REPORT OF THE
SECRETARY OF ADMINISTRATION

A STUDY ON THE FEASIBILITY AND DESIRABILITY OF LEASING STATE-OWNED PROPERTIES TO WIRELESS TELECOMMUNICATIONS PROVIDERS

TO THE GOVERNOR AND
THE GENERAL ASSEMBLY OF VIRGINIA

HOUSE DOCUMENT NO. 32

COMMONWEALTH OF VIRGINIA
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Exhibits

Purpose

House Joint Resolution 224 (Exhibit A) requests the Secretary of Administration to study the feasibility and desirability of leasing state-owned properties to wireless telecommunications providers. Specifically, the Secretary was asked to examine: (i) whether to authorize the leasing of such properties for the siting of mobile service antennas and, if so, how to ensure equal access to all service providers; (ii) how to coordinate zoning and other land use control ordinances with local governments; (iii) the role of utility companies in locating antennas atop utility poles; and (iv) the feasibility of siting alternatives to mitigate the negative visual impact of these structures.

Background

Demand for antenna space to accommodate wireless telecommunication is increasing due largely to the emergence of new technology known as Broadband Personal Communications Services (PCS). Broadband PCS competes with the cellular industry in providing mobile telecommunications, and it also provides digital service that will open the door to development of new communication devices. Both technologies use low powered transmitters which, as more subscribers are added, require more transmitting facilities. In addition, PCS operates at a higher frequency than cellular often requiring more antennas than cellular services to provide equivalent coverage. The Federal Communications Commission began auctioning Broadband PCS licenses in 1994, and licenses were granted beginning in June of 1996.

The licensed PCS providers are anxious to fill-out their service areas with adequate numbers of antenna sites to begin operations as soon as possible. In

response, the cellular industry is working to expand and improve its services. Both industries are interested in siting facilities on state-owned land due in no small part to the absence of zoning which the companies perceive as offering a quicker path to developing new facilities.

The construction of antennas for both PCS and cellular technologies is very site specific. State-owned land can only be utilized when it is within the parameters of the technical specifications being applied. Use of state-owned land, therefore, cannot be viewed as an alternative to placing antennas in residential communities as suggested in House Joint Resolution 224, though that might incidentally be the case in some areas.

The obvious advantage to the Commonwealth in leasing land and antenna space to mobile communication companies is the income that can be derived. For instance, state agencies own some 40 existing communication towers, and a space on such towers leases for $1,000 to $1,200 per month, depending on the location of the tower. Typically, towers can accommodate multiple antennas. Because of the site-specific needs, not all of the state-owned towers will be in locations that are needed by these industries. Assuming 25% of the existing state-owned towers are in desirable locations, leasing space on them can generate a minimum of $120,000 annually. That assumes only one site on each tower will be leased when in fact multiple sites on each tower can be leased.

There are also other important considerations. An expected outcome of the licensing of PCS providers is competition with the cellular industry and thus a reduction in the cost of mobile communication. In addition, PCS offers digital communication that will encourage development of more sophisticated

communication devices. The Federal Communication Commission's Broadband PCS Fact Sheet (Exhibit B) states, in part:

> *"Broadband Personal Communications Services (Broadband PCS) is broadly defined by the Federal Communications Commission as "radio communications that encompass mobile and ancillary fixed communication services that provide services to individuals and businesses and can be integrated with a variety of competing networks." Broadband PCS could also be used in the development of more advanced wireless phone services that can pinpoint the subscriber in any given locale. Broadband PCS will most likely be used to provide a variety of mobile services including an entire family of new communications devices utilizing very small, lightweight, multifunction portable phones, portable facsimile and other imaging devices, new types of multifunction cordless phones, and advanced devices with two-way data capabilities. Broadband PCS systems will be able to communicate with other telephone networks as well as with personal digital assistants, allowing subscribers to send and receive data and/or video messages without connection to a wire."*
>
> *"Competition in the PCS industry will benefit consumers and businesses. The FCC's licensing plan for this spectrum provides for several new full service providers of wireless services in each market. Consumers will be able to choose from multiple providers and will receive lower prices and better service as a result. Businesses will increases their productivity and enhance efficient delivery of products because they will have greater choice among service providers and more advanced telecommunication services. Businesses also will benefit by providing a supporting role to this new industry, in construction of infrastructure, software development, etc."*

Thus, the broader implications of encouraging competition among the services and enhancing economic development opportunities must be considered in determining the best interest of the Commonwealth with respect to allowing antennas to be constructed on state-owned property.

By 1995, the Allen Administration had recognized the potential for income that leasing antenna space could generate. The Department of General Services were also becoming involved in actions with the Department of State Police whereby the FCC auctioned frequencies used by DSP, and it was the purchaser's responsibility to relocate DSP to their new frequencies. This offered potential benefits to DSP if they had the latitude to offer space on state-owned towers to the purchasers. That, for instance, allows DSP to swap space on towers to obtain locations that provide radio coverage to areas in the Commonwealth heretofore not covered.

Consequently, DGS recommended language that would allow state agencies to lease or sell real property for the placement of communications antennas on state-owned property. We offered that for consideration by the 1996 session, and it was approved by the General Assembly as an amendment to §2.1-504.4 of the Code.

At the same time, House Joint Resolution 224 was considered and approved by the General Assembly. Undertaking this study has provided us the opportunity to focus on the issues, and as a result we plan to establish a more aggressive program to work expeditiously with the cellular and PCS providers.

APPROACH AND SCOPE

House Joint Resolution 224 sets forth four areas to be examined: (i) whether to authorize the leasing of state-owned properties for the siting of mobile service antennas and, if so, how to ensure equal access to all service providers; (ii) how to coordinate zoning and other land use control ordinances with local governments; (iii) the role of utility companies in locating antennas atop utility poles; and (iv) the feasibility of siting alternatives to mitigate the negative visual impact of these structures. The scope of this report is limited to those four issues.

In conducting the study, we collected available data on the issues (which became the primary source of the information presented here). We also interviewed and solicited input from representatives of the cellular telephone and PCS providers, Virginia Power and the State Corporation Commission.

Our observations and conclusions on each of the four issues specified in HJR 224 follow.

Observations and Conclusions

1: Whether to authorize the leasing of state-owned properties for the siting of mobile service antennas and, if so, how to ensure equal access to all service providers.

These issues were discussed during the 1996 session of the General Assembly when the Allen Administration proposed language that would allow the Commonwealth to convey real property for the siting of mobile service antennas. The fundamental question of whether to authorize leasing of state-owned real property for such purpose was addressed in that amendment (§2.1-504.4 of the Code), which provides:

> *C. When it is deemed to be in the public interest, and subject to guidelines promulgated by the Department of General Services, property owned by the Commonwealth may be sold or leased or other interests or rights therein granted or conveyed to political subdivisions or persons providing communication or information services for the purpose of erecting, operating, using or maintaining communication towers, antennas, or other radio distribution devices. If any tower proposed for erection on property owned by the Commonwealth is to be used solely by private persons providing communication or information services, and there is no immediate use thereof planned or anticipated by any department, agency or institution of the Commonwealth or political subdivision, the guidelines shall provide a means to obtain comments from the local governing body where the property is located. The conveyances shall be for such consideration as the Director of the Department of General Services deems appropriate, and may include shared use of such facilities by other political subdivisions or persons providing the same or similar services, and by departments, agencies, or institutions of the Commonwealth."*

Conclusions: In addition to generating income, the Commonwealth can help

foster competition among the service providers which should lower costs to our citizens, and we can help ensure that Virginia is competitive with other states in offering broad availability of both cellular and PCS services. Given those benefits along with the potential income, the decision to authorize siting of communication antennas on state-owned property is sound.

Prior to the 1996 amendment, we discussed the issue of fairness with industry representative. There are a finite number of cellular and PCS providers licensed to operate in the Commonwealth, and they can be identified through readily available FCC records. This limited audience allows direct contact (as opposed to broad advertising) that ensures fairness and equal access to all providers. Therefore, directed advertising to the cellular and PCS providers can be adapted as a matter of policy, and that is encouraged by the industries.

We note here that, in developing policy to support a program to allow antenna construction on state-owned property, we have encountered three significant problems:

- Capital Projects: Construction of a communication tower on state-owned land is a capital project, irrespective of who undertakes the construction or the source of funds (§4-4.01 of the current Appropriation Act). General fund and some non-general fund agencies would have little incentive to apply resources to the planning and management of capital project requests that are not directly related to their missions. A possible solution, and our recommendation, is for the General Assembly to declare such tower construction to be categorized as non-capital outlay or provide a blanket authorization.

- Building Official: Permitting agencies to effect the erection of communication towers on state-owned property for non-state use raises the issue of the building official responsibility (§36-98.1 of the Code of Virginia). The Division of Engineering and Buildings can determine, on a case by case basis, whether the Division can provide the building official review and permits or whether to delegate the task to the local building official.

- Section 10.1-109 of the Code of Virginia: This section prohibits sale or lease of lands held by the Department of Conservation and Recreation without the prior consent and approval of the General Assembly. That could effectively eliminate consideration of DCR property by the communications companies since General Assembly Approval could be more than a year after the need for the site is identified. A possible solution, and our recommendation, is for the General Assembly to exempt the leasing of land and space for communication antennas from that requirement.

2: How to coordinate zoning and other land use control ordinances with local governments.

Service providers are particularly interested in locating on state-owned land because of the absence of zoning issues. Their interest is in finding the quickest way to construct their facilities.

Citizens often oppose siting towers in or near their neighborhoods based on perceptions of health hazards from radio transmissions, reduction in resale value of homes and interference with radio, television and other electrical devices. Those issues were addressed in a symposium held in October of 1994 commissioned by the Scientific Advisory Group on Cellular Telephone Research, predecessor to Wireless Technology Research, L.L.C. The results are published in a report entitled *"Federal Focus National Symposium on Wireless Transmission Base Facilities: A Tutorial"*. According to the tutorial, the symposium included government officials and private sector professionals, including communications engineers, experts on radio energy's effects on living tissue, experts on radio signal's effects on medical and consumer electronics, and professionals in the field of land-use regulation. They conclude:

- There is no scientific evidence that base stations pose public health risks. The tutorial cites the FCC's December 1994 *"Information On Human Exposure to Radiofrequency Fields From Cellular Radio Transmitters"* which states, in part:

"The signal from a cellular base station antenna is essentially directed toward the horizon in a relatively narrow beam in the vertical plane. ... As with all forms of electromagnetic energy, the power density from a cellular transmitter

decreases rapidly (according to an inverse square law) as one moves away from the antenna. Consequently, normal ground-level exposure is much less than exposure very close to the actual antenna. ... Calculations corresponding to a worst-case situation (all transmitters operating simultaneously and continuously at the maximum licensed power) show that in order to be exposed to levels near the 1982 ANSI[1] limits for cellular frequencies, an individual would essentially have to be in the main transmitting beam (at the height of the antenna) and within a few feet of the antenna. This makes it extremely unlikely that a member of the general public could be exposed to RF levels in excess of those guidelines".

The symposium consensus was that RF from cellular base stations is typically between hundreds and thousands times less than the ANSI limits.

- There is no evidence that property values decrease due to the presence of a cellular communication antenna. Evidence is only anecdotal, but one participant of the symposium noted an affluent New Jersey neighborhood where a 400 foot tower stands. According to this participant, construction of custom houses ranging in price from $700,000 to $1,000,000 was underway on adjoining parcels.

- There have been no reports of interference with other electrical devices from cellular radio base stations. Though radio signals at sufficient strength can cause such interference, the signal from a base station drops off such that there is not enough strength to interfere with other devices.

Section 704(A) of the Telecommunications Act of 1996 significantly constrains local government to approve siting of communication towers (a copy of the FCC's Fact Sheet entitled *"New National Wireless Tower Siting Policies"* which provides the FCC's interpretations and the full text of §704 of the Act is included as Exhibit C).

§2.1-504.4.C of the Code of Virginia authorizes state departments, agencies and institutions to lease real property to communication providers and stipulates:

> *"If any tower proposed for erection on property owned by the Commonwealth is to be used solely by private persons providing communication or information services, and there is no immediate use thereof planned or anticipated by any department, agency or institution of the Commonwealth or political subdivision, the guidelines shall provide a means to obtain comments from the local governing body where the property is located."* (underlining added for emphasis).

Conclusion: When a tower is planned for construction on state-owned land that does not serve the Commonwealth, the Commonwealth should solicit comments from localities giving them a reasonable time to respond. The locality may elect to hold public hearings, in which case the company requesting the lease will be required to cooperate in such hearings. In addition, the company should be required to comply with the reasonable requests of the locality.

Footnote:

[1]In 1982, the American National Standards Institute (ANSI) established permissible exposure from RF to be about 2700 micro watts per square centimeter, averaged over six minutes. A 1992 revision drafted by the Institute of Electrical Engineers and adopted by ANSI retained those limits for occupational exposure but lowered the standard for areas frequented by the general public. Those standards were lowered by five times, and the exposure time was increased to thirty minutes.

3: The role of utility companies in locating antennas atop utility poles.

Siting antennas on existing utility poles is a feasible and often used alternative. Utility companies are interested in participating because it generates income without significant investment by them, and there appears to be no need for additional law or regulatory action to encourage the practice.

The likely candidates are larger steel frame structures rather than the typical wooden utility poles strung along roadways. The pole or tower must be of sufficient structural strength to withstand the weight and wind torque to which an antenna array is typically subjected

Conclusion: Leasing space on utility structures offers significant income to the utility companies without substantial cash outlays. Utility companies are prepared to offer sites for mobile telecommunication antennas. Virginia Power, for instance, has created a unit within the company that is pro-actively seeking such opportunities. Therefore, we conclude that the free market will ensure this alternative is used whenever possible. However, it is unlikely that antennas can be placed on local distribution poles to any large extent, since most of those poles are not structurally sufficient to handle the weight of an antenna array.

4: The feasibility of siting alternatives to mitigate the negative visual impact of these structures.

There are a number of ways antennas can be disguised, ranging from painting them to blend in with their surroundings to disguising them as trees. According to the FCC's "*Fact Sheet #2, National Wireless Facilities Siting Policies*" (Exhibit D):

"Antennas for personal wireless services can sometimes be mounted on existing structures such as building roof tops, church steeples, street lights, traffic lights, or electric utility substations, where they are relatively unobtrusive. Painting antenna structures to blend in with the existing structure is also an effective camouflage. Camouflaging of antennas is also used to accommodate highly specialized land use concerns. For example, a personal wireless service provider seeking to locate a transmitter site in a historic district may consider camouflaging the antenna in such structures as clock towers or artificial trees. Such camouflaging is, however, expensive and time consuming and most service providers are reluctant to routinely use the camouflage option."

The use of many siting alternatives is constrained by the geographic needs of the particular system. In a cellular system, for instance, the ideal location is in the center of the cell, and the technical limitation is one mile from the center of the cell. If there are no sites available within that limitation, the cell is divided and two antennas are sited under the same constraints. Therefore, only those structures that are within the parameters of the specific system can be considered.

Where the situation may dictate, an antenna tower may be disguised as an indigenous tree. Typically, the disguised antenna must be taller than surrounding trees, so the appearance may not be quite natural. However, this alternative has been used successfully in sensitive areas.

Conclusion: The visual impact of antennas can be, and often is, mitigated through use of alternatives that hide or disguise the antennas. Alternatives such as placing antennas in church steeples and highway signs are limited to those facilities that are in suitable areas. The alternative of disguising an antenna as an indigenous tree is feasible, but too expensive for routine use. That alternative is, however, very

appropriate for historical areas where an inordinately tall pine tree might look a bit odd but does not have the negative visual impact of a modern steel tower.

Summary

There is no evidence that the presence of PCS and cellular antennas devalue homes or pose health risks or interfere with other electronic devices. On the other hand, perceptions to the contrary are strong. However, recent history with cellular mobile communications suggests that Virginia's citizens will demand the services these companies offer. The PCS and cellular industries will ultimately obtain whatever antenna sites they need to support their customers, irrespective of whether those antennas are placed on state-owned property.

By pro-actively seeking communication tower leases, we can expect significant income, the benefits of which will be spread to all of our citizens. Perhaps more importantly, citizens will benefit directly from lower costs for mobile communications due to competition among the service providers, and they will benefit by having more options available as to which service they select and the equipment they use. Those benefits will come sooner rather than later by making state-owned property available for construction of antennas.

Leasing state-owned property to wireless telecommunications providers is feasible and desirable, and the Commonwealth should adopt a policy to diligently pursue such leases.

EXHIBIT A

HOUSE JOINT RESOLUTION NO. 224

Requesting the Secretary of Administration to study the feasibility and desirability of leasing state-owned properties to wireless telecommunications providers.

WHEREAS, the Commonwealth of Virginia owns property which could be leased over a period of years for substantial sums to wireless telecommunications providers; and

WHEREAS, property along highway rights-of-way, parks and recreation areas, state police facilities, universities and colleges, and other government institutions could be considered for such siting; and

WHEREAS, the utilization of state-owned properties could expand access to this new and vital technology for the citizens of the Commonwealth; and

WHEREAS, at the same time, it would minimize the need to place these monopole antennas in residential communities, thereby alleviating aesthetic, safety, and environmental concerns; and

WHEREAS, the General Assembly should consider and adopt a policy in response to this opportunity; now, therefore, be it

RESOLVED by the House of Delegates, the Senate concurring, That the Secretary of Administration be requested to study the feasibility and desirability of leasing state-owned properties to wireless telecommunications providers. The Secretary shall examine (i) whether to authorize the leasing of such properties for the siting of mobile service antennas and, if so, how to ensure equal access to all service providers; (ii) how to coordinate zoning and other land use control ordinances with local governments; (iii) the role of utility companies in locating antennas atop utility poles; and (iv) the feasibility of siting alternatives to mitigate the negative visual impact of these structures. Technical assistance shall be provided by the State Corporation Commission. All agencies of the Commonwealth shall provide assistance to the Secretary, upon request.

The Secretary shall complete his work in time to submit his findings and recommendations to the Governor and the 1997 Session of the General Assembly as provided in the procedures of the Division of Legislative Automated Systems for the processing of legislative documents.

EXHIBIT B

BROADBAND PCS FACT SHEET

What is Broadband PCS?

Broadband Personal Communications Services (Broadband PCS) is broadly defined by the Federal Communications Commission as "radio communications that encompassmobile and ancillary fixed communication services that provide services to individuals and businesses and can be integrated with a variety of competing networks." Broadband PCS could also be used in the development of more advanced wireless phone services that would be able to pinpoint the subscriber in any given locale. Broadband PCS will most likely be used to provide a variety of mobile services including an entire family of new communications devices utilizing very small, lightweight, multi-function portable phones, portable facsimile and other imaging devices, new types of multi-function cordless phones, and advanced devices with two-way data capabilities. Broadband PCS systems will be able to communicate with other telephone networks as well as with personal digital assistants, allowing subscribers to send and receive data and/or video messages without connection to a wire.

Broadband PCS is in the 2 GHz band of the electromagnetic spectrum, from 1850 to 1990 MHz. The spectrum allocated for Broadband PCS totals 140 MHz; 20 MHz in that block is reserved for unlicensed applications that could include both dataand voice services.

Potential of PCS

The FCC's auctions of Broadband PCS licenses helped kick off an entirely new industry. Analysts predict that within ten years, there could be 100 million wireless telephone subscribers - an increase of more than 80 million. The creation of this new industry is estimated to generate tens of billions of dollars of futureinvestment. Hundreds of thousands of new jobs will also be created.

Competition in the PCS industry will benefit consumers and businesses. The FCC's licensing plan for this spectrum provides for several new full service providers of wireless services in each market. Consumers will be able to choose from multiple providers and will receive lower prices and better service as a result. Businesses will increase their productivity and enhance efficient delivery of products because they will have greater choice among service providers and more advanced telecommunications services. Businesses also will benefit by providinga supporting role to this new industry, in construction of infrastructure, softwaredevelopment, etc.

Broadband Spectrum Breakdown:

Auctions

The Commission has divided the 120 MHz of spectrum allocated to Broadband PCS into six frequency blocks (A through F). Blocks are divided into either Major Trading Areas (MTAs) or Basic Trading Areas (BTAs), which are based on the Rand McNally Commercial Atlas and Marketing Guide. There are 51 MTAs and 493 BTAs in the United States, including the District of Columbia, American Samoa, Guam, the Northern Mariana Islands, Puerto Rico, and the U.S. Virgin Islands.

Following is a breakdown of Broadband PCS spectrum:

Block Name	Block Size	Geographic Breakdown	Auction (Started)	Auction (Ended)	Result
Block A	30 MHz	MTA	Dec 5, 1994	Mar. 13, 1995	License granted June 23, 1996
Block B	30 MHz	MTA	Dec 5, 1994	Mar. 13, 1995	License granted June 23, 1995
Block C	30 MHz	MTA	Dec 18, 1994	May 6, 1996	License granted to 83 out of 86 winners on Sept 17, 1996 and Oct 25, 1996
Block D	10 MHz	BTA	Aug 26, 1996	in progress	
Block E	10 MHz	BTA	Aug. 26, 1996	in progress	
	10 MHz	BTA	Aug. 26, 1996	in progress	

To date, the FCC has auctioned 90 of the 120 MHz of spectrum allocated for Broadband PCS. The A and B block licenses, which are 30 MHz each, were offered in the FCC's first Broadband PCS auction. The auction ran from December 5, 1994 through March 13, 1995 and raised $7.7 billion for the United States Treasury.

The C block auction for 30 MHz of spectrum in BTAs started in December 18, 1995, and ran through May 6, 1996. Two winners defaulted (total of 18 markets) for the C Block Auction and were reauctioned beginning July 3, 1996 and ending July 16, 1996.

Blocks D, E, and F, which contain 10 MHz each, started on August 26, 1996, and is currently in progress.

What are the Entrepreneurs' Blocks?

The C and F blocks of Broadband PCS spectrum have been named the "Entrepreneur's Blocks." The auction for PCS licenses in these frequency blocks is limited to smaller businesses that fall under certain financial caps.

Eligibility to bid on these licenses is limited to firms whose gross revenues have been less than $125 million in each of the last two years, and whose total assets do not exceed $500 million. In addition, bidding credits and installment payment plans are available for certain bidders on all Entrepreneurs' Block licenses.

For further information, contact (202) 418-1400.

Last updated December 2, 1996

EXHIBIT C

April 23, 1996

FEDERAL COMMUNICATIONS COMMISSION

FACT SHEET

Information provided by the Wireless Telecommunications Bureau

NEW NATIONAL WIRELESS TOWER SITING POLICIES

The Telecommunications Act of 1996 contains important provisions concerning the placement of towers and other facilities for use in providing personal wireless services. Most state and local communities have worked closely with cellular and other wireless service providers on such placement plans, but this new law establishes new responsibilities for communities and for the Federal Communications Commission (FCC). The rapid expansion in the wireless industry makes these issues even more important.

This fact sheet is intended to explain the new provisions and to help state and local governments as they deal with the complex issues of facilities siting in their local communities. At the end of this fact sheet, you will find names of contacts for additional information about this area and other issues before the FCC.

Section 704 of the Telecommunications Act of 1996 (the "1996 Act") governs federal, state and local government oversight of siting of "personal wireless service" facilities. The 1996 Act establishes a comprehensive framework for the exercise of jurisdiction by state and local zoning authorities over the construction, modification and placement of facilities such as towers for cellular, personal communications service (PCS), and specialized mobile radio (SMR) transmitters:

- The new law preserves local zoning authority, but clarifies when the exercise of local zoning authority may be preempted by the FCC.

- Section 704 prohibits any action that would discriminate between different providers of personal wireless services, such as cellular, wide-area SMR and broadband PCS. It also prohibits any action that would ban altogether the construction, modification or placement of these kinds of facilities in a particular area.

- The law also specifies procedures which must be followed for acting on a request to place these kinds of facilities, and provides for review in the courts or the FCC of any decision by a zoning authority that is inconsistent with Section 704.

- Finally, Section 704 requires the federal government to take steps to help licensees in spectrum-based services, such as PCS and cellular, get access to preferred sites for their facilities. Federal agencies and departments will work directly with licensees to make federal property available for this purpose, and the FCC is directed to work with the states to find ways

for states to accommodate licensees who wish to erect towers on state property, or use state easements and rights-of-way.

The attachments to this fact sheet seek to provide information concerning tower siting for personal wireless communications services. They include a summary of the provisions of Section 704 of the 1996 Act, the actual text of Section 704, and a technical information summary that describes the cellular, wide-area SMR and broadband PCS technologies that underlie the majority of requests for new tower sites.

Questions about this topic, and about federal regulation of wireless telecommunications services in general, may be addressed to Karen Brinkmann, Associate Chief of the Wireless Telecommunications Bureau, 202-418-0783, (e-mail: kbrinkma@fcc.gov). Questions about the Telecommunications Act of 1996 generally may be addressed to Sheryl Wilkerson in the FCC's Office of Legislative and Intergovernmental Affairs, 202-418-1902 (e-mail: swilkers@fcc.gov). Questions about tower siting, licensing issues or technical matters may be addressed to Steve Markendorff, Chief of the Broadband Branch in the Wireless Telecommunications Bureau, 202-418-0620, (e-mail: smarkend@fcc.gov).

This Fact Sheet is available on our fax-on-demand system. The telephone number for fax-on demand is 202-418-2830. The Fact Sheet may also be found on the World Wide Web at http://www.fcc.gov/wtb/wirehome.html.

SUMMARY OF SECTION 704 OF THE TELECOMMUNICATIONS ACT OF 1996

The following is a summary of key provisions. The text of Section 704 is reproduced in its entirety as an attachment to this summary.

1. Local Zoning Authority Preserved

Section 704(a) of the 1996 Act amends Section 332(c) of the Communications Act ("Mobile Services") by adding a new paragraph (7). It preserves the authority of state and local governments over decisions regarding the placement, construction , and modification of personal wireless service facilities, except as provided in the new paragraph (7).

2. Exceptions

a. States and Localities May Not Take Discriminatory or Prohibiting Actions

Section 704(a) of the 1996 Act states that the regulation of the placement, construction, and modification of personal wireless service facilities by any State or local government or instrumentality thereof shall not unreasonably discriminate among providers of functionally equivalent services and shall not prohibit or have the effect of prohibiting the provision of personal wireless services. 47 U.S.C. §332(c)(7)(B)(i).

Review: Any person that is adversely affected by a state or local government's action or failure

to act that is inconsistent with Section 332(c)(7) may seek expedited review in the courts. 47 U.S.C. §332(c)(7)(B)(v).

b. Procedures for Ruling on Requests to Place, Construct or Modify Personal Wireless Service Facilities

Section 704(a) also requires a State or local government to act upon a request for authorization to place, construct, or modify personal wireless service facilities within a reasonable time. Any decision to deny a request must be made in writing and be supported by substantial evidence contained in a written record. 47 U.S.C. §332(c)(7)(B)(ii), (iii).

c. Regulations Based On Environmental Effects of RF Emissions Preempted

Section 704(a) of the 1996 Act expressly preempts state and local government regulation of the placement, construction, and modification of personal wireless service facilities on the basis of the environmental effects of radio frequency emissions to the extent that such facilities comply with the FCC's regulations concerning such emissions. 47 U.S.C. §332(c)(7)(B)(iv).

Review: Parties may seek relief from the FCC if they are adversely affected by a state or local government's final action or failure to act that is inconsistent with this provision. 47 U.S.C. § 332(c)(7)(B)(v).

3. Federal Guidelines Concerning RF Emissions

Section 704(b) requires the FCC to prescribe and make effective new rules regarding the environmental effects of radio frequency emissions, which are under consideration in ET Docket 93-62, within 180 days of enactment of the 1996 Act.

NOTE: *The pendency of this proceeding before the FCC does not affect the rules which currently are in effect governing the environmental effects of radio frequency emissions. Section 704(b) gives preemptive effect to these existing rules. See related attachments to the Fact Sheet.*

4. Use of Federal or State Government Property

a. Federal Property

Section 704(c) of the 1996 Act requires the President (or his designee) to prescribe procedures by which the federal government may make available on a fair, reasonable and nondiscriminatory basis, property, rights-of-way and easements under their control, for the placement of new spectrum-based telecommunications services.

b. State Property

With respect to facilities siting on state property, Section 704(c) of the 1996 Act requires the FCC to provide technical support to States to encourage them to make property, rights-of-way and easements under their jurisdiction available for the placement of new spectrum-based telecommunications services.

NOTE: *Information concerning technical support for tower siting which the FCC is making available to state and local governments is attached to the Fact Sheet.*

5. Definitions

"Personal wireless services" include commercial mobile services, unlicensed wireless services, and common carrier wireless exchange access services. 47 U.S.C. §332(c)(7)(C)(i).

"Commercial mobile services" are defined in Section 332 of the Communications Act and the FCC's rules, and include cellular telephone services regulated under Part 22 of the FCC's rules, SMR services regulated under Part 90 of the FCC's rules, and PCS regulated under Part 24 of the FCC's rules. 47 C.F.R. §20.9.

"Unlicensed wireless services" are defined as the offering of telecommunications services using duly authorized devices which do not require individual licenses; direct-to-home satellite services are excluded from this definition. 47 U.S.C. §332(c)(7)(C)(iii).

COMPLETE TEXT OF SEC. 704 OF THE TELECOMMUNICATIONS ACT OF 1996

SEC. 704. FACILITIES SITING; RADIO FREQUENCY EMISSION STANDARDS.

SEC. 704. FACILITIES SITING; RADIO FREQUENCY EMISSION STANDARDS.
(a) NATIONAL WIRELESS TELECOMMUNICATIONS SITING POLICY- Section 332(c) (47 U.S.C. 332(c)) is amended by adding at the end the following new paragraph:

(7) PRESERVATION OF LOCAL ZONING AUTHORITY-

(A) GENERAL AUTHORITY- Except as provided in this paragraph, nothing in this Act shall limit or affect the authority of a State or local government or instrumentality thereof over decisions regarding the placement, construction, and modification of personal wireless service facilities.

(B) LIMITATIONS-

(i) The regulation of the placement, construction, and modification of personal wireless service
facilities by any State or local government or instrumentality thereof--

(I) shall not unreasonably discriminate among providers of functionally equivalent services; and

(II) shall not prohibit or have the effect of prohibiting the provision of personal wireless services.

(ii) A State or local government or instrumentality thereof shall act on any request for authorization to place, construct, or modify personal wireless service facilities within a reasonable period of time after the request is duly filed with such government or instrumentality, taking into account the nature and scope of such request.

(iii) Any decision by a State or local government or instrumentality thereof to deny a request to place, construct, or modify personal wireless service facilities shall be in writing and supported by substantial evidence contained in a written record.

`(iv) No State or local government or instrumentality thereof may regulate the placement, construction, and modification of personal wireless service facilities on the basis of the environmental effects of radio frequency emissions to the extent that such facilities comply with the Commissions regulations concerning such emissions.

`(v) Any person adversely affected by any final action or failure to act by a State or local government or any instrumentality thereof that is inconsistent with this subparagraph may, within 30 days after such action or failure to act, commence an action in any court of competent jurisdiction. The court shall hear and decide such action on an expedited basis. Any person adversely affected by an act or failure to act by a State or local government or any instrumentality thereof that is inconsistent with clause (iv) may petition the Commission for relief.

`(C) DEFINITIONS- For purposes of this paragraph--

`(i) the term `personal wireless services' means commercial mobile services, unlicensed wireless services, and common carrier wireless exchange access services;

`(ii) the term `personal wireless service facilities' means facilities for the provision of personal wireless services; and

`(iii) the term `unlicensed wireless service' means the offering of telecommunications services using duly authorized devices which do not require individual licenses, but does not mean the provision of direct-to-home satellite services (as defined in section 303(v)).

(b) RADIO FREQUENCY EMISSIONS- Within 180 days after the enactment of this Act, the Commission shall complete action in ET Docket 93-62 to prescribe and make effective rules regarding the environmental effects of radio frequency emissions.

(c) AVAILABILITY OF PROPERTY- Within 180 days of the enactment of this Act, the President or his designee shall prescribe procedures by which Federal departments and agencies may make available on a fair, reasonable, and nondiscriminatory basis, property, rights-of-way, and easements under their control for the placement of new telecommunications

services that are dependent, in whole or in part, upon the utilization of Federal spectrum rights for the transmission or reception of such services. These procedures may establish a presumption that requests for the use of property, rights-of-way, and easements by duly authorized providers should be granted absent unavoidable direct conflict with the department or agency's mission, or the current or planned use of the property, rights-of-way, and easements in question. Reasonable fees may be charged to providers of such telecommunications services for use of property, rights-of-way, and easements. The Commission shall provide technical support to States to encourage them to make property, rights-of-way, and easements under their jurisdiction available for such purposes. rights-of-way, and easements under their control for the placement of new telecommunications services that are dependent, in whole or in part, upon the utilization of Federal spectrum rights for the transmission or reception of such services. These procedures may establish a presumption that requests for the use of property, rights-of-way, and easements by duly authorized providers should be granted absent unavoidable direct conflict with the department or agency's mission, or the current or planned use of the property, rights-of-way, and easements in question. Reasonable fees may be charged to providers of such telecommunications services for use of property, rights-of-way, and easements. The Commission shall provide technical support to States to encourage them to make property, rights-of-way, and easements under their jurisdiction available for such purposes.

TECHNICAL INFORMATION CONCERNING CELLULAR, SPECIALIZED MOBILE RADIO AND PERSONAL COMMUNICATIONS SERVICES

April 1996

Cellular Information

The FCC established rules and procedures for licensing cellular systems in the United States and its Possessions and Territories. These rules designated 306 Metropolitan Statistical Areas and 428 Rural Service Areas for a total of 734 cellular markets and spectrum was allocated to license 2 systems in each market. Cellular is allocated spectrum in the 824-849 and 869-894 MHz ranges. Cellular licensees are generally required to license only the tower locations that make up their outer service contour. Licensees desiring to add or modify any tower locations that are within an already approved and licensed service area do not have to submit an application for that location to be added to their cellular license, although they may need FCC approval if the antenna would constitute a major environmental action (See question 2, below) or would exceed the criteria specified in Part 17 of the FCC's Rules ("Construction, Marking and Lighting of Antenna Structures"). Part 17 includes criteria for determining when construction or placement of a tower would require prior notification to the Federal Aviation Administration (FAA). (See question 3, below.)

A cellular system operates by dividing a large geographical service area into cells and assigning the same frequencies to multiple, non-adjacent cells. This is known in the industry as frequency reuse. As a subscriber travels across the service area the call is transferred (handed-off) from one cell to another without noticeable interruption. All the cells in a cellular system are connected to a Mobile Telephone Switching Office (MTSO) by landline or microwave links. The MTSO controls the switching between the Public Switched Telephone Network (PSTN) and the cell site for all wireline-to-mobile and mobile-to-wireline calls.

Specialized Mobile Radio (SMR) Information

Specialized Mobile Radio (SMR) service licensees provide land mobile communications on a commercial (i.e., for profit) or private basis. A traditional SMR system consists of one or more base station transmitters, one or more antennas and end user radio equipment which often consists of a mobile radio unit either provided by the end user or obtained from the SMR operator. The base station receives either telephone transmissions from end users or low power signals from end user mobile radios.

SMR systems operate in two distinct frequency ranges: 806-821/851-866 MHz (800 MHz) and 896-901/935-940 MHz (900 MHz). 800 MHz SMR services have been licensed by the FCC on a site-by-site basis, so that the SMR provider must approach the FCC and receive a license for each and every tower/base site. In the future the FCC will license this band on a wide-area market approach. 900 MHz SMR was originally licensed in 46 Designated Filing Areas (DFAs) comprised of only the top 50 markets in the country. The Commission is in the process of auctioning the remainder of the United States and its Possessions and Territories in the Rand McNally defined 51 Major Trading Areas.

PCS Information

Broadband PCS systems are very similar to the cellular systems but operate in a higher frequency band, in the 1850-1990 MHz range. One other difference is that the FCC used different market areas for licensing purposes. The FCC used the Rand McNally definitions for 51 Major Trading Areas (MTAs) and 493 Basic Trading Areas (BTAs). PCS was allocated spectrum for six Broadband PCS systems and 26 Narrowband systems. The six Broadband PCS systems will be licensed as follows: two Broadband PCS licenses will be issued for each of the 51 MTAs and four for each of the 493 BTAs. The 26 Narrowband systems will be licensed as follows: eleven Narrowband PCS licenses will be issued for nationwide systems, six for each of five regional areas, seven for each of the 51 MTAs and two for each of the 493 BTAs.

PCS licensees are issued a blanket license for their entire market area and are not required to submit applications to license individual cell sites unless construction of the facility would be a major environmental action or would require FAA notification. Major environmental actions are defined by the National Environmental Policy Act of 1969 that is discussed in question 2, below. Therefore, the FCC has no technical information on file concerning PCS base stations.

Frequently asked questions concerning tower siting for personal wireless services.

1. Do local zoning authorities have any authority to deny a request for tower siting?

Answer: Yes. The Telecommunications Act of 1996 specifically leaves in place the authority that local zoning authorities have over the placement of personal wireless facilities. It does prohibit the denial of facilities siting based on RF emissions if the licensee has complied with the FCC's regulations concerning RF emissions. It also requires that denials be based on a reasoned approach, and prohibits discrimination and outright bans on construction, placement and modification of personal wireless facilities.

2. What requirements do personal wireless communications licensees have to determine whether a site is in a flood plain? A historical site?

Answer: All antenna structures must also comply with the National Environmental Policy Act of 1969 (NEPA). as well as other mandatory federal environmental statutes. The FCC's rules that implement the federal environmental statutory provisions are contained in sections 1.1301-1.1319. The FCC's environmental rules place the responsibility on each applicant to investigate all the potential environmental effects, and disclose any significant effects on the environment in an Environmental Assessment (EA), as outlined in section 1.1311, prior to constructing a tower. The applicant is required to consult section 1.1307 to determine if its proposed antenna structure will fall under any of the listed categories that may significantly affect the environment. If it does, the applicant must provide an EA prior to proceeding with the tower construction and. under section 1.1312, must await FCC approval before commencing any such construction even if FCC approval is not otherwise required for such construction. The FCC places all proposals that may significantly impact the environment on public notice for a

period of 30 days, seeking any public comments on the proposed structures.

The categories set forth in section 1.1307 include:

Wilderness Area
Wildlife Preserve

Endangered Species

Historical Site

Indian Religious Site

Flood Plain

Wetlands

High Intensity White Lights in Residential Neighborhoods

Excessive Radiofrequency Radiation Exposure

3. Are there any FCC regulations that govern where towers can or cannot be placed?

Answer: The FCC mandates that personal wireless companies build out their systems so that adequate service is provided to the public. In addition, all antenna structures used for communications must be approved by the FCC in accordance with Part 17 of the FCC Rules. The FCC must determine if there is a reasonable possibility that the structure may constitute a menace to air navigation. The tower height and its proximity to an airport or flight path will be considered when making this determination. If such a determination is made the FCC will specify appropriate painting and lighting requirements. Thus, the FCC does not mandate where towers must be placed, but it may prohibit the placement of a tower in a particular location without adequate lighting and marking.

4. Does the FCC maintain any records on tower sites throughout the United States? How does the public get this information (if any)?

Answer: The FCC maintains a general tower database on the following structures: (1) any towers over 200 feet, (2) any towers over 20 feet on an existing structure (such as a building, water tower, etc.) and (3) towers that are close to airports that may cause potential hazards to air navigation. The FCC's licensing databases contain some base site information for Cellular and SMR systems. The general tower database and the Cellular and SMR data that may be on file with the FCC is available in three places:

(1) Cellular licensing information is available in the Public Reference Room of the Wireless Telecommunications Bureau's Commercial Wireless Division. The Public Reference Room is

located on the fifth floor of 2025 M Street, NW, Washington, DC 20554, telephone (202)418-1350. On-line database searches of cellular licensing information along with queries of the FCC's general tower database can also be accomplished at the Public Reference Room.

(2) People who would like to obtain general tower information through an on-line public access database should call or write Interactive Systems, Inc., 1601 North Kent St., Suite 1103, Arlington, VA 22209, telephone 703-812-8270.

(3) The FCC does not duplicate these records, but has contracted with International Transcription Service, Inc. to provide this service. Requests for copies of information should be addressed to International Transcription Service, Inc. (ITS, Inc.), 2100 M St., NW, Suite 140, Washington, DC 20037, telephone 202-857-3800.

5. Why do Cellular and PCS providers require so many tower sites?

Answer: Low powered transmitters are an inherent characteristic of Cellular Radio and Broadband PCS. As these systems mature and more subscribers are added, the effective radiated power of the cell site transmitters is reduced so frequencies can be reused at closer intervals thereby increasing subscriber capacity. There are over 30 million mobile/portable cellular units and more than 22 thousand cell sites operating within the United States and its Possessions and Territories. PCS is just beginning to be offered around the country. Due to the fact that Broadband PCS is located in a higher frequency range, PCS operators will require more tower sites as they build their systems to provide coverage in their service areas as compared to existing Cellular carriers. Therefore, due to the nature of frequency reuse and the consumer demand for services, Cellular and PCS providers must build numerous base sites.

6. Can Cellular, SMR and PCS providers share tower structures?

Answer: Yes, it is technologically possible for these entities to share tower structures. However, there are limits to how many base station transmitters a single tower can hold and different tower structures have different limits. Moreover, these providers are competitors in a more and more competitive marketplace and may not be willing to share tower space with each other. Local zoning authorities may wish to retain a consulting engineer to evaluate the proposals submitted by wireless communications licensees. The consulting engineer may be able to determine if there is some flexibility as to the geographic location of the tower.

7. Is the Federal government helping to find ways to accommodate multiple licensees of personal wireless services?

Answer: Yes. The FCC has designated Steve Markendorff, Chief, Broadband Branch, Commercial Wireless Division, Wireless Telecommunications Bureau, FCC to assist local zoning authorities and municipalities and respond to questions concerning tower siting issues. His telephone number is 202-418-0620. Also, President Clinton issued an Executive Memorandum on August 10, 1995 directing the Administrator of General Services (GSA), in

coordination with other Government departments and agencies, to develop procedures to facilitate appropriate access to Federal property for the siting of mobile services antennas. GSA recently released "Government-Wide Procedures for Placing Commercial Antennas," 61 Fed Reg 14,100 (March 29, 1996). For further information contact James Herbert, Office of Property Acquisition and Realty Services, Public Building Service, General Services Administration, 18th & F Streets, NW, Washington, DC 20405, telephone 202-501-0376.

8. Have any studies been completed on potential hazards of locating a tower/base site close to residential communities?

Answer: In connection with its responsibilities under NEPA, the FCC considers the potential effects of radiofrequency (RF) emissions from FCC-regulated transmitters on human health and safety. Since the FCC is not the expert agency in this area, it uses standards and guidelines developed by those with the appropriate expertise. For example, in the absence of a uniform federal standard on RF exposure, the FCC has relied since 1985 on the RF exposure guidelines issued in 1982 by the American National Standards Institute (ANSI C95.1-1982). In 1991, the Institute of Electrical and Electronic Engineers (IEEE) issued guidelines designed to replace the RF ANSI exposure guidelines. These guidelines (ANSI/IEEE C95.1-1992) were adopted by ANSI. The Telecommunications Act of 1996 mandates that the FCC complete its proceeding in ET Docket 93-62, in which it is considering updating the RF exposure guidelines, no later than early August 1996. Copies of this proceeding can be obtained from the International Transcription Service, Inc. (ITS), telephone 202-857-3800. Presently, RF emission requirements are contained in Section 1.1307(b) of the FCC's rules , 47 C.F.R. §1.1307(b), for all services. PCS has service specific RF emission provisions in Section 24.52 of the FCC's rules, 47 C.F.R. § 24.52.

Additional information concerning RF emission hazards can be obtained through a variety of sources:

(1) Information concerning RF hazards can be obtained on the World Wide Web at http://www.fcc.gov/oet/faqs. RF safety questions are answered and further RF documents and information are contained under the Cellular Telephony Section.

(2) OET Bulletins 56 and 65 concerning effects and potential RF hazards can be requested through the Radiofrequency Safety Program at 202-418-2464. Additionally, any specific questions concerning RF hazards can be answered by contacting the FCC at this phone number.

The FCC maintains a Communications and Crisis Management Center which is staffed 24 hours a day, seven days a week. In the event of an emergency, such as a radiofrequency hazard threatening public safety or health, you may call 202-632-6975. The watch officer who answers at that number can contact our compliance personnel in your area and dispatch them within a matter of hours.

EXHIBIT D

FEDERAL COMMUNICATIONS COMMISSION
WIRELESS TELECOMMUNICATIONS BUREAU
2025 M Street, N.W., Washington, DC 20554

FACT SHEET #2

SEPTEMBER 17, 1996

NATIONAL WIRELESS FACILITIES SITING POLICIES

The Telecommunications Act of 1996 (the 1996 Act) contains important provisions concerning the placement of antenna structures and other facilities for use in providing personal wireless services. State and local governments have already been working closely with wireless service providers to place such facilities within their localities. The new law establishes a framework for the exercise of jurisdiction by state and local zoning authorities over the construction, modification and placement of facilities for personal wireless services.

The new law also directs the Commission to offer assistance to state and local governments in resolving wireless facilities siting issues. In that capacity, the Commission has formed a Wireless Facilities Siting Task Force to serve as a focal point for collection and dissemination of information relating to the efforts of state and local governments, as well as providers of personal wireless services, to address facilities siting concerns. The Task Force believes it can serve as a valuable information resource for state and local governments and for the industry as they carry out the responsibilities assigned them under the new law. Proper implementation of the new law will ultimately benefit the American public by preserving local zoning and land use authority, while at the same time, promoting the broad availability of these exciting new technologies.

On April 23, 1996, the Wireless Telecommunications Bureau issued **Fact Sheet #1** to inform the public about the provisions of Section 704 of the 1996 Act, and to assist state and local governments as they deal with the complex issues of personal wireless facilities siting in their local communities. **Fact Sheet #1** summarized key provisions of Section 704, reprinted the complete text of Section 704 of the 1996 Act, provided technical information concerning personal wireless services, and, finally, answered frequently asked questions.

This **Fact Sheet #2** consists of four parts :

- PART I is a new compilation of frequently asked questions and answers;

- PART II summarizes the Commission's radiofrequency (RF) emission rules governing personal wireless services, adopted August 1, 1996, and sets forth the most relevant RF rules for personal wireless facilities siting purposes;

- PART III provides revised information about those personal wireless services most likely to be submitting facilities siting requests during the upcoming year; and

- PART IV consists of maps showing the geographic areas used by the Commission to license cellular radiotelephone service and personal wireless services, and lists licensees for certain personal communications services.

Fact Sheet #1 and **Fact Sheet #2** on *National Wireless Facilities Siting Policies* are both available from the Commission's "fax-on-demand" system at (202) 418-2830. To obtain the 12-page **Fact Sheet #1** from fax-on-demand, please reference Document Number 6507. To obtain the 39-page **Fact Sheet #2**, please reference Document Number 6508. Both **Fact Sheets** are also available on the Internet, from the Wireless Telecommunications Bureau homepage, at http://www.fcc.gov/wtb/wirehome.html.

In addition to the contacts listed elsewhere in this **Fact Sheet #2**, questions on the following general topics should be directed to the Commission staff listed below:

- The Telecommunications Act of 1996 in general:
  Office of Legislative and Intergovernmental Affairs
  Voice: (202) 418-1900
  Fax: (202) 418-2806

- Federal regulation of wireless communications services in general:
  Rosalind K. Allen
  Deputy Chief
  Wireless Telecommunications Bureau
  Voice: (202) 418-0600
  Fax: (202) 418-0787
  E-mail: rallen@fcc.gov

- Antenna structure siting, licensing issues and technical matters:
  Steve Markendorff
  Chief, Broadband Branch
  Wireless Telecommunications Bureau
  Voice: (202) 418-0620
  Fax: (202) 418-1412
  E-mail: smarkend@fcc.gov

- Commission guidelines on radiofrequency emissions:
  RF Safety Program
  Office of Engineering and Technology
  Voice: (202) 418-2464
  Fax: (202) 418-1918
  E-mail: rfsafety@fcc.gov

- Transmitter power, antenna structure painting and lighting requirements:
  Dan S. Emrick
  Compliance Division
  Voice: (202) 418-1170
  Fax: (202) 418-2813

Compliance and Information Bureau E-mail: demrick@fcc.gov

Additional questions on wireless facilities siting issues may be addressed to the following national governmental and trade associations:

- American Planning Association
  Karen B. Graham — Voice: (202) 872-0611
  Public Affairs Associate — Fax: (202) 872-0643

- National Association of Counties
  Robert J. Fogel — Voice: (202) 393-6226
  Associate Legislative Director — Fax: (202) 393-2630

- National Association of Telecommunications Officers and Advisors
  Eileen E. Huggard — Voice: (202) 429-5101
  Executive Director — Fax: (202) 223-4579

- National League of Cities
  Frank Shafroth — Voice: (202) 626-3026
  Director of Policy and Federal Relations — Fax: (202) 626-3043

- United States Conference of Mayors
  Kevin S. McCarty — Voice: (202) 293-7330
  Assistant Executive Director — Fax: (202) 293-2352

- American Mobile Telecommunications Association
  Jill Lyon — Voice: (202) 331-7773
  Director of Regulatory Relations — Fax: (202) 331-9062

- Cellular Telecommunications Industry Association
  Andrea D. Williams — Voice: (202) 785-0081
  Assistant General Counsel — Fax: (202) 785-0721
  or
  Lauren Fry — Voice: (202) 785-3236
  Manager for Industry Education — Fax: (202) 887-1629

- Personal Communications Industry Association
  Mark J. Golden — Voice: (703) 739-0300 x 3008
  Senior VP, Industry Affairs — Fax: (703) 836-1608

PART I

FREQUENTLY ASKED QUESTIONS

The Commission's Wireless Facilities Siting Task Force has spent a substantial amount of time over the past three months meeting with representatives from various state and local governments and their national associations, as well as with representatives from personal wireless service providers and their trade associations. We have also answered numerous inquiries from members of the public on facilities siting and RF emission issues. The questions and answers listed below reflect the Task Force's collective assessment of those issues of most interest to parties affected by wireless facilities siting issues.

PERSONAL WIRELESS SERVICES & FACILITIES

1. What are "personal wireless facilities" referenced in Section 704 of the 1996 Act?

Answer: Personal wireless facilities are transmitters, antenna structures and other types of installations used for the provision of personal wireless services. Section 704 defines personal wireless services to include a broad range of spectrum-based services. All commercial mobile services fall within the definition of personal wireless services. Elsewhere in the statute, commercial mobile services have been defined as mobile services that are for-profit, are available to the public or a substantial portion of the public, and provide subscribers with the ability to access or receive calls from the public switched telephone network. Common examples of commercial mobile services are personal communications services (PCS), cellular radio mobile service and paging. Personal wireless services also includes unlicensed wireless services, which are services that are not licensed by the Commission, but are deployed through equipment that is authorized by the Commission. Finally, personal wireless services include common carrier wireless exchange access services, which are offerings designed as competitive alternatives to traditional wireline local exchange providers.

2. Are home satellite services considered "personal wireless service"?

Answer: No. Section 704 of the 1996 Act specifically excludes "direct-to-home satellite services" from the definition of personal wireless services. State and local regulation of facilities used to receive these broadcast services is addressed under Section 207 of the 1996 Act. Pursuant to Section 207, the Commission has adopted rules concerning state, local, and private restrictions on viewers' ability to receive video programming signals from direct broadcast satellites, multichannel multipoint distribution (wireless cable) providers, and television broadcast stations. For more information on the Commission's rules under Section 207, please contact 1-888-225-5322. A separate fact sheet has been prepared regarding these rules, which is available from the Commission's fax-on-demand system at (202) 418-2830 or from the Internet at http:\\www.fcc.gov\Bureaus\Common_Carrier\Factsheets\otafacts.html.

3. How can providers of personal wireless services benefit my community?

Answer: Personal wireless services are not just car phones for businesses. Due to technological innovation and the continuing availability of additional spectrum, PCS and cellular providers are offering light-weight portable phones at increasingly affordable prices that enable consumers to make and accept calls anywhere and at anytime. It is also anticipated that providers of personal wireless services will offer wireless computer networking and wireless Internet access. Many PCS providers also intend to offer a service that will eventually compete directly with residential local exchange and exchange access services. The inherent flexibility of wireless services makes it possible to introduce new service offerings on a dynamic basis as consumer demands grow and change.

Wireless services are also integral to many businesses that rely on mobility of their operations to provide goods and services to consumers. Communicating by a wireless network enables companies in various businesses, from car rentals to package delivery, to operate in a more efficient manner, and to ultimately lower the cost to the consumer while improving the quality of service.

It is also worthwhile to keep in mind that the antenna structures required to deploy personal wireless services can be used for other purposes that could benefit your community. For example, a community that has a long-term plan to improve its public safety communications may be able to expedite that process by teaming with personal wireless service providers to construct new sites that could be used for deployment of both public safety and personal wireless communications. Furthermore, wireless telecommunications and data services play an increasing (and increasingly sophisticated) role in providing healthcare services. Wireless services may be particularly helpful in delivering healthcare to the home, for example, by allowing a nurse, while in a patient's home, to access the patient's vital information directly from the database at the hospital. Personal wireless service providers may also serve as a lower-cost source of advanced telecommunications capabilities for schools and libraries. Therefore, state and local governments should engage the personal wireless service providers in a dialogue about how their offerings can best serve the community.

4. Why do personal wireless service providers require so many antenna structures?

Answer: Generally, low powered transmitters are an inherent characteristic of cellular radio and broadband PCS. As these systems develop and more subscribers are added, the effective radiated power of the cell site transmitters is reduced. Channels are reused at closer intervals to increase the subscriber capacity of the system, and therefore, more transmitting facilities are needed. Additionally, because broadband PCS operates at a higher frequency than cellular, these providers may require more antenna structures than cellular services to provide equivalent coverage in their service areas.

5. ***It seems as if the Commission is authorizing a large number of these personal wireless service providers. How many new antenna structures should my community expect to accommodate?***

Answer: Currently, there are over 40 million mobile/portable cellular units and over 22,000 cell sites operating within the United States and its Possessions and Territories. The Commission is allocating spectrum to personal wireless service providers on an ongoing basis. In addition, at the direction of Congress, the federal government is making spectrum currently allocated to federal government use available to the Commission for private sector use. As a result, it is difficult at this time to predict the ultimate number of personal wireless service providers that may serve your community. At present, however, the greatest demand for new site construction is concentrated in cellular and broadband PCS.

In most parts of the country, there are two Commission-licensed entities providing cellular services. In addition, the Commission has already issued two broadband PCS licenses in each Major Trading Area, and soon will issue four more broadband PCS licenses for Basic Trading Areas. (PART IV of this **Fact Sheet #2** contains maps showing the Major and Basic Trading Areas). Therefore, during the upcoming year, local governments can expect approximately eight discrete cellular and broadband PCS licensees to seek antenna facilities in each community. However, the actual number is likely to be smaller than eight due to the ability of existing cellular and PCS licensees to obtain more than one license in an area, and the expected consolidation of providers within the wireless communications industry.

6. ***Does the Commission maintain any records on the locations of personal wireless structures throughout the United States?***

Answer: The Commission maintains site information on antenna structures that may affect air navigation, including (1) antenna structures located over 200 feet above ground, and (2) antenna structures that are in close proximity to airport runways. Antenna structures that do not exceed 20 feet above existing landscape or buildings, however, are not included. Site information for structures built prior to July 1, 1996, is contained in the Commission's "tower file" database. Site information for structures built after July 1, 1996, as well as an increasing number of structures built before that date, is contained in the Commission's "antenna registration" database. The registration database will contain all the tower file information by July 1998. Additionally, the Commission's cellular and SMR licensing databases contain some site information for base stations in those services.

For a fee, you can request a search of the tower file or antenna registration databases through International Transcription Service, Inc. (ITS), 2100 M Street, N.W., Suite 140, Washington, DC 20037, at (202) 857-3800. You may also view the antenna registration database on-line using the Commission's ASR Electronic Filing/Viewing Software. For more information on this software, please call (800) 322-1117.

The cellular and SMR databases are available for on-line viewing in the Public Reference Room of the Wireless Telecommunications Bureau's Commercial Wireless Division, located on the fifth floor of 2025 M Street, N.W., Washington, DC 20554. For more information, you may contact the Reference Room at (202) 418-1350. You may also obtain on-line access from a remote location, by contacting Interactive Systems, Inc., 1601 North Kent Street, Suite 1103, Arlington, VA 22209, at (703) 812-8270. However, because PCS licensees are issued a blanket license for their entire geographic area, the Commission does not maintain any information in its databases on the specific locations of any PCS base stations, unless they fall into the categories listed above.

7. ***Some people consider personal wireless service facilities to be unsightly. Is there some way to make these structures blend in with their surroundings?***

Answer: Antennas for personal wireless services can sometimes be mounted on existing structures such as building roof tops, church steeples, street lights, traffic lights, or electric utility substations, where they are relatively unobtrusive. Painting antenna structures to blend in with the existing structure is also an effective camouflage. Camouflaging of antennas is also used to accommodate highly specialized land use concerns. For example, a personal wireless service provider seeking to locate a transmitter site in a historic district may consider camouflaging the antenna in such structures as clock towers or artificial trees. Such camouflaging is, however, expensive and time consuming and most service providers are reluctant to routinely use the camouflage option.

ZONING ISSUES

8. ***What types of information exchanges should occur at the beginning of the local zoning process that would be helpful both to local and state governments and to personal wireless service providers?***

Answer: From the perspective of the local and state governments, it is helpful for the wireless service provider to supply as much advance information as possible about the nature of its service offerings and the "big picture" plan for service deployment. Local zoning authorities have a strong interest in becoming fully informed about exactly what they are authorizing, and what will be the long-term effects of facilities siting on land use in their communities. Many personal wireless service providers have found it helpful to organize seminars aimed at acquainting local zoning authorities with their services. Community outreach is also a productive way for new wireless service providers to pave the way for introduction of their offerings. Personal wireless service providers may be able to expedite the zoning authorization process if they target, where possible, site locations that are compatible with the proposed use, such as industrial zones, utility rights of way and pre-existing structures.

From the perspective of the personal wireless service provider, knowing what to expect in the zoning process is the primary concern. Therefore, state and local authorities should endeavor to provide wireless service providers with a clear picture of the zoning authorization process in

advance. It is also helpful for zoning authorities to share information about their land use priorities to determine where and how wireless service facilities fit into the plans. Finally, keep in mind that wireless telecommunications systems are very dynamic. Personal wireless services are thus designed to respond quickly to customer demands which may change dramatically as a result of the construction of new highways and roads and the development of new residential and business communities.

9. How do personal wireless service providers approach state and local governments to request authorization to construct, place or modify their facilities?

Answer: A personal wireless service provider may have an internal antenna facilities siting team which seeks potential sites for the company's own needs, or it may hire an independent contractor to seek potential sites. Some of these independent facilities siting companies may be working on behalf of more than one Commission licensee at a time, or they may not be seeking sites for any Commission licensees at all. The local zoning authorities should therefore be aware that a facilities siting company may not be seeking the sites that are of most interest to particular Commission licensees, but rather seek general sites on highly elevated locations in the hopes of leasing the sites, in turn, to Commission licensees.

10. Can personal wireless service providers share common structures to house their transmitters?

Answer: Yes, it is possible for these entities to share structures. Sharing of structures by several wireless service providers is typically referred to as "collocation." The Commission encourages collocation of antenna structures to the extent technologically feasible, and recommends that local zoning authorities engage the parties in cooperative efforts to chart the potential overlap of desirable locations, in order to minimize the number of antenna structures to be sited. It has also been our experience that personal wireless service providers are responsive to positive incentives to collocate, such as, for example, processing the zoning application of a collocating facility more quickly. There are, however, limitations on collocation, and it should not be viewed as a complete solution to all land use concerns associated with the deployment of personal wireless services.

First, there are physical limitations on how many transmitters a single structure can sustain. Different tower structures have different structural tolerances. In general, there are other technical issues that the service provider must consider, including the evaluation of interference and compliance with the Commission's RF emissions criteria. In addition, personal wireless services will deploy a variety of technologies that will require differing site configurations to provide subscribers with quality service. It is also important to note that as additional service providers enter the market, they will tailor their offerings to market demands that remain unsatisfied, so that while the first two providers in the community may be able to share a site because they seek to provide similar service to a similar market, the third provider may require a new site configuration because it intends, for example, to provide wireless Internet access to the

community's educational institutions. For this third provider, collocation with the first two providers may therefore be technically or economically problematic. Additionally, because collocation groups many pieces of equipment on a single structure, collocation may result in larger and more obtrusive and unsightly structures than multiple, discrete installations of individual antennas and transmitters.

It should also be kept in mind that personal wireless service providers are fierce competitors that are often deploying the first commercial use of a particular technology. As a result, the providers may be unwilling to share their siting plans, particularly actual site locations, because they consider these plans proprietary business information, or they may be reluctant to engage in group discussions with their competitors about siting because such conduct could be viewed as anticompetitive.

Finally, because these services are new technologies, it will be difficult to predict the exact location of all sites at the time of initial service deployment, and adjustments may be necessary along the way. New technologies also present unique technical challenges. Attempts by state and local governments to "reengineer" these new technologies and service offerings may have unpredictable effects on service quality and coverage. At the same time, the new law recognizes the legitimacy of local zoning and land use concerns. Service providers and local zoning authorities are thus encouraged to work together to develop ways to protect the proprietary nature of siting plans yet still yield information that can be useful to local zoning authorities for developing overall zoning plans for personal wireless facilities.

11. How quickly must state or local zoning authorities process applications for new personal wireless antenna structures?

Answer: Section 704 of the 1996 Act states that local authorities are required to act upon an application for a facility site within a reasonable period of time. The Conference Report accompanying Section 704 explains that the "nature and scope" of each request should be taken into account. The Conference Report further explains that "[i]f a request for placement of a personal wireless facility involves a zoning variance or a public hearing or comment process, the time period for rendering a decision will be the usual period under such circumstances. It is not the intent of this provision to give preferential treatment to the personal wireless service industry in the processing of requests, or to subject their requests to any but the generally applicable time frame for zoning decision."

Some state and local governments have adopted, or have considered adopting, "freezes" on the processing of facilities siting applications in anticipation of an increase in applications for personal wireless antenna structures. Many state or local governments believe that such freezes or moratoria are necessary because they are being asked to evaluate long-term land use issues without having relevant ordinances in place, and in some instances without the information they need to make these types of global assessments. Freezes of this nature are not looked upon favorably by personal wireless service providers because the providers are generally concerned

that moratoria (especially those that are open-ended or renewable) cause uncertainty and disruption to their business plans. In addition, wireless service providers find the lack of certainty amplified when it is not clear exactly what the state or local government is accomplishing during the moratorium other than not processing their applications.

While the issue of whether moratoria are consistent with Section 704 is being developed in the courts, the Conference Report provides some guidance: "It is the intent of this section that bans or policies that have the effect of banning personal wireless services or facilities not be allowed and that decisions be made on a case-by case basis." Moratoria may have a disproportionate impact on some personal wireless service providers, who may be effectively blocked from entering the market during the pendency of the freeze, or may be inhibited from further deployment or improvement of existing service. For one court's opinion on this issue, see *Sprint Spectrum, L.P. v. City of Medina*, 924 F. Supp. 1036 (W.D. Wash. 1996).

In certain instances, state and local governments may benefit from a brief, finite period of consideration in order to set up a process for the orderly handling of facilities siting requests. These brief periods of consideration may be most effective if the state or local government communicates clearly to wireless service providers the specific duration of the moratorium, the tasks that the local governmental entity intends to accomplish during the moratorium and the ways in which the wireless service providers can help the local government to achieve the stated goals of the moratorium by, for example, providing additional information about their needs and about their services.

12. If the state or local zoning authorities deny applications for personal wireless antenna structures, must the decisions be in writing?

Answer: Yes. Section 704 of the 1996 Act mandates that the decision must be in writing, and supported by substantial evidence contained in a written record. The Conference Report explains that "substantial evidence contained in a written record" means "the traditional standard used for judicial review of agency actions." For one court's opinion on this issue, see *BellSouth Mobility Inc., v. Gwinnett County*, No. 1:96-cv-1268-GET (N.D. Ga. Aug. 13, 1996).

13. Section 704 states that state or local governments may not unreasonably discriminate among providers of functionally equivalent services. What types of state and local governmental actions constitute unreasonable discrimination?

Answer: It appears that what constitutes "reasonable" discrimination among providers will be developed in the courts on a case-by-case basis. However, Congress' Conference Report accompanying Section 704 provides some guidance as well, explaining that the intent of the conferees is "to ensure that a State or local government does not in making a decision regarding the placement, construction and modification of facilities of personal wireless services . . . unreasonably favor one competitor over another." The Conference Report further explains the intent of the conferees is to "provide localities with the flexibility to treat facilities that create

different visual, aesthetic, or safety concerns differently to the extent permitted under generally applicable zoning requirements even if those facilities provide functionally equivalent services. For example, the conferees do not intend that if a State or local government grants a permit in a commercial district, it must also grant a permit for a competitor's 50-foot tower in a residential district." As a general matter, there appears to be an expectation that state and local governments should endeavor to avoid making land use decisions that give one personal wireless service provider a competitive advantage over another. For one court's opinion on this issue, see *Westel-Milwaukee Co., Inc. v. Walworth County*, No. 95-2097, 1996 WL 496670 (Wis. Ct. App. Sept. 4, 1996).

14. What should I do if the state or local government has acted inconsistently with Section 704, and I have been adversely affected?

Answer: If the state or local governmental action is inconsistent with Section 704, and you are adversely affected by such action, you may appeal the zoning authority's decision to a court of competent jurisdiction. Congress' Conference Report which accompanied Section 704 states that such actions may be filed in the federal district court in which the facilities are located or a State court of competent jurisdiction, at the option of the party appealing the decision. Section 704 also requires that such action be filed in court within 30 days after the state or local government acts or fails to act, and courts are directed to rule expeditiously on such cases.

If the decision of a state or local government authority which adversely affects you is based on the environmental effects of radiofrequency emissions, such decision may be appealed to the courts or it may be appealed directly to the Commission through a request for Declaratory Ruling, pursuant to Section 1.2 of the Commission's Rules. Either way, however, the appeal must be filed within 30 days after the state or local government's action.

15. What can the federal government do to accommodate multiple providers of personal wireless services in seeking antenna structure locations?

Answer: Section 704 of the 1996 Act mandates that the federal government make available property, rights-of-way, and easements under its control for the placement of new spectrum-based telecommunications services. It also provides that a presumption may be established to grant such requests absent unavoidable direct conflict with the government's mission or planned use of the locations, and that the decisions regarding siting on such locations must be fair, reasonable, and nondiscriminatory.

On August 10, 1995, President Clinton issued an Executive Memorandum directing the Administrator of the General Services Administration (GSA), in coordination with other federal government departments and agencies, to develop procedures to facilitate appropriate access to federal property for the siting of mobile services antenna structures. In response to this order and the Congressional mandate, GSA has prepared a manual entitled "Government-Wide Procedures for Placing Commercial Antennas," which is published in Volume 61, page 14100 of the Federal

Register, issued on March 29, 1996. For more information on the use of federal property to site wireless antenna facilities, please contact James Herbert, Office of Property Acquisition and Realty Services, Public Building Service, General Services Administration, at (202) 501-0376, or write to GSA at 18th & F Streets, NW, Washington, DC 20405.

Section 704 also mandated the Commission to provide technical support to states in order to encourage them to make property, rights-of-way and easements under their jurisdiction available for the placement of new spectrum-based telecommunications services. For more information on how the Commission can be of assistance to the state and local governments in this area, please contact Steve Markendorff, Chief of the Broadband Branch, Commercial Wireless Division, Wireless Telecommunications Bureau, at (202) 418-0620, or fax (202) 418-1412, or email "smarkend@fcc.gov."

RADIOFREQUENCY (RF) EMISSIONS

16. Does Section 704 preempt state and local governments from basing regulation of the placement, construction or modification of personal wireless facilities directly or indirectly on the environmental effects of RF emissions?

Answer: Yes. Section 704 states that "No State or local government or instrumentality thereof may regulate the placement, construction, and modification of personal wireless service facilities on the basis of the environmental effects of radio frequency emissions to the extent that such facilities comply with the Commission's regulations concerning such emissions."

17. Have any studies been conducted on potential health hazards of locating an antenna structures close to residential communities?

Answer: Many governmental agencies, scientists, engineers and professional associations have conducted studies of exposure levels due to RF emissions from cellular transmitter facilities. These levels have been found to be typically thousands of times below the levels considered to be safe by expert entities such as the Institute of Electrical and Electronics Engineers, Inc. (IEEE), and the National Council on Radiation Protection and Measurements (NCRP), as reflected in the Commission's rules governing RF emissions.

18. Has the Commission adopted new guidelines for evaluating RF exposures?

Answer: Yes. In light of revised guidelines developed by the Institute of Electrical and Electronics Engineers, Inc. and adopted by the American National Standards Institute in 1992 (ANSI/IEEE C95.1-1992), the Commission initiated a proceeding in 1993 to determine whether the Commission should adopt these guidelines to replace the 1982 ANSI guidelines. Section 704 of the 1996 Act required the Commission to complete this rulemaking proceeding (ET Docket 93-62) and have in place revised RF exposure guidelines by August 7, 1996. The Commission adopted a *Report and Order*, FCC 96-326, on August 1, 1996, which revised the guidelines that

the Commission will use to evaluate the environmental effects of transmitters licensed or authorized by the Commission. The new guidelines governing transmitter facilities become effective January 1, 1997. Guidelines governing equipment authorization become effective immediately.

19. How do the new guidelines differ from the existing guidelines used by the Commission?

Answer: The new guidelines are based on recommendations from the public, including federal health and safety agencies, such as the Environmental Protection Agency (EPA) and the Food and Drug Administration (FDA). These agencies recommended that we adopt elements of both the 1992 revision of the ANSI standard and the exposure criteria recommended by the National Council on Radiation Protection and Measurements. In certain respects the new guidelines are more stringent than those used previously by the Commission. For example, exposure limits allowed for the general public are stricter with respect to exposure from building-mounted and tower-mounted transmitting antennas as well as from hand-held devices such as cellular telephones.

20. Which federal agencies made recommendations to the Commission that formed a basis for the final rules?

Answer: While Congress vested the Commission with the authority and responsibility for regulating the environmental effects of RF emissions, four key federal agencies with responsibility for health and safety filed comments in this proceeding and made specific recommendations. These agencies were the Environmental Protection Agency (EPA), the Center for Devices and Radiological Health (CDRH) of the Food and Drug Administration (FDA), the National Institute for Occupational Safety and Health (NIOSH) and the Occupational Safety and Health Administration (OSHA). In adopting the new guidelines, the Commission paid considerable deference to the recommendations of these federal agencies, and these agencies have reaffirmed their support for the Commission's action with letters which are part of the record in this docket.

21. What is the American National Standards Institute?

Answer: The American National Standards Institute (ANSI) is a non-profit, privately funded membership organization that coordinates the development of voluntary national standards in the United States. ANSI, based in New York, New York, has a membership composed of over 1200 companies, 250 professional, technical, trade, labor and consumer organizations, and approximately 30 government agencies. ANSI and IEEE standards are often recognized by many government agencies and organizations in both the United States and abroad.

22. What is the Institute of Electrical and Electronics Engineers, Inc?

The Institute of Electrical and Electronic Engineers (IEEE) is the world's largest technical

professional society comprised of over 320,000 engineers throughout the world. IEEE is a non-profit organization that promotes the development and application of electrotechnology and applied sciences for the benefit of humanity, the advancement of the profession and the well being of its members. The technical objectives of the IEEE focus on advancing the theory and practice of electrical, electronics and computer engineering, and computer science.

IEEE standards are voluntary and these documents are developed within the Technical Committees of the IEEE Societies and the Standards Coordinating Committees of the IEEE Standards Board. Members of these committees serve voluntarily and without compensation and may or may not be members of the institute. The standards developed within the IEEE represent a consensus of the broad expertise on the subject within the Institute as well as those activities outside the IEEE that have expressed an interest in participating in the development of the standard.

23. What is the National Council on Radiation Protection and Measurements?

Answer: The National Council on Radiation Protection and Measurements (NCRP) is a non-profit organization chartered by the United States Congress to provide government, the public, and industry with recommendations and guidance concerning human exposure to ionizing and non-ionizing radiation. The Commission, along with other government agencies and organizations, has an official relationship with NCRP as a "collaborating organization."

24. How will antenna sites be evaluated for RF exposure?

Answer: Antenna sites will be evaluated for compliance with limits for maximum permissible exposure (MPE) if they meet the criteria based on operating power, location, or height above ground set forth in Table 1 in the new Section 1.1307 of the Commission's rules. Under the rules, all sites are required to comply with the new MPE limits, but only certain sites are required to undergo environmental evaluation. The rules provide specific guidelines and procedures for such evaluation.

25. Some carriers say their facilities are "categorically excluded" from compliance. What does that mean?

Answer: In the past, the Commission categorically excluded certain radio services, including cellular, land mobile services, and others, from routine environmental evaluation requirements. Categorical exclusions are allowed under the National Environmental Policy Act if such facilities are determined, individually or collectively, to have no significant impact on the quality of the human environment. This does *not* mean, however, that such facilities do not have to meet the Commission's guidelines for exposure to RF emissions. Rather, it means that certain facilities will normally be assumed not to exceed the applicable MPE limits, and do not have to demonstrate compliance routinely.

Under the new rules, the Commission has changed the ways it determines which facilities should be categorically excluded. Instead of exempting whole services, the categorical exclusions are now based on the operating power, location, or accessibility of an individual facility. Thus, the categories requiring environmental evaluation have been changed to include some facilities which were previously categorically excluded and to categorically exclude others which were previously included. Table 1 in the new Section 1.1307 of the Commission's rules identifies those facilities that are subject to routine environmental evaluation. Thus, under the new rules which apply to cellular, PCS, and paging, as well as other services, some of a carrier's facilities may be categorically excluded, while others are subject to routine environmental evaluation. It is important to note that if the Commission receives evidence that a particular facility or equipment may not be in compliance with the MPE or specific absorption rate (SAR) limits, the Commission can require that the operator of such facility or the manufacturer of such device demonstrate compliance, even if it is otherwise categorically excluded.

26. How can I obtain a copy of the new Commission rules adopting the revised RF exposure guidelines?

Answer: PART II of this **Fact Sheet #2** sets forth the most relevant Commission rules governing RF emissions. Paper copies of the Commission's *Report and Order* which adopted these new guidelines can be obtained from the Commission's duplication contractor, International Transcription Service (ITS), 2100 M Street, N.W., Suite 140, Washington, DC 20037, at (202) 857-3800. An electronic version of the *Report and Order* is also available from the Internet on the Commission's Office of Engineering and Technology (OET) homepage at http://www.fcc.gov/oet. Under the section entitled "Headlines," click on the sentence concerning RF guidelines. The text of a press release and the complete *Report and Order* can be accessed this way.

27. How can I obtain additional information about RF safety and standards?

Answer: The Commission's Office of Engineering and Technology (OET) provides technical bulletins and fact sheets that address these issues. These documents are available by mail upon request to the OET's RF Safety Information Line at (202) 418-2464. Additionally, the Commission's Compliance and Information Bureau maintains a Communications and Crisis Management Center which is staffed 24 hours a day, seven days a week. In the event of an emergency, such as a radiofrequency hazard threatening public safety or health, the public can call (202) 632-6975, or fax (202) 418-2813, or e-mail "dprescot@fcc.gov." The watch officer who answers at that number can contact the Commission's staff in the affected area and dispatch them within a matter of hours.

For more general background information on the health and safety issues related to electromagnetic fields and biological effects, you may also call the Environmental Protection Agency's Electromagnetic Field (EMF) information line at 1-800-363-2383.

IMPACT OF PERSONAL WIRELESS FACILITIES ON AIRPLANE NAVIGATION AND ON THE ENVIRONMENT

28. Are personal wireless facilities hazardous to airplane navigation? What has the Commission done to address this problem?

Answer: Antenna structures or towers which are proposed to be constructed taller than 60.96 meters (200 feet) above ground level and towers which are to be located within certain distances of airport runways must be registered with the Commission, regardless of whether or not any other notification to the Commission is required for that particular type of communications service. The Commission works closely with the Federal Aviation Administration (FAA) to ensure that Commission licensees do not construct antenna structures which may constitute a menace to air navigation because both of these agencies have jurisdiction and responsibility of regulating the construction, marking and lighting of these antenna structures. Depending on the FAA's recommendations reached upon conducting an aeronautical study of the proposed structure, the Commission may require these Commission-registered structures to be marked, painted and/or lighted, or in some situations to be constructed at a reduced height, in order to avoid becoming a public safety hazard.

For more information on the FAA safety requirements, please refer to the Commission's Wireless Telecommunications Bureau's Fact Sheet PR5000 #15, entitled "Antenna Structure Registration." A copy of this Fact Sheet can be obtained by request at 1-800-322-1117, or by sending a request by email to "mayday@fcc.gov." Fact Sheet PR5000 #15 is also available on the Internet on the Commission's Wireless Telecommunications Bureau homepage at http://www.fcc.gov/wtb/antstruc.html.

29. Are there any requirements that personal wireless services providers consider the effect of their proposed facilities upon the environment?

Answer: Yes. As a federal agency, the Commission is required by the National Environmental Policy Act of 1969 (NEPA) to ensure that it considers effects upon the environment of any major action that it takes. Because the Commission is a licensing agency, it requires that all licensees comply with NEPA as well, by evaluating their actions for environmental consequences.

The Commission's rules implementing NEPA are found in Title 47 of the Code of Federal Regulations, Part 1, Sections 1.1301-1.1319, 47 C.F.R. §§ 1.1301-1.1319. Each licensee must evaluate the location of a proposed structure to determine if it is in an environmentally sensitive area as determined in Section 1.1307. Specifically, there are eight categories listed in Section 1.1307(a), as follows:

(1) officially designated wilderness areas;
(2) officially designated wildlife preserves;

(3) situations which may affect listed threatened or endangered species or critical habitats;
(4) situations which may affect historical sites listed or eligible for listing in the National Register of Historic Places;
(5) Indian religious sites;
(6) 100-year floodplains (as determined by the Federal Emergency Management Agency (FEMA)'s flood insurance rate maps);
(7) situations which may cause significant change in surface features, such as wetland fills, deforestation or water diversion; and
(8) proposed use of high intensity white lights in residential neighborhoods.

Section 1.1307(b) also requires an environmental evaluation if the proposed transmitter may cause human exposure to RF radiation in excess of the Commission's adopted guidelines.

If the licensee's proposed construction falls within one of these categories, the licensee is required to prepare an environmental assessment (EA), as instructed in Section 1.1311, and file that document with the appropriate Bureau of the Commission for evaluation. Pursuant to Section 1.1312, a licensee that files an EA must await Commission approval of its proposed project before commencing any construction, even if Commission approval is not otherwise required for such construction. The licensee's application is also placed on public notice as a "major action," and all interested parties are afforded a 30-day period in which to file comments on the proposed effects upon the environment. If this period expires without any negative comments, and if the Commission staff, after consulting other governmental agencies with expertise over the subject matter, makes a finding of no significant impact, then the construction can proceed.

For more information on the Commission's NEPA compliance requirements and preparation of EAs in general, contact the Enforcement Division of the Wireless Telecommunications Bureau, at (202) 418-0569, or fax (202) 418-2644.

PART II

SUMMARY OF THE COMMISSION'S REVISED RADIOFREQUENCY EMISSIONS GUIDELINES

As required by Section 704 of the Telecommunications Act of 1996, on August 1, 1996, the Commission adopted new guidelines and methods for evaluating the environmental effects of radiofrequency (RF) emissions. These new guidelines apply to all transmitters licensed and/or authorized by the Commission to be sold by manufacturers. For purposes of Section 704, the RF emission rules apply to all transmitters licensed or authorized by the Commission. This would include both transmitter structures licensed to personal wireless service providers, and the mobile telephone handsets used by subscribers to the service.

The updated guidelines are based on recommendations of federal agencies with expertise in health and safety issues, such as the Environmental Protection Agency and the Food and Drug Administration, as well as of the Institute of Electrical and Electronics Engineers, Inc., the American National Standards Institute and the National Council on Radiation Protection and Measurements, and will ensure that the public and workers are adequately protected from exposure to potentially harmful RF emissions.

The new rules adopt two limitations on exposure to RF emissions:

- First, the Commission adopted Maximum Permissible Exposure (MPE) limits for electric and magnetic field strength and power flux density for transmitters operating at frequencies from 300 kHz to 100 GHz, which includes, for example, cellular radio services, personal communications services (PCS) and specialized mobile radio (SMR) services. The MPE limits for field strength and power density are generally based on recommendations made by the National Council on Radiation Protection and Measurements (NCRP) in 1986. With the exception of the limits on exposure to power density above 1500 MHz and the limits for exposure to lower frequency magnetic fields, these MPE limits are also generally based on the guidelines contained in the 1992 RF safety standard developed by the Institute for Electrical and Electronics Engineers, Inc. (IEEE) and adopted by the American National Standards Institute (ANSI).

- Second, the Commission adopted exposure limits for Specific Absorption Rate (SAR) to be used for evaluating certain hand-held devices such as cellular radio and PCS telephones. The SAR limits for hand-held devices are the same as those recommended by ANSI/IEEE which are generally similar to those recommended by the NCRP.

The new rules also categorically exclude certain transmitting facilities from routine evaluation for compliance with the RF emission guidelines based on the Commission's determination that they are extremely unlikely to cause workers or the general public to become exposed to emissions that exceed the guidelines.

- For cellular and certain SMR facilities, transmitters are categorically excluded if they are located ten meters or more off the ground (other than on a rooftop), or if the total power of all channels is 1000 watts effective radiated power (ERP) or less. Broadband PCS facilities are categorically excluded if they are located ten meters or more off the ground (other than on a rooftop), or if the total power of all channels is 2000 watts ERP or less. Categorical exclusions for other personal wireless services are specified in the new RF rules.

- Facilities that are categorically excluded need not undergo routine evaluation for compliance with the Commission's guidelines, but they nevertheless must comply with these guidelines, and the Commission may order an evaluation if it determines that a facility may have a significant impact upon the human environment.

- If a facility is not categorically excluded, the application must contain a statement confirming that the facility will not expose workers or the general public to emissions that exceed the guidelines. Technical information showing the basis for this statement must be submitted to the Commission upon request. If the facility will expose workers to the general public to emissions that exceed the guidelines, either by itself or cumulatively with other transmitters, the applicant must prepare an environmental assessment (EA) which is filed with the Commission for its review. The applicant is not authorized to begin construction of its facilities until the EA is ultimately approved by the Commission.

The new guidelines for MPE will apply to applications for transmitter facilities filed with the Commission on or after January 1, 1997, in order to provide licensees with a reasonable transition period for compliance with the new requirements. Transmitter facilities for which applications are filed before January 1, 1997, will continue to be governed by the old guidelines. However, the new requirements for SAR evaluation of hand-held devices will apply immediately to cellular and PCS handsets that are submitted for Commission approval prior to marketing.

The new RF emissions rules amend various portions of the Commission's Rules which are found at Title 47 of the Code of Federal Regulations (CFR). Because these rules were just adopted, they will not appear in the CFR until the October 1996 edition, which is expected to be available in early 1997. We therefore reproduce in the next section of this **Fact Sheet #2** those revised and/or new RF rules which are most relevant to personal wireless facilities siting issues.

SELECTED TEXT OF THE COMMISSION'S RULES ADOPTING THE NEW RADIOFREQUENCY EMISSIONS GUIDELINES

The Commission's *Report and Order* in ET Docket No. 93-62, released on August 1, 1996, amends Parts 1, 2, 15, 24 and 97 of the Commission's Rules, which are found in Title 47 of the Code of Federal Regulations. The following is a reproduction of the most relevant existing rules (in italics) and new rule provisions added by this action (in regular text) for the purpose of personal wireless facilities siting. Deletions of rule provisions which are not relevant to the RF evaluations are indicated with asterisks (* * * * *).

To obtain a hard copy of the *Report and Order* in ET Docket No. 93-62, including the complete text of the new and revised RF rules, contact the Commission's duplications contractor, International Transcription Service (ITS), at (202) 857-3800. An electronic copy of the text is available on the Internet at http://www.fcc.gov/oet, under the section entitled "Headlines." For more information about these RF rules, contact the Commission's Radiofrequency Safety Information Line at (202) 418-2464.

PART 1—PRACTICE AND PROCEDURE

Subpart I—Procedures Implementing the National Environmental Policy Act of 1969

* * * * *

§ 1.1307 Actions which may have a significant environmental effect, for which Environmental Assessments (EAs) must be prepared.

(a) Commission actions with respect to the following types of facilities may significantly affect the environment and thus require the preparation of EAs by the applicant (see §§ 1.1308 and 1.1311) and may require further Commission environmental processing (see §§ 1.1314, 1.1315 and 1.1317):

(1) Facilities that are to be located in an officially designated wilderness area.

(2) Facilities that are to be located in an officially designated wildlife preserve.

(3) Facilities that:

(i) May affect listed threatened or endangered species or designated critical habitats; or

(ii) are likely to jeopardize the continued existence of any proposed endangered or threatened species or likely to result in the destruction or adverse modification of proposed critical habitats, as determined by the Secretary of the Interior pursuant to the Endangered Species Act of 1973.

NOTE: The list of endangered and threatened species is contained in 50 CFR 17.11, 17.22, 222.23(a) and 227.4. The list of designated critical habitats is contained in 50 CFR 17.95, 17.96 and Part 226. To ascertain the status of proposed species and habitats, inquiries also may be directed to the Regional Director of the Fish and Wildlife Service, Department of the Interior.

(4) Facilities that may affect districts, sites, buildings, structures or objects, significant in American history, architecture, archeology, engineering or culture, that are listed, or are eligible for listing, in the National Register of Historic Places. (See 16 U.S.C. 470w(5); 36 CFR 60 and 800.)

NOTE: The National Register is updated and re-published in the Federal Register each year in February. To ascertain whether a proposal affects a historical property of national significance, inquiries also may be made to the appropriate State Historic Preservation Officer, see 16 U.S.C. 470a(b); 36 CFR Parts 63 and 800.

(5) Facilities that may affect Indian religious sites.

(6) Facilities to be located in a flood Plain (See Executive Order 11988.)

(7) Facilities whose construction will involve significant change in surface features (e.g., wetland fill, deforestation or water diversion). (In the case of wetlands on Federal property, see Executive Order 11990.)

(8) Antenna towers and/or supporting structures that are to be equipped with high intensity white lights which are to be located in residential neighborhoods, as defined by applicable zoning law.

(b) In addition to the actions listed in paragraph (a) of this section, Commission actions granting construction permits, licenses to transmit or renewals thereof, equipment authorizations or modifications in existing facilities, require the preparation of an Environmental Assessment (EA) if the particular facility, operation or transmitter would cause human exposure to levels of radiofrequency radiation in excess of the limits in § 1.1310 and § 2.1093 of this chapter. Applications to the Commission for construction permits, licenses to transmit or renewals thereof, equipment authorizations or modifications in existing facilities must contain a statement confirming compliance with the limits unless the facility, operation, or transmitter is categorically excluded, as discussed below. Technical information showing the basis for this statement must be submitted to the Commission upon request.

(1) The exposure limits in § 1.1310 are generally applicable to all facilities, operations and transmitters regulated by the Commission. However, a determination of compliance with the exposure limits in § 1.1310 (routine environmental evaluation), and preparation of an EA if the limits are exceeded, is necessary only for facilities, operations and transmitters that fall into the categories listed in Table 1, or those specified in paragraph (b)(2) of this section. All other facilities, operations and transmitters are categorically excluded from making such studies or preparing an EA, except as indicated in paragraphs (c) and (d) of this section. For purposes of Table 1, "rooftop" means the roof or otherwise outside, topmost level or levels of a building structure that is occupied as a workplace or residence and where either workers or the general public may have access. The term "power" in column 2 of Table 1 refers to total operating power of the transmitting operation in question in terms of effective radiated power (ERP), equivalent isotopically radiated power (EIRP), or peak envelope power (PEP), as defined in § 2.1 of this chapter. For the case of the Cellular Radiotelephone Service, subpart H of part 22 of this chapter; the Personal Communications Service, part 24 of this chapter and covered Specialized Mobile Radio Service operations, part 90 of this chapter, the phrase "total power of all channels" in column 2 of Table 1 means the sum of the ERP or EIRP of all co-located simultaneously operating transmitters of the facility. When applying the criteria of Table 1, radiation in all directions should be considered. For the case of transmitting facilities using sectorized transmitting antennas, applicants and licensees should apply the criteria to all transmitting channels in a given sector, noting that for a highly directional antenna there is relatively little contribution to ERP or EIRP summation for other directions.

TABLE 1: TRANSMITTERS, FACILITIES AND OPERATIONS SUBJECT TO ROUTINE ENVIRONMENTAL EVALUATION

SERVICE (TITLE 47 RULE PART)	EVALUATION REQUIRED IF:
Experimental Radio Services (Part 5)	power > 100W ERP (164W EIRP)
Radio Frequency Devices (Part 15)	millimeter wave device operating in one of the following bands 46.7-46.8 GHz, 59.0-64.0 GHz or 76.0-77.0 GHz (see §§ 15.253 and 15.255 of this chapter) unlicensed personal communications service devices operating under Subpart D of this chapter
Multipoint Distribution Service (Subpart K of Part 21)	non-rooftop antennas: height above ground level to radiation center < 10 m and power > 1640 W EIRP rooftop antennas: power > 1640W EIRP
Paging and Radiotelephone Service (Subpart E of Part 22)	non-rooftop antennas: height above ground level to radiation center < 10 m and power > 1000W ERP (1640W EIRP) rooftop antennas: power > 1000W ERP (1640W EIRP)
Cellular Radiotelephone Service (Subpart H of Part 22)	non-rooftop antennas: height above ground level to radiation center < 10 m and total power of all channels > 1000W ERP (1640 W EIRP) rooftop antennas: total power of all channels > 1000W ERP (1640W EIRP)
Personal Communications Services (Part 24)	(1) Narrowband PCS (subpart D): non-rooftop antennas: height above ground level to radiation center <10 m and total power of all channels > 1000W ERP (1640 W EIRP) rooftop antennas: total power of all channels > 1000W (1640W EIRP) (2) Broadband PCS (subpart E): non-rooftop antennas: height above ground level to radiation center <10 m and total power of all channels > 2000W ERP (3280 W EIRP) rooftop antennas: total power of all channels > 2000W (3280W EIRP)
Satellite Communications (Part 25)	all included
Radio Broadcast Services (Part 73)	all included

SERVICE (TITLE 47 RULE PART)	EVALUATION REQUIRED IF:
Experimental, Auxiliary, and Special Broadcast and Other Program Distributional Services (Part 74)	(1) subparts A, G, L: power > 100W ERP (2) subpart I: non-rooftop antennas: height above ground level to radiation center < 10 m and power > 1640 W EIRP rooftop antennas: power > 1640W EIRP
Stations in the Maritime Services (Part 80)	ship earth stations only
Private Land Mobile Radio Services Paging Operations (Part 90)	non-rooftop antennas: height above ground level to radiation center < 10 m and power > 1000W ERP (1640W EIRP) rooftop antennas: power > 1000W ERP (1640 W EIRP)
Private Land Mobile Radio Services Specialized Mobile Radio ("covered" providers only - see below)* (Part 90)	non-rooftop antennas: height above ground level to radiation center < 10 m and total power of all channels > 1000W ERP (1640 W EIRP) rooftop antennas: total power of all channels > 1000W ERP (1640W EIRP)
Amateur Radio Service (Part 97)	transmitter output power > 50W PEP

* NOTE: "Covered" SMR providers include geographic area SMR licensees in the 800 MHz and 900 MHz bands that offer real-time, two-way switched voice service that is interconnected with the public switched network and Incumbent Wide Area SMR licensees, as defined in § 20.3 of this chapter.

(2) Mobile and portable transmitting devices that operate in the Cellular Radiotelephone Service, the Personal Communications Services (PCS), the Satellite Communications Services, the Maritime Services (ship earth stations only) and covered Specialized Mobile Radio Service providers authorized under subpart H of part 22, part 24, part 25, part 80, and part 90 of this chapter are subject to routine environmental evaluation for RF exposure prior to equipment authorization or use, as specified in §§ 2.1091 and 2.1093 of this chapter. All unlicensed PCS and millimeter wave devices are also subject to routine environmental evaluation for RF exposure prior to equipment authorization or use, as specified in § 15.253(f), § 15.255(g), and § 15.319(i) of this chapter. All other mobile, portable, and unlicensed transmitting devices are categorically excluded from routine environmental evaluation for RF exposure under §§ 2.1091 and 2.1093 of this chapter except as specified in paragraphs (c) and (d) of this section.

(3) In general, when the guidelines specified in § 1.1310 are exceeded in an accessible area due to the emissions from multiple fixed transmitters, actions necessary to bring the area into compliance with the guidelines are the shared responsibility of all licensees whose transmitters produce field strengths or power density levels at the area in question in excess of 1% of the exposure limits applicable to their particular transmitter.

(i) Applicants for proposed (not otherwise excluded) transmitters, facilities or modifications that would cause non-compliance with the limits specified in § 1.1310 at an accessible area previously in compliance must submit an EA if emissions from the applicant's transmitter or facility would result in a field

strength or power density at the area in question that exceeds 1% of the exposure limit applicable to that transmitter or facility.

(ii) Renewal applicants whose (not otherwise excluded) transmitters or facilities contribute to the field strength or power density at an accessible area not in compliance with the limits specified in § 1.1310 must submit an EA if emissions from the applicant's transmitter or facility results in a field strength or power density at the area in question that exceeds 1% of the exposure limit applicable to that transmitter or facility.

(4) Transition Provisions. For applications filed with the Commission prior to January 1, 1997, Commission actions granting construction permits, licenses to transmit or renewals thereof, equipment authorizations, or modifications in existing facilities require the preparation of an Environmental Assessment if the particular facility, operation or transmitter would cause human exposure to levels of radiofrequency radiation that are in excess of the requirements contained in paragraphs (4)(i) - (4)(iii) of this section. These transition provisions do not apply to applications for equipment authorization of mobile, portable, and unlicensed devices specified in paragraph (2) of this section.

(i) For facilities and operations licensed or authorized under parts 5, 21 (subpart K), 25, 73, 74 (subparts A, G, I, and L), and 80 of this chapter, the "Radio Frequency Protection Guides" recommended in "American National Standard Safety Levels with Respect to Human Exposure to Radio Frequency Electromagnetic Fields, 300 kHz to 100 GHz", (ANSI C95.1-1982), issued by the American National Standards Institute (ANSI) and copyright 1982 by the Institute of Electrical and Electronics Engineers, Inc., New York, New York shall apply. With respect to subpart K of part 21 and subpart I of Part 74 of this chapter, these requirements apply only to multipoint distribution service and instructional television fixed service stations transmitting with an equivalent isotropically radiated power (EIRP) in excess of 200 watts. With respect to subpart L of part 74 of this chapter, these requirements apply only to FM booster and translator stations transmitting with an effective radiated power (ERP) in excess of 100 watts. With respect to part 80 of this chapter, these requirements apply only to ship earth stations.

(ii) For facilities and operations licensed or authorized under part 24 of this chapter, licensees and manufacturers are required to ensure that their facilities and equipment comply with IEEE C95.1-1991 (ANSI/IEEE C95.1-1992), "Safety Levels With Respect to Human Exposure to Radio Frequency Electromagnetic Fields, 3 kHz to 300 GHz." Measurement methods are specified in IEEE C95.3-1991, "Recommended Practice for the Measurement of Potentially Hazardous Electromagnetic Fields – RF and Microwave." Copies of these standards are available from IEEE Standards Board, 445 Hoes Lane, P.O. Box 1331, Piscataway, NJ 08855-1331. Telephone: 1-800-678-4333. The limits for both "controlled" and "uncontrolled" environments, as defined by IEEE C95.1-1991, will apply to all PCS base and mobile stations, as appropriate.

(iii) Applications for all other types of facilities and operations are categorically excluded from routine RF radiation evaluation except as provided in paragraphs (c) and (d) of this section.

(c) If an interested person alleges that a particular action, otherwise categorically excluded, will have a significant environmental effect, the person shall submit to the Bureau responsible for processing that action a written petition setting forth in detail the reasons justifying or circumstances necessitating environmental consideration in the decision-making process. (See § 1.1313). The Bureau shall review the petition and consider the environmental concerns that have been raised. If the Bureau determines that the action may have a significant environmental impact, the Bureau will require the applicant to prepare an EA (see §§ 1.1308 and 1.1311), which will serve as the basis for the determination to proceed with or terminate environmental processing.

(d) If the Bureau responsible for processing a particular action, otherwise categorically excluded, determines that the proposal may have a significant environmental impact, the Bureau, on its own motion, shall require the applicant to submit an EA. The Bureau will review and consider the EA as in paragraph (c)

of this section.

(e) No State or local government or instrumentality thereof may regulate the placement, construction, and modification of personal wireless service facilities on the basis of the environmental effects of radio frequency emissions to the extent that such facilities comply with the regulations contained in this chapter concerning the environmental effects of such emissions. For purposes of this paragraph:

(1) The term "personal wireless service" means commercial mobile services, unlicensed wireless services, and common carrier wireless exchange access services;

(2) The term "personal wireless service facilities" means facilities for the provision of personal wireless services;

(3) The term "unlicensed wireless services" means the offering of telecommunications services using duly authorized devices which do not require individual licenses, but does not mean the provision of direct-to-home satellite services; and

(4) The term "direct-to-home satellite services" means the distribution or broadcasting of programming or services by satellite directly to the subscriber's premises without the use of ground receiving or distribution equipment, except at the subscriber's premises or in the uplink process to the satellite.

* * * * *

§ 1.1310 Radiofrequency radiation exposure limits.

The criteria listed in Table 1 shall be used to evaluate the environmental impact of human exposure to radiofrequency (RF) radiation as specified in § 1.1307(b), except in the case of portable devices which shall be evaluated according to the provisions of § 2.1093 of this chapter. Further information on evaluating compliance with these limits can be found in the FCC's OST/OET Bulletin Number 65, "Evaluating Compliance with FCC-Specified Guidelines for Human Exposure to Radiofrequency Radiation."

NOTE TO INTRODUCTORY PARAGRAPH: These limits are generally based on recommended exposure guidelines published by the National Council on Radiation Protection and Measurements (NCRP) in "Biological Effects and Exposure Criteria for Radiofrequency Electromagnetic Fields," NCRP Report No. 86, Sections 17.4.1, 17.4.1.1, 17.4.2 and 17.4.3. Copyright NCRP, 1986, Bethesda, Maryland 20814. In the frequency range from 100 MHz to 1500 MHz, exposure limits for field strength and power density are also generally based on guidelines recommended by the American National Standards Institute (ANSI) in Section 4.1 of "IEEE Standard for Safety Levels with Respect to Human Exposure to Radio Frequency Electromagnetic Fields, 3 kHz to 300 GHz," ANSI/IEEE C95.1-1992, Copyright 1992 by the Institute of Electrical and Electronics Engineers, Inc., New York, New York 10017.

TABLE 1: LIMITS FOR MAXIMUM PERMISSIBLE EXPOSURE (MPE)

(A) Limits for Occupational/Controlled Exposure

Frequency Range (MHz)	Electric Field Strength (V/m)	Magnetic Field Strength (A/m)	Power Density (mW/cm^2)	Averaging Time (minutes)
0.3-3.0	614	1.63	(100)*	6
3.0-30	1842/f	4.89/f	($900/f^2$)*	6
30-300	61.4	0.163	1.0	6

300-1500	—	—	f/300	6
1500-100,000	—	—	5	6

f = frequency in MHz
* = Plane-wave equivalent power density

(B) Limits for General Population/Uncontrolled Exposure

Frequency Range (MHz)	Electric Field Strength (V/m)	Magnetic Field Strength (A/m)	Power Density Time (mW/cm^2)	Averaging (minutes)
0.3-1.34	614	1.63	(100)*	30
1.34-30	824/f	2.19/f	($180/f^2$)*	30
30-300	27.5	0.073	0.2	30
300-1500	—	—	f/1500	30
1500-100,000	—	—	1.0	30

f = frequency in MHz
* = Plane-wave equivalent power density

NOTE 1 TO TABLE 1: Occupational/controlled limits apply in situations in which persons are exposed as a consequence of their employment provided those persons are fully aware of the potential for exposure and can exercise control over their exposure. Limits for occupational/controlled exposure also apply in situations when an individual is transient through a location where occupational/controlled limits apply provided he or she is made aware of the potential for exposure.

NOTE 2 TO TABLE 1: General population/uncontrolled exposures apply in situations in which the general public may be exposed, or in which persons that are exposed as a consequence of their employment may not be fully aware of the potential for exposure or can not exercise control over their exposure.

* * * * *

PART 24—PERSONAL COMMUNICATIONS SERVICES

Subpart C—Technical Standards

§ 24.52 RF hazards.

Licensees and manufacturers are subject to the radiofrequency radiation exposure requirements specified in § 1.1307(b), § 2.1091 and § 2.1093 of this chapter, as appropriate. Applications for equipment authorization of mobile or portable devices operating under this section must contain a statement confirming compliance with these requirements for both fundamental emissions and unwanted emissions. Technical information showing the basis for this statement must be submitted to the Commission upon request.

PART III

MAJOR PERSONAL WIRELESS SERVICES

CELLULAR RADIOTELEPHONE SERVICE

The cellular radiotelephone service primarily is intended to provide consumers with mobile telephone service over a broad geographic area. A cellular system operates by dividing a large geographic service area into cells and assigning the same frequencies to multiple, non-adjacent cells. This is known as "frequency reuse." When a cellular subscriber makes or receives a call, the call is connected to the nearest cell site. As a subscriber travels within a cellular provider's service area, the cellular telephone call in progress is transferred, or "handed-off," from one cell site to another without noticeable interruption. The smaller and more numerous a provider's cells are, the more often it can reuse frequencies and the more users it can accommodate. In addition, all the cells in a cellular system are connected to a mobile telephone switching office (MTSO) by wireline (landline) or microwave links. The MTSO switches wireline-to-mobile and mobile-to-wireline calls between the public switched telephone network (PSTN) and the cell site.

In order to license cellular systems in the United States and its Possessions and Territories, the Commission designated a total of 734 cellular markets divided into 306 metropolitan statistical areas (MSA) and 428 rural service areas (RSA). The Commission then allocated spectrum in the 824-849 and 869-894 MHz ranges to license two cellular radio systems in each of these 734 markets.

Under Part 22 of the Commission's Rules, 47 C.F.R. §§ 22.1 *et seq.*, cellular licensees are required to obtain licenses for only the antenna transmitter facilities which are located at the outer service contours of the particular licensee's designated service area. Licensees desiring to add or modify any facilities that are located within an already approved and licensed service area are not required to file anything with the Commission. However, the licensee is required to apply to the Commission for authority to construct and operate the site if the proposed antenna structure could have an impact upon the environment as defined by the Commission's National Environmental Policy Act (NEPA) implementation rules, 47 C.F.R. §§ 1.1301 *et seq.*, or if the height and/or location of that antenna structure exceeds certain criteria and requires notification to the Federal Aviation Administration (FAA) as mandated by Part 17 of the Commission's Rules, 47 C.F.R. §§ 17.1 *et seq.*

PERSONAL COMMUNICATIONS SERVICES (PCS)

The term Personal Communications Services (PCS) encompasses two different licensed services offered over two different frequency bands, as well as certain unlicensed services. Narrowband PCS operates on frequencies in the 901-941 MHz range and is suitable for offering a variety of specialized services, such as messaging and two-way paging. To date, the Commission has granted eleven PCS licenses for nationwide narrowband systems and six narrowband PCS licenses for each of five regions. Proceedings are still underway to determine how the remaining spectrum allocated to narrowband PCS will be licensed.

Broadband PCS is similar to cellular radiotelephone service and is often mistaken as the same wireless communications service. There are, however, some significant differences between the two. First, PCS operates in a higher frequency band, at the 1850-1990 MHz range, which allows broadband PCS to deploy a wider variety of communications services, such as digital, voice, data and paging transmissions, over the same spectrum. Another distinction is that the Commission uses different geographic market areas for licensing purposes. Instead of using MSAs and RSAs as in the case of cellular, for broadband PCS the Commission adopted Rand McNally's definitions to divide the United States and its Possessions and Territories into 51 major trading areas (MTA) and 493 basic trading areas (BTA). Both the MTAs and BTAs cover the entire country. The Commission then divided the broadband PCS spectrum into six frequency bands. To date, licenses for two of these frequency bands have been issued in each MTA, and the Commission will soon license the other four frequency bands in each of the BTAs.

Because PCS operates at a higher frequency than cellular service, PCS systems may require more antenna transmitters in the same geographic area. Another difference is that unlike cellular radio services, PCS licensees are issued a blanket license by the Commission for their entire geographic area, and therefore they are not required to individually license each transmitter site within the market area. Because of this blanket licensing scheme, the Commission does not maintain any technical information on file concerning the majority of PCS licensees' base stations. As with cellular radio service providers, however, a PCS licensee may still be required to notify the Commission if the proposed antenna transmitter is to be located on a structure which may have an impact upon the environment pursuant to our NEPA rules, or if the structure requires FAA notification pursuant to our antenna structure construction rules.

Spectrum in the 1850-1990 MHz range has also been allocated to unlicensed PCS. As the name implies, we do not issue individual licenses to unlicensed PCS operators, but we do require them to deploy authorized equipment and comply with technical and operational standards designed to minimize interference. Unlicensed PCS operations are anticipated to be comprised of low-power short-range communications applications.

SPECIALIZED MOBILE RADIO (SMR) SERVICES

Specialized Mobile Radio (SMR) licensees provide a variety of land mobile communication services. Systems in the SMR service range from small, localized systems offering solely dispatch communications to digital systems that offer interconnected and dispatch service over a wide geographic area. SMR systems are classified as personal wireless services if they offer interconnected service to the public on a for-profit basis. SMR systems typically consist of one or more base station transmitters, one or more antenna structures, and the end user radio equipment. The base station receives transmissions from a dispatch point, the public switched telephone network, or other end user mobile radios.

SMR systems operate in two frequency ranges which the Commission categorizes as "800 MHz" (806-821/851-866 MHz) and "900 MHz" (896-901/935-941 MHz). The 800 MHz services have been licensed by the Commission on a site-by-site basis, so that the SMR provider must apply for a license with the Commission for each and every tower/base site. In the future, however, the Commission will issue geographic licenses for this service. The 900 MHz services, on the other hand, were originally licensed in 46 designated filing areas (DFA) which comprised only the top 50 geographic markets in the nation. The Commission has recently completed auctions for 20 licenses in each of the 51 MTAs, and has issued the majority of the 900 MHz SMR licenses to all those applicants that have successfully completed the auction process.

COMMERCIAL PAGING SERVICES

Paging services are classified as personal wireless services if they are provided to the public for profit. The Commission currently licenses paging systems by transmitter and site location, and therefore, paging providers must apply for a license with the Commission for each and every tower/base site. Commercial paging bands include the 35, 43, 152, 158, 454, and 931 MHz bands. Response paging channels will be auctioned in the future and will allow paging operators to provide two-way or response paging services.

Paging systems are traditionally one-way signaling systems. Categorized by the type of output, such systems include tone, tone/voice, numeric, and alphanumeric paging. Presently, there are two basic types of systems: wide-area general-use type providing subscription service to the public, and in-building, private paging systems, which are limited to service within a commercial building or the general area of a manufacturing plant. Currently, neither of these paging systems can initiate an answer without calling through a landline telephone.

OTHER SERVICES

RURAL RADIOTELEPHONE SERVICE, including **BASIC EXCHANGE TELEPHONE RADIO SYSTEMS (BETRS)**, is a fixed service regulated under Subpart F of Part 22 of the Commission's Rules. BETRS is a technology that uses a multiplexed digital radio link as the last segment of the local loop. This service can be provided in the 152 and 454 MHz bands. The Commission currently licenses these systems by transmitter and site location, and therefore, the service providers must apply for a license with the Commission for each and every transmitter site.

AIR-GROUND RADIOTELEPHONE SERVICE allows certain commercial mobile radio service providers to offer two-way voice communications for hire to subscribers in aircraft. This service can be provided by Commercial air-ground systems on 10 channel blocks in the 800 MHz band and by General Aviation air-ground systems in the 454.675-454.975 and 459.675-459.975 MHz bands. The Commission currently licenses these systems by transmitter and site location, and therefore, the service providers must apply for a license with the Commission for each and every tower/base site.

OFFSHORE RADIOTELEPHONE SERVICE allows certain commercial mobile radio service providers to offer two-way voice and data communications for hire to subscribers on structures in the offshore coastal waters of the Gulf of Mexico. This service can be provided by offshore radio systems on 488/492 MHz paired channels. The Commission currently licenses these systems by transmitter and site location, and therefore, the service providers must apply for a license with the Commission for each and every tower/base site.

IMPROVED MOBILE TELEPHONE SERVICE (IMTS) allows certain commercial mobile radio service providers to offer two-way voice communications for hire to subscribers on 152 and 454 MHz bands. It provides enhancements such as direct dialing and interconnection to the Public Switched Telephone Network (PSTN) not previously offered under the Mobile Telephone Service. The Commission currently licenses these systems by transmitter and site location, and therefore, the service providers must apply for a license with the Commission for each and every tower/base site.

PART IV

LISTS OF PERSONAL COMMUNICATIONS SERVICES LICENSEES AND MAPS OF GEOGRAPHIC SERVICE AREAS FOR CELLULAR RADIOTELEPHONE SERVICE AND PERSONAL COMMUNICATIONS SERVICES

Reproduced on the following pages is the current list of broadband PCS licensees for the "A" and "B" blocks and a list of narrowband PCS licensees. This information is also available from the Internet at http://www.fcc.gov/wtb/pcssrv.html. A list of the cellular licensees for all 734 markets is too lengthy to be included in this **Fact Sheet #2**. However, this information can also be obtained from the Internet at http://www.fcc.gov/wtb/cellsrv.html.

Also reproduced at the end of PART IV are three maps of the United States indicating the geographic boundaries of the Metropolitan Statistical Areas and Rural Service Areas for cellular radiotelephone service and Metropolitan Trading Areas and Basic Trading Areas for PCS.

A BLOCK AND B BLOCK PCS LICENSEE INFORMATION

NAME AND ADDRESS	POINT OF CONTACT	MTA
American Personal Communications (Sprint Spectrum) 6901 Rockledge Dr Bethesda, MD 20817 (301) 214-9200	Jonathan Blake Covington & Burling 1201 Pennsylvania Avenue, NW Washington, DC 20004 (202) 662-5506	Washington, DC/Baltimore
American Portable Telecommunications, Inc. (Now renamed as APT Alaska, Inc., APT Columbus, Inc., APT Guam, Inc., APT Houston, Inc., APT Kansas City, Inc., APT Minneapolis, Inc., APT Pittsburgh Ltd. Partnership, and APT Tampa/Orlando, Inc.) 30 N. LaSalle Street, Suite 4000 Chicago, Illinois 60602 (312) 630-1900	George Wheeler Koteen & Naftalin 1150 Connecticut Avenue, NW Suite 1150 Washington, DC 20036 (202) 467-5700	Minneapolis, Tampa, Houston, Pittsburgh, Kansas City, Columbus (OH), Alaska, Guam
Ameritech Wireless Communications, Inc. 30 South Wacker Drive Chicago, Illinois 60606 (708) 248-8652	Ken Hallman Ameritech Cellular Services 2000 W. Ameritech Center Drive Location 4C24 Hoffman Estates, IL 60196 (708) 248-4760	Cleveland, Indianapolis
AT&T Wireless PCS, Inc. 1150 Connecticut Avenue, N.W. 4th Floor Washington, D.C. 20036 (202) 223-9222	Howard Symons Mintz, Levin, Cohn, Ferris, Glovsky & Popeo, P.C. 701 Pennsylvania Avenue, NW Washington, DC 20004 (202) 434-7300	Nationwide MTAs
BellSouth Personal Communications, Inc. 3353 Peachtree Road Suite 400, North Tower Atlanta, Georgia 30326 (404) 841-2040	Ben Almond Bellsouth Corporation 1133 21st Street, NW, Suite 900 Washington, DC 20036 (202) 463-4112	Charlotte (NC), Knoxville (TN)
Centennial Cellular Corp. 50 Locust Avenue New Canaan, Connecticut 06840 (908) 223-6464	Richard Rubin Fleischman and Walsh, L.L.P. 1400 16th Street, NW, Suite 600 Washington, DC 20036 (202) 939-7900	Puerto Rico
Communications International Corporation c/o Neil S. McKay 717 West Sprague Avenue Suite 1600 Spokane, Washington 99204-0466 (509) 623-2028	John Pellegrin Pellegrin, John D., Chartered 1140 Connecticut Avenue, NW Suite 605 Washington, DC 20036 (202) 293-3831	American Samoa

NAME AND ADDRESS	POINT OF CONTACT	MTA
Cox Communications, Inc. 1400 Lake Hearn Drive, N.E. Atlanta, Georgia 30319 (404) 843-5740	Laura Phillips Dow, Lohnes, Albertson 1255 23rd Street, NW Washington, DC 20037 (202) 857-2824	Los Angeles/ San Diego, Omaha (NE)
GCI Communication Corp. 2550 Denali Street Suite 1000 Anchorage, Alaska 99503-2781 (907) 265-5647	Kathy Shobert GCI Communication Corp. 901 15th Street, NW, Suite 900 Washington, DC 20005 (202) 842-8847	Alaska
GTE Mobilnet Inc. 245 Perimeter Center Parkway 3 REG Atlanta, Georgia (404) 391-1732	Suzanne Carmel GTE Service Corporation 1850 M Street, NW, Suite 1200 Washington, DC 20036 (202) 463-5295	Atlanta, Cincinnati, Denver, Seattle
Omnipoint Corp. 1365 Garden of the Gods Road Colorado Springs, CO 80907 (719) 548-1200	Mark Tauber or Mark O'Connor Piper & Marbury 1200 19th Street, NW, 7th Floor Washington, DC 20036 (202) 861-3913 / (202) 861-6471	New York
Pacific Telesis Mobile Services 4420 Rosewood Drive Bldg. 2, 4th Floor Pleasanton, California 94588 (510) 227-3015	Mike Patrick Pacific Telesis Mobile Services 4420 Rosewood Drive Bldg. 2, 4th Floor Pleasanton, CA 94588 (510) 227-3015	Los Angeles/ San Diego, San Francisco
PCS Primeco, L.P. 6 Campus Circle Westlake, Texas 76262 (817) 962-8070	William Roughton Airtouch Communications, Inc 1818 N Street, NW, Suite 800 Washington, DC 20036 (202) 293-3800	San Antonio, Dallas/Fort Worth, Houston, Tampa, Jacksonville, Miami, New Orleans, Milwaukee, Richmond (VA), Chicago, Honolulu
PhillieCo, L.P. 9221 Ward Parkway Kansas City, Missouri 64114 (913) 624-6940	Jay Keithley Sprint Co. 1850 M Street, NW, Suite 1100 Washington, DC 20036 (202) 828-7453	Philadelphia
Poko Lambro Telephone Cooperative, Inc. 11.5 Miles North of Tahoka on U.S. 87 Tahoka, Texas 79373 (806) 924-7234	Sylvia Lesse Kraskin & Lesse 2120 L Street, NW, Suite 520 Washington, DC 20037 (202) 296-8890	Spokane (WA)/ Billings (MT), Guam

NAME AND ADDRESS	POINT OF CONTACT	MTA
Powertel PCS Partners, Inc. 1239 O.G. Skinner Drive West Point, Georgia 31833 (205) 644-9400	Michele Walters Hogan & Hartson, L.L.P. 555 13th Street, NW Washington, DC 20004 (202) 637-5857	Memphis (TN), Birmingham (AL), Jacksonville (FL)
South Seas Cable and Wireless, Inc. c/o 25 N. Stonington Road South Laguna, California 92677 (714) 499-4469	Michael Morrone Keller and Heckman 1001 G Street, NW, Suite 500-W Washington, DC 20001 (202) 434-4124	American Samoa
Southwestern Bell Mobile Systems, Inc. 17330 Preston Road Suite 100-A Dallas, Texas 75252 (214) 733-2000	Steve Portnoy Southwestern Bell Mobile Systems, Inc. 17330 Preston Rd, Suite 100A Dallas, TX 75252 (214) 733-2116	Memphis (TN), Little Rock (AR), Tulsa (OK)
Sprint Telecommunications Venture 9221 Ward Parkway Kansas City, Missouri 64114 Washington, D.C. 20036 (913) 624-6940	Jay Keithley Sprint Co. 1850 M Street, NW, Suite 1100 Washington, DC 20036 (202) 828-7453	Nationwide MTAs
Western PCS I Corp./Western PCS II Corp. 330 120th Avenue, N.E. Suite 200 Bellevue, Washington 98005 (206) 635-0300	Louis Gurman Gurman, Kurtis, Blask & Freedman, Chartered 1400 16th Street, NW, Suite 500 Washington, DC 20036 (202) 328-8200	Portland (OR), Des Moines (IA), Salt Lake City, El Paso (TX)/ Albuquerque (NM), Oklahoma City, Honolulu

NARROWBAND PCS LICENSEE INFORMATION

NAME AND ADDRESS	POINT OF CONTACT	MARKET
AirTouch Paging 12221 Merit Drive, Suite 800 Dallas, Texas 75251 (214) 458-5200	James R. Lawson or Mark A. Stachiw Airtouch Paging 12221 Merit Drive, Suite 800 Dallas, Texas 75251 (214)458-5200	Nationwide
MobileMedia Communications, Inc. (Assigned from BellSouth Wireless, Inc.) 2101 Wilson Boulevard, Suite 935 Arlington, Virginia 22201 (703) 312-5151	Gene P. Belardi MobileMedia PCS, Inc. 2101 Wilson Boulevard, Suite 935 Arlington, Virginia 22201 (703)312-5151	Nationwide
Destineer Corp. Formerly - NWM 200 South Lamar Street Security Centre, S. Bldg. Jackson, Mississippi 39201 (601) 944-1300	Thomas Gutierrez Lukas, McGowan, Nace & Gutierrez, Chartered 1111 Nineteenth Street, N.W., Suite 1200 Washington, D.C. 20036 (202)828-9470	Nationwide
DM Messaging 1150 Connecticut Avenue, N.W., 4th Fl. Washington, D.C. 20036 (202) 223-9222	David C. Jatlow 2300 N Street, N.W., Suite 600 Washington, D.C. 20037 (202)663-9080	Nationwide
PageMart II, Inc. 6688 N. Central Expressway, Suite 800 Dallas, Texas 75206 (214) 750-5809	Todd A. Bergwall PageMart, Inc. 6688 N. Central Expressway, Suite 800 Dallas, Texas 75206 (214)706-3789	Nationwide
Paging Network of Virginia DBA - PageNet 4965 Preston Park Boulevard, Suite 600 Plano, Texas 75093 (214) 985-4100	David P. Gamble Paging Network, Inc. 4965 Preston Park Boulevard, Suite 600 Plano, Texas 75093 (214)985-4100	Nationwide
Advanced Wireless Messaging, Inc. 1300 Godward Street, N.E., Suite 3100 Minneapolis, Minnesota 55413 (612) 623-3100	George Y. Wheeler Koteen & Naftalin 1150 Connecticut Ave, N.W.,Suite 1150 Washington, D.C. 20036 (202) 467-5700	1-5 All Regions Nationwide Service
AirTouch Paging 12221 Merit Drive, Suite 800 Dallas, Texas 75251 (214) 458-5200	James R Lawson or Mark A. Stachiw Airtouch Paging 12221 Merit Drive,Suite 800 Dallas, Texas 75251 (214) 458-5200	1, 4, 5 1 = Northeast 4 = Central 5 = West

NAME AND ADDRESS	POINT OF CONTACT	MARKET
Ameritech Mobile Services, Inc. 2000 West Ameritech Center Drive Hoffman Estates, Illinois 60196 (708) 706-7640	William J. Edwards Ameritech Mobile Services, Inc. 1515 Woodfield Road, 14th Floor Schaumburg, Illinois 60173 (708) 706-7640	3 3 = Midwest
Benbow P.C.S. Ventures, Inc. 1615 Highland Avenue Eureka, California 95503 (707) 443-0806	June E. Walsh Benbow P.C.S. Ventures, Inc. 1615 Highland Avenue Eureka, California 95503 (707) 443-0806	4 & 5 4 = Central 5 = West
Insta-Check Systems, Inc 1691 N.W. 107th Avenue Miami, Florida 33172 (800) 222-6385 ext. 800	Thomas Gutierrez Lukas, McGowan, Nace & Gutierrez 1111 19th Street, N.W., Suite 1200 Washington, D.C. 20036 (202) 828-9470	2 2 = South
MobileMedia PCS, Inc. 2101 Wilson Boulevard, Suite 935 Arlington, Virginia 22201 (703) 312-5151	Gene P. Belardi MobileMedia PCS, Inc. 2101 Wilson Boulevard, Suite 935 Arlington, Virginia 22201 (703) 312-5151	1-5 All Regions Nationwide Service
Page Call, Inc. 5 West 3rd Street Coudersport, Pennsylvania 16915 (814) 274-9403	Laura Phillips Dow, Lohnes, Albertson 1255 23rd Street, N.W. Washington, D.C. 20037 (202) 857-28240	1, 2, 3 1 = Northeast 2 = South 3 = Midwest
PageMart PCS, Inc. 6688 N. Central Expressway, Suite 800 Dallas, Texas 75206 (214) 750-5809	Todd A. Bergwall PageMart, Inc. 6688 N. Central Expressway, Suite 800 Dallas, Texas 75206 (214) 706-3789	1-5 1 = Northeast 5 = West
PCS Development Corporation 15 South Main, Suite 810 Greenville, South Carolina 29601 (803) 235-0940	Gerald S. McGowan Lukas, McGowan, Nace & Gutierrez 1111 19th Street, N.W., Suite 1200 Washington, D.C. 20036 (202) 828-9470	1-5 1 = Northeast 5 = West