

# Planning for Cellular Towers

by Ben Campanelli

Seated in the front row of the meeting room is a group of stern-faced town residents. Sitting to the rear is a tightly knit cadre of business attired people armed with display boards, brightly colored transparency overlays, and stacks of neatly stapled handouts. Are they the Wal-Mart group? No, that's next month. It must be those tower people.

Both groups wait patiently as the items on the agenda are slowly dispensed. The front row participants perk-up when the tower agenda item is read: A public hearing will now be held considering the application of New Age Wireless, a Delaware Limited Partnership request for approval of a 195 foot wireless communication "utility" facility proposed in an R-1 residential district.

## WHY SO MANY TOWERS?

As a planning commissioner or zoning board member, if you haven't already been through a tower request, you probably soon will. In fact, chances are you will get to hear quite a few of them. In the early 1980s, the Federal Communications Commission (FCC) granted licenses to two competing cellular phone providers in each community. Over the last 15 years, cellular telephone firms have installed some 22,000 antenna support structures. They have used existing building rooftops, towers, water tanks, and similar structures — and occasionally built new towers when no other alternatives were available.

Starting in late 1995, from three to six additional "next generation" Personal

Communication Service (PCS) licenses have been auctioned-off by the FCC, giving high bidders the right to build digital wireless phone networks which compete with standard cellular service. They have paid substantial sums of money for the right to operate under these licenses. See "Personal Communication Services," on page 10.

Industry analysts predict that between 122,000 and 250,000 new cell sites will be needed to meet the growing demand of cellular phone subscribers in the United States alone. As many as half of these sites will require new towers, especially in suburban and rural areas where few suitable tall structures are available to lease as antenna support platforms.

Did the FCC and Congress know what was coming to American towns and villages? While the landmark Telecommunications Act of 1996 does indicate an intent to preserve the authority of state and local governments over decisions regarding the "placement, construction, and modifications of personal wireless services," Section 704(a) of the Act states:

"The regulation of the placement, construction, and modification of personal wireless service facilities by any State or local government or instrumentality thereof shall not unreasonably discriminate among providers of functionally equivalent services and shall not prohibit or have the effect of prohibiting the provision of personal wireless services." (emphasis added).

The Act also expressly preempts state and local governments from regulating personal wireless communications facilities on the basis of the environmental effects of radio frequency emissions to the extent that such facilities comply with the FCC's regulations concerning such emissions. [Editor's Note: For more on the Telecommunications Act's require-

ments, see pages 7-9 of this issue].

Complicating things further are court rulings in several states which have bestowed "utility use" status to wireless telecommunication facilities, allowing them in all land-use zones as if they were the local utility pole, cable junction box, or electric sub-station facility. The "utility" definition is not far off the mark, however, when one realizes that the new PCS wireless providers are vying not only for the mobile communication marketplace, but for serving as a substitute for the wired phone lines presently in your home or place of business.

## TIME IS MONEY

Many wireless providers optimistically plan for only a six to eight month time period for acquiring, permitting, and building their initial set of transmission facilities in order to launch new wireless service in a community. Often two or more wireless providers compete for the same scarce "friendly" sites within the target market, sometimes driving prices up for available antenna space.

With over \$20 billion being spent by wireless carriers for the privilege of operating public frequencies, it's no surprise the industry is attempting to gain quick approvals of their new tower sites to begin offering service to the public. And it is understandable when major wireless telecommunication companies sue local governmental agencies for passing moratoria on new tower site applications while they take a look at their applicable regulatory codes.

What can planning agencies do, given the provisions of the 1996 Telecommunications Act which strongly favor the growth of the wireless communications industry?

Many communities, in consultation with their legal counsel, are developing or modifying zoning ordinances to

ensure local review consistent with the requirements of the Telecommunications Act. Not as often focused on, but in the long-run even more beneficial, is strong county or regional planning for the siting of cellular towers. This is best done through a collaborative effort involving all parties interested in the issue — public and private.

### ROLE OF COUNTY & REGIONAL PLANNING

County and regional planning agencies are well-situated to assist communities in making sure that new cellular towers are planned to minimize negative impacts. Given that cellular providers plan their networks from a regional (and broader) perspective, it makes sense for the public to plan for the siting of telecommunications facilities at the same scale — instead of each locality seeking to plan for tower siting independently of neighboring communities.

Based on my experience, the following are some actions that county or regional planning agencies can take to help ensure that the siting of cellular towers meshes with local (and industry) needs.

1. Provide community educational workshops and forums at which planners, industry representatives, and local residents can discuss — and begin to cooperatively plan for — the development of cellular networks in their area.

2. Conduct a county-wide inventory of existing structures suitable for use as antenna support platforms, such as communications towers, buildings 70' or taller, water tanks, and inactive chimneys. As part of the inventory, also identify existing or planned public facilities and lands upon which antennas might be mounted or towers constructed — e.g., government centers, public works operation yards, police and fire stations,



Short monopole ~100' w/split panel array (cellular)

surplus highway right-of-ways.

3. Classify and prioritize preferred land use areas for new towers. This step will require cooperation and input not just from local governments within the county/region, but from the wireless communications providers.

4. Maintain a central data-base and map of inventoried existing structures, potentially available public facilities and land, and preferred land use areas.

5. Have wireless service providers submit, and annually update, a county-wide antenna network plan.

6. Develop criteria for tower siting and design, including preferred construction materials, types and colors, setback requirements, height restrictions, accessory equipment location, fencing, access road criteria, co-location capacity certification, FAA lighting requirements, and ground screening.

7. Develop incentives to encourage good tower design and co-location of towers (i.e., having more than one cellular service provider locate their transmit-

ters on a single tower). Incentives might include tax abatements for “stealth” or camouflaged towers, and an expedited review and approval process for towers proposed within preferred land use areas, using public facilities, or co-locating with other providers. *“Stealth” Towers, p. 6*

8. Prepare criteria or a checklist for new tower approval (which can be used at the county/regional level, or adapted for local use). Among items which might be included:

- Review of site search ring analysis reports documenting the scope of the applicant’s search for existing structures or property owners in preferred land use areas and the rationale for selecting the site under consideration..

- Review of visual impact analysis, including “simulations” or digitally reproduced depictions of a “virtual” tower of like size and type viewed from various locations around the proposed site. *See also, “Visual Analysis,” on page 11.*

9. Provide planning and engineering assistance to communities, including help with review of tower applications.

Time to go home. It’s now ten-thirty PM. Everyone’s patience is wearing a little thin.

The tower applicant’s lawyer didn’t know if the owners of the 440’ FM radio tower on Harris Hill Rd. in the town had been asked if it could be used as an antenna site. The applicant’s radio frequency engineer testified that he didn’t believe the site would work because it was 1 1/2 miles from the site search ring and would interfere with a cell site planned in an adjacent town. He didn’t have signal propagation coverage maps with him to back-up his assertion.

As the night wore on, it only got

*continued on page 6*



## Wireless Network Design

The communications site acquisition process is like right-of-way acquisition work associated with utility facility build-out projects. Both involve land acquisition before the project can proceed. An important difference is that the wireless industry does not have the power of eminent domain. As more wireless carriers “mine” site rings in each community, building and land owners are becoming more familiar with the rules of the game. Even when owners are aware of controversial proposed tower sites in their region, a willing owner with a suitable site can almost always be found within a typical site ring.

There are various techniques for designing wireless communications “grids.” A grid is a set of geographic areas or “cells” which organize the radio signals for the specific wireless service so that needs of prospective users operating cellular phones in the system are met.

1. The Perfect Grid. A “perfect grid” wireless network plan looks like a honeycomb with each propagation “ring,” or cell, having a hexagonal shape which interlocks with adjoining cells forming a seamless grid. See Figure 1.

2. The Grid-in-Progress. The construction program is rolled-out in phases with emphasis on providing coverage first to the most lucrative areas within a market. Targeted areas include downtowns, suburban commercial zones, industrial parks, entertainment districts, shipping facilities, inter-state highways, marinas, and airports.

3. Site Rings. A coverage ring is the total contiguous land area which is intended to be served by a cell site base station facility. A site search ring is the area inside a coverage ring within which a suitable “friendly” structure or land-lease parcel must be acquired for use as a base station facility. See Figure 2.

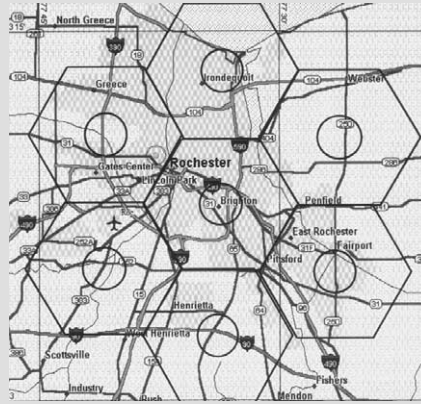


Figure 1—The Perfect Grid

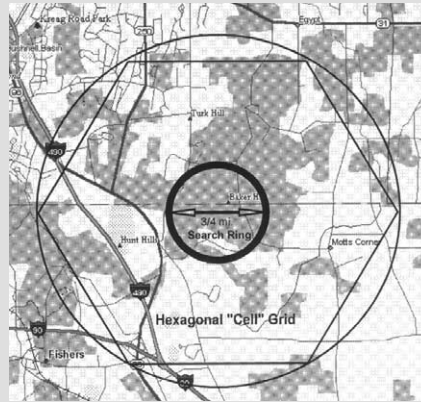


Figure 2—Site Rings



## “Stealth” Towers

No, they’re not part of a secret Defense Department program. “Stealth” towers are simply towers which are camouflaged in ways to minimize their visibility. For service providers, the often triple costs of building such towers must be weighed against the potential legal and intangible public relations costs associated with an all-out brawl with local government approval agencies, impacted property owners, and neighborhood associations — as well as the lost potential revenue generated by each site during the delayed months it’s not on the air. See also “Camouflaging” on page 11.

## Planning for Cellular Towers

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worse. The applicant’s site acquisition consultant admitted he did not contact the town’s public works director to see if the DPW’s 40’ roof-mounted tower stub could be rebuilt to accommodate both the town’s antennas and the applicant’s base station equipment.

In response to the neighbors’ concern about the health effects from radio signals emitted from the proposed antennas, the applicant’s expert consultant told them that the high powered TV broadcast towers and 50,000 watt radio station signals emanating from miles away were far more powerful than what the applicant’s signal levels were going to be.

The commission votes to table the tower application so that the applicant can do more homework and answer all the questions put forward at the meeting. The neighborhood folks are outside in the parking lot discussing whether they should hire their own lawyer to fight the proposed tower. Someone’s cellular phone rings. It’s one of their kids asking his dad to pick-up a pizza they’ve ordered for a sleep-over party. It’s time to go home. ♦

*Ben Campanelli heads CommQuest, a communications site acquisition consulting firm which emphasizes working closely with government planning and zoning agencies when siting towers for industry clients. He has been involved with telecommunications issues the past eleven years. Prior to that, he served in various positions with the City of Rochester, New York, including Deputy Commissioner of Buildings and Property Conservation.*



*Campanelli is author of the Cellular Tower Guide, a resource manual for local officials, land-use planners and legal professionals on the wireless communication business and site acquisition process. For ordering information, contact Campanelli at: 20 Shaftsbury Rd., Rochester, NY 14610; phone & fax: 716-482-4063; e-mail: cquest@frontiernet.net.*

# Sticks in the Air, Stakes in the Sand

by R. Todd Hunt, Esq.

Not since the advent of funding for the interstate highway system, has federal legislation had such a visual impact upon the landscape as has a very small section of the federal Telecommunications Act of 1996. Unless a community's municipal officials, by rare circumstance, have not received a tower facility application from a personal wireless telecommunication service provider, they most likely have bumped up against [section 704] of the 1996 Act that deals with personal wireless service facilities and their relation to local land use regulation.

It is imperative that local governments update their local zoning and land use regulations to accommodate the provisions of Section 704 if they hope to have much say in the siting of communication tower facilities. As one of the technical consultants I have worked with over the past year continually reminds me, once "an engineering stake is driven in the sand" for a tower (analogous to the proverbial "drawing of a line in the sand"), the wireless tower technology dictates that the options for the siting of surrounding towers is necessarily reduced.

In assisting various communities over the past year on these issues, I have seen several trends develop. Some communities attempt to deal with the 1996 Act by using traditional zoning methods of confining tower facilities to certain zoning districts, such as industrial and commercial districts, and imposing very restrictive height, setback and aesthetic requirements, such as substantial landscaping, painting of facilities certain colors, or even camouflaging towers to make them appear to be trees in the neighborhood.

Depending upon the size and characteristics of the municipality, these traditional zoning methods can either

effectively eliminate the provision of wireless services in the community or, at the other end of the spectrum, be overly permissive causing proliferation of such facilities in the community.

PINPOINT SPECIFIC LAND AREAS IN THE COMMUNITY THAT ARE MORE ACCEPTABLE THAN OTHERS FOR TOWER FACILITIES.

A much more effective method of developing zoning and land use regulations has been to seek the assistance of both planning and wireless telecommunication experts to perform a comprehensive study of the community, its topography, its land uses and its proposed land uses in order to pinpoint specific land areas in the community that are more acceptable than others for tower facilities.

The next step is to create a hierarchy of those acceptable land areas that have been identified in the study. The concept of an overlay zoning district works well in this situation. The overlay district retains the underlying zoning regulations, where not specifically superseded by the new regulations, and does not necessarily track existing zoning district lines.

For example, certain large tracts of governmentally-owned land, large industrial sites, limited access highway locations, and high tension electric power line areas may be more acceptable for towers than certain general commercial areas or residentially-zoned areas. Designating some of those more acceptable areas as "permitted use" areas for tower facilities and designating the location or

collocation of antennas on existing tall structures as "permitted uses" in local codes will often provide the wireless telecommunication companies sufficient adequate options for siting tower facilities without facing a long, drawn-out review by a local planning or zoning board.

Furthermore, designating certain large tracts of vacant land in residentially-zoned areas, other more sensitive commercial areas, or certain public facility use areas as areas for "conditionally-permitted uses" with stricter standards of review by a local planning or zoning board has proven effective. An effective condition to be placed on such a conditional use permit is to require the company to provide proof that it is unable to locate its tower facility within one of the "permitted use" areas in the local code.

This hierarchy of land use areas and levels of administrative review of permits has already worked effectively in some communities. For example, the new PCS companies which are actively building out their systems have greater flexibility in the siting of such facilities and have readily sought those areas where the use is "permitted" rather than "conditionally permitted."

With the multitude of personal wireless service providers entering the market-place, municipal officials must direct the tower facility's engineering stake to be driven in a place in the sand which is most desirable to the community and its residents. ♦


*R. Todd Hunt, a partner with Walter & Haverfield, P.L.L. in Cleveland, Ohio, is an experienced trial and appellate lawyer and legal counselor on municipal law, land use, and constitutional issues. The above article is reprinted with permission of the publisher from the May/June 1997 edition of Municipal Lawyer, published by the International Municipal Lawyers Association (1100 Vermont Ave., N.W., Suite 200, Washington, DC 20005).*

# The Telecommunications Act of 1996

by Brian J. Sullivan, Esq.

Through the Telecommunications Act of 1996 (TCA), Congress and the President placed the United States squarely on the information “superhighway.” At its core, the TCA seeks to ensure that American consumers and businesses will have access to increasingly sophisticated communications technologies at competitive rates.

During the decade preceding enactment of the TCA, the demand for cellular communications services grew at an annual rate of 30 to 35 percent. In order to meet this demand, the companies licensed by the Federal Communications Commission (FCC) to provide these services sought to construct “cell sites” on buildings and existing communications towers. Despite their efforts, no suitable structures existed in many areas, and the providers sought permission from zoning boards and planning commissions to erect new communications towers. Many of these applications faced opposition from nearby residents who voiced fears of this seemingly new technology.

 *New Technology or Old?*

The TCA attempts to address the localized resistance to this evolving technology by instituting a national standard for the consideration of cellular and personal communications service (PCS) facility applications. See “*Personal Communications Services*”, page 10. That standard contains three main components: (1) regulation of radio frequency radiation (RFR); (2) prohibitions against activities that effectively prohibit the provision of wireless service or discriminate among providers; and (3) mandates to conduct the local hearing process in a manner that ensures due process and timely decision making.

## 1. Radio Frequency Radiation (RFR)

Only the Federal Communications Commission (FCC) may regulate personal wireless service facilities — cellular and

PCS sites — regarding RFR. As long as the operators of those facilities comply with the applicable FCC regulations, state and local land use authorities are preempted from taking action based on RFR. In contrast, zoning boards and planning commissions may continue to regulate RFR levels for other facilities, such as television and radio stations.

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As the FCC has observed, most tower-mounted cell sites emit RFR at levels that are hundreds to thousands of times below the applicable exposure limits. Therefore, where the tower-mounted antennas are more than 10 meters (about 33 feet) above ground level, the FCC “categorically excludes” cellular providers from having to prove compliance with the FCC’s RFR regulations. In other words, the FCC presumes such compliance.

*References: 47 U.S.C. 332(c)(7)(B)(iv); In the Matter of Guidelines for Evaluating the Environmental Effects of Radiofrequency Radiation, ET Docket No. 93-62, Report and Order (FCC, Aug. 1, 1996); Second Memorandum Opinion and Order (FCC, Aug. 25, 1997).*

## 2. Activities that Effectively Prohibit the Provision of Wireless Service, or Discriminate Among Providers.

The FCC typically licenses two cellular providers and up to six PCS providers in each “market.” The TCA mandates that competition between these providers be open and free. In the land use climate that exists today, it is more difficult to

obtain required permits for towers than it was some years ago. However, cases decided under the TCA demonstrate that state and local governments cannot treat providers who “got there first” differently than those who follow. Such treatment would give an unfair competitive advantage to the early market entrants.

For example, a court has ruled that a zoning board’s denial of a permit for a PCS provider because two cellular providers were already providing service in the same area constituted unreasonable discrimination. Similarly, under the TCA a municipality may not simply decide that it already has enough towers and, on that basis, deny an application.

While the TCA makes clear that no municipality may flatly exclude personal wireless service facilities from within its borders, the law also invalidates local regulations and decisions that *have the effect* of preventing a personal wireless service provider from offering effective service.

Thus a court has found that a municipality’s denial of permission to construct a PCS site in an area necessary to serve a busy Interstate highway corridor (where competing companies were providing uninterrupted service) violated the TCA. The court reasoned that the denial would have increased the PCS provider’s costs — by requiring it to find a less desirable, alternative site — and thereby reduced its ability to compete throughout its entire network.

In another recent example, a state land use court invalidated the zoning regulations of a Vermont town that effectively excluded cell sites from all of the high ground in that town and limited sites to valleys and floodplains. In making this ruling, the Court held that: “In mountainous and forested terrain, and especially in relatively steep and narrow valleys, cellular phone technology

demands a site that is relatively high in comparison to the surrounding topography." Hence, in such areas, municipalities must make reasonable provision for personal wireless service providers to have access to the high ground.

*References:* 47 U.S.C. 332(c)(7)(B)(I)(i); *Western PCS II Corp. v. Extraterritorial Zoning Authority of the City and County of Santa Fe, et al.*, 957 F.Supp. 1230 (D.N.M. Feb. 27, 1997); *Sprint Spectrum, L.P. v. Jefferson County*, 968 F.Supp. 1457 (N.D. Ala. July 31, 1997); *United States Cellular Corp. v. Board of Adjustment of the City of Des Moines, Iowa*, LACL NO. CL 000 70195 (Iowa District Court for Polk County Dec. 31, 1996); *In re Appeals of Vermont RSA Ltd. Partnership d/b/a Bell Atlantic NYNEX Mobile*, Docket Nos. E96-192 and E96-205 (Vt. Env. Ct. July 18, 1997).

### 3. Affirmative Obligations on State and Local Decisionmakers

• *Decision Within a Reasonable Period of Time.* Congress, concerned that opposition to applications for cell sites would result in delays in the local hearing process, mandated that zoning and planning authorities act on such applications within a reasonable period of time. Courts determine reasonableness with reference to the type of application involved. For example, the time typically needed to rule on a conditional use application for a personal wireless service facility should be no different than the time needed to rule on any other conditional use application.

In the first months after enactment of the TCA, the delays that Congress feared did materialize in some communities. Because of these delays (and concerns that remanding an overturned denial to a local zoning board would simply result in more delays or another denial), courts have issued writs of mandamus, compelling boards to issue permits as soon as possible. Very recently, a court has invalidated a moratorium that prevented personal wireless providers from filing any

permit applications in that locality.

• *Denials Must Be in Writing and Be Supported by Substantial Evidence.* If there is an appeal from a denial of an application for a personal wireless service facility, the state or local government bears the burden of proof to show that it based its decision on substantial evidence contained in a written record. The courts have made clear that substantial evidence means more than "conclusory statements for which no explanations are provided." Further, the mere existence of opposition, even numerous and outspoken, does not constitute substantial evidence and, by itself, does not suffice to support a decision to deny an application for a personal wireless service facility.

Instead, substantial evidence requires reliance on specific, concrete evidence presented to the state or local boards. The state or local board must "provide written findings of fact which indicate their evidentiary basis."

*References:* 47 U.S.C. 332(c)(7)(B)(ii); *Bell South Mobility, Inc. v. Gwinnett County, et al.*, 944 F.Supp 923 (N.D. Ga. 1996); *United States Cellular Corp. v. Des Moines, supra*; *Illinois RSA No. 3, Inc. v. County of Peoria*, 963 F.Supp. 732 (C.D. Ill. Apr. 28, 1997); *Sprint Spectrum v. Jefferson County, supra*; *Seattle SMSA Limited Partnership, et al. v. San Juan County, No. C96-15212 (W.D. Wash. Apr. 11, 1997).*

### SUMMING UP:

The thrust of Section 704 of the Telecommunications Act is on fostering the growth of cellular and PCS technologies. To help achieve this, the TCA bars local regulations that have the effect of prohibiting the siting of cellular and PCS towers, or discriminating among service providers. Given the continuing surge in demand for personal wireless services and the corresponding increase in local permit applications for personal wireless service facilities, it behooves local zoning and planning officials to follow these developments closely. ♦

Brian J. Sullivan, Esq. is a member of the Burlington, Vermont law firm of Burak Anderson & Meloni, PLC. He graduated from the University of Chicago with General and Special Honors and from Harvard Law School cum laude. Sullivan's areas of practice include environmental and land use law and telecommunications issues. He has represented communications providers, as well as municipalities, in a variety of environmental and land use matters.



## New Technology or Old?

The basic technology employed at cell sites has existed for decades. A cell site consists of radio equipment and antennas that transmit and receive radio signals at the upper end of the ultra high frequency portion of the electromagnetic spectrum. Due to lack of use by television broadcasters, the FCC, in the early 1980s, reallocated these frequencies to be used for cellular service.

Recent technological advances have reduced the price of cellular services and have made more sophisticated options — such as voice mail and alphanumeric messages — available. Nonetheless, cellular service constitutes a natural evolution of an older method of communication rather than a dramatic shift in technology. Since the 1920s, first broadcasters, then two-way radio and paging companies, have been constructing towers on which they have mounted antennas that emit radio waves. Most of those broadcast towers are far taller and emit signals of much greater power than those used at cell sites.

# A Wireless Miscellany

*Editor's Note: Thanks to those of you who provided us with information about your community's approach to dealing with wireless towers. Much of the material in this "Miscellany" comes from your input. Our apologies if you sent in information we were unable to include.*

## Cellular Growth Booms

Telecommunications companies continue to report steep growth in wireless customers. During 1995, Ameritech saw its number of cellular customers rise 45.6 percent to almost 1.9 million. Bell Atlantic NYNEX Mobile reported a 43.4 percent increase in customers over the same period. The BellSouth Corporation saw its revenues from wireless communications increase nearly 70 percent between the end of 1993 and 1995, compared to a 13 percent increase from its overall operations.

## Personal Communications Services

PCS stands for "personal communications services," a method of communication similar to cellular. One of the attractions of PCS is that it provides higher quality reception and allows for the transmission of data, as well as voice (though cellular providers are developing comparable capabilities). PCS uses higher frequencies than cellular, which results in PCS signals traveling shorter distances than cellular signals. For this reason, a typical PCS system will require more sites than a typical cellular system.

Unlike cellular services, PCS providers are issued a blanket license by the Commission for their entire geographic area, and are not required to individually license with the FCC each transmitter site within the market area. Another distinction is that the FCC uses different geographic market areas for licensing purposes. Instead of using MSAs and RSAs as in the case of cellular, for broadband PCS the Commission adopted Rand McNally's definitions to divide the United States and its Possessions and Territories into 51 major trading areas (MTA) and 493 basic trading areas (BTA).

## Moratoria

The FCC is currently considering a petition filed by the Cellular Telecommunications Industry seeking to prohibit all local zoning moratoria affecting the siting of wireless telecommunications facilities.

The FCC's Local and State Government Advisory Committee has opposed this request noting that: "Moratoria have permitted communities, often in close consultation with industry representatives, to modify out-of-date regulations and facilitate the placement of facilities. In many communities, the adoption of a moratorium has been followed by the adoption of clear siting policies and procedures that properly balance local safety and aesthetic concerns with the desire of many local residents to have access to reliable personal wireless services." *Advisory Recommendation Number 4 (June 27, 1997).*

While the FCC has not (as of October 1) ruled on the cel-

lular industry petition, it hinted at its position by "tentatively concluding" in a July 28, 1997 Public Notice (FCC 97-264) that "moratoria of a fixed duration, which permit local officials the opportunity to study and develop a process for handling siting requests would be a legitimate exercise of local land use authority ... moratoria of a relatively short and fixed duration may serve the public interest."

The documents cited above are available on the FCC's Web site: <http://www.fcc.gov/wtb/> — which is also an excellent place to keep up-to-date on FCC policies and rulings.

## Co-Location

Co-location (sometimes spelled "collocation") is when more than one antenna or transmitter is located on a single tower. The principal benefit from co-location is that fewer towers are needed to serve a given area. This reduces the overall visual impact of towers on a community. Co-location, however, can necessitate taller towers in order to accommodate multiple transmission devices. It can also raise tricky issues involving "good faith" negotiations between the company owning the tower and potential competitors seeking to share space.

Co-location has become a favored policy in many communities and regions. For example, the City of Solon, Ohio's ordinance provides that "as a condition of issuing a permit to construct or operate a tower in the City, the owner/operator of the tower is required to allow co-location until said tower has reached

full antenna capacity, but in no event fewer than two additional antennas from two additional providers." The owner/operator is also required "to sign a statement that all disputes with future providers concerning co-location and the terms and conditions of co-location shall be submitted to commercial arbitration ... ." Given the City's strong preference for co-location, tower heights up to 199 feet are allowed (in order to accommodate the extra height usually needed for locating additional antennas on a tower).

Daly City, California's, new wireless communications ordinance similarly encourages co-location. When applying for a permit, "the applicant shall specifically state the reasons for not co-locating on any of the existing monopoles and lattice towers within a 3,000 foot radius. ... the applicant may also be asked to provide a letter from the telecommunications carrier owning or operating the existing facility stating reasons for not permitting co-location." The Daly City ordinance also provides that "as a condition of approval for all freestanding monopoles, all telecommunications carriers proposing a monopole shall provide a written commitment to the Director [of Economic & Community Development] that they shall allow other wireless carriers to co-locate antennas on the monopoles where technically and economically feasible."

In Vermont, the Windham Regional Plan includes a policy to "discourage the development of new sites for transmission and receiving stations in favor of utilizing existing

facilities.” This policy was recently applied by the state Environmental Board in denying a land use permit for a 110 foot communications tower. The Environmental Board concluded that the applicant failed to adequately identify and assess existing facilities and failed to negotiate in good faith with the owners of other existing facilities. *Gary Savoie, #2W0991-EB (Aug. 27, 1997)* [Note: The Board’s decision contains an interesting analysis of some of the issues that can come up in determining whether an applicant has been negotiating in “good faith” to co-locate on another carrier’s tower].

The City of Overland Park, Kansas, communications towers ordinance contains several provisions designed to encourage co-location. One limits initial special use permits for towers to five years. “At the time of renewal the applicant shall demonstrate to the satisfaction of the City that a good-faith effort has been made to cooperate with other providers to establish co-location at the tower site.” The ordinance defines “good-faith effort” as including “timely response to co-location inquiries from other providers and sharing of technical information to evaluate the feasibility of establishing co-location.”

## Camouflaging Towers

Another policy encouraged in many new telecommunications tower ordinances is to camouflage towers and related equipment, or make them as inconspicuous as possible.

The City of Liberty, Missouri’s wireless communications ordinance encourages the use of “alternative tower structures” (such as grain silos, utility poles, clock towers, and steeples), as well as other



existing buildings, by providing a simpler review process for those applications.

According to city planner Bonnie Johnson: “The plan adopted by the City Council takes the approach of being flexible on location but strict on design. The ordinance allows wireless communication facilities in any zoning district as long as it fits its surroundings. The hope is that by being lenient on location and creating a relatively simple approval process — for example, antennas placed on existing buildings can be approved administratively — telecommunication providers will choose the path of least resistance which are camouflaged facilities or roof tops in commercial areas.”

Along similar lines, the Town of Matthews, North Carolina, seeks to encourage “stealth” towers by allowing them within residential districts and by authorizing increased heights for stealth towers in other districts. The Matthews ordinance defines “stealth or concealed structure” as “the support structure for a communications system which is primarily for another principal use or accessory to the principal use on the lot where it is located, and partial-

ly or wholly conceals the antenna or minimizes its appearance in relation to the principal use of the stealth structure.”

Planning Director Kathi Ingrish notes that “Duke Power Company has begun offering their transmission towers as antenna locations, so we specifically wrote in allowances to exceed height limits when on existing ‘stealth’ structures.” Ingrish also observes that “for Matthews, what I see as the ‘saving grace’ is the local power company’s participation in the communications game. They are marketing themselves as a host for antennas. Since there are four transmission lines running out from a central point, and their towers are much taller than anything else around, they provide good opportunities for antenna locations without adding new spikes into the horizon.”

A number of companies have already recognized that there is a rapidly growing market for camouflaged towers. The Larson Company, based in Tucson, Arizona, has built on its specialty of fabricating artificial landscapes for theme parks and zoos by developing ways of disguising poles so that they look, for example,

like Date Palm or Lodge Pine trees. Similarly, Stealth Network Technologies of North Charleston, South Carolina, designs and installs antenna sites concealed in bell towers, false chimneys, and other custom-made structures.

## Visual Analysis

As Ben Campanelli suggests in his article in this issue (*see page 5*), planners can require tower applicants to provide a visual analysis or simulation of what the tower will look like in its surroundings. A number of communities have incorporated this type of requirement into their telecommunications tower ordinances.

The City of Overland Park, Kansas, for example, requires that a special use permit application for a communications tower include, among other things, “a photo simulation of the proposed facility from effected residential properties and public rights-of-way as coordinated with the Planning staff.” Similarly, Daly City, California’s ordinance provides for “visual impact demonstrations using photo-simulations ... elevations or other visual or graphic illustrations to determine potential visual impact.”

*continued on page 12*



## Visual Analysis

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Sonoma, California's new wireless ordinance requires that applicants "submit a visual analysis, which may include photo montage, field mock up or other techniques, which identifies the potential visual impacts of the proposed facility. Consideration shall be given to views from public areas as well as from private residences. The analysis shall assess the cumulative impacts of the proposed facility and other existing and foreseeable telecommunication facilities in the area, and shall identify and include all feasible mitigation measures consistent with the technological requirements of the proposed telecommunication service. All costs for the visual analysis, and applicable administrative costs, shall be borne by the applicant."

## "Tiered" Review

A number of communities that have recently adopted telecommunications tower ordinances have made use of "tiered" review. This approach seeks to encourage new antennas to be located on existing buildings (or co-located on existing towers) by providing for quick approval, often administratively by staff, in those cases. Closer scrutiny is given to applica-

involving the construction of new freestanding towers.

Claremont, California, planners note that this approach "makes it easy to obtain permits for the types of telecommunications facilities that the community prefers, such as facade mounted or concealed roof mounted antennas, and makes it more difficult and expensive to obtain approvals for the types of facilities that the community wants to discourage, such as freestanding monopoles."

The Cape Cod Commission, in a model bylaw (i.e., ordinance) prepared for its member towns, employs a tiered review process. According to the Commission: "New facilities which locate on an existing tower, monopole, electric utility tower or water tower require no special permit under the bylaw, as long as they do not increase the height of the structure and as long as they gain site plan approval. The second tier proposed in the bylaw would allow new ground or building mounts anywhere in town by special permit, provided they meet standards for height, camouflage, setback, safety and design. The third tier is for facilities which exceed the bylaws height restrictions. Such facilities would be allowed by special permit only in a designated overlay district which the town has decided can accommodate the new structures."

In addition, the Cape Cod Commission itself reviews most new tower proposals as "developments of regional impact." The Commission has adopted criteria for evaluating towers based on environ-

mental impacts, community character, and other factors.

To assist wireless providers, the Commission has integrated into its geographic information system (GIS) a Cape-wide inventory of existing buildings and structures which may be suitable for antenna installations. The towns have also provided information on areas in which wireless facilities would be both appropriate and inappropriate. This has been incorporated into the GIS maps (along with water resource and conservation areas, state and federal lands, and electric transmission corridors). The Commission is currently in the process of identifying scenic viewsheds to include on the maps as well.

## Environmental Review

In implementing the National Environmental Policy Act (NEPA), the Federal Communications Commission requires applicants to prepare "environmental assessments" for towers that are proposed to be located in certain environmentally sensitive areas, including: officially designated wildlife preserves or wilderness areas; 100-year floodplains; situations which may affect threatened or endangered species or critical habitats; or situations which may cause significant change in surface features, such as wetland fills, deforestation or water diversion. In addition, an environmental assessment must be prepared when sites listed or eligible for listing in the National Register of Historic Places may be affected.

The fact that an environmental assessment is required does not necessarily mean the tower cannot be built. It does, however, call for public notice and opportunity to comment on the environmental impacts

of the proposed tower. If the FCC, after review of the comments, makes a finding of "no significant impact," the project has cleared NEPA scrutiny.

*More information on FCC environmental review and other siting questions is available in FCC Fact Sheet #2, National Wireless Facilities Siting Policies. This 39-page document is available by fax: 202-418-2830 (reference document #6508), and on the FCC's Web site: <http://www.fcc.gov/state&local/>*

## Municipal Profits from Towers

If you can't stop towers from coming in, why not at least profit from them? That's the approach Gastonia, North Carolina (population 62,000) and some other communities have taken by encouraging towers to be located on municipal property, such as parks, golf courses, and school fields.

According to Gastonia planning director Jack Kiser, "the city actively markets municipal property to the cellular industry as site locations." The approval process is much simpler when a site is proposed on municipal land. For example, no public hearings are required. Kiser reports that Gastonia can earn in excess of \$15,000 per year in lease payments for a tower located on city property. Moreover, if a second cellular provider co-locates on a tower (as the city encourages), the city takes in 50 percent of the payment that provider makes to the tower owner. All told, Gastonia will earn \$80,000 next year from the five towers (four of which have co-locators) currently on city-owned land. These towers will yield \$3 million over a 25 year period, not counting taxes, if they stay that long.

The city has also benefited



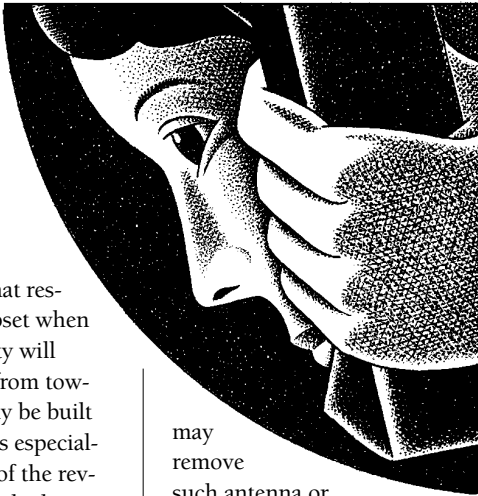
by being able to co-locate, at no cost, all municipal antennas (emergency, non-emergency, and mobile data terminals) on the towers being built.

Kiser believes that residents are not as upset when they see that the city will financially benefit from towers that would likely be built in any event. This is especially the case if some of the revenues can be earmarked to improve the public area within which the tower is located. Kiser also notes that the telecommunications companies have supported the city's policy, since it meets their top priority of getting their facilities installed as quickly as possible.

## Abandoned Towers

While right now it's boom times in the wireless communications industry, it's always hard to predict where technology will be ten or twenty years from now. As a result, many communities with new wireless tower ordinances have wisely included provisions making the tower owner responsible for removing the structure if it stops being used for communications purposes.

The Overland Park, Kansas, communications tower ordinance is typical in providing that "any antenna or tower that is not operated for a continuous period of twelve months shall be considered abandoned, and the owner of such antenna or tower shall remove the same within ninety days of a receipt of notice ... If such antenna or tower is not removed within said ninety days, the governing authority



may remove such antenna or tower at the owner's expense."

## Public Health Impacts

[From a report published by the Vermont Natural Resources Council]

"The electromagnetic spectrum consists of both ionizing and non-ionizing radiation. Ionizing forms of radiation include ultraviolet rays, X- and Gamma rays, and Cosmic rays from the sun. Their harmful effects, particularly their potential to cause cancer, are well known. ...

Radiofrequency fields, including microwaves, are within the non-ionizing spectrum, but that doesn't mean they're completely safe. Their known danger is that under some circumstances — for example, at the transmission point for FM radio signals — they can produce enough energy to cause heating in conductive materials, including human tissue. The heating, or "thermal," effects of high-frequency, non-ionizing forms of radiation are understood; to prevent them, owners of broadcast towers are required to erect fencing and/or post signs to keep the public at a distance from the facilities.

Where the opinion of science is divided, however, is in

*continued on page 14*



## Some Observations

by Robert Baldwin

Municipal tower regulations can generally be divided into the following broad categories:

1. Regulations that require every request for a tower to go through a zoning process of some sort, either to obtain a special exception, conditional use permit, or some other type of commission approval;

2. Regulations that allow towers by right in some districts, provided that certain development standards, such as setbacks from residential districts, are met, but prohibit towers in residential districts;

3. Regulations that through the use of such stringent locational criteria on the placement of towers essentially prohibit them; or

4. Regulations that are silent as to tower locations or exempt towers from the height regulations established in the zoning regulations.

Most of the municipalities we work in require that every tower be approved on a case-by-case basis. The regulations often do not specifically address wireless communications towers, but the cities have determined that these types of towers fall under the generic land use for radio, television, or microwave towers and, as such, require a specific use permit or are classified as conditional uses.

In my experience, cities that require every tower to be heard and approved by a board or commission tend to have the hardest time with towers. This is especially the case in larger communities, where a board or commission may be facing several tower requests a month. I have been to a meeting where the board of adjustment heard 15 separate tower requests!

If elected and appointed officials are getting tired of this, and are approving most tower requests anyway, it probably makes sense to restructure the regulations to allow towers by right in certain locations, but prohibit them in other areas. For example, a city might allow, by right, communications towers up to 120 feet in height in all industrial zoning districts, as long as the towers are at least 300 feet from the nearest residential zoning district.

This type of approach works well provided that the areas where towers are permitted are distributed across the city. City officials do not have to hear and decide every tower request, residential areas can be protected from new towers in close proximity, and communications companies will know in advance where their towers can go.

I have also worked in communities with ordinances so severe that towers are essentially prohibited. Since the Telecommunications Act now provides that local regulations cannot "prohibit or have the effect of prohibiting the provision of personal wireless services" these ordinances may run afoul of the federal law.

There are also communities whose zoning ordinances are totally silent on towers. Chances are, if an ordinance has not been revised in the last ten years, towers are either not mentioned or exempted with a passage that reads "height limits do not apply to radio or television antennas." If your ordinance falls into this category, it is a good idea to fix it.

*Robert Baldwin is a planner with the Dallas, Texas, law firm of Munsch Hardt Kopf Harr & Dinan. He has been involved in the siting of a number of wireless towers.*

## Public Health Impacts

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regard to exposure to non-thermal (or athermal) energy waves, which do not heat body tissue. ... While proof of danger from exposure to non-thermal RFR [radiofrequency radiation] thus far has remained elusive, theories of negative effects include that such exposure indirectly damages DNA, and, perhaps, the electrical transmissions involved in the nervous system. ... The Cancer Journal (Vol. 8, No. 5) provides a cautious voice, stating: 'Epidemiology has seen a large number of examples where health hazards were initially described with unconvincing and sometimes inadequate experiments which demonstrated a weak association with a given environmental influence. Such associations were found between cholera and drinking water containing fecal contaminants, between smoking and lung cancer or between exposure to vinyl chloride and certain forms of liver cancer. All these associations were highly questioned in the past and are now well recognized.' ...

On August 1, 1996, responding to the Congressional mandate as enunciated in the TCA [Telecommunications Act], the FCC adopted new health and safety regulations for exposure. These are based on standards established by the National Council on Radiation Protection and Measurement, a congressionally chartered organization. ... They are scheduled to become effective September 1, 1997.

It is important to note that the FCC addresses health concerns by controlling for exposure — not emissions. A licensee might simply be required to post signs or erect fences around a microwave transmission facility to keep

the public at a distance. And the new NCRP standards ... calculate only for thermal exposure. Questions about long-term, low-level exposure remain unaddressed. ...

Concern about the health effects of emissions from a cellular tower is not a permissible basis for making local zoning decisions if the tower is in compliance with FCC standards; it is, however, a permissible basis for regulating radio and television towers, and other facilities that do not fall within the definition of 'personal wireless services.' Moreover, local authorities may regulate 'personal wireless service facilities' to the extent they do not comply with the FCC guidelines. ... But first it must be determined that they are out of compliance.

Spot inspections by the FCC are not routine, and long periods of time separate a facility's relicensing procedure, when such an evaluation might be done. Thus it would seem an appropriate investment for Vermont's state government ... to see to it that municipalities were equipped and enabled to periodically determine the compliance status of the towers and transmission facilities within their borders."

*Reprinted with permission from Telecommunications and Broadcasting Transmission Facilities in Vermont (August 1997, Vermont Natural Resources Council).*

*Editor's Note: While this just-released report primarily focuses on wireless communications within Vermont's regulatory context, it does include material which may be of interest to readers outside of Vermont — in particular, two chapters dealing, respectively, with radiofrequency interference and public health impacts (from which the material in this sidebar was excerpted)*

*The report is available for \$10 from the Vermont Natural Resources Council, 9 Bailey Ave., Montpelier, VT 05602; 802-223-2328; e-mail: VNRC@plainfield.bypass.com*

*Additional information about the health impacts of exposure to electro-magnetic fields is available at the National Institute of Environmental Health Sciences Web site: <http://www.niehs.nih.gov/emfrapid/html/other.htm>*

## Wireless Benefits

The Federal Communications Commission on the benefits of wireless technology:

"Personal wireless services are not just car phones for businesses. Due to technological innovation and the continuing availability of additional spectrum, PCS and cellular providers are offering lightweight portable phones at increasingly affordable prices that enable consumers to make and accept calls anywhere and at anytime. It is also anticipated that providers of personal wireless services will offer wireless computer networking and wireless Internet access. Many PCS providers also intend to offer a service that will eventually compete directly with residential local exchange and exchange access services. The inherent flexibility of wireless services makes it possible to introduce new service offerings on a dynamic basis as consumer demands grow and change.

Wireless services are also integral to many businesses that rely on mobility of their operations to provide goods and services to consumers. Communicating by a wireless network enables companies in various businesses, from car rentals to package delivery, to operate in a more efficient manner, and to ultimately lower the cost to the consumer while improving the quality

of service.

It is also worthwhile to keep in mind that the antenna structures required to deploy personal wireless services can be used for other purposes that could benefit your community. For example, a community that has a long-term plan to improve its public safety communications may be able to expedite that process by teaming with personal wireless service providers to construct new sites that could be used for deployment of both public safety and personal wireless communications. Furthermore, wireless telecommunications and data services play an increasing (and increasingly sophisticated) role in providing healthcare services. Personal wireless service providers may also serve as a lower-cost source of advanced telecommunications capabilities for schools and libraries."

*From FCC Fact Sheet #2. Information on how to obtain this document is available at the end of the "Environmental Review" note on page 12.*



150' Lattice tower with microwave dishes.

BEN CAMPANELLI

## On the Horizon

The broadcast industry this August filed a petition with the FCC to drastically curtail state and local review of the siting of DTV (digital television) towers — the “next generation” of broadcast towers.

According to the FCC's notice of rulemaking: “Petitioners state that the accelerated DTV transition schedule [approved by the FCC] will require extensive and concentrated tower construction.

They estimate that 66 percent of existing television broadcasters will require new or upgraded towers to support DTV service, involving an estimated 1000 television towers. Moreover, they state, as a result of the increased weight and windloading of DTV facilities and other tower constraints, a number of FM broadcast stations which have collocated their FM antennas on television towers will be forced to relocate to other existing towers or to construct new transmission facilities. ...

Petitioners propose a rule which provides specific time limits for state and local government action in response to requests for approval of the placement, construction or modification of broadcast transmission facilities ... [generally] requests would have to be acted upon within 45 days. Failure to act within these time limits would cause the request to be deemed granted. ... Petitioners would categorically preempt regulations based on the environmental or health effects of radio frequency (“RF”) emissions to the extent a broadcast facility has been determined by the Commission to comply with its regulations and policies concerning emissions; interference with other telecommunications signals and consumer electronics devices as long as

the broadcast antenna facility has been determined by the Commission to comply with its applicable regulations and/or policies concerning interference. ...

Further, the rule would preempt all state and local land use, building, and similar laws, rules or regulations that impair the ability of licensed broadcasters to place, construct or modify their transmission facilities unless the promulgating authority can demonstrate that the regulation is reasonable in relation to a clearly defined and expressly stated health or safety objective.”

The FCC's notice of rulemaking goes on to state that: “To the extent that state and local ordinances result in delays that make it impossible for broadcasters to meet our construction schedule and provide DTV service to the public, important Congressional and FCC objectives regarding prompt availability of this service to the public... would be frustrated. At the same time, we are sensitive to the rights of states and localities to protect the legitimate interests of their citizens and we do not seek to unnecessarily infringe these rights.

The Commission recognizes its obligation to ‘reach a fair accommodation between federal and nonfederal interests.’... Thus, it is incumbent upon the Commission not to ‘unduly interfere with the legitimate affairs of local governments when they do not frustrate federal objectives.’ These include not only certain health and safety regulations, which the Petitioners’ proposed rule recognizes, but also the right of localities to maintain their aesthetic qualities.”

*More information on this rule-making is available at the FCC's web site:*  
<http://www.fcc.gov/state&local/>

## **Wireless Miscellany Contacts:**

### *Cape Cod Commission*

Gay Wells at:  
508-362-3828 (phone);  
508-362-3136 (fax)

### *Claremont, California*

Lisa Prasse at:  
909-399-5486 (phone);  
909-399-5366 (fax)

### *Daly City, California*

Al Savay at:  
415-991-8033 (phone)

### *Gastonia, North Carolina*

Jack Kiser at:  
704-854-6652 (phone);  
704-864-9732 (fax)

### *Liberty, Missouri*

Bonnie Johnson at:  
816-792-6000 x3107 (phone)

### *Matthews, North Carolina*

Kathi Ingrish at:  
704-847-4411 (phone);  
704-845-1964 (fax)

### *Overland Park, Kansas*

Leslie Karr at:  
913-895-6190 (phone);  
913-895-5013 (fax)

### *Solon, Ohio*

Edward Suit at:  
330-399-8964 (phone)

### *Sonoma, California*

Sandra Cleisz at:  
707-938-3743 (phone)

### *Vermont Environmental Board*

David Grayck at:  
802-828-5444 (phone)

### *Windham Regional Commission, Vermont*

Susan McMahon at:  
802-257-4547 (phone)

### *The Larson Company*

Scott Krenzer at:  
800-527-7668

### *Stealth Network Technologies*

Jim Haldeman at:  
800-755-0689.