



# VALUATION of WIRELESS COMMUNICATION TOWERS

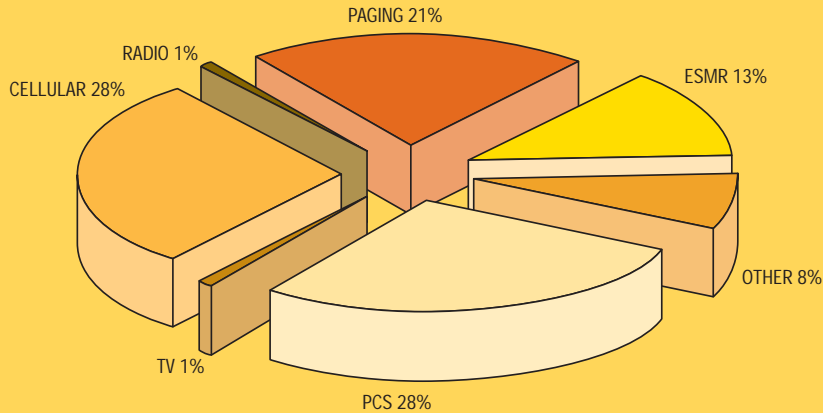
This article provides an overview of the market and outlines a methodology for the valuation of communication towers. It addresses only the real estate asset – that is, the tower and the land upon which it is located. It does not attempt to address the value of ancillary soft assets.

By Edward M. Wright

## THE COMMUNICATION TOWER INDUSTRY

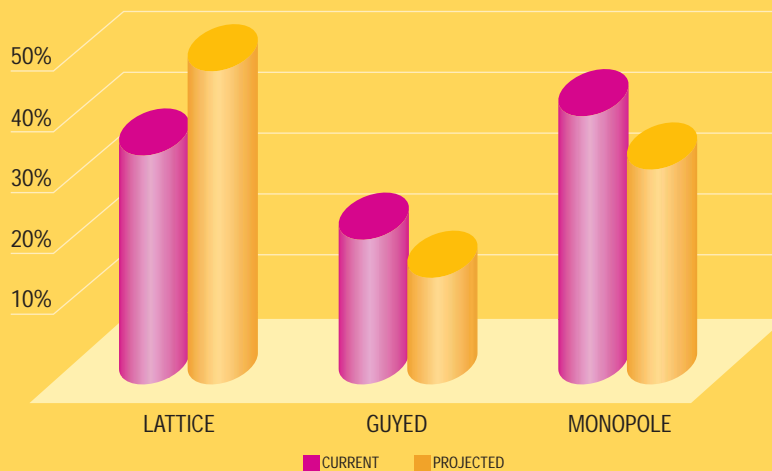
The communications tower industry is primarily focused on building, owning, maintaining, and operating of towers for wireless communications. Typical tower users include wireless carriers (cellular, PCS, mobile radio, paging), radio and television broadcasters, as well as government, utilities, and private-interest parties. Prior to the emergence of independent tower companies, various tower-related activities, from zoning to site engineering to everyday maintenance, were either done in-house by the communication provider or contracted on a project-by-project basis. A few independent tower companies did exist but were typically small, localized operators. The landscape of the tower industry changed dramatically during the latter part of the decade with tower companies consolidating and extending beyond merely localized service. The industry is now dominated by public tower companies with national and international scopes.

## MIX OF TOWER CUSTOMERS<sup>1</sup>



There are multiple types of towers that include monopoles (a single rigid pole design to support one or two antennae), lattice towers (multi-antennae structures that are constructed of steel), and guyed towers (typically over 1,000 feet tall used for broadcasting). At the base of most towers is a building that houses electronic equipment used to transmit and receive radio signals. Typically, cellular towers range from 100 feet to 250 feet and cost new between \$100,000 and \$300,000.

## TOWERS BY TYPE



Multiple antennae can be attached to towers, depending on the size, heights, and weights of the antenna and the tower itself. This practice, known as co-location, involves the sitting of two or more separate companies' antennas on the same tower.

There are four key factors driving the positive fundamentals of the tower industry:

- wireless growth,
- the trend toward outsourcing,
- consolidation within the industry, and
- the positive financial performance of the tower business.

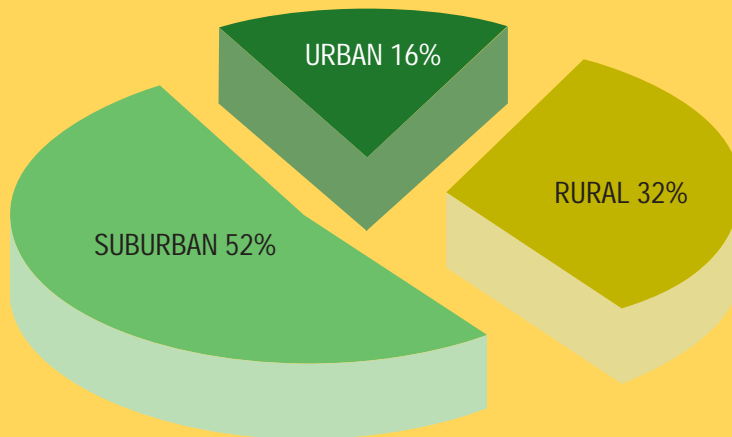
## WIRELESS GROWTH

The demand for wireless services has been growing at a healthy pace for over a decade. Increased mobility of the US population, changes in telecommunications regulations and the demand for a wider variety of services have contributed to this rise in wireless infrastructure demands. Not only must tower development grow to meet the influx of new customers and services, but customers are also demanding greater regional, national and international coverage. The FCC said that there are over 30 million mobile/portable cellular units and more than 20,000 cell sites operating in the United States. Predictions for the tower growth range up to 100,000 within the next 10 years. It should be noted that not all cell sites are on towers. About 60 percent of all cell sites, usually in urban areas, are located on rooftops or other existing structures.

Three forces have driven tower growth for cellular service: capacity saturation, digitalization of analog networks, and the growth of Personal Communication Service (PCS). Basic cellular service carriers have the geographical footprint already in place to serve their customers but that demand for wireless service has outgrown capacity. The digitalization of cellular networks also increases tower demand. As the cellular industry converts its mostly analog systems to digital, more cell sites are needed because digital signal coverage is inferior to that of analog.

Similarly, PCS networks operate on higher frequency (compared to cellular) which means its radio waves are shorter. This translates into a comparatively smaller cell radius and the requirement for PCS to have more cell sites than cellular carriers. The blossoming demand of PCS is especially seen in the suburbs where more than 50 percent of towers are located. Although wireless traffic was traditionally concentrated in heavily populated urban areas, the need for towers in major cities is negligible due to the fact that tall buildings can replace the function of towers. However, as wireless telephone usage grows, suburban and rural areas can only be serviced with the use of towers.

## GEOGRAPHIC LOCATION OF TOWERS



## OUTSOURCING

Traditionally, towers were built and operated by the wireless carriers themselves, but the outsourcing of these functions has led to an explosive rise in the number of independent tower operators. The trend toward outsourcing is also helping to drive co-location of tenants on independently owned towers.

Local governments are helping to drive the trend toward outsourcing and co-location. Local governments have responded to citizens who are becoming increasingly vocal about tower location. This not-in-my-backyard (NIMBY) movement has provoked small battles in the city halls of America where companies must expend time and capital to win zoning permits for towers. Confronted with NIMBY opposition along with continuing residential demand for cellular services, local governments have required co-location of carriers, thus reducing the number of total towers in a community. Limiting communities to a minimal number of towers but still providing residents a choice of carriers has worked in the favor of independent tower companies. For the local government, awarding a zoning permit to a third party tower company rather than an individual carrier is often preferable because the local government can be assured that the tower company will encourage as many tenants to locate on the site as possible and will not use the tower as a competitive advantage (as some carriers might with a hard-to-zone location). In addition, given the increasing difficulty involved in getting towers zoned, carriers are often willing to outsource their tower needs and let third party tower companies fight the zoning battles.

## INDUSTRY CONSOLIDATION

Industry experts expect significant consolidation in the tower industry over the next 10 years. For the tower companies, acquisitions were a key driver of tower count growth over the last few years. The build versus buy decision is one that extends beyond economics because some towers cannot be built at any price because of zoning and other issues. Zoning for new towers is becoming increasingly difficult and expensive, and purchasing already existing towers circumvents this problem. Cellular carriers, in particular, have towers situated in prime, hard-to-zone locations with networks that would be difficult, if not impossible, to duplicate in today's environment. These circumstances have had an effect on tower prices. Additionally, to date, most of the carriers' tower assets have been underutilized and selling or joint venturing their tower assets have allowed carriers to harness some of the embedded but unrealized value in these assets. As towers are loaded with tenants, tower companies can also realize efficiencies of scale which operators may not be able to achieve.

## FINANCIAL PERFORMANCE

Financially, the tower business is proving to be lucrative because of rapid and consistent revenue growth, high margins, and low variable costs. The economics of multiple-leasing of tower space remains the most rewarding aspect of the tower industry. The following chart shows the profitability of towers. Fully loaded towers produce phenomenal returns on invested capital. Co-location is a major advantage that tower companies have over carriers in owning and managing towers. Carriers are hesitant, at best, about leasing their own tower space to competitors while independent tower operators can take full advantage of this opportunity.



ECONOMICS OF CO-LOCATION			
BROADBAND TENANTS	1	2	3
NARROWBAND TENANTS	0	2	4
CONSTRUCTION COST	210,000	210,000	210,000
REVENUE	18,000	48,000	78,000
OPERATING COST	10,000	10,000	10,000
EBITDA*	8,000	38,000	68,000
EBITDA MARGIN	44%	79%	87%
YIELD TO COST	4%	18%	32%
PAYBACK PERIOD	26.3 YEARS	5.5 YEARS	3.1 YEARS

SOURCE: LEHMAN BROTHERS ESTIMATES AND COMPANY REPORTS, 1998.  
\*EBITDA = Earning Before Income Tax, Depreciation and Amortization

Revenue streams are highly secure through a reliable base of customers, long leases, and low turnover. Master lease contracts typically run from five years to 10 years for cellular and PCS operators. Normally, contracts are written with a CPI-based minimum annual increase. These annual price escalator clauses and long leases provide a high level of recurring, contracted revenues. Turnover rates are less than 5 percent, and are typically due to carriers consolidation rather than relocation to a competitor.

### Appraisal Methodology

As with most appraisals, the three traditional approaches to value are applicable to communication towers. However, the cost, sales, and income approaches each carry unique sets of strengths and weaknesses.

## COST APPROACH

### Site Valuation

The first step in the cost approach is the estimate of land value, as if it were vacant. However, the tradition method of estimating land value may or may not be applicable for communication towers. First, tower owners lease the overwhelming majority of their sites. In such cases, the lease amounts vary widely from \$3,000 per year in rural areas to \$6,000 (or less) in small towns to \$20,000 (or more) per year in large urban areas. Second, regulatory and logistical barriers exist which prevent fee simple acquisition of many tower sites. For instance, many local subdivision regulations require street frontage for the creation of any new lot. However, many tower sites are accessed via a cross easement and are otherwise landlocked. In addition, tower sites often fail to meet the minimum lot requirements contained in local land use regulations and the setback requirements necessitate the acquisition of several acres when only a small parcel is needed. Finally, many landowners are unwilling to sell a small site (50' x 50' or 100' x 100') within a

larger tract. They fear the logistical difficulties that may arise associated with marketing or planning for the parent tract.

Land valuation can be accomplished in two ways. If adequate land lease comparables exist, a land capitalization method can be employed. Alternatively, land allocation can be used if adequate market data can be derived from which to draw allocation conclusions. For example, if the market indicates the consistent data, the allocation method would be calculated in the following fashion. Market data forms the basis of an estimate that the cost of land (either purchase price or capitalized value of land leases) account for about 20 percent of the total project cost (including land) in rural areas, 30 percent in small towns, and 45 percent in large cities (individual market will vary). This schedule of land allocation can then be use in the cost approach calculations. For example, if a tower located in a rural area costs about \$150,000 for hard and soft costs, and the land accounts for 20 percent of the total project cost, then the hard and soft cost equates to 80 percent of total project cost. To determine the allocated land value we apply the following formulas:

LAND ALLOCATION FORMULA FOR RURAL TOWER SITES								
HARD AND SOFT COST OF TOWER CONSTRUCTION	÷	(100% - LAND ALLOCATION %)	=	TOTAL PROJECT COST	-	HARD AND SOFT COST OF TOWER CONSTRUCTION	=	ESTIMATED LAND COST
\$150,000	÷	(100%-20%)	=	\$187,500	-	\$150,000	=	\$37,500
LAND ALLOCATION FORMULA FOR SMALL TOWN TOWER SITES								
HARD AND SOFT COST OF TOWER CONSTRUCTION	÷	(100% - LAND ALLOCATION %)	=	TOTAL PROJECT COST	-	HARD AND SOFT COST OF TOWER CONSTRUCTION	=	ESTIMATED LAND COST
\$150,000	÷	(100%-30%)	=	\$214,286	-	\$150,000	=	\$64,286
LAND ALLOCATION FORMULA FOR URBAN TOWER SITES								
HARD AND SOFT COST OF TOWER CONSTRUCTION	÷	(100% - LAND ALLOCATION %)	=	TOTAL PROJECT COST	-	HARD AND SOFT COST OF TOWER CONSTRUCTION	=	ESTIMATED LAND COST
\$150,000	÷	(100%-45%)	=	\$272,727	-	\$150,000	=	\$122,727

These ratios would then be applied to each individual tower and included as an Allocated Land Value Estimate in the Cost Approach.

## IMPROVEMENT VALUATION

The second step in the cost approach is the estimate of replacement cost for the improvements. Professional assistance is typically required to ensure that the valuation is prepared with full knowledge of the tower type, structural characteristics, load capacity, foundation design and all other related factors.

Cost comparables should be collected and evaluated in each local market. The total cost of constructing a tower can vary significantly from site to site, based upon capacity, geographic location, topography, soil conditions, regulatory requirements, and other factors. The primary components of tower costs are the tower structure and related components, tower foundation, labor, site preparation and finish. In

addition, there are varying costs associated with providing vehicular and utility access to the tower and gaining local regulatory approval (zoning). The impact of regulatory approval costs is best illustrated by First Quarter 2001 data reported by two large tower companies. Crown Castle's average tower build cost increased from an average of about \$230,000 to an average of \$245,000. Similarly, SBA reported a six-month rise from an average of \$235,000 to \$250,000.

## SALES COMPARISON APPROACH

Recent sales activity of communication towers reflects the immaturity of the industry as well as the growth phase dynamics presently at work. As previously described, the tower industry is an emerging entity. During the early days of cellular, paging and PCS service, the service provider companies built and owned their towers. It was not until recently that third parties started getting involved with built-to-suit contracts and sale-lease-back agreements. The last two years of the 1990's saw a tremendous level of activity in the market for towers. Most of this activity involved large cellular/PCS providers and new tower companies. Transaction sizes have ranged from a handful to 2,000 and typically involved the sale of tower assets to a third party tower company and the lease-back of antenna space on the same towers.

Tower divestitures do not, however, remove the influence of carriers on tower business operations. The providers are effectively contracting out their signal, and the wireless business is a business of transmitting signals. Because of this vested interest, carriers have not given up all control of the towers that house their signals. Most wireless carriers have continued to hold an interest through stock options or joint ventures. With the same concern in mind, carriers who are outsourcing are not just seeking the highest bid on their towers – the service, quality, and footprint of independent tower operators have substantially contributed to their decision. For these reasons, we have not seen strictly financial considerations in the transfer of tower assets.

Independent tower operators can help carriers achieve a national footprint and better coverage. Build-to-suit (BTS) contracts have complemented the sale of carriers' tower assets. A large percentage of the portfolio sales in the last four years included an additional agreement

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Independent tower operators can help carriers achieve a national footprint and better coverage. Build-to-suit (BTS) contracts have complemented the sale of carriers' tower assets. A large percentage of the portfolio sales in the last four years included an additional agreement

to build more towers where the cellular provider (seller) would be the anchor tenant for the new tower. As mentioned in the discussion on outsourcing, the real potential of acquisitions and new builds is tenant loading. With the PCS build-out, it is especially important to have access to tower space for a successful entrance into a regional market. So the motivation of the sellers (the wireless providers) is less an issue of price than of considerations of future development, coverage, national scope, continued influence/control and, most importantly, growth potential.

Similarly, the motivation of the buyers (the tower companies) has been directly tied to relationship building and asset massing. The real income potential for a tower company comes, not with the potential revenue to be derived from any individual tower, but rather from the aggregate income that can be realized from a network of towers. A tower company must be able to offer providers a seamless continuum of service by providing their customers uninterrupted reception. Therefore, market activity in recent months has been dominated by large tower companies (SpectraSite, American Tower, Pinnacle, Crown Castle, SBA) whose motivation was dominated by a need to establish a network, or an inventory, of towers as well as the formalization of relationships with large providers (AT&T, Nextel, BellSouth, Bell Atlantic Mobile, etc.).

### PRICE PER TOWER INDICATIONS

The conditions described above make for a sales market which is skewed toward the larger players (both wireless providers and tower companies) and which is characterized by sales of portfolios that include secondary consideration and soft asset transfers. As previously stated, virtually all of the sales included one or more of the following components in addition to the cash transaction:

- Financing (partial or full) provided directly, or via a conduit, from the selling company;
- Purchase price premiums in exchange for relationship exclusivity;
- Right-to-build and build-to-suit contracts for future development;
- Partial stock consideration; and
- Ownership interest in the acquiring company (effectively a partial corporate merger).

These conditions are a direct result of the industry dynamics. Specifically, while the wireless providers desire to free-up capital and transfer the laborious process of new tower development to a third party, they are unwilling to give up complete control of their life-blood asset (towers) to a fully independent company. At the same time, the tower companies' financial futures, and their ability to raise capital on Wall Street and elsewhere, depends on their ability to mass tower inventory and establish a network to attract co-location tenants. This has created a somewhat incestuous market with the two main players finding themselves mutually dependent. However, with most of the large transactions, the scales were significantly tipped toward the wireless companies since they had the assets needed by the tower companies and since they are well established, well capitalized companies. The net result has been a seller's market with prices reaching levels that have surprised even the participants.

There is evidence of this in some of the transactions that occurred in 1998 and 1999. The following table lists a number of large transactions with per tower prices well above the replacement cost (without depreciation) and with NOI multipliers. As the table shows, there is a wide range of sales prices on a per tower basis.



TOWER TRANSACTION, 1998-2001

DATE	BUYER/SELLER	# OF TOWERS	VALUE OF TRANSACTION (\$MM)	PRICE PER TOWER (\$,000)	CURRENT YEAR TOWER CASH FLOWS MULTIPLE
JAN-01	SBA/US UNWIRED	400	\$ 125	\$ 313	17X
DEC-00	AMERICAN TOWER/ALLTEL	2,193	\$ 658	\$ 309	21X
SEPT-00	SBA/TELECORP PCS	400	\$ 90	\$ 327	20X
AUG-00	SPECTRSITE/SBC	3,900	\$1,308	\$ 399	37X
SEPT-99	AMERICAN TOWER/AT&T MICROWAVE	1,942	\$ 260	\$ 180	16X
SEPT-99	CROWN CASTLE /GTE	2,300	\$ 900	\$ 391	20X
AUG-99	AMERICAN TOWER/AIRTOUCH	2,100	\$ 800	\$ 392	24X
MAR-99	PINNACLE/MULTIPLE TRANSACTIONS	47	\$ 74	\$1,574	N/A
MAR-99	CROWN CASTLE / BELL SOUTH	1,850	\$ 610	\$ 330	25X
MAR-99	CROWN CASTLE / POWERTEL	650	\$ 275	\$ 423	25X
FEB-99	SPECTRA SITE / NEXTEL	2,000	\$ 630	\$ 315	22X
DEC-98	CROWN CASTLE / BELL ATLANTIC	1,427	\$ 650	\$ 455	22X
NOV-98	AMERICAN TOWER / OMNI AMERICA	246	\$ 400	\$1,628	33X
NOV-98	AMERICAN TOWER / TELECOM TOWERS	367	\$ 185	\$ 504	16X
OCT-98	AMERICAN TOWER / 4 TRANSACTIONS	322	\$ 104	\$ 321	23X
OCT-98	CROWN CASTLE / MILLENNIUM	132	\$ 15	\$ 116	NA
JUL-98	PINNACLE / MOBILE MEDIA	163	\$ 170	\$1,043	14X
JUN-98	OMNI AMERICA / RF COMMUNICATIONS	11	\$ 5	\$ 473	13X
APR-98	OMNI AMERICA / ARCH	151	\$ 38	\$ 253	16X
MAR-98	PINNACLE / SOUTHERN	201	\$ 84	\$ 415	13X
FEB-98	SPECIALTY TELE / OMNI AMERICA	40	\$ 117	\$2,932	13X
	MEAN:			\$ 623.48	20.53X

## INCOME APPROACH

Future benefits are typically measured as: potential gross income (PGI) - the total potential income attributable to the real property at full occupancy before operating expenses are deducted; effective gross income (EGI) - the anticipated income from all real property operations adjusted for vacancy and collection losses; net operating income (NOI) - the actual or anticipated net income remaining after all operating expenses are deducted from effective gross income, but before mortgage debt service and book depreciation are deducted.

There are two methodologies for estimating the market value by the income approach. The first is an income multiplier method which recognizes that participants in the market place often adhere to a certain standard or benchmark of pricing which is a function of gross or net revenue. The second methodology is direct capitalization whereby all future benefits are itemized, scheduled with respect to time, and converted to present value.

## INCOME MULTIPLIER INDICATIONS

Every industry has its own benchmarks or standards for financial performance. Among these benchmarks is the ratio between price (asset value) and earnings. In each industry the market players reach a comfort level with a particular index or ratio and the market tends to congregate around a norm. In the stock market such an index has traditionally been the price-earning ratios, and with hotels and other real estate it has been gross income multipliers. Given the infancy of the communication tower industry (and specifically the third party tower companies), it is fair to say that such an index or benchmark for this industry is still forming. Nonetheless, conversations with market participants indicate a pervasive perception that towers are trading based on a multiple of the NOI. As the preceding table illustrates, there exists a wide range of indicated multipliers depending on the particular asset, or portfolio, being considered. However, it is imperative that market research be conducted to determine the appropriate multipliers for any given market or sub-market. With the market conditions that recently existed, multipliers were, at least partially, dependent on the perceived income growth potential of the asset as opposed to the historical income stream. This was because most towers purchased were purchased from owner-occupants.

The market rational has held that a tower company (the purchaser in most cases) stands to make the majority of its revenue, and almost all of its net revenue, from the non-anchor co-locators. If a tower is well located and has only one anchor tenant the potential revenue from co-locators is often limited only by the load capacity of the tower structure. Therefore, a buyer can afford to pay a higher multiplier of the relatively limited existing income (assuming assignment of anchor-tenant rent in the cases of purchase/lease-back). This runs contrary to normal practice in most commercial real estate. In essence, the market is saying that a tower is more valuable (on a multiplier basis, not in absolute dollar amounts) if its occupancy is lower. Currently, the demand for tower space is very high and the barriers to entry for new towers (zoning restrictions, etc.) are substantial. A tower with excess capacity is the inventory most buyers are seeking in today's market. As illustration, the following tables provides representative multipliers as they relate to existing income.

TOWER TYPE AND STATUS	NOI MULTIPLIER
SELF-SUPPORTING TOWER (SST) OR MONOPOLE TOWER LOCATED IN A LARGE URBAN AREA WITH ONE CREDIT ANCHOR TENANT AND EXCESS CAPACITY FOR ADDITIONAL CO-LOCATORS.	14
SST OR MONOPOLE TOWER LOCATED IN A SMALL OR MEDIUM URBAN AREA WITH ONE CREDIT ANCHOR TENANT AND EXCESS CAPACITY FOR ADDITIONAL CO-LOCATORS.	10
SST OR MONOPOLE TOWER LOCATED ALONG A MAJOR HIGHWAY OR INTERSTATE WITH ONE CREDIT ANCHOR TENANT AND EXCESS CAPACITY FOR ADDITIONAL CO-LOCATORS.	12
SST OR MONOPOLE TOWER LOCATED IN A LARGE URBAN AREA WITH ONE CREDIT ANCHOR TENANT AND FULLY LOADED WITH OTHER CO-LOCATORS, NO EXCESS CAPACITY.	12
SST OR MONOPOLE TOWER LOCATED IN A SMALL TO MEDIUM URBAN AREA WITH ONE CREDIT ANCHOR TENANT AND FULLY LOADED WITH OTHER CO-LOCATORS, NO EXCESS CAPACITY.	8
SST OR MONOPOLE TOWER LOCATED ALONG A MAJOR HIGHWAY OR INTERSTATE WITH ONE CREDIT ANCHOR TENANT AND FULLY LOADED WITH OTHER CO-LOCATORS, NO EXCESS CAPACITY.	10



## DIRECT CAPITALIZATION

As with income multipliers, capitalization rates for transactions during the last few years have ranged widely. Using the transactions previously described, we can see stark evidence of this fact, as shown in the following table.

TOWER TRANSACTION, 1998-1999				
BUYER / SELLER	# OF TOWERS	VALUE OF TRANSACTION (\$MM)	EST. NOI* (\$MM)	INDICATED OAR
SBA/US UNWIRED	400	\$ 125	\$ 7.35	5.88 %
AMERICAN TOWER/ALLTEL	2,193	\$ 658	\$ 31.33	4.76%
SBA/TELECORP PCS	400	\$ 90	\$ 4.5	5.00%
SPECTRSITE/SBC	3,900	\$ 1,308	\$ 35.35	2.70%
AMERICAN TOWER/ALLTEL	2,193	\$ 658	\$ 32.62	4.96%
CROWN CASTLE /GTE	2,300	\$ 900	\$ 45.0	5.00%
AMERICAN TOWER/AIRTOUCH	2,100	\$ 800	\$ 33.0	4.13%
PINNACLE / MULTIPLE TRANSACTIONS	47	\$ 74	N/A	N/A
CROWN CASTLE / BELL SOUTH	1,850	\$ 610	\$ 24.4	4.00%
CROWN CASTLE / POWERTEL	650	\$ 275	\$ 11.0	4.00%
SPECTRA SITE / NEXTEL	2,000	\$ 630	\$ 28.6	4.54%
CROWN CASTLE / BELL ATLANTIC	1,427	\$ 650	\$ 29.5	4.54%
AMERICAN TOWER / OMNI AMERICA	246	\$ 400	\$ 12.1	3.03%
AMERICAN TOWER / TELECOM TOWERS	367	\$ 185	\$ 11.6	6.27%
AMERICAN TOWER / 4 TRANSACTIONS	322	\$ 104	\$ 4.5	4.33%
CROWN CASTLE / MILLENNIUM	132	\$ 15	N/A	N/A
PINNACLE / MOBILE MEDIA	163	\$ 170	\$ 12.1	7.12%
OMNI AMERICA / RF COMMUNICATIONS	11	\$ 5	N/A	N/A
OMNI AMERICA / ARCH	151	\$ 38	\$ 2.4	6.32%
PINNACLE / SOUTHERN	201	\$ 84	\$ 6.5	7.74%
SPECIALTY TELE / OMNI AMERICA	40	\$ 117	\$ 9.0	7.69%

\* The NOI assumes Gross Potential Income less 40% vacancy, credit loss and operating expenses.

Obviously, some of the indicated capitalization rates are suspiciously low. Again, this is because of the presence of soft assets included in most of these transactions. This data is provided to illustrate the need to collect a full set of data on each sale, as available, so that the hard cost can be segregated from other consideration.

## NOI

To arrive at a net operating income figure (or earning before income taxes and debt amortization – EBITDA), we must first estimate the gross potential income. This data can come from historical data, market data, and estimates based on third party studies. From the gross potential income figure is deducted a vacancy/credit loss allocation and operating expenses. The operating expenses include land lease (if the land is not owned in fee simple), tower and ground maintenance, sales and marketing (for co-location tenants), administrative and management costs, utilities, property taxes, insurance, and reserves for replacements.

## RECONCILIATION OF APPROACHES

As with any asset valuation, the final step in the process is to weigh the relative strengths and weaknesses of the three approaches and reconcile them into one value opinion. In the case of cell towers, each approach has its strong and weak points.

For the Cost Approach, data is usually available for land sales/leases and the cost of tower construction. However, the current market seems to give little consideration to the cost of construction when towers are purchased. This is evidenced by comparing the prices paid per tower to construction costs per tower. The average cost to build, as reported by Crown Castle and SBA, was between \$240,000 and \$250,000 per tower. However, both of these companies purchased existing towers at an average rate of \$356,000 per tower during the last three years. This equates to a 42 percent premium. Consequently, the cost approach is not a very accurate indicator of value in today's market. This condition is likely to change as the tower companies fill-out their inventories and the cellular providers divest themselves of their tower assets.

For the same reasons, the Sale Comparison Approach is an accurate value indicator in today's market. Its weakness, however, is the inherent difficulty associated with separating the value paid for the tower assets from the value of built-to-suit agreements, relationship building, and other soft assets.

The Income Approach is a very useful if reliable data can be obtained as to the lease rates for co-location tenants. The scarcity of data, coupled with the skewed capitalization rates produced by the recent buying frenzy, means that valuation by the income approach is dependent on the ability to collect and properly analyze market indications.

Endnotes:

- i Investing in the Tower Industry. Lehman Brothers, October 6, 1998
- ii ESMR, Enhanced Specialized Mobile Radio, digital mobile telephone services offered to the public over channels previously used for two-way analog dispatch services.

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