

## Eleventh In The World.

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The growing adoption of high speed Internet is quickly changing from 'curiosity' to 'compulsory' for a growing number of homes and businesses. The most significant reason, aside from the information and commerce benefits that fast and always-on access to the Internet brings, is that these days, if you're not Internet-savvy, you're at a significant competitive disadvantage in business, in the job market, in school, and in many social circles. Yet a non-trivial portion of the population finds that the high-speed Information Highway bypasses where they work live or play, or it's too expensive for them to afford. As we'll see, this is not a good thing for any country's global competitiveness in this new century.

High-speed access methods are typically grouped under the moniker "Broadband" and fall into two primary categories for homes and small businesses in the U.S.:

- Cable Internet service from your cable company (typically 1.5 to 3 megabits/second download speed and 256 kilobits/second upload speed) for around \$50/month;
- And, depending on how long the wire is from your telephone company's local central office to your location, DSL (Digital Subscriber Line) service (typically 768 kilobits/second download speed and 128 kilobits/second upload speed) for about \$30/month.

These services generally work well if your cable system has converted to a digital "fiber to the neighborhood" distribution network, or if you are within the very restrictive DSL distance limitations, and they undeniably open many doors that are effectively closed to dial-up's typical 33 kilobits/second speed.

## Far From Pervasive.

Yet even as the amount of business conducted over the Internet increases, and often represents the most economical way to purchase products in a growing number of industries (for example, the lowest airline fares are often only available via the airlines' Websites), only [13% of U.S. households](#) had adopted broadband as of May 2003! By comparison, 24.4% of South Korean homes have broadband Internet access, and their access is more than ten times faster than in the U.S!

Considering the vast number of new services that have been enabled by the move from dial-up to U.S. broadband speeds, South Korea's ten-times-faster speeds enable even more Internet-delivered products and services.

But it's not just South Korea that is ahead of the U.S. in broadband Internet adoption. A recent sobering statistic from the FCC documents that the often technologically-leading U.S. is but [number eleven](#) in the world of broadband Internet penetration!

This is due, in part, to escalating prices, but perhaps even more so because of limited broadband availability for those who live beyond the physical tendrils of broadband-capable cable systems and phone company DSL lines.

### **Why?**

Why this paltry broadband penetration? A significant factor that preserves the status quo is surely the lack of competitive offerings in most geographic areas (cable franchises usually prevent competition, and phone companies have, in most cases, done little to extend the relatively short distances over which they can offer DSL).

Installing fiber to each home, with its effectively unlimited bandwidth, could dramatically change things (especially if the fiber plants were owned by local governments that provided competitive access to multiple content and service providers. But even though I suspect that this will likely, eventually happen, rewiring (fiber-ing?) the country is an immensely expensive and time consuming undertaking.

### **Alternatives.**

There are, however, a growing number of alternatives that could change the competitive rules.

In a combination of good and bad news, the FCC has decided that traditional phone companies who offer "fiber to the neighborhood" digital service do NOT have to open those high speed connections to competitors if the fiber terminates within 500 feet of a residence. What that means is that the phone company can fiber-up your neighborhood, but if you choose to use their fiber for a typically 5 megabits/second broadband Internet connection, you can only purchase this service from them. But this is also good news, in that it may make the huge investment more palatable to the phone companies. Yet as we've seen before, another monopolistic communications infrastructure (remember the original Ma Bell) will likely restrain competition.

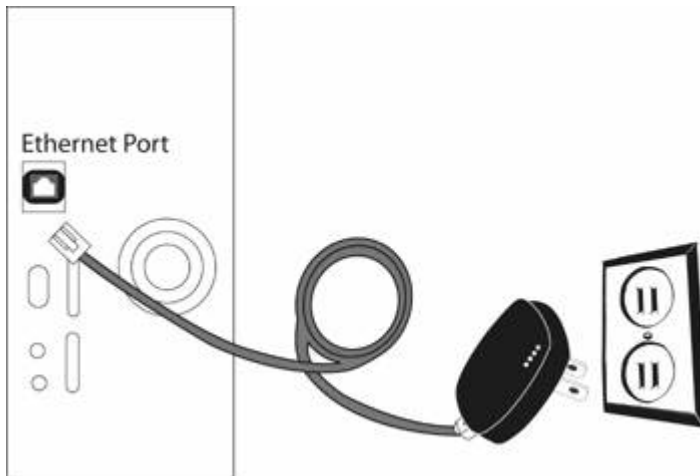
It doesn't have to be so, though -- technology, and open regulation, are teaming up to open new broadband doors into homes and small businesses.

### **One New Kid On The Block - BPL.**

The first "new kid on the block," possibly available within just a few years, makes use of wires that *already* come into your home or office -- the power lines.

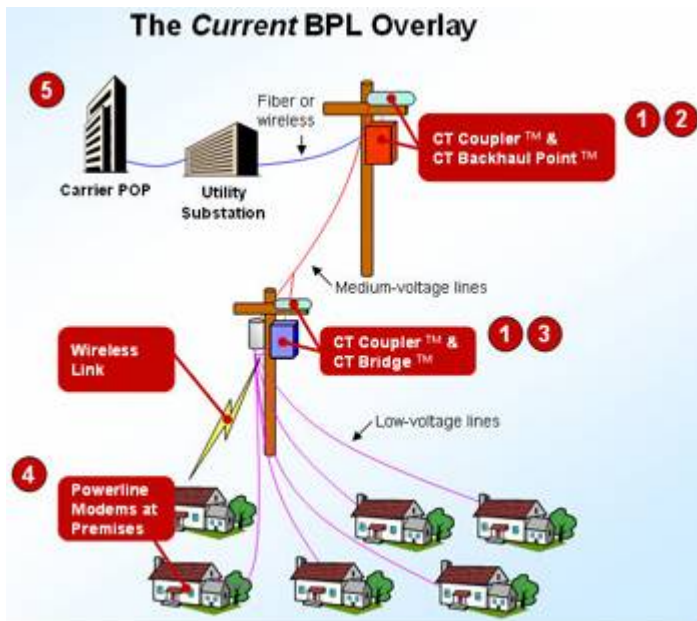
Companies such as Current Communications have been conducting "**Broadband over Power Line**" (**BPL**) tests in 18 states. And, with FCC backing, Current Communications is already offering a limited commercial rollout in and around the Cincinnati, Ohio area.

This service uses the general power grid to provide Internet service over the existing wires as if by magic. You simply plug a small Power Line Modem into ANY electric socket in the wall, attach it to the Ethernet jack on your computer, and voila -- instant Internet connectivity at symmetrical (both upload and download) speeds up to 3 megabits/second! With higher speeds planned.



(From <http://www.currentgroup.com/LearnMore/HowItWorks/index.html>)

Since using existing power lines for networking doesn't require the major physical plant build-out required for cable or extended DSL service (although it does require placing new equipment on some "telephone poles"), I suspect that Broadband over Power Lines could provide needed competition for Internet access in already-served areas (current BPL prices start at \$29.95 per month for 1 megabit/second service). It can also extend Internet access to areas not currently served by cable or DSL. There's also the additional benefit that BPL does not require any additional cabling within your home or office.



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(From <http://www.currentgroup.com/LearnMore/Technology/index.html>)

And once competition rears its head in an area, I suspect that all broadband providers will be adjusting their prices downwards.

#### **Another New Kid On The Block - WiMAX.**

"WiFi," the user-friendly name for a suite of IEEE 802.11x technologies, is now commonly providing local wireless networks to businesses, schools, coffee shops, parks, and homes. Surprising most everyone by rapidly becoming so common that even established telephone companies are getting into the WiFi game. For example, Verizon is rumored to be turning many pay phone kiosks in Manhattan into WiFi access points.

WiFi equipment is now almost dirt cheap, and most new laptops and handhelds have WiFi built-in. But WiFi's nominal distance limitation of 150 - 300 feet make this technology a non-starter for providing wide area wireless broadband services.

Now, enter "WiMAX" ("Worldwide Interoperability of Microwave Access"), an industry initiative to provide up to 75 megabits/second broadband wireless access within a three to ten mile radius! Because WiMAX is wireless, it provides broadband Internet service without requiring *ANY* new infrastructure such as longer-reaching DSL, fiber, or enhanced power lines.

Although still undergoing testing, WiMAX anticipates that its roll-out will begin later this year for fixed installation use (a home or business), first requiring an outdoor antenna similar to a satellite dish, and later working with unobtrusive indoor antennas. Then, in 2006, support will be added to allow mobile users to "roam" between WiMAX's large "cells" while maintaining their data connection.

The beginning of more pervasive Internet access.

Of course widespread adoption of WiMAX, as with WiFi before it, requires inexpensive chip-level solutions, and companies such as [Intel](#) have already demonstrated WiMAX enabled chips for fixed use, as well as for the intrepid notebook or handheld wielding road warrior.

As with power line Internet access, perhaps the most interesting aspect of WiMAX is the instant "competition" that it can bring to current "locked-in" cable or DSL users. Not to mention its ability to inexpensively extend broadband Internet service to areas that are currently beyond the reach of Internet-carrying wires.

#### **The Bottom Line.**

Regardless of the broadband method you choose (and even more access choices will continue to become available), high speed Internet is already altering many aspects of society. It's been years since I've picked up a physical telephone directory. I've saved literally 50% to 75% of my traditional phone charges by switching to VoIP (Voice over Internet Protocol) phone service. With a broadband Internet connection I can legitimately download movies through services such as MovieLink (<http://www.movielink.com/>) and InternetMovies (<http://www.internetmovies.com/index.asp>). I can shop easily and get far better prices than I can at many local stores. I can keep in touch with people throughout the world by Email, phone, video, and Instant Messaging at virtually no cost. A world's worth of information lies, literally, at my fingertips, which allows me to do cutting-edge

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research without the once-necessary facilities of a huge library. And these represent just the tip of the 'always-on' broadband Internet advantage.

"Metcalfe's Law" states that the value of a network improves as the square of the number of connections, and that certainly applies to the Internet. Bolstered by these latest competitive Internet access alternatives, the promise of extending broadband Internet access to far more people (both in developed and developing countries) will dramatically grow the network's -- the Internet's -- benefits to us all.

Pervasive broadband Internet access *will* further affect how we live. It *will* further affect how we play. And it *will* dramatically continue to affect how we do business.

You can help us rise from eleventh-place and increase our 21st century global competitiveness by supporting positive legislation and regulation that encourages unfettered and innovative competitive access to the Internet.

That will yield vast dividends to us all.

Don't Blink!

*This essay is original and was specifically prepared for publication at Future Brief. A brief biography of Jeff Harrow can be found at our main [Commentary](#) page. Other essays written by Jeff Harrow can be found at his [web site](#). Jeff receives e-mail at [jeff@theharrowgroup.com](mailto:jeff@theharrowgroup.com). Other websites are welcome to link to this essay, with proper credit given to Future Brief and Mr. Harrow. This page will remain posted on the Internet indefinitely at this web address to provide a stable page for those linking to it.*

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