), 309(j). *See also* 47 U.S.C. § 257.

Reporting, Recordkeeping, and Other Compliance Requirements: The proposals under consideration in this *Fifth Notice* include the possibility of imposing reporting and recordkeeping requirements on small businesses seeking licenses through the proposed partitioning and disaggregation rules. The information requirements would be used to determine whether the licensee was qualified to obtain a partitioned license or disaggregated spectrum. This information will be a one-time filing by an applicant requesting 220 MHz service partitioning or disaggregation. This information will be submitted on FCC Forms 490, 600 and/or 430 (filed as one package under cover of the Form 490) which are currently in use and have already received OMB clearance.

Federal Rules Which Overlap, Duplicate or Conflict With These Rules: None.

Description and Number of Small Entities Involved: The rule changes proposed in this proceeding will affect all small businesses which avail themselves of these rule changes or which may acquire licenses through partitioning and/or disaggregation. Pursuant to the RFA, we are required to identify the number of small entities to which a rule will apply and provide a description of such entities.[5] There are approximately 3,800 non-nationwide Phase I licensees and 4 nationwide licensees currently authorized to operate in the 220 MHz band. To estimate the number of such entities that are small businesses, we apply the definition of a small entity under SBA rules applicable to radiotelephone companies. This definition provides that a small entity is a radiotelephone company employing fewer than 1,500 persons.[6] However, the size data provided by the SBA do not allow us to make a meaningful estimate of the number of 220 MHz providers that are small entities because they combine all radiotelephone companies with 500 or more employees.[7] We therefore use the 1992 Census of Transportation, Communications, and Utilities, conducted by the Bureau of the Census, which is the most recent information available. Data from the Bureau of the Census' 1992 study indicate that only 12 out of a total 1,178 radiotelephone firms which operated during 1992 had 1,000 or more employees -- and these may or may not be small entities, depending on whether they employed more or less than 1,500 employees.[8] But 1,166 radiotelephone firms had fewer than 1,000 employees and therefore, under the SBA definition, are small entities. However, we do not know how many of these 1,166 firms are likely to be involved in the 220 MHz service. In the *Third Report and Order*, the Commission adopted a two-tier definition for small businesses as follows: (1) a very small business is an entity that, together with its affiliates and controlling principals, has average gross revenues that are not more than

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[5] 5 U.S.C. § 603.

[6] 13 C.F.R. § 121.201, Standard Industrial Classification (SIC) Code 4812.

[7] 1992 Economic Census Employment Report, Bureau of the Census, U.S. Department of Commerce, Table 3, SIC Code 4812 (industry data adapted by the Office of Advocacy for the U.S. Small Business Administration).

[8] U.S. Bureau of the Census, U.S. Department of Commerce, 1992 Census of Transportation, Communications, and Utilities, UC92-S-1, Subject Series, Establishment and Firm Size, Table 5, Employment Size of Firms; 1992, SIC Code 4812 (issued May 1995).

$3 million for the three preceding years; and (2) a small business is an entity that, together with its affiliates and controlling principals, has average gross revenues that are not more than $15 million for the three preceding years.[9] To assist the Commission in this analysis, commenters are requested to provide information regarding how many total 220 MHz service entities, existing and potential, would be affected by the proposed rules in the *Fifth Notice*. In particular, we seek estimates of how many 220 MHz service entities, existing or potential, will be considered small businesses. Additionally, we request each commenter to identify whether it is a small business under this definition. If the commenter is a subsidiary of another entity, this information should be provided for both the subsidiary and the parent corporation or entity.

The Commission anticipates that a total of 23,500 licensees or potential licensees in the 220 MHz service could take the opportunity to partition or disaggregate a license or obtain a license through partitioning and/or disaggregation. This estimate is based upon the current number of Phase I 220 MHz service licensees (approximately 3,800) and potential Phase II 220 MHz licensees (approximately 900) and our estimate that each license would probably not be partitioned and/or disaggregated to more than five parties. At this time, there is no basis upon which to estimate definitively the number of 220 MHz service licensees, either current or potential, that are small businesses.[10] However, we estimate that a significant number of the 220 MHz service licensees and potential licensees who take the opportunity to partition and/or disaggregate a license or who could obtain a license through partitioning and/or disaggregation will be small businesses.

Significant Alternatives Minimizing the Impact on Small Entities Consistent with the Stated Objectives: The impact on small entities in the proposals in the *Fifth Notice* is the opportunity to enter the 220 MHz service market through partitioning and disaggregation. Through partitioning and disaggregation, additional entities, including small businesses, may participate in the provision of 220 MHz service without needing to acquire wholesale an existing license or a license awarded through competitive bidding. Acquiring "less" than a current license or a license awarded through competitive bidding will presumably be a more flexible and less expensive alternative for entities desiring to enter this service.

The rule changes proposed in the *Fifth Notice* by the Commission are consistent with the Communications Act's mandate to identify and eliminate market entry barriers for small business in the provision and ownership of telecommunications services under Section 257, and the mandate under Section 309(j) of the Communications Act, to utilize auctions to ensure that small businesses have an opportunity to participate in the provision of spectrum-based services. The proposals in the *Fifth Notice*, if implemented, will facilitate market entry by parties, including small businesses, that may lack the financial resources for participation in 220 MHz service.

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[9] See para. 291, *supra*. See also Section III of Appendix A, *supra* (Final Regulatory Flexibility Analysis).

[10] See Section III of Appendix A, *supra* (Final Regulatory Flexibility Analysis).

The Commission proposes facilitating 220 MHz service partitioning by offering a choice between two different build-out options, which could be negotiated by the parties.[11] The Commission tentatively concludes that these proposed flexible build-out requirements, if adopted, will encourage partitioning to entities that have a sincere interest in providing 220 MHz service and will thereby expedite the provision of service to geographic areas that otherwise may not receive it as quickly. The two build-out options may have a different impact on small entities. We seek comment on how the two options will affect small entities.

This *Fifth Notice* solicits comments on a variety of proposals discussed herein, *i.e.*, construction requirements,[12] combined partitioning and disaggregation,[13] and available license areas.[14] Any significant alternatives presented in the comments will be considered.

[11] See para. 133, *supra*.

[12] See paras. 328-340, *supra*.

[13] See para. 327, *supra*.

[14] See paras. 324-325, *supra*.

Partial Dissent
of
Chairman Reed E. Hundt

Re: Amendment of Part 90 of the Commission's Rules to Provide for the Use of the 220-222 MHz Frequency Band by the Private Land Mobile Radio Service (PR Docket No. 89-552); Implementation of Sections 3(n) and 332 of the Communications Act -- Regulatory Treatment of Mobile Services (GN Docket No. 93-252); and Implementation of Sections 309(j) of the Communications Act -- Competitive Bidding 220-222 MHz (PP Docket No. 93-253).

The Commission has decided in this Third Report and Order (*Order*) that 220 MHz licensees aggregating contiguous 5 kHz channels to form channels wider than 5 kHz must adhere to a government-mandated spectrum efficiency standard. This standard arbitrarily requires licensees offering voice services to employ equipment that provides at least one voice channel per 5 KHz channel of bandwidth. For data services, licensees are required to employ equipment that operates at a data rate of at least 4,800 bits per second per 5 KHz channel of bandwidth. The imposition of such a standard is inappropriate, unnecessary, and will have the effect of severely limiting users' equipment choices and will cause a costly delay in the provision of competitive services to the public. I dissent from this section of the Order.

Regulatory intervention is the opposite of free market forces. In this Order we claim to be voting for free market forces in the form of competitive bidding, but in fact we're preserving the mantle of regulatory intervention in the guise of a mandated efficency standard.

I believe the Commission should instead adhere to a consistent approach to spectrum policy that relies on market-based mechanisms to ensure that spectrum is used to benefit the public. Under this approach, the Commission without exception should seek to promote competition over monopoly and provide users with the maximum flexibility to rapidly respond to consumer demand and technological innovation Such a policy in this case would mean that 220 MHz licensees should be given broad flexibility to aggregate channels wider than 5 kHz using any technology they deem appropriate to offer any service they believe the market demands. Licensees should be subject only to the minimum technical restrictions necessary to prevent interference with the operations of neighboring licensees and to protect public health.

A government-mandated efficiency standard is unnecessary to promote spectrum efficiency in this band for several reasons. First, additional spectrum in this band will be awarded through

competitive bidding. In addition, licensees in this band have the ability to sell their licenses to other parties. One of the primary advantages of this market-based freedom is that in addition to awarding licenses to those who value them most highly, auctions and tradability impose economic incentives on licensees to use spectrum as efficiently as possible. Where spectrum is freely tradable, licensees have the incentive and the ability to determine the most efficient tradeoffs between acquiring more spectrum and using more efficient equipment. By mandating an efficiency standard here, we are eliminating the ability of users' to deploy the highest quality, lowest cost equipment that will best meet consumer needs. This view is affirmed by equipment manufacturers and service providers alike who have argued in this proceeding that the imposition of an efficiency standard will arbitrarily limit the ability of 220 MHz licensees to select affordable equipment that will enable them to offer the services consumers demand. Moreover, an efficiency standard will impair the ability of 220 MHz licensees to compete with service providers in other bands who are not subject to similar technical restrictions and will therefore benefit from a more competitive equipment market where they can select the highest quality, lowest cost and most efficient technology from competing manufacturers.

Second, the band plan adopted in this *Order* already recognizes the Commission's earlier policy of promoting spectrally efficient, narrowband technology in the 220-222 MHz band, and thus a spectrum efficiency standard is unnecessary to fulfill that commitment. The Commission originally reallocated the 220 MHz band in 1988 to encourage the development of spectrally efficient technologies. The service rules and channelization plan subsequently adopted in 1991 were designed to afford spectrally efficient narrowband technology "an opportunity to gain acceptance in the marketplace." This goal, which may have been appropriate in a preauction environment, is no longer necessary where licensees will acquire additional spectrum through a market-based auction process and must face the opportunity cost of inefficient use. Nonetheless, in this *Order*, the Commission leaves unchanged the original allocation of 100 channels assigned on non-contiguous basis in Phase I. This allocation will ensure that Phase I licensees who have made substantial investments in existing 5 KHz equipment will be able to expand their operations without substantial investment in new equipment. There is no legitimate reason, however, to place additional restrictions on users of this spectrum in order to protect manufacturers of 5 KHz equipment from facing competition in this band.

Third, the spectrum efficiency standard mandated in this Order will have the likely effect of delaying the ability of licensees to provide new competitive services that meet the needs of consumers. The efficiency standard will severely limit the ability of 220 Mhz licensees to provide services that require channels wider than 5 kHz. For example, the *Order* nominally allows 220 MHz licensees to provide a variety of services including paging on a primary basis; but the efficiency standard we impose is not currently achievable by paging systems and thus, paging is effectively precluded from this band until the efficiency standard sunsets in 2001. As a result, licensees will be forced to make costly and inefficient equipment decisions that will delay the provision of competitive services.

The decision to impose an efficiency standard in this band represents an unnecessary departure from the Commission's move towards a market-based spectrum policy. It arbitrarily

limits licensees' flexibility to provide a variety of services to the public and effectively dictates licensees technology choices. The imposition of this standard will cost users the benefits of a competitive equipment market and will deny consumers the benefits of the rapid introduction of competitive new services.

Separate Statement
of
Commissioner Susan Ness

Re: Use of the 220-222 MHz Band, PR Docket No. 89-552

Today we close a decade-long initiative to license services using spectrum-efficient technologies in the 220-222 MHz band. Our decision removes restrictions on the types of technology that can be used, increases the flexibility of licensees to provide any fixed or mobile services, allows for the expeditious licensing of remaining spectrum by competitive bidding, and furthers our statutory mandate to encourage development of new and spectrally efficient technologies.

I disagree with those who advocate allowing only the current 5 kHz channel plan. The better approach is the one we take here to introduce flexibility for the channels and allow the newer technologies to be implemented by placing the channel bandwidth decision with the bidders and the marketplace. The channels will be auctioned in either adjacent or non-adjacent groups based upon the former channeling plan. Bidders may purchase, trade, aggregate, or partition in any fashion they wish. We also propose to permit spectrum disaggregation. Using these tools, licensees will be able to obtain the specific channel bandwidth(s) they desire.

In the Notice, we tentatively concluded that allowing channel aggregation should be accompanied by a spectral efficiency requirement at least equivalent to that obtained through 5 kHz channelization. The requirement here is based upon the one adopted unanimously last year in our Refarming proceeding, Docket 92-235. It is technology-neutral, attainable, flexible, and will sunset in five years.

Continuing to use the 220 MHz band as a commercial testbed for spectrum-efficient technologies furthers the purposes set out in our competitive bidding authority, Section 309(j) of the Communications Act. This Act requires, among other things, that we "protect the public interest in the use of the spectrum" and promote its "efficient and intensive use."

This Congressional directive within our competitive bidding authority is, of course, consistent with the goals and requirements expressed elsewhere in the Act. For example, Section 7 requires that we encourage (not merely permit) the provision of new technologies to the public. Similarly, Section 303(g) requires that we "study new uses for radio" and "generally encourage the larger and more effective use of radio in the public interest."

Congress would not have charged us separately to ensure efficient spectrum use if competitive bidding itself was sufficient to attain this objective. Competitive bidding provides an incentive for *economically efficient* service, but does not necessarily result in use of the most *spectral efficient* technology.

Because we have not imposed an efficiency requirement in other auctionable bands, the need is more compelling to continue the experiment in this small two-megahertz wide band. Here, licensees can experiment with spectrally-efficient, state-of-the-art technologies without interfering with older, less efficient ones.

Dale Hatfield, in his 1995 paper "The Economic Impact of Refarming" -- submitted in our Refarming proceeding -- demonstrates the value of spectrum efficiency. Hatfield explains that increasing efficiency to 5 kHz (from 7.5 and 6.25 kHz) in just the 150 and 450 MHz private bands would increase the number of available paired channels by 32 percent, resulting in the creation of over 8,000 service jobs and thousands more manufacturing jobs. Hatfield estimates that in an auction, the *additional* spectrum capacity would have a value in the billions of dollars. Even if wildly optimistic, a fraction of this predicted benefit would be of continuing value to the American public.

Providers employing less spectrally-efficient technologies have the universe of other bands from which to choose. Some of these bands will also be available to competitive bidding within the same timeframe as the 220 MHz band. I have not supported an efficiency rule for other commercial bands, believing that marketplace forces should be relied upon for establishing the balance between efficient spectrum use and cost of service. However, allowing this testbed to continue for five years in a technologically-neutral fashion furthers the goals established by Congress, harms no potential service provider, and has great potential to benefit the public.

Separate Statement
of Commissioner Rachelle B. Chong

Re: *Amendment of Part 90 of the Commission's Rules to Provide for the Use of the 220-222 MHz Band by the Private Land Mobile Radio Service*, PR Docket No. 89-552, RM-8506, *Third Report and Order; Fifth Notice of Proposed Rulemaking*

I support our decision today to provide 220 MHz licensees with more flexibility in the types of services that they can provide with their spectrum.[1] I believe that this decision will allow 220 MHz licensees to compete more effectively in the wireless communications marketplace and will broaden the array of services for customers.

In order to facilitate the provision of certain of those services, I also supported our decision to allow 220 MHz licensees to aggregate 5 kHz channels into channels of larger bandwidth. However, precisely because we have decided to allow such aggregation, I believe it is important, as we tentatively concluded in the *Notice*, to require licensees choosing to aggregate channels to maintain a degree of spectrum efficiency at least equivalent to that obtained through 5 kHz channelization. I write separately to set forth my reasoning for supporting adoption of a spectrum efficiency standard for this band and to explain why I respectfully disagree with the arguments raised by my dissenting colleague. I emphasize that my decision to support such a standard is limited to the unique circumstances of this service.

My dissenting colleague argues that licensees who will acquire this spectrum at auction will have incentive to use the spectrum as efficiently as possible. I agree that licensees acquiring 220 MHz spectrum at auction will have incentives to use their spectrum in an *economically* efficient manner. The most economically efficient result, however, does not necessarily require the use of the most spectrally efficient technology. While I generally prefer that the market drives the technology choice in wireless services such as this one, I believe that the equities of the situation mitigate in favor of the adoption of a limited spectrum efficiency standard.

As background, we reallocated the 220-222 MHz band from the Amateur Radio

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[1] Our decision today allows 220 MHz licensees to provide one and two way paging and fixed services on a primary basis, in addition to the land mobile services they are currently allowed to provide.

Service to private and federal government land mobile use in 1988.[2] In doing so, we *specifically* dedicated this 2 MHz of spectrum for the development of spectrally efficient narrowband technology. In addition, we stated at that time that, "[w]e are convinced that in order for narrowband land mobile technology to flourish, it must be afforded a reasonable opportunity to gain full acceptance in the market place [sic]."[3] In furtherance of this policy, we channelized the 2 MHz into 200 5 kHz channel pairs.[4]

In spite of our good intentions and the best efforts of several manufacturers, narrowband technology has not yet had a real opportunity to gain acceptance in the marketplace. First, there were a number of delays associated with the Commission's adoption of service rules and issuance of licenses in the 220 MHz band.[5] Even after the licenses were issued, the new licensees were reluctant to invest in the narrowband technology and construct their systems because of a pending lawsuit challenging certain aspects of the Commission's licensing procedures in the 220-222 MHz band.[6] In recognition of these problems and delays, the Commission extended the 220 MHz construction deadline *five times* – with the last deadline expiring August, 1996.[7]

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[2] *Amendment of Part 2 of the Commission's Rules Regarding the Allocation of the 216-225 MHz Band,* GEN Docket No. 87-14, *Report and Order*, 3 FCC Rcd 5287 (1988).

[3] *Id.* at 5289.

[4] *Amendment of Part 90 of the Commission's Rules to Provide for the Use of the 220-222 MHz Band by the Private Land Mobile Radio Services,* PR Docket No. 89-552, *Report and Order*, 6 FCC Rcd 2356 (1991).

[5] Although we reallocated the spectrum in 1988, we did not actually issue any service rules for the 220-222 MHz band until 1991. *Id.* Although we began accepting license applications almost immediately, within one month of opening the application window, the staff imposed a freeze on the filing of all applications (which continued in place until last year). *Acceptance of 220-222 MHz Private Land Mobile Applications,* 6 FCC Rcd 3333 (1991). We held lotteries for non-nationwide and nationwide licenses in 1992 and 1993, respectively, and issued the last licenses in 1995. *Public Notice, Commission Announces Lottery for Rank Ordering of 220-222 MHz Private Land Mobile "Local" Channels,* 7 FCC Rcd 6378 (1992); *Public Notice, Commission Announces Lottery to Select Commercial Nationwide 220-222 MHz Private Land Mobile Licensees, DA 93-159 (rel. Feb. 16, 1993), 58 Fed. Reg. 09174 (Feb. 19, 1993).*

[6] *See Evans v. FCC*, Order, per curiam, Case No. 92-1317 (D.C. Cir. Mar. 18, 1994). This suit was filed in July, 1992, and the case was settled in March, 1994.

[7] *Amendment of Part 90 of the Commission's Rules to Provide for the Use of the 220-222 MHz Band by the Private Land Mobile Radio Service,* PR Docket No. 89-552, *Second Report and Order*, 11 FCC Rcd 3668 (1996).

I believe that because we specifically set aside this band for the development of spectrally efficient technology, and some licensees and manufacturers relied our set aside decision, we should honor our commitment to spectrum efficiency in this band. That being said, I acknowledge that narrowband technology is not the only type of spectrally efficient technology. Because I did not want to preclude other spectrally efficient types of technologies that require wider bandwidths from being used in the 220 MHz band, I supported the decision to allow channel aggregation and the use of non-narrowband technologies, so long as the licensee choosing to aggregate channels also maintains a level of spectrum efficiency.

My dissenting colleague argues that the efficiency standard will surely limit the ability of 220 MHz licensees to provide services that require channels wider than 5 kHz and will effectively preclude paging services. I disagree. In establishing the spectrum efficiency standard, we tried to choose an efficiency level that would promote efficiency, but would still be reasonably attainable by manufacturers. The standard we chose – for voice, 1 voice channel per 5 kHz, and for data, 4800 bits per second per 5 kHz – meets both of these criteria. This standard is similar to the standard that we recently adopted in our refarming decision.[8] It appears that it is a standard that can be met by both of the current narrowband manufacturers and in fact has been exceeded threefold by one of the manufacturers.[9] Moreover, the data standard is one that other types of technologies, including TDMA and some new paging technologies, should be able to meet, if there is enough available spectrum at 220 MHz.[10] In addition, we provided that a manufacturer may obtain type acceptance for 220 MHz equipment that does not meet the voice or data efficiency standard if they can meet certain other conditions.

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[8] *Replacement of Part 90 by Part 88 to Revise the Private Land Mobile Radio Services and Modify the Policies Governing Them and Examination of Exclusivity and Frequency Assignment Policies of the Private Land Mobile Radio Services*, PR Docket No. 92-235, *Amendment of the Commission's Rules Concerning Maritime Communications*, PR Docket No. 92-257, *Memorandum Opinion and Order*, FCC 96-492 (rel. Dec. 30, 1996) (*Refarming Reconsideration Order*).

[9] Securicor Radiocoms Limited ("Securicor") is reporting that its current system is operating at 14.4 kb/s. Securicor, *Ex Parte Submission*, PR Docket 89-552, GN Docket 93-252, and PP Docket 93-252, filed November 12, 1996; SEA, Inc. ("SEA") proposed a data rate of 4,800 b/s. SEA Comments at 17.

[10] Cellular and 800 MHz SMR digital TDMA equipment are operating at a data rate of 48,600 b/s for a 30 kHz channel. This translates to 8,100 b/s for a 5 kHz channel and meets our 220 MHz data standard. In addition, Motorola is reported to have developed a paging technology, Inflexion, which is expected to have a data rate of 112,000 b/s for a 50 kHz channel. This translates to 11,200 b/s for a 5 kHz channel, a number far in excess of our efficiency standard.

Although I believe that we should adopt a spectrum efficiency standard today, I do not believe that we should retain the spectrum efficiency standard indefinitely. For this reason, I supported a five year sunset date for the spectrum efficiency standard. I believe that this time period will provide a fair opportunity for spectrally efficient technologies to develop in the band and gain acceptance in the marketplace. Moreover, with the fast pace of wireless technological development, it is my hope that by the year 2002, the spectrum efficiency standard we adopt today will have long since been exceeded.