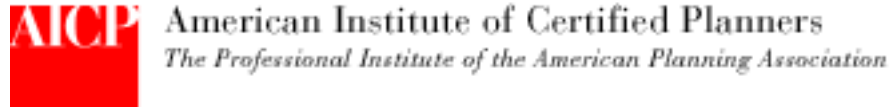


# Practicing Planner



Planning Essentials

## Managing Wireless Infrastructure Deployment

by Robert E. Smith, AICP

This planning essentials article provides a primer on local land-use management of wireless infrastructure with an emphasis on regulatory issues. Local government planners are the primary audience. The article includes a true story about a local discretionary land-use decision involving a tower, identifies resources that planners can draw upon to ensure their knowledge of telecommunications infrastructure is up to date, and discusses major issues in regulating the wireless industry.

I contend that local land-use regulations should make it easier for local governments to ensure the appropriate and timely provision of essential wireless infrastructure. Being employed in the wireless industry, I offer an industry perspective, but it is cast in the frame of reference of a local planner administering a zoning ordinance and development regulations. Planners will be better prepared to update their wireless ordinances and administer applications for wireless infrastructure after consulting this article.

### INTRODUCTION

#### The Regulatory Environment

Planners have been regulating towers, antennas, and cellular phone infrastructure sites for more than two decades. Local land-use planners administer applications for new towers and antenna additions to existing sites, and they review building and other permits, usually administrative or ministerial, for modifications and colocations to such facilities. In many localities, approval of a cell tower is a discretionary process involving public hearing, planning commission recommendation, or local governing body approval.

The federal Telecommunications Act of 1996 establishes boundaries on local regulatory practices. Nonetheless, federal, state, and local authority have enabled cities and counties to treat wireless telecommunications facilities and equipment with more discretion than other utilities, such as electricity or phone lines. Local land-use regulations can make it easy or difficult to provide essential wireless infrastructure, and extreme examples of both are

found in almost every state.

Legal decisions are emerging that enable facial challenges to overly restrictive siting ordinances, offering wireless providers the sanctuary of federal pre-emption in some circumstances. This legal mechanism is rooted in Section 253(a) of the 1996 Telecommunications Act, and between it and the recent Federal Communications Commission (FCC) frequency auction (the largest yet), the wireless industry sector may be ripening for a string of industry-favorable siting decisions in the courts.

### **Wireless Facilities as Essential Infrastructure**

Long-range planners often can view wireless as essential communications infrastructure. Like electricity transmission towers or the power, phone, and water lines running down a street, wireless communication has become an essential service on which we assume we can rely. If local regulations fail to provide for wireless infrastructure deployment in the future, a locality can fall short of its economic development and public safety objectives, which are increasingly reliant on the telecommunications industry.

### **Rapid Technological Change**

Like other technologies, the wireless industry is changing rapidly. It is now offering enhanced communications and data services, and is poised to offer additional innovative services. For instance, a number of new developments in wireless communications may have direct impacts to localities as well as the built environment and quality-of-life issues. These new developments include municipal Wi-Fi/broadband, distributed antenna systems, new camouflaging materials and technology, video on cell phones, smart-phone and PDA development, interoperability, and broadband capable transit. Potential benefits include enhanced public participation in planning, linkages to public safety and emergency medical communication networks, improved intergovernmental collaboration and data sharing, and more support for economic development objectives.



✦ *Figure 1*  
 Typical Monopole  
 Location,  
 Installation and Tower

✦ *Figure 2*  
 Typical Lattice Tower

## The Need to Expand Wireless Infrastructure

The momentum of steadily increasing subscribership and minutes of use is driving the wireless industry to prepare for increased business — new products and services are in development to take advantage of spectrum acquired in the recent FCC auction, and new systems and facilities are being planned to support them. New equipment (infrastructure) will be required to field some of those new services, and land-use permits will be required for siting some of that equipment. The industry is actively targeting residential markets — the last frontier, if you will — for wireless infrastructure.

Planners regulating the telecommunications industry through zoning and land-use laws owe it to themselves and their communities to understand the land-use and community facility implications of these rapid technological changes. Regulators need to ensure that local ordinances and regulatory environments evolve in step with major substantive advancements in the wireless industry. Planners need to lead efforts to update wireless and tower ordinances to ensure wireless infrastructure is there to serve the current and future needs of the community and meet the public's expectations.

### A DISCRETIONARY APPROVAL GONE BAD

We've all seen it, and — like a stock car pileup at Talladega — you just can't look away. A wireless services provider new to town has proposed an installation to provide new wireless services to the community, and the item is before the planning commission because the ordinance requires a conditional-use permit for new installations. A seemingly innocuous hearing for a service everybody wants is about to turn just as ugly as an eight-car pileup on turn three — twisted fenders, flying tires, and all.

The public is out in force, swelling the back of the meeting room to capacity. The applicant's nervous glances at the throng have you getting a little twitchy yourself. Anyone bothering to look can tell he's wondering if there are more of them out in the hall with torches and pitchforks. And despite instructions from the city attorney that radio frequency issues are wholly outside the purview of the planning commission's oversight, this evening's input from the public is going to be a message of fear, suspicion, and NIMBYism at its best. The line is already starting to form at the microphone. Get the popcorn, it's show time.

After 18 months of design reviews and wrangling with local staff, the applicant is informed by the planning commission at the hearing that unless the 150-foot tall monopole design is converted over to a stealth pine tree, the project will be denied. The public isn't happy, but they feel the planning commission listened and is taking action. The fact that the Federal Aviation Administration (FAA) requires the tower to be lighted and that it is located in the middle of a rather large parking area was considered in the staff report, but it was not part of the planning commission's last-minute considerations. With the carrier pressing for permit approval so service can be launched, the applicant's planning consultant accepts the

last-minute alteration. Now the city will have a giant, very expensive, year-round faux Christmas tree with a flashing light on the top in a large paved area. No other service provider would dream of collocating to the tower for fear of the strange and expensive conditions that might emerge from subsequent applications to amend the site.

The public has been heard by a responsive planning commission, industry will spend three times more to construct this site, and the result will be a local icon of ridicule that will not support future collocations and additional services.

The above actually happened, and I was the unlucky industry planner brought in to appeal the approval and try to have the city council amend the planning commission's last-minute stealth requirement. I was successful, but it was an embarrassing situation for everyone involved. Scenarios similar to the above play themselves out thousands of times a year in our country, resulting in a wide range of unreasonable permit conditions, unnecessary denials, and litigation — and to what end, and why? Everyone wants wireless services — more than 70 percent of Americans have wireless phones. More than 250,000 life-saving calls are being placed every day to 911 on cell phones, but people show up to object to and thwart the installations of the systems that make it all work. What's going on here, and how should cities plan and manage this infrastructure so the community has the communications systems it really needs?

## **THE EDUCATIONAL PROCESS AND RESOURCES**

Many would say that that industry has not provided education so the public and community leaders can understand the mix of concerns and come to conclusions appropriately focused on the betterment of the community. Others would say that more than 20 years of health research and growing presence in the built environment are enough of a track record, and this land use should be mainstreamed like all other forms of basic community infrastructure. Most of us in the industry keep hoping for something in the middle; any balance point would be better than what we currently face.

Planners need a healthy range of resources when reviewing wireless applications, informing decision makers, and working with interested members of the public. Planners must be able to work with project design issues to ensure a sound proposal is brought forward while negotiating the requirements of local codes and project review processes. Decision makers need to be informed about the relevant, project-related issues at hand, and they also need to understand the larger context in which the proposed project will operate, as well as the impact its operation will have on the community. The interested public needs access to the same information to understand the process, issues, and policies that will guide the decision makers.

Additional information is needed when contemplating revisions to local wireless ordinance and adopting departmental policies or guidelines. Given the fast pace of change in the

wireless communications sector, staying on top of current trends and their related issues can be challenging. Thankfully, several organizations and agencies are well positioned to assist planners in acquiring information and accessing additional resources.

## Wireless 101

"Nuts and bolts" information, as well as industry perspective and context, can be accessed through the Internet. Such background information is helpful to decision makers, who must consider the facts presented by staff as well as other benefits and impacts that are not so easy to quantify, including economic impact, quality of life and safety enhancements, and community demand for services. This information also helps staff members better understand industry motivations and actions. The following web pages are particularly useful:

- Personal Communications Industry Association (PCIA) — The Wireless Infrastructure Association: [www.pcia.com](http://www.pcia.com)
- CTIA — International Association for Wireless Telecommunications: [www.ctia.org](http://www.ctia.org)
- Federal Communications Commission (FCC), Office of Engineering and Technology, Radio Frequency Safety: [www.fcc.gov/oet/rfsafety/rf-faqs.html](http://www.fcc.gov/oet/rfsafety/rf-faqs.html)
- Food and Drug Administration. Cell Phone Facts: Consumer Information on Wireless Phones: [www.fda.gov/cellphones/](http://www.fda.gov/cellphones/)



☒ *Figure 3*  
Representative Facade  
Mounted Antennae



☒ *Figure 4*  
Slimline Design

## Wireless Industry News

Information and context about market demand, new products, services, applications, and providers is available online. Planning-related information and legal decisions, corporate announcements and regulatory developments all have an impact on local regulations. Staff

members can use such information to better manage the wireless infrastructure in their communities. I suggest the following web pages:

- The Wireless Infrastructure News Service: [http://wins-news.com/wins/nm\\_admin/winsnews/default.aspx](http://wins-news.com/wins/nm_admin/winsnews/default.aspx)
- Bennet & Bennet Rural Spectrum Scanner: [www.bennetlaw.com](http://www.bennetlaw.com)
- MuniWireless: The Voice of Public Broadband: [www.muniwireless.com/](http://www.muniwireless.com/)
- RCRW Wireless News: [www.rcrnews.com/apps/pbcs.dll/frontpage](http://www.rcrnews.com/apps/pbcs.dll/frontpage)
- Government Technology News: [www.govtech.net](http://www.govtech.net)
- Wireless Week: [www.wirelessweek.com](http://www.wirelessweek.com)
- Above Ground Level Magazine [www.agl-mag.com](http://www.agl-mag.com)
- Wireless and Mobile Technology Yahoo! News: <http://news.yahoo.com/i/1899>

## **Tower Locators**

It helps to know where all the towers are in your community — especially when applicants propose new facilities and the issue of colocation on existing facilities needs to be addressed. Beyond asking the applicant to see if other locations for the proposed facility might be superior to the one being proposed, a quick check online to see where the existing towers are located could yield a potential colocation opportunity the applicant may have overlooked. A good way to develop a complete set of location data on towers and wireless facilities in your community is to require each applicant to provide, with their application, the locations of all of their existing facilities within the community.

- Crown Castle International: [www.crowncastle.com](http://www.crowncastle.com)
- SBA's Owned Site Locator: <http://map.sbsite.com>
- American Tower Site Locator: [www.americantower.com/OasisPublic/Mappoint/default.asp](http://www.americantower.com/OasisPublic/Mappoint/default.asp)

## **Mapping Tools**

Most tower companies provide latitude and longitude information for their towers, as well as street addresses or tax assessor's numbers. With latitude and longitude numbers, planners can use one of several Internet-based mapping utilities to locate coordinates and generate maps. For the small locality, this function is helpful when evaluating projects, performing current and future planning, and tracking the inventory of towers.

- Tiger Based Reverse Geocoder for the United States: [www.usnaviguide.com/revtiger.htm](http://www.usnaviguide.com/revtiger.htm)
- United States Geological Survey National Map Viewer: <http://nmviewogc.cr.usgs.gov/DecDegPtLookup.htm>

### **Specific Searches**

Several Internet search engines offer users the ability to specify a search and automatically run it on a regular basis, with "hits" or alerts sent to your e-mail address. Google is one company with this service ([www.google.com/alerts?hl=en](http://www.google.com/alerts?hl=en)), which can be handy if you are trying to stay current on wireless infrastructure and planning issues.

### **KEY REASONS FOR AMENDING THE WIRELESS ORDINANCE**

There are several reasons, some already mentioned, that local planners should engage in the process of revising their wireless ordinances. Wireless proposals that seem simple can create undue burdens for the applicant and staff. Review and approval processes may require disproportionate or excessive lengths of time and money to negotiate. Industry objectives, construction techniques and technological advances in site design have created more options and new opportunities that might not be considered or allowed within the existing wireless communications codes.

### **Wireless Has a Public Purpose**

Wireless infrastructure and services are becoming more critical as the public and localities begin to use and depend upon them. The impact of this use and reliance has positive and wide-reaching effects — from public safety to economic development. However, those benefits may be limited by the infrastructure systems supporting the services.

Many communities are embarking upon "broadband initiatives" to plan for and develop robust wireless services for a range of reasons, including economic development, public safety, and quality of life. Some communities are planning to link their municipal wireless networks into "wireless clouds" that might cover entire regions. Advancements in wireless video likely will combine with public safety communications and interoperability to one day empower citizens to send video of an emergency in real time to 911 — giving emergency response personnel invaluable information. Wireless linkage to security cameras inside

schools may become a reality — and a real advantage to on-site emergency responders. Commuter transit is changing, as wireless-capable buses and trains emerge, and the workplace is also morphing as applications take on wireless platforms in the field. Government services also are being improved by wireless devices. From meter reading to highway construction to building inspections, wireless applications are being used to empower front-line personnel to deliver better, more efficient service.

A local ordinance dictating minimum wireless infrastructure that meets only a community's current needs could cripple future enhancement and delivery of new services and products to your citizens. Further, as local government envisions new services and products for the benefit of citizens, private wireless infrastructures should not be overlooked. Rather than taking on the full capital cost of creating entirely new wireless infrastructure systems, localities should reach out to the private wireless infrastructure systems to determine if existing private infrastructures might serve the localities' purposes. Private wireless infrastructures, already in place across most localities, may be the key to local governments being able to offer additional services to the public at affordable cost.

## Colocation

Once a wireless infrastructure facility is in place, usually only minor physical alterations are required to augment the utility of the facility to double or triple its service capability. Such intensification of use is termed "colocation" and, in general, it means that additional service providers can locate on the same tower and at the same facility installation.

Colocation on existing structures has become a standard practice — and often top choice — for most wireless service providers, but the bulk of ordinances in existence were created during a time when that may not have been the case. Changes in siting preferences and the shift from coverage to capacity and quality infill project proposals reflect shifts in the industry's objectives that should be considered in local codes.



✚ *Figure 5*  
Tower Disguised as  
Chimney



✚ *Figure 6*  
Tower Disguised as  
Flag Pole

## Residential as the New Wireless Frontier



Some siting issues have become more prominent recently because wireless service providers are seeking to respond to people who expect to be able to use their wireless devices at home. The number of work-at-home employees is increasing. There has been a continued rise in numbers of small businesses within residential settings, and the number of multiple wireless users within the household has increased. The number of households eliminating wire-line communication services also is increasing, as demands for wireless residential services and capacity are rising.

As a result, the industry is now actively targeting residential markets more than transportation corridors and employment centers, which generally already have services. Siting proposals are being submitted to local governments from a diverse and growing range of applicants and products. Infill capacity/quality projects to ensure reliable data and video services are becoming common, and they often present different design requirements than the initial coverage sites created during the last decade.

These recent developments have brought a change in the types of permit applications typically being submitted, and new developments in materials and design have opened up more alternatives. Codes based on the standard construction and siting experiences of a decade ago are in need of review.

### **The Need to Avoid Sameness, or a Lack of Design Variety**

Local governments may run the risk of having almost all approved wireless facilities taking on a similar built design, creating a widespread cookie cutter appearance. Codes may tend to homogenize the physical design and siting of proposed wireless facilities, resulting in sites that tend to look the same across a community or area. Is there too much of an emphasis on roof-top facilities, for example, causing rapid rooftop proliferation and wide-scale alteration of the local built aesthetic? Should there be colocation incentives and flexible height requirements offered to existing tower and stealth facilities to better balance the end result in the built environment? Is residential development growing, while wireless coverage to serve these developments is hamstrung by exclusionary language or excessive setbacks in the ordinance?

Given the wider range of design alternatives and construction techniques available today, it might be time to take advantage of these changes and introduce some flexibility and discretion in the approval process. Case-by-case sensitivity is recommended, for it would offer needed flexibility to the applicant. Staff should have discretion to allow a range of solutions, and variety of design in the built environment can result. If flexibility does not exist or is removed from the ordinance, and too much control is exerted over facility design, the wireless industry is not free to solve creatively various siting and design issues, and less-than-optimal results are likely.

### **A COLLABORATIVE APPROACH TO ORDINANCE REVISION**

In revising wireless ordinances, planners should pursue a collaborative, inclusionary public process. By having all the stakeholders involved in the ordinance revision process, planners can ensure that the best combination of controls, incentives, and design guidance is included in the ordinance. Planners need to understand the roles and motivations of the stakeholders present and encourage all participants (including the locality itself) to be transparent about objectives and concerns.

It is not enough to selectively include representatives from the different types of wireless service providers within the industry sector. All legitimate stakeholders (including wireless infrastructure providers) should be invited to participate in the ordinance revision process. An inclusionary approach will ensure that those who have a stake in the issue and a desire to participate will be heard. Such an approach also will increase the potential for new perspectives and approaches to emerge. Set aside ample time for several workshops or meetings to review and consider the draft and to consider all revisions suggested by participants. Concrete suggestions for creating ordinance revision workshops that will produce results include the following:

- Ensure legitimate stakeholders are included: Contact local stakeholders as well as the PCIA and state wireless associations to develop a comprehensive approach to regulatory development.
- Provide ample notice for meetings to ensure good attendance.
- Provide web and e-mail resources, such as those provided in this article, to encourage maximum participation and dissemination of information.
- Provide teleconferencing services for meetings so physical attendance is not necessary.
- Provide ample time to review and comment on draft language so quality feedback is gathered.
- Don't get bogged down in the beginning. Agree to disagree where necessary, and keep things moving.
- Provide multiple opportunities to discuss suggested revisions and resulting drafts. Iterations likely will generate positive developments in regulatory approach and language.

Consider holding an educational workshop for decision makers, and request industry

participation.

## **HALLMARKS OF A GOOD ORDINANCE**

### **Flexibility**

Planners face two potentially competing objectives: (1) wanting reliable, pragmatic, and tangible results, and (2) needing to facilitate local infrastructure development and enhancement. Zoning regulations, by their very nature, have had a restrictive effect on siting of towers and wireless infrastructure. Design controls also limit the physical aspects of the proposal. Euclidean zoning tends to push siting and design into certain geographical areas and typical configurations. Planners should recognize that some flexibility and creativity in the regulation will result in potentially superior project proposals and, at the least, a healthy variance from the typical norm in terms of cell tower and cell site installations. Building flexibility into the ordinance can sometimes offer an opportunity to the industry to create new solutions to old problems. A deft hand here is far better than a sledgehammer approach when regulating wireless infrastructure.

For example, it might be more in keeping with a community's character to allow an existing tower that currently stands at the height limit to extend above the height limit in order to facilitate a colocation rather than forcing the development of another site at a new facility. As another example, it might be more beneficial to allow a camouflaged facility to be constructed in a location that doesn't meet setbacks, rather than have a non-camouflaged facility installed elsewhere. Planners and decision makers should emphasize that each proposal is unique, and that each siting decision involves opportunities and alternatives to optimize the facility's "fit" in both the community and the site itself.

Flexibility in regulations can maximize the utility of the community's existing wireless infrastructure while minimizing the creation of new sites. When colocation proposals to existing facilities are considered, allowing some flexibility in the site design can result in a successful colocation rather than the creation of new facilities. For example:

An existing tower has two carriers present and is at the 120-foot height limit for the zone. Another service provider would like to collocate to the facility, but locating below the current carriers would place the equipment too low to serve the carrier's intended RF objective, and multiple new sites would then be necessary. An application is presented to the locality, proposing a 10-foot increase in the height of the tower to accommodate the carrier's equipment and RF objective. This extension represents less than a 10 percent increase in the height of the tower, but the application is denied because of the height limit. The carrier now must seek to create multiple new tower facilities to attain the RF objective.

The community could have had one tower supporting three service providers, but now it will have several towers performing that function. Rather than make an existing 120-foot tower 10 feet taller, the community is encouraging the creation of additional towers and compounds. From a visual impact perspective, this result would seemingly be in conflict with the objectives of the local code.

### **Avoid Overregulation**

Overregulation can stymie the delivery of wireless service. Planners and decision makers should realize that the industry's ability to respond to demand already is handicapped by certain factors. Growing numbers of subscribers already strain existing infrastructure in many places. New services are being offered that require additional bandwidth, further stressing existing systems.

On top of these challenges, regulatory processes can create bottlenecks in the siting of facilities, generate limiting effects on network operations, or otherwise restrict infrastructure deployment. Planners must consider that the future enhancement of wireless infrastructure will have a positive impact that affects the community's quality of life, business development, public safety, and other services.



▣ *Figure 7*  
Antennae on Parking  
Light Stand



▣ *Figure 8*  
Monopinees

### **Recognize the Limits of Colocation**

Colocation has become a widely recognized best practice for siting wireless infrastructure, but it works only when the existing facility has the capacity and location to serve the applicant's radio frequency objective and when the local regulations allow the flexibility necessary to create a viable project. Incentives to encourage colocation, however, can be simple and pragmatic. By-right approval with planning staff comment on the building permit can be offered for applications meeting certain requirements, and streamlined ministerial review and approval processes can be established and implemented for colocation applications that meet certain design standards. These reforms would provide the applicant with swifter reviews and more certainty in the permitting process.

Some states have passed legislation to encourage streamlining the wireless collocation process, while also safeguarding the locality's interests in managing the land use. This movement is a direct result of the difficulties service providers have faced in deploying critical infrastructure to ensure the rapid development of ubiquitous wireless service across the country. As legislation is enacted, localities should evaluate their codes to ensure conformance with state law. State wireless associations also are being formed. Made up of wireless industry representatives and businesses, these associations can assist local governments facing such challenges by providing resources, information, and feedback.



▣ *Figure 9*  
Tower Camouflaged as  
Palm Tree



▣ *Figure 10*  
Tower Camouflaged as  
Cactus

### **Ease Up on Nonconformities by Allowing Collocation**

Some communities, upon passage of updated wireless siting ordinances, have towers that are legally nonconforming with the new code. Most communities also have typical language in their codes that constrains the approval of additional permits on nonconforming uses or structures. Typically, applicants attempting to collocate on nonconforming wireless infrastructure sites are informed that they must make the site conforming if they wish to collocate to it. In some circumstances this is physically impossible, because the nonconforming conditions cannot be cured (e.g., increased setbacks have been introduced in the new code). In such circumstances, the applicant would have to abandon collocating to an underutilized site and erect another single-use tower. In other circumstances, it is economically impractical to make a site conforming. The resulting outcome may be that an underutilized, nonconforming facility is passed over in order to create another potentially underutilized facility.

Planners should consider that if applicants no longer submit proposals to collocate to a nonconforming site because of these sorts of circumstances, there is no real opportunity to improve the site. It likely will remain static for its useful life: nonconforming, underutilized, and unimproved. This is not an optimal condition.

Ordinances should allow collocations on nonconforming towers and sites. Doing so will ensure that the maximum utility of existing wireless infrastructure is realized and avoid the

unnecessary proliferation of additional towers and sites. Further, in the process of granting that flexibility on nonconforming sites, the locality has the opportunity to address some design issues to improve elements of the appearance or conformity status of the site.

In operational terms, colocation may mean an additional trip or two each month to the site by a maintenance or support person. From a visual perspective, it would mean the addition of antennas to the existing pole or tower, and the placement of ground cabinets containing computerized radio equipment within the facility compound. These are negligible impacts associated with the continued and expected use of the facility that do not require another discretionary review by the local government.

Planners are urged to remind decision makers that colocation works only when the existing wireless facility will provide a platform that serves the new wireless provider's objectives and when the locality has land-use controls that allow outright the addition of users to existing wireless infrastructure facilities.

### **Respond to Residential Location Needs**

In order to provide service to users, wireless communications providers are seeking to site facilities in proximity to residential developments. Many local ordinances exclude wireless infrastructure from residential areas. Some go so far as to define wireless infrastructure facilities as commercial uses and exclude them from residential zoning districts.

Given the increased level of demand for wireless services in residential areas, the wireless infrastructure facility should be treated as essential infrastructure. Codes might define such installations as an accessory use to residential development, similar to the way electrical, water, cable, and landline telephone infrastructure is treated in zoning ordinances. The presence of wireless facilities is warranted — and indeed demanded — anywhere there are legitimate users of the service. That increasingly includes residential areas.

There are negligible if any impacts related to the operation of wireless facilities in residential neighborhoods. Operation of a wireless facility usually includes limited maintenance visits, but such traffic comes nowhere close to the number of trips per day that the average residence generates. Operational impacts, such as noise from emergency generators, can be mitigated by requiring compliance with local nuisance and performance codes. Visual and physical impacts can be mitigated through a variety of means, from design controls to staff or neighborhood design committee reviews. Many and newly developed construction materials, techniques, and designs can be accessed to meet a wide variety of design and performance considerations. In sum, if sited and designed appropriately, and conditioned to mitigate visual impacts, wireless facilities will not necessarily conflict with residential uses.

As the demand for residential wireless services increases, and as the wireless industry moves to meet that demand, one might expect longstanding attitudes about compatibility of

wireless infrastructure in residential areas to shift. How fast and how smoothly such change will occur depends largely on individual localities and the contents of the ordinances they adopt.

### **Provide Incentives**

Ordinances should reward certain types of proposals with shorter approval schedules, less rigorous use-permitting requirements, and more certainty in the approval process. An example for a streamlined process incentive would be for a community to allow colocations or minor modifications to existing wireless facilities by building permit, with planning staff commenting on the building permit during the routine plan-check process. By allowing colocations to move forward through the building permit process, process time is shortened and certainty is enhanced, while staff still holds sway over design review and compliance issues related to the use.

Planners should consider other possible incentives. One incentive is to provide "by right" status to certain types of wireless proposals meeting specified location and design criteria. Another incentive or permit streamlining measure is the "pre-authorization" of future colocations indicated on design proposals so that only a building permit is required for subsequent, future colocations. A third possible incentive is to develop an acceptable design template for wireless facilities that would prescribe the physical, aesthetic, and dimensional design aspects of a facility, and then allow facilities and colocations that meet those specifications to be approved and installed by building permit only. In sum, incentives can be used to encourage and expedite certain types of development, and such incentives help ensure that the community's wireless infrastructure and services remain robust, flexible, and positioned for new service deployment.

### **Include Design Guidelines and Directive Policies**

Any ordinance, no matter how well written, will at some point generate questions that cannot be answered by the ordinance language itself. Unforeseen circumstances often will present themselves in a wireless facility proposal. Development and adoption of design guidelines and directive policies can create more consistency of reviews and can help provide direction when questions or uncertainty arise.

Design guidelines and directive policy can offer an opportunity for further refinement of the locality's perspective on wireless infrastructure facilities, design, and siting. Such guidelines and policies help manage expectations on both sides of the project proposal by helping staff provide more consistent project reviews that reflect the community's objectives and the decision maker's intentions. They also can facilitate applicants in filing applications that are more consistent with the expectations of staff and local decision makers.

In general, design guidelines and directive policies should:

- Clearly convey the design and aesthetic expectations of the community.
- Provide existing and desired examples through pictures and photosimulations.
- Provide instruction to staff so administration of the local regulations is consistent.
- Require scrutiny where needed, but not exceed other existing design regulations applicable to other structures and facilities in the community.
- Allow placement of wireless infrastructure in all zones, with appropriate design controls.
- Allow colocation to existing facilities with minimal regulatory requirements.

The author has compiled numerous photos of typical cell tower installations and approaches to camouflaging towers. See the figures below for examples, some of which may be considered better than others. Planners can judge for themselves the aesthetics of typical installations and the relative effectiveness of the various camouflaging techniques.



▣ *Figure 11*  
Tower Camouflaged as  
Windmill

## CONCLUSION

There's no doubt that wireless infrastructure will continue to change and grow. The industry will continue to introduce new designs and services during the next decade, and we will begin to see an increase in the same from local governments. Wireless communications have become tools necessary for public safety and community well-being, and they have integrated themselves solidly within our culture. In such a dynamic environment of technological change, communities are best served by developing local use regulations that provide flexibility and balance, while generating pragmatic and reliable outcomes that meet clearly articulated community objectives.

Ultimately the introduction of incentives and flexibility in a wireless ordinance requires an exercise in balance. That balance is best struck when all the stakeholders have the opportunity to share their perspectives. Colocation is usually the best way for a community to effect the deployment of additional wireless infrastructure and services, as it presents minimal visual and operational impacts. When compared to the creation of a new wireless



facility, colocation on an existing facility involves less physical intrusion into the built environment, minimizes the proliferation of wireless infrastructure sites and aggregates the operational impacts of wireless infrastructure to a minimum number of locations.

This article has suggested ways that decisions can be expedited, more certainty can be ensured, and incentives can be created so that the wireless industry can propose projects that are consistent with community objectives. A forward-looking approach to wireless infrastructure is critical, and revised regulations must be adopted if a community wants to position itself in the future for the best possible wireless infrastructure and services.

*Robert E. Smith, AICP, is National Zoning Compliance Manager for Crown Castle USA, Inc. He has been employed by Crown Castle since 2001 and serves in the regulatory department as the company's manager for zoning issues. Prior to his assignment as national manager, Smith worked for Crown Castle in California as a zoning specialist to develop, evaluate, present, and secure land-use permits for a wide variety of projects for wireless customers. His experience prior to Crown Castle includes city manager, director of community and economic development, and grants writer/administrator positions at several cities and councils of government. He holds a BA in Fine Arts from the College of Charleston, and master's degrees in urban and regional planning and public administration from Virginia Tech. Smith is a member of APA's Technology Division and is working to create a forum for this issue and others like it.*

©Copyright 2007 American Planning Association All Rights Reserved