

2012 VAAO Annual Conference

Identification and Valuation of
Communication Towers





Goals for this presentation....

- Understand the fundamentals of the cell site to allow you to track changes that are made that can impact the value.
- Apply some specific ideas that, in conjunction with all departments, will allow better management of towers/carriers in your community.
- See how the values reported to you stack up against the actual construction costs that our technical department assembles.



- Founded in 2008 to fill the knowledge gap from the industry to the assessing community.
- Created methods and technology to find the actual values of the towers and the associated carrier equipment.
- Provide the useful life tables based on actual real reported life span of equipment in the field.
- Creating tools to assist Assessors in the process management within their own systems.
- Additional Towers: Radio, TV, Corporate, Radar, Agricultural



Tower and Carrier Basics

Layout and Design of a Cell Site



Types of Cell Towers



Monopole



Self Supporting



Guyed Wire

What to Look for up Top



Major Equipment from Tower Company

- Tower itself
 - Guyed Wire
 - Self Supporting
 - Monopole
 - Tower Lighting
 - Fencing and gravel
 - Building
 - Shared Generator
- 

Major Equipment from Carriers

- Transmitters (Internal/External)
- Back up batteries
- Antenna Panels
- Antenna Mounts
- Back up power systems
- Buildings and infrastructure
- Tower Mounted Amplifiers
- Ice Bridge
- Cables



Evolving Cell Technology
Untangling the Alphabet Soup

AT&T-2G

- **GSM – 2nd Generation Technology (2G).**
- Entered market in the 1990's.
- Created first world phone.
- Uses SIM card that can be transferred to other GSM phones.
- With the addition of the EDGE (Enhanced Data for GSM Evolution) radios, Benefits, higher data speed transfer than other technologies.
- AT&T to phase out by 2016. 12% of their non-prepaid customers on this service, BUT all phones use these towers in extended coverage areas.
- Weakness is range limitations due to frequencies.

AT&T - 3G

- **GSM/UMTS- 3rd Generation (3G) equipment**
- Enhanced Capabilities
- Able to transmit data at higher speeds than previous generations.
- Data Transmission of up to 84 meg/sec

AT&T – 4G LTE

- **4G LTE-**
 - Introduced in 2010 with commercial rollout in 2011.
 - Has the industry leading data speeds.
 - Adding 700 and 850 Mhz to increase their coverage zone per tower site.
 - Verizon still leads 2:1 over AT&T implementation.
- 

Verizon – 2G

- CDMA - 2nd Generation (2G) introduced in the 1990's.
 - Used 800 Hhz frequencies for enhanced coverage area.
 - Lower battery life, inability to switch handsets with other carriers or phones.
- 

Verizon – 3G

- CDMA - 3rd Generation (3G) introduced in approximately 2000.
- Used 800 Mhz frequencies for enhanced coverage area. Roughly twice that of GSM carriers.
- Lower battery life, inability to switch handsets with other carriers or phones.
- Added enhanced data capability, but unable to browse web and talk at the same time.

Verizon – 4G LTE

- LTE - 4th Generation (4G) introduced in approximately 2009. 38 cities completed in 2010 well ahead of AT&T. By the end of 2012, will have roughly twice the subscribers up on their 4G service.
- First out with true 4G speeds.
- Still operating on 800 Mhz. Frequencies for good coverage.
- Added handsets, able to browse web and talk at the same time.
- Benchmarked a bit slower than AT&T true 4G-LTE

Sprint/Nextel

- CDMA carrier on 2G and 3G equipment
- First carrier out with 4G WIMAX through partnership with Clearwire in 2008.
- Purchased Nextel in 2004 for \$36 Billion. In 2008, wrote off \$30 Billion of the purchase.
- Nextel was the major IDEN, push to talk provider in the US.
- Sprint announced in 2010 plans to shut down the Nextel network 9/30/2012, removal to follow. Launching combined solution.

T-Mobile

- GSM carrier on 2G and UMTS on 3G equipment.
 - Equipment mirrors AT&T, making it attractive as a takeover target, which AT&T attempted. FCC application withdrawn 11/29/2011.
 - Maintains a “technical” relationship with AT&T.
 - Rolled out enhanced UMTS in 2010...Should have been branded...4G lite.
 - Announced in 2011 will start true LTE rollout in HSPA+42 standard in 55 markets...doubling speed.
- 

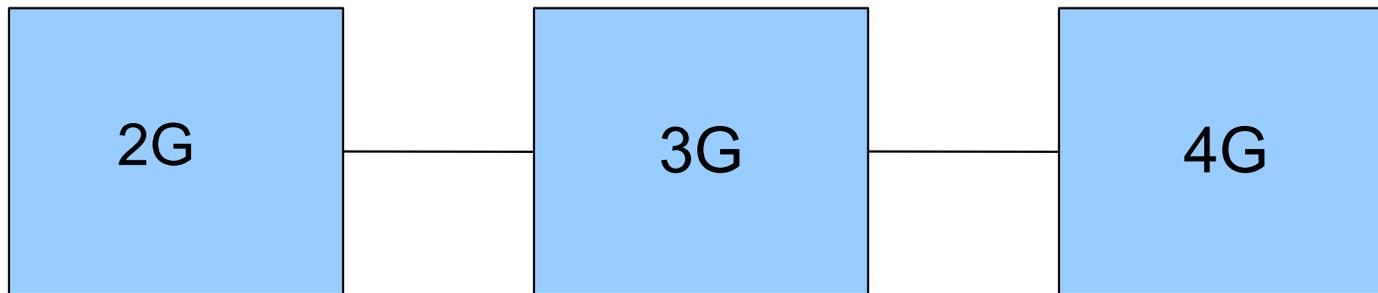
T-Mobile

- October 2012 T-Mobile announces intent to purchase Metro PCS.
 - Benefits – Additional 1900 MHz bandwidth combined company. Existing LTE equipment in place for Metro PCS helps speed LTE expansion. Additional customer base for the combined units.
 - Challenges – MetroPCS runs CDMA equipment over most of their network, T-Mobile, GSM.
 - Changes for Assessors – By 2015 most MetroPCS equipment is coming out, reducing digest.
- 



The cell industry...getting the most
out of their equipment

2G, 3G, 4G onsite integration



**External
Hypercombiners**

How your calls are processed at the cell site



2G

\$50



3G

\$80



4G

\$100

So.....how long does the equipment last?

- Dependent on the specific component.
 - Up until 3G/UMTS, the technology transitions occurred in 10 year cycles. But, in much of the country, carriers skipped directly from 2G to 4G/UMTS/LTE.
 - Carriers use software and enhancements to extend the life of the systems.
 - Virtually none of the equipment classifies as computer equipment.
- 

What about towers?

- New Galvanized steel towers are designed to last for 30-50 years. These should be depreciated at the longest allowable in your tables.
 - Not unusual to find towers moved after being re-installed at another location.
 - Older steel towers may have a shorter life depending on maintenance.
- 

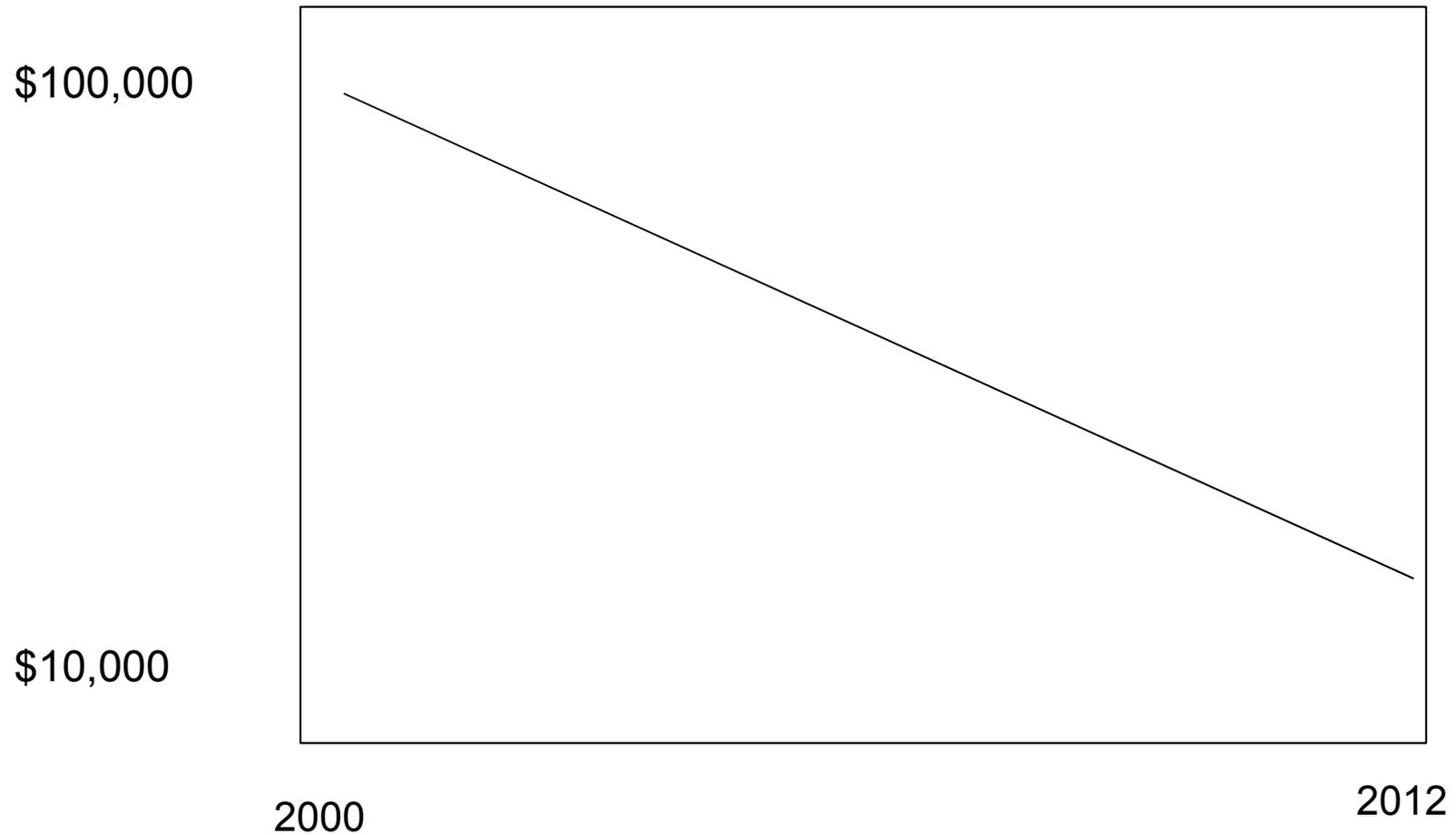
Construction Cost Differences

- Guyed Wire Towers – Less expensive material cost, but more skill involved with tensioning the wires. Less attractive the landowner, ties up more land.
 - Self Supporting Towers- Most common tower with smaller footprint with higher steel cost, but easier to stack.
 - Monopole-Most expensive cost per foot, but more attractive than other two options. For shorter towers.
- 

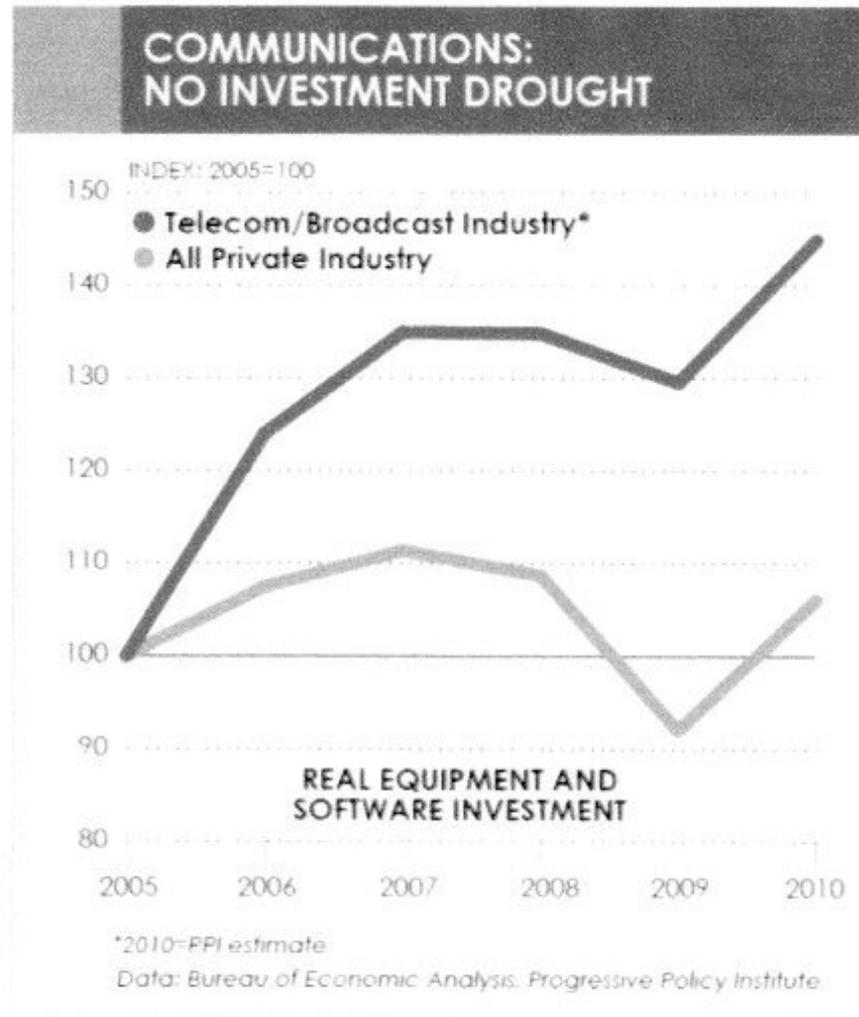


Shrinking Cost...Expanding Capacity

Transmission Equipment Costs over time



Industry Spending



Industry Spending

INVESTMENT HEROES

The top companies based on domestic capital spending*

CAPITAL SPENDING IN THE U.S., LATEST FISCAL YEAR	BILLIONS OF DOLLARS
AT&T	19.5**
Verizon	16.5**
Wal-Mart	8.8
Exxon Mobil	7.8
Chesapeake Energy	6.6
Chevron	6.4
Comcast	5.0

*Universe includes large nonfinancial U.S. corporations

**Includes a small amount of non-U.S. spending

Data: Company financial reports, PPI estimates.

Includes investment in exploration for energy companies.

Summary....

- Although the costs of transmission equipment continues to fall...the industry continues to increase both capacity and coverage.
- The key to valuation is based on the historical date the equipment is put into service. The same equipment may be used over a period of 6-10 years where the design is essentially unchanged.



Leading trends
In Cellular Technology

Smaller is great...

- Microcells – Coverage at a lower cost. Integrated unit construction. No expansion capability. Used by smaller carriers.



Even Smaller is better for communities, but harder for assessors...

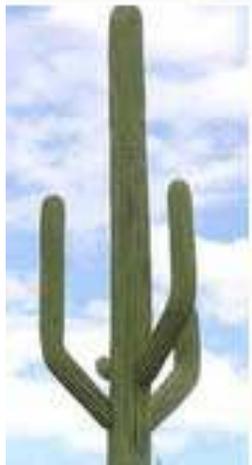
- Picocells – Clearwire (Sprint) polebox. Lower cost on existing locations. Easier to hide...harder to find.



Wireless merges with Wifi

- Republic Wireless – Blends wireless call across Wifi networks and cellular.
 - Home Hot Spots – To enhance your cell calls, your provider gives/sells you a home hub. Uses you home wifi to backhaul your calls.
 - Devicescape- Accumulating open wifi hotspots, to create a national network to carry cell calls. Customers include Republic and MetroPCS.
 - AT&T has 30,000 hotspots throughout the US.
 - Challenge of assessing property used for commercial purposes.
- 

Find the cell site...





T-Mobile and AT&T
Is the deal dead...or does it really matter?

Details of the deal...

- March 28, 2011 Tmobile and AT&T announced the intent to merge their companies.
 - Benefits are vast for the companies. Each company operates on the GSM networks and use the same equipment. Tmobile has customers that are value conscious, and AT&T, the premium customers looking for features and service.
 - August 31, 2011, the justice department blocked the merger with the intent to slow the review processes.
 - November 23, 2011 AT&T withdraws their FCC application for takeover, eleven days short of the 180 day review window. Will review plans to reapply.
- 

So if it's dead, why does it matter?

- AT&T UMTS cabinets are designed to accept up to 4 additional carriers to operate on each unit.
 - AT&T has vastly more sites and upgraded equipment than T-Mobile's site.
 - If AT&T allows T-Mobile to lease space off their sites, their network jumps virtually overnight. They lose the need to keep equipment and staff in the field, and can concentrate on marketing.
- 

How does that impact assessing?

- When T-mobile moves onto the AT&T site, their equipment may be pulled.
- All the data on that equipment will be lost and the ability to value it in the field will be lost.



Industry Changes that impact value



Valuation methods and findings

CTS Methodology

- Photos, measurements, and inventory of external equipment and settings are gained from the site visit.
 - Wireless company data accumulated from our technical staff that have worked with virtually every carrier in the US.
 - Tower data is on construction cost of the particular model, style, and height. Factor in the load and design to calculate the cost.
 - We create useful life tables based on actual replacement cycles of equipment.
- 

CTS Findings

- **Based on data collected on nearly 500 towers in four states.**
- Towers typically reflect values that are between \$180,000-\$300,000 based on installed cost.
- Carriers are valued at between \$80,000 - \$500,000, with a median value \$250,000
- Values vary greatly between carriers. Some carriers use microcells or dated equipment that allow them to get an operational site for a lower cost.
- Historical date is critical to getting a true value on each site.
- Overall site value is dictated by the number of carriers, who the carriers are and the overall age of the equipment.

Comparison to submitted reports

- Tower values are typically between 40-60% undervalued to actual constructed cost.
 - Carrier values are between 50-80% undervalued.
 - Carriers may show original cost of equipment but apply their own accelerated depreciation.
 - Returns fail to report all equipment that is required to make the site operational.
 - Requesting additional information from the carriers may high detail of small value parts, that can't be matched year to year.
- 

Defending Appeals

- Work with Carriers and Tower companies to bring additional information to the table.
 - Offer to have carriers open the sheds and jointly inventory equipment in sheds and cabinets. So far, we have had cooperation from Sprint and Tmobile.
 - Represent at appeals board. Seldom is successful in carrier is unable to open their cabinets/sheds to allow for inventory.
- 

Carriers press to change numbers

- Carriers support change to Fair market value.
 - Allows for “economic and technical obsolescence”.
 - No need to supply dates of equipment installation.
 - CTS supports maintaining the current historical approach. Aligns with approach used on all other personal property categories. Establishes a baseline at install that doesn't change until replaced.
 - Declining equipment costs counters the declining customer base.
- 

Marshall and Swift Errors

- Tower companies are attempting to use M&S numbers to get reductions.
 - The numbers for guyed wire towers are understated by as much as 75%.
 - Prices for Self Supporting towers are as much as 25% too high.
- 



Closing the Loop...Permitting

Ordinances

The first step to getting useful information from the permit is the proper ordinance.

- Ordinance should overview where towers can be located and what requires permitting.
 - Requires tower company to have carrier lease before building tower.
 - Tower companies must prove need through propagation studies that a co-location will not work.
 - Creates balance to not handicap the cell industry but create workable guidelines.
- 

How permitting cheats you out of information and your county additional funds

- Nearly all permit values filed are not accurate. Making information useless to assessors.
 - If the information were accurate, assessors would have the correct equipment, date of installation, and value on equipment.
 - CTS has implemented a service with County permitting to review the blueprints for these new cell sites and upgrades to give an accurate value.
 - Benefit to Assessor is the correct baseline information, and for the permitting department, the correct fees.
- 



Walt Woodard

walt@celltowersolutions.com

706.380.7333

Website: www.celltowersolutions.com