

Wireless Needs Wires

Part one

Ditching landline and going wireless is a growing trend in the United States. According to a May 2009 study by the Centers for Disease Control and Prevention, one in five households has cut the cord and eliminated landline telephone service. What these converts and other wireless users might not realize, however, is that wireless is fed by landlines. Without the landline network, wireless simply wouldn't work.

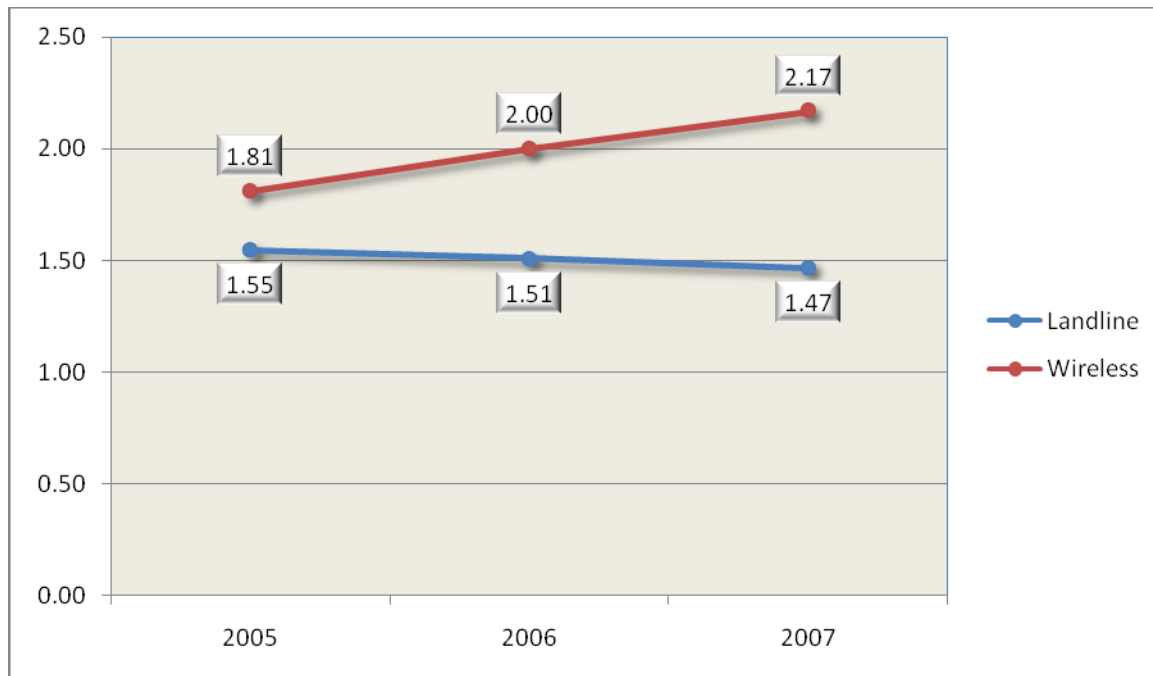
Wireless is now much bigger than landline – both in Iowa and the U.S. – in number of users, minutes-of-use, customer spending and total company revenues. The average wireless customer consumes 769 minutes and spends \$70 per month. The wireless industry projects strong continued growth, due to increasing demand for data services, such as text messaging, email, and Internet access from the handset. According to CTIA, a national wireless advocacy association, a whopping 2 billion text messages are sent every day in the U.S. A recent study of teenagers and young adults, conducted by Cronin Communications, a telecom research firm, revealed that more than one-quarter use their phones to send and receive photos. Another 20% download video from the Internet. And almost 40% listen to music stored on their phones.

Table 1 – Wireless User Profile

Average Monthly Bill	\$70
Average Monthly Minutes of Use	769
Average Number of Users on a Plan	2.5
“Smart Phone” Users	10%
Calls That Would Be Rated Long Distance From a Landline	50%
Average Duration of a Wireless Call	2.5 minutes
Average Duration of Current Account	4 years

Meanwhile, landline phone companies are losing customers. In Iowa, about 80,000 landlines have been eliminated over the past three years. During the same period, wireless providers in the state picked up 360,000 new customers. There are now 700,000 more wireless phone numbers than landline in Iowa.

Chart One – Landline vs. Wireless Users (in millions)



So is landline obsolete? With 85% of all Americans now having a cell phone, it might seem inevitable. But the wireless network – the one that provides so much freedom and flexibility – still relies on both fiber and copper buried in the ground to carry calls, text messages and email from the originating tower to the tower or other equipment closest to the receiving party. Without your local phone provider, much of what we take for granted simply wouldn't work. To be continued next month...to read the full article now go to our website.

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Part two

How It Works

A cell phone is actually a small portable two-way radio. Simpler and earlier versions are the CB radio and walkie-talkie. These are *simplex* devices, meaning that the two people communicating use the same frequency, so only one person can talk at a time. A cell phone is a *duplex* device, so it uses one frequency for talking and another frequency for listening.

Wireless service works only because each cell site is fed by a landline, usually a fiber-optic cable provided by the local phone company. The calls, text messages and Internet downloads made from a wireless phone may travel thousands of miles over the landline network before reaching the cell tower

closest to the wireless user. To the user, the experience appears wireless, but without the fiber optics and copper network along with all the proper electronics provided by your local communications company, wireless communications would not be possible.

The landline network also provides each cell tower its bandwidth, allowing multiple users in the region to talk, text and download at broadband speeds. There is tremendous innovation still occurring in the wireless industry, especially in the area of mobile broadband and video. But these new technologies will continue to depend on the landline network to feed the cell sites and connect wireless users to the world. Wireless, really, is a short-range service sitting on top of a vast landline network.

A wireless network is divided into geographic regions, known as “cells.” Each cell contains its own mobile base station, cell tower and antenna. There are now 240,000 cell towers across the United States, providing practically ubiquitous coverage. The base station is the small building at the bottom of the tower that contains radio equipment and electronics. The antenna is placed on the tower at a certain height and emits a radio signal to cover a small geographic area – usually about a 10-mile radius.

When a wireless user makes a call, the cell phone chooses the closest base station and then checks all channels to determine which channel has the best signal. After choosing the strongest signal, the cell phone transmits a short message containing the cell phone number (also known as a Mobile Identification Number) and its ESN (electronic serial number.) After the cellular service provider authenticates the customer (based on the phone number and ESN), the base station sends a channel assignment to the phone, telling it where (on what channel) the conversation will take place.

Special wireless switches (Mobile Switching Centers) interface with the larger telecommunications network, allowing wireless users to call *any* telephone number, whether another wireless phone or a landline phone, such as in a home or business. Reciprocally, landline phones can reach any wireless customer, provided the customer is within range of a cell site. To be continued next month...to read the full article now go to our website.

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Part three

Wireless Competition

Iowa has more telecom providers than any other state. Although there are 61 wireless carriers and 154 local landline phone companies, the wireless industry is dominated by three companies: Verizon, AT&T and Sprint, who have an estimated 90% of the market-share. The reason? The wireless business is virtually impossible to break into. Carriers must buy spectrum (the radio frequency assigned to wireless communications) from the Federal Communications Commission. Spectrum is purchased through a competitive bidding process, so potential start-ups continually lose out to the big three and their much deeper pockets, when it does become available.

After acquiring spectrum, a carrier must design and construct its wireless network – building a series of cell towers to provide adequate coverage to customers. Each tower costs approximately \$300,000 to complete. Then the carrier must negotiate inter-connection agreements with all other wireless providers to allow each others' customers to use their towers when calling from outside their service areas. Finally, the carrier must purchase handsets and establish retail operations to attract new customers. The average marketing expense is \$450 per customer.

As a result of these intractable market conditions, the wireless industry will continue to be controlled by the big three, but dependent on the local phone companies that provision and care for the landline network that serves as the wireless backbone.

Conclusion

While market-based competition is designed to let consumers choose the winners and losers, in the race between wireless and landline communications, there's more than meets the eye. The wires connecting your wireless call may not be visible, but they are a crucial link provided by companies whose landline infrastructure – built over decades – makes today's wireless lifestyles possible. So the next time you reach for your wireless phone, just remember, "*your call may not be completed*" without the help of those "old-fashioned" wires and fiber optic cable provided by your local communications company.