cloutnow

Coalition for Local Oversight of Utility Technologies

Fiber optic broadband vs. wireless broadband

CLOUT's position is that the federal government's national broadband initiative should ensure that fiber optic broadband be deployed to provide the highest-quality service to all Americans, including those in lower-income and other underserved communities in both rural an urban areas. Such communities should not be accorded second-class status by means a relatively cheap and quick wireless solution when a far superior fiber optic broadband solution is readily available. While installing fiber optic broadband is initially more expensive than wireless, due largely to the excavation costs involved in laying fiber optic cable underground, the jobs such a national effort would create and the long-term benefits that result from building this infrastructure now far surpass any short-term gains from a reliance on wireless to close the "digital divide."

Reliability

Wireless technologies are constrained by inherent performance limitations that do not apply to fiber optic broadband. Wireless broadband networks, whether licensed by the Federal Communications Commission (e.g., Verizon, AT&T, SprintNextel/Clearwire and T-Mobile) or unlicensed by the FCC (e.g., WiFi), use microwave radiation to transmit and receive their signals. Radio signals can be blocked by buildings, trees and other objects, and transmission quality is even subject to atmospheric conditions. Many WiFi networks operate in unlicensed bands of the spectrum and use the same carrier frequency as cordless phones, microwave ovens, and other consumer devices, and are therefore even more subject to interference problems than licensed wireless networks.

Fiber optic technology presents none of these problems. In fact, network traffic moves across fiber optic cables in a manner that makes it even less susceptible to interference from other data traveling along the same fiber cables than other wired technologies (e.g., copper or co-axial cables).

Speed and Capacity

Wireless broadband network speeds are significantly slower than fiber optic networks. In

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Los Angeles County Board of Supervisors June 2, 2009 Resolutions on Telecommunications Act of 1996 and FCC Standards

Los Angeles Unified School District May 26, 2009 Resolution on Wireless Telecommunication Installations

Anti Cell Phone Antenna Demonstration, San Francisco (video)

Matt Gonzalez Takes on the Cell Phone Industry (video)

European Parliament Resolution on EMFs

European Parliament TV: Mobile phone health threat should not be waved off lightly (video)

addition, the greater the number of users accessing a wireless access point at a given time, the greater is the degradation of service experienced by those users. The current industry standard for fiber optic broadband is 10 Gigabits per second (GB/s or billion bits per second) per fiber optic pair. Bonding multiple 10 GB/s fiber pairs is possible to produce even faster channels. By contrast, the present theoretical maximum speed for an 802.11n dedicated wireless access point is 150 Megabits per second (MB/s or million bits per second). In other words, the standard fiber optic connection for current commercial desktop usage is over 66 times faster than its wireless counterpart.

Security

Wireless networks are more expensive and difficult to secure than wired fiber optic networks and are therefore vulnerable to hacking, identity theft, national security threats, and unauthorized surveillance of users. Unlike wired fiber optic networks, wireless networks can be subject to attack wherever a signal is present. Although encryption makes such attacks more difficult, encryption methods do not eliminate this problem. For those with the interest and technical ability (e.g., individual hackers, criminal organizations, and national governments, both foreign and domestic), wireless signals are easily intercepted, tapped, eavesdropped upon, and used as platforms to launch malicious attacks on users.

Environmental Impacts

Wireless networks entail the installation of unsightly cell tower and intrusive wireless facilities in residential neighborhoods and scenic areas. Concerns that arise when these types of facilities are proposed for communities include reduction in property values, destruction of views, and adverse impacts on human health and the environment. Installing a high capacity fiber-to-the-premises broadband network throughout the U.S. is an investment in superior technology for the long-term benefit of all Americans that moves away from a relatively short-term, disposable wireless infrastructure that must be continually upgraded and modified.

Links

- A Blueprint for Big Broadband, a white paper on broadband commissioned by EDUCAUSE, a nonprofit association whose mission is to advance higher education by promoting the intelligent use of information technology
- Comments to the FCC regarding the Broadband Provisions of the Recovery Act, Bill Schrier, Director and Chief Technology Officer, Department of Information Technology, City of Seattle

Selected Quotes from A Blueprint for Big Broadband

"Building big broadband networks is not just a matter of international competition; it is also economically efficient. Because of the limited dollars available, it is more economically efficient to invest these resources into networks with unlimited potential (such as fiber-optic cable) than to invest in the deployment of a multitude of interim technologies whose bandwidth could be overwhelmed by Internet traffic in a few years. American policy should thus focus on future-proof networks – networks employing technologies that are scalable and adaptable to future growth in demand. Several existing technologies are limited by physics and geography and will be obsolete in three to five years. Our resources will be better spent on technologies that have a long shelf life."

"Some states are admirably developing programs to fill the gaps in small broadband deployment and availability. Certain municipalities are building fiber networks on a case-

waved on light) (video)

NYC Council Member Peter Vallone Jr. Takes on the Cell Phone Industry

Bad Reception: The Wireless Revolution in San Francisco (Opening Montage/Preview)

San Francisco Residents Take on the Cell Phone Industry (video)

Recent endorsements

Peter F. Vallone Jr.
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Author/Ecologist
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Mission Viejo Cell Out
Mission Viejo, California
www.MVcell-out.org

Coalition for the Appropriate Placement of Cell Antennas
Los Osos, CA

Friends of Loma Alta Creek
Oceanside, CA
www.lomaaltacreek.org

by-case basis, but many more municipalities have been bogged down on wireless networks that will not satisfy consumers' hunger for much greater capacity."

"Big Broadband: U.S. broadband policy should focus on the future. Cable modem, DSL, and wireless technologies are unlikely to meet our future needs."
