Perspectives from FSF Scholars
March 29, 2012
Vol. 7, No. 7

4G Wireless Networks Need Relief from Cell Siting Barriers: Economy Would Benefit Through New Jobs and Investment

by

Seth L. Cooper *

Cell towers and other infrastructure facilities are critical inputs for wireless services. Thousands of more cell sites will need to be built or modified in the years ahead to enable upgrades to next-generation wireless technologies. But local government zoning processes as well as litigation often inhibits the ability of wireless providers to meet growing consumer demand for advanced wireless services.

This March the U.S. Court of Appeals for the Fourth Circuit issued a pair of rulings that grapple with the sometimes murky law of wireless siting. At issue in both cases were denials of cell siting permits that the wireless provider sought in order to improve its signal in the surrounding neighborhoods. In *T-Mobile v. City Council of Newport News* the Fourth Circuit ruled that a city council improperly denied a cell tower siting permit application on account of health-related fears. But in *T-Mobile v. Fairfax County* the Fourth Circuit upheld the Fairfax county board's denial of T-Mobile's applications for permits to collocate radio antennas on an existing tower, apparently due to concerns about visual impact.

Hundreds of such cell siting disputes have worked their way through the courts since adoption of the Telecommunications Act of 1996. Cases like *T-Mobile v. City Council of*

Newport News and *T-Mobile v. Fairfax County* should focus attention on the technological and economic imperatives of building and upgrading cell sites. They should also draw into focus the immediate and aggregate consequences of denying cell siting permits.

When local governments deny cell siting permits to wireless carriers, consumers are more likely to experience lower service quality and wider coverage gaps. Denials of cell siting permits can also mean that wireless consumers will have less choice among wireless providers, with competitors unable to gain entry or upgrade their networks.

Lack of timely built and modified cell sites is an obstacle to achieving nationwide deployment of 4G wireless networks. Thousands of cell sites need to be constructed and upgraded to meet 4G marketplace demands ahead. 4G promises advanced technological capabilities and economic efficiencies to wireless carriers and consumers.

Importantly, delays or denial in infrastructure facilities permitting needed for deploying 4G services result in foregone investment and foregone job creation. Cell site construction and modification means heavy private investment. New towers cost from $250,000 to $300,000, and collocations cost some $25,000-$30,000. Also, research by economists Robert Shapiro and Kevin Hassett suggests "every 10 percent increase in the adoption of 3G and 4G wireless technologies could add more than 231,000 new jobs to the U.S. economy in less than a year." Denials of cell siting applications that impede the infrastructure inputs necessary for 4G deployment, therefore create sizeable economic opportunity costs.

The FCC has identified local government permit processing as *the* significant regulatory constraint faced by wireless providers that need to add or modify cell sites. And given the 1996 Act's deference to local governments in making zoning decisions involving cell siting, the FCC's options for taking regulatory action to remove barriers to infrastructure investment and construction are limited. Nonetheless, the FCC should explore ways to clear up ambiguities presented by Section 332(c)(7)(B). By adding greater certainty to the law, the FCC could provide modest assistance in removing regulatory barriers to new and improved wireless infrastructure facilities.

The FCC could, for example, rule that the unreliability of a wireless provider's service in an area could amount to a "significant gap" that triggers the federal law's prohibition on local regulations that "have the effect of prohibiting" wireless services. To this end, the Commission could likewise rule that the law is not satisfied merely when a wireless provider has *some* radio frequency (RF) signal to provide coverage, but that a "significant gap" exists when a wireless provider does not have a sufficiently strong RF signal. And it could adopt conclusive or presumptive RF signal strength thresholds in order to inject more objective standards into heavily fact-intensive cell siting cases. This could provide a useful guide for the courts that would reduce uncertainty and enhance the uniformity of decisions.

T-Mobile v. City Council of Newport News

In April 2008, T-Mobile submitted an application for a permit to construct a new wireless tower on a parcel of land behind an elementary school and adjacent to a 150 foot wide wooded area that the local school board agreed to lease. By constructing and operating the tower, T-Mobile sought to strengthen its wireless signal strength in the area. The local planning department unanimously recommended the permit be approved. But after testimony from a handful of local residents that included asides about concerns over property values and RF emissions, the Newport News City Council voted 4-3 without explanation to deny the permit.

In *T-Mobile v. City Council of Newport News*, the Fourth Circuit ruled that the City Council's denial of the cell siting permit was impermissible under federal law. The Fourth Circuit relied on Section 332(c)(7)(B)(iv)'s provision that potential health effects are not a factor that can be considered in deciding whether to grant cell siting permits. After excising fears about RF emissions from the record, the Fourth Circuit concluded that the offhand remarks and speculations by a few residents about the potential effect of the new tower on property values in the neighborhood did not constitute substantial evidence to support the City Council's denial of the permit.

T-Mobile v. Fairfax County Board of Supervisors

In March 2009, T-Mobile filed applications for permits to collocate radio antennas on an existing tower in Fairfax County, Virginia. AT&T and Verizon already have antennas on the tower, which is situated on a public right-of-way near a residential area. T-Mobile sought to remediate in-vehicle and in-building coverage in the surrounding neighborhoods. The county's comprehensive plan prefers collocation over new tower construction. And a county staff report recommended approval, based on the location, character, and extent of the tower extension. But the county board rejected T-Mobile's applications, apparently concerned about visual impact.

In *T-Mobile v. Fairfax County*, the Fourth Circuit ruled that Fairfax County's denial of T-Mobile's applications did not "effectively prohibit" wireless services. The court concluded T-Mobile failed to show that there were no reasonable alternative siting locations and that further attempts to gain county approval would be futile.

Under the rules of civil procedure, the Fourth Circuit's ruling is dubious. Since the Fourth Circuit was reviewing a trial court ruling on a summary judgment motion by Fairfax County, all facts in the case should have been viewed in the light most favorable to T-Mobile. Judge Andre Davis dissented from the Fourth Circuit panel's ruling on this point. He believed T-Mobile presented enough evidence under summary judgment standards to show that it explored the feasibility of other sites to conclude that there is an "effective absence of coverage" and that there are no "reasonable alternative sites" to fill the gap.

What's at Stake for Wireless Services in Cell Siting

Cases like *T-Mobile v. Fairfax County* raise policy issues more important than the rules of civil procedure, however. There are obvious negative consequences for wireless services when wireless carriers – like T-Mobile – are denied tower siting or collocation permits by local governments – like Fairfax County.

As the FCC explains in its latest *Wireless Competition Report*:

> Infrastructure facilities are a major input into the provision of mobile wireless service. These facilities are comprised largely of cellular base stations and towers or other structures on which the base stations are situated. A base station generally consists of radio transceivers, antennas, coaxial cable, a regular and backup power supply, and other associated electronics. These base stations are generally placed atop a purpose-built communications tower, or on a tall building, water tower, or other structure providing sufficient height above the surrounding area.

When wireless carriers are denied cell siting permits by local governments, wireless consumers are more likely to experience reduced service quality and more likely to encounter wide gaps in coverage. This means incoming and outgoing calls are less likely to connect to the network and are more likely to be dropped. Wirelessly downloaded and uploaded applications and files are less likely to get through and are more likely to be slow. It also means that wireless consumers will have a reduced number of choices for providers offering quality services.

Wireless providers facing growing traffic loads often seek to improve the capacity of their networks by adding new sites, creating a "split" in the geographic area covered. Each site then serves a smaller area and fewer consumers with greater network capacity. But by denying permit applications to build new towers or collocate antennas on existing towers, local governments inhibit the ability of wireless carriers to make infrastructure upgrades necessary for improved service. Reluctance by local governments to grant cell siting permits also means consumers may have fewer choices. This is the case where smaller wireless providers are seeking to expand and upgrade their services to compete with larger providers that already have antennas placed at local cell sites.

The negative effects of local governments denying cell siting permits need to be considered in the aggregate as well. The lack of timely built cell sites is an obstacle to achieving nationwide deployment of competing next-generation wireless technologies. 4G buildout is especially critical to meet demands. Mobile web browsing, video downloads, and other bandwidth-intensive applications on smartphones, tablet devices, and other wirelessly connected devices continue to challenge wireless network capacity limits.

Recent industry projections put these concerns in more concrete terms. Verizon Wireless, which as of March 31, 2010, used approximately 42,600 cell sites, will reportedly need to use 60,000 to 70,000 cell sites to service the 4G-LTE network it is now deploying. A conservative estimate entails Verizon needing to increase its cell tower sites by 40% just in the next handful of years. And if one takes the total number of wireless sites serving all wireless providers from around that same time period – i.e., 251,618 as of June 2010, according to a CTIA survey – a 40% increase means that approximately 352,265 cell sites will be needed just a few years from now to serve the nation's wireless network demands. With CTIA estimating 256,920 cell sites in service as of June 2012, it is clear that thousands of cell sites need to be built and modified to meet 4G marketplace challenges ahead.

Myriad opportunity costs also result from delays or denial of next-generation wireless technology deployment. As a report by Deloitte in August explains, "[f]rom a technical standpoint, 4G promises three benefits over 3G: increased throughput, lower latency, and stronger security. One result is a reduced cost per megabit." Moreover, "4G networks combined with cloud computing and other advanced technologies have the potential to facilitate interactions among all components of the ecosystem, and thereby accelerate the process through which supply and demand signals interact and create new economic activity."

Construction and modification of thousands of cell sites also translates into heavy private investment. According to wireless infrastructure industry data cited by the FCC in its *Wireless Competition Report*, new towers cost approximately $250,000 to $300,000, and collocations cost some $25,000-$30,000.

In addition, research published in January by economists Robert Shapiro and Kevin Hassett suggests "every 10 percent increase in the adoption of 3G and 4G wireless technologies could add more than 231,000 new jobs to the U.S. economy in less than a year." To the extent that denials of cell siting applications by local governments impede the infrastructure inputs necessary to deploy 4G services, such economic opportunity costs will follow.

Cell Siting in Law, Regulation, and Litigation

Congress sought to strike a balance in the Telecommunications Act of 1996 between local government discretion in zoning decisions and the need to prohibit unreasonable barriers to the construction of new cell sites for wireless services. When it comes to placing or modifying wireless facilities, Section 332(c)(7)(B) provides that state and local government regulation shall not "unreasonably discriminate among providers," or "prohibit or have the effect of prohibiting" wireless services. Because the statute's restrictions are set out in general terms, local governments continue to exercise considerable discretion in approving or denying cell site permit applications.

In the years since Congress passed the current version of Section 332(c)(7)(B), denials of cell siting permits by local governments have been the source of lengthy

administrative and legal disputes across the country. The FCC's *Wireless Competition Report* identified local government permit processing as *the* significant regulatory constraint faced by wireless providers that need to add or modify cell sites. Excessive delays in the zoning approval process prompted a November 2009 Declaratory Ruling by the FCC that brought some aspects of Section 332(c)(B)(7) into sharper focus. The FCC ruled that if a local government denies a siting application "solely because one or more carriers serve a given geographic market," it "has engaged in unlawful regulation that prohibits or ha[s] the effect of prohibiting the provision of personal wireless services." Prior to this ruling, some courts read Section 332(c)(7)(B) as only prohibiting local governments from decisions resulting in a "blanket ban" on wireless services.

The FCC's Declaratory Ruling also defined presumptively reasonable time parameters for local governments to approve or deny cell site applications. Pursuant to the FCC's "shot-clock," wireless providers can assert statutory claims under Section 332(c) if local governments fail to act on collocation applications within 90 days of filing or fail to act on all other siting applications within 150 days.

But while the FCC's Declaratory Ruling offers at least some help in curbing unnecessary administrative delays in local permit processing, legal delays still follow when local governments fail to act or if they deny permits for reasons wireless carriers believe are unlawful. In *T-Mobile v. Fairfax County*, for instance, seven months elapsed between the time T-Mobile filed its applications and the County Planning Commission denied it a permit. Two more months passed before the County Board of Supervisors also voted against T-Mobile's applications. More than two years of litigation followed. All told, two years and eleven months elapsed between T-Mobile's filing of its collocation applications and the Fourth Circuit's ruling. And in *T-Mobile v. City Council of Newport News*, almost four years elapsed between T-Mobile's filing of its initial permit application and the Fourth Circuit's ruling.

Far lengthier administrative and legal delays have taken place in other cases across the country. But whatever the source of such delays, the practical result is a halt in wireless tower construction or antenna placement. That inhibits deployment of next-generation wireless technologies and imposes economic opportunity costs.

The Regulatory Future for Wireless Infrastructure Facilities

If one accepts standard zoning authority, to which Congress largely deferred in Section 332(c)(7)(B), then denying wireless permits based on traditional zoning concerns may be legally defensible in many instances. Local governments might reasonably deny permits for new towers or for extensions to existing towers that would create distracting eyesores or be completely out-of-step with local zoning. So despite the imperatives of new cell site construction and modification, denials of siting permits by local governments are not automatically suspect.

Whatever one's opinion about whether Fairfax County should have denied T-Mobile's specific collocation permit application and the Fourth Circuit's ruling, the case offers at least a couple takeaways.

First, the FCC's amicus brief to the Fourth Circuit further clarified the meaning of its 2009 Declaratory Ruling's prohibition on denials of siting permits solely because one or more wireless providers already serve the area. The trial court in *T-Mobile v. Fairfax County* imposed a narrow reading of the FCC's Declaratory Ruling. In particular, the trial court suggested that the FCC's ruling prohibited only blanket bans on wireless siting permits by wireless providers that are first entrants into the markets. But in its amicus brief, the FCC reiterated that the restrictions on zoning authority contained in Section 332(c)(7)(B), apply not only to land use applications by the first wireless provider to enter the local market but to siting requests by all subsequent entrants**.**

Since the statute does not define what constitutes an "effective prohibition" on wireless services, the FCC has authority under administrative law precedents, such as *NCTA v. Brand X Internet Services* (2005), to provide binding interpretations of such ambiguous statutory terms. So the position taken by the FCC in its Declaratory Ruling and reaffirmed in its amicus brief should receive deference from courts in future cases.

Second, the Fourth's Circuit's opinion and the dissent point out opportunities for the FCC to take concerted action to bring a further degree of clarity to the law. The FCC should consider following up its Declaratory Ruling regarding ambiguities presented by Section 332(c)(7)(B). It can begin by defining aspects of an "effective prohibition" resulting from "significant gaps in coverage."

Just as all federal circuit courts applying the statutory provision have essentially recognized, it contains a "significant gap" component, so the FCC could adopt that component in a Declaratory Ruling or even codify it in the Code of Federal Regulations. The Fourth Circuit's opinion appears to suggest that the unreliability of a wireless provider's service in an area could amount to an "effective absence of coverage" or "significant gap." But the FCC could make the point clear. It could rule that a "significant gap" exists when a wireless provider does not have a *sufficiently strong* radio frequency (RF) signal to provide coverage. This would necessarily mean rejecting interpretations made by some courts that a significant gap in coverage exists only when a wireless provider has *no* signal or that the law is satisfied if a wireless provider has merely *some* signal.

Further, the FCC could set a RF signal strength threshold for defining what constitutes a sufficiently strong signal. As Judge Davis wrote in dissent, "[o]ur review of an effective-prohibition claim might look different if there were properly promulgated FCC regulations setting particular threshold coverage levels *subsection (B)(i)(II)* entitles a company like T-Mobile to provide." Other courts have grappled with the question of whether a customary industry standard or practice exists for regarding RF signal strength. Expert testimony in one federal court case, for instance, posited an -85 decibel (dB) signal strength threshold as industry standard. To date, there is no conclusive judicial

recognition of such a threshold. But the FCC could set a minimum RF signal strength threshold as a conclusive or presumptive standard. Or it could set minimum thresholds calibrated to different geographic conditions. That would provide clearer rules for future determinations of whether significant gaps in coverage exist.

Conclusion

Constructing and upgrading thousands of more cell sites will be critical to providing the infrastructure necessary for a competitive 4G wireless marketplace. But the future of wireless technology and its accompanying economic benefits will be hampered to the extent that wireless providers are unable to obtain build or upgrade cell cites due to local zoning delays and permit denials. *T-Mobile v. City Council of Newport News* and T-*Mobile v. Fairfax County* are just a couple of the latest installments in the ongoing administrative and legal struggle over cell siting playing out in localities and courts across the country.

The FCC has identified local government permit processing as *the* significant regulatory constraint on wireless infrastructure facilities. The role of federal regulation to address the problem may be limited by compromises between local government discretion and the need to deploy wireless services nationwide in Section 332(c)(7)(B). Nonetheless, within the ambit of its authority, the FCC should consider additional ways to clear up ambiguities in federal law concerning cell siting. By adding greater certainty to the law – even in limited and measured respects – the FCC could help to alleviate such barriers to new wireless infrastructure facilities and thereby promote a competitive 4G future.

***** Seth L. Cooper is Research Fellow of the Free State Foundation, a nonpartisan, Section 501(c)(3) free market-oriented think tank located in Rockville, Maryland.