The Telecommunications Act of 1996 authorized the Federal Communications Commission (FCC) to expand the wireless telephone industry by auctioning off six personal communication services (PCS) licenses per geographic area. Because wireless communication antennae must be mounted on high, unobstructed locations, the build out of the PCS industry has led to the need for additional communications towers. Abutters and neighbors of these communication towers have often opposed their construction, citing aesthetic and health concerns, and alleging a consequent decrease in property values. Such opposition has primarily targeted towers located in residential zones, where such towers are generally less harmonious with surrounding structures. This article examines the impact of proximity to a wireless tower on residential property values.

Mundy (1992) and Patchin (1991) report that a nuisance feature, or source of stigma, typically reduces the market value of a property. It is the perceived undesirability of a source of stigma that leads to reduction in property value. As Farber (1998) explains, perceived risks are a function of subjective risk factors as well as statistical risks; whether the source of the perception is quantitative or subjective, the effect on property values may be the same.

In Komis v. City of Sante Fe, the Supreme Court of New Mexico awarded damages for the perceived decline in property value resulting from a source of stigma, even when no objective evidence demonstrated that the perceived nuisance was unsafe, and when market loss was not proven by comparable sales data. The Criscuola decision established the “fear in the marketplace” theory of damages, by allowing fear in the marketplace regarding transmission lines, rather than actual epidemiological evidence of adverse health effects from electromagnetic frequencies (EMF), to affect appraised valuation. The literature (for example, Mundy 1992, Levitt 1995, and Harrison 1989) includes high-tension wires and utility poles as sources of stigma to a property.

Are wireless towers also a source of stigma? Because most wireless towers have been constructed recently, time-series data for a valid empirical study of
the impact of wireless towers on property values are virtually unavailable. Therefore, the first step is to review research on the impact of electric power lines and towers on property values, because they may have effects similar to wireless towers. If it is found that (1) proximity to electrical lines reduces residential property values, and (2) the factors causing reduced valuation near electric lines also apply to proximity to wireless towers, and (3) these factors have led to significant concern about proximity to wireless towers, then it may be inferred that proximity to a wireless tower may reduce residential property values.

**POWER LINES AND PROPERTY VALUES: SOME EVIDENCE**

The scientific community has conducted numerous studies of the health effects of proximity to power lines. The first epidemiological study linking EMF exposure and cancer incidence was published in 1979. In June of 1998, a panel convened by the National Institute of Environmental Health Sciences concluded that low-frequency EMF should be classified as a Group 2B human carcinogen under the International Agency for Research on Cancer classification scheme. This means the agent is possibly carcinogenic to humans. The California Department of Health’s 1999 Fact Sheet on EMF points out that epidemiology studies of childhood leukemia provide enough evidence to classify EMF as a possible human carcinogen.

Numerous studies have examined the impact of proximity to power lines on property values:

Kinnard (1967) reported that proximity to a tower line had little negative impact on residential market values in several Connecticut subdivisions. Higher priced subdivisions showed slightly greater negative impact from power line proximity.

Colwell (1990) found that proximity to power lines was associated with diminished selling prices in two Illinois subdivisions.

In Delaney and Timmons’s (1992) survey of appraisers, 84 percent responded that the market value of residential property is negatively affected when located proximate to a high voltage electric power line; on average, market price is 10.01 percent lower than the price of comparable properties. The most frequently cited factors for property value reduction were visual unattractiveness and issues of health and safety.

Kung and Seagle’s attitudinal survey (1992) found that 53 percent of the Tennessee homeowners surveyed considered transmission lines and towers an eyesore. Once informed of possible health risks, 87 percent felt power lines and towers would adversely affect property values.

Kroll and Priestley (1992) reported that the perceived impact of transmission lines cluster’s into three areas: health and safety, aesthetics, and property values. They concluded that overhead transmission lines have the potential to reduce the sales price of single-family homes by zero to 10 percent.

Gimmy’s (1994) research on power
lines and California residential property values found diminutions of between 18 and 54 percent in lot values from properties abutting power line easements.

Studying residential home prices in Vancouver, Canada, Hamilton and Schwann (1995) reported that properties adjacent to 60 kV power lines lost 6.3 percent of their value due to proximity and the visual impact.

According to the Cowger, Bottemiller, Cahill study (1996), the value of Oregon single-family residential property fell by less than 10 percent because of proximity to overhead transmission lines.

Gregory and von Winterfeldt (1996) determined that the public perception of health risks associated with proximity to power lines led to a reduction in property value: post-1979 property valuation studies showed a decline in values of 5 to 10 percent.

According to Bolton and Sick (1999), real estate professionals, (even those performing studies for power line companies) believed that concern about the adverse health effects of EMF from power lines resulted in a reduction in the values of nearby properties. Bolton’s earlier study (1994) found that the general public’s perception that EMF were harmful drove down the values of adjacent property.

Jaconetty (2001) concluded that, on a subjective level, most people believe that the electromagnetic fields generated by high-voltage towers and lines adversely influence real property values, primarily because of health concerns.

**SIMILARITIES BETWEEN POWER LINES AND WIRELESS TOWERS**

According to the studies cited above, proximity to electric lines and towers is associated with a reduction in residential property values because of aesthetic and health concerns. In this section, the similarities between the aesthetic and health effects of electric lines and wireless towers are examined.

Consider first aesthetic similarities. The literature states that the view enjoyed from a property may affect its value—a poor view, such as that of utility poles and high-tension wires, detracts from value. The aesthetic effects of transmission lines and wireless towers are similar. Both electric lines and wireless towers rise above building height in typical single-family neighborhoods; therefore, they are visible for some distance. Unless camouflaged, these structures typically do not complement rural or suburban landscapes.

Are health concerns surrounding electric lines also applicable to wireless towers? Technically, radio waves from wireless antennae differ from the electromagnetic fields produced by power lines. Although both radio waves and EMF are part of the electromagnetic spectrum, electric power in the United States operates at 60 Hz, while cellular phones operate at 860–900 MHz, and PCS phones operate at about 2000 MHz. As Moulder (1998) explains, radio waves...
are non-ionizing, that is, the energy of the particles is too low to break chemical bonds. Power lines are nonthermal, that is, they produce no significant non-ionizing radiation. Fields from power lines do not radiate energy into space, and the fields cease to exist when power is turned off.

However, the technical distinction between radio waves emitted by wireless antennae and low-frequency EMF emitted by electric lines is not generally understood. The federal government has issued guidelines regarding safe levels of exposure for both power lines and wireless antennae, but there is ongoing controversy within the scientific community about whether these government guidelines are too lax. Because a final verdict on the safety of both electric lines and wireless antennae is still moot, many people are fearful about living in proximity to either type of structure. As Rikon (1996) points out, the fear in marketplace argument established by the Criscuola decision regarding EMF has also been invoked regarding health concerns about cell towers.

EVIDENCE OF CONCERNS ABOUT WIRELESS TOWERS

In this section, evidence is presented about the significant level of concern about the aesthetic and health effects of wireless towers. The evidence is grouped into three categories: (1) lawsuits regarding wireless tower construction, (2) organizations and conferences dealing with the harmful effects of wireless towers, and (3) municipal moratoria on wireless tower construction and mandatory visual impact studies.

Lawsuits

Numerous lawsuits have been filed regarding the actual or proposed construction of wireless towers. As Foster and Carrel (1999) discuss, case law on the issue is somewhat ambiguous. Some courts have ruled for the municipality opposing wireless tower construction. In Franklin v. Nextel, for instance, the court found that a 120 foot wireless tower erected in a residential neighborhood was so incongruous and damaging to the neighborhood that it must be dismantled. In Jacksonville, Florida, in 1996, community opposition to a 150 foot tower in a residential neighborhood led the wireless company, InterCel, to take it down.

In other cases, courts have ruled for the wireless companies, finding that community opposition was not sufficient grounds for denying a permit for tower construction. For instance, in Westinghouse v. Hampton, the court found that the Telecommunications Act preempts tower regulation based on perceived health concerns and that “aesthetics alone… [are not]… an adequate reason to deny… use of…property.” OMP-USA, dealing specifically with the location of towers in residential neighborhoods, found that “towers cannot always be compatible with the character of the surrounding property. [I]n order to meet…demand…towers have to be…located in…residential, commercial, and rural areas.
Organizations, Conferences, and International Concerns

Concerns about wireless towers have resulted in the formation of organizations and the scheduling of conferences to voice these concerns. The EMR Alliance argues that electromagnetic radiation from wireless antennae is hazardous to life and public health. The Communication Workers of America and the EMR Alliance jointly published Your Community Guide to Cellular Phone Towers to help consumers mobilize against the placement of wireless transmission facilities that could adversely affect their health, safety, property values, or the aesthetics of the community.

The 2000 International Conference on Cell Tower Siting included testimony from numerous scientists on the health effects of exposure to high frequency EMF. Several questioned the safety of current standards for exposure to radiation from wireless antennae.

The US Supreme Court, in January 2001, denied a writ for certiorari filed by the Ad Hoc Association of Parties Concerned about the Federal Communications Commission Health and Safety Rules (AHA). Fifty-four petitioners filed as co-petitioners; similar appeals by the Communications Workers of America and The Cellular Phone Task Force were consolidated with the AHA case. The AHA had charged that the FCC’s ruling, that adverse health effects cannot be discussed in reviewing zoning rules or permit applications for cell towers, denies the public their first amendment right to free speech.

In Europe, opposition to cell tower construction has led to lawsuits and the destruction of wireless equipment. In an attempt to quell concerns about the health effects of wireless towers, one Italian mobile phone operator, Omnitel, launched an Internet site on which residents can check the amount of electromagnetic radiation emitted by nearby cell phone towers and antennas.

Municipal Regulations

Responding to community concerns about the negative impact of wireless towers, more than 150 municipalities have adopted temporary moratoria on wireless tower construction. Although the Telecommunications Act prevents a municipality from permanently banning wireless tower construction, the Act does allow municipalities to establish criteria based on aesthetic—but not health—considerations.

Community concern has also led to municipal enactment of zoning ordinances regulating wireless tower construction by

- Requiring that the visual impact of wireless towers be disclosed prior to construction
- Limiting tower construction to municipal sites, or encouraging such sites
- Encouraging co-location and the use of concealed structures

In response to community concerns about the aesthetics of wireless towers, so-called stealth towers—in the form of pine and palm trees—have been erected in more than 200 locations in the United States. The issue of the visual impact of wireless towers has also been addressed by placing antennas on silos, church steeples, tall buildings, and water towers.

CONCLUSION

It has been shown that aesthetic and health concerns about electric lines and towers lead to a reduction in the valuation of nearby residential properties. There are similar concerns about wireless towers; these concerns are widespread and have been expressed in multiple venues. Therefore, proximity to a wireless tower needs to be considered as a negative amenity that may reduce residential property valuation. However, the severity of the aesthetic impact may be mitigated by screening and concealment of the wireless towers.
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