

## Conclusion

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- ◆ There is a win/win solution for competition and taxpayers.
- ◆ Rescheduling keeps government whole.
  - Ability to ensure taxpayer and competition
- ◆ Limitations of a Reauction

# Appendix 1: License Concentration

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## License Concentration of Cellular/PCS Licensees by POPs

Company	Type of Carrier	Total PCS POPs	Cellular POPs	Total POPs	Percent of Total	Cumulative Total	Total Wireline POPs		
							Wireline POPs	Percent of Total	Cumulative Total
AT&T	Wireline	258,539,720	104,790,396	363,330,116	19.96%	19.96%	363,330,116	19.96%	19.96%
Sprint	Wireline	279,542,834	-	279,542,834	15.36%	35.32%	279,542,834	15.36%	35.32%
PCS PrimeCo	Wireline	61,812,211	149,979,864	211,792,075	11.64%	46.96%	211,792,075	11.64%	46.96%
NextWave	Non-Wireline	163,011,126	-	163,011,126	8.96%	55.92%	-	0.00%	46.96%
Omnipoint	Non-Wireline	131,044,147	-	131,044,147	7.20%	63.12%	-	0.00%	46.96%
Western Wireless	Non-Wireline	80,073,531	6,511,543	86,585,074	4.76%	67.87%	-	0.00%	46.96%
BellSouth	Wireline	26,029,599	54,986,809	81,016,408	4.45%	72.33%	81,016,408	4.45%	51.41%
GTE	Wireline	2,091,774	77,435,326	79,527,100	4.37%	76.69%	79,527,100	4.37%	55.78%
Southwestern Bell	Wireline	9,185,124	55,397,316	64,582,440	3.55%	80.24%	64,582,440	3.55%	59.33%
ALL TEL	Wireline	11,480,371	25,088,303	36,568,674	3.11%	83.35%	36,568,674	3.11%	62.44%
TDS/Aerial	Wireline	25,847,991	25,279,239	51,127,229	2.81%	86.16%	51,127,229	2.81%	65.25%
Ameritech	Wireline	6,181,832	31,717,797	39,899,629	2.19%	88.35%	39,899,629	2.19%	67.44%
Pocket	Non-Wireline	35,114,380	-	35,114,380	1.93%	90.28%	-	0.00%	67.44%
PacTel	Wireline	33,854,632	-	33,854,632	1.86%	92.14%	33,854,632	1.86%	69.30%
InterCel	Non-Wireline	32,081,732	-	32,081,732	1.76%	93.91%	-	0.00%	69.30%
U S West	Wireline	22,182,428	-	22,182,428	1.22%	95.12%	22,182,428	1.22%	70.52%

The top 3 wireline companies own nearly half of the available POPs in the U.S.

And, more than 70% of the available POPs in the U.S. are controlled by 11 wireline companies.

Source: FCC data and Donaldson, Lufkin & Jenrette Report, The Wireless Communications Industry (Spring 1997).

# License Concentration of Cellular/PCS Licensees by Markets

Rank	Market Name	1996 POPs	Cellular Carriers		PCS Carriers					
			A	B	A	B	C	D	E	F
1	New York, NY	18,400,203	AT&T	BANM	OMPT	SPRINT	NextWave	OMPT	AT&T	Northcoast
2	Los Angeles, CA	15,679,293	LA Cellular	AirTouch	SPRINT	PACTEL	NextWave	AT&T	Gabelli	Gabelli
3	Chicago, IL	8,467,720	SBM	AMERITECH	AT&T	PRIMECO	Pocket	SPRINT	SPRINT	NextWave
4	San Francisco, CA	6,842,466	AT&T	GTE	SPRINT	PACTEL	GW	SPRINT	Western	NextWave
5	Philadelphia, PA	5,984,423	Comcast	BANM	AT&T	SPRINT	OMPT	Comcast	Gabelli	NextWave
6	Dallas, TX	4,828,566	AT&T	SBM	PRIMECO	SPRINT	Pocket	AT&T	AT&T	NextWave
7	Detroit, MI	4,785,173	AirTouch	AMERITECH	AT&T	SPRINT	Pocket	NextWave	OMPT	OMPT
8	Houston, TX	4,598,155	AT&T/BELLSOUTH	GTE	AERIAL	PRIMECO	NextWave	SPRINT	AT&T	Telecorp
9	Washington, DC	4,410,587	SBM	BANM	SPRINT	AT&T	NextWave	Gabelli	OMPT	Gabelli
10	Boston, MA	4,177,962	SBM	BANM	AT&T	SPRINT	NextWave	OMPT	OMPT	Northcoast
11	Atlanta, GA	3,763,994	AirTouch	BELLSOUTH	AT&T	Interce	GW	SPRINT	ALLTEL	NextWave
12	Miami, FL	3,577,306	AT&T	BELLSOUTH	SPRINT	PRIMECO	GW	AT&T	OMPT	OMPT
13	Minneapolis, MN	3,063,561	AT&T	AirTouch	SPRINT	AERIAL	NextWave	U S WEST	AT&T	Northcoast
14	Seattle, WA	3,055,225	AT&T	AirTouch	Western	SPRINT	NextWave	AT&T	Western	Western
15	Cleveland, OH	2,940,521	AirTouch	GTE	AMERITECH	AT&T	NextWave	SPRINT	Western	Northcoast
16	St Louis, MO	2,807,363	AMERITECH	SBM	AT&T	SPRINT	Pocket	OMPT	Western	NextWave
17	Phoenix, AZ	2,720,380	BANM	AirTouch	AT&T	SPRINT	REAUCTION	U S WEST	Western	Western
18	San Diego, CA	2,679,864	GTE	AirTouch	SPRINT	PACTEL	NextWave	AT&T	Gabelli	Central OR
19	Baltimore, MD	2,552,338	SBM	BANM	SPRINT	AT&T	NextWave	Gabelli	Gabelli	OMPT
20	Pittsburgh, PA	2,517,972	AT&T	BANM	SPRINT	AERIAL	NextWave	AT&T	Radiofone	Devon
21	Tampa, FL	2,394,524	AT&T	GTE	AERIAL	PRIMECO	NextWave	SPRINT	BELLSOUTH	Telecorp
22	Denver, CO	2,386,290	AT&T	AirTouch	SPRINT	Western	NextWave	AT&T	U S WEST	Radiofone
23	Cincinnati, OH	2,091,774	AirTouch	AMERITECH	AT&T	GTE	NextWave	SPRINT	CINCINNATI BELL	Western
24	Portland, OR	1,945,500	AT&T	AirTouch	Western	SPRINT	NextWave	AT&T	U S WEST	Magnacom
25	Kansas City, MO	1,930,633	AT&T/AirTouch	SBM	SPRINT	AERIAL	NextWave	ALLTEL	AT&T	DCC
26	Charlotte, NC	1,861,677	BANM	ALLTEL	AT&T	BELLSOUTH	NextWave	SPRINT	ALLTEL	AirGate
27	Sacramento, CA	1,832,812	AT&T	AirTouch	SPRINT	PACTEL	GW	AT&T	WEST COAST	NextWave
28	Milwaukee, WI	1,799,556	BELLSOUTH	AMERITECH	SPRINT	PRIMECO	Indus. Inc.	AT&T	Western	NextWave
29	Norfolk, VA	1,785,196	360 Comm.	GTE	AT&T	PRIMECO	NextWave	SPRINT	Western	OMPT
30	San Antonio, TX	1,728,049	AT&T	SBM	SPRINT	PRIMECO	NextWave	SPRINT	AT&T	OMPT
31	Nashville, TN	1,591,314	GTE	BELLSOUTH	SPRINT	AT&T	Chase	Western	interce	OMPT
32	Columbus, OH	1,574,030	AirTouch	AMERITECH	AT&T	Interce	NextWave	SPRINT	SPRINT	Northcoast
33	Providence, RI	1,505,903	SNET	BANM	AT&T	SPRINT	NextWave	ACC	Northcoast	OMPT
34	Salt Lake City, UT	1,497,885	AT&T	AirTouch	Western	SPRINT	PCS 2000	AT&T	U S WEST	NextWave
35	Memphis, TN	1,471,561	GTE	BELLSOUTH	Interce	SBM	Chase	SPRINT	ALLTEL	Telecorp
36	Orlando, FL	1,447,059	AT&T	BELLSOUTH	AERIAL	PRIMECO	NextWave	SPRINT	AT&T	Telecorp
37	Louisville, KY	1,428,320	GTE	BELLSOUTH	AT&T	SPRINT	NextWave	SPRINT	AT&T	Telecorp
38	Indianapolis, IN	1,420,258	BELLSOUTH	GTE	SPRINT	AMERITECH	NextWave	AT&T	Interce	Mercury PCS
39	New Orleans, LA	1,396,435	Radiofone	BELLSOUTH	SPRINT	PRIMECO	Pocket	AT&T	AT&T	21st Century
40	Oklahoma City, OK	1,368,004	AT&T	SBM	Western	SPRINT	NextWave	SPRINT	AT&T	Telecorp
41	Greensboro, NC	1,330,742	GTE	360 Comm.	AT&T	BELLSOUTH	NextWave	Trnad	AT&T	DCC
42	Birmingham, AL	1,270,221	GTE	BELLSOUTH	SPRINT	Interce	Mercury PCS	SPRINT	ALLTEL	AirGate
43	Raleigh, NC	1,261,166	GTE	360 Comm.	SPRINT	Interce	Urban	ALLTEL	AT&T	OMPT
44	Buffalo, NY	1,234,670	SBM	BANM	SPRINT	BELLSOUTH	OMPT	SPRINT	ALLTEL	ComScope
45	Dayton, OH	1,218,672	AMERITECH	AirTouch	AT&T	AT&T	OMPT	Gabelli	REAUCTION	Devon
46	Jacksonville, FL	1,208,139	AT&T	BELLSOUTH	Interce	PRIMECO	NextWave	SPRINT	Western	Devco
47	Richmond, VA	1,191,504	BELLSOUTH	GTE	AT&T	PRIMECO	NextWave	SPRINT	ALLTEL	Southern Wireless, L.P.
48	Rochester, NY	1,153,214	SBM	BANM	SPRINT	PRIMECO	NextWave	SPRINT	Western	Urban
49	Hartford, CT	1,121,164	BANM	SNET	OMPT	AT&T	OMPT	OMPT	AT&T	Northcoast
50	Albany, NY	1,057,180	SBM	BANM	OMPT	SPRINT	Gabelli	AT&T	AT&T	Northcoast
							NextWave	AT&T	ACC	Vtel

Wireline companies own 79% of the cellular licenses and 87% of the A-and B-block PCS licenses in the top 50 markets  
 In total, wireline companies own 57 percent of the cellular/PCS licenses in the top 50 markets

Source: FCC data and Donaldson, Lufkin & Jenrette Report, *The Wireless Communications Industry* (Spring 1997).

## Appendix 2: Analyst Reports

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SMITH BARNEY INC.  
FROM: BROUCE BARGR

THOMAS J. IRE

Comments on WSJ article on FCC changes to C-block payments; not a surprise

07/11/97 Mobile Communication Systems (U.S. ONLY) THOMAS J. IRE

---SUGGAR:---

- \* According to WSJ article today, the FCC is expected to announce changes for the C-block PCS licenses from quarterly to annual interest payments
- \* The change in our opinion is not a surprise given the FCC previously "indefinitely" delayed quarterly payments on the debts
- \* This does little to address the critical challenge facing C-block

holders - their high prices paid makes financing nearly impossible  
Net-net: the continued delays in C-block financing are a positive for both cellular and PCS: (1) it delays a new entrant and (2) any reduction/easing of terms will create a less desperate competitor and therefore maintain a more rational market. This particularly extends the lead enjoyed by existing PCS players such as Omnipoint (OMPT-25, target \$31), Western Wireless (WVCA-25, target \$29) and Aerial (AERL-35, target \$14)

07/11/97 Mobile Communication Systems (U.S. ONLY) THOMAS J. IRE

---OPINION:---

According to an article in the Wall Street Journal today, the FCC is expected to announce changes in interest installment payments for the C-block PCS (personal communications services) licenses from quarterly to annual interest payments.

\*\* The change in our opinion is not a surprise given the FCC previously "indefinitely" delayed quarterly payments on the debts.

\*\* A potential change to annual installments does little to address the critical challenge facing many C-block license holders - their disproportionately high prices paid (compared to previous auction winners) makes obtaining financing nearly impossible, and therefore delays their entrance into the wireless marketplace.

\*\* We believe any resolution to the debt outstanding will involve protected negotiations and probably ultimately result in one of two scenarios: (1) a revocation and reauction of the spectrum of defaulted C-block license owners or (2) an effective reduction of the present value of the debt owed to the FCC either through a reduction in principle value or extension/modification of payment terms.

Net-net: We reiterate that the continued delays in C-block financing are a positive for existing wireless carriers, both cellular and PCS, for two reasons: (1) it delays a new entrant in the marketplace and (2) any reduction/easing of financing terms will create a less desperate competitor and therefore more likely maintain a rational marketplace. In any case, it appears that the wireless marketplace in the next few years will be a less crowded space (4 players total) than originally envisioned twelve months ago. We would note the following three observations:

1. This extends the time to market lead enjoyed by existing new entrants (PCS, or personal communications services) players such as Omnipoint (OMPT-rated 25, target \$31), Western Wireless (WVCA-rated 25, target \$29) and Aerial Communications (AERL-rated 35, target \$14) and would be buyers of their stock.

2. Delays in the C-block also benefit the cellular incumbents including 360 Communications (360-rated 2M, target \$30), Airtouch (ATI-rated 3M, target \$28), Vanguard Cellular (VCCA-rated 3H, target \$14) as their existing market share will be subject to less intense competition (one less competitor). Still, we believe urban cellular carriers are subject to the "cellular straight-jacket" and therefore remain cautious on Airtouch (see our 1997 review dated May 15, 1997).

# WIRELESS WAVES

NATWEST SECURITIES

A weekly update of NATWEST's global Wireless Services & Wireless Equipment stocks

June 30, 1997

Jeffrey L. Sines (212) 602-5741

Volume 3, Issue 26

**MARKET RECAP:** With one trading day left, 2Q97 shows strong market (\$69500 + 14.7%) as telecom continues rearing back led by CLECs (+32.9%), Cable (+23.7%), & Equip. (+19.8%).

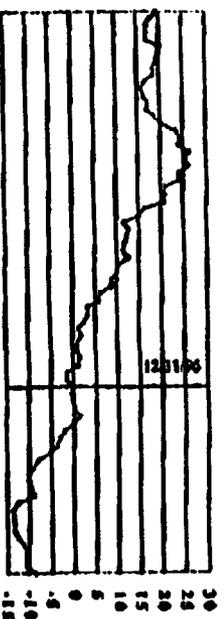
Telecom Index/Market	Close	Qtr Δ	Month Δ	1Yr	YTD
CLEC-Other (10)	111	32.9%	10.3%	8%	11%
Paging (9)	81	31.5%	3.9%	-6%	-19%
Other (2)	119	23.7%	18.7%	9%	19%
Equipment (21)	112	19.8%	8.3%	3%	12%
S&P 500	807	14.7%	4.6%	3%	20%
PCSOth (11)	100	14.6%	6.2%	-18%	0%
Other (7)	115	12.9%	5.1%	0%	19%
Wireless (4)	111	10.4%	2.2%	17%	11%
3-Year T-Total Yield	6.24%	-34bp	-17bp	-16bp	13bp

## FCC getting closer to clearing up C-Blocks?

Suggestors were that this week on what the FCC should do regarding the C-Block PCS licenses, since they still have sizable debts owed to the federal gov't. It should also be no surprise that the C-Block winners in questions offered up several suggestions, including lengthening the financing/payment schedules, reducing the interest rates, or taking permits on the dollar for what they originally bid. We find it disconcerting that the same bidders who bid up prices during the auction, and forced more "national" and perhaps "cable" bidders to drop out, are now asking the FCC to amend their payments. To the extent that the C-Block delays continue, it is a boon to incumbent operators, as the competitive bidders will not become as heated as quickly as their anticipated. Two basic scenarios seem likely: 1) the FCC accepts less money and/or amends the payment structure, or 2) the FCC demands payments under the "original" terms. In either case, it appears any significant C-Block competition is at least a year off. If the FCC amends the finance structure (scenario 1), bidders that dropped/were forced out will likely tie up the licenses in court. If the FCC plays hardball (scenario 2), deterring C-Blockers could tie the licenses up in Chapter 11 court, after which they will have to be auctioned (both could take considerable time). We note that the FCC has already "bank" on its rules, by delaying payments.

## Mexico & Nigeria: It Really Is A Wireless World

- The FCC issued a "proposal" to amend rules for the 800 MHz S&R auction - which should allow NICKTEL (NXTL-518 M-B) to bid for so called "tower" 800 channels, a new development.
- MOTOROLA (MOT-576 7/8-B) announced orders for nearly \$250 million of wireless infrastructure, including \$65M for a GSM network and \$20M for a TACS expansion both in China, and a \$12M order for an AMRS expansion in Brazil.
- NOKIA (NOKA-575-A), ERICSSON (ERIC-540H-B), and MOTOROLA, along with Unifed Planet, announced plans to co-develop an open protocol for wireless data, e.g. the very cellular/FCS hardware companies with customers for things like stock

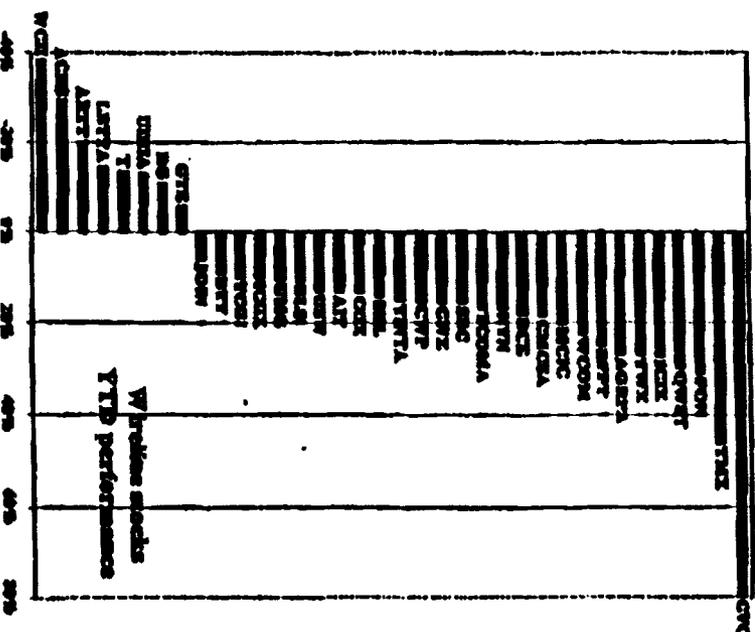


## Barometer: Telecom stock performance vs. S&P 500

quotes, e-mail, fax, Internet, info-services, etc. An open protocol could hasten the development of larger scale wireless data services.

- CELPAVIRE (CEAS-516 1/8-A) announced what could be the first of several paging infrastructure orders from CELPAGE of Puerto Rico and its associates throughout Latin America. The STM order for an alphanumeric system is expandable to regional / nationwide and upgrade-able to RATELEX for two-way.
- BELL CANADA (BCE-528 3/16-NF) is considering fixed wireless as part of its \$200M local network upgrade.
- WINSTAR (W/CU-513-NF) commenced commercial operation of its wireless local loop at 38 GHz in its 5<sup>th</sup> city, San Diego. Winstar also received 4 new licenses from the FCC, giving it a footprint in 47 of the top 50 cities in the US.

## Wireless Services Index: YTD performance



Jeffrey L. Sines, Telecommunications Analyst

Wireless: (212) 602-5741

Wireless: (917) 731-0030; Page (800) 207-6297

Christopher M. Lerman, Telecommunications Analyst

Wireless: (212) 602-5490

Wireless: (917) 731-0030; Fax: (212) 602-5444

**TELECOMMUNICATIONS SERVICES**

July 8, 1997 -- Initiation of Coverage

**RICHARD PRENTISS**

(813) 573-3800 x2567

**TOM STASZAK**

RESEARCH ASSOCIATE

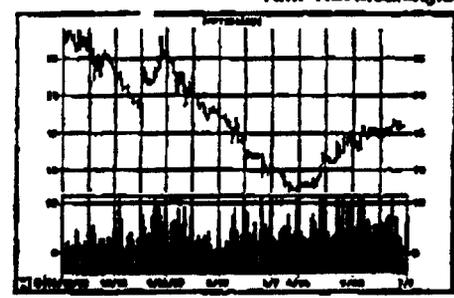
**RAYMOND JAMES**

1892250

**OMNIPOINT CORPORATION  
(OTC-OMPT) — RATING: BUY (1)**

**OMNIPOINT CORPORATION**  
 (OTC-OMPT) — RATING: BUY (1)  
 Based on detailed discounted cash flow analysis. NM: Not Meaningful

EPS (FY=Dec)	1996A(a)	1997E	1998E
Q1 (Mar)	\$(0.39)	\$(1.02)A	\$(1.82)
Q2 (Jun)	(0.47)	(1.35)	(1.95)
Q3 (Sep)	(0.55)	(1.64)	(1.95)
Q4 (Dec)	(1.21)	(2.49)	(2.72)
Full Year	\$(2.71)	\$(6.51)	\$(8.44)
Revenues (mil)	\$0.5	\$68.7	\$243.5
EBITDA (mil)	\$(84.8)	\$(184.6)	\$(149.5)



(a) Full-year EPS based on average shares for the full year. Graph © Automatic Data Processing, Inc., 1997.

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**RAYMOND JAMES**

- ◆ **WE ARE INITIATING COVERAGE OF OMNIPOINT WITH A BUY (1) RATING AS ITS INTERNATIONALLY ACCLAIMED SENIOR MANAGEMENT TEAM IMPROVES COVERAGE IN NEW YORK AND PREPARES TO LAUNCH SERVICE IN PHILADELPHIA.**
- ◆ **AS A PIONEER'S PREFERENCE WINNER AND SMALL BUSINESS, OMPT ACQUIRED ITS LICENSES AT A DISCOUNT OR WITH VERY FAVORABLE GOVERNMENT FINANCING. ITS LARGE, LUCRATIVE MARKETS HAVE HIGH POPULATION DENSITIES AND INCLUDE INTERNATIONAL CITIES THAT MAKE OMNIPOINT AN IDEAL PARTICIPANT IN THE CONTINUED CONSOLIDATION OF THE GLOBAL TELECOMMUNICATIONS INDUSTRY.**
- ◆ **THE FCC IS ACTIVELY CONSIDERING IMPROVING THE TERMS OF THE GOVERNMENT FINANCING. WE BELIEVE THAT REGARDLESS OF ITS FINAL DECISION, OUR MID-YEAR 1998 TARGET PRICE OF \$27 COULD IMPROVE BECAUSE OF BETTER FINANCING TERMS OR SLOWER TO MATERIALIZE COMPETITION.**
- ◆ **COMBINING THIS WITH THE POTENTIAL OF ITS TECHNOLOGY BUSINESS, "BASEBALL TRADING CARD" LICENSES AND CURRENT 71% UPSIDE TO OUR TARGET PRICE PROVIDES WHAT WE BELIEVE IS A COMPELLING REASON TO INVEST IN OMNIPOINT.**

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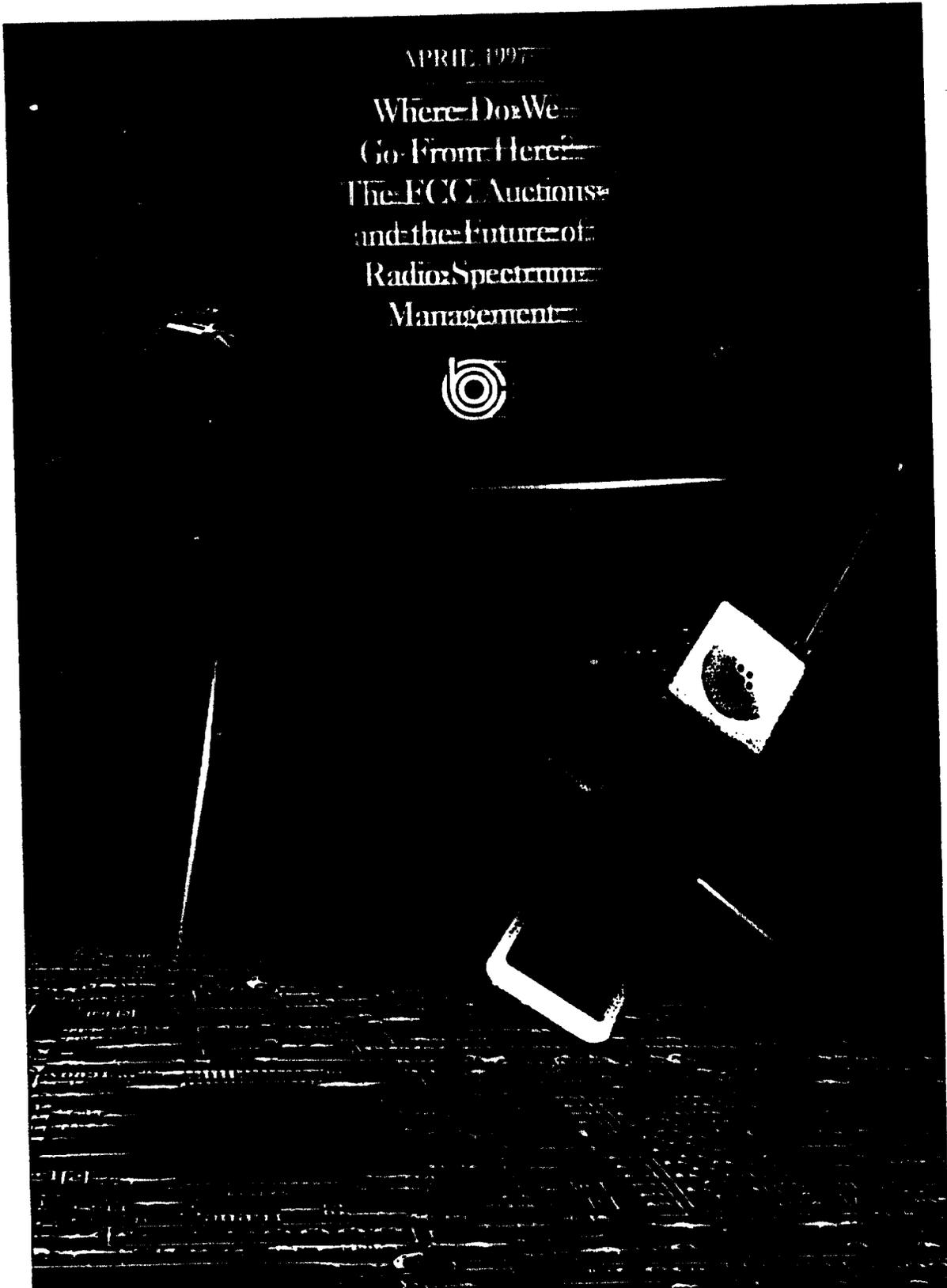
# Appendix 3: CBO Report Excerpt

CONGRESS OF THE UNITED STATES  
CONGRESSIONAL BUDGET OFFICE

A  
**CBO**  
**STUDY**

APRIL 1997

Where Do We  
Go From Here?  
The FCC Auctions  
and the Future of  
Radio Spectrum  
Management



APR 1997

per-megahertz price paid for the Chicago licenses was \$1.05—notably higher than the prices paid for the single competitively auctioned licenses in the New York and Los Angeles markets (\$0.56 and \$0.86, respectively). Prices could be expected to vary between markets on the basis of consumer demographics—income and time spent commuting in automobiles, for example—but differences as large as those evident in the A&B block auction are too great to be explained by such factors.

Additional questions about the efficiency of the distribution of licenses in the A&B block auction and the two other broadband sales that followed it are raised when the average prices for licenses are compared. The average per-person, per-megahertz price in the A&B block was about \$0.50. The C block auction registered a substantially higher price of about \$1.35, which drops to about \$0.80 after adjusting for the terms of the installment payments available to the small businesses that won C block licenses (see Box 1, which discusses the differences in prices paid for licenses in the A&B and C block auctions). In contrast, the average price in the D,E&F auction was about \$0.35, lower than that reported in either of the broadband PCS auctions that preceded it. Prices could be expected to vary among the auctions because the licenses sold granted the right to use different-sized blocks of spectrum that allowed the licensee to operate in different-sized geographic areas. Nevertheless, the ranking of average prices from high to low corresponds to the potential competition in each of the auctions as measured by the eligibility ratio. That ratio was 6.7 for the C block sale, compared with 1.9 for the A&B block sale and 1.7 for the D,E&F sale.

Why wasn't the A&B block auction more competitive? Fewer bidders entered that auction because the FCC restricted participation by the current holders of cellular licenses and permitted would-be competitors to join forces before the auction began. Both decisions should be evaluated as trade-offs between ensuring competition in wireless telecommunications markets and ensuring competition in the auctions for licenses to participate in those markets. Specifically, the commission chose to sacrifice the opportunity to maximize auction receipts to ensure an adequate number of technically capable and financially sound service providers and, ultimately, to sustain the competitive pricing and services that such providers would bring to telecommunications markets.

**Table 2.**  
Total Population in Markets for Personal Communications and Cellular Telephone Service Covered by the Three Largest Winners in the A&B Block Auction (in millions of people)

	Personal Communi- cations Services	Cellular Telephone Services	Total
AT&T	107.0	68.3 <sup>a</sup>	175
WirelessCo	144.9	28.4 <sup>b</sup>	173
PCS PrimeCo	57.2	110.4 <sup>c</sup>	167

SOURCE: Congressional Budget Office based on Peter Cramton, "The FCC Spectrum Auctions: An Early Assessment" (draft, University of Maryland, July 15, 1996), Table and Cellular Telephone Industry Association, *The Wireless Marketbook* (Spring 1996).

- Estimated as the difference between the total mobile telephone population as reported by the Cellular Telephone Industry Association and the total population in the personal communication services markets as reported by Cramton.
- Represents the cellular telephone markets of WirelessCo partners Comcast (7.6 million people) and Cox Communications (20.8 million people).
- Represents the cellular telephone markets of Bell Atlantic/NYNEX (57.7 million people) and AirTouch (55.2 million people) adjusted downward by 2.5 million people for overlapping licenses in Arizona markets.

The result of the A&B block auction that most strongly suggests an efficient distribution of license was the success of bidders in aggregating groups of licenses. Each of the three largest winning bidders—AT&T, WirelessCo, and PCS PrimeCo—won license that enable them to offer nationwide service.<sup>24</sup> The PCS licenses won by AT&T and PCS PrimeCo, when combined with the cellular telephone licenses that each bidder already owned, provide nearly complete national coverage. WirelessCo, the largest winner in the auction, had the smallest cellular coverage but won 29 PCS

24. WirelessCo is a combination of the long-distance telephone company Sprint and three large cable television companies (TCI, Comcast, and Cox Communications). After the A&B block auction, WirelessCo changed its name to SprintCom. PCS PrimeCo is a combination of three regional Bell operating companies (NYNEX, Bell Atlantic, and USWest) plus AirTouch (a spin-off of another former Bell company, PacTel), which provides cellular telephone service in PacTel's operating area.

# Appendix 4: Powertel, Inc. Form S-4

SECURITIES AND EXCHANGE COMMISSION  
WASHINGTON, D.C. 20549

FORM S-4  
REGISTRATION STATEMENT  
UNDER  
THE SECURITIES ACT OF 1933

POWERTEL, INC.  
(Exact Name of Registrant as Specified in its Charter)

<TABLE>  
<CAPTION>

<S>	<C>	<C>
Delaware	4812	58-1944750
(State or Other Jurisdiction of Incorporation or Organization)	(Primary Standard Industrial Classification Code Number)	(I.R.S. Employer Identification Number)

</TABLE>

1233 O.G. Skinner Drive, West Point, Georgia 31833  
(706) 645-2000  
(Address, Including Zip Code, and Telephone Number, Including  
Area Code, of Registrant's Principal Executive Offices)

Allen E. Smith  
President and Chief Executive Officer  
Powertel, Inc.  
1233 O.G. Skinner Drive  
West Point, Georgia 31833  
(706) 645-2000  
(706) 645-9523 (Fax)  
(Name, Address, Including Zip Code, and Telephone Number, Including Area  
Code, of Agent for Service)

-----  
With a Copy to:

Glenn W. Sturm, Esq. James Walker, Esq. Nelson Mullins Riley & Scarborough, L.L.P. First Union Plaza, Suite 1400 999 Peachtree Street, N.E. Atlanta, Georgia 30309 (404) 817-6000 (404) 817-6050 (Fax)	Jill F. Dorsey, Esq. Powertel, Inc. 1233 O.G. Skinner Drive West Point, Georgia 31833 (706) 645-2000 (706) 645-9523 (Fax)
---	--

MARCH 31, 1997

	ACTUAL	AS ADJUSTED
	(DOLLARS IN THOUSANDS)	
<S>	<C>	<C>
CASH, CASH EQUIVALENTS AND SHORT-TERM INVESTMENTS.....	\$ 207,511	\$ 500,217
RESTRICTED CASH FOR PAYMENT OF INTEREST(A).....	\$ --	\$ 89,618
CASH HELD IN ESCROW(B).....	\$ --	\$ 5,405
CURRENT PORTION OF LONG-TERM DEBT.....	\$ 112	\$ 112
LONG-TERM DEBT:		
February 1996 Notes.....	223,080	223,080
April 1996 Notes.....	223,738	223,738
Notes.....	--	300,000
Vendor Financing Agreement.....	103,833	103,833
Other.....	715	325
Total long-term debt.....	551,366	850,976
STOCKHOLDERS' EQUITY:		
Preferred Stock -- Series A, \$.01 par value; 100,000 issued and outstanding; convertible.....	1	1
Preferred Stock -- Series B, \$.01 par value; 100,000 issued and outstanding; convertible.....	1	1
Preferred Stock -- Series C, \$.01 par value; 50,000 issued and outstanding; convertible.....	--	1
Preferred Stock -- Series D, \$.01 par value; 50,000 issued and outstanding; convertible.....	--	1
Common Stock, \$.01 par value, 55,000,000 shares authorized and 26,864,511 shares issued and outstanding(c).....	269	269
Additional paid-in capital.....	430,058	474,831
Accumulated deficit.....	(52,332)	(8,657)
Deferred compensation.....	(165)	(165)
Treasury stock.....	(345)	(345)
Total stockholders' equity.....	377,487	465,937
Total capitalization.....	\$ 928,965	\$ 1,317,025

<TABLE>

- (a) Reflects the estimated portion of the net proceeds from the Offering to be used to purchase Pledged Securities to secure the first six scheduled interest payments on the Notes. See "Description of the Notes -- Security."
- (b) Reflects the \$5.4 million of proceeds from the Maine Disposition that is being held in escrow for indemnification or purchase price adjustment obligations.
- (c) Includes 35,000 shares outstanding as of March 31, 1997 under the Company's 1995 Employee Restricted Stock Plan, but excludes 2,374,797 shares of Common Stock issuable upon exercise of stock options outstanding as of March 31, 1997. See "Management." Also excludes: (i) the 1,143,904 shares issuable upon exercise of the Warrants; (ii) the 9,090,900 shares of Common Stock issuable upon conversion of the Series A Convertible Preferred Stock and Series B Convertible Preferred Stock; and (iii) the 3,529,412 shares of Common Stock issuable upon conversion of the Series C Convertible Preferred Stock and Series D Convertible Preferred Stock. See "The Preferred Stock Sales."

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## SELECTED HISTORICAL FINANCIAL INFORMATION

The following table sets forth certain selected historical financial information for the Company as of and for each of the years in the five-year period ended December 31, 1996 and as of and for the three months ended March 31, 1997 and 1996. The financial information as of and for each of the years in the five-year period ended December 31, 1996 was derived from the consolidated financial statements and notes thereto of the Company, which have been audited by Arthur Andersen LLP, independent public accountants. The financial information as of and for the three months ended March 31, 1997 and 1996 was derived from the unaudited financial statements of the Company. In the opinion of management, the unaudited financial statements include all adjustments (consisting only of normal recurring adjustments) necessary to present fairly the information set forth herein. Operating results shown in the following table will not be indicative of future performance due to the capital requirements associated with the buildout of the Company's PCS System.

The selected historical financial information should be read in conjunction with "Pro Forma Financial Information," "Management's Discussion and Analysis of Financial Condition and Results of Operations" and the Company's consolidated financial statements and notes thereto and other financial and operating information included elsewhere in this Prospectus.

<TABLE>  
<CAPTION>

	THREE MONTHS ENDED MARCH 31,		YEAR ENDED DECEMBER 31,				
	1997	1996	1996	1995	1994	1993	1992
	(DOLLARS IN THOUSANDS, EXCEPT PER SHARE DATA)						
<S>	<C>	<C>	<C>	<C>	<C>	<C>	<C>
STATEMENT OF OPERATIONS DATA:							
Service revenues .....	\$ 14,084	\$ 6,996	\$ 31,875	\$ 25,384	\$ 18,903	\$ 8,228	\$ 6,235
Equipment sales .....	5,025	854	7,250	3,928	2,859	1,121	925
Total revenues and sales .....	19,109	7,850	39,125	29,312	21,762	9,349	7,160
Cost of services .....	5,428	684	5,811	2,394	1,921	574	442
Cost of equipment sales .....	11,987	694	11,653	3,127	2,391	1,010	828
Operations expenses .....	3,809	1,204	9,927	3,596	2,722	1,333	1,214
Selling and marketing .....	5,237	1,274	13,301	4,280	3,405	1,353	1,187
General and administrative .....	7,680	1,810	16,963	4,218	3,651	1,562	1,379
Depreciation .....	8,340	731	5,887	2,741	2,130	953	832
Amortization .....	1,178	881	4,214	2,360	1,543	890	735
Total operating expenses .....	43,659	7,278	67,756	22,716	17,763	7,675	6,617
Operating income (loss) .....	(24,550)	572	(28,631)	6,596	3,999	1,674	543
Interest (income) expense(a) .....	4,543	(739)	(3,175)	1,657	635	46	131
Miscellaneous (income) expense .....	473	303	1,226	(295)	(48)	48	260
Income (loss) before income taxes .....	(29,566)	1,008	(26,682)	5,234	3,412	1,580	152
Income tax (benefit) expense .....	--	472	(1,654)	2,230	1,535	567	52
Net income (loss) before cumulative effect .....	(29,566)	536	(25,028)	3,004	1,877	1,013	100
Cumulative effect of change in accounting principle, net of tax(b) .....	--	(2,583)	(2,583)	--	--	--	--
Net income (loss) .....	\$ (29,566)	\$ (2,047)	\$ (27,611)	\$ 3,004	\$ 1,877	\$ 1,013	\$ 100

Earnings per share:

Net income (loss) before cumulative effect of change in accounting principle .....	\$ (1.10)	\$ .03	\$ (1.00)	\$ .29	\$ .19	\$ .16	\$ .02
Cumulative effect of change in accounting principle, net of tax(b) .....	--	(.13)	(.10)	--	--	--	--
Net income (loss) per share .....	\$ (1.10)	\$ (.10)	\$ (1.10)	\$ .29	\$ .19	\$ .16	\$ .02

Average common and common equivalent shares outstanding ..... 26,812,000 19,899,000 25,087,000 10,281,000 9,765,000 6,317,000 6,289,000

OTHER FINANCIAL AND OPERATING DATA:

EBITDA(c) ..... \$ (12,244) \$ 4,193 \$ (2,466) \$ 11,992 \$ 7,720 \$ 3,469 \$ 1,850

Ratio of earnings to fixed

charges(d) ..... -- -- -- 3.9x 5.5x 27.3x 2.1x

Capital expenditures ..... \$ 36,209 \$ 10,874 \$ 233,551 \$ 7,661 \$ 2,866 \$ 1,105 \$ 921

Cellular subscribers at end

of period(e) ..... 49,731 40,403 47,617 38,582 28,624 10,590 7,447

Net cellular population

equivalents(f) ..... 737,800 737,800 737,800 732,900 728,200 281,800 277,400

PCS Subscribers at end of period ..... 34,886 -- 14,892 -- -- -- --

Net PCS population equivalents(f) .... 24,293,000 17,460,000 17,460,000 -- -- -- --

<TABLE>

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<PAGE> 39

<TABLE>

<CAPTION>

	AT DECEMBER 31,					
AT MARCH 31,	-----					
1997	1996	1995	1994	1993	1992	

(DOLLARS IN THOUSANDS)

<S> <C> <C> <C> <C> <C>

BALANCE SHEET DATA:

Working capital .....	\$ 200,646	\$ 256,349	\$ 977	\$ 2,710	\$ 547	\$ 908
Property and equipment, net	284,713	251,269	18,066	13,262	5,545	5,394
Licenses, goodwill and other intangibles, net .....	429,085	402,321	24,904	23,903	--	--
Total assets .....	973,094	947,117	74,330	50,812	10,517	8,721
Long-term obligations .....	551,366	504,065	29,411	11,030	2,019	2,194
Retained earnings (accumulated deficit) .....	(52,332)	(22,766)	4,845	1,841	(36)	(1,048)
Stockholders' equity .....	377,487	407,007	36,674	33,374	5,983	4,960

<TABLE>

- (a) The Company had interest income of \$3.3 million and \$2.3 million for the three months ended March 31, 1997 and 1996, respectively, and \$17.3 million for the year ended December 31, 1996. The Company had no interest income for the years ended December 31, 1995, 1994, 1993 and 1992. Excludes capitalized interest of \$6.7 million and \$2.7 million for the three months ended March 31, 1997 and 1996, respectively, and \$29.0 million for the year ended December 31, 1996. During the construction of the PCS System, the cost of the PCS licenses and the costs related to construction expenditures are considered to be assets qualifying for interest capitalization under FASB Statement No. 34 "Capitalization of Interest Cost." Accordingly, management expects that a majority of the interest on the February 1996 Notes, the April 1996 Notes, the Vendor Financing Agreement and the Notes will be capitalized during the construction of the PCS System. See "Pro Forma Financial Information."
- (b) During 1996, the Company changed its method of accounting for costs incurred in connection with certain promotional programs under which

customers receive discounted cellular equipment or airtime usage credits. Under its previous accounting method, all such costs were deferred and amortized over the life of the related non-cancelable cellular telephone service agreement. Under the new accounting method, the costs are expensed as incurred.

- (c) EBITDA represents earnings from continuing operations before interest expense, income taxes, depreciation and amortization. EBITDA is provided because it is a measure commonly used in the industry. EBITDA is not a measurement of financial performance under generally accepted accounting principles and should not be considered an alternative to net income as a measure of performance or to cash flow as a measure of liquidity.
- (d) Earnings were insufficient to cover fixed charges by \$36.3 million and \$2.2 million for the three months ended March 31, 1997 and 1996, respectively, and by \$56.2 million for the year ended December 31, 1996. Earnings consist of income before income taxes, plus fixed charges, except where capitalized. Fixed charges consist of interest charges and amortization of debt issuance costs, in each case whether expensed or capitalized, and the portion of rent expense under operating leases representing interest.
- (e) Cellular subscribers at end of period include 14,216, 20,288, 25,456, 21,320 and 26,486 subscribers in the State of Maine for the years ended December 31, 1994, 1995 and 1996 and for the three months ended March 31, 1996 and 1997, respectively. See "The Maine Disposition."
- (f) Net Population Equivalents means the estimated population of the license market area multiplied by the percentage ownership of the license. The estimated population is based on the 1996 Paul Kagan Associates, Inc. Cellular/PCS POP Book. The Company owns 100% of each of its PCS licenses and 100% of each of its cellular licenses. For the years ended December 31, 1994, 1995 and 1996 and the three months ended March 31, 1996 and 1997, Net Cellular Population Equivalents include 441,900, 442,000, 442,200, 442,000 and 442,200 population equivalents, respectively, from the Company's Maine market areas. See "The Maine Disposition."

# Appendix 5: Articles on Diminishing Spectrum Values

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# WALL STREET JOURNAL.

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TUESDAY, JUNE 3, 1997

INTERNET ADDRESS: <http://wsj.com>

## Dollar Days

### Sale of FCC Licenses In Several States Nets Budget Pocket Change Public Airwaves Went Cheap After Congress Pushed Agency for Fast Auctions McLeod Bags Four for \$4

By BRYAN GRULEY

Staff Reporter of THE WALL STREET JOURNAL  
CEDAR RAPIDS, Iowa — Clark McLeod loves grabbing a cheap cafeteria lunch at his company's new headquarters here. One recent afternoon, he paid only \$4.80 for a generous slice of cheese pizza, a barbecued-beef sandwich and coffee.

But Mr. McLeod got an even better deal in April when he bought government licenses to use the public airwaves. In a Federal Communications Commission auction, McLeodUSA Inc. was the high bidder for licenses to offer wireless communications to 15 million people in four states.

The price: Four bucks.

That's right. McLeodUSA paid \$1 for each license giving it permission to serve most of Iowa, Wisconsin, Minnesota and Nebraska. The licenses will play their part in Mr. McLeod's big plan to sell bundled local and long-distance telephone, cellular, paging and Internet services across the upper Midwest. Bryce Nemitz, a company vice president, deadpans: "Our CFO guaranteed we could double our money."



Clark McLeod

McLeodUSA's good fortune is now the subject of spirited debate in Washington, with policymakers torn between the dueling goals of fostering competition in telecommunications and balancing the federal budget. While no one doubts Mr. McLeod will fuel competition — he sold his first company to MCI Communications Corp. for \$1.25 billion — they profess shock and dismay that anyone could buy an FCC wireless license for less than the price of a gallon of gasoline.

Thirteen prior FCC auctions of rights to use electromagnetic spectrum garnered \$23 billion in bids for 1,249 licenses — or about \$5.4 million a license. Winners have poured more than \$10 billion into the U.S. Treasury, with more to come.

But the latest auction looks more like a fire sale. Congressional budgeteers expected it to fetch \$1.8 billion, but bidders offered just \$13.6 million for 128 licenses — a measly average of \$106,000 apiece. Bargains abounded. BellSouth Corp., the Atlanta-based Baby Bell, snagged licenses for Kentucky, Tennessee and the Carolinas for just \$1,002 each. And, like McLeodUSA, two other companies paid \$1 each for other Missouri, Minnesota and Wisconsin licenses.

#### Budget Hole

"It was just a comedy of errors," complains John McCain, the Arizona Republican who chairs the Senate Commerce Committee.

Congress hurried the auction because it wanted to plug a hole in the budget. This meant potential bidders didn't have time to develop business plans and line up financing. Telecommunications-equipment makers weren't sure what to build or what to spend, because the FCC didn't designate the spectrum for a particular use. Mr. McLeod and other lucky bidders took advantage.

For decades the FCC parceled out spectrum via "comparative" hearings that took years and at lotteries that handed winners free licenses that they frequently resold for windfall profits. But in 1993 lawmakers decided auctions would deliver spectrum to worthy competitors more quickly, while raising more money for the government.

Now critics contend so much spectrum has been shopped that its market value is falling, and they say future auctions could reap fewer and fewer deficit-cutting dollars. That could be a problem because the balanced-budget deal cut by Congress and the Clinton administration expects spectrum auctions to raise \$26.3 billion over the next five years.

Television broadcasters, worried because the budget deal also targets some of their existing spectrum for auction, are telling lawmakers that auctions have run their course. (Separately, broadcasters recently were awarded free licenses to beam digital signals — a move ordered by Congress and blessed by many lawmakers, Sen. McCain excluded, who now complain the latest auction raised too little cash.)

#### 'Create Scarcity'

Cellular-phone-service companies that won in prior auctions complain that falling prices have devalued their licenses. This makes it harder for them to raise capital for their wireless systems, which in turn delays competition, they say. They want Congress to have the FCC allot spectrum more slowly.

At a recent Washington soiree, Mimi Dawson, a lobbyist for Motorola Inc., the big wireless-communications company, flashed her diamond ring and said, "You see this? It wouldn't be worth a dime if DeBeers [the South African cartel] put their diamonds on the market the same way we're putting spectrum on the mar-

Please Turn to Page A10, Column 1

# Sale of FCC Licenses Nets Pocket Change

*Continued From First Page*  
 set. In an interview, she adds: "If you want to create value, you've got to create scarcity."

Sen. McCain and other lawmakers agree, and they are preparing legislation requiring the FCC to set minimum bids and limit the number of auctions held in a given time period. Separately, the FCC and the Justice Department are investigating that and other auctions for possible illegal bid-signaling. McLeodUSA is one of many bidders to receive Justice Department requests for information. The company denies any wrongdoing. Congress isn't likely to overturn the last auction, but in the future, "we've got to maximize the value of this public asset," Sen. McCain says.

But FCC Chairman Reed Hundt contends limiting auctions would also limit competition. He says the cellular industry wants to slow down auctions because "it's not an industry that loves seeing more competitors." And he argues that money generated by auctions is less important than the fact that more than 570 licensees have permission to offer new services at lower prices. "McLeod's license is a cheap ticket to ride the information highway," Mr. Hundt says. "He'll hire people, he'll pay taxes, he'll create an entrepreneurial venture. What's not to like?"

Nothing at all, if you ask Mr. McLeod. "What an exciting time," says the 50-year-old executive, striding through his headquarters at a pace just short of a jog. With the company payroll rising sixfold to 2,400 workers in the past two years, employees have been tripling up in cramped offices scattered throughout 11 buildings in downtown Cedar Rapids.

Now, amid stacks of boxes and the smell of fresh paint, about 1,000 are moving into a new complex that sprawls across a former cornfield outside town. It boasts its own post office and health club, and an acre-sized room of office cubicles marked with color-coded, made-up street addresses. Mr. McLeod's office, with a desk he bought at J.C. Penney in 1985, is at the corner of 11th Avenue and 11th Street. But he says, "I feel like somebody picked me up and put me down in heaven."

He has been there before. In 1980, the former high-school teacher and two pals started a company that became TelecomUSA, the nation's fourth-largest long-distance carrier. When long-distance giant MCI bought it in 1990, Mr. McLeod walked away with \$50 million. "Once you taste that kind of accomplishment," he says, "you want to taste it again."

Having mastered long-distance service, he decided to compete against en-

trenched local phone companies. Now reunited with seven executives who helped build TelecomUSA, he aims to create a "super regional" carrier offering one-stop phone service — bundling local, long distance, paging, Internet and other services — in 12 Midwestern states, focusing on small and midsize towns. "This is an area of the country the big guys could care less about," he says.

The "big guys" are U S West Inc., the Denver-based Baby Bell, and Ameritech Corp., the Chicago-based Bell. Mr. McLeod jokingly calls U S West "Dino," for dinosaur, and a drawing in Mr. Nemitz's office shows a long-necked dinosaur labeled "U S West" with its head stuck in its posterior. A spokeswoman for U S West says it's "just fine if competitors think of us that way; it means they'll be off guard."

McLeodUSA has yet to post an annual profit and last year had a loss of \$22.3 million on revenue of \$51 million. But Mr. McLeod says he is focusing on market share. He says the company has won customers on 27% of the business-telephone lines in Iowa markets it has invaded, and on 17% in the Illinois cities where it competes, chiefly by reselling service purchased at wholesale rates from U S West and Ameritech. Meantime, the company is building its own fiber-optic network, and Mr. McLeod predicts profits will flow once customers migrate to that system, perhaps by 1999. The plan was convincing enough to help McLeodUSA raise \$1 billion in equity and debt last year.

Mr. McLeod's wireless strategy has come along more slowly. Three years ago he asked Keith Molof, a former Ameritech manager, to explore bidding in an FCC auction. Mr. Molof, 39, tracked a few auctions before entering one last August for licenses to provide "personal communications services," a new generation of wireless phone and paging services. The company spent \$32.8 million, or about \$5 for each of the 6.5 million people its 26 licenses let it reach.

Meanwhile, a separate batch of spectrum suddenly became available. Last September, Congress was seeking fresh funds to complete the fiscal 1997 budget. After consulting the FCC, lawmakers ordered an auction of unused spectrum vaguely designated for "wireless communications services." The Congressional Budget Office predicted this would raise \$1.8 billion — but to be counted in the budget, the money had to be in the Treasury by Sept. 30, 1997. So Congress told the FCC to auction the spectrum by April 15.

This gave the FCC about five months to write auction rules and decide what the spectrum could be used for, a process of debate and compromise with industry that

normally takes a year or more. In February, the agency completed rules that let bidders use airwaves for almost everything, from high-speed Internet transmissions to wireless cable TV. Only mobile-phone service was limited, because of potential interference with another band of spectrum.

Cellular companies and telecommunications-equipment makers objected to the imprecise rules, saying they couldn't determine what types of equipment they ought to build or at what cost. Thomas Wheeler, president of the Cellular Telecommunications Industry Association, a lobbying group, says the FCC neglected its responsibility. "It's the free-market approach gone haywire," he says.

Chairman Hundt defends the FCC's hands-off approach. With more time, affected industries could have developed clearer plans, he says, but adds, "I don't think the government should tell industry how to use spectrum." The FCC chose not to set minimum bids for the auction, partly because officials thought it would discourage bidders and, contrary to Congress's orders, leave a lot of unauctioned licenses. Also, FCC officials say it would have been difficult to set minimums for licenses in dozens of different U.S. markets.

On Feb. 5, Michele Farquhar, then-chief of the FCC Wireless Bureau, warned lawmakers by letter that bidders "may not have had sufficient time . . . to achieve a successful auction." Mr. Hundt enlisted wireless-industry lobbyists, including Mr. Wheeler, to persuade Congress to delay the auction so bidders would have more time to prepare. But they declined. Mr. Wheeler says, because it already was too late to change Congress's mind.

Out in Iowa, Mr. McLeod was in a quandary. He thought the spectrum surely could be used for stationary local-phone service and perhaps for remote reading of utility meters. But suppliers couldn't predict with certainty the costs of equipment needed for this particular band of spectrum — leaving "a huge hole" in the business plan, Mr. Molof says.

Mr. McLeod figured other potential bidders faced the same problem, so licenses just might be a bargain. He decided to make a few modest bids. After paying \$5 a potential customer in the previous auction, McLeodUSA now expected to pay no more than a penny a customer. "If the licenses were all but free," Mr. McLeod says, "we wanted access to them."

Shortly after 8 a.m. on April 15, Mr. Molof sat down at a fourth-floor computer at McLeodUSA's old downtown headquarters. He had wired the FCC a required good-faith payment of \$3,005,000, although he really didn't expect to bid more than \$150,000. Just before the computer dialed the FCC auction computer, a message told Mr. Molof his toll call would cost \$2.30 a minute.

A grid appeared, listing cities and regions where licenses were available. Mr. Molof moved his cursor to "Milwaukee," and inserted the numeral "1" in the "bid amount" column — for \$1. Twice the computer asked if he was sure; twice he

## Manufacturers Planning More Hires, Survey Says

By a WALL STREET JOURNAL Staff Reporter

CHICAGO — A new survey said more U.S. manufacturers plan to increase hiring this year, reflecting continued strength in the U.S. job market.

The study, by Grant Thornton LLP, Chicago, said 59% of U.S. manufacturers plan to add full-time, permanent production employees this year, up from 46% a year earlier. About 32% say they plan to keep full-time staff size the same, while 7% plan to cut payrolls.

The study polled executives from 257 U.S. manufacturing companies with annual sales between \$10 million and \$500 million.

"Under present economic conditions, manufacturers are increasing capacity and hiring new workers," said Martin E. Cooperman, director of Grant Thornton's manufacturing/distribution group.

The survey found that 71% of executives say they're "optimistic" about the U.S. economy, while 3% say they're pessimistic and 26% are uncertain. Nearly 75% of manufacturers said profits for 1997 will rise above last year's levels — up from 60% a year ago and 57% in April of 1995.

A smaller percentage, about 63%, said 1998 earnings would also exceed the prior year's levels.

answered "yes." He entered three more \$1 bids and, by the time he logged off, the toll-call bill was about \$30.

For the next week, Mr. Molof checked periodically to see if he needed to raise his bids. Instead, he found that rivals he had expected to bid were dropping out. When the FCC ended the auction April 25, no one had topped his \$1 offers.

A beaming Mr. Molof burst into Mr. McLeod's office with the good news. "Four dollars for 15 million customers," he said. "Mission accomplished." They slapped high-fives and Mr. McLeod handed Mr. Molof four one-dollar bills. He is having them framed.

The company has yet to receive its formal licenses, but the FCC recently sent something else just as welcome: a refund of \$3,004,996.

## Morgan Stanley, Dean Witter

NEW YORK — Dean Witter, Discover & Co. and Morgan Stanley Group Inc. said yesterday that they have completed their \$10.2 billion merger.

The stock of the combined firm, which will be known as Morgan Stanley, Dean Witter, Discover & Co., started trading yesterday under the symbol "MWD."

Morgan Stanley Group and Dean Witter, Discover announced in February that they planned to merge, creating the biggest securities firm in terms of market capitalization.

Separately, Standard & Poor's Corp. said it has raised the long-term senior debt ratings of the former Dean Witter, Discover to single-A-plus from single-A. At the same time, S&P affirmed the single-A plus long-term senior debt ratings of the former Morgan Stanley.



Keith Molof

## Prentiss Acquires a Development

DALLAS — Prentiss Properties Trust said it acquired a six-building industrial development in suburban Los Angeles for \$17.3 million.

The real-estate investment trust said it plans to renovate and expand the property, which currently totals 466,708 square feet of rentable space.

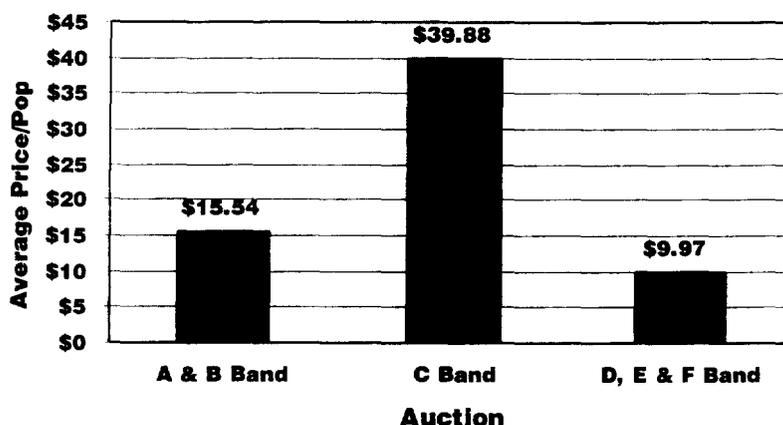
## U.S. Telecommunications

### D/E/F Band PCS Auction Results In Lower Spectrum Prices But Another Win For CDMA Proponents

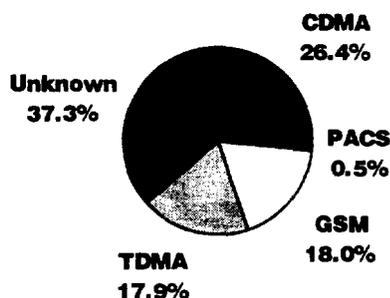
January 28, 1997

The FCC's auction of the last three personal communications services licenses ended on January 14, 1996. In this report, we provide an analysis of the outcome of the auction. In our view, four developments with broad implications for operators and equipment providers bear mentioning.

#### 1. Spectrum Prices 75% Lower Than C Band Auction



#### 2. CDMA Again The Big Winner—Buy Lucent Technologies



#### 3. Sprint and AT&T Gain National Coverage—Both Rated Hold

#### 4. GSM Proponents Can Now Claim National Coverage

**Barry M. Sine, CFA**  
(212) 224-8511

**John C. Baylis**  
(212) 224-8049

**Parker Brophy**  
(212) 212-8357

**Dolores J. Daly**  
(212) 224-5810

## **D/E/F Bands Personal Communications Services Auction Produces \$2.5 Billion or \$10 Per Pop**

The Federal Communications Commission (FCC) completed its auction of the last three blocks of personal communications services licenses when the auction for the D, E and F band licenses ended on January 14 after 276 rounds. The FCC raised just over \$2.5 billion in the auction, which works out to \$9.97 per 30 MHz pop for all three licenses. Since these licenses only allow the use of 10 MHz of radio spectrum, versus 30 MHz for the A, B and C band licenses, we adjust this to arrive at a price per 30 MHz pop.

### **Spectrum Prices Drop 75% From C Band Auction in May**

The gold rush atmosphere that pervaded the C band auction which ended in May, 1996 did not carry over to the D/E/F bands auction, with the price per 30 MHz equivalent pop falling 75% from the \$40 paid by the small company participants in the C band, to only \$10 in the D/E/F bands auction. This is also down roughly 35% from the A and B band auction held in 1995, which was dominated by the major U.S. telecom carriers. We see two factors behind the crash in the market for radio spectrum:

- First, most of the major U.S. telecom carriers that wanted a wireless telephony license either already held one of the two cellular licenses in their markets, or had successfully bid for licenses in the A/B bands auction. As we note later, in the few markets where two or more major telecom operators did actively compete, license prices reached record highs.
- Second, we believe that the difficulty many of the C band auction winners had in raising financing has diminished the appeal of the business to others that fear they may not have access to the capital markets if they did win licenses. By our count, C band participants have filed with the SEC for offerings to raise over \$700 million in equity and \$700 million in debt. Despite the fact that some of these companies initially filed last summer, none have yet to successfully raise any public capital.

### **C Band Winners Have Yet To Raise Public Capital**

	<b>Proposed Ticker</b>	<b>Initial Filing Date</b>	<b>Equity (mils)</b>	<b>Debt (mils)</b>
NextWave Telecom	SURF	6/10/96	\$300.00	\$400.00
General Wireless	GWIR	6/28/96	\$189.75	\$220.00
Pocket Communications		8/29/96	\$172.50	N/A
Chase Telecom	CTEL	10/2/96	\$80.50	\$105.00
<b>Total</b>			<b>\$742.75</b>	<b>\$725.00</b>

Source: Securities and Exchange Commission and SBC Warburg Inc.

The  
WIRELESS  
COMMUNICATIONS  
INDUSTRY

Spring 1997

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Additional information is available upon request.

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## **PERSONAL COMMUNICATIONS SERVICES (PCS)**

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### **D, E and F Auction Prices Surprisingly Low**

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The final auctions, the so-called D, E and F Blocks for broadband PCS were awarded on January 14 after 275 rounds of bidding, which had begun in August 1996. The ultimate price of \$2.52 billion, net of the F Block discounts, for a record 1,479 licenses by 125 bidders amounted to only \$3.32 per pop, substantially below the \$27 per pop paid in the C Block last year, adjusting for the difference in spectrum—10 MHz versus 30—by tripling the latest bid numbers. (In other than the largest markets, 30 MHz is not often needed, so tripling is perhaps overstating the relative value). With \$10.17 billion from the C Block and \$7.73 billion for the A and B rounds, (or \$15 per pop for 30 MHz wide area A and B licenses) the total bid at auction from all rounds was \$20.42 billion (excluding narrowband paging, SMR and other auctions) assuming the government actually collects all the money. There is some concern—particularly with the C Block, which brought in the most, and where payments are due over time rather than all upfront—that some of the winners will ultimately default. Those licenses would presumably be put up for bid again, but in view of the much lower D, E and F round prices and time to market considerations, it is virtually certain that any rebids would be at substantially lower prices. In the recent bids, a 5% down payment was required January 23, with another 5% due when licenses are officially granted probably very shortly. The rules were changed somewhat this time in some ways to be more liberal—i.e., that only 25% of the licensed area population has to be built out in five years compared to 80% in the first awards; and in some ways to be more conservative—i.e., the discounts and payment terms for the F Block winners are less favorable. The F Block down payment is 20% instead of 10%, and the government loans are interest only for only two years, not six as with the C Block.

Of the bidders, one-third were new, and they included 70 led by minorities, 50 by women and 167 by rural companies, largely in the F Block. Among the more interesting new players was Sprint Corp. on its own rather than Sprint Spectrum, although the latter will manage the Sprint properties; U S WEST, which also bid at the corporate level, as opposed to via U S WEST New Vector; North Coast whose principal is related to Charles Dolan, CEO of cable company Cablevision Systems (North Coast bid in Cablevision Systems' cable markets as it had in the C Block) and Rivgam/Aer Force in which investor Mario Gabelli is a principal (Aer Force was a vehicle for the F rounds, which require small business status). It is also interesting that Omnipoint and Western Wireless (WWCA) ended up with 10 MHz each in certain markets where it is unlikely either would build alone, suggesting a partnership there. WWCA already has a partnership with Cook Inlet through which it bid in both the C and F rounds. In Sprint's case, the apparent reason for the stand-alone bid was that the company is more enthusiastic about PCS than its three cable partners (Tele-Communications, or TCI, Comcast and Cox); in fact, there has been recent publicity about TCI and Comcast's interest in getting out of the venture. With USW the likely ultimate merger and then sale of the New Vector properties into AirTouch, the telephone company will be removed from direct participation in wireless, particularly if U S WEST Media Group, now a tracking stock, is spun out to shareholders entirely, which we expect to happen.