

# A ROAD MAP TO THE BEST PRACTICES FOR UTILITY WIRELESS COLLOCATION

*Condensed from a Research Report prepared for the benefit of members of the United Telecom Council and Wireless Business Opportunities Committee (WBOC)*

As utilities continue to look for ways to make best use of assets, many are finding that reserve space on transmission towers and communications antenna structures can be a source of useful revenue.

The wireless communications industry continues to develop, requiring new sites for existing networks as well as for new technologies. While most utilities have left the competitive telecommunications arena in recent years, wireless collocation is becoming a relatively simple way to add to the bottom line using existing assets. What this niche industry has not had before now, however, is information on “how the other guys do it” that may lead to more efficiencies, better carrier relationships and a more successful business.

Members of the United Telecom Council’s Wireless Business Opportunities Committee (WBOC), made up of utilities of various ownership types and sizes operating Utelco (a utility owned competitive, commercial telephone/IT services entity that may utilize existing utility private communications infrastructure) collocation businesses, are interested in finding ways in which to standardize wireless collocation practices in order to improve the business climate. The objectives of the WBOC include a better understanding of the needs of carrier customers and determining ways in which utilities can become better partners in the wireless siting effort. Thus, this Road map to Best Practices for Utility Wireless Collocation study is created as a first step in gathering information in order to establish industry consensus and define “best practices” for utility collocation businesses. As part of the study, a survey was generated and distributed to United Telecom Council (UTC) members seeking input on the current state of their business and construction practices with regards to wireless collocation in North America and internationally. Aggregated data from the survey is shown in Appendix A.

The results are also presented throughout the body of the text, with various analyses and recommendations for “best practices”. The note

must be made that common consensus is an evolving effort and, therefore, this document is but a starting point for what is hoped to be a continuing effort.

An individual utility’s collocation business is influenced by numerous forces forming unique requirements for the particular business:

Finding common consensus across an entire industry is a challenging but worthwhile endeavor. What we have discovered thus far: while some elements of standardization already exist among utility wireless collocation processes, there is room for greater improvement; this will facilitate better communication with carrier customers resulting in greater speed to market.

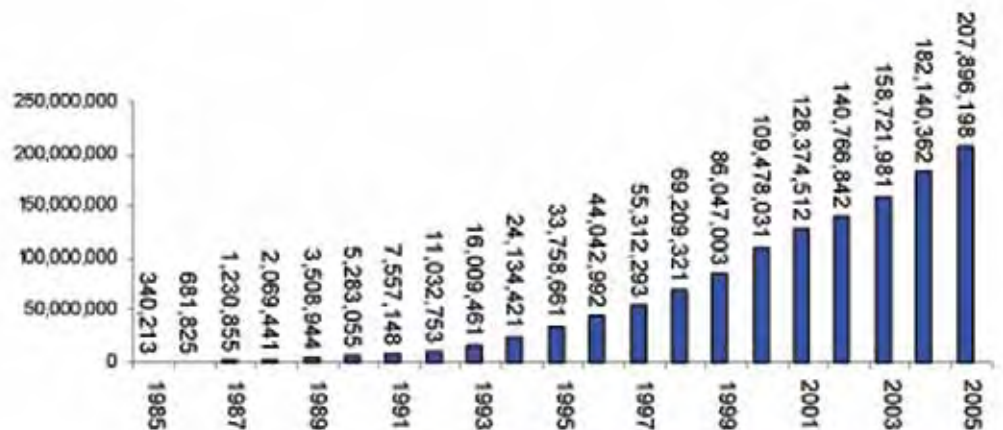


## THE BUSINESS CASE FOR UTILITY WIRELESS COLLOCATION

While using utility assets, especially transmission towers, can have downsides for commercial wireless carriers, the utility’s expertise in strong and reliable infrastructure build out is a plus. The leasing of internal assets for commercial wireless infrastructure siting and the utilization of utility personnel/talent to provide design, construction, installation and management of wireless antenna solutions positions utilities as very strong niche competitors in the large and competitive wireless siting market.

### a. Defining Opportunities

The wireless industry experienced a banner year in 2005, with subscribers increasing by 12.3%. The number is but the latest addition to a rapid growth pattern for the wireless carrier industry; this in turn offers continuing and steady collocation



Year-end 2005 Estimated Wireless Subscribers  
Highest Growth Year Ever: Up More than 25.7 Million from December 2004

opportunities for Utelcos.

But the growth of cellular subscribers is only one consideration and factor in concluding that wireless collocation business will continue to be viable for the foreseeable future.

Some of the larger wireless carriers boast extensive "national" coverage, but all providers are driven to establish additional cellsites/base stations by several factors, including providing new service in geographic areas and filling in areas where existing signals are weak. The reuse of spectrum or bandwidth to meet the needs of increasing population and to accommodate the higher speeds of emerging technologies also drive collocation opportunities through the resulting need for "capacity" sites.

Therefore, a second indicator of continued collocation business is the need for wireless carriers to constantly improve quality and range of coverage.

Even when a carrier offers coverage in a certain geographic area, calls can be dropped due to limitations in network architecture (a dropped call can occur when there are too few antennas in a particular area), capacity (how many callers are using the airwaves/antenna at a given time), and topography (buildings, man-made clutter, foliage and terrain). The effects of topography can be a localized "dead spot" caused by signal blockage between the handset and the cell tower. Link budget used for path loss and margin fade may become insufficient as a result of topographical changes. Carriers are constantly working to improve and upgrade their networks in order to minimize dropped calls, busy signals, and dead spots. Each attempt to mitigate faulty service offers a local utility an opportunity to lease infrastructure to commercial wireless service providers.

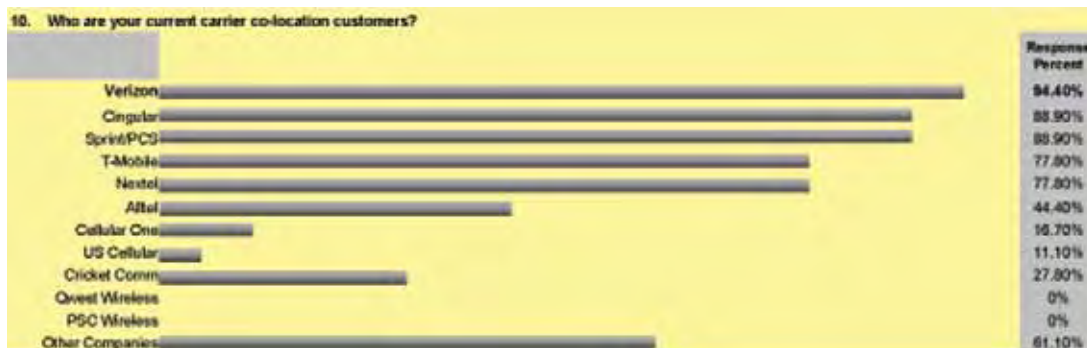
While wireless carriers are understandably close-mouthed about their specific business plans, insights may be gained into potential collocation opportunities by monitoring sites such as [www.deadcellzones.com](http://www.deadcellzones.com). This particular service relies upon consumer reports of specific trouble spots for Verizon, Cingular, Sprint/Nextel, T-Mobile, Alltel, Cellular One, US Cellular, Cricket Comm, Qwest Wireless and PSC

Wireless.

Respondents to the UTC survey for this report indicated that they currently work with the following wireless carrier companies:

As would be expected, most U.S. survey respondents lease to the top five

Comm, TAMA Comm, Clearwire, Newpath, Startouch and Cellnet. Our Irish respondent named Vodafone/Verizon, British Telecom (BT), Meteor, Irish Broadband, DigiWeb, Clearwire and Last Mile Wireless. Many respondents stated that



large wireless carrier companies, regardless of regional locations, reflecting the carriers' goals of national coverage. However, both U.S. domestic and international data was gathered, as this business opportunity is one that may be of interest to utilities nearly everywhere.

"Other Companies" named by survey respondents as business partners are N-Tellos, Suncom, Clear Wire, RAM

leases are also provided to small paging companies, Police, emergency services, state and local governments, various radio stations and municipalities. Interestingly, tower consolidator companies, Crown Castle and American Towers, normally competitors of utility collocation businesses, are also named as lease customers.

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Investment Committee Chairman, Rich Grimes sees evolving wireless broadband technologies as offering significant lease up opportunities for utility members, "In addition to the major wireless carriers and tower companies, there are evolving alternative broadband wireless technologies that have the potential to become a significant new source of siting revenue for Utility Companies. Some examples of these new technology deployments are WiMAX and companies like MediaFLO... (which is) a Qualcomm venture, a dedicated multicast mobility delivery system that is very complementary to carriers because it allows them to provide multicast mobility without utilizing the carriers' own network capacity. We see these evolving broadband technology deployments creating increased demand for space on strategically located infrastructure in the future".

Marc Ganzi, CEO of Global Tower Partners, points to much carrier business driven by capacity build outs in the future and a "predictable, steady cash flow..." Further, he notes that carriers are moving concentrically away from (population) centers and from roaming partners into new markets with site construction.

This is especially true for Verizon and Cingular. Other factors that are expected to drive carrier network growth are demand from public safety, homeland security and network portability. Jim Eisenstein, CEO of Optasite, explains that carriers are focusing beyond commuter corridors now that people can take their phone numbers with them to a competing carrier service. This forces companies to build out their networks. He also points to potential billion-dollar sales driven by the Patriot Act, which will spur the deployment of new government sites and technologies, and by the Coast Guard.

**b. The Business View from the Wireless Carrier's Perspective**

Lending great impetus to the WBOC's efforts to achieve consensus on streamlined and consolidated business processes are the motivating words of wireless carriers and associated industry partners such as Justin F Marron, Senior Vice President of WCP Utilities, "Most utility co-location procedures are viewed by the wireless carriers as overly complex and far too time consuming to consider as a viable primary candidate. Consequently, carrier tenants typically

view utilities as backup candidates for cell sites. The need for utilities to implement efficient streamlined procedures to ease this point of pain is paramount to driving new wireless revenue to the utility. Understanding both the wireless and utility industries, and knowing their respective needs, is critical to creating, effective and efficient co-location procedures that will bring new revenue to both parties. At the end of the day both the utilities' and the carriers' goals must be aligned for the new procedures to function correctly and generate revenue."

An additional insight for utility consideration was provided by Neil Boyer, director of Cingular Sites, at the 2006 Tower Technology Summit in April.

He emphasized that speed of deployment is more important to a carrier company than pricing, "Speed is still

**c. Traditional Collocation Business for Utilities and Competitors**

Cellular service providers at first primarily constructed and owned their own towers; allowing competitors to share space on their assets was never a consideration. Carriers later saw the opportunity to reduce infrastructure investments and free up cash for other uses by leasing space from "Tower Consolidators", huge companies that cater to multiple service providers. This trend was reinforced by local government ordinance preferences for fewer towers with more carriers using each (collocation).

The current top companies in this industry sector are:

Tower consolidator companies are the primary competitors of utility collocation businesses, but certain market

Top Tower Consolidator Companies

	<i>American Towers</i>	<i>Crown Castle</i>	<i>SBA Communications</i>	<i>Global Signal</i>
<b>2005 Sales (\$mil.)</b>	\$944.8	\$676.8	\$260	\$368.1
<b>Largest Customers</b>	Wireless carriers, radio and TV broadcasters	Cingular, Optus, Sprint Nextel, Verizon	Cingular and Sprint Nextel	Wireless carriers, Government, radio and TV broadcasters
<b>Number of Towers</b>	~22,000 - broadcast & communications	~12,000 radio towers	> 3,300	~ 3,000 towers
<b>Locations (Primary)</b>	US, Brazil, & Mexico	US & Puerto Rico	Eastern US, Puerto Rico, US Virgin Islands	Southeast & Mid-Atlantic US, Canada & UK
<b>Additional Comments</b>	The company sold off its tower, construction unit. It merged with SpectraSite (2005)	Also in Australia (Vodafone customers)	Leading independent owner and operator of wireless communications towers.	Formerly called Pinnacle Holdings

Source: Hoovers On-line

king, getting on the air as fast as possible...." Brian Fliss, T-Mobile's director of national development concurred, saying, "Everyone is looking for speed...." These comments were made in the context of reciprocal tower leasing agreements between carrier companies themselves; however, the concept can be extracted for utility company collocation businesses.

From the carrier's point of view, speed to market is often the most important element in a new cell site lease decision. Therefore, it is in the best interest of utility collocation businesses to streamline business processes and practice superior communications with carrier customers in order to speed-up implementation. The ability to deploy equipment rapidly can tip the scale in favor of utility infrastructure collocation.

forces are steering wireless carriers away from traditional collocation of antennas and other cell site equipment at large consolidator sites. These include:

- Utility assets often are located in hard-to-reach places ideally suited to cell site expansion;
- Abundant, available utility infrastructure lends itself to rapid cell site deployment;
- Utility property owners own their infrastructure and generally do not need multiple tenants on their towers (or other infrastructure), as do tower consolidators, in order to realize a positive return on their investment;
- Increasing resistance to the construction of new towers in some areas has played a role in steering carriers towards utilization of existing infrastruc-

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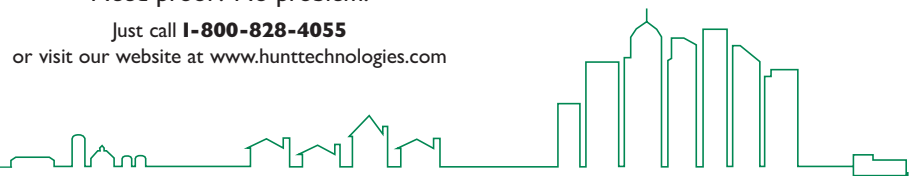
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## Best Practices continued from Page 18

ture for new equipment mounting.

Therefore, in recent years the practice of locating wireless equipment on non-tower property including utility infrastructure has become a dominant implementation strategy. According to representatives of the wireless carrier community, "Utilities are an ideal choice for carrier tenants as they are the largest infrastructure owners in any given area; typically have power and backhaul at or near every site, and most regulatory bodies favor this type of co-location as an alternative to a new tower."

Crown Castle International Corp., the nation's second largest tower consolidator, said in March of 2006 that its average annual tenant income was \$18,000, representing a monthly lease rate of \$1,500, with average three percent (3%) annual escalation. For the tower consolidator sector the following broad estimates are given:

Monthly rates for Personal Communications Service (PCS, or second-generation cellular) carriers must now factor

Type of Corridor:	Calls Per Hour:	Lease Per Month:
Secondary Highway	600 or less	\$1,200 to \$1,400
Primary Highway	600 - 1,200	\$1,400 to \$1,900
Expressway/Freeway	1,200 - 1,600	\$1,900 to \$2,100
Prime Locations	1,600 +	\$2,100 +

Source: Wireless Estimator

in voice/data convergence and increased minutes of use (MOU). "Calls per hour" is less frequently used as a measurement for leasing analyses; however, these figures give a general idea of collocation competitors' price points.

The point is that utility wireless collocation businesses may enjoy some pricing advantages, since the infrastructure already exists for power delivery and there is an easier ROI (return-on-investment).

However, pricing is a complicated matter dependent on many factors.

Interestingly, carriers themselves are competitors to utility IOUs in the traditional tower leasing business. That is, companies such as Cingular are engaged in dual roles as entities that rent space for antennas from others, while at the same time serving, as are site landlords that rent tower space to others (Cingular owns 7,000 towers or structures with leased space). This enables reciprocal pricing agreements to be struck. T-Mobile owns 4,500 towers that are available to Sprint and other companies in leasing agreements with reciprocal pricing. To complicate matters further, respondents to the UTC-generated Wireless Collocation Survey stated that tower consolidators American Towers and Crown Castle also are customers of utility IOUs, as stated above. There are many ways to slice up the wireless siting business pie, and with the development of new wireless technologies with different technical requirements, the scene will only become more complex. Utilities interested or involved in this business are advised to think imaginatively!

### d. New Business Opportunities

Non-traditional wireless business opportunities spring

from the implementation of new technologies such as Wi-Fi, Distributed Antenna systems (DAS) and soon, WiMAX. With the advent of new lines of business in wireless collocation, utilities may wish to review current business practices to determine whether they make sense in the new arenas.

#### • Distributed Antenna Systems (DAS)

Municipalities are key players in implementing newer wireless infrastructure. In a sense, if a utility is not municipally owned and operated, the city may be a competitor of the area utility for wireless collocation. This is especially true of so-called "disruptive" technologies such as Distributed Antenna Systems (DAS), which brings the wireless infrastructure as close as possible to the consumer and whose equipment can be mounted almost anywhere. For such systems, utility infrastructure is only one of many property options. A primary reason for deploying DAS is to improve coverage and capacity where conventional towers are not feasible (dense urban, suburban, residential and hard-to-zone areas). Antennae for DAS have become so "stealthy" that they are almost impossible to detect, whether for in-building or outdoor systems.

Jack MacLeod, Principal Vice President and Chief Technology Officer for Bechtel Communications, cautions the tower industry that, "We better start paying attention to our customers. They don't want the big old huge towers in their back yards."

Laura Altschul, director of National Siting Policies & Programs at T-Mobile USA, works with municipalities closely and notes that as technology moves to smaller and smaller cell-sites, municipalities are loath to give up revenues from traditional structures. She notes that city officials are wondering how to initiate permits for in-building or outdoor DAS networks.

This would defeat one of the main attractions to DAS; with towers there are multiple hearings and permits required and currently things go much more smoothly for the lower profile DAS.

A multitude of factors such as cost, zoning constraints, number of potential carriers sharing a system the system can tilt a carrier's decision in a given case to deploy a Distributed Antenna System vs. conventional cell sites. Laura Altschul asserts that the challenge is to make sure that jurisdictions understand that DAS is not the only solution: "Carriers are interested in the systems, but not at the exclusion of other technical solutions that improve networks and the ability to improve customer service."

Magnus Friberg, Chief Operating Officer for MobileAccess Networks, has overseen the deployment of major DAS and WiFi systems throughout the United States, including the Microsoft headquarters campus and SeaTac Airport, and has been a thought leader in distributed antenna technology design and adoption. Magnus believes that "Distributed Antenna Systems, both in-building and outdoor, provide the opportunity to leverage one common infrastructure for several different wireless technologies deployed at different times. With greater demand for cell density to support the capacity required from multiple bands of technology, DAS becomes compelling."

For utility wireless collocation businesses, regardless of the type of utility, the challenge of implementation of emerging wireless technologies such as DAS is to determine the best business model and to arrange processes in such a way as to make collocation profitable.

#### V. SUMMARY

Utility collocation entities can look forward to continuing business with carrier customers in years to come, both in the form of tradition tower siting and in the siting of emerging technologies' equipment such as DAS, Wi-Fi and WiMAX. Wireless communications is now a part of daily life and the cellular business is not slowing down. Wireless carriers are constantly improving their networks in order to accommodate growing populations and the greater bandwidth needs of next generation wireless. Although steadily profitable, niche collocation Utelcos businesses are generally considered to be just a nice addition to the core business of power delivery by parent utilities. From the Carrier's perspective, utility infrastructure is often viewed as a last choice among leasing options due to the perceived difficulty in doing business. But by streamlining processes and improving communications with carrier customers, wireless siting Utelcos can improve profitability and

make significant contributions to the utility's bottom-line.

From the wireless carriers' point of view, speed to market is often the most important element in a new cell-site lease decision. Therefore, the ability to rapidly deploy equipment can tip the scale in favor of utility infrastructure collocations. Utility collocation businesses also enjoy pricing advantages over competitors that make them attractive to carriers.

Tower companies were the original suppliers of leased space to the carriers and are the primary competitors of the utility wireless siting business. However, Utelcos are well positioned to compete:

- Utilities own assets located in hard-to-reach places, ideally suited to cell site expansion;
- Utilities' abundant, available infrastructure lends itself to rapid cell site deployment;
- Since private property owners possess existing infrastructure to capitalize upon, they do not need to have multiple tenants on their towers (or other infrastructure), as do tower consolidators, in

order to realize a positive return on their investments;

- Increasing resistance to the construction of new towers in some areas has played a role in steering carriers towards utilization of existing infrastructure for new equipment mounting.

Utilities should also bear in mind that emerging technologies may eat into the tradition tower siting business. This is counter balanced by the fact that as wireless technologies evolve to smaller and smaller cell sites, utilities also possess many alternative infrastructure options (such as lamp posts, roof tops, water towers) to offer for leasing arrangements.

This will necessarily drive changes in business and construction processes associated with utility wireless collocation activities.

*Courtesy of WCP Utilities, Justin F. Marron, Senior Vice President and Allen Garrison, WBOC Chairman, Salt River Project, Wireless Project Manager.*

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