™ CTIA
Building The Wireless Future™
Cellular Telecommunications & Internet Association

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October 4, 2001

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FEDERAL COMMUNICATIONS COMMISSION
OFFICE OF THE SECRETARY

Ms. Magalie Roman Salas
Secretary
Federal Communications Commission
445 12th Street, S.W.
12th Street Lobby, TW-A325
Washington, DC 20554

***Re*: *Ex Parte* Presentation**
CC Docket No. 01-14

Dear Ms. Salas:

On October 3, 2001, the Cellular Telecommunications & Internet Association ("CTIA") represented by Michael Altschul, Diane Cornell, and Chris Guttman-McCabe, along with Marius Schwartz, Georgetown University and CTIA Consultant, met with David Sappington, Chief Economist, Robert Pepper, Chief, Office of Plans and Policy, Don Stockdale, Office of Plans and Policy, Lauren Kravetz Patrich, Commercial Wireless Division, Walter Strack, Chief Economist of the Wireless Telecommunications Bureau, and James Bird and Nandan Joshi, Office of the General Counsel. The parties discussed the attached presentation outlining CTIA's arguments for elimination of the spectrum cap along with the attached charts detailing spectrum holdings for several wireless carriers based on data provided in the January 31, 2001 Merrill Lynch wireless spectrum report.

Pursuant to Section 1.1206 of the Commission's Rules, an original and one copy of this letter is being filed with your office. If you have any questions concerning this submission, please contact the undersigned.

Sincerely,

Christopher Guttman-McCabe

Attachment(s)

No. of Copies rec'd 0+1
List ABCDE

CELLULAR TELECOMMUNICATIONS & INTERNET ASSOCIATION

SPECTRUM CAP PRESENTATION

October 3, 2001

OVERVIEW

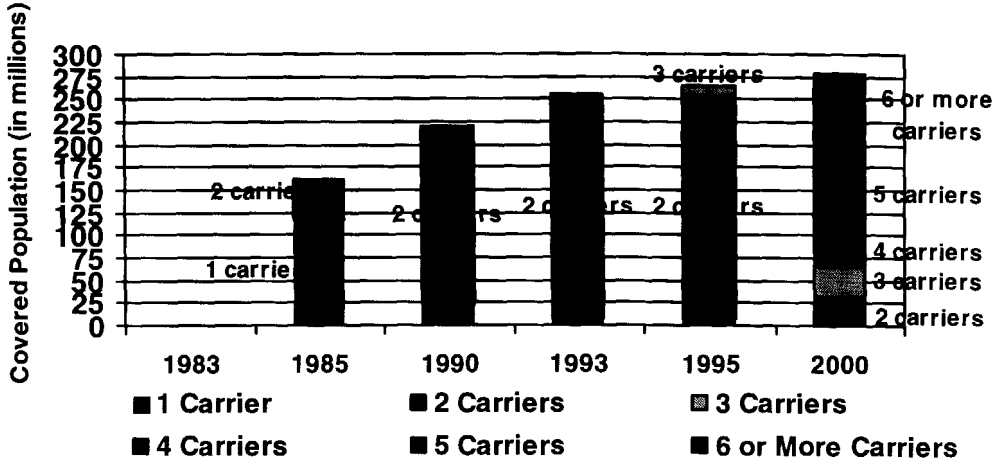
- THE CMRS INDUSTRY NO LONGER REQUIRES A UNIQUE MECHANISM TO PROTECT COMPETITION.
- ANTITRUST REVIEW PROVIDES A MORE ACCURATE COMPETITIVE ANALYSIS THAN THE SPECTRUM CAP.
- THE SPECTRUM CAP DOES NOT RESULT IN SAVINGS OF RESOURCES OR ADMINISTRATIVE COSTS.
- THE SPECTRUM CAP CAUSES AFFIRMATIVE HARM.
- RAISING THE CAP IS NOT THE BEST SOLUTION.

THE CMRS INDUSTRY NO LONGER REQUIRES A UNIQUE MECHANISM TO PROTECT COMPETITION

- The spectrum cap was designed initially to ensure that CMRS spectrum would be licensed to more firms than the two cellular incumbents.
- The CMRS industry is no longer a nascent industry. New entrants have constructed systems and provided services for several years.
- If industry-specific rules no longer are justified by their original purpose, the FCC only should maintain those rules if they serve a necessary function.

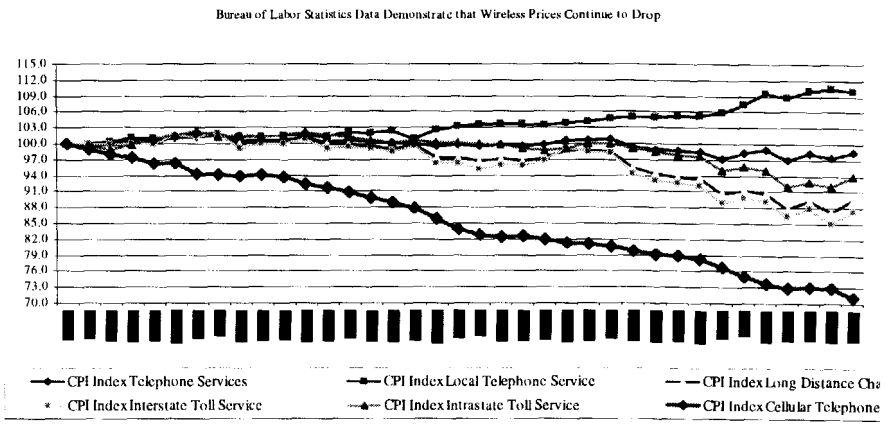
- Competition in the wireless industry is well established:

- Today, 265 million Americans can choose from between 3 and 8 wireless service providers.
- More than 202 million Americans can choose from among 5 providers.
- More than 92 million Americans can choose from among 6 providers.



• Wireless prices have fallen dramatically:

- Average monthly wireless bills have fallen by more than 50% in the past decade.
- Consumers in areas where there are 3 or fewer carriers typically still benefit from low prices in nationwide plans.



ANTITRUST REVIEW PROVIDES A MORE ACCURATE COMPETITIVE ANALYSIS THAN THE SPECTRUM CAP

- DOJ merger review process was designed to evaluate all potentially harmful consolidations.
- The wireless industry is no different than any other industry that is subject to antitrust review of a merger, not industry-specific caps.
- Mergers should not be pre-judged by an arbitrary cap – they may be pro-competitive, anticompetitive, or competitively neutral.
- If the cap is eliminated, the Commission still will retain all of its rights under Section 310(d) to review and possibly reject any combination it finds to be anticompetitive or not in the public interest.

- A comprehensive competitive analysis of a merger includes review of:
    - Ease of market entry;
    - Competitors' ability to expand output;
    - Technology;
    - Innovation;
    - Footprint of merging companies;
    - Geographic location;
    - Brand name;
    - Revenues;
    - Etc.

- Reliance on spectrum cap oversimplifies the merger review process.
- The amount of spectrum licensed to a carrier is too crude a measure of market power.
- The spectrum cap can impede the growth of successful firms, prevent efficient market outcomes.
  - Allowing some reallocation may enhance efficiency without harming competition.
  - Asymmetries in market shares are common in most industries.
- The spectrum cap perpetuates the "belt and suspenders" model.

THE SPECTRUM CAP DOES NOT RESULT IN SAVINGS OF RESOURCES OR ADMINISTRATIVE COSTS

- The spectrum cap review is duplicative – a competitive analysis is performed by the FCC through its Section 310(d) procedures and the DOJ through its merger review process.
- The spectrum cap is not such a bright line - intricate questions still arise regarding application of the spectrum cap (e.g., overlapping attributable interest review).
- Case-by-case reviews are required if a carrier files a waiver.

THE SPECTRUM CAP CAUSES AFFIRMATIVE HARM

- The cap impairs carriers' ability to plan for and introduce innovative service offerings.
- The cap places artificial constraints on firms' size that can cause substantial losses of economies of scale or scope.
- The waiver process does not provide an effective "escape valve" from the spectrum cap.
  - Carriers are reluctant to file waivers that require the release of proprietary business information.
  - Carriers must be assured that they will have access to additional spectrum if they are going to make substantial capital expenditures. Waivers are not guaranteed.
- The cap harms the U.S. wireless industry's international competitiveness.

U.S. CARRIERS ARE MORE SPECTRUM-CONSTRAINED THAN THEIR FOREIGN COUNTERPARTS

Wireless Spectrum Allocation	*189 MHz*	*365 MHz*	*306 MHz*	*234 MHz*	*263 MHz*
Population	*281*	*59*	*82*	*127*	*57*
Wireless Subscribers (2000)	*110.5*	*40*	*51*	*58*	*41*
Penetration	*39%*	*68%*	*63%*	*46%*	*72%*
# of National Carriers Per Country	*6*	*5*	*6*	*3*	*6*
Average Frequency By Carrier	*32*	*73*	*51*	*78*	*44*
Carrier 1	*33-45 MHz*	*82 MHz*	*61 MHz*	*86 MHz*	*62 MHz*
Carrier 2	*35-45 MHz*	*77 MHz*	*61 MHz*	*98 MHz*	*62 MHz*
Carrier 3	*25-35 MHz*	*85 MHz*	*70 MHz*	*50 MHz*	*49 MHz*
Carrier 4	*25-35 MHz*	*85 MHz*	*65 MHz*	*N/A*	*29 MHz*
Carrier 5	*25-35 MHz*	*35 MHz*	*25 MHz*	*N/A*	*30 MHz*
Carrier 6	*19 MHz*	*N/A*	*25 MHz*	*N/A*	*30 MHz*

Safety

RAISING THE CAP IS NOT THE BEST SOLUTION

- The efficient number of firms will vary depending on specific industry conditions and market circumstances.
- As industry conditions change, any spectrum cap number chosen will become inappropriate – there is no "right" number of competitors.
- Over time, spectrum needs may vary significantly among firms.
  - Different technology choices and marketplace successes may impact demand.

CONCLUSION

- It would be more efficient for the Commission and industry if the FCC eliminated the cap and relied on antitrust review and FCC Section 310(d) prior approval procedures.
- If the cap is eliminated, the Commission retains all of its rights under Section 310(d) to perform competitive and public interest analyses.
- Consumers would benefit from more service offerings and lower prices if the cap were eliminated.

NUMBER OF MARKETS IN WHICH LARGEST CARRIERS OWN 45 MHz OF SPECTRUM (TOP 25 MSA MARKETS)

Includes Spectrum Acquired in C and F Block Re-Auction # 35 in January 2001

Verizon Wireless	AT&T Wireless	Cingular Wireless	VoiceStream
10	6	0	0

NUMBER OF MARKETS IN WHICH LARGEST CARRIERS OWN 35 MHz OR MORE OF SPECTRUM (TOP 25 MSA MARKETS)

Includes Spectrum Acquired in C and F Block Re-Auction # 35 in January 2001

Verizon Wireless	AT&T Wireless	Cingular Wireless	VoiceStream
19	15	9	2

Note: Based on data from the January 31, 2001 Merrill Lynch wireless spectrum report.

NUMBER OF MARKETS IN WHICH LARGEST CARRIERS OWN
45 MHz OF SPECTRUM
(TOP 10 MSA MARKETS)

Includes Spectrum Acquired in C and F Block Re-Auction # 35 in January 2001

Verizon Wireless	AT&T Wireless	Cingular Wireless	VoiceStream
7	3	0	0

NUMBER OF MARKETS IN WHICH LARGEST CARRIERS OWN
35 MHz OR MORE OF SPECTRUM
(TOP 10 MSA MARKETS)

Includes Spectrum Acquired in C and F Block Re-Auction # 35 in January 2001

Verizon Wireless	AT&T Wireless	Cingular Wireless	VoiceStream
8	4	6	1

Note: Based on data from the January 31, 2001 Merrill Lynch wireless spectrum report.

NUMBER OF MARKETS IN WHICH LARGEST CARRIERS OWN
45 MHz OF SPECTRUM
(TOP 50 MSA MARKETS)

Includes Spectrum Acquired in C and F Block Re-Auction # 35 in January 2001

Verizon Wireless	AT&T Wireless	Cingular Wireless	VoiceStream
10	9	0	0

NUMBER OF MARKETS IN WHICH LARGEST CARRIERS OWN
35 MHz OR MORE OF SPECTRUM
(TOP 50 MSA MARKETS)

Includes Spectrum Acquired in C and F Block Re-Auction # 35 in January 2001

Verizon Wireless	AT&T Wireless	Cingular Wireless	VoiceStream
34	30	12	6

Note: Based on data from the January 31, 2001 Merrill Lynch wireless spectrum report.

Merrill Lynch

In-depth Report

United States
Telecom Services-Wireless/Cellular

31 January 2001

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Wireless Spectrum

Re-Auction Wrap-up

Reason for Report: Industry Update

Industry

Investment Highlights:

- **After 101 rounds, on Friday, January 26th, the 1900 MHz C and F Block re-auction closed. Total gross high bids were $17.6 billion versus our pre-auction estimate of $18.5 billion. Total net high bids (including bidding credits) were $16.9 billion, corresponding to about $4.18 per MHz-POP.**
- **Looking at the national carriers (including 100% of their bidding partners) the results after the final round were (on a net high bid basis) as follows:**
  1) **Verizon Wireless: $8.8 billion for 150.7 million POPs ($58.28 per POP).**
  2) **AT&T Wireless: $2.9 billion for 64.7 million POPs ($44.70 per POP).**
  3) **Cingular Wireless: $2.3 billion for 71.9 million POPs ($32.66 per POP).**
  4) **VoiceStream: $989 million for 29.0 million POPs ($34.12 per POP).**
  5) **Sprint PCS: $282 million for 8.3 million POPs ($33.81 per POP).**
- **What's the bottom line?**
- **One, the overall proceeds were in line with our expectations.**
- **Two, the national carriers listed above (accounting for 91% of the net auction proceeds) were the biggest "winners" in the re-auction.**
- **Three, different national carriers appeared to have pursued somewhat different strategies. Some (like AT&T Wireless, Verizon Wireless and to a lesser degree Sprint PCS) added primarily depth to their current spectrum positions, while others (like Cingular and VoiceStream) added new markets, thereby filling in holes in their current footprints.**
- **Four, the impact of the auction on the valuation of AWE and PCS remains the same as what we estimated a few weeks ago, when we revised our AWE price objective to $35 and our PCS price objective to $55.**
- **In our initial report on September 25, 2000, we looked at the US national operators' wireless spectrum in terms of what they had (and how much) and what their holes were. In this report, we'll update that analysis.**
- **In the top 50 MSA markets, we calculate that the market-weighted MHz has increased as follows: Verizon Wireless 37.8 MHz (up from 29.0), AT&T Wireless 36.5 MHz (up from 32.9), Sprint PCS 26.9 MHz (up from 26.5), VoiceStream 25.4 MHz (up from 23.9) and Cingular Wireless 24.4 MHz (up from 20.8). Nextel management reports an average of 19 MHz (following recently announced acquisitions) in the 800 MHz and 900 MHz SMR bands across all MSA markets. Including the 700 MHz Guard Band, this total rises to approximately 23 MHz.**
- **We continue to recommend AT&T Wireless (AWE, C-1-1-9, $27.00), Sprint PCS (PCS, D-1-1-9, $32.10) and Nextel (NXTL, D-1-1-9, $36.75).**

Merrill Lynch & Co.
Global Securities Research & Economics Group
Global Fundamental Equity Research Department

#10188

RC#60203120

Overview

On January 26th, the 1900 MHz C and F Block re-auction closed. Total gross high bids were $17.6 billion versus our pre-auction estimate of $18.5 billion. Total net high bids (including bidding credits) were $16.9 billion.

The net high bids correspond to $4.18 per MHz-POP—which compares to the average UK and German auction proceeds of about $4.08 per MHz-POP. Frankly, we're not surprised that the MHz-POP calculation yields a higher value than the average of the UK and German auctions. Why? We think that the US auction was somewhat unique given the scarcity of available frequency in the US, the ability of carriers to target frequency in the markets they wanted (as opposed to on a nationwide basis), as well as the competitive dynamic given six existing national competitors.

In Table 1, we summarize the overall auction results for the national carriers and selected other bidders. In the Appendix, we present the national carriers, the licenses they won, and the prices they paid.

Table 1: Final—Results for National Carriers, Bidding Partners & Others

Bidder Name	Total High Bids	Net High Bids	POPs	$/POP
AT&T Wireless Bidding Partner (39.9%)	44	$2,893,144,250	64,718,725	$44.70
Cingular Wireless Bidding Partner (85%)	79	$2,348,774,750	71,921,921	$32.66
Sprint Bidding Partner (80%)	5	$281,944,000	8,339,270	$33.81
Verizon Wireless	113	$8,781,393,000	150,682,267	$58.28
VoiceStream	19	$482,653,000	11,304,761	$42.69
VoiceStream Bidding Partner (49.9%)	22	$506,376,000	17,685,514	$28.63
VoiceStream Total	41	$989,029,000	28,990,275	$34.12
Total National Carriers		**$15,294,285,000**		
% of Re-Auction		**91%**		
Selected Other Bidders				
Dobson Communications	14	$546,074,000	17,709,151	$30.84
Triton PCS Bidding Partner (38.9%)	14	$170,340,150	6,141,572	$27.74
US Cellular Bidding Partner (85%)	17	$283,885,000	10,185,736	$27.87
Total National Carriers & Selected Bidders		**$16,294,584,150**		
% of Re-Auction		**97%**		

Source: Merrill Lynch research estimates and FCC data.

(1) Bidding Partners: AT&T Wireless bidding partner is Alaska Native Wireless—AT&T holds 39.9% of all member interests and not more than 79.4% on a fully diluted basis. In addition, AT&T Wireless has an agreement with DCC PCS, a subsidiary of Dobson Communications. Cingular Wireless bidding partner is Salmon PCS. Sprint PCS bidding partner is SVC BidCo. VoiceStream bidding partner is Cook Inlet. Cook Inlet initially contributes 50.1% of the equity, subject to its right to call additional capital from VoiceStream up to the point at which the equity investment in is diluted to 15%. Triton PCS bidding partner is Lafayette Communications. US Cellular bidding partner is Black Crow Wireless.

The National Operators

In Table 2, we've updated, compiled and sorted license ownership summary data for the six national operators.

Since our report on September 25th, several spectrum transactions have closed, including the following:

- On October 2, 2000, AT&T announced that it completed the acquisition of the San Diego (from Verizon Wireless) and Indianapolis (from SBC) markets.
- On October 3, 2000, ALLTEL completed its purchase of the New Orleans and Baton Rouge markets (from SBC).
- In December 2000, BellSouth elected to exercise its option to redeem AT&T's interest in AB Cellular. Upon the closing of this transaction on December 29th, the Los Angeles cellular market was distributed to AT&T, while Bell South assumed full ownership of the venture, including Houston and 87% of Galveston.
- On December 13, 2000, the FCC approved the transfer of control of Cook Inlet's licenses to VoiceStream.
- On December 29, 2000, AT&T Wireless announced that it completed the acquisition of the Houston market (from Verizon Wireless, formerly PrimeCo PCS).

In addition, it's important to note that our estimates are pro forma for several previously announced transactions, which have been disclosed but not yet closed. These include the following:

- The VoiceStream/Powertel acquisition.
- The Cingular/VoiceStream license swaps. On November 2, 2000, Cingular and VoiceStream announced that they would swap spectrum in several markets. The exchange calls for Cingular to receive 10 MHz of spectrum in the New York MTA, the St. Louis BTA, and the Detroit BTA from VoiceStream. In addition, VoiceStream will receive 10 MHz of spectrum in the Los Angeles and San Francisco MTA's. The exchange involves approximately 35 million POPs for each company.
- Verizon Wireless's purchase of 20 PCS licenses, with more than 11.4 million POPs from ALLTEL. The transaction includes 10 MHz licenses in Atlanta and Kansas City. This transaction was announced on November 9, 2000.
- Cook Inlet's filing for transfer of DCR PCS's (i.e., Pocket's) licenses in New Orleans, Las Vegas and Omaha.

In the table, we have not included the swap announced on November 3, 2000, of properties between AT&T Wireless and Sprint PCS. The two companies have agreed to exchange certain 10 MHz blocks of PCS spectrum. The licenses being exchanged cover approximately 18.5 million POPs for each carrier. However, the companies have not yet disclosed which properties at this time. We would expect to see such an announcement at some point in the future, now that the 1900 MHz re-auction has been completed.

As a result of the above, we have attempted to update our estimates of cellular and PCS license holdings and spectrum ownership (in MHz) on a per POP basis.

For comparison purposes, we've calibrated all carriers' data to a total US population of 281.4 million—from the US Census 2000 results. This may result in numbers being slightly different from what investors have seen before. We have taken this approach in order to try to put all of the carriers on the same population basis.

In addition, we have included in our calculations the results of the 1900 MHz re-auction. Note that historically, the re-auction POPs have reflected 1990 population information. We have also attempted to calibrate these into 2000 POP estimates.

Table 2: License Ownership Summary Estimates—Pro Forma and Including Re-auction High Bids

MHz	Nextel (3)	Sprint PCS (4)	AT&T Wireless (2)	VSTR/PTEL (6)	Cingular (5)	Verizon Wireless (7)
30+ MHz	-	204,717,386	241,872,744	137,369,588	95,731,062	202,069,100
25 MHz	-	-	4,181,528	2,946,832	57,064,059	42,099,729
20 MHz	-	24,819,327	5,615,456	75,010,369	33,494,611	551,552
15 MHz	281,421,906	-	802,982	10,119,750	4,651,993	423,473
10 MHz	-	51,885,193	21,517,857	42,911,868	63,341,151	7,978,010
Total	281,421,906	281,421,906	273,990,566	268,358,406	254,282,876	253,121,865
Not Owned	-	-	7,431,340	13,063,500	27,139,030	28,300,041
US Population (1)	281,421,906	281,421,906	281,421,906	281,421,906	281,421,906	281,421,906
% Owned	100%	100%	97%	95%	90%	90%

Source: Merrill Lynch research estimates, and FCC and company data.

(1) Calibrated to the US Census 2000 population of 281,421,906.

(2) AT&T Wireless with partnerships and affiliates. Does not include Sprint PCS swap.

(3) Nextel with Nextel Partners. Nextel management reports an average of 19 MHz (following recently announced acquisitions) in the 800 MHz and 900 MHz SMR bands across all MSA markets. Including the 700 MHz Guard Band, this total rises to approximately 23 MHz.

(4) Sprint PCS with affiliates. Does not include AWE swap.

(5) Excludes an estimated SBC/BLS overlap of approximately 20 million POPs.

(6) VoiceStream estimates are pro forma for the Powertel acquisition, Cingular swap and Pocket transfers. Cook Inlet licenses transferred 12/13/00. Excludes an estimated VSTR/PTEL overlap of approximately 6.2 million POPs.

(7) Pro forma for Alltel PCS licenses acquisition and Price Communications acquisition.

The AT&T Wireless numbers reflect both partnerships and affiliates but exclude Dobson—and the licenses won by Dobson in the re-auction. However, this could change depending on the nature of any subsequent agreement between Dobson and AT&T Wireless. At this point, we've also excluded the re-auction licenses won by Triton PCS's bidding partner, Lafayette Communications.

The Nextel numbers include Nextel Partners. The Sprint PCS numbers include the Sprint PCS affiliates. The Verizon Wireless numbers reflect Verizon Wireless consolidated ownership only and do not include the POPs covered under its roaming agreement with ALLTEL.

In essence, this is an attempt to show what each "national" carrier currently has in terms of license ownership. We estimate that the national carriers own licenses for the following percentage of the total 2000 US population: Nextel (with Nextel Partners) 100%, Sprint PCS (with affiliates) 100%, AT&T Wireless (with partnerships and affiliates) 97%, VoiceStream (pro forma for the Powertel acquisition) 95%, Cingular Wireless 90% and Verizon Wireless 90%.

Note that for Nextel and AT&T Wireless to fully own all of the related licenses, they would, in our view, have to buy in their respective partnerships and affiliates (or at least the remaining ownership portions) at some associated price. With regard to Sprint PCS, recall that it has retained ownership of the spectrum used by its affiliates.

In Table 3, we present the license ownership information on a percentage basis to show the MHz associated with the population ownership above. Again, our estimates include partnerships and affiliates and are pro forma for the announced transactions and the re-auction results.

Table 3: Current—License Ownership Breadth & Depth (% of Total POPs)

MHz	Nextel	Sprint PCS	AT&T Wireless	VoiceStream	Cingular Wireless	Verizon Wireless
30+ MHz	0%	73%	86%	49%	34%	72%
25 MHz	0%	0%	1%	1%	20%	15%
20 MHz	0%	9%	2%	27%	12%	0%
15 MHz	100%	0%	0%	4%	2%	0%
10 MHz	0%	18%	8%	15%	23%	3%
Owned	**100%**	**100%**	**97%**	**95%**	**90%**	**90%**
Not Owned	**0%**	**0%**	**3%**	**5%**	**10%**	**10%**

Source: Merrill Lynch research estimates, and FCC and company data.

■ How has the breadth and depth changed?

In Table 4, we present the comparable table from our September 25th report.

Table 4: Previous-License Ownership Breadth & Depth (% of Total POPs)

MHz	Nextel	Sprint PCS	AT&T Wireless	VoiceStream	Cingular Wireless	Verizon Wireless
30+ MHz	0%	73%	80%	46%	27%	37%
25 MHz	0%	0%	3%	1%	33%	48%
20 MHz	0%	6%	3%	14%	0%	0%
15 MHz	100%	0%	0%	3%	0%	0%
10 MHz	0%	22%	11%	21%	7%	1%
Owned	**100%**	**100%**	**97%**	**87%**	**68%**	**86%**
Not Owned	**0%**	**0%**	**3%**	**13%**	**32%**	**14%**

Source: Merrill Lynch research estimates and company data.
For AT&T Wireless as of 9/25/00, license ownership percentages for 20 MHz and 25 MHz are revised from our initial estimate of 6% and 0%, respectively, to 3% and 3%, respectively.

So, what has changed? As you can see by comparing the two tables, some companies have significantly changed their mix of properties. Let's walk through each.

Nextel dropped out of the re-auction in its early stages. Therefore, there are no auction related differences—although the company continues to accumulate spectrum in the 800 and 900 MHz bands. For example, Nextel recently entered into an agreement to purchase some SMR frequencies from Arch Wireless.

Sprint PCS, through its bidding partner SVC BidCo, added 10 MHz of spectrum in five markets in which it previously had only 10 MHz of spectrum. These markets include: Dayton, Cincinnati, Orlando, Tampa and Norfolk. Once again, we have not included the AT&T Wireless and Sprint PCS spectrum swaps that were announced in November 2000, as the companies have not yet disclosed what properties are being exchanged.

In our view, AT&T Wireless' strategy in the re-auction (through its bidding partner, Alaska Native Wireless) was primarily to add 10 MHz of spectrum to its existing holdings in selected markets, including New York, Los Angeles, Cleveland, Minneapolis, Tampa, Denver, Cincinnati, Portland, Charlotte and Columbus.

In addition, we estimate that AT&T Wireless extended its footprint (through Alaska Native Wireless) in a few areas, including markets in Wyoming, Montana, North Dakota and Alaska—however, these markets on an aggregate POP basis are not large enough to impact the overall percentage figures.

We think the VoiceStream strategy, through its recently announced transactions as well as the re-auction, included filling in holes in its footprint as well as increasing its spectrum ownership in markets where it formerly held 10 MHz. In all, we estimate that VoiceStream (with its bidding partner) increased its licensed POPs

by over 10 million during the re-auction (based on our estimate of 2000 POPs), filling in holes in areas such as North Carolina, South Carolina and Virginia. In addition, VoiceStream and its bidding partner added 10 MHz of spectrum in several top 50 markets, including Indianapolis, Baltimore, San Diego, Cleveland and Milwaukee— in which it had previously owned only 10 MHz.

Cingular Wireless also increased its licensed POP ownership significantly through both the swap with VoiceStream and the re-auction. The swap with VoiceStream provides Cingular with 10 MHz in the New York MTA. Through its bidding partner, Salmon PCS, we estimate that Cingular expanded its footprint by acquiring 10 MHz (and in some cases 15 or 20 MHz) in areas corresponding to over 28 million 2000 POPs. In addition, Cingular Wireless, through its bidding partner added 10 MHz of spectrum in several top 50 markets, including Atlanta, Houston, Washington, DC, Boston, Dallas, and Los Angeles.

Verizon Wireless increased its spectrum position in several markets in the re-auction, including Boston, Philadelphia, San Francisco, Chicago, Los Angeles and New York. Looking at a comparison of the two tables, pro-forma for the re-auction, Verizon has 30+ MHz in over 72% of the country's POPs (according to our 2000 POP estimates)— up from 37% prior to the re-auction.

The Top 50 MSA Markets

■ An Update: What Do They Own Now?

In this section, we've updated our analysis of the top 50 MSA markets as defined primarily by the 1990 Census. We estimate that these markets constitute nearly 50% of the total US POPs, and we think that they are important to the carriers due to their size, demographics and economics.

In Table 5, we've updated the ownership data for cellular and PCS licenses for AT&T Wireless, Sprint PCS, Cingular Wireless, Verizon Wireless, and VoiceStream. In Table 6, we present the comparable data from our September 25th report. By looking at the two tables together, it is possible to see where carriers have added both capacity and coverage in these top markets.

We think that it is interesting to look at how the overall MHz owned in these top 50 markets has changed. As you can see, AT&T Wireless now has 1,735 total MHz in these markets (up from 1,600), Sprint PCS has 1,320 MHz (up from 1,280), Cingular has 1,200 MHz (up from 1,060), Verizon has 1,705 MHz (up from 1,375) and VoiceStream has 1,270 MHz (up from 1,155).

We have excluded Nextel from this analysis.

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Table 5: Total MHz of Licenses Owned in the Top 50 MSA Markets (Current, Pro Forma Estimates)

Market #	Market Name	ST	AWE MHz (2)	PCS MHz	Cingular MHz	Verizon MHz	VSTR MHz (3)
1	New York (4)	NY	45	30	10	45	30
2	Los Angeles (4)	CA	45	30	30	45	20
3	Chicago	IL	30	20	25	45	30
4	Philadelphia	PA	30	30	35	45	15
5	Detroit (4)	MI	30	30	35	25	40
6	Boston	MA	30	30	35	45	20
7	San Francisco (4)	CA	35	30	20	35	20
8	Washington	DC	30	30	35	45	20
9	Dallas	TX	45	30	35	30	30
10	Houston	TX	30	10	35	45	30
11	St. Louis (4)	MO	30	30	35	35	40
12	Miami	FL	35	30	25	30	20
13	Pittsburgh	PA	35	30	10	35	30
14	Baltimore	MD	30	30	35	45	20
15	Minneapolis	MN	45	30	10	35	30
16	Cleveland	OH	40	10	30	35	20
17	Atlanta (5)	GA	30	10	35	35	30
18	San Diego (4)	CA	35	30	20	45	20
19	Denver	CO	45	30	10	35	30
20	Seattle	WA	35	30	20	45	30
21	Milwaukee	WI	40	30	25	30	20
22	Tampa	FL	35	20	20	30	30
23	San Juan	PR	45	10	25	25	10
24	Cincinnati	OH	40	20	25	35	10
25	Kansas City (5)	KS	10	30	25	35	30
26	Buffalo	NY	30	30	25	35	30
27	Phoenix	AZ	30	30	-	25	20
28	San Jose (4)	CA	35	30	20	35	20
29	Indianapolis	IN	30	30	35	35	20
30	New Orleans	LA	45	30	25	30	15
31	Portland	OR	45	30	20	35	30
32	Columbus	OH	40	20	25	35	30
33	Hartford	CT	20	30	25	25	30
34	San Antonio	TX	35	30	25	30	30
35	Rochester	NY	40	30	25	25	40
36	Sacramento (4)	CA	35	30	20	35	10
37	Memphis	TN	40	10	25	25	30
38	Louisville	KY	40	30	35	35	20
39	Providence	RI	30	30	35	35	20
40	Salt Lake City	UT	35	30	-	35	30
41	Dayton	OH	40	20	25	35	10
42	Birmingham	AL	35	30	25	25	40
43	Bridgeport	CT	30	30	25	35	30
44	Norfolk	VA	30	20	10	35	20
45	Albany	NY	10	30	25	35	40
46	Oklahoma City	OK	35	30	25	10	40
47	Nashville	TN	45	30	25	25	30
48	Greensboro	NC	40	10	30	35	10
49	Toledo	OH	30	30	-	25	20
50	New Haven	CT	30	30	25	35	30
Total			**1,735**	**1,320**	**1,200**	**1,705**	**1,270**

Source: Merrill Lynch research estimates, and FCC and company data.

(1) Analysis does not assign proportionate ownership unless otherwise noted. Assigns 100% of the MHz to majority owner.

(2) AWE ownership is with partners and affiliates

(3) VSTR ownership is pro forma for the PTEL acquisition and Pocket transfers.

(4) Pro forma for Cingular/Voicestream transaction.

(5) Pro forma for the Verizon/Alltel transaction.

(6) Does not include AWE/PCS swap announced on 11/3/00.

Table 6: Total MHz of Licenses Owned in Top 50 MSA Markets (Previous Estimates, 9/25/00)

Market #	Market Name	ST	AWE MHz (2)	PCS MHz	Cingular MHz	Verizon MHz	VSTR MHz (6)
1	New York	NY	35	30	-	25	40
2	Los Angeles (3)	CA	35	30	30	35	10
3	Chicago (9)	IL	30	20	25	35	30
4	Philadelphia	PA	30	30	35	35	15
5	Detroit	MI	30	30	25	25	50
6	Boston	MA	30	30	25	25	20
7	San Francisco	CA	35	30	30	25	10
8	Washington	DC	30	30	25	35	20
9	Dallas	TX	45	30	25	30	30
10	Houston (3) (4)	TX	30	10	25	35	30
11	St. Louis	MO	30	30	25	25	50
12	Miami	FL	35	30	25	30	20
13	Pittsburgh	PA	35	30	-	25	30
14	Baltimore	MD	30	30	25	45	10
15	Minneapolis	MN	35	30	-	25	30
16	Cleveland	OH	30	10	30	25	10
17	Atlanta	GA	30	10	25	25	30
18	San Diego (4)	CA	35	30	30	35	-
19	Denver	CO	35	30	-	25	30
20	Seattle (5)	WA	35	30	20	25	20
21	Milwaukee	WI	40	30	25	30	10
22	Tampa	FL	35	10	10	30	30
23	San Juan	PR	45	10	25	25	10
24	Cincinnati (9)	OH	30	10	25	35	10
25	Kansas City	KS	10	30	25	25	30
26	Buffalo	NY	30	30	25	35	30
27	Phoenix	AZ	30	30	-	25	20
28	San Jose	CA	35	30	30	25	10
29	Indianapolis (7)	IN	30	30	35	25	10
30	New Orleans (8)	LA	30	30	25	30	-
31	Portland	OR	35	30	-	25	30
32	Columbus	OH	30	20	25	25	30
33	Hartford	CT	20	30	25	25	30
34	San Antonio	TX	35	30	25	30	20
35	Rochester	NY	40	30	25	25	40
36	Sacramento	CA	35	30	30	25	-
37	Memphis	TN	30	10	25	25	30
38	Louisville	KY	40	30	25	25	20
39	Providence	RI	30	30	25	25	20
40	Salt Lake City	UT	35	30	-	25	30
41	Dayton (9)	OH	30	10	25	35	10
42	Birmingham	AL	25	30	25	25	40
43	Bridgeport	CT	20	30	25	25	30
44	Norfolk	VA	30	10	-	35	20
45	Albany	NY	10	30	25	25	40
46	Oklahoma City	OK	35	30	25	-	40
47	Nashville	TN	45	30	25	25	30
48	Greensboro	NC	30	10	30	25	-
49	Toledo	OH	30	30	-	25	20
50	New Haven	CT	20	30	25	25	30
Total			**1,600**	**1,280**	**1,060**	**1,375**	**1,155**

Source: Merrill Lynch research estimates and company data.

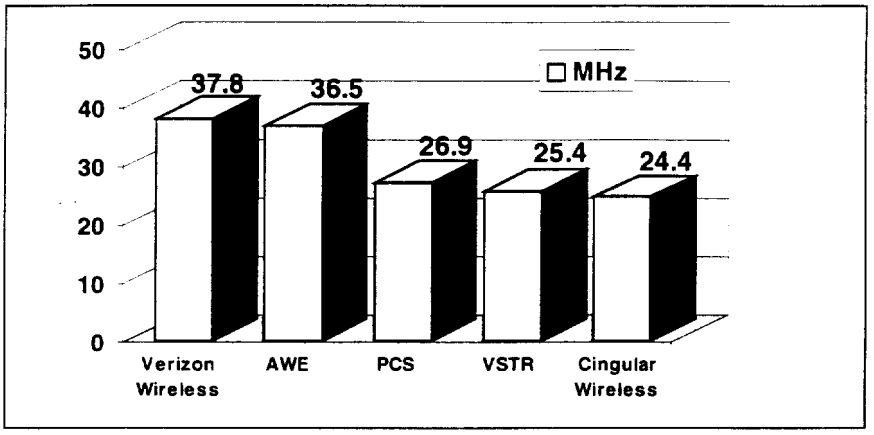
(1) Analysis does not assign proportionate ownership unless otherwise noted. Assigns 100% of the MHz to majority owner.
(2) AWE ownership is with partners and affiliates.
(3) For AB Cellular: assign LA ownership to AWE, Houston ownership to BLS.
(4) Pro forma for AWE/Verizon transaction.
(5) Pro forma for SBC/Verizon transaction. Per Public Notice, for Seattle, 10 MHz was disaggregated and license transfer was 20 MHz.
(6) VSTR ownership is with Cook Inlet joint venture and pro forma for the PTEL acquisition.
(7) Pro forma for AWE/SBC transaction.
(8) Pro forma for SBC/AT transaction.
(9) Verizon properties placed in trust, pending sale.

■ How Much Do They Own?

From Table 5, we can determine the market-weighted depth of spectrum ownership (in MHz) in the top 50 markets for each of the carriers. We calculate this as follows: for each market we multiply the MHz owned times the total market POPs, sum all MHz-Market POPs, and divide by total market POPs. The result is the market-weighted MHz owned in the top 50 markets.

Using this methodology, we currently estimate the following: Verizon Wireless 37.8 MHz, AT&T Wireless 36.5 MHz, Sprint PCS 26.9 MHz, VoiceStream 25.4 MHz and Cingular Wireless 24.4 MHz. We estimate that this methodology would yield a market-weighted MHz estimate for Nextel of approximately 19 MHz (including the 800 and 900 MHz bands, but excluding the 700 MHz Guard Bands).

Chart 1: Market-Weighted MHz by Carrier in the Top 50 MSA Markets

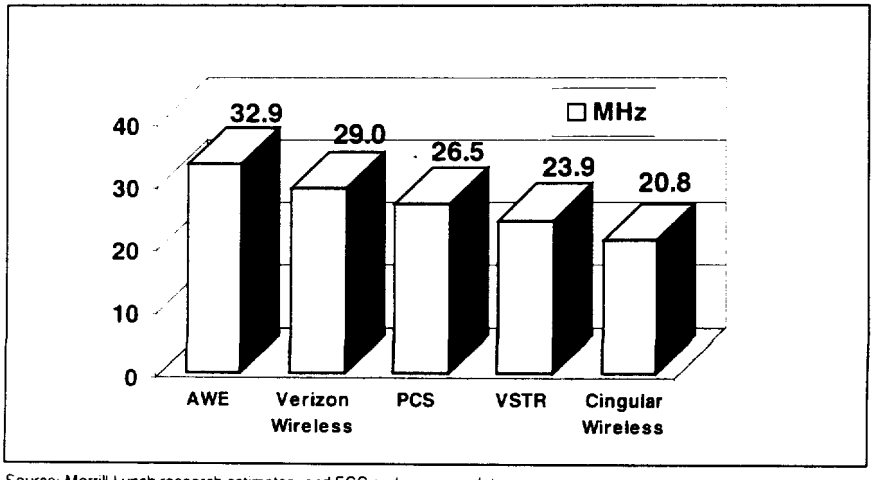


Source: Merrill Lynch research estimates, and FCC and company data.

How does this compare to our previous estimates?

You can see from our estimates published on September 25, 2000, that several carriers have increased their weighted average MHz through a combination of transactions as well as the re-auction.

Chart 2: Previous Estimates—Market-Weighted MHz by Carrier in the Top 50 MSAs



Source: Merrill Lynch research estimates, and FCC and company data.

■ What About the Holes?

Next, we can update what the major holes are by company.

In our initial report, we estimated that AT&T Wireless (with partnerships and affiliates) and Sprint PCS had at least 10 MHz in all of the top 50 MSA markets.

What about now?

We estimate that in the top 50 MSA markets, Verizon Wireless now owns licenses in all 50. In the re-auction, Verizon Wireless was the high bidder on a 10 MHz license for Oklahoma City—the only market in the top 50 where it didn't previously own spectrum.

We estimate that VoiceStream, pro forma for Powertel and the announced transactions, now has licenses in all of the top 50 MSA markets. The Cingular swap adds San Diego and Sacramento, the Pocket transfer adds New Orleans, and Cook Inlet was the high bidder on a 10 MHz license in Greensboro.

As previously mentioned, as part of the Cingular/VoiceStream swap announced in November 2000, Cingular Wireless gets 10 MHz of spectrum in the New York MTA. In the re-auction, Salmon PCS (Cingular Wireless' bidding partner) was the high bidder in several of the top 50 MSA markets for which it previously had no ownership. These include: Pittsburgh, Minneapolis, Denver, Portland and Norfolk. The high bids were for 20 MHz in Portland and for 10 MHz in the other markets. Therefore, we estimate that Cingular Wireless will own licenses in 47 of the top 50 MSA markets—with the remaining holes being Phoenix, Salt Lake City and Toledo.

■ How Much Did it Cost?

As we have mentioned before, total net high bids (including bidding credits) were $16.9 billion, corresponding to about $4.18 per MHz-POP. In Table 7, we list the top 15 markets (and 33 licenses) by population and the high bids in terms of dollars per MHz-POP. These population numbers are the 1990 POPs used by the FCC during the re-auction process.

In our initial report dated September 25th, we applied a simple pricing methodology to the re-auction licenses. This analysis yielded an estimate of approximately $18.5 billion on a gross high bid basis.

Recall that we applied a three-tiered pricing scheme—$6 per MHz-POP for the largest markets (which we defined as having greater than or equal to 2.5 million 1990 POPs), $4 per MHz-POP for the medium markets (which we defined as having greater than or equal to 750,000 but less than 2.5 million 1990 POPs), and $2 per MHz-POP for the smaller markets (or markets with fewer than 750,000 1990 POPs).

In Table 7, we show the net bids for the largest markets, which we have defined as having at least 2.5 million POPs. We estimate that total bids for these licenses equate to approximately $6.28 per MHz-POP on a gross high bid basis and $6.04 per MHz-POP on a net high bid basis (less applicable bidding credits)—compared to our $6 gross estimate. We think it is interesting to note that the net high bids ranged from approximately $2.47 per MHz-POP for one Houston 10 MHz license to $11.40 per MHz-POP for one New York 10 MHz license.

Obviously, the New York high bids increased the re-auction average. In fact, as shown in Table 8, we estimate that without the three New York licenses the total re-auction net high bids corresponded to approximately $3.23 per MHz-POP.

In Table 9, we list the top 30 licenses by net bid per MHz-POP. Once again, we think it is interesting to note that several relatively small markets (in terms of POPs) generated relatively high bids.

Table 7: Large Market Licenses by Population

Market Name	1990 Population	High Bidder	Net High Bid	$/MHz-POP
New York, NY	18,050,615	Verizon Wireless	$2,057,010,000	$11.40
New York, NY	18,050,615	Verizon Wireless	$2,038,316,000	$11.29
New York, NY	18,050,615	AT&T Wireless Bidding Partner	$1,484,327,000	$8.22
Los Angeles, CA	14,549,810	Verizon Wireless	$513,532,000	$3.53
Los Angeles, CA	14,549,810	AT&T Wireless Bidding Partner	$435,205,000	$2.99
Los Angeles, CA	14,549,810	Cingular Wireless Bidding Partner	$409,263,000	$2.81
Chicago, IL	8,182,076	Verizon Wireless	$494,612,000	$6.05
San Francisco, CA	6,420,984	Verizon Wireless	$398,785,000	$6.21
Philadelphia, PA	5,899,345	Verizon Wireless	$277,251,000	$4.70
Dallas, TX	4,329,924	Cingular Wireless Bidding Partner	$213,900,000	$4.94
Boston, MA	4,133,895	Verizon Wireless	$212,080,000	$5.13
Boston, MA	4,133,895	Verizon Wireless	$191,599,000	$4.63
Boston, MA	4,133,895	Cingular Wireless Bidding Partner	$125,092,000	$3.03
Washington, DC	4,118,628	Verizon Wireless	$216,743,000	$5.26
Washington, DC	4,118,628	Dobson Communications	$172,184,000	$4.18
Washington, DC	4,118,628	Cingular Wireless Bidding Partner	$163,145,250	$3.96
Houston, TX	4,054,253	Verizon Wireless	$139,139,000	$3.43
Houston, TX	4,054,253	Cingular Wireless Bidding Partner	$104,409,000	$2.58
Houston, TX	4,054,253	Leap Wireless	$100,263,000	$2.47
Atlanta, GA	3,197,171	Cingular Wireless Bidding Partner	$321,983,250	$10.07
Cleveland, OH	2,894,133	VoiceStream	$87,715,000	$3.03
Cleveland, OH	2,894,133	Verizon Wireless	$79,818,000	$2.76
Cleveland, OH	2,894,133	AT&T Wireless Bidding Partner	$72,736,000	$2.51
Minneapolis, MN	2,840,561	Verizon Wireless	$165,099,000	$5.81
Minneapolis, MN	2,840,561	AT&T Wireless Bidding Partner	$134,747,000	$4.74
Minneapolis, MN	2,840,561	Cingular Wireless Bidding Partner	$124,477,500	$4.38
St Louis, MO	2,742,114	Verizon Wireless	$103,783,000	$3.78
Seattle, WA	2,708,949	Verizon Wireless	$149,531,000	$5.52
Seattle, WA	2,708,949	Verizon Wireless	$132,806,000	$4.90
Seattle, WA	2,708,949	VoiceStream Bidding Partner	$102,531,000	$3.78
Pittsburgh, PA	2,507,839	Verizon Wireless	$112,774,000	$4.50
Pittsburgh, PA	2,507,839	Dobson Communications.	$97,848,000	$3.90
Pittsburgh, PA	2,507,839	Cingular Wireless Bidding Partner	$85,667,250	$3.42
Total	**198,347,663**		**$11,518,371,250**	**$6.04**

(1) Source: Merrill Lynch research estimates and FCC data.
Large markets are defined as having greater than or equal to 2.5 million 1990 POPs.

Table 8: Re-Auction Analysis—Less New York Licenses

	Net High Bids	MHz-POPs	$/MHz-POP
Total Re-auction	$16,857,046,150	4,028,621,345	**$4.18**
New York Licenses	$5,579,653,000	541,518,450	**$10.30**
Re-Auction Less NY	$11,277,393,150	3,487,102,895	**$3.23**

Source: Merril Lynch research estimates and FCC data.

Table 9: Top 30 Licenses by Net Bid per MHz-POP

Market Name	1990 Population	High Bidder	Net High Bid	$/MHz-POP
New York, NY	18,050,615	Verizon Wireless	$2,057,010,000	$11.40
New York, NY	18,050,615	Verizon Wireless	$2,038,316,000	$11.29
Salt Lake City, UT	1,308,035	Verizon Wireless	$138,324,000	$10.57
Myrtle Beach, SC	144,053	Verizon Wireless	$15,041,000	$10.44
Atlanta, GA	3,197,171	Cingular Wireless Bidding Partner	$321,983,250	$10.07
Sacramento, CA	1,656,581	Verizon Wireless	$157,449,000	$9.50
Tulsa, OK	836,559	AT&T Wireless Bidding Partner	$74,003,250	$8.85
Charlottesville, VA	190,128	Cingular Wireless Bidding Partner	$16,800,750	$8.84
Honolulu, HI	836,231	AT&T Wireless Bidding Partner	$70,352,250	$8.41
New York, NY	18,050,615	AT&T Wireless Bidding Partner	$1,484,327,000	$8.22
Medford, OR	209,038	Cingular Wireless Bidding Partner	$16,703,250	$7.99
Florence, SC	239,208	Verizon Wireless	$17,627,000	$7.37
Greenville, SC	788,212	VoiceStream	$57,854,000	$7.34
Charlotte, NC	1,671,037	Verizon Wireless	$120,510,000	$7.21
Roseburg, OR	94,649	Cingular Wireless Bidding Partner	$6,583,500	$6.96
Raleigh, NC	1,089,423	Verizon Wireless	$72,705,000	$6.67
San Francisco, CA	6,420,984	Verizon Wireless	$398,785,000	$6.21
Columbia, SC	568,754	VoiceStream	$34,991,000	$6.15
Milwaukee, WI	1,751,525	VoiceStream	$107,614,000	$6.14
Boise, ID	416,503	Cingular Wireless Bidding Partner	$25,239,750	$6.06
Chicago, IL	8,182,076	Verizon Wireless	$494,612,000	$6.05
Minneapolis, MN	2,840,561	Verizon Wireless	$165,099,000	$5.81
Charleston, SC	624,369	VoiceStream	$36,018,000	$5.77
Raleigh, NC	1,089,423	VoiceStream Bidding Partner	$61,397,000	$5.64
Norfolk, VA	1,635,296	Sprint Bidding Partner	$90,719,000	$5.55
Seattle, WA	2,708,949	Verizon Wireless	$149,531,000	$5.52
Norfolk, VA	1,635,296	Cingular Wireless Bidding Partner	$88,069,000	$5.39
Washington, DC	4,118,628	Verizon Wireless	$216,743,000	$5.26
Las Vegas, NV	857,856	Verizon Wireless	$44,923,000	$5.24
Raleigh, NC	1,089,423	AT&T Wireless Bidding Partner	$56,902,000	$5.22
Total	**100,351,813**		**$8,636,232,000**	**$8.61**

Source: Merril Lynch research estimates and FCC data.

Appendix

Table A-1: AT&T Wireless Bidding Partner— Licenses with High Bids

BTA	License Size (MHz)	Market Name	1990 Population	Net High Bids	$/MHz-POP
BTA321	10	New York, NY	18,050,615	$1,484,327,000	$8.22
BTA262	10	Los Angeles, CA	14,549,810	$435,205,000	$2.99
BTA298	10	Minneapolis, MN	2,840,561	$134,747,000	$4.74
BTA448	10	Tulsa, OK	836,559	$74,003,250	$8.85
BTA074	10	Charlotte, NC	1,671,037	$73,402,000	$4.39
BTA440	10	Tampa, FL	2,249,405	$73,042,000	$3.25
BTA084	10	Cleveland, OH	2,894,133	$72,736,000	$2.51
BTA192	10	Honolulu, HI	836,231	$70,352,250	$8.41
BTA110	10	Denver, CO	2,073,952	$64,298,000	$3.10
BTA358	10	Portland, OR	1,690,930	$62,764,000	$3.71
BTA368	10	Raleigh, NC	1,089,423	$56,902,000	$5.22
BTA081	10	Cincinnati, OH	1,990,451	$56,201,000	$2.82
BTA174	10	Greensboro, NC	1,241,349	$40,647,000	$3.27
BTA336	10	Orlando, FL	1,256,429	$33,911,000	$2.70
BTA425	10	Spokane, WA	612,862	$25,596,000	$4.18
BTA106	10	Dayton, OH	1,207,689	$24,206,250	$2.00
BTA212	10	Jacksonville, FL	1,114,847	$23,880,000	$2.14
BTA095	10	Columbus, OH	1,477,891	$19,706,000	$1.33
BTA318	10	New Haven, CT	978,311	$11,261,000	$1.15
BTA408	10	Sarasota, FL	513,348	$7,915,000	$1.54
BTA408	10	Sarasota, FL	513,348	$7,746,000	$1.51
BTA357	10	Portland, ME	471,614	$4,802,000	$1.02
BTA241	10	Lansing, MI	489,698	$4,678,000	$0.96
BTA063	15	Burlington, VT	369,128	$4,629,000	$0.84
BTA480	10	Worcester, MA	709,705	$4,383,000	$0.62
BTA289	10	Melbourne, FL	398,978	$3,729,000	$0.93
BTA159	10	Gainesville, FL	260,538	$3,611,000	$1.39
BTA239	10	Lakeland, FL	405,382	$2,975,000	$0.73
BTA077	10	Cheyenne, WY	103,939	$2,780,250	$2.67
BTA331	10	Olympia, WA	258,937	$1,512,000	$0.58
BTA319	10	New London, CT	357,482	$1,367,000	$0.38
BTA224	10	Kalispell, MT	59,218	$1,197,000	$2.02
BTA341	10	Paris, TX	89,422	$727,500	$0.81
BTA036	10	Bellingham, WA	127,780	$657,000	$0.51
BTA045	10	Bismarck, ND	123,682	$644,250	$0.52
BTA220	10	Joplin, MO	215,095	$481,000	$0.22
BTA188	10	Helena, MT	58,752	$419,250	$0.71
BTA136	10	Fairbanks, AK	92,111	$347,250	$0.38
BTA299	10	Minot, ND	122,687	$321,000	$0.26
BTA261	10	Longview, WA	85,446	$289,000	$0.34
BTA004	10	Ada, OK	52,677	$276,750	$0.53
BTA064	10	Butte, MT	65,252	$214,500	$0.33
BTA221	10	Juneau, AK	68,989	$213,000	$0.31
BTA259	10	Logan, WV	43,032	$42,750	$0.10
Total			**64,718,725**	**$2,893,144,250**	**$4.46**

Source: Merril Lynch research estimates and FCC data.

Table A-2: Cingular Wireless Bidding Partner— Licenses with High Bids

BTA	License Size (MHz)	Market Name	1990 Population	Net High Bids	$/MHz-POP
BTA262	10	Los Angeles, CA	14,549,810	$409,263,000	$2.81
BTA024	10	Atlanta, GA	3,197,171	$321,983,250	$10.07
BTA101	10	Dallas, TX	4,329,924	$213,900,000	$4.94
BTA461	10	Washington, DC	4,118,628	$163,145,250	$3.96
BTA051	10	Boston, MA	4,133,895	$125,092,000	$3.03
BTA298	10	Minneapolis, MN	2,840,561	$124,477,500	$4.38
BTA196	10	Houston, TX	4,054,253	$104,409,000	$2.58
BTA324	10	Norfolk, VA	1,635,296	$88,069,000	$5.39
BTA350	10	Pittsburgh, PA	2,507,839	$85,667,250	$3.42
BTA110	10	Denver, CO	2,073,952	$67,921,000	$3.27
BTA358	10	Portland, OR	1,690,930	$65,428,000	$3.87
BTA358	10	Portland, OR	1,690,930	$63,352,500	$3.75
BTA440	10	Tampa, FL	2,249,405	$63,027,750	$2.80
BTA374	10	Richmond, VA	1,090,869	$40,161,000	$3.68
BTA374	10	Richmond, VA	1,090,869	$37,602,750	$3.45
BTA029	10	Baltimore, MD	2,430,563	$35,287,500	$1.45
BTA336	10	Orlando, FL	1,256,429	$31,436,250	$2.50
BTA008	15	Albuquerque, NM	688,612	$31,063,000	$3.01
BTA050	10	Boise, ID	416,503	$25,239,750	$6.06
BTA447	15	Tucson, AZ	666,880	$24,649,000	$2.46
BTA364	10	Providence, RI	1,509,789	$19,755,000	$1.31
BTA263	10	Louisville, KY	1,352,955	$17,064,000	$1.26
BTA075	10	Charlottesville, VA	190,128	$16,800,750	$8.84
BTA288	10	Medford, OR	209,038	$16,703,250	$7.99
BTA128	10	El Paso, TX	649,860	$15,859,000	$2.44
BTA365	10	Provo, UT	269,407	$11,213,250	$4.16
BTA376	10	Roanoke, VA	609,215	$10,183,000	$1.67
BTA424	15	South Bend, IN	330,821	$6,622,000	$1.33
BTA385	10	Roseburg, OR	94,649	$6,583,500	$6.96
BTA183	10	Harrisonburg, VA	128,910	$6,038,250	$4.68
BTA428	10	Springfield, MO	532,880	$5,587,000	$1.05
BTA117	15	Du Bois, PA	124,180	$5,522,250	$2.96
BTA274	10	Manchester, NH	540,704	$5,419,000	$1.00
BTA126	10	Elkhart, IN	235,152	$5,166,750	$2.20
BTA256	15	Lincoln, NE	309,515	$4,739,000	$1.02
BTA241	10	Lansing, MI	489,698	$4,668,000	$0.95
BTA225	10	Kankakee, IL	127,042	$4,632,750	$3.65
BTA357	10	Portland, ME	471,614	$4,564,000	$0.97
BTA030	15	Bangor, ME	316,838	$3,736,000	$0.79
BTA412	10	Scranton, PA	678,410	$3,364,000	$0.50
BTA203	15	Indiana, PA	89,994	$3,363,750	$2.49
BTA328	15	Oil City, PA	105,882	$3,285,000	$2.07
BTA390	10	Saginaw, MI	615,364	$3,069,000	$0.50
BTA407	15	Santa Fe, NM	174,526	$3,062,000	$1.17
BTA239	10	Lakeland, FL	405,382	$2,712,000	$0.67
BTA251	15	Lewiston, ME	221,697	$2,616,000	$0.79
BTA077	10	Cheyenne, WY	103,939	$2,589,000	$2.49
BTA317	15	New Castle, PA	96,246	$2,488,500	$1.72
BTA172	10	Greeley, CO	131,821	$2,074,500	$1.57
BTA430	10	Staunton, VA	100,322	$1,878,000	$1.87
BTA465	15	Waterville, ME	165,671	$1,875,000	$0.75
BTA244	10	Las Cruces, NM	197,166	$1,853,000	$0.94
BTA325	15	North Platte, NE	80,249	$1,670,000	$1.39
BTA294	10	Michigan City, IN	107,066	$1,664,250	$1.55
BTA179	10	Hagerstown, MD	327,693	$1,649,000	$0.50
BTA139	15	Farmington, NM	162,776	$1,556,000	$0.64
BTA284	10	Martinsville, VA	90,577	$1,542,750	$1.70

Table A-2: Cingular Bidding Partner— Licenses with High Bids (Cont.)

BTA	License Size (MHz)	Market Name	1990 Population	Net High Bids	$/MHz-POP
BTA215	10	Jamestown, NY	186,945	$1,537,500	$0.82
BTA330	10	Olean, NY	239,343	$1,428,750	$0.60
BTA162	15	Gallup, NM	122,277	$1,421,000	$0.77
BTA167	15	Grand Island, NE	141,541	$1,215,000	$0.57
BTA103	15	Danville, IL	114,241	$937,000	$0.55
BTA012	15	Altoona, PA	222,625	$925,000	$0.28
BTA227	10	Keene, NH	111,709	$915,750	$0.82
BTA341	10	Paris, TX	89,422	$839,250	$0.94
BTA067	10	Carbondale, IL	209,497	$619,500	$0.30
BTA218	10	Johnstown, PA	241,247	$515,250	$0.21
BTA185	10	Hastings, NE	72,833	$495,000	$0.68
BTA398	10	Salisbury, MD	163,043	$478,500	$0.29
BTA265	10	Lufkin, TX	144,081	$475,500	$0.33
BTA270	15	McCook, NE	36,618	$464,000	$0.84
BTA130	10	Enid, OK	85,998	$380,250	$0.44
BTA431	10	Steubenville, OH	142,523	$358,500	$0.25
BTA307	10	Mt Pleasant, MI	118,558	$309,000	$0.26
BTA085	10	Cleveland, TN	87,355	$297,750	$0.34
BTA261	10	Longview, WA	85,446	$270,750	$0.32
BTA281	10	Marion, OH	92,023	$251,250	$0.27
BTA363	10	Presque Isle, ME	86,936	$164,250	$0.19
BTA470	10	West Plains, MO	67,165	$132,750	$0.20
Total			**71,921,921**	**$2,348,774,750**	**$3.17**

Source: Merril Lynch research estimates and FCC data.

Table A-3: Sprint Bidding Partner— Licenses with High Bids

BTA	License Size (MHz)	Market Name	1990 Population	Net High Bids	$/MHz-POP
BTA324	10	Norfolk, VA	1,635,296	$90,719,000	$5.55
BTA440	10	Tampa, FL	2,249,405	$74,628,000	$3.32
BTA081	10	Cincinnati, OH	1,990,451	$57,427,000	$2.89
BTA336	10	Orlando, FL	1,256,429	$34,530,000	$2.75
BTA106	10	Dayton, OH	1,207,689	$24,640,000	$2.04
Total			**8,339,270**	**$281,944,000**	**$3.38**

Source: Merril Lynch research estimates and FCC data.

Table A-4: Verizon Wireless— Licenses with High Bids

BTA	License Size (MHz)	Market Name	1990 Population	Net High Bids	$/MHz-POP
BTA321	10	New York, NY	18,050,615	$2,057,010,000	$11.40
BTA321	10	New York, NY	18,050,615	$2,038,316,000	$11.29
BTA262	10	Los Angeles, CA	14,549,810	$513,532,000	$3.53
BTA078	10	Chicago, IL	8,182,076	$494,612,000	$6.05
BTA404	10	San Francisco, CA	6,420,984	$398,785,000	$6.21
BTA346	10	Philadelphia, PA	5,899,345	$277,251,000	$4.70
BTA461	10	Washington, DC	4,118,628	$216,743,000	$5.26
BTA051	10	Boston, MA	4,133,895	$212,080,000	$5.13
BTA051	10	Boston, MA	4,133,895	$191,599,000	$4.63
BTA298	10	Minneapolis, MN	2,840,561	$165,099,000	$5.81
BTA389	10	Sacramento, CA	1,656,581	$157,449,000	$9.50
BTA413	10	Seattle, WA	2,708,949	$149,531,000	$5.52
BTA196	10	Houston, TX	4,054,253	$139,139,000	$3.43
BTA399	10	Salt Lake City, UT	1,308,035	$138,324,000	$10.57
BTA413	10	Seattle, WA	2,708,949	$132,806,000	$4.90
BTA074	10	Charlotte, NC	1,671,037	$120,510,000	$7.21
BTA402	10	San Diego, CA	2,498,016	$119,015,000	$4.76
BTA350	10	Pittsburgh, PA	2,507,839	$112,774,000	$4.50
BTA394	10	St Louis, MO	2,742,114	$103,783,000	$3.78
BTA358	10	Portland, OR	1,690,930	$81,395,000	$4.81
BTA110	10	Denver, CO	2,073,952	$80,537,000	$3.88
BTA084	10	Cleveland, OH	2,894,133	$79,818,000	$2.76
BTA368	10	Raleigh, NC	1,089,423	$72,705,000	$6.67
BTA329	10	Oklahoma City, OK	1,305,472	$58,849,000	$4.51
BTA174	10	Greensboro, NC	1,241,349	$57,871,000	$4.66
BTA245	10	Las Vegas, NV	857,856	$44,923,000	$5.24
BTA204	10	Indianapolis, IN	1,321,911	$38,640,000	$2.92
BTA027	10	Austin, TX	899,361	$34,081,000	$3.79
BTA364	10	Providence, RI	1,509,789	$33,443,000	$2.22
BTA263	10	Louisville, KY	1,352,955	$25,878,000	$1.91
BTA095	10	Columbus, OH	1,477,891	$25,239,000	$1.71
BTA007	10	Albany, NY	1,028,615	$23,573,000	$2.29
BTA141	10	Fayetteville, NC	571,328	$23,375,000	$4.09
BTA128	10	El Paso, TX	649,860	$21,261,000	$3.27
BTA181	10	Harrisburg, PA	654,808	$18,147,000	$2.77
BTA147	10	Florence, SC	239,208	$17,627,000	$7.37
BTA318	10	New Haven, CT	978,311	$15,325,000	$1.57
BTA312	10	Myrtle Beach, SC	144,053	$15,041,000	$10.44
BTA376	10	Roanoke, VA	609,215	$14,442,000	$2.37
BTA408	10	Sarasota, FL	513,348	$10,949,000	$2.13
BTA055	15	Bremerton, WA	189,731	$10,108,000	$3.55
BTA240	10	Lancaster, PA	422,822	$9,999,000	$2.36
BTA241	10	Lansing, MI	489,698	$9,468,000	$1.93
BTA107	10	Daytona Beach, FL	399,413	$9,316,000	$2.33
BTA252	10	Lexington, KY	816,101	$9,062,000	$1.11
BTA268	10	McAllen, TX	424,063	$8,737,000	$2.06
BTA370	10	Reading, PA	336,523	$8,241,000	$2.45
BTA010	10	Allentown, PA	686,688	$7,811,000	$1.14
BTA483	10	York, PA	417,848	$7,743,000	$1.85
BTA127	15	Elmira, NY	315,038	$7,638,000	$1.62
BTA020	10	Asheville, NC	510,055	$7,535,000	$1.48
BTA063	15	Burlington, VT	369,128	$7,367,000	$1.33
BTA043	15	Binghamton, NY	356,645	$7,284,000	$1.36
BTA274	10	Manchester, NH	540,704	$7,266,000	$1.34
BTA357	10	Portland, ME	471,614	$7,250,000	$1.54
BTA025	10	Atlantic City, NJ	319,416	$6,793,000	$2.13
BTA478	10	Wilmington, NC	249,711	$6,128,000	$2.45

Table A-4: Verizon Wireless— Licenses with High Bids (Cont.)

BTA	License Size (MHz)	Market Name	1990 Population	Net High Bids	$/MHz-POP
BTA390	10	Saginaw, MI	615,364	$5,292,000	$0.86
BTA480	10	Worcester, MA	709,705	$5,231,000	$0.74
BTA289	10	Melbourne, FL	398,978	$5,190,000	$1.30
BTA056	10	Brownsville, TX	277,825	$5,111,000	$1.84
BTA361	10	Poughkeepsie, NY	424,766	$5,093,000	$1.20
BTA441	10	Temple, TX	291,768	$5,011,000	$1.72
BTA412	10	Scranton, PA	678,410	$4,806,000	$0.71
BTA189	10	Hickory, NC	292,409	$4,444,000	$1.52
BTA239	10	Lakeland, FL	405,382	$3,954,000	$0.98
BTA356	15	Port Angeles, WA	76,610	$3,660,000	$3.18
BTA077	10	Cheyenne, WY	103,939	$3,585,000	$3.45
BTA251	15	Lewiston, ME	221,697	$3,558,000	$1.07
BTA452	10	Tyler, TX	269,762	$3,299,000	$1.22
BTA156	10	Fredericksburg, VA	124,654	$2,954,000	$2.37
BTA295	15	Middlesboro, KY	121,217	$2,912,000	$1.60
BTA319	10	New London, CT	357,482	$2,753,000	$0.77
BTA172	10	Greeley, CO	131,821	$2,702,000	$2.05
BTA244	10	Las Cruces, NM	197,166	$2,444,000	$1.24
BTA179	10	Hagerstown, MD	327,693	$2,427,000	$0.74
BTA135	10	Evansville, IN	504,859	$2,187,000	$0.43
BTA331	10	Olympia, WA	258,937	$2,181,000	$0.84
BTA215	10	Jamestown, NY	186,945	$2,084,000	$1.11
BTA316	10	New Bern, NC	154,955	$1,903,000	$1.23
BTA333	15	Oneonta, NY	107,742	$1,721,000	$1.06
BTA047	10	Bloomington, IN	217,914	$1,696,000	$0.78
BTA330	10	Olean, NY	239,343	$1,594,000	$0.67
BTA388	15	Rutland, VT	97,987	$1,585,000	$1.08
BTA116	10	Dover, DE	251,257	$1,482,000	$0.59
BTA235	10	Lafayette, IN	247,523	$1,379,000	$0.56
BTA176	10	Greenville, NC	218,937	$1,357,000	$0.62
BTA059	10	Bryan, TX	150,998	$1,246,000	$0.83
BTA382	10	Rocky Mount, NC	199,296	$1,205,000	$0.60
BTA227	10	Keene, NH	111,709	$1,193,000	$1.07
BTA214	10	Jacksonville, NC	149,838	$1,149,000	$0.77
BTA176	10	Greenville, NC	218,937	$1,088,000	$0.50
BTA165	10	Goldsboro, NC	217,319	$1,047,000	$0.48
BTA435	15	Stroudsburg, PA	95,709	$1,044,000	$0.73
BTA382	10	Rocky Mount, NC	199,296	$1,039,000	$0.52
BTA036	10	Bellingham, WA	127,780	$898,000	$0.70
BTA218	10	Johnstown, PA	241,247	$826,000	$0.34
BTA307	10	Mt Pleasant, MI	118,558	$778,000	$0.66
BTA416	15	Sharon, PA	121,003	$723,000	$0.40
BTA339	10	Paducah, KY	217,082	$700,000	$0.32
BTA265	10	Lufkin, TX	144,081	$630,000	$0.44
BTA093	10	Columbus, IN	139,128	$617,000	$0.44
BTA398	10	Salisbury, MD	163,043	$600,000	$0.37
BTA130	10	Enid, OK	85,998	$556,000	$0.65
BTA431	10	Steubenville, OH	142,523	$441,000	$0.31
BTA004	10	Ada, OK	52,677	$410,000	$0.78
BTA261	10	Longview, WA	85,446	$397,000	$0.46
BTA281	10	Marion, OH	92,023	$391,000	$0.42
BTA062	10	Burlington, NC	108,213	$386,000	$0.36
BTA377	10	Roanoke Rapids, NC	76,314	$341,000	$0.45
BTA377	10	Roanoke Rapids, NC	76,314	$329,000	$0.43
BTA359	10	Portsmouth, OH	93,356	$274,000	$0.29
BTA287	15	Meadville, PA	86,169	$267,000	$0.21
Total			**150,682,267**	**$8,781,393,000**	**$5.79**

Source: Merril Lynch research estimates and FCC data.

Table A-5: VoiceStream & Bidding Partner— Licenses with High Bids

BTA	License Size (MHz)	Market Name	1990 Population	Net High Bids	$/MHz-POP
VoiceStream					
BTA297	10	Milwaukee, WI	1,751,525	$107,614,000	$6.14
BTA084	10	Cleveland, OH	2,894,133	$87,715,000	$3.03
BTA401	10	San Antonio, TX	1,530,954	$58,795,000	$3.84
BTA177	10	Greenville, SC	788,212	$57,854,000	$7.34
BTA374	10	Richmond, VA	1,090,869	$53,305,000	$4.89
BTA072	10	Charleston, SC	624,369	$36,018,000	$5.77
BTA091	10	Columbia, SC	568,754	$34,991,000	$6.15
BTA376	10	Roanoke, VA	609,215	$14,981,000	$2.46
BTA099	10	Corpus Christi, TX	499,988	$13,229,000	$2.65
BTA216	10	Janesville, WI	214,510	$4,646,000	$2.17
BTA436	10	Sumter, SC	149,524	$4,475,000	$2.99
BTA335	10	Orangeburg, SC	114,458	$3,090,000	$2.70
BTA224	10	Kalispell, MT	59,218	$1,675,000	$2.83
BTA224	10	Kalispell, MT	59,218	$1,616,000	$2.73
BTA341	10	Paris, TX	89,422	$1,219,000	$1.36
BTA188	10	Helena, MT	58,752	$815,000	$1.39
BTA064	10	Butte, MT	65,252	$308,000	$0.47
BTA359	10	Portsmouth, OH	93,356	$250,000	$0.27
BTA259	10	Logan, WV	43,032	$57,000	$0.13
Subtotal			**11,304,761**	**$482,653,000**	**$4.27**
VoiceStream Bidding Partner					
BTA413	10	Seattle, WA	2,708,949	$102,531,000	$3.78
BTA074	10	Charlotte, NC	1,671,037	$82,189,000	$4.92
BTA402	10	San Diego, CA	2,498,016	$80,151,000	$3.21
BTA368	10	Raleigh, NC	1,089,423	$61,397,000	$5.64
BTA174	10	Greensboro, NC	1,241,349	$41,315,000	$3.33
BTA029	10	Baltimore, MD	2,430,563	$37,653,000	$1.55
BTA204	10	Indianapolis, IN	1,321,911	$26,574,000	$2.01
BTA027	10	Austin, TX	899,361	$21,649,000	$2.41
BTA141	10	Fayetteville, NC	571,328	$20,932,000	$3.66
BTA020	10	Asheville, NC	510,055	$6,457,000	$1.27
BTA189	10	Hickory, NC	292,409	$6,043,000	$2.07
BTA441	10	Temple, TX	291,768	$5,672,000	$1.94
BTA478	10	Wilmington, NC	249,711	$3,986,000	$1.60
BTA390	10	Saginaw, MI	615,364	$3,309,000	$0.54
BTA331	10	Olympia, WA	258,937	$1,527,000	$0.59
BTA176	10	Greenville, NC	218,937	$997,000	$0.46
BTA214	10	Jacksonville, NC	149,838	$989,000	$0.66
BTA316	10	New Bern, NC	154,955	$912,000	$0.59
BTA382	10	Rocky Mount, NC	199,296	$850,000	$0.43
BTA036	10	Bellingham, WA	127,780	$687,000	$0.54
BTA062	10	Burlington, NC	108,213	$306,000	$0.28
BTA377	10	Roanoke Rapids, NC	76,314	$250,000	$0.33
Subtotal			**17,685,514**	**$506,376,000**	**$2.86**
Combined			**28,990,275**	**$989,029,000**	**$3.41**

Source: Merrill Lynch research estimates and FCC data.

[V2] MLPF&S or one of its affiliates was a manager of the most recent offering of securities of this company within the last three years.

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