

CELLULAR TRANSMISSION FACILITIES – MARKET OVERVIEW

Telecommunications – Macro Market Trends

In 2009, the telecommunications industry consisted of approximately \$3.7 trillion in revenue globally, with roughly \$1.2 trillion in the U.S, including equipment and related services, as well as subscriber revenues.

The International Telecommunication Union (ITU), the leading United Nations agency for information and communication technology issues, estimates the number of mobile subscribers worldwide at 4.01 billion at the end of 2008, up from 1.41 billion in 2003. This is a 184% rise in the number of subscribers, and represents a compound annual growth rate of 23.2%. Global wireless subscribers are projected to rise to over 5.5 billion by 2011 to 2012, as providers are making service prices low enough to be affordable for vast numbers of people. Telecommunications remains one of the largest providers of employment in the world, with over 1 million employees in the U.S. alone.

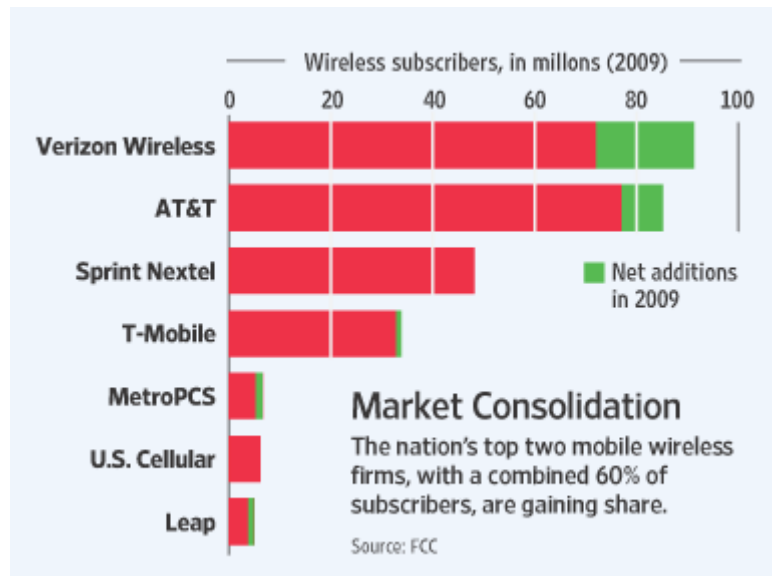
Several major factors are creating changes in the telecommunications sector today, including: a) budgetary pressures and slower growth due to the global recession, b) a shift in residential and personal use from wired services to wireless, c) intense competition between cable and wired services providers and d) rapid advances in Internet and wireless technologies, including more advanced cellular handsets and wider availability of 3G services.⁸

US Wireless Market

On May 20, 2010, Federal regulators described the wireless telecommunications market as more concentrated, possibly laying the groundwork for new regulations that could aid smaller cell phone carriers such as Sprint Nextel Corp. and T-Mobile USA.

In its annual report on competition in the wireless industry, the Federal Communications Commission on Thursday reversed years of findings that the market is "effectively competitive."

The report falls short of declaring the market uncompetitive, but the agency says industry concentration has increased by nearly a third since 2003. Wireless providers bristled at the report, saying choices are available.



The FCC reversal is notable since the agency has already been focusing on wireless industry practices, such as early termination fees, and is pushing to free up airwaves that can be auctioned off to wireless carriers in the next few years.

It said the nation's two largest providers, AT&T Inc. and Verizon Wireless, a unit of Verizon Communications Inc., have 60% of subscribers and revenue, and continue to gain share from rivals. The smallest two, Sprint and T-Mobile, lost 1.7 million subscribers combined in 2008 and added just 827,000 last year.

"The U.S. has the most intensely competitive wireless market on the planet, and it's becoming more competitive by the day," Verizon said in a statement disagreeing with the report. "The facts and the record establish conclusively that the wireless marketplace is 'effectively competitive,' as the FCC has found in the previous six wireless competition reports."

Wireless carriers are sensitive about whether the FCC thinks national or local markets are competitive because the agency will soon free up more airwaves for wireless broadband services. If the agency doesn't think a local market is competitive, it could restrict which wireless companies are allowed to bid at auction.

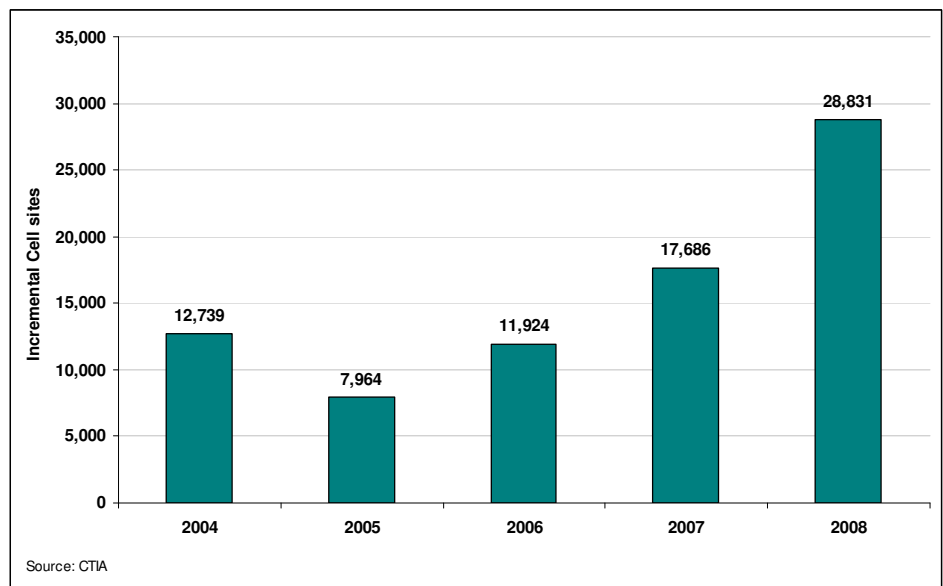
The FCC's 237-page report provides reams of data about

wireless services and changes in usage, as more Americans have begun using their cell phones to access the Internet in addition to making phone calls.⁹

The industry has bristled at the report. Even before it was released, companies argued Americans have more choice in wireless services than ever.

Cellular Transmission Facility Standards

A "cell site" is a term used to describe a site where antennas and electronic communications equipment are placed to create a cell in a cellular network. A cell site is composed of a tower or elevated structure for mounting antennas, and one or more sets of transmitter/receivers, digital signal processors, control electronics, a GPS receiver for timing, regular and backup electrical power sources, and sheltering. Often, cellular transmission facilities are located affixed to the parapet of a multi-story commercial building.



⁹ Wall Street Journal – May 2010

When choosing a site, cellular companies determine areas where the placement of a new tower will accomplish one or more of the following goals:

1. Expansion: The tower site will provide coverage over areas that do not currently have coverage.
2. Capacity: The tower site provides additional capacity for the carrier to handle more calls in areas where existing towers are overloaded. Presently, this also includes the ability to provide enhanced data services to customers.
3. Quality: The tower fills in a "hole" or an area where customer calls are frequently dropped or call service is poor.

Further, there are certain requirements specific parcels must meet.

1. The site must be within an area developed by the carrier known as a "Search Ring." A search ring is an area designated by the cellular company's radio frequency engineering department that depends on topography, demographics, and other factors including whether the area is urban, suburban or rural in nature.
2. The site must be large enough for a cell tower or transmission facility - normally (but not always) this is a parcel double the size of the height of the tower. So if a tower is 100 ft tall, the parcel must be 200' x 200'. Most urban transmitters are less than 100' tall.
3. Parcels must have easy access from public roads.
4. Parcels must be suitable from a zoning perspective. In many jurisdictions, towers are only allowed on commercially or industrially zoned parcels. Some areas allow towers on agriculturally zoned parcels, and many municipalities do not allow towers on residentially zoned parcels.
5. Parcels must not have conditions that would make constructing a tower unduly expensive. These conditions can include wetlands, poor or rocky soil conditions, significant distance to the cell tower site from the main road, lots of trees, and possible hazardous waste on the property.
6. Parcel landowners must be willing to lease the site at rates acceptable to the wireless carrier.

Types of Towers

There are four types of towers utilized by cellular companies. The first is referred to as the Lattice Tower, or a self-support tower (SST). It provides strength, low wind resistance, and economy in the use of materials. Such structures are usually triangular or square in cross-section. They often afford the greatest flexibility and are often used in heavy loading conditions. These types of towers are typically taller, and used largely in more remote, rural locations.

The second type is a monopole tower. A monopole tower is a single tube tower. It requires one foundation and typically does not exceed 200'. The antennas are mounted on the exterior of the tower.

The third type is a guyed tower. A guyed tower is a straight tower supported by guy wires to the ground which anchor the tower. Most radio and television towers are guyed towers. While guyed

towers require the most amount of land, they are the cheapest to build for heights of 300' or greater. Again, this tower design is typically used in rural locations.

Stealth towers are typically required by zoning and used to hide the cellular tower. They are always more expensive than the other types of towers. More often than not they require additional material to "Stealth" their appearance and typically don't provide the same amount of capacity for tenants. These towers are often designed to mimic trees, and are most common in urban locations.

Each carrier will typically use multiple antennas on the tower. Sometimes there are as few as three antennas, sometimes as many as eighteen antennas per carrier. As additional subscribers come onto the carriers system the carriers need additional antennas to handle the added capacity. In rare cases, there are actually towers installed on the top of roofs which then in turn have antennas installed on them. Most of the time, antennas are simply attached directly to the parapet or roof either by roof mounts or platforms that rest on top of the roof.

Generally, cell sites are grouped in areas of high population density, where the most users are present as the goal of cell tower placement is to increase the "Minutes of Use." The main way of increasing minutes of use is by placing cell towers in locations that have high daytime working populations or heavy nearby traffic.