

The Alabama Public Service Commission

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Commercial Mobile Radio Services (CMRS)

Report on the Proposed Regulation of Wireless Providers in Alabama

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COMMERCIAL MOBILE RADIO SERVICES (CMRS)

Regulatory Authority

The Alabama Public Service Commission (PSC) was granted statutory authority from the State to regulate providers included in the CMRS category under the Alabama Radio Utility Act found at Code of Alabama 1975, § 37-4-100 through 37-4-117.

In 1990, the Legislature (H. 259) removed the PSC's authority to regulate cellular **radio** telecommunication services and providers (See Ala. Code § 40-21-120). Consequently, we were no longer permitted to regulate cellular services but retained the authority to regulate other wireless services, including paging.

Under the Omnibus Budget Reconciliation Act of 1993, Congress created the statutory classification of Commercial Mobile Radio Services (CMRS) by amending Section 332 of the Communications Act of 1934. The Budget Act defines CMRS as a category of services Congress created to encompass all Mobile Telecommunication Services that are provided for profit and make interconnected services available to the public, as specified by Federal Communications Commission (FCC) regulation.

Section 332(c)(3) of the Omnibus Budget Reconciliation Act of 1993 (The Budget Act) provides that **state and local governments CANNOT impose rate or entry regulation** on private land mobile service or commercial radio services, effective August 10, 1994. States are, however, permitted to regulate the terms and conditions of CMRS, including such matters as:

- customer billing information and practices;
- billing disputes and other consumer protection matters;
- facilities siting issues (e.g. zoning);
- transfers of control;
- the bundling of services and equipment;
- the requirement that carriers make capacity available on a wholesale basis;
- and such other matters as fall within a state's lawful authority.

As a result, we could no longer regulate the rates and entry requirements of paging companies. The Legislature removed the Public Service Commission's authority over cellular service in 1990, but the introduction of Personal Communications Services (PCS) in Alabama in the mid- to late '90s brought about a whole new category of wireless services in the 1900 MHZ frequency band. While the Commission still couldn't regulate PCS cellular service, it was authorized to regulate the terms and conditions of non-cellular services in this new 1900 MHZ band.

In its Order titled Regulation of other terms and conditions of services offered by Commercial Mobile Radio Service providers in the state of Alabama (Docket 26414), dated March 9, 1998, the Alabama Public Service Commission clarified its regulatory authority over CMRS and CMRS providers:

While CMRS providers are not required to obtain a certificate of convenience and necessity prior to commencing operations in Alabama, such providers are required to file a notice of intent to provide CMRS in the state of Alabama. CMRS providers must adhere to all of the rules and regulations of the APSC which are unrelated to rates and entry, such as those requiring the submission of annual reports and payment of inspection and supervision fees.

Each CMRS provider operating in Alabama is required to submit a tariff setting forth the terms and conditions of services it offers in Alabama, although such tariff should not include any references to air-time rates. CMRS providers who currently have tariffs on file with the Commission which include references to air-time rates and certificated area maps should submit tariffs eliminating such information.

It is the Commission's opinion that, the best interest of the subscribers of Commercial

Mobile Radio Service throughout the state of Alabama will best be served if the Alabama Public Service Commission regulates the “other terms and conditions” of services offered by CMRS providers. Pursuant to 47 U.S.C. § 332©(3), “other terms and conditions” include such matters as customer billing information, billing disputes and other consumer protection matters, facilities siting issues, transfers of control, bundling of services, the requirement that carriers make capacity available on a wholesale basis and all other matters that fall within a state’s lawful authority. (Order for Docket 26414, pages 1-2)

Effective June 9, 1999, the Legislature amended § 40-21-120 to delete the word “radio” from § 40-21-120. The Legislature also expanded the definition of “cellular telecommunication services.” See Ala. Code § 40-21-120(1)a and the definition of “cellular telecommunication provider” in Ala. Code § 40-21-120(1)b. Specifically, the Legislature defined “cellular telecommunications services” to include “cellular services.” See Ala. Code § 40-21-120. The Legislature defined “cellular telecommunication provider” as “all licensees of the Federal Communications Commission to provide cellular telecommunications services, broadband personal communications services, and commercial mobile radio services, and shall include all resellers of such services.” See Ala. Code § 40-21-120(1)b.

This legislation effectively stripped the Commission of all its authority with regard to wireless regulation. By a joint filing received December 27, 1999, providers of Commercial Mobile Radio Service (CMRS) in Alabama petitioned the Commission for a declaratory ruling that the Commission has no authority to regulate CMRS or any terms or conditions of services offered by

CMRS providers. By Order dated March 2, 2000:

The Commission finds that in the June 9, 1999 amendments to Ala. Code § 40-21-120(2) and (1)a, the Legislature removed the Commission's regulatory authority over cellular telecommunication services, which includes all cellular services, broadband personal communications services, and CMRS. The Commission further finds that in the June 9, 1999, amendments to Ala. Code § 40-21-120(2) and (1)b, the Legislature removed the Commission's regulatory authority over cellular telecommunications providers, which includes all licensees of the Federal Communications Commission to provide cellular services, broadband personal communications services and CMRS. Accordingly, the Commission finds that the Petitioners' Petition for Declaratory Ruling is due to be granted as a matter of law and that the Commission should clarify its regulatory authority in light of the June 9, 1999, amendments to Ala. Code § 40-21-120.

The Commission ordered that the Petition for Declaratory Ruling be granted and declared that:

...as a result of the June 9, 1999, amendments to Ala. Code §§ 40-21-120(2) and (1)a, the Commission has no authority to regulate in any respect cellular services, broadband personal communications services, and commercial mobile radio services. Further, the Commission declared that it has no authority to regulate in any respect licensees of the Federal Communications Commission that provide cellular services, broadband personal communication services, and commercial mobile radio services in the State of Alabama, including resellers of such services, insofar as the Commission's regulation of such licensees pertain to such services.

The Commission's Order Re Regulation of other terms and conditions of services offered by Commercial Mobile Radio Service Providers in the state of Alabama, Docket 26414 (March 9, 1999), is hereby vacated.

To recap, in the Omnibus Budget Reconciliation Act of 1993, Congress preempted state authority over rates and entry issues for CMRS and CMRS providers. States were left with the authority to regulate certain terms and conditions of CMRS. The Commission has the authority to regulate a service or the providers of a service only to the extent that the Alabama legislature has given the Commission such authority. Boswell v. Whatley, 345 So.2d 1324 (Ala. 1977). The Commission finds that it has no such authority.

Section 332(c)(3)(b) of the Budget Act, permits states to petition the FCC for authority to regulate rates for commercial mobile services where mobile services have become a substitute for telephone service, or where market conditions are such that consumers are not protected from unreasonable and unjust rates. Seven states have petitioned the FCC to date; none has been granted the authority.

Competition in the Industry

Rate regulation in the utility industry is a proxy for competition. A healthy marketplace in which there are sufficient competitors is the best possible oversight in matters of price and service availability. This postulate was clearly demonstrated in the long distance telephone market and is evident in the cellular industry as well.

The FCC licenses up to eight facilities-based, wireless carriers in each market within the United States. In addition, resellers purchase service from those carriers and resell it to end-users. Consequently, consumers have choices regarding their service provider. If a wireless provider is not satisfying its customers with quality service at a fair and reasonable price, customers can simply take their business to another competitor. Such is the argument from wireless providers to justify little or no regulation. But the theory that customer choice alone is sufficient to police the industry becomes less compelling in the face of facts.

1. While it is true that urban customers have many choices when it comes to providers, such is not necessarily the case in rural service areas.

2. As will be shown in subsequent sections, providers use different transmission protocols. A phone and accessories purchased from an AMPS (analog) provider will not work with digital AMPS or with a PCS provider and vice versa. Additionally, there are three different PCS protocols: TDMA, CDMA, and CGM. Customer handsets may not be compatible between providers.
3. The argument ignores the issue of billing disputes wherein the customer has already incurred charges with their provider. A customer cannot simply walk away from an existing bill without being subject to collection actions. Doing so could lead to flagging of the customer's credit report, making it difficult to acquire service from another provider at prices and terms available to other customers.
4. The consumer choice argument does not fully address the issue of transmission quality. Service quality may vary between cell sites within the provider's coverage area. Information is readily available for the consumer to compare provider prices, but service quality monitoring and comparisons can best be performed by a third party. This third party should have the authority to monitor and track compliance with performance standards on a continuing basis. In addition, a consumer who is unhappy with the service quality of a reseller may incur the expense of switching providers only to find their new provider is a reseller which relies on the same facilities-based carrier (to obtain services for resale) as did their previous provider.

The FCC license program for wireless providers includes very stringent build-out requirements. Providers are required to build out their networks over a timeframe established by the FCC to ensure each provider is maximizing its coverage area. If the provider does not adhere to that schedule, the FCC can pull its license and re-auction it.

The FCC's oversight includes detailed operational and pro-competitive policies. In fact, the FCC issues an annual report on the state of competition in the industry. Every report has concluded the industry is very competitive and that the level of competition is increasing. Allowing market forces to determine wireless prices leads to lower prices for consumers, according to FCC officials. In 1987 the average monthly bill was almost \$100, but, as of December 1999, the average local monthly bill nationwide for subscribers dropped to \$40.24.

With rapid growth and decreasing prices comes the risk of diminished service quality. The FCC is a large regulatory body but not large enough to monitor transmission quality in the nation's massive wireless network fully. The wireless industry is evolving away from analog toward a digital environment. Digital transmission offers improved service quality, clearer reception, less noise and much higher security. At present, however, most wireless companies use analog transmission and probably will for some time to come.

Issues surrounding the zoning and siting of wireless facilities have arisen in Alabama occasionally. For the most part, Section 704 of the Telecommunications Act of 1996 does not preempt local zoning authority.

“... [E]xcept as provided in this paragraph, nothing in this Act shall limit or affect the authority of a state or local government ... over decisions regarding the placement, construction and modification of personal wireless service facilities.”

With the introduction of new wireless technologies and services in existing coverage areas and the expansion of wireless facilities into previously underserved areas, we anticipate that disputes between local governments and wireless providers will accelerate. Absent any regulatory oversight by the Alabama PSC, no agency exists at the state level with the technical expertise for mediation of such disputes.

Wireless Technology (General)

Wireless communications encompasses a broad spectrum of services, including voice, data and paging. What began as mobile telephone service with limitations on subscribers evolved into “improved mobile telephone service” and finally into cellular service in 1983. The first generation of cellular service uses analog technology in the 800MHZ radio frequency band, allocated by the FCC. The service is commonly referred to as Advanced Mobile Phone Service (AMPS) and is the predominant cellular technology deployed today. The principal advantage of AMPS is the extensive coverage area available over the existing network. Because cellular service initially was used for communications from automobiles, towers are typically located near transportation thoroughfares.

The requirements for expanded use beyond the automobile, improved transmission quality and increased bandwidth led

to the introduction of digital cellular services, which are commonly referred to as Personal Communications Services (PCS). The FCC allocates frequencies in the 1900 MHz band for PCS. Unlike Europe, which has adopted a single industry standard for PCS, U.S. companies have adopted competing transmission protocols. Those protocols include Code Division Multiple Access (CDMA), Time Division Multiple Access (TDMA) and Global System for Mobile Communications (GSM). GSM is the European protocol and is sometimes referred to as simply “PCS”.

U.S. companies have deployed digital cellular service in both the 800 and 1900 MHz frequency bands. The use of the 800 MHz band for digital cellular service (often referred to as digital AMPS or D-AMPS) allows providers to utilize the existing AMPS network for both analog and digital cellular service. Only digital wireless services are provided using these three protocols in the 1900 MHz frequency band. The disadvantage of PCS in the 1900 MHz frequency band, compared with AMPS, is that the network is not currently as “mature” and availability of service is far more limited. Over the next three years, however, the availability and coverage area for PCS is expected to increase dramatically.

Based on demographics, the FCC has divided the United States and its territories into market areas for AMPS called Metropolitan Service Areas (MSAs) and Rural Service Areas (RSAs). PCS market areas are called Major Trading Areas (MTAs) and Basic Trading Areas (BTAs). The FCC auctions these market areas to qualifying companies and licenses all providers.

Wireless Technology (Detailed)

Analog cellular, or AMPS (Advanced Mobile Phone Service)

The cellular concept originated at Bell Labs in 1947. The first automatic analog cellular system started operation in Japan in 1979, and in the Nordic countries in 1981. The first commercial AMPS wireless cellular system in the United States started in October 1983 in Chicago. Analog cellular service operates on the 800 MHz frequency band and is based on FDMA (Frequency Division Multiple Access).

AMPS is a standard system for analog signal cellular telephone service in the United States and is also used in other countries. It is based on the initial frequency spectrum allocation for cellular service by the Federal Communications Commission in 1970. Introduced by AT&T in 1983, AMPS became – and remains – the most widely deployed cellular system in the United States.

AMPS allocates frequency ranges within the 800 and 900 Megahertz (MHz) spectrum to cellular telephones. Each service provider can use half of the 824-849 MHz range for receiving signals from cellular phones and half the 869-894 MHz range for transmitting to cellular phones. The bands are divided into 30 kHz sub-bands, called *channels*. The receiving channels are called *reverse channels* and the sending channels are called *forward channels*. The division of the spectrum into sub-band channels is achieved by using frequency division multiple access (FDMA).

The signals received from a transmitter cover an area called a cell. As a user moves out of the cell's area into an adjacent cell, the user begins to pick up the new cell's signals without any noticeable transition.

The analog service of AMPS has been updated with digital cellular service by adding to FDMA a further subdivision of each channel using time division multiple access (TDMA). This service is known as digital AMPS (D-AMPS). Although AMPS and D-AMPS originated for the North American cellular telephone market, they are now used worldwide with over 74 million subscribers, according to Ericsson, one of the major cellular phone manufacturers.

The Federal Communications Commission regulates and licenses the use of radio spectrum in the United States, while in Canada, this responsibility lies with the Department of Communications.

Digital cellular, or PCS

Not long after analog cellular systems were introduced in 1983, it became apparent that higher capacity, more reliable, and lower-cost wireless systems were needed to meet booming demand. Predictions were made that system capacity would be saturated by the 1990s, first in the largest cities, then in other locations.

When consumer demand saturates the capacity of a cellular system, there are three ways to expand: move into new spectrum bands, split existing cells into smaller cells, or introduce new technology to make more efficient use of existing bandwidth. Since no new radio spectrum would be available, and splitting cells requires very expensive additional network infrastructure, especially in congested areas, new technology seemed to be the best route. To stimulate technology creation, the FCC declared in 1987 that cellular licensees could employ alternative cellular technologies in the 800 MHz band provided that interference to other cellular systems was not created. This encouraged the cellular industry to search for new transmission techniques that would increase the efficiency of radio spectrum use compared to existing AMPS systems.

In 1988, a Cellular Technology Industry Association (CTIA) subcommittee was established in the United States to identify technology requirements. Cellular service operators and the manufacturing industry worked with CTIA to define a series of specific milestones to be achieved, with the goal of introducing new technology products and services by 1991.

The requirements and milestones included:

- A tenfold increase in system capacity compared to AMPS (analog)
- Dual-mode AMPS/digital capability during transmission
- New data feature capabilities, such as fax and Short Messaging Service
- Ensuring that equipment would be available by 1991
- Standards for high quality service

The Telecommunications Industry Association (TIA) was asked to create a specification based on these requirements. Many proposals and much debate ensued, with major factions backing Time Division Multiple Access technology (TDMA) and others supporting Frequency Division Multiple Access (FDMA). Both technologies evolved from the original AMPS. Ultimately, a hybrid of the technologies, TDMA Interim Standard 54 (IS-54), was released in early 1991. TDMA equipment was demonstrated and tested in 1991 in Dallas and Sweden. Newer, more comprehensive standards have been released since, including TDMA IS-136 (also called Digital AMPS or D-AMPS) and CDMA IS-95, as well as the European GSM standard. Each of these has inherent advantages over AMPS technology.

In 1994, the FCC announced it was allocating spectrum specifically for PCS technologies at the 1900 MHz band and began a series of auctions. In the years following, network operators deployed cellular service using each of the PCS technologies at the 1900 MHz frequency band.

TDMA IS-136 (again, also called D-AMPS or Digital AMPS) is based on the IS-136 specification. TDMA, or Time Division Multiple Access, is so named because frequency bands available to the network are divided into time slots, with each user having access to one time slot at regular intervals. TDMA makes more efficient use of available bandwidth than the previous generation of analog technology. The current version, TDMA IS-136, is a revision of the original version of TDMA, IS-54, which was based in part on 1970s technology and had limited system performance. The revised IS-136 standard was published in 1994 and took into account such later developments as digital control channels.

CDMA, based on IS-95 technology, is a particular form of spread spectrum technology. Rather than dividing radio spectrum into separate user channels by frequency slices or time slots, spread spectrum technology separates users by assigning them digital codes within the same broad spectrum. Spread spectrum technology dates from the 1940s and was used in military communications systems because spread spectrum signals were virtually immune to interference from enemy signals. The 1970s and 1980s saw growing interest in commercial applications, with the earliest proposals to apply spread spectrum to cellular systems appearing in the late 1970s. In the late 1980s and early '90s, Qualcomm Corporation proposed and developed a CDMA system; in 1993, the Qualcomm system was modified and adopted by the Telecommunications Industry Association as the Interim Standard 95. Several network operators adopted this

standard with plans to adopt CDMA for dual-mode operation with analog at both the 800 and 1900 MHz frequency bands. In 1996, commercial systems began operation.

The most important CDMA design goals were high spectrum efficiency with a many-fold improvement in capacity over analog, as well as improved privacy and network security. IS-95 incorporates a cryptographic authentication system.

GSM (Global System for Mobile Communications) was developed in Europe. Like TDMA IS-136, GSM's air interface is based on TDMA technology. Although GSM technology has a lot of similarities to TDMA IS-136, it developed along a very different path. Unlike the United States, where the FCC moved the industry from a single analog standard to a new generation of multiple competing digital standards, in Europe the direction was reversed.

In the United States, GSM specifications on the 1900 MHz band were developed starting in 1995. Commercial GSM 1900 cellular systems have been operating in the US since 1996, first in the Washington DC area. Of the PCS technologies described here, GSM networks are currently the only ones that provide data services such as fax, Internet access, and e-mail, in the US. GSM is also currently the only one that permits automatic roaming between North American, European and Asian countries.

Wireless Markets in Alabama

800 MHz Frequency Band – Metropolitan Service Areas and Rural Service Areas

Cellular MSA/RSA Markets and Counties

COMMON CARRIER PUBLIC MOBILE SERVICES INFORMATION

CELLULAR MSA/RSA MARKETS AND COUNTIES

Report No. CL-92-40-A

January 30, 1992

In order to consolidate information, this public notice is issued to provide a listing of all cellular markets with the appropriate counties involved. The list was compiled from the 1980 U.S. Census and various public notices. Questions should be directed to Steve Markendorff at (202) 418-0620.

MSA (Metropolitan Service Areas)

41. Birmingham, AL

Counties - Jefferson, St. Clair, Shelby and Walker

83. Mobile, AL

Counties - Baldwin and Mobile

120. Huntsville, AL

Counties - Limestone, Madison and Marshall

139. Montgomery, AL

Counties - Autauga, Elmore and Montgomery

153. Columbus, GA-AL

Counties - Chattahoochee GA, Muscogee GA and Russell AL

222. Tuscaloosa, AL

Counties - Tuscaloosa

226. Florence, AL

Counties - Colbert and Lauderdale

246. Dothan, AL

Counties - Dale and Houston

249. Anniston, AL

Counties - Calhoun

272. Gadsden, AL

Counties - Etowah

RSA (RURAL SERVICE AREAS) WITH COMPONENT PARTS

ALABAMA

307. Alabama 1 - Franklin

Franklin
Marion
Winston
Cullman
Morgan
Lawrence
Blount

308. Alabama 2 - Jackson

Jackson
DeKalb
Cherokee

309. Alabama 3 - Lamar

Lamar
Fayette
Pickens
Sumter
Greene
Choctaw
Hale
Marengo

310. Alabama 4 - Bibb

Bibb
Perry
Dallas
Wilcox
Lowndes
Chilton

311. Alabama 5 - Cleburne

Cleburne
Talladega

Clay
Randolph
Coosa
Tallapoosa
Chambers

312. Alabama 6 - Washington

Washington
Clarke
Monroe
Conecuh
Escambia

313. Alabama 7 - Butler

Butler
Covington
Crenshaw
Pike
Coffee
Geneva

314. Alabama 8 - Lee

Lee
Macon
Bullock
Barbour
Henry

PERSONAL COMMUNICATIONS SERVICES INFORMATION
PCS BTAs and MTAs

Report No. CW-94-02

September 22, 1994

This public notice is issued to provide a comprehensive listing, including counties, of all PCS Basic Trading Areas (BTAs) and Major Trading Areas (MTAs).

Basic Trading Areas (Includes counties)

017 - Anniston, AL

Calhoun
Clay
Cleburne
Randolph

044 - Birmingham, AL

St. Clair
Bibb
Blount
Chilton
Coosa
Cullman
Jefferson
Marion
Shelby
Talladega
Tallapoosa
Walker
Winston

108 - Decatur, AL

Lawrence
Morgan

115 - Dothan-Enterprise, AL

Coffee
Dale
Geneva
Henry
Houston

146 - Florence, AL

Colbert
Franklin
Lauderdale
Wayne

158 - Gadsden, AL

Cherokee
DeKalb
Etowah

198 - Huntsville, AL

Jackson
Limestone
Madison
Marshall
Lincoln

302 - Mobile, AL

Baldwin
Clarke
Conecuh
Escambia
Mobile
Monroe
Washington

305 - Montgomery, AL

Autauga
Bullock
Butler
Covington
Crenshaw
Elmore
Lowndes
Macon
Montgomery
Pike

334 - Opelika-Auburn, AL

Chambers
Lee

415 - Selma, AL

Dallas
Perry
Wilcox

450 - Tuscaloosa, AL

Fayette
Greene
Hale
Marengo
Pickens
Tuscaloosa

Major Trading Areas (includes BTAs that make up the MTA)

17 New Orleans-Baton Rouge

9, 32, 42, 154, 180, 186, 195, 236, 246, 269, 302, 320, 343

29 Birmingham

17, 44, 108, 115, 146, 158, 198, 305, 415, 450

CMRS Providers

Attached is a list of the wireless providers for E9-1-1 in Alabama.