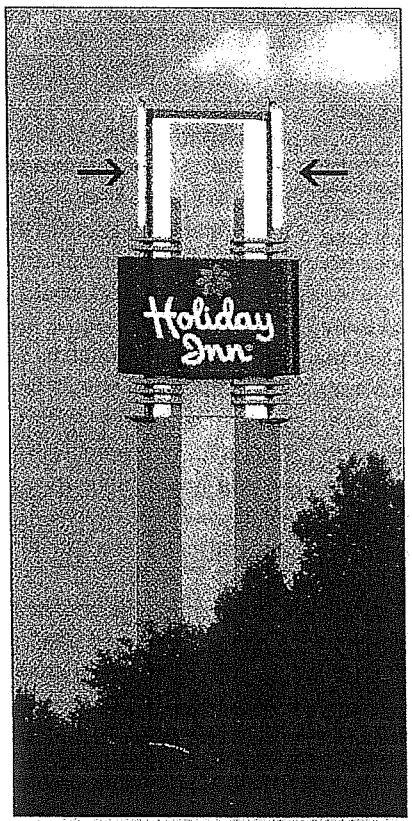
What Local Governments Really Want... and *Why*

Antenna site applicants increase their chances for permits when their requests reflect their true needs, as opposed to their best wishes or desires. A blue-sky desire for towers or for sites that aren't necessary doesn't equate with need.

by L.S. 'Rusty' Monroe



HIDDEN IN PLAIN SIGHT—Municipal governments love alternatives to tower siting like this one. The addition of side-mounted panel antennas blends so well with the art deco features of the hotel sign as to be virtually unnoticeable.

Municipal government officials can take pride in their efforts to place wireless telecommunications antennas in the right places.

Their review of permit applications should encompass several questions, however addressed:

- Is a tower *needed* in the first place?
- Does it have to be as tall as requested (even to allow multiple users)?
- Has the site been selected to minimize visual intrusion?
- Is the site in the right location for the desired coverage?

Assuming that the wireless service provider's need for a tower can be proven (and that there are no alternatives to a new tower), locating it at the right location in the right manner will satisfy carriers, residents, business operators, motorists, public safety agencies and politicians, to name a few. As long as expectations are realistic, satisfaction can be achieved.

Allowing towers to be built on "speculation" (absent prospective tenants with an existing need) usually leads to construction of towers that are taller (and more visible) than required for the coverage that may eventually be offered or planned by carriers. Communities are not obliged to accommodate speculators.

Astute communities will ask, "How does a 'speculator' even *know* where to position the tower? Every carrier's system design is different."

Without a contract to rent space to a carrier with a specific need to satisfy, the prospective tower owner is simply guessing and hoping that the spec tower is located where the most carriers will be able to use it. With spec towers, there is seldom any resemblance between what is proposed and what is in the community's best interests.

That's where the role of local government becomes critical—as the only party that can strike a balance between a carrier's real (and provable) needs and the public interest. It's all about striking that balance and not allowing construction that may permanently change the character of the community.

'If wishes were horses...'

You can't blame a tower permit applicant for asking for the maximum. After all, the applicant's primary interest is revenue and profit. Protecting the public interest falls on the shoulders of government through regulation. A municipality can, and should, ask an applicant to prove the need for a tower versus any less-intrusive alternatives that would give the carrier equivalent coverage.

The municipality should encourage scaling back the tower design

to meet the demonstrable need.

The prospective tower owner benefits if the tower is built in an area where there is no way to collocate new antennas on an existing facilities. Additional antenna tenants will be driven to the new facility. An ordinance that requires collocation as the first priority and allows new towers only as a last resort may effectively eliminate marketing cost for the approved tower owner. Newcomers will have to use that new tower, unless they can prove they cannot. The owner gets more revenue faster and a significantly shorter payback period.

Regulatory doors and windows

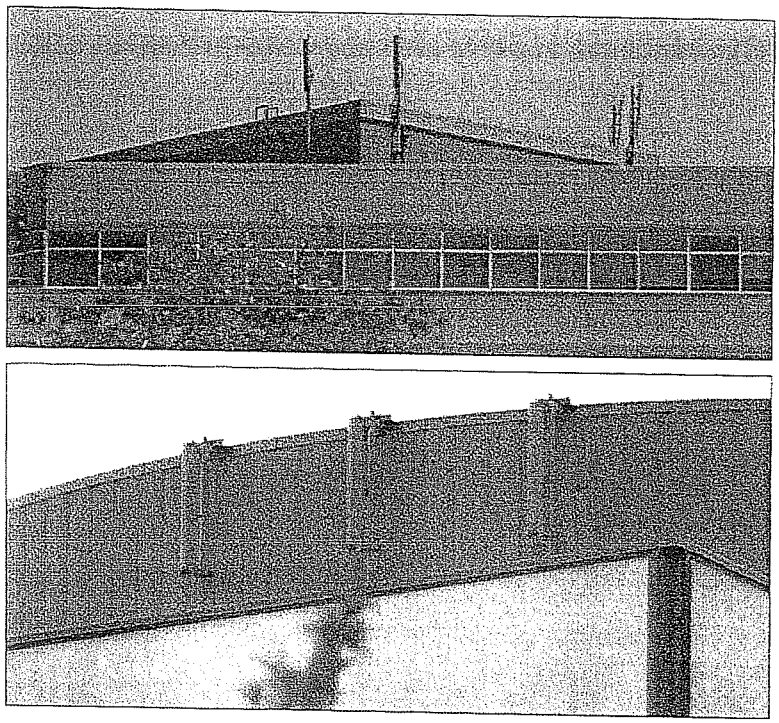
Balance the *needs* (instead of the *best-case desires*) of the wireless industry with the needs of the community, and the result is a smaller number of towers with less visibility, and more collocated facilities.

Municipalities shouldn't regulate simply for the sake of regulation. In many cities, that isn't the tendency, anyway. Elected officials often are local business people who want to encourage economic growth. They understand that every community needs universal wireless service for economic development. Thus, it runs against a community's best interest to use regulations to create roadblocks or unnecessarily long reviews.

'We're gonna need a bigger boat'

At the same time, some wireless industry participants don't like to acknowledge the number of new sites actually needed for third-generation (3G) cellular services.

Because of the critical nature of many of the new services, their features require significantly greater reliability than a voice call. For example, 3G service adds Internet access and video to wireless phones. For reliability, these features require greater signal strength than many voice networks in fringe or marginal areas. Given the range limits of end-user equipment, many new sites—more than 20,000 in 2004 and perhaps several hundreds of thousands of new sites in the next several years—are expected to be needed.



AVOIDING VISUAL CLUTTER—Even when rooftop siting is used as an alternative to towers, an effort must be made to minimize visual intrusion. The antennas in the top photo extend above the rooftop. They should have been mounted on the face of the building and painted to match, making them virtually invisible, as shown in the lower photo.

Given the increasing dependence on wireless Internet access for critical functions (such as businesses and service organizations transfering funds or sales records), Internet connections have to approach perfection and data errors must be eliminated.

Likewise, accuracy needs are becoming more critical as the number of telemetry applications, such as telemedicine, increase.

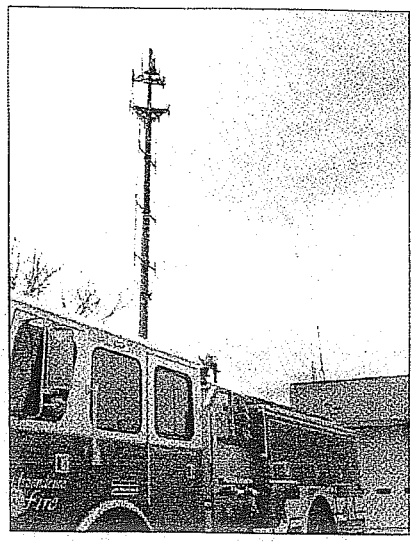
When a medical technician sends the result of an MRI or CAT scan, it has to arrive in perfect order. Lives depend on the reliability of the information transmitted.

Requirements such as these are driving carriers' need to improve signal strength in what now are fringe or marginal areas. The industry will acknowledge privately that as many as two to four times as many antenna locations than what they have now may be required to serve the same area with 3G services.

Cellular system design is now reversing itself and is going "micro" instead of "macro" because of the demands of new technologically sophisticated and demanding services. Cell sites originally were built for maximum coverage and the biggest bang for the buck. Now carriers have to collapse the size of cell site service areas to assure functional reliability.

The ultimate goal for one group of telecommunications service providers is to replace hard line service drops into homes with

Tower replacement helps fire department and carrier



Local governments and carriers can negotiate siting needs to mutual advantage. For example, cooperation with AT&T Wireless Services (AWS; now part of Cingular Wireless) saved money and improved fire radio reliability for Independence, MO.

AWS wanted a location for a tower with space for its cellular antennas and for those of other carriers. AWS offered to replace one of the fire department's aging telecommunications towers. The offer was timely. That three-legged lattice tower, said Curt Sevage, assistant fire chief, only had an estimated five to seven years of remaining service life.

"AWS removed the old tower and erected a 180-foot monopole in its place at no cost to us. The monopole has space for four cellular antenna bays, plus our own radio system antennas," Sevage said.

Sevage said that AWS received a reduced rental rate for space on the tower as a partial offset of the construction expense. But he said the carrier was generous to the city in two other ways besides the tower replacement. The carrier built a redundant antenna system for the fire department and waived its usual revenue sharing for collocated carriers.

"AWS rewired and reinstalled not only one complete set of antennas for us, but two, so we are redundant. We had five radio antennas for different frequency bands and channels. They put those up on the new tower and a second set of five antennas besides, to balance the tower. The complement of antennas makes a redundant system wired with all-new cable that improves our communications.

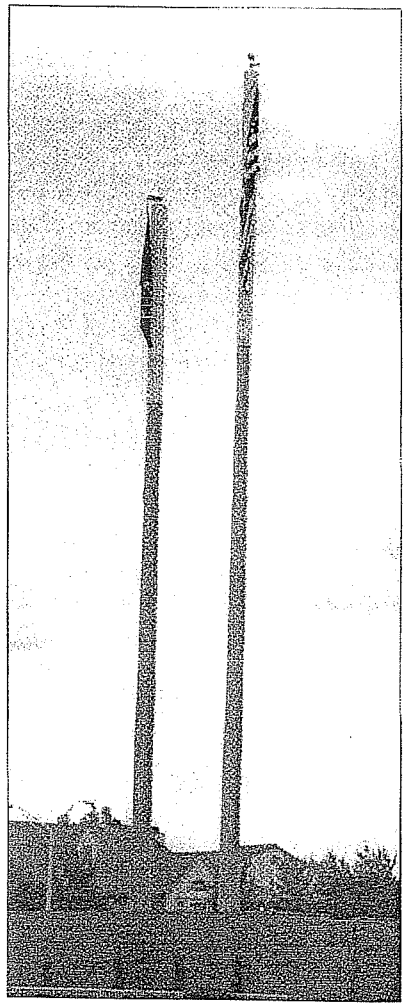
"Also, in the event of lightning that might damage an antenna, we simply unplug that cable and plug the redundant cable back in. Within 30 seconds, you're on the back-up antenna with time to replace the other one," Sevage said.

The assistant chief noted that Cingular Wireless (which has since acquired AWS) rented the second available cellular bay about a year ago. He was uncertain of the exact amount of rent, but he estimated that it could be $30,000 annually.

Sevage said the rent had been based on a formula, developed by specialists, that accounts for the number of antennas and the amount of space occupied, together with the current market value at the time.

AWS usually took half of the revenue from other renters on such a tower, but Sevage said that the company waived its share as long as the money would be used to improve the fire department communications.

—Don Bishop



TWO FOR ONE—Although 'stealthing' to avoid additional towers is an alternative, any stealth solution must address the coverage and call volume addressed by the site. Here, antenna cylinders had to be placed on both flagpoles to be an equivalent to one monopole.

wireless connections. Depending on the technology used, this service will require sites spaced as close as every two or three hundred yards in some communities and perhaps a half-mile apart in more sparsely populated communities. In densely populated areas with apartments and condominium complexes, sites may have to be even closer together.

Another reason for the multitude of new sites that are needed has to do with the number of calls that any given site can handle, which is finite.

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New user demands require greater capacity for the volume of calls. Building or adding new hand-off sites to take the excess call volume resolves the limited call-handling capacity of existing sites. This expansion alone could increase the number of new sites by a magnitude.

Balancing needs and desires

Service providers don't want communities to become upset at the prospect of having so many antenna sites. The good news is that communities have no reason to be upset if they know what they're doing, and why, and if they control the situation to ensure that the needs of all parties are met.

Municipalities and antenna site applicants should come to agreement at the point where the applicant has proved the need for a facility, as opposed to the applicant's best-wish desires. The point is to *prove* the need and to permit the applicant whatever it can prove the need for, but in the least-intrusive manner reasonably possible.

Some applicants take the position that they shouldn't have to prove the need. They may say that they wouldn't be spending the money if they didn't need the location. However, this is not a safe assumption. Historically (including federal court decisions), not all new sites requested are needed.

For an applicant, it's often faster and easier to build a new site than to re-engineer or adjust existing sites. Speedy construction is important to carriers. Based on national averages, every day that a site is not up and operating can cost a carrier thousands of dollars per site, per day.

Despite expressions of urgent need for new tower construction, government officials should look into whether the carrier's need might be satisfied with an existing operating site by: (a) increasing the effective radiated power (ERP), (b) decreasing or eliminating the amount of downtilt of an antenna sector or (c) moving the antenna higher, if the existing antenna array is attached to a tower.

Municipalities can perform their own site analyses to learn whether a site really is necessary, assuming they have access to qualified RF analysts and don't delude themselves into believing their staffers can do it (unless they're specifically trained in RF propagation analysis).

Compounding the matter, many wireless companies employ first- and second-year engineering graduates unfamiliar with the variety of options or alternatives to a new site. All they know is: Their employer

wants a site at a particular location; the area has marginal, unreliable or questionable service; and a conclusion has been made (often erroneously) that a new site is needed.

Examining alternatives to new sites and new towers in good faith to reduce the size of a coverage gap can and usually does mitigate what otherwise would have been a more intrusive installation.

Municipal officials do not always understand the need for new sites, but they are not necessarily taking a position against the wireless industry. And they shouldn't be. The relationship between antenna site operators and municipalities should be relatively symbiotic, if only for reasons of economic development: Businesses need and citizens want wireless telecommunications to be as ubiquitous as possible.

Given the permanent effects of many installations, the mutual effort to build antenna sites should all be about striking the needed balance between the needs of the parties, in the context of protecting the community from the effects of an over-proliferation of wireless facilities in general and towers in particular.

'Trust, but verify'

Many people think cellular service equates to a need for towers. But in hundreds of communities across the nation, more than 50 percent of the towers that were built for cellular don't need to exist. Of the remaining number that truly are needed, 90 percent are much taller than they need to be—sometimes several times taller.

Usually, developers who build towers that are unnecessary, or taller than necessary, get heartburn over the notion of having to demonstrate need. However, carriers already have the information to make such a determination because they had to develop it for their own purposes. Providing that information for government review is not, or should not be, a problem.

A good rule to keep in mind as regards the proper role of government is Ronald Reagan's philosophy of "Trust, but verify." Local government should also accept its responsibility as the only party that can assure a balance of interests.

Monroe is co-founder of the Center for Municipal Solutions, www.telecomsol.com. The organization represents and assists more than 500 communities in 20 states about siting wireless facilities and minimizing their effect on the community. He has written articles for state and national public sector publications and has appeared at their meetings and conferences to speak and to present workshops.