October 9, 2001

Magalie R. Salas
Secretary
Federal Communications Commission
445 Twelfth Street, S.W., Room TW-A325
Washington, D.C. 20554

Re: Reply Comments to IB Docket No. 97-95

Dear Ms. Salas:

The Satellite Industry Association ("SIA")[1] submits this letter in Reply to comments filed by several participants in the FCC's Further Notice of Proposed Rule Making ("FNPRM") in the above-captioned matter. SIA makes this filing to clarify the record before the Commission regarding the current state of the deployment of advanced broadband telecommunications capabilities to all Americans.

The Commission has previously recognized in this proceeding the apparent widening of the "Digital Divide" between the "information rich" and the "information poor."[2] Recognizing again that certain groups of consumers might be particularly

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[1] SIA is a national trade association representing the leading U.S. satellite manufacturers, service providers, and launch service companies. SIA serves as an advocate for the U.S. commercial satellite industry on regulatory and policy issues common to its members. With member companies providing a broad range of products and services, SIA represents the unified voice of the U.S. commercial satellite industry. SIA's members include: ASTROLINK International LLC; The Boeing Company; GE American Communications, Inc.; Globalstar, L.P.; Hughes Electronics Corp.; Lockheed Martin Corp.; Loral Space & Communications Ltd.; Motient Corp.; PanAmSat Corporation; Teledesic Corporation; and TRW Inc.

[2] Third NOI at ¶ 1.

vulnerable to not receiving timely deployment of advanced telecommunications capability through market forces alone, the Commission indicates its willingness to take steps to remove barriers to broadband deployment.[3]

Satellite-delivered broadband services are essential to narrowing the "Digital Divide" for rural and consumer broadband users and are uniquely suited to achieve the Commission's stated policy goal of broadband deployment that is fast, ubiquitous, competitive, and open. Both terrestrial wireline and terrestrial wireless service providers have disappointingly fallen short in providing the services so urgently needed by communities in rural America. The Commission should fulfill its statutory mandate to ensure the deployment of advanced services to all Americans by making adequate spectrum available for satellite-based systems to meet the unanswered needs for very-high-speed Internet services in underserved and unserved areas.

SIA believes that satellite systems present the only practical near-term alternative to provide broadband services in rural and other underserved areas. Satellite systems have nationwide coverage areas and are able to offer high-quality, ubiquitous service as soon as the satellite system is launched and operational. As such, satellite systems offer instantaneous deployment to low-population density and low-income areas that may not have enough demand to motivate a terrestrial build-out. In addition, satellites offer ubiquitous service at prices that are distance insensitive, in contrast to the distance-based prices that are characteristic of many terrestrial networks.[4] These advantages allow satellite operators to provide first- and last-mile connectivity more cost-effectively than terrestrial systems, which have historically focused their deployment on high-density urban areas.[5]

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[3] *Id.*

[4] *See,* Appendix A

[5] *See* Extending Wireless Telecommunications Services to Tribal Lands, *Notice of Proposed Rulemaking*, FCC 99-205, WT Docket No. 99-266 (released August 18, 1999) at ¶ 24.

Indeed, SIA believes that broadband service satellite systems are likely to be the *only* broadband technology available for a significant portion of small businesses and consumers in the United States. Large portions of the U.S. are not now, and may never be, served by either cable or DSL due to the cost of wiring those remote areas, or because of technical limitations due to distance from the telephone company's central office. Even where DSL has been deployed, many DSL customers have lost access to broadband service when their service provider has ceased operations or declared bankruptcy. In this environment, many consumers have limited, if any, terrestrial alternatives.

It is not realistic to expect that the broadband needs of underserved areas will be met by terrestrial wireless providers, because wireless operators have concentrated on urban/suburban areas.[6] As the Commission is well aware, the networks of many terrestrial wireless providers are experiencing significant financial difficulties, and investment in some networks has slowed considerably, if not stopped entirely. Three major fixed wireless companies are now operating under bankruptcy protection and are at risk of ceasing operations.

As with DSL, the failure of any of those companies could leave many users without access to broadband service. Even if these companies were to recover, there is no reason to believe they will turn their focus away from deploying in heavily populated urban areas, due to the high cost of extending terrestrial wireless networks outside those areas. Nor is there any reason to believe that terrestrial wireless companies are in need of additional spectrum to meet the needs of rural America. Today, rural America has as much spectrum available to it as urban America. As a result, the available spectrum *per person* in rural America is considerably higher than in urban America. The answer to

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[6] *See,* Appendix B, *FS Broadband Internet Access Deployment Analysis*, Regulatory Access, LLC.; *See also, e.g.,* COMMUNICATIONS DAILY, March 20, 2000, at 11 ("While cable operators are rolling out advanced services in larger markets, most small and medium-sized markets won't see such services for at least another 2 years, according to another new study. Report by Cahners In-Stat Group found that most cable operators serving areas outside biggest markets don't intend to launch digital cable, high-speed data or telephone service in the next 24 months.").

rural access is not to allocate additional spectrum to terrestrial providers, but to encourage those forms of access -- like satellite -- that can most naturally address low-density markets.

Direct Broadcast Satellite (DBS) services are provided to over 16 million homes, which translates to 42 million viewers. Over 7.5 million of these homes and 19.5 million of these viewers are in rural or underserved areas. Just as the satellite industry has brought multi-channel television services to the least densely populated areas of the United States, it has the potential to be a leading supplier of broadband services in both urban and rural areas. Satellite technology does not require access to the local telephone exchange or laying cable in low-density areas. By targeting a satellite beam toward a particular region of the United States, satellite-based services can reach every square mile of that region, even the most isolated areas. A number of satellite companies provide high-speed Internet services that reach all U.S. residents today, and new, even more sophisticated, systems are under development

In sum, satellite broadband systems provide a critical means to serve those users who are, and will likely remain, unserved by terrestrial service providers. As such, the Commission must continue to consider satellite provision of broadband services as an essential element in closing the "digital divide". The SIA urges the Commission to focus on ways to encourage alternative infrastructure deployment to meet the needs of rural and remote areas.

Respectfully submitted,

Satellite Industry Association

Richard DalBello

Executive Director

October 9, 2001

Appendix A

SATELLITES CONNECTING THE WORLD

Satellites: Enabling American Prosperity

The satellite industry generated over $80 billion in revenues last year and enabled over $1.7 trillion in business activity worldwide.

The satellite industry has long played a key role in the US and world economies, providing the services that allow us to communicate and work together. Few industries touch such a large number of people. Satellites enable services ranging from telecommunications to television, from remote imaging to GPS and the Internet.

Given the increasing importance of information services to the prosperity of all Americans, satellites extend essential economic opportunities to rural areas. These are areas that have been neglected by terrestrial telecommunications companies, which focus on urban population centers where profits come easiest. Unlike the terrestrial competition, satellites use technology that can provide universal connectivity, serving both rural and urban markets for the same price.

Satellites are an important component of a surprisingly large number of technologies. The following paragraphs contain a cross-section of the economy, showing a sampling of the industries that rely on satellites.

National broadcast content from the four television networks and more than 180 different national cable channels is relayed to 10,000 local cable systems – all via satellites.

Broadcast and Cable TV: Virtually all national television content is delivered via satellites; this is by far the most cost effective and efficient way for

broadcasters to deliver programming to affiliates throughout the US. Live events such as sports and news are routinely transmitted from dishes on top of satellite trucks to studios across the country. And it's not just TV; in the radio market syndicated radio shows also use satellites to deliver their content to local stations.

Over one in five households in 23 states and over one in ten households in 45 states subscribe to Direct Broadcast Satellite service.

Direct to Home TV: While the satellite industry is the backbone of cable and broadcast TV, it also provides industry-leading television service itself. Since the introduction of DBS service, its receivers have become the fastest selling consumer electronics product of all time, with approximately 15 million American buyers. The overwhelming popularity of DBS is due in part to its ability to serve all Americans, regardless of where they live, with outstanding TV content.

Navigation: The government-funded Global Positioning System (GPS) has created an enormous windfall for consumers and businesses around the world by providing accurate position location and navigation services. For example, trucking companies now incorporate GPS devices paired with satellite transmitters that allow a central office to monitor and track the location and inventory of their entire fleets with real-time data. Air and sea transportation also use GPS as a navigational aid, cutting down on route deviations, increasing navigational safety, and saving carriers money on reduced fuel expenses.

The GPS industry is projected to grow from $2 billion in 2000 to $5.4 billion in 2005.

Internet: Though the Internet has gotten plenty of attention over the past few years, the satellite systems underlying the Internet have received little notice. A major benefit of satellites is that they provide cheap and reliable instant infrastructure, extending and complementing terrestrial networks. Rural areas comprise an enormous proportion of the world. There are 30 million households and 3 million businesses located in rural areas of the United States. Satellites are the ideal transmission medium to bring the benefits of the information age to these areas. In many less developed areas of the world, the issue of cost is secondary to the fact that, as in the telephone market, satellites connect people and businesses to the Internet that would otherwise have no access at all.

The cost of deployment of high speed broadband data and video services to a rural subscriber is five times less for a satellite operator than for a cable provider.

VSAT Networks: Companies with far-flung operations have come to increasingly rely on a purely satellite-based technology to run their networks. Using small satellite dishes placed on remote buildings, companies are able to centrally manage inventory, data collection, credit-card validation, e-mail delivery, and virtually all other aspects of their businesses. Over 2,200 shopping

Blockbuster, Ford, Mailboxes Etc., Mobil, Pep Boys, Safeway, Salomon Smith Barney, Staples, the State of California, Target Stores, and the US Postal Service all use VSATs in their daily operations.

malls and 8,000 retail stores utilize these VSAT networks. VSATs have continuously upgraded their services (moving from data-only to providing voice and multimedia services as well,) while lowering their prices by approximately *ninety percent* over the past ten years.

Approximately $60 billion will be invested over the next few decades to modernize military space capabilities.

National Security: Satellites are also a critical component of our defense. Soldiers in every branch of the armed forces use satellites to gather intelligence from high-resolution satellite imagery, provide battlefield location information to aircraft and smart munitions, and communicate instantaneously with units in the field or at sea.

The Department of Defense is increasingly relying on commercial satellite companies for communications services, recently signing deals with Spaceway and Lockheed Martin Global Telecommunications, and pledging support for the commercial imaging industry. Sixty percent of military satellite communications rely on commercial service providers.

Military satellite capacity requirements will grow six-fold over the next decade.

Roughly 80% of all national pager traffic backhaul is sent over satellite.

Mobile Messaging: Coast-to-coast pagers and other messaging devices are essential tools of the mobile professional. All of these devices rely heavily on satellite services, using satellites as the primary backbone to transmit their messages.

Voice Telephony: The satellite industry has long been a pioneer in providing outstanding international telephone service. It remains a leading player in the market today, especially outside Europe and North America. While rich countries can rely more heavily on terrestrial providers, satellite telephone circuits are often the only communications lifelines for rural areas. Satellite service providers bring telephony and data services to areas of the world that the terrestrial telephone industry has overlooked and may never be able to profitably serve.

Over 70 countries, representing a total population of approximately 2.3 billion people, rely on satellites for telephone connections.

The new generation of commercial remote imaging satellites will be able to photograph objects as small as two feet across.

Remote Imaging: Remote imagery and data taken from satellites help weather forecasters predict regional and local weather patterns. Farmers use this information to plan irrigation, frost protection, and pest deterrence, thereby mitigating potential disasters. Satellite sensing data is also used to characterize farmland features such as mineral content, moisture level, and soil type.

Meteorology: The US government maintains a fleet of seven weather satellites that form the backbone of our meteorological information infrastructure. Up to the minute satellite images are relayed to local television affiliates and used by the National Weather Service to forecast developing weather patterns. Industries like agriculture and tourism are particularly weather-sensitive, relying on satellite data for day-to-day operations.

One seventh of the US economy, or around $1 trillion, is dependent on reliable weather forecasting for business planning.

Appendix B

FS Broadband Internet Access Deployment Analysis
Conducted by Regulatory Access, LLC for SIA

Introduction

Service providers use terrestrial wireless fixed service (FS) to deliver stand-alone or integrated data, voice, and video packages to end-users. Certain types of FS operations and services have been directly targeted at enterprise-level customers whereas others specifically target consumers and small businesses. Regulatory Access analyzed six FS frequency blocks used for wireless broadband Internet access.

Many FS operators were awarded spectrum through competitive bidding in auctions conducted by the FCC. Over the past three years, several companies have launched service with varying degrees of success. While the services were considered ideal for rapid deployment of broadband services to all Americans, especially in rural areas, an assessment of progress made by these companies yields little positive evidence that terrestrial wireless has deployed or will deploy in such areas. The deployment of FS in larger urban areas cannot by itself guarantee financial viability as witnessed by the recent difficulties of major FS providers who have significantly scaled back operations this year.

FS Application Overviews

General Characteristics

While each FS application has unique characteristics, last mile access services offered by FS providers share the following general features:

- "Broadband" data rates – here defined as offering a minimum of 200 kbps per user link.
- Consumer premises equipment consisting of an exterior antenna connected to a modem by coaxial cable, which in turns connects to the end-user's computer.
- Price and usage structures in line with cable and DSL broadband access services for residential users, and competitive with terrestrial wireline operators for business-class services.

A physical feature of wireless communications is that signal attenuation, or loss, is generally stronger at higher frequencies. The effect of this loss is that transmission distances are significantly reduced above 15 GHz. The cell radius for PCS or MMDS (both operate below 3 GHz) service can be thirty-five miles. For 39 GHz applications, the cell radius is reduced to about three miles. This figure is even lower during periods of heavy rainfall.

The six selected FS applications are described below. Key information on frequencies, band size and current service offerings is included. Other spectrum bands that may be used for last mile access services that are not analyzed in this study are briefly discussed in Attachment I.

BPCS (Broadband Personal Communications Service)

BPCS operates in approximately 120 MHz in the 1.8 to 2 GHz band. BPCS is traditionally used for circuit-switched mobile telephony. The service has not been deployed for FS to any great extent. In select markets, AT&T is currently offering fixed wireless broadband service on BPCS frequencies. This service is known as "Project Angel" and serves customers in Los Angeles, San Diego, Anchorage, and other markets.

WCS (Wireless Cable Service)

WCS operates in 30 MHz in the 2.3 GHz band. The service has not been deployed commercially to any great extent. The major licensees of the spectrum are AT&T Wireless, BellSouth, Comcast, Metricom and Verizon. BellSouth is currently conducting trials of a data-delivery WCS service in southern Louisiana. WCS spectrum may also be used for the delivery of wireless cable television services.

MMDS (Microwave Multipoint Distribution Service)

MMDS operates in approximately 200 MHz in the 2.1 to 2.7 GHz range. For decades, small television programmers have used these frequencies to broadcast educational or local content. The FCC allowed two-way transmissions in the band in 1998. Sprint and WorldCom have consolidated most of this spectrum through acquisitions and offer broadband services to around 20 metropolitan areas. In addition, WorldCom is currently testing its second-generation MMDS wireless data services in Dallas-Ft. Worth and Boston. Services are often deployed using a 30 – 35 mile "supercell" line of sight architecture.

DEMS (Digital Electronic Messaging Service)

DEMS operates in 400 MHz in the 24 GHz band. DEMS was originally located in the 18 GHz band but operators were not able to deploy services to end users due to regulatory obstacles. Like other users of "upper-band" frequencies, DEMS suffers from poor propagation characteristics, attenuation, and other factors limiting transmission distances to under three miles per cell. When the FCC relocated the band in 1997, Teligent consolidated 90% percent of the available spectrum and launched a business-focused service to over 40 urban markets.

LMDS (Local Multipoint Distribution Service)

LMDS operates in 1300 MHz in discrete bands between 27 – 31 GHz. Like other "upper-band" services, LMDS is capable of offering subscribers a variety of one and two-

way broadband services such as video, wireless local loop telephony, and high-speed data. LMDS frequencies are primarily held by XO Communications and Winstar. XO Communications uses LMDS to complement its terrestrial fiber offerings, whereas Winstar uses LMDS to complement its 39 GHz services.

39 GHz

39 GHz services operate in 1400 MHz in discrete segments between 38 – 40 GHz. Like DEMS and LMDS, 39 GHz licensees may provide fixed communications including point-to-point and point-to-multipoint communications. Winstar, Adelphia Communications, and Advanced Radio Telecommunications (ART) hold the vast majority of 39 GHz licenses.

Findings

Population Density Analysis Results

FS broadband services are currently available only in the largest metropolitan areas of the US. Of the 493 Basic Trading Areas (BTAs[i]) licensed in the US, only 59 have an established FS provider offering commercial or trial service. Even if FS providers build out to all counties that have population densities above the thresholds for each of the service types, over 140 million Americans will never have access to wireless broadband services. Half of the US population lives in counties where deployment of some type of terrestrial FS is unlikely because of unfavorable economic and technical conditions.

FS deployment has been and will continue to be based on the population density of target markets. The analysis above projects that the FS application with the largest cell size, MMDS, may reach a total of 44% of the US population. While this may extend Americans' access to broadband service, FS applications will cover a small percentage of US land area.

Service Type	Total Sq. Miles Now Served	Total Sq. Miles Served plus Unserved Above MDT	% of US Landmass Now Served (excluding Alaska)	% of US Landmass Potentially Served (excluding Alaska)
BPCS	30,945	84,917	1.0%	2.9%
39 GHz	77,071	88,850	2.6%	3.0%
MMDS	54,492	105,090	1.8%	3.5%
LMDS	27,326	29,896	0.9%	1.0%
DEMS	77,543	89,734	2.6%	3.0%

Competition

FS applications have been promoted as effective competitors to incumbent RBOCs and cable operators. In reality, when analyzed on a market-by-market basis, there is little competition between wireless operators. In the 59 areas served by FS, 66% have a

monopoly or duopoly. This suggests that FS providers will enjoy limited competition just as incumbent access providers have in the past.

# of FS Providers	# of BTAs
5	2
4	4
3	14
2	20
1	19
0	434

Markets Currently Served by FS Operators

The 59 areas currently served by FS operators are almost all densely populated. Only ten of the areas served are outside population centers with fewer than 1 million inhabitants. A listing of the Basic Trading Areas (BTAs), a common geographic delineator for US government purposes, appears in Attachment II.

Methodology of Analysis

Regulatory Access compiled publicly available data in order to determine the actual deployment of FS, as well as to project the future availability of the six terrestrial broadband services described above. To establish a baseline of demographic data, Regulatory Access organized auction results from the FCC's Wireless Telecommunications Bureau, population figures from the 2000 US Census, and geographical data from the Department of Commerce. Population density was calculated for each county. Using publicly available data from the FCC, the SEC, company releases, analyst reports, and news articles, Regulatory Access captured the metropolitan areas currently served by FS broadband providers. To the extent possible, each of the six services was analyzed on a county-by-county basis.

After determining which services were currently being provided in each county, Regulatory Access established a density threshold that characterizes the general deployment strategy for each service type. The density threshold calculation results confirmed anecdotal evidence that there are two levels of FS deployment based on service architecture and population density. For WCS and MMDS, which have relatively large transmission ranges, the density threshold was significantly lower because signal propagation allows for transmission over 30 miles. For "upper-band" services, however, the density was considerably higher because of short-range transmissions and service deployments limited to high-density urban cores.

In order to determine future deployment, Regulatory Access identified "candidate counties" for each of the six service types that do not have a current service provider but have a higher population density than the threshold. Counties where FS is presently offered, as well as "candidate counties" where it may be offered, were aggregated in order determine a baseline to assess the scope of FS deployment. Use of the population density threshold metric assumes that deployment costs for FS operators are the same on

average across each market. It must be noted that technological advances and selective deployment will affect this assumption to the extent that service providers target different markets. It must also be noted that the metric does not account for competitive issues such as where current alternatives like DSL or cable are available.

Attachment I – Other FS Services Not Analyzed

In addition to the six FS applications discussed above, there are three additional FS service types that may be able to deliver terrestrial broadband fixed wireless service. Each of the applications is in varying degrees of deployment and/or technical evaluation. Regulatory Access did not include analysis about deployment of these services because they have not been authorized for service or are not considered major last mile access service applications.

2.4 GHz Unlicensed Band

The FCC approved use of an 83 MHz (2.40 – 2.4835 GHz) block of spectrum for unlicensed use. The frequencies are located near other FS applications such as WCS and MMDS. Currently a number of products for wireless local area networks use these frequencies. There are growing concerns that users of the spectrum will suffer harmful interference from other users.

Fixed Wireless Access/Extended C-band

In 1998, the FCC allocated 50 MHz of spectrum between 3.65 and 3.7 GHz for the Fixed Wirelesss Access service (FWA). The band had previously been assigned to the US government, which operated approximately 50 satellite earth station sites for FSS downlinks. These sites are authorized to continue reception, but the FCC is no longer accepting new applications for satellite operations in the extended C-band. The band is subject to the same rules as Wireless Communications Services (see above). The FCC is planning to auction this spectrum, but has yet to determine a schedule.

5 GHz NII Unlicensed Band

In May 1995, Apple Computer submitted a Petition for Rulemaking that sought the creation of an unlicensed NII (National Information Infrastructure) band. In December 1997 the FCC released a Report & Order that allocated 300 MHz of spectrum for unlicensed NII usage. Various commenters have stated that the 5 GHz NII band may be used for wireless communications at data rates up to 54 MB/s. Proponents also stated that wireless operations in the band could be done 6.2 – 9.3 miles from the originating antenna. High equipment costs and uncertainty regarding technical standards have prevented its widespread acceptance.

MVDDS (Multichannel Video and Data Distribution Service)

MVDDS is the name of a new service that proposes to offer terrestrial wireless data and video services using the 12.2 – 12.7 GHz band. The use of these frequencies by MVDDS is subject to considerable debate because DBS operators are presently using the 12 GHz band. The FCC has not yet determined the licensing methodology for this service.

Q/V-band

The FCC allocated approximately 8 GHz between 37 GHz and 52 GHz for use by fixed satellite services and terrestrial fixed services in 1999. Service in these bands is not yet licensed in the US and consolidation of global band plans is not likely until 2003. The Q/V-bands suffer from severe rain attenuation, which may limit the utility of widespread commercial deployment of last mile services in these bands.

Point-to-Point Fixed Services

Allocations for point-to-point fixed services exist across the 4, 6, 11 and 18 GHz bands. These services are used to relay data and voice traffic from cellular base stations and broadcast towers to network access points. Many public safety and industrial users occupy this spectrum, which has not been used for last mile access broadband services.

Attachment II - Markets Currently Served by At Least One FS Provider

(See Next Page)

BTA Name	BTA Pop	Size Rank
New York, NY	19,620,902	1
Los Angeles, CA	16,391,590	2
Chicago, IL	9,098,316	3
San Francisco-Oakland-San Jose, CA	7,237,170	4
Philadelphia, PA-Wilmington, DE-Trenton, NJ	6,184,346	5
Dallas-Fort Worth, TX	5,571,828	6
Houston, TX	5,045,022	7
Detroit, MI	4,965,944	8
Washington, DC	4,769,729	9
Atlanta, GA	4,407,446	10
Boston, MA	4,391,344	11
Miami-Fort Lauderdale, FL	3,955,969	12
Phoenix, AZ	3,462,432	13
Minneapolis-St. Paul, MN	3,293,598	14
Seattle-Tacoma, WA	3,232,492	15
Cleveland-Akron, OH	2,993,610	16
St. Louis, MO	2,873,395	17
San Diego, CA	2,813,833	18
Denver, CO	2,712,488	20
Tampa-St. Petersburg-Clearwater, FL	2,628,386	21
Baltimore, MD	2,606,003	22
Pittsburgh, PA	2,471,759	23
Cincinnati, OH	2,170,768	24
Portland, OR	2,114,640	25
Charlotte-Gastonia, NC	2,078,083	26
Kansas City, MO	2,049,447	27
Sacramento, CA	2,001,001	28
San Antonio, TX	1,856,320	29
Milwaukee, WI	1,849,490	30
Norfolk-Virginia Beach-Newport News-Hampton, VA	1,784,356	31
Nashville, TN	1,761,799	32
Orlando, FL	1,697,906	33
Columbus, OH	1,692,240	34
Salt Lake City-Ogden, UT	1,629,189	35
Las Vegas, NV	1,568,418	37
Memphis, TN	1,553,276	38
Indianapolis, IN	1,552,963	39
Louisville, KY	1,486,048	40
Raleigh - Durham, NC	1,475,053	41
Greensboro--Winston-Salem--High Point, NC	1,454,066	42
Oklahoma City, OK	1,434,827	43
New Orleans, LA	1,430,273	44
Jacksonville, FL	1,358,825	45
Austin, TX	1,325,029	46
Richmond-Petersburg, VA	1,256,479	48
Dayton-Springfield, OH	1,219,933	49
Buffalo-Niagara Falls, NY	1,213,535	50
West Palm Beach-Boca Raton, FL	1,167,094	51
Hartford, CT	1,148,618	54
Fresno, CA	922,516	63
Tucson, AZ	843,746	66
Baton Rouge, LA	705,760	78
Jackson, MS	677,489	83
Wichita, KS	656,056	92
Colorado Springs, CO	537,484	107
Modesto, CA	501,498	116
Melbourne-Titusville, FL	476,230	123
Anchorage, AK	456,392	129
Houma-Thibodaux, LA	271,365	187

[i] BTAs are Material Copyright (c) 1992 Rand McNally & Company. BTAs are geographic areas drawn based on the counties in which residents of a given BTA make the bulk of their shopping goods purchases. Rand McNally's BTA specification contains 487 geographic areas covering the 50 states and the District of Columbia. For its spectrum auctions, the Commission added additional BTA-like areas for: American Samoa; Guam; Northern Mariana Islands; San Juan, Puerto Rico; Mayagüez/Aguadilla-Ponce, Puerto Rico; and the United States Virgin Islands.