



# WiFi: A Great Amenity, a Lousy Cure for the Digital Divide

By Steven S. Ross ■ *Editor-in-Chief*

It's time for a reality check when it comes to citywide wireless systems. We still strongly believe that many public authorities can – and will continue to – make a strong case for publicly owned wireless networks, or private networks supported in part by advertising or other mechanisms that reduce cost and increase availability. But we just don't see a case for wireless to serve residential areas of a city. Wireless is simply the wrong technology for that.

## Use Wireless for....

What is wireless good for? Blanketing public and commercial spaces. Supplementing wired transmission in rural areas. Providing point-to-point transmission paths. It is no accident that the nation's fiber-to-the-home showplaces like Loma Linda deploy plenty of WiFi as well. This month, we explore the issues in detail.

A year ago, it looked as if many planned municipal broadband deployments in the United States were destined to be WiFi, and not fiber. Close to 150 projects had been announced, many downtown areas in smaller cities had received a WiFi umbrella, and some full urban deployments were well under way in smaller cities such as St. Cloud, Florida and Tempe, Arizona.

WiFi supporters touted the technology as a way to provide cheap broadband to the masses and cure the "digital divide" that supposedly exists between rich and poor.

Well, what happened? Providers backed out of the Sacramento deployment. Google and Earthlink have rewritten plans for their San Francisco deployment several times, with Google now agreeing to respect user privacy while targeting the ads that are supposed to pay for 128 to 300 Kbps free service. Google was planning to require that San Francisco users sign on with their e-mail address, so that it could be used for ad targeting and so that the company could assure that a live person was signing on. That would have made an automatic or anonymous denial-of-service attack slightly harder to mount against the

network. Google dropped the requirement under pressure. Google is planning to experiment with a free WiFi network in its headquarters city, Mountain View, California, but admits that it has no revenue model to make it pay.

## New Deployments

It can work. The largest US deployment of all, in area, went live this month – Earthlink's WiFi mesh covering most of the 49 square miles of Anaheim, California. It's no bargain. The 1 Mbps symmetrical service is \$21.95 a month. Earthlink's competition did, however, spur AT&T to offer a one-year reduced-price 1.5 Mbps (download) "promotional" service for \$12.99. In Anaheim, Verizon also offers its regular low-end 768 Kbps (also download speed) service at its national price of \$14.95.

A far bigger deployment also went live in Taipei this month. The network is being subsidized in the hope it will reduce traffic. WiFi is cheaper than highways. Taipei's WiFi network is indeed impressive – open-access with 4,000 hot spots, covering around 90 percent of the city's 2.6 million residents. Two companies offer access to the network. Q-ware Systems charges about \$12 a month and HiNet (Chunghwa Telecom, owned in part by the government) charges even less. Others offer more geographically limited service in coffee shops and locations where travelers gather. We'll have more on this next month, in our Intelligent Communities coverage.

Back in the US, though, Earthlink is mired in technical problems in Philadelphia, where it committed to cover 135 square miles with WiFi. Philly was supposed to be the poster child for American WiFi. First service, in a small area of the city, is not expected now until September.

## A Problem of Physics

The problem in Philly and elsewhere is that the WiFi 802.11b/g/n standard band, 2.4 GHz, is at least partially blocked by most construction materials. As a result,

Earthlink and other system builders have had to add more access points than originally expected, and (as Earthlink has done free, in Anaheim) supply extra in-home "booster" devices.

One high-ranking Philadelphia official, upset with the delays and extra costs necessary to fix blind spots, suggested to me that the FCC should license longer wavelengths with more penetrating power. The problem is one of physics, not politics, however. I pointed out that this would limit the number of access points, because each would have a wider broadcast range. I also noted that longer wavelengths would have lower frequency, and thus less information-carrying capacity. These two limitations, combined, would drastically reduce available bandwidth, negating the network's purpose.

This sort of nonsense gets combined with an odd bias against fiber. Example: New York City Mayor Michael Bloomberg, a high-tech entrepreneur himself, has been quoted as shunning a fiber network for the city "because it would require tearing up the streets." This, in a city that already sports fiber running under almost every major street – to feed coax cable video. And this, just as technology is being deployed to inexpensively bring FTTH to apartment buildings and other MDUs (come to this year's Broadband Summit in September to learn the exciting details first-hand).

As for the so-called digital divide: Where it is an issue, spend resources on computer training, not WiFi in residential areas. Provide inexpensive computers and an infrastructure for keeping them maintained. Ideas like \$100 laptops (which will be a reality in a year or two) seem attractive. **BBP**

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