

## **FIXED WIRELESS CARRIER ECONOMICS: An Idea Whose Time Has Come?**

In the late 1990s, there were numerous fixed wireless companies started, some of them service providers (e.g., Winstar, Teligent, ART, Sprint MDMS, LMDS players), some of them equipment vendors (e.g., Lucent, Granger, Netro, Ensemble, Triton, Broadband Networks). At the start there was a lot of hype; in the end, all failed. Was the idea doomed or just before its time?

*Equipment vendors over promised on first-generation point-to-multipoint/non-line-of-sight equipment price and performance*

To some degree, equipment vendors over promised on first-generation point-to-multipoint/non-line-of-sight equipment price and performance. The only alternative was for Competitive Local Exchange Carriers (CLECs) to do actual provisioning by reselling unbundled network elements (UNEs) from Incumbent Local Exchange Carriers (ILECs).

In 2005, we believe there is a role for fixed wireless as a next-generation play, based on economics. How competitive is fixed wireless with wireline networks?

### ***Wireline Carrier Economics***

To compare carrier economics, we consider the elements in telecom networks: subscriber equipment for voice, data, and video that interfaces to network interface units, which in turn connect over physical media (copper wire pairs, coaxial cable, optical fiber pairs, and microwave spectrum) to a network access point. The network access point in turn connects via the same list of physical media to switching systems, and the switching systems are interconnected to provide any-to-any connectivity.

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As a starting point, consider the required capital expenditure, or capex, of plain old telephone service (POTS) as of 2003, the last year data is available for the United States. At a high level, the data suggests that any new wireless technology has to enter the market at \$1,050 of capex per subscriber, and preferably much less, in order to be viable; we estimate 75% of these costs are fixed. In addition, operating expenses, or opex, tends to track capital expenditure depreciation: all of those trucks and people working for wireline carriers are there for a reason, with large numbers of accidental cable cuts as well as new subscribers, changes, and foreclosures on services. What about cable television (CATV)? The best pure play (Comcast) shows lower capex and opex per subscriber than wireline telcos (in part because the Comcast network is newer, based on a more homogenous network design, in part because Comcast never had the access to capital that wireline telcos had). However, CATV has higher fixed cost to pass a subscriber on a street or road than wireline carriers. We have addressed the network access economics of

Fiber to the Home (FTTH) elsewhere (“Is Fiber To The Home Affordable?”, Business Communications Review, June 2004) based on a major pro-RBOC FTTH study used by the FCC (CSMG/Corning study) showing that in a free market environment, ILECs and CLECs could afford to build out FTTH networks

### **Wireless Carrier Economics**

*...wireless has three fundamental advantages over wireline:...*

In theory, wireless has three fundamental advantages over wireline: 1) can facilitate mobility/portability, 2) less wiring (conduit for wires, poles, concrete slabs with wiring concentrators, connectors, and less associated labor) and 3) more variable cost structure, so costs track revenues.

One question that will be asked: is the spectrum available for permitting really high bandwidth to compete with optical fiber, or will wireless always be chasing wireline in transmission capacity? Our view: if demand is there, spectrum will be available.

### **Status of Wireless/Wireline Competition**

*...fixed wireless has made substantial progress, to the point where a \$5,800 cost per sub in 1998 has dropped to \$250 in 2005...*

In the mid 90s, Negroponte/Gilder thought that fiber networks would result in ‘bits too cheap to meter, based on 2x Moore’s Law improvements. At the core transmission level, this largely occurred. However, at the local loop, the high cost to pass a household has resulted in high overall costs for greenfield builds and overlays. At the same time, fixed wireless has made substantial progress, to the point where a \$5,800 cost per sub in 1998 has dropped to \$250 in 2005, and with most of the economics driven by variable costs. Fixed wireless has three valid economic propositions: 1) rural/third world environments where economics prohibit building wireline high-bandwidth solutions, 2) fiber to the pedestal/fixed wireless to the home/small business and 3) temporary fixed wireless buildout, with redeployment of transmitters once FTTH is deployed.

We think fixed wireless’ time has come.

References <http://signallake.com/publications/>

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