

December 11, 2002

*Industry Update*Sector Weighting: *Underweight***Telecommunications
Services**

Downgrading Telecom Services to Market Underweight

- We're downgrading telecom services to Market Underweight from Market Weight, effective 12/12. After a recent strong run, the stocks appear fully valued, while fundamentals remain uncertain. Longer term, the industry's competitive intensity is rising, due to disruptive technologies and a poor industry structure.
- Our long-term thesis has not changed: we continue to see the migration of traffic to IP and wireless from traditional wireline networks. This is spurring both increased cross-sector competition, and secular deflation as a result. It's a process that's very difficult for incumbents to manage.
- The transition appears to be accelerating, and spreading from LD to now impacting local. This is because wireless continues to price irrationally due to too many competitors and no visibility on consolidation, while new IP-based competitors are appearing as broadband penetration increases.
- Given these risks, we believe investors will need to be more trading oriented. We're maintaining our relative recommendations on individual stocks, continuing to favor the RBOCs over their LD counterparts, but we're lukewarm on the sector's overall risk/reward at current levels.

Timothy Horan, CFA
1 (212) 667-8137
Tim.Horan@us.cibc.com

Edward H. Yang
1 (212) 667-8459
Edward.Yang@us.cibc.com

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A More Cautious Outlook

We have completed a review of the communications services industry that leads us to believe that fundamentals for Regional Bell Operating companies (RBOCs), long-haul carriers, and wireless providers will remain challenging for the foreseeable future. The reasons for this are manifold and discussed in detail below, including short-term risks related to lackluster demand and misguided regulation, but in general, the long-term level of competitive intensity in the industry appears to be rising, spurred by disruptive technologies and an inefficient industry structure. Near term, we believe we will see a sharp ramp in the level of competition, churn, and customer acquisition costs, as the RBOCs get long-distance entry, particularly in Florida and California (20% of the U.S. population, and 30% of AT&T's profitability), and long-distance companies have no choice but to retaliate. This is stoking secular deflation, which makes current sector valuations unattractive, in our view. Ultimately, the combination of these factors will likely force the industry to a more horizontally focused, customer-facing industry structure.

Wireless/wireline intermodal competition is heating up, as wireless prices have begun to hit price points that are cheaper than wireline, and wireline has begun to respond with unlimited packages. Competition from VOIP, broadband-based providers will have a similar impact.

The largest near-term risk, in our opinion, is that consensus expectations for wireless are once again too high, in a stale rerun from the same time last year, which may force wireless carriers to aggressively price compete, cannibalizing wireline and lowering overall sector valuations. In addition, the outlook for technology spending remains very weak.

In addressing these concerns, we also take a fresh look at the most salient issues on investors' minds, many of which we had detailed in our 200-page "Communications Services Industry: Long-Term Outlook" report last April, including wireless and IP cannibalization, top regulatory concerns, and a quick roster of disruptive technologies affecting the industry. This year has been an extraordinary year in telecom, among the most volatile in the decade that we have covered the industry, and 2003 promises to be another turbulent year.

Why Downgrade Now?

After a strong run recently, telecom stocks look fully valued, while fundamentals remain uncertain.

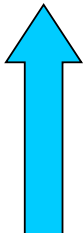
After a strong run recently, telecom stocks look fully valued, while fundamentals remain uncertain. Although the third quarter was one of the weakest in 20 years, the sector has substantially outperformed the market since September, with the RBOCs up 28% and long-distance up 45% versus a 5% rise for the S&P 500. The hard bounce from recent lows is even more impressive on a total return basis, including dividends (Exhibit 5 and 6), although telecom stocks on average have underperformed this year. We believe investors are expecting very positive regulatory announcements and potential industry consolidation, as well as an improvement in overall demand, and the outlook for all this is somewhat mixed, which leaves stocks little margin for error.

We also believe that a near-term negative catalyst is that once again, expectations for wireless are too high.

We also believe that a near-term negative catalyst is that, once again, expectations for wireless are too high (please see CIBC World Markets' Wireless analyst Cannon Carr's note under separate cover). We spotted a reignition of wireless price competition back in January after a period of stability, and called this very negative for wireless stocks. Today's environment seems eerily similar, with consensus subscriber estimates too high, which is troubling on what this could mean for pricing.

In addition to valuation, communications services continue to experience a whirlwind of change, and the ultimate structure and timing of the industry's long-term evolution remain unclear. Clearly, there are a lot of forks in the road, which will determine the eventual shape and profitability of telecom services (Exhibit 1).

Exhibit 1. Determinants of Industry Structure

		Industry Significance	
		Long-Term	Near-Term
Increasing Importance 		Disruptive Technologies	Consolidation
		Industry Structure	Regulation
		New Applications	Emerging Carrier Bankruptcies
		Emerging Carrier Bankruptcies	New Applications
		Regulation	Industry Structure
		Consolidation	Disruptive Technologies

Source: CIBC World Markets Corp.

Our outlook is tempered by concerns that:

- 1) Demand remains very weak;
- 2) Consumers may start aggressively trying to lower communications spending;
- 3) True industry deregulation will continue to be delayed;
- 4) Carriers have dwindling flexibility in cutting costs in line with revenue declines, which may begin to pressure margins;
- 5) The prospects for wireless consolidation look murky, raising the likelihood of further price competition and wireline cannibalization to a much greater extent than we previously expected;
- 6) Anti-trust litigation is an increasing risk for the RBOCs;
- 7) Long-term technology trends are uncertain, especially IP-based disruptive technologies; and
- 8) Intermodal competition is rising, accelerating the risk of secular deflation.

The first four concerns are short-term in nature, while we believe the latter four will be problematic for the industry for several years. We discuss these issues individually in detail later in this report.

We are worried most by the long-term issues, because they pose the greatest threat to future valuations.

We are worried most by the long-term issues, because they pose the greatest threat to future valuations. **The long-term issues are also related in that the overarching theme is that technology is driving increasing competition in the industry, which is creating downward pricing pressure on services, collapsing profits and damaging asset values.** The effect of secular deflation was first felt in the long-distance market and was one of our primary reasons for downgrading those stocks three years ago, but the effects are finally spreading to local.

What's Changed?

The themes discussed above are generally consistent with the long-term thesis that we have expounded literally for years, so what's changed?

The dominant disruptive change is the migration of traffic from traditional intelligent wireline networks to "dumb" IP and wireless networks with intelligence at the edge.

Long-Term Thesis

We still firmly believe that disruptive technologies are driving the industry toward network-centric computing. This, combined with deregulation and increased competition, is forcing companies to become horizontally segmented, more focused, and realigned along customer lines, a trend evidenced in virtually all competitive industries. The dominant disruptive change is the migration of traffic from traditional intelligent wireline networks to "dumb" IP and wireless networks with intelligence at the edge. **This is a "sail to steam" type of transformation, and we have seen it before in this industry, when the telephone displaced the telegraph. Obviously, given the lack of surviving publicly traded telegraph companies, it's a process that is very difficult for incumbents to manage.**

What's Changed

1. Continued weak demand;
2. Lack of consolidation;
3. More onerous regulatory oversight than we expected;
4. Innovation continues (i.e. VOIP); and
5. Delayed incumbents' responses to these challenges.

The additional wrinkle besides current valuations, which we believe do not adequately discount the short-term risks, is that the process is occurring faster than we had initially envisioned, even starting to meaningfully impact the local market and the RBOCs, because of the rapid march of technology and also because wireless has not consolidated and continues to price irrationally. When we downgraded the long-distance industry at the height of the bubble two and a half years ago, mostly due to concerns about overcapacity, but also due to risks posed by disruptive technologies, we wrote that "we expect long-haul to be first affected by disruptive tech, but local in three years." Now, nearly three years later, the risks to the RBOCs and the industry as a whole are if anything growing.

Households now spend over \$200 per month on combined voice/data/video communications/computing/entertainment products. New technologies and competition could start driving this down.

Incumbent communications companies as a group will likely face flattening or declining profitability in the next several years due to these factors.

This is spurring both increased cross-sector competition, and secular deflation as a result. **Households spend over \$200 per month on combined voice/data/video communications/computing/entertainment products. New technologies and competition could start driving this down for the first time.** With a broadband connection, packet-based services are one-hundredth of the price of circuit based services, and can carry voice, data, and video; the transition continues both on wireline and wireless services.

As a result, our principal conclusion is that incumbent communications companies as a group will likely face flattening or declining profitability over the next several years due to these factors. Because of this, we believe telecom growth will lag overall GDP growth for the next several years, and continue to decline as a percentage of GDP. 2002 was the first time in over 60 years that this has happened.

We recognize that many telecom stocks are already down significantly, but we believe fundamentals may get worse before they get better, which will make an expansion of valuation multiples from these levels difficult.

Stock Recommendations

Consistent with our concerns, we recommend an Underweight position in the communications services industry from a previous Market Weight. Within this more cautious overall industry outlook, we are maintaining our relative recommendations on individual stocks, continuing to favor the RBOCs over their long-distance counterparts. We have been strong supporters of the RBOCs for a long time, and these stocks have historically been great investments. While the risks are also clearly growing for the RBOCs along with the industry as a whole, they still remain, in our view, relatively more defensive, while having strong management teams, robust free cash flows, relatively solid balance sheets, and well positioned to be incremental share takers in the long-distance market. Meanwhile, long-haul companies are market share losers even with resale UNE-P local wins (the overriding concern is that LD is disappearing as a standalone business), and continue to be disproportionately exposed to the short-term and long-term negatives we have highlighted, particularly the threat of cannibalization from new services.

In terms of our recommendations for large-cap carriers, we reiterate our ratings on AT&T (Sector Performer); BellSouth (Sector Outperformer); Level 3 (Sector Underperformer); Qwest (Sector Underperformer); SBC (Sector Performer); Sprint (Sector Underperformer); and Verizon (Sector Outperformer). Our attached Pricebox (Exhibit 2) includes our full list of coverage, as well as price targets and estimates.

Exhibit 2. CIBC Telecom Services Comparable Companies Analysis (Pricebox)

CIBC World Markets

Timothy K. Horan

212-667-8137

tim.horan@us.cibc.com

	Current Opin.	Closing Price 12/10	Stock Gain In 2001	Stock Gain Since 12/31/01	Price Target		Market Cap. (Mil)	Firm Value (Mil)	2003E Revs (Mil)	'03 Rev. Mult	2002E Revs (Mil)	Operating EPS Excluding extraordinary gains/losses				P/E Multiple		5 yr. estim. EPS Grwth.	Firm Value to 2003 EBITDA		Curr. Yield %		
					On Est. 2002 EPS ⁽⁴⁾	Implied Upside						2003E	2002E	2001	2000	On 2003 EPS	Rel. To S&P		EBITDA	Multiple			
																						\$ Amt.	%
																	2003		2002	2001		2000	2003
Tim Horan																							
Incumbents																							
AT&T (T) ^(6,4,11)	SP	\$27	44%	-31%	NA	NA	\$20,513	\$36,513	\$34,549	1.1	\$37,894	\$2.50	-31.1%	\$3.63	-37.2%	\$5.78	NA	10.66	0.63	NM	\$8,652	4.2	0.6%
BellSouth (BLS) ⁽⁶⁾	SO	\$26	-7%	-32%	\$26	0%	48,583	64,207	27,727	2.3	28,512	1.95	-7.1%	2.10	-0.07	2.25	2.20	13.32	0.78	7%	12,050	5.3	3.1%
Qwest (Q)	SU	\$5	-65%	-67%	NA	NA	7,967	32,964	16,822	2.0	17,121	(0.02)	NM	(0.38)	NM	0.03	0.59	NM	NM	NM	5,299	6.2	NA
SBC Comm. (SBC) ⁽⁶⁾⁽⁸⁾	SP	\$26	-18%	-34%	\$26	1%	85,375	102,999	50,668	2.0	52,285	1.95	-13.5%	2.25	-4.2%	2.35	2.26	13.18	0.78	7%	19,317	5.3	4.2%
Sprint (FON) ^(6,11)	SU	\$14	-1%	-29%	NA	NA	12,668	16,912	14,845	1.1	15,267	1.32	0.1%	1.32	24.5%	1.06	1.86	10.72	0.63	7%	4,548	3.7	3.5%
Verizon (VZ) ^{(6)(8,9)}	SO	\$38	-5%	-19%	\$39	2%	105,424	150,107	68,287	2.2	67,172	2.90	-4.7%	3.05	1.6%	3.00	2.92	13.21	0.78	7%	25,550	5.9	4.0%
Emerging																							
EarthLink (ELNK) ⁽¹⁾	SO	\$6	142%	-54%	\$8	43%	852	338	1,489	0.2	1,360	0.18	NM	(0.21)	NM	(0.83)	(1.45)	31.11	1.83	NM	115	2.9	NA
Genesys (GNSY) ⁽¹⁾	SU	\$1	NA	-81%	NA	NA	38	165	219	0.8	202	0.22	NM	(1.24)	NM	(3.15)	(3.53)	5.52	0.32	NM	45	3.6	NA
GRIC (GRIC) ⁽¹⁾	SP	\$3	-40%	152%	\$4	24%	65	43	52	0.8	36	0.05	NM	(0.27)	NM	(1.10)	(1.68)	71.19	4.19	NM	4	10.3	NA
ITXC (ITXC) ^(1,3,11)	SO	\$3	4%	-62%	\$5	84%	126	16	324	0.0	270	(0.39)	NM	(0.63)	NM	(1.42)	(1.41)	NM	NM	NM	4	4.4	NA
Level 3 (LVLT) ^(1,4)	SU	\$5	-85%	6%	NA	NA	2,178	7,071	3,722	1.9	3,223	(2.53)	NM	(2.63)	NM	(6.15)	(4.26)	NM	NM	NM	478	14.8	NA
Ptek (PTEK) ^(1,3,4)	SO	\$4	137%	18%	\$7	75%	228	354	375	0.9	344	0.45	104.5%	0.22	NM	(4.84)	(1.22)	8.89	0.52	NM	90	3.9	NA
Raindance (RNDG) ⁽¹⁾	SU	\$3	226%	-47%	NA	NA	155	128	84	1.5	61	0.10	NM	(0.03)	NM	(0.34)	(1.56)	31.17	1.83	NM	17	7.7	NA
WebEx (WEBX) ⁽¹⁾	SP	\$19	19%	-23%	\$20	5%	834	778	200	3.9	141	0.54	108.9%	0.26	NM	(0.36)	(1.83)	35.19	2.07	NM	51	NM	NA
Cannon Carr																							
Independent Telcos																							
Alaska Comm. (ALSK) ^(1,11)	SP	\$2	10%	-76%	\$5	160%	61	643	345	1.9	342	(0.02)	NM	(0.17)	NM	(0.36)	(0.59)	NM	NM	NM	137	4.7	NA
Alltel (AT) ⁽⁶⁾	SP	\$51	-1%	-17%	\$45	-12%	15,896	22,684	8,581	2.6	7,990	3.35	4.0%	3.22	2.6%	3.14	2.98	15.21	0.90	9%	3,337	6.8	2.7%
Broadwing Inc. (BRW) ⁽⁶⁾	SU	\$4	-58%	-56%	NA	NA	924	3,895	2,011	1.9	2,168	0.15	NM	(0.38)	NM	(1.36)	(1.72)	28.13	1.66	NM	746	5.2	NA
Century Telep. (CTL) ^(6,3,4,11)	SO	\$29	-8%	-11%	\$35	20%	4,160	7,544	2,315	3.3	1,960	2.12	7.1%	1.98	24.5%	1.59	1.61	13.72	0.81	9%	1,189	6.3	0.7%
Citizens Comm. (CZN) ⁽⁶⁾	SO	\$10	59%	-72%	\$13	31%	2,790	7,933	2,310	3.4	2,691	0.01	NM	0.17	NM	(0.74)	(0.20)	NM	NM	NM	1,162	6.8	NA
Commonwealth Tele. (CTCO) ^(1,2)	SO	\$38	30%	-16%	\$45	18%	901	1,069	325	3.3	315	2.30	9.4%	2.10	51.0%	1.39	0.48	16.54	0.97	12%	162	6.6	NA
Wireless																							
AT&T Wireless (AWE)	SO	\$7	-17%	-52%	\$11	61%	19,595	27,023	16,048	1.7	15,580	0.06	NM	(0.02)	NM	0.00	0.21	113.83	6.70	NM	4,350	6.2	NA
Nextel Comm. (NXTL) ^(1,3,4)	SP	\$12	-56%	11%	\$11	-10%	12,024	24,373	9,770	2.5	8,716	0.33	NM	(0.17)	NM	(1.73)	(1.48)	36.88	2.17	NM	3,449	7.1	NA
Nextel Partners (NXTF) ⁽¹⁾	SP	\$7	-29%	-44%	\$11	63%	1,649	2,868	975	2.9	672	(0.63)	NM	(1.27)	NM	(1.07)	(0.95)	NM	NM	NM	151	19.0	NA
Sprint PCS (PCS) ⁽⁶⁾	SU	\$5	19%	-79%	NA	NA	5,144	23,082	12,954	1.8	12,090	(0.32)	NM	(0.71)	NM	(1.27)	(1.94)	NM	NM	NM	3,125	7.4	NA
Triton PCS (TPC) ⁽⁶⁾	SO	\$4	-14%	-86%	\$13	225%	265	1,497	827	1.8	733	(1.39)	NM	(1.81)	NM	(2.67)	(2.88)	NM	NM	NM	171	8.8	NA
<i>Total market cap (bill.)</i>							348,416																
S&P 500 (Consensus)		\$904	-13%	-21%								53.23	11.6%	47.71	5.6%	45.16	55.00	16.99	--	6%			1.6%

Notes

- (a) RBOCs are generally valued relative to the market P/E multiple; long-distance companies use various methods.
 (b) BellSouth, SBC and Verizon price targets based on a 20% discount to market multiple.
 (c) Verizon EBITDA adjusted for wireless.

The results presented should not and cannot be viewed as an indicator of future performance.

Footnotes

- (1) CIBC World Markets, or one of its affiliated companies, makes a market in the securities of this company
 (2) CIBC World Markets, or one of its affiliated companies, has performed investment banking services for this company
 (3) CIBC World Markets Corp., or one of its affiliated companies, managed or co-managed a public offering of securities for this company within the last three years.
 (4) This company has a convertible included in the CIBC World Markets Corp. convertible universe.
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Source: CIBC World Markets Corp.

Detailed Discussion of Short-term Risks

Stocks Relatively Expensive

After a strong run recently, telecom stocks look fully valued, while fundamentals remain uncertain. Although the third quarter was one of the weakest in 20 years, the sector has substantially outperformed the market since September, with the RBOCs up 28% and long-distance up 45% versus a 5% rise for the S&P 500 (Exhibit 5 & 6). The RBOCs have generally outperformed over a two-year or longer horizon.

The RBOCs, at a 20% discount to the S&P 500 2003 forward P/E multiple, are trading at the midpoint of their 20-year relative range, despite fundamentals which (as we see it) have never been weaker for the group. This makes 2003 estimates very uncertain. On an access line basis, at \$1400 per line (SBC at \$1100 per line), valuations are 30% above near-term lows (Exhibit 3).

There are few remaining “pure-play” long-distance companies remaining, but AT&T at over 4X EBITDA looks pricey with visibility for future revenue and cash flow growth extremely limited. **At current valuations, we believe the stocks are discounting the best-case scenario of industry consolidation, an economic recovery and regulatory relief next year, leaving little margin for error, which makes the sector’s risk/reward profile unattractive, in our opinion.**

Exhibit 3. Implied Access Line Valuations

Company	Enterprise Value	% of EV International	% of EV Directory	EV Domestic ⁽¹⁾	Access Lines	Prop. Wireless Subs. Domestic	EV Domestic / (AL & WS)
BellSouth	64,207	10.0%	15.0%	48,155	24,894	8,830	\$1,428
SBC	102,999	10.0%	15.0%	77,249	57,628	13,246	\$1,090
Verizon	150,107	10.0%	15.0%	112,580	58,598	17,337	\$1,483
Qwest	32,964	0.0%	23.1%	25,349	17,196	1,084	\$1,387

(1) Assumes 10% of each of the RBOCs total enterprise value is derived from international operations; another 15% from Directory.

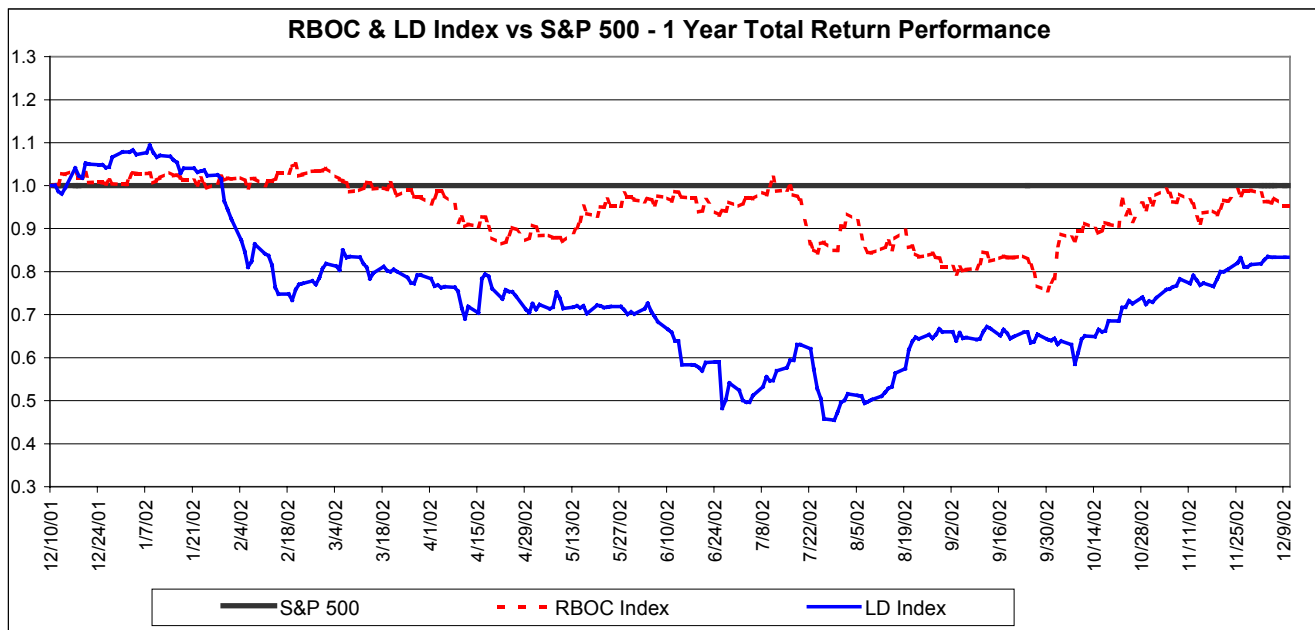
Source: CIBC World Markets Corp. & Company Reports.

Exhibit 4. Wireless and Wireline Implied Valuations Holding Access Lines Constant

Company	Enterprise Value	Estimated access line value	Total Wireline Valuation	Total Wireless Valuation	Calculated wireless per sub
BellSouth	64,207	\$1,200	29,873	18,282	2,070
SBC	102,999	\$1,100	63,391	13,858	1,046
Verizon	150,107	\$1,200	70,318	42,263	2,438
Qwest	32,964	\$1,200	20,635	4,714	4,349

Source: CIBC World Markets Corp.

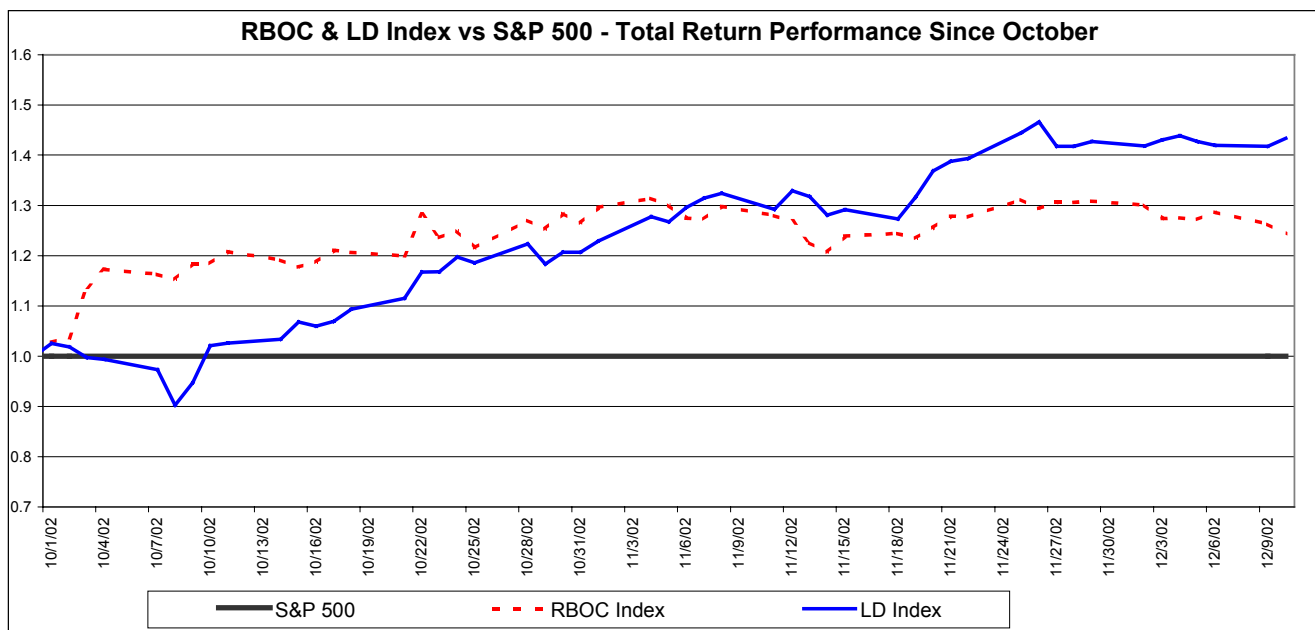
Exhibit 5. RBOC and Long-Distance Total Return Versus the S&P 500 (Trailing 12 Months)



Source: CIBC World Markets Corp. & Factset.

Note: RBOC index includes BLS,SBC and VZ; LD index includes FON, Q, and T.

Exhibit 6. RBOC and Long-Distance Total Return Versus the S&P 500 (Since October)



Source: CIBC World Markets Corp. & Factset.

Note: RBOC index includes BLS,SBC and VZ; LD index includes FON, Q, and T.

Stocks are pricing in a future recovery, but this may be premature, since our channel checks show no evidence of an uptick in demand.

On a broader level, we doubt enterprises will invest in new telecom projects, or other long-lived payback projects for that matter, until the endemic lack of pricing power currently experienced by enterprises reverses.

Demand Remains Anemic

The direction of the broader economy remains uncertain, and recent economic numbers are mixed in deciphering the pace and strength of a macro recovery. Communications services typically experiences a six-month lag anyway, so a return to business telecom spending may still be some time away. Of course, the markets are forward looking, and stocks are pricing in a future recovery, but this may be premature, since our channel checks show no evidence of an uptick in demand.

In addition, spending on information technology and software, which is closely tied to telecom, remains weak, as evidenced by recent comments from software companies, distributors like Tech Data and Ingram Micro, and various computer box makers.

Also affecting demand are the effects of the boom-bust cycle of the Internet/emerging carrier bubble, general industry oversupply and the September 11, 2001 attacks. Because of overinvestment during the bubble, the systematic excess capacity in the broader economy is only worse in telecom.

In addition, communications services is being disproportionately hit by the plunge in business spending, since the hardest hit sectors economically are among the most telecom-intensive, such as energy, technology and financials. On a broader level, we doubt enterprises will invest in new telecom projects, or other long-lived payback projects for that matter, until the endemic lack of pricing power currently experienced by enterprises reverses. Recent economic numbers have shown that private sector GDP deflator is already negative.

Consumers May Start Aggressively Trying to Lower Communications Spending

This is closely tied to the secular deflation impacting the industry, and we discuss it in much greater detail in the section below, "The Shape of Communications in the Next Decade: Secular Deflation?" Needless to say, households spend over \$200 per month on combined voice/data/video communications /computing/entertainment products. This number seems high to us, and we believe consumers, especially in a tough economy with overextended personal balance sheets will move to aggressively bring this down. Ample opportunities exist; for example, yield on wireless is still approximately \$0.10-\$0.12 per minute versus price plans comfortably in the \$0.06 per minute range.

Deregulation of UNE-P Will Take Some Time

Although we expect the FCC to deliver a net positive decision on UNE-P for the RBOCs in mid-February (although the agency is required to rule by January 3 as part of a D.C. Circuit Court mandate), we see little change in the status quo for the foreseeable future, and continue to believe substantial regulatory relief may be slow in coming. While the rhetoric from FCC Chairman Powell has been hopeful, we are skeptical Federal regulators will have the political fortitude to enact forceful change on residential UNE-P (business UNE-P will likely go away), which in the short term leads to increased pseudo-competition in the local arena and lowers prices for consumers. We would also expect a state regulatory backlash if the FCC makes aggressive changes.

UNE-P won't change overnight; ultimately this will be a political compromise.

UNE-P won't change overnight; and ultimately this will be a political compromise. By YE03, the U.S. will have ten million UNE-P subscribers; in our opinion, there is no way to shut these subscribers down and there is currently no other logical alternative to UNE-P. We do not think that the regulators will be able to eliminate UNE-P without having an alternative offer—we believe this will be seamless provisioning of local loops, to begin with. This is the same transition to equal access that the long-distance industry underwent in 1984. **We believe it will take at least two years before the industry can start transitioning from UNE-P to UNE-L.**

After the transition capabilities are in place, we expect the FCC to come up with a market share or a technology test on a per LATA basis, to determine when competitive carriers should be forced from UNE-P to UNE-L. We expect the market share tests to be much lower for business than for consumer. **We believe the FCC will override the states on the UNE-P issue to set up national standards.** The 1996 Telecom Act gives the commission the authority to oversee local competition implementation, in our opinion.

In addition, we have seen first hand the anti-RBOC vitriol held by state regulators when we spoke last month at the National Association of Regulatory Utility Commissioners (NARUC) annual convention in Chicago on UNE-P reform, along with SBC CEO Edward Whitacre, AT&T's head of federal affairs Joel Lupin and others. We remain convinced that state regulators want to "have their cake and eat it too," namely, they neither want to rebalance retail rates nor lose control of UNE-P—this is an unsustainable situation, in our opinion.

Cost Reductions Will Be Difficult to Maintain, Without Confronting Wage Increases Of 4% Per Year

Carriers have relatively high fixed costs, with approximately 40% of costs variable. As seen with United Airlines' travails, unionized employees are not always keen to help their employers reduce costs as fast as revenues fall. It seems a standard ritual every three years to see the Communications Workers of America (CWA) strike against the RBOCs. The RBOCs so far have been able to reduce their workforce by awarding healthy buyout packages from their overfunded pensions, but they no longer have that flexibility, thus hindering future labor and wage concessions. Health care costs have also reaccelerated. This may hurt margins going forward, which at least for local carriers have held up remarkably well during this downturn. In addition, investors may pay a shrinking premium for earnings growth obtained solely through deleveraging and cost reductions, which will inevitably slow.

Anti-trust Litigation Is an Increasing Risk for the RBOCs

This may seem like throwing in the kitchen's sink in terms of concerns, but since the Second U.S. Appeals Court in New York in June overturned a lower court decision to dismiss an antitrust suit against Verizon using the *Goldwasser* precedent, this is a real threat. In *Goldwasser v. Ameritech* in 2000, a U.S. Appeals Court in Chicago ruled that antitrust suits could not be filed against the RBOCs for Telecom Act-related issues. Since the *Goldwasser* case, most appeals courts have dismissed antitrust suits against the RBOCs.

Back in the 1970s, AT&T was hit with various antitrust suits after many of its competitors went bankrupt, a close parallel to the RBOCs and the CLECs. Verizon last month asked the Supreme Court to clarify whether the RBOCs can be sued on antitrust grounds for actions governed by the Telecom Act.

Historically, litigation, not regulation, has been the major driver of the telecom industry structure (competition).

The Shape of Communications in the Next Decade: Secular Deflation?

Given how popular the term deflation is right now, it might be worthwhile to first define it. We like best Jim Grant's explanation from his *Grant's Interest Rate Observer* newsletter: "Deflation is a comprehensive state of economic contraction, characterized by falling prices and wages, shrinking credit, vanishing asset values, and collapsing profits... There's no mistaking real deflation for an isolated decline in a price index, just as there's no misconstruing a broken neck for a head cold." We do not bring up the deflation bogeyman lightly, knowing full well that few other words strike as much fear in the hearts of investors—understandably so, as equity valuations come under severe pressure.

Secular deflation is accelerating, in our view, stoked by:

- 1) the effects of overinvestment during the bubble;
- 2) disruptive technologies; and
- 3) increasing intermodal competition.

Communications services has already clearly experienced its own boom and bust, which has led to its own set of deflationary pressures.

Deflation Reason #1: Over-Investment

Debate continues to rage over whether the overall economy is set to experience deflation with a prick of the housing bubble-financed boom in consumer spending. However, beyond the cyclical deflationary risks to telecom is secular deflation, as communications services has already clearly experienced its own credit-driven boom and bust, which has led to its own set of deflationary pressures. This is most apparent in the long-distance sector, where there were lower barriers to entry, overinvestment and overcrowding, but may be spreading to other segments as well.

The "Achilles heel" for incumbents will not be regulatory in nature, but new disruptive technologies.

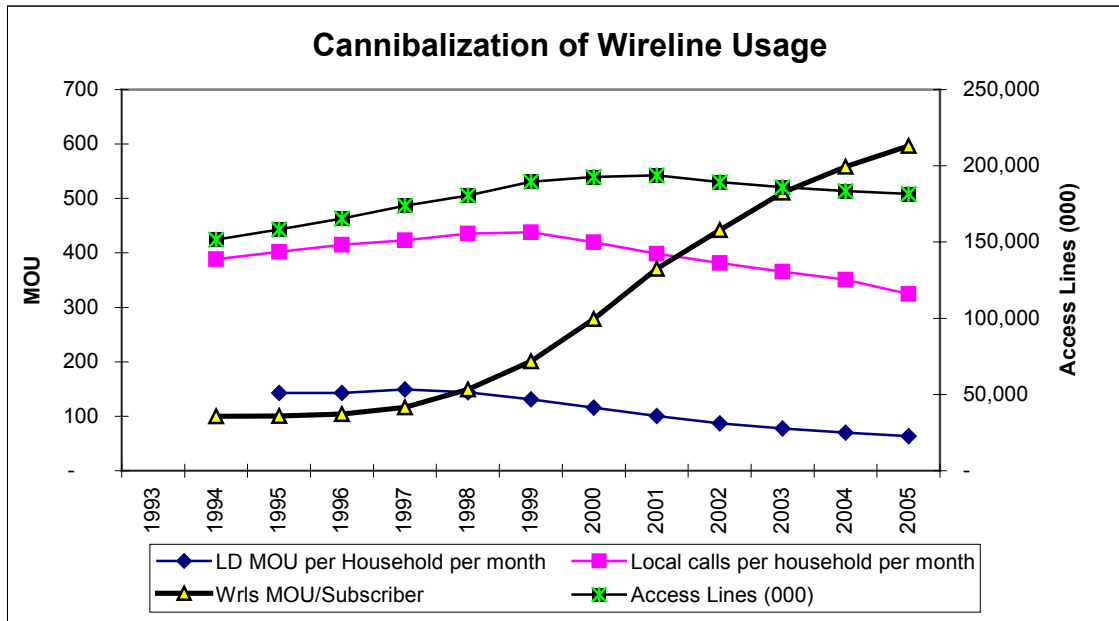
Deflation Reason #2: Disruptive Technologies

We continue to believe that the overarching dominant long-term theme is that the industry is rapidly undergoing a "sail to steam" type of transformation driven by disruptive technologies, as new IP and wireless based services cannibalize existing wireline products. **Like the telephone displacing the telegraph, the relentless march of innovation is spawning new services that threaten incumbents; regulations and barriers to consolidation only handcuff companies' ability to adapt to the emerging threats.** Other problems exist, such as schizo regulations, but this may be confusing the forest from the trees; the "Achilles heel" for incumbents will not be regulatory in nature, but new disruptive technologies.

New innovative products cost a fraction of the legacy services that they are displacing. The local market could be next, as the effects of IP start to infiltrate access lines and rampant price competition in wireless as new technologies such as spread spectrum or Wi-Fi begin to impact wireline. Packetbased service are 1/100th price of circuit based services, and the transition continues both on wireline and wireless services.

Even though the impact has been minimal so far, we are at the tipping point; at the same time, 18% of RBOC consumer lines are second lines, which remain disproportionately exposed to replacement by cheaper wireless and broadband alternatives. Already, declines in second lines are accelerating, declining by over 10%, as consumers switch to broadband and wireless for internet access and another dial-tone (Exhibit 7). We will be issuing a separate detailed report on disruptive technologies shortly, but provide a roster of some at the end of this report.

Exhibit 7. Cannibalization of Wireline Usage



Source: CIBC World Markets Corp.

Inter-modal competition is accelerating because three main consumer networks—wireline, wireless and cable—are all fiercely competing to offset enormous stresses in each segment of the market.

Deflation Reason #3: Intermodal Competition

Intermodal competition is accelerating because three main consumer competitors—wireline, wireless and cable—with 8 total networks (6 wireless, cable, and access lines), are all fiercely competing to offset enormous stresses in each segment of the market. It is also not clear if all these networks can coexist, and leverage compounds the desperation and ferocity of competition of these disparate businesses, as they compete for the same pie.

Brutal competition in telecom continues unabated. High-end households are spending over \$200 per month on combined voice/data/video communications/computing/entertainment products. In the future, this dollar amount could decline by 5% per year, even while volumes grow, as:

- 1) **Consumers become better shoppers.** In difficult economic times, consumers will seek to minimize expenditures. This could result in wireless subscribers, for instance, moving to lower rate plans, since yields throughout the industry are at least 50% above existing marginal prices. As consumers become more stressed, they will seek to lower cash outflows and take the time to shop for better deals—the Internet also helps in the price-discovery process.

Video is starting to carried over broadband IP networks; will consumers continue to pay for premium cable service in the future?

- 2) **Carriers utilizing new technologies.** The positive aspect of the excesses of the technology/telecom bubble is the explosion of innovation and infrastructure.
- 3) **New services are cheaper.** There will continue to be very strong volume growth (IP volumes expected to be up close to 80%) in the industry, but much of this is going to services that sell at a fraction of the cost of traditional services and generally have lower quality. This is a difficult environment for incumbents to prosper. For example, video is starting to carried over broadband IP networks; will consumers continue to pay for premium cable service in the future?

On the local side, new entrants have a large advantage in servicing new customers because they can take advantage of both new technologies (allowing lower costs and differentiated products), while at the same time reselling the RBOC network to remain flexible on capital and operating expenses. We believe the RBOCs will continue to be forced to resell most of their infrastructure to competitors, allowing new entrants minimal capex. On the operating side, new entrants do not have an expensive unionized workforce, and can also use the latest technologies (Linux as opposed to Windows), and service models (using cheap undersea fiber to outsource customer care centers and a host of other services to India, for example).

The risk to the incumbents is that they cannot cut costs fast enough, or change their business models to adopt to the technological changes. In particular, the RBOCs largely have unionized work forces, and fixed plant that requires expensive maintenance, not to mention inflexible regulation. This maintenance also includes substantial amounts of rights of way fees, taxes, etc.

Incumbents need to cash cow and raise prices, but regulators will not let them. This is misguided, since intermodal competition provides plenty of alternatives to traditional fixed wireline. For example, if voice goes on broadband, then the natural reaction for the RBOCs should be to raise prices on broadband to lower costs and limit cannibalization, but cable companies are also out there, and wireless may also be next.

Telecom as a Percentage of GDP Will Shrink Despite Robust Volume Growth

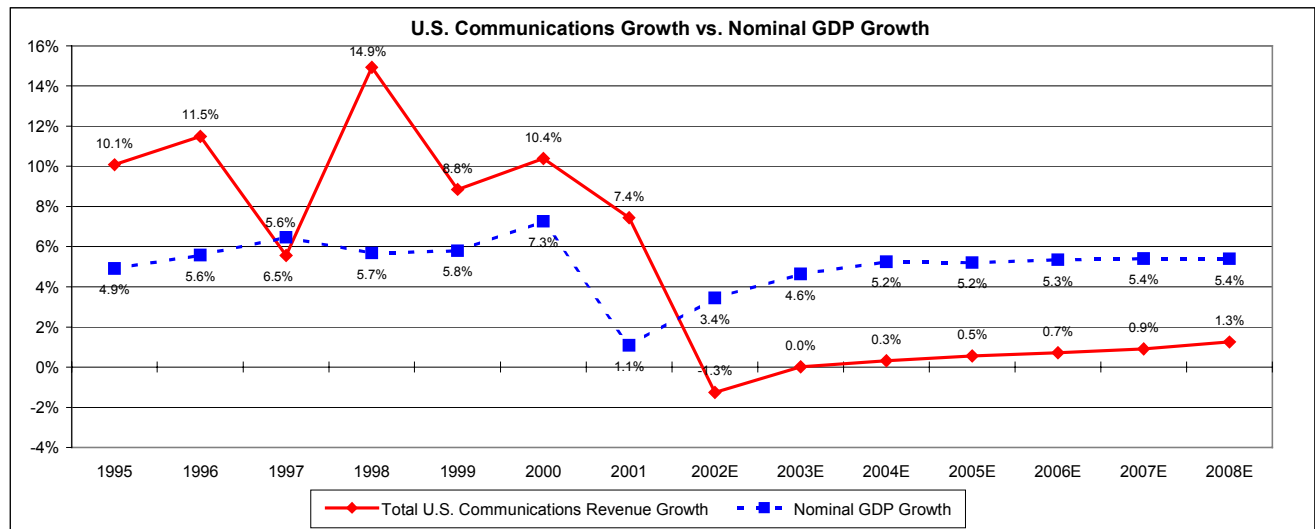
Since its inception, the communications industry has experienced unparalleled technological and competitive change, which has led to strong growth and, in general, financial prosperity for the industry. This is due to the powerful combination of growing demand outpacing overall GDP growth, relatively stable pricing for certain segments of the industry and improving productivity. We believe this streak may be at risk.

We continue to believe that the convergence of communications with computing (network-centric computing) remains the U.S. economy's single greatest way to improve overall productivity, in our opinion, and we have just scratched the surface of the potential. However, these services could cannibalize existing services.

What are the financial ramifications of secular deflation? We have attempted to model the financial impact of the entire communications industry based on the outlook for the industry that we have described. On the whole, we have lowered

our overall forecast for the industry, showing now communications services revenue growth lagging GDP growth (Exhibit 8-11).

Exhibit 8. U.S. Communications Growth Versus Nominal GDP Growth



Source: CIBC World Markets Corp. & CBO.

Exhibit 9. U.S. Communications Services Growth Forecast (1/3)

(\$ billions, unless otherwise indicated)	1994	1995	1996	1997	1998	1999	2000	2001	Broadband cannibalizes telephony.				2006E	2007E	2008E	CAGR '02-'07
									2002E	2003E	2004E	2005E				
Total U.S. Communications Revenue	148.8	163.8	182.6	192.8	221.6	241.2	266.2	286.0	282.4	282.5	283.4	284.9	287.0	289.6	293.2	0.5%
<i>Growth</i>		10.1%	11.5%	5.6%	14.9%	8.8%	10.4%	7.4%	(1.3%)	0.0%	0.3%	0.5%	0.7%	0.9%	1.3%	
Detailed																
Local Service (incl. Toll)	92.8	97.7	103.0	107.7	114.3	120.9	129.5	132.9	126.3	123.0	119.8	117.4	115.6	114.3	114.3	(2.0%)
<i>Local Growth (incl. Toll)</i>		5.3%	5.4%	4.6%	6.1%	5.8%	7.1%	2.6%	(4.9%)	(2.6%)	(2.6%)	(2.0%)	(1.5%)	(1.2%)	0.0%	
Long Distance (InterLATA)	40.0	44.5	53.3	54.7	58.3	61.0	62.5	61.7	57.0	54.3	53.7	53.6	53.5	53.4	53.4	(1.3%)
<i>LD Growth (InterLATA)</i>		11.3%	19.8%	2.6%	6.7%	4.7%	2.4%	(1.2%)	(7.6%)	(4.7%)	(1.1%)	(0.3%)	(0.2%)	(0.1%)	0.0%	
Enhanced Data Services	NM	NM	NM	NM	12.4	14.8	17.4	19.7	20.7	22.4	24.4	26.4	28.1	29.9	31.6	7.6%
<i>Enhanced Data Growth</i>							19.7%	17.9%	13.0%	5.0%	8.3%	8.3%	6.6%	6.3%	5.9%	
Wireless Revenue	16.1	21.6	26.4	30.5	36.6	44.4	56.8	71.7	78.4	82.7	85.4	87.6	89.8	92.0	93.8	3.3%
<i>Wireless Revenue Growth</i>		34.6%	22.2%	15.3%	20.3%	21.2%	27.9%	26.3%	9.3%	5.5%	3.3%	2.5%	2.5%	2.5%	2.0%	
U.S. Growth Estimates																
U.S. Population (millions)	263.9	266.9	269.9	272.9	275.9	279.0	281.8	284.6	287.5	290.3	293.2	296.2	299.1	302.1	305.2	1.0%
<i>Population Growth</i>		1.1%	1.1%	1.1%	1.1%	1.1%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	
U.S. Households (millions)	99.8	100.4	101.3	102.8	104.1	105.4	106.4	107.5	108.5	109.6	110.7	111.8	113.0	114.1	115.2	1.0%
ILEC Access Lines	151.6	158.2	165.4	172.7	177.5	181.3	177.7	173.9	167.1	161.3	156.4	152.1	147.8	143.4	139.8	(3.0%)
<i>ILEC Access Line Share</i>	100.0%	100.0%	100.0%	99.4%	98.3%	95.7%	92.3%	89.8%	88.3%	86.8%	85.3%	83.8%	81.8%	79.8%	77.8%	
<i>ILEC Access Lines Growth</i>				4.4%	2.8%	2.2%	(2.0%)	(2.1%)	(3.9%)	(3.5%)	(3.0%)	(2.7%)	(2.9%)	(2.9%)	(2.5%)	
CLEC Access Lines				1.0	3.0	8.2	14.9	19.8	22.2	24.6	27.0	29.5	32.9	36.4	40.0	10.4%
<i>CLEC Facilities Access Line Share</i>				0.6%	1.7%	4.3%	7.7%	10.2%	11.7%	13.2%	14.7%	16.2%	18.2%	20.2%	22.2%	
<i>CLEC Access Lines Growth</i>				NA	200.0%	173.1%	81.5%	33.2%	12.0%	10.8%	9.9%	9.1%	11.8%	10.4%	9.9%	
Total U.S. Access Lines (millions)	151.6	158.2	165.4	173.7	180.5	189.5	192.6	193.7	189.3	185.8	183.4	181.6	180.7	179.8	179.8	(1.0%)
<i>Access Lines Growth</i>		4.4%	4.6%	5.0%	3.9%	5.0%	1.6%	0.6%	(2.3%)	(1.8%)	(1.3%)	(1.0%)	(0.5%)	(0.5%)	0.0%	
<i>New Entrant Access Line Share</i>				0.6%	1.7%	4.3%	7.7%	10.2%	11.7%	13.2%	14.7%	16.2%	18.2%	20.2%	22.2%	
Nominal GDP	7,054	7,401	7,813	8,318	8,790	9,299	9,974	10,082	10,429	10,912	11,484	12,082	12,727	13,414	14,137	5.2%
<i>Nom. GDP Growth</i>		4.9%	5.6%	6.5%	5.7%	5.8%	7.3%	1.1%	3.4%	4.6%	5.2%	5.2%	5.3%	5.4%	5.4%	
Telecom as % of GDP	2.1%	2.2%	2.3%	2.3%	2.5%	2.6%	2.7%	2.8%	2.7%	2.6%	2.5%	2.4%	2.3%	2.2%	2.1%	
Volume Metrics																
VGE Share																
BellSouth	NA	27.1	29.6	33.1	37.2	43.0	53.8	65.6	70.0	74.2	80.5	87.4	94.8	102.8	110.5	8.0%
Verizon	NA	NA	NA	74.7	82.7	90.7	116.9	131.0	137.0	145.2	157.6	171.0	185.5	201.3	216.3	8.0%
SBC	NA	NA	NA	55.4	57.0	88.4	103.5	111.8	115.0	121.9	132.3	143.5	155.7	168.9	181.6	8.0%
Qwest (Pre-1999 is USW)	NA	NA	NA	23.6	25.6	34.6	47.6	59.0	67.5	79.0	90.4	101.7	111.4	120.9	129.9	12.4%
Total RBOC	NA	NA	NA	186.7	202.4	256.7	321.7	367.4	389.5	420.3	460.8	503.6	547.4	593.9	638.4	8.8%
<i>RBOC VGE Growth</i>					8.4%	26.8%	25.3%	14.2%	6.0%	7.9%	9.6%	9.3%	8.7%	8.5%	7.5%	
New Entrants	NA	NA	NA	7.8	15.2	31.7	56.8	80.6	105.4	125.5	153.6	186.2	223.6	266.8	314.5	20.4%
<i>New Entrants VGE Growth</i>					95.9%	108.2%	79.0%	42.0%	30.7%	19.1%	22.3%	21.3%	20.0%	19.3%	17.9%	
<i>New Entrants VGE Share</i>	NA	NA	NA	4.0%	7.0%	11.0%	15.0%	18.0%	21.3%	23.0%	25.0%	27.0%	29.0%	31.0%	33.0%	
Total U.S. Local VGEs (millions) (a)	NA	NA	NA	194.5	217.7	288.4	378.5	448.0	494.9	545.9	614.4	689.8	771.0	860.7	952.9	11.7%
<i>VGEs Growth</i>					11.9%	32.5%	31.2%	18.4%	10.5%	10.3%	12.6%	12.3%	11.8%	11.6%	10.7%	
VGEs per Pop	NA	NA	NA	0.7	0.8	1.0	1.3	1.6	1.7	1.9	2.1	2.3	2.6	2.8	3.1	10.6%
Total Local Gigabits/Sec. Supply	NA	NA	NA	12,449	13,932	18,460	24,226	28,672	31,676	34,935	39,319	44,147	49,341	55,087	60,986	11.7%
Est. Lit Long-Haul Transport Supply (G)	NA	NA	NA	17	240	639	2,582	7,633	10,000	14,000	19,000	24,700	30,875	37,050	37,050	32.2%
<i>Long-Haul Growth</i>						1,318%	166.3%	304.1%	195.6%	31.0%	40.0%	35.7%	30.0%	25.0%	20.0%	
Long-Haul/Short-Haul Ratio	NA	NA	NA	NA	0.1%	1.3%	2.6%	9.0%	24.1%	28.6%	35.6%	43.0%	50.1%	56.0%	60.8%	

Source: CIBC World Markets Corp., FCC, CBO, and Company Reports.

Exhibit 10. U.S. Communications Services Growth Forecast (2/3)

(\$ billions, unless otherwise indicated)	1994	1995	1996	1997	1998	1999	2000	2001	Broadband cannibalizes telephony.					2008E	CAGR '02-'07	
									2002E	2003E	2004E	2005E	2006E			2007E
Detailed Revenue Analysis																
Telephone Transport Revenue (Emerging & Incumbent)																
Local Exchange (ex. Toll)	40.9	43.6	46.8	53.8	59.2	62.8	67.7	69.0	61.0	58.0	55.1	52.9	51.3	50.0	50.0	(3.9%)
Local Exchange Growth		6.7%	7.5%	14.8%	10.2%	6.1%	7.8%	1.8%	(11.6%)	(5.0%)	(5.0%)	(4.0%)	(3.0%)	(2.5%)	0.0%	
Pay Telephone	1.4	1.6	1.9	2.2	2.5	2.2	1.9	1.7	1.4	1.2	1.0	0.8	0.7	0.6	0.4	(17.4%)
Pay Telephone Growth		16.2%	16.2%	16.2%	16.2%	(12.5%)	(12.9%)	(13.4%)	(13.9%)	(16.4%)	(16.9%)	(17.4%)	(17.9%)	(18.4%)	(18.9%)	
Local Private Line	1.1	1.2	1.6	2.1	2.8	3.8	5.1	6.3	6.9	7.2	7.6	8.0	8.4	8.8	9.2	4.8%
Local Private Line Growth		7.7%	31.8%	32.3%	32.8%	33.3%	34.5%	24.0%	10.0%	4.0%	5.0%	5.0%	5.0%	5.0%	5.0%	
Other Local	4.9	6.1	6.2	2.8	2.2	4.6	5.4	6.3	6.9	7.1	7.2	7.3	7.3	7.3	7.3	1.2%
Other Local Growth		25.6%	1.1%	(54.1%)	(23.5%)	111.2%	18.4%	16.5%	8.0%	3.0%	2.0%	1.0%	0.0%	0.0%	0.0%	
Subscriber Line Charges	7.3	7.7	8.0	8.3	11.1	10.8	11.6	12.0	12.5	12.5	12.3	12.0	11.8	11.5	11.3	(1.6%)
Subscriber Line Charges Growth		4.4%	4.6%	4.0%	32.7%	(2.0%)	6.8%	4.0%	4.1%	0.0%	(2.0%)	(2.0%)	(2.0%)	(2.0%)	(2.0%)	
Access	25.4	26.3	27.6	27.6	26.0	27.2	28.8	29.4	30.0	30.0	30.0	30.0	30.0	30.0	30.0	0.0%
Access Growth		3.3%	5.3%	(0.2%)	(5.6%)	4.7%	5.7%	2.0%	2.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	
SLC+Access % of Gross LD (InterLATA)	45.0%	43.3%	40.1%	39.6%	38.9%	38.4%	39.2%	40.1%	42.7%	43.9%	44.0%	43.9%	43.9%	43.9%	43.7%	
Local Universal Service Surcharges	-	-	-	-	0.1	0.3	0.6	0.6	0.5	0.5	0.5	0.4	0.4	0.4	0.4	(3.9%)
Additional Revenue	-	-	-	0.6	0.6	-	-	-	-	-	-	-	-	-	-	
Total Local Service (ex. Toll)	81.0	86.5	92.2	97.4	104.6	111.8	121.1	125.3	119.3	116.4	113.6	111.4	109.8	108.5	108.7	(1.9%)
Growth YOY (ex. Toll)		6.7%	6.6%	5.7%	7.3%	6.9%	8.4%	3.4%	(4.8%)	(2.4%)	(2.5%)	(1.9%)	(1.4%)	(1.1%)	0.1%	
RBOC IntraLATA (Toll)	9.5	8.9	8.4	7.7	7.1	6.5	5.5	4.7	4.1	3.6	3.2	2.9	2.7	2.5	2.3	(9.4%)
RBOC Toll Growth		(6.0%)	(6.0%)	(7.5%)	(8.0%)	(9.0%)	(15.5%)	(14.5%)	(13.0%)	(12.7%)	(10.0%)	(9.0%)	(8.0%)	(7.0%)	(6.0%)	
Other IntraLATA (Toll)	2.3	2.4	2.4	2.5	2.6	2.7	2.8	2.9	2.9	3.0	3.1	3.1	3.2	3.2	3.3	1.8%
Other Toll Growth		3.0%	3.0%	3.0%	3.0%	4.0%	5.8%	2.0%	2.0%	1.8%	1.9%	1.8%	1.9%	1.8%	1.8%	
Total IntraLATA (Toll)	11.7	11.2	10.8	10.2	9.7	9.2	8.3	7.6	7.0	6.6	6.3	6.0	5.8	5.7	5.6	(4.0%)
IntraLATA Toll Growth		(4.2%)	(4.1%)	(5.1%)	(5.3%)	(5.5%)	(9.3%)	(8.9%)	(7.3%)	(6.6%)	(4.6%)	(3.7%)	(2.9%)	(2.2%)	(1.6%)	
% of Net Toll/LD	22.7%	20.2%	16.8%	15.8%	14.2%	13.0%	12.0%	10.9%	11.0%	10.8%	10.4%	10.1%	9.9%	9.7%	9.5%	
Total Local Service (incl. Toll)	92.8	97.7	103.0	107.7	114.3	120.9	129.5	132.9	126.3	123.0	119.8	117.4	115.6	114.3	114.3	(2.0%)
Local Growth (incl. Toll)		5.3%	5.4%	4.6%	6.1%	5.8%	7.1%	2.6%	(4.9%)	(2.6%)	(2.6%)	(2.0%)	(1.5%)	(1.2%)	0.0%	
Incumbent Market Share (facilities based)				99.3%	98.1%	95.5%	92.3%	89.8%	88.3%	86.8%	85.3%	83.8%	81.8%	79.8%	77.8%	
Reconciliation to LD from Gross Toll/LD (As reported by FCC)																
Long Distance (InterLATA)	40.0	44.5	53.3	54.7	58.3	61.0	62.5	61.7	57.0	54.3	53.7	53.6	53.5	53.4	53.4	(1.3%)
Long Distance (InterLATA) Growth		11.3%	19.8%	2.6%	6.7%	4.7%	2.4%	(1.2%)	(7.6%)	(4.7%)	(1.1%)	(0.3%)	(0.2%)	(0.1%)	0.0%	
% of Net Toll	77.3%	79.8%	83.2%	84.2%	85.8%	87.0%	90.2%	89.1%	89.0%	89.2%	89.6%	89.9%	90.1%	90.3%	90.5%	
Narrowband LD	33.9	37.4	44.8	44.7	46.6	47.6	46.7	43.6	38.4	34.9	33.2	32.2	31.2	30.3	29.4	(4.6%)
Narrowband Growth		10.1%	20.1%	(0.4%)	4.4%	2.1%	(2.0%)	(6.5%)	(12.0%)	(9.0%)	(5.0%)	(3.0%)	(3.0%)	(3.0%)	(3.0%)	
Narrowband % of LD Mix	84.9%	84.0%	84.2%	81.7%	80.0%	78.0%	74.6%	70.7%	67.3%	64.3%	61.7%	60.1%	58.4%	56.7%	55.0%	
Broadband LD (ex. IP-VPN)	6.0	7.1	8.4	10.0	11.7	13.4	15.8	18.1	18.7	19.4	20.6	21.4	22.2	23.1	24.1	4.4%
Broadband Growth		17.9%	18.3%	18.9%	16.6%	15.2%	18.0%	14.3%	3.0%	4.0%	6.0%	4.0%	4.0%	4.0%	4.0%	
Broadband % of LD Mix	15.1%	16.0%	15.8%	18.3%	20.0%	22.0%	25.4%	29.3%	32.7%	35.7%	38.3%	39.9%	41.6%	43.3%	45.0%	

Source: CIBC World Markets Corp., FCC, CBO, and Company Reports.

Exhibit 11. U.S. Communications Services Growth Forecast (3/3)

(\$ billions, unless otherwise indicated)	1994	1995	1996	1997	1998	1999	2000	2001	Broadband cannibalizes telephony.				2006E	2007E	2008E	CAGR '02-'07
									2002E	2003E	2004E	2005E				
Enhanced Data Services (ex. LD)																
Web Hosting	NM	NM	NM	NM	0.4	0.7	1.4	2.0	2.0	2.3	2.6	2.9	3.2	3.5	3.8	11.8%
ASP	NM	NM	NM	NM	NM	0.3	0.5	0.7	0.7	0.8	0.9	1.0	1.1	1.2	1.3	11.4%
Content Management	NM	NM	NM	NM	NM	0.0	0.2	0.3	0.3	0.4	0.5	0.6	0.7	0.8	0.9	21.7%
Dedicated IP VPN	NM	NM	NM	NM	0.1	0.2	0.4	0.4	0.4	0.4	0.5	0.5	0.5	0.5	0.6	5.0%
<i>Dedicated Growth</i>						83.0%	80.0%	7.9%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	
Dial Site IP VPN	NM	NM	NM	NM	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	10.4%
<i>Dial Site Growth</i>						150.2%	100.2%	42.6%	20.0%	20.0%	15.0%	10.1%	5.1%	2.5%	1.2%	
Remote User IP VPN	NM	NM	NM	NM	0.0	0.1	0.5	0.9	1.0	1.3	1.6	1.9	1.7	1.6	1.4	8.8%
<i>Remote User Growth</i>						302.7%	275.6%	75.8%	20.0%	25.0%	25.0%	15.0%	(6.9%)	(8.9%)	(10.5%)	
Total IP VPN	NM	NM	NM	NM	0.2	0.4	0.9	1.3	1.5	1.8	2.2	2.4	2.3	2.2	2.1	7.8%
<i>IP VPN Growth</i>						132.2%	152.4%	46.1%	15.4%	19.2%	19.7%	12.6%	(4.1%)	(5.4%)	(6.2%)	
Access/Online Services	NM	NM	NM	NM	11.9	13.4	14.4	15.5	16.2	17.1	18.2	19.4	20.8	22.2	23.6	6.5%
<i>Access/Online Growth</i>						13.3%	7.4%	7.1%	4.7%	5.8%	6.3%	6.8%	6.9%	6.7%	6.3%	
Total Enhanced Data Services	NM	NM	NM	NM	12.4	14.8	17.4	19.7	20.7	22.4	24.4	26.4	28.1	29.9	31.6	7.6%
<i>Enhanced Data Growth</i>						19.7%	17.9%	13.0%	5.0%	8.3%	8.6%	8.3%	6.6%	6.3%	5.9%	
Wireless Service Revenue																
Voice Revenue	16.1	21.6	26.4	30.5	36.6	44.1	56.3	70.4	77.5	80.7	81.9	82.1	82.3	82.5	82.3	1.3%
Data Access	-	-	-	-	-	0.3	0.5	1.4	0.8	2.0	3.5	5.5	7.5	9.5	11.5	64.0%
Total Wireless Revenue	16.1	21.6	26.4	30.5	36.6	44.4	56.8	71.7	78.4	82.7	85.4	87.6	89.8	92.0	93.8	3.3%
<i>Wireless Revenue Growth</i>		34.6%	22.2%	15.3%	20.3%	21.2%	27.9%	26.3%	9.3%	5.5%	3.3%	2.5%	2.5%	2.5%	2.0%	
Subscribers EOY (millions)	24.1	33.8	44.0	55.3	69.2	86.0	108.5	128.4	141.2	150.6	157.9	163.3	166.5	167.5	180.0	3.5%
Calculated Voice ARPU	68.0	63.1	57.1	51.6	49.6	42.7	43.2	45.7	45.7	44.7	43.2	41.9	41.2	41.0	39.5	(2.1%)
Calculated Data ARPU	-	-	-	-	-	0.3	0.4	0.9	0.5	1.1	1.8	2.8	3.8	4.7	7.3	54.8%
Calculated Composite Rev./Sub. per Mtr	68.0	63.1	57.1	51.6	49.6	43.0	43.6	46.5	46.3	45.8	45.1	44.7	44.9	45.8	43.4	(0.2%)
Cumulative Penetration	9.1%	12.7%	16.3%	20.3%	25.1%	30.8%	38.5%	45.1%	49.1%	51.9%	53.8%	55.1%	55.7%	55.4%	59.0%	2.5%

Notes: (a) VGE = Voice Grade Equivalent: Allows measurement of high-speed lines. Measures vary slightly, but roughly speaking there are 24 64 Kbps VGE's per T-1 line, 672 per DS-3.

Source: CIBC World Markets Corp., FCC, CBO, and Company Reports.

Wireless: 2002 Meltdown All Over Again?

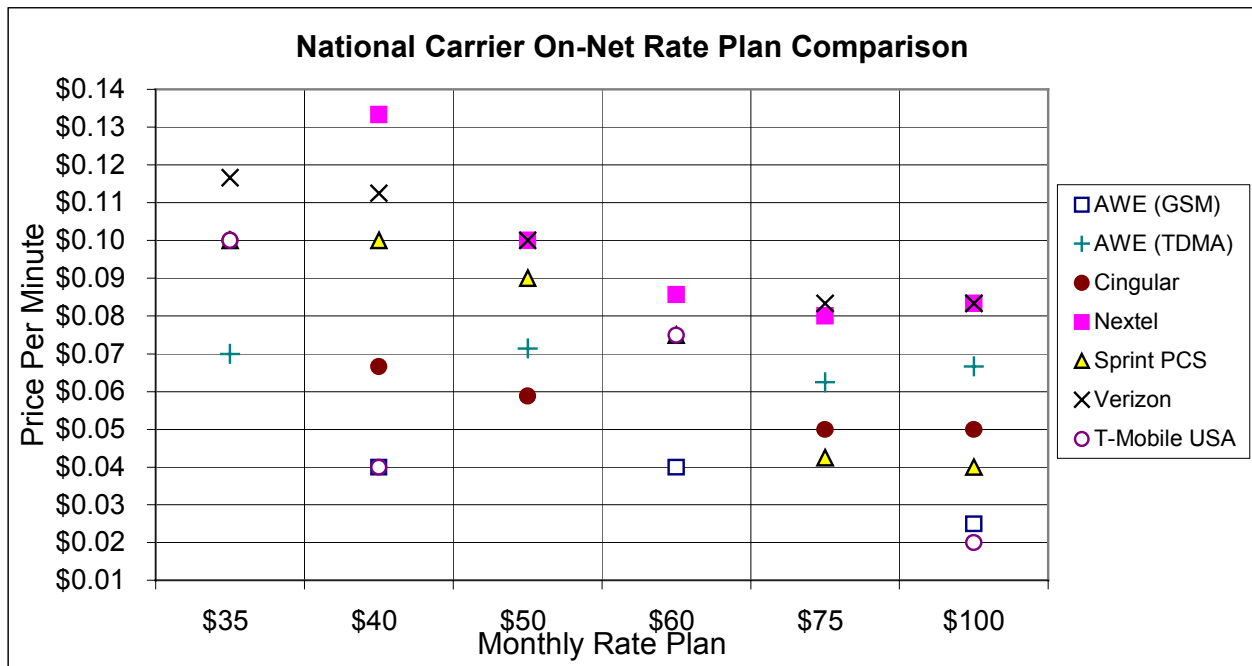
Those who cannot remember the past are condemned to repeat it.

—George Santayana

We feel like we are reliving a bad rerun of last year. We spotted a reignition of wireless price competition back in January after a period of stability, and called this very negative for wireless stocks. The environment today seems eerily similar, with consensus subscriber estimates too high for 2003, just as it was for 2002, which is troubling in its portents for pricing.

Back in January, we wrote that if wireless did not consolidate, pricing would plummet to marginal cost. Although almost everyone agrees consolidation is needed, even the most logical mergers have stumbled over price and the stubbornness of debt-laden carriers. With no end to the problem of overcrowding brought on by the presence of *six* national carriers and *several* regional players in a market that can arguably support three, the result is rampant price competition.

A year later, even we are surprised by the wireless industry's ability to price compete away every advantage, which is finally making wireless displacement a real threat to access lines. The important point of all this is that **reasonable wireless plans can now be purchased for \$35 per month, about \$10 cheaper than wireline plans**, depending on usage (Exhibit 12-13). This not only hurts wireline carriers through reduced revenue from their wireline divisions (most of the largest wireless carriers are also owned by wireline operators), but also increases the risk of wireless cannibalizing wireline. Needless to say, another wave of price competition on the part of levered wireless carriers would hurt sector valuations across the board.

Exhibit 12. National Wireless Plans

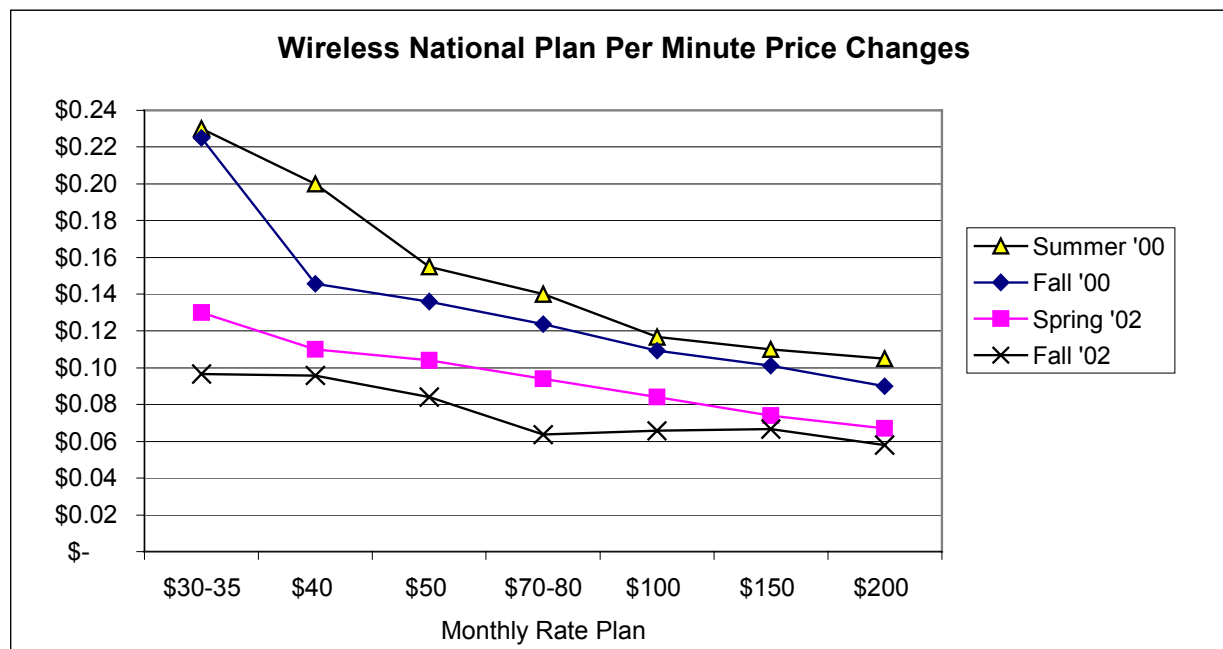
Source: CIBC World Markets Corp. & Company Reports.

In a virtual repeat, today, with wireless approaching saturation, consensus subscriber estimates are again too high, and wireless stocks have enjoyed another strong run-up, albeit off a much lower base.

In a strange sense of déjà vu, in the second half of 2001, wireless stocks enjoyed a tremendous run, buoyed by investors' optimistic forecasts for strong net-adds and growth. Unfortunately, when it became clear that those rosy forecasts would not be realized, wireless stocks plummeted as investors moved from expecting 16 million net-adds entering 2002, to now looking for 13 million. In a virtual repeat, today, with wireless approaching saturation, consensus subscriber estimates are again too high, and wireless stocks have enjoyed another strong run-up, albeit off a much lower base.

We believe consensus estimates for 2003 is too high, but also possibly for 2002; we are only at around 9 million subs added so far this year, and it may be difficult to hit 13.5 million for 2002. CIBC World Markets' wireless analyst Cannon Carr has cut his estimates today in conjunction with our report. We believe a more likely number for 2002 subscriber net-adds is approximately 13 million, and possibly 9 to 9.5 million next year, which in and of itself may even be optimistic given the steady 5 million a year decline in net-adds that we have seen over the past two years.

We believe the wireless carriers will seek to stabilize average revenue per user (ARPU) by continuing to give minutes away at cheaper prices. **At some point, this strategy will stop working as customers reach a point of saturation, where they can't practically use any more minutes.** Without major new data driven revenue, ARPU will begin to come under pressure.

Exhibit 13. Changes in Wireless Price Per Minute

Source: CIBC World Markets Corp. & Company Reports.

Wireless displacing wireline is more a negative for wireline carriers than it is a positive for wireless carriers.

Incidentally, we are puzzled by some recent commentary we have heard from other wireless analysts actually touting stabilizing ARPUs from increasing minutes of use (MOU) as a positive. Some have even posited wireline cannibalization as the next big growth opportunity for wireless. **While this may prove true, wireless displacing wireline is more a negative for wireline carriers than it is a positive for wireless carriers.** Wireless is not earning its cost of capital, but a profitable business that has to compete with irrational competitors pricing below long-term costs is obviously challenged.

Wireless carriers are pricing at short-term marginal cost, when by economic rule, long-term marginal costs are always higher.

One of the basic tenets of economics is that there is no free lunch—maybe an even better corollary would be Newton’s conservation of energy—basically, you cannot produce something (revenue) out of nothing (no costs). Even if wireless MOU were to continue to balloon, to only have stable ARPU would indicate plummeting revenue per minute. **Stable ARPUs in light of rising MOU is not a positive; it’s a symptom of the disease.** While it’s true that next-gen upgrades to 1XRTT and GPRS will greatly bolster wireless carriers’ capacity, inevitably, rising MOU will entail capex spending further down the line, which will lower free cash flow, and hurt return on invested capital. Wireless carriers are pricing at short-term marginal cost, when by economic rule, long-term marginal costs are always higher. At some point on its current trajectory, the wireless industry will encounter its next step-wise function increase in capex, and investors will then see if those wireline minutes were really worth cannibalizing.

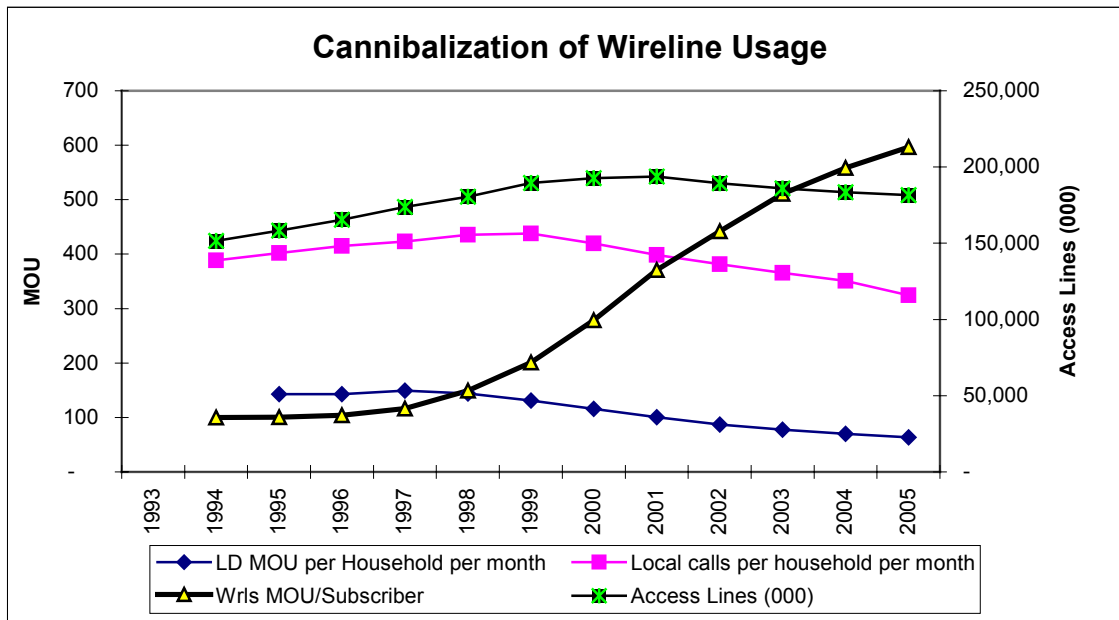
The wireless industry’s history has been one of incredible innovation and new products, but also of giving away those products for free in a mad dash to grab subscribers (U.S. per minute pricing is half that of Europe). The wireless industry’s inability to price correctly is ominously reminiscent of long-distance, price competing every advantage to the detriment of themselves. History has taught us that there are always inherent problems with trying to price correctly in capital intensive industries where the economic payback is over a lengthy period of

time (i.e. canals, railroads), and this is playing out for wireless. Clearly, undisciplined pricing by wireless is increasingly threatening RBOC access lines, but there is no easy answer to the problem.

Top Ten Reasons Wireless Cannibalization Is Likely to Accelerate

We are already seeing the effects (Exhibit 14). To date, the most pronounced impact has been on long-distance with free wireless LD, with average wireline LD MOU per month down 25% from 2000's 116 minutes. However, we are still close to 20% of households with second lines, and this should probably continue to decline at more than 10% per year. We believe primary line cannibalization by wireless, which to date has only been about 3% (according to company surveys), could be 1% per year, given all the above factors.

Exhibit 14. Cannibalization of Wireline Usage



Source: CIBC World Markets Corp.

Why is wireless cannibalization accelerating?

1. Wireless is now and continues to be cheaper than wireline for many users - Wireless plans at \$0.02-\$0.05/minute are priced at or below wireline per minute pricing of \$0.04-\$0.05.
2. Mobility is an inherent wireless advantage over wireline
3. More personalized communications - Wireless service is capable of being more tailored to a subscribers' needs and usage patterns (including handsets, rate plans and features).

4. Wireless quality will continue to improve - Wireless carriers continue to enhance and enlarge coverage areas that ultimately make wireless service more reliable.
5. Enhanced 911 will eliminate the lifeline services concern - Wireless phones will be able to provide sufficient detail to emergency services that will mitigate wireline users safety concerns.
6. Number portability (LNP) will enable subscribers to keep their numbers when they switch providers. The FCC has mandated LNP implementation in November 2003 although there is precedent that the implementation date may be extended.
7. Wireless data applications are increasing - While we continue to believe data will not have a meaningful impact until 2004, carriers and developers are creating new applications that will continue to increase wireless functionality.
8. Pooling of minutes within family minutes - Wireless plans allow subscribers to share minutes among multiple users.
9. As wireline broadband access becomes more prevalent and satisfies high capacity data needs, wireless can become the primary voice tool. Also with increasing broadband penetration the need for second lines will likely decrease.
10. The development of wireless home docking stations create a viable solution that leverages the wiring within homes yet bypasses the wireline provider. The docking station enables the wireless signal to be shared by other wired phones within the home. In addition the systems often use a larger antenna and have more power (electricity vs. battery powered) that provides a better wireless signal.

Top Six Regulatory Issues

Regulators have typically shown a track record of fighting yesterday's battles and looking backwards. We continue to believe that the downfall for any incumbent will not be regulatory in nature, but new disruptive technologies, although regulators can certainly handcuff the way companies respond to the rising competitive threats.

Over the next several months, the Federal Communications Commission (FCC) will need to address several issues. We provide a short list below, since we have written on all these issues *ad infinitum* in other reports.

1. **Industry consolidation.** This is needed in wireless, but also in wireline.
2. **Bankrupt companies are allowed to keep operating, usually with much improved capital structures versus companies that did not go bankrupt.** WorldCom is a prime example of this, despite the carriers' enormous fraud. Many CLECs are also reemerging.
3. **Forced reselling of the RBOC plant.** UNE-P is creating its own set of artificial deflationary pressures on pricing. It seems preposterous to us, for example, that Illinois believes it costs SBC only \$3 per month to provide a loop

in that state, or for Indiana to think that the true cost of providing a telephone line to a customer in the most rural area is only \$9 per month.

4. **Broadband deregulation.** The FCC is expected to level the playing field between DSL and cable. A larger issue is whether future broadband services would need to be unbundled, or whether the RBOCs would need to resell phone service if it is provided through fiber to the home.
5. **Universal Service.** The FCC will soon move to rebalance the amount of money telephone companies pay into the \$5.5 billion Universal Service Fund, which subsidizes Internet access to schools and libraries, as well as phone service for rural areas and low-income families. The FCC will likely opt for changing the formula of who pays what into the fund and look further into whether a fee for each connection or phone number would work. The larger longer-term issue is that traditional voice services subsidize all the public good programs, and this is coming under pressure from new services. In addition, it is pricey for RBOCs to provide service to unprofitable customers, especially as they are forced to resell their networks, sometimes at below cost.
6. **RBOC long-distance entry.** We expect all the RBOCs to have obtained full approvals by the end of 2003.

What Can Go Right?

Potential positives that may allow us to revisit our Market Underweight recommendation for the industry include:

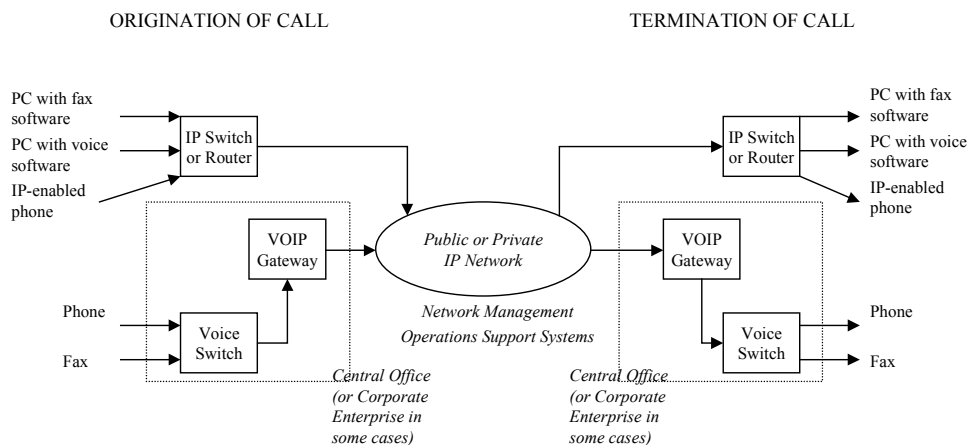
- **More reasonable valuations commensurate with risk.** We would be particularly aggressive on the RBOCs 20% below current levels, depending on overall market conditions.
- **Overall economic recovery.** While we believe communications services will lag a macro recovery, and would still suffer from secular over-crowding and over-capacity, a stronger demand environment would obviously cure a lot of ills. Unfortunately, we have very little visibility on this.
- **Stock market recovery helps pension income.** This would remove a significant earnings drag to 2003-2004 earnings.
- **Regulatory relief, consolidation.**
- **Emergence of a new killer app.** This could have the greatest potential to change the industry's trajectory, but is also the most difficult to forecast. The next killer network centric application is not hitting hyper growth yet. We believe a critical mass of broadband connections is necessary for the next application to accelerate, probably streaming. It also will take time for the next killer app to reach critical scale (it usually goes through three cycles). Between these phases there is always a plateau when it is not clear if the killer application will take off. In addition, there is a chance that the killer app could lower overall industry profitability (i.e. wireless, IM, etc.).

Top Ten Disruptive Technologies

Disruptive technologies continue to rock the industry, accelerating along with improvements in processing power, which is following Moore's Law. Generally, disruptive technologies first wracked the long-distance industry because barriers to entry were low and quality overshot what customers needed and were willing to pay for. We began saying two and half years ago that the process could start affecting the local market and the RBOCs. This may now be occurring. We provide a short roster of some disruptive technologies pressuring traditional wireline services. Most of these services are priced at a fraction of plain old telephone service (POTS). We have written about many of these technologies, most recently in our "Communications Services Industry: Long-Term Outlook," and will be issuing a separate detailed report on this topic in the near future.

I. Voice Over IP (VOIP) with SIP: The true significance of VOIP technology is not so much in that the network layer is based on the IP, but rather lies in its potential as an alternative to the existing circuit-switched PSTN infrastructure for the delivery of telephony and advanced multimedia communications services. The technology is really not an issue of protocols or technology as it is an issue of providing more compelling, higher value services more quickly and cost effectively. With broadband penetration increasing, and with wireless 911 coming, it may become practical for typical consumers to have a single broadband connection to the home and a wireless connection, and do away with the primary access line and any second lines. The benefit to enterprises is even more apparent in ordering a single high-capacity link versus ordering several single access lines. IP PBXs are slowly starting to be deployed, but like most disruptive technologies, the early adopters have been in the consumer and small business market.

Session Initiation Protocol (SIP) gives VOIP an added boost, allowing interactive user sessions that involve multimedia elements like video, voice and chat, and also makes it possible for users to initiate and receive communications and services from any location, and for networks to identify the users wherever they are. We have been testing out a VOIP service from Vonage (www.vonage.com) that allows us to have unlimited local and long-distance calls for \$39.99 per month over a cable or DSL connection, a Cisco ATA converter, and a conventional telephone. While 911 is not available, users can pick an area code of their choice regardless of location (i.e. Nashville resident can have a Beverly Hills area code). We have generally found the call quality to be excellent.

Exhibit 15. Sample Diagram Of Internet Telephony*Overview of Internet Telephony: Diagram***Sample Voice-over-IP Network Diagram**

Source: CIBC World Markets Corp.

II. Wi-Fi: A wireless local area network (LAN) is one in which a mobile user can connect to a LAN through a wireless (radio) connection. Specifically, 802.11 refers to a family of specifications developed by the Institute of Electrical and Electronics Engineers (IEEE). 802.11 specifies an over-the-air interface between a wireless client and a base station or between two wireless clients. We believe that pure Wi-Fi access will have difficulty being a profitable business, since many businesses are willing to provide Wi-Fi access at or below cost to support their main business activities (i.e. hotels, coffee shops, etc.). It is also precisely this characteristic that increases the likelihood of Wi-Fi cannibalizing wireline for both voice and broadband.

III. Cable/DSL Telephony: Cable companies trade on average at \$3400 per sub versus \$1500 per wireless sub and \$1400 per access line. Cable ARPU is currently approximately \$57 per month, not much higher than wireless or wireline subscribers. Although we have traditionally believed duopolies do not tend to aggressively compete with one another, for fear of tit-for-tat reprisals, cable companies may be forced to more aggressively deploy telephony to justify their leverage and higher valuations. Cable companies have generally gone with the circuit-switched route, but many providers have had friendly VOIP trials. Net2Phone has said it is in talks with cable companies, and Cablevision said it will market an Internet-based phone service, with hopes to roll it out by the middle of next year. If Vonage, and other VOIP providers are successful, it will pressure cable to roll out.

Cablevision will experiment with various prices but is focusing on an all-you-can use version for consumers, charging less than \$40 a month. Cablevision estimates that it could hook up the service at a cost to the company of about \$150 per customer, including the cost of a voice modem and switching expense. Cablevision had started a circuit-switched based phone service but stopped marketing that because it decided that the Internet-based service would be less expensive, and easier to deploy.

IV. AOL/Microsoft/Yahoo Instant Messaging: According to Nielsen/NetRatings, almost 60% of the online population under age 17 uses instant messaging. True to the pattern of disruptive technologies, instant messaging began as a niche product among techies and college kids. At the onset, some industry pundits wondered what the purpose of IM would be when email already existed. Now, IM is common even in the corporate market, and AOL is marketing a business version with better quality and security. IM is eating into call volumes, and present versions of the software from AOL, Microsoft, and Yahoo are all capable of carrying voice.

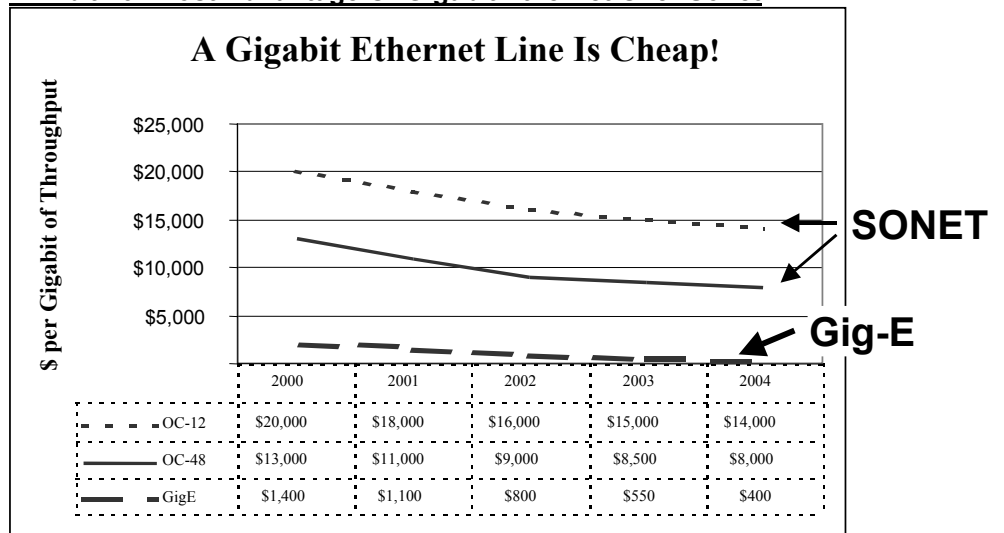
V. Wireless-PCS, 2.5G: 1XRTT and its like will expand wireless capacity, allowing wireless carriers to price more aggressively.

VI. Peer-to-Peer: Peer-to-peer (referred to as P2P) is a communications model in which each party has the same capabilities and either party can initiate a communication session. In recent usage, peer-to-peer has come to describe applications in which users can use the Internet to exchange files with each other directly or through a mediating server. Napster and Gnutella are the most prevalent examples of this kind of software. To work P2P software, the user first downloads and executes a peer-to-peer networking program, launches the program, and then enters the IP address of another computer belonging to the network. Once the computer finds another network member online, it will connect to that user's connection (who has gotten their IP address from another user's connection and so on). Users can choose how many member connections to seek at one time and determine which files they wish to share or password protect. This is different from the Web, where each computer is connected to only one other computer at a time; when a user visits Amazon.com, he is not at Yahoo.com. Some popular Gnutella clients include Kazaa (www.kazaa.com) and Limewire (www.limewire.com), both of which can be downloaded for free.

VII. Spread Spectrum Technology: In 1985, the FCC allocated three frequency bands for a radio transmission technique known as spread spectrum communications, originally developed by the military. This transmission technique has much greater immunity to interference and noise compared to conventional radio transmission techniques. In addition, an increasing number of users can use the same frequency (similar to cellular). These rules are designed to drive usage towards local data communications. Under the regulations, users of FCC certified spread spectrum products do not require a license from the FCC. The only requirement is that the manufacturers of Spread Spectrum products must meet FCC spread spectrum regulations.

VIII. Gigabit Ethernet: Ethernet is the name given to the dominant LAN technology. CIBC World Markets networking analyst Steve Kamman has published a detailed report, but at its heart Gig-E equipment is significantly less expensive than equivalent bit-rate SONET products.

Exhibit 16. Cost Advantage Of Gigabit Ethernet Over Sonet



Source: CIBC World Market Estimates, Cisco, Dell'Oro

Source: CIBC World Markets Corp., Cisco, Dell'Oro.

IX. Virtual Private Networks: A virtual private network (VPN) is a private data network that makes use of the public telecommunication infrastructure, maintaining privacy through the use of a tunneling protocol and security procedures. A virtual private network can be contrasted with a system of owned or leased lines that can only be used by one company. The idea of the VPN is to give the company the same capabilities at much lower cost by using the shared public infrastructure rather than a private one. Phone companies have provided secure shared resources for voice messages. A virtual private network makes it possible to have the same secure sharing of public resources for data.

X. Fiber to the Home: Companies such as World Wide Packets allows simultaneous delivery of telephony, business and entertainment video, broadband data, and Internet access services using Ethernet over fiber and copper.

Exhibit 17. Wireline Price Performance

	Price 12/10/02	52 Week High	% off of 52 Week High	Year To Date	One Week Ago	One Month Ago	3Q 2002	2Q 2002	1Q 2002	4Q 2001	2001	2000	1999	1998
Large Telcos														
BellSouth	\$25.90	\$40.90	(36.7%)	(32.1%)	(6.2%)	(3.6%)	(41.7%)	(14.5%)	(3.4%)	(8.2%)	(6.8%)	(12.6%)	(6.1%)	77.1%
SBC	25.67	40.99	(37.4%)	(34.5%)	(9.5%)	(5.7%)	(34.1%)	(18.5%)	(4.4%)	(16.9%)	(18.0%)	(2.1%)	(9.1%)	46.4%
Verizon	38.26	51.09	(25.1%)	(19.4%)	(7.5%)	(1.1%)	(31.7%)	(12.9%)	(2.9%)	(12.3%)	(5.3%)	(18.6%)	14.0%	18.7%
<i>Average</i>			(33.1%)	(28.7%)	(7.7%)	(3.5%)	(35.8%)	(15.3%)	(3.6%)	(12.4%)	(10.0%)	(11.1%)	(0.4%)	47.4%
Incumbent LD Carriers														
AT&T	\$26.66	\$37.60	(29.1%)	(24.8%)	(4.8%)	(1.8%)	12.2%	(31.8%)	(13.5%)	(6.0%)	36.2%	(66.1%)	0.6%	23.5%
MCI	0.32	15.00	(97.9%)	(97.5%)	(24.6%)	169.2%	(89.4%)	(71.6%)	(53.5%)	(16.6%)	NA	NA	NA	NA
Qwest	4.69	15.19	(69.1%)	(66.8%)	0.6%	17.3%	(18.6%)	(65.9%)	(41.8%)	(15.4%)	(65.4%)	(4.9%)	72.0%	68.1%
Sprint	14.20	20.55	(30.9%)	(29.3%)	(5.0%)	7.6%	(14.0%)	(30.6%)	(23.9%)	(16.4%)	(1.1%)	(69.8%)	60.0%	61.7%
WorldCom	0.20	16.06	(98.7%)	(98.6%)	(30.6%)	103.0%	(87.8%)	(87.7%)	(52.1%)	(6.4%)	4.3%	(73.5%)	10.9%	137.2%
<i>Average</i>			(65.2%)	(63.4%)	(12.9%)	59.1%	(39.5%)	(57.5%)	(36.9%)	(12.2%)	(6.5%)	(53.6%)	35.9%	72.6%
Emerging Long-Haul														
Asia Global Crossing	\$0.01	\$1.65	(99.6%)	(99.5%)	(26.5%)	(89.1%)	(53.1%)	6.7%	(81.1%)	(47.1%)	(81.9%)	NA	NA	NA
Global Crossing	0.02	1.30	(98.8%)	(98.2%)	(21.1%)	(31.8%)	(50.5%)	(55.7%)	(87.0%)	(53.3%)	(94.1%)	(71.4%)	121.6%	NA
Level 3	5.20	7.39	(29.6%)	4.0%	(8.9%)	2.0%	31.9%	(17.1%)	(28.8%)	32.3%	(84.8%)	(59.9%)	89.9%	191.4%
Williams	11.78	15.75	(25.2%)	NA	(9.4%)	(15.9%)	NA	NA	NA	NA	NA	NA	NA	NA
<i>Average</i>			(63.3%)	(64.6%)	(16.5%)	(33.7%)	(23.9%)	(22.1%)	(65.6%)	(22.7%)	(86.9%)	(65.6%)	105.7%	191.4%
RLECS														
Alaska Communications	\$1.99	\$8.28	(76.0%)	(75.0%)	(2.9%)	(6.6%)	(64.6%)	(36.7%)	(5.9%)	4.7%	9.9%	(41.4%)	NA	NA
Alltel	51.21	64.08	(20.1%)	(17.0%)	(6.3%)	4.0%	(14.6%)	(15.4%)	(10.0%)	6.5%	(1.1%)	(24.5%)	38.2%	45.7%
Broadwing	4.10	10.62	(61.4%)	(56.8%)	(3.8%)	115.8%	(23.8%)	(62.8%)	(26.4%)	(40.9%)	(58.4%)	(38.1%)	122.7%	22.0%
CenturyTel	29.16	35.59	(18.1%)	(11.1%)	(7.2%)	1.9%	(24.0%)	(13.2%)	3.7%	(2.1%)	(8.3%)	(24.5%)	5.3%	103.3%
Citizens Communications	9.77	11.53	(15.3%)	(8.3%)	0.7%	5.2%	(18.9%)	(22.2%)	0.8%	13.4%	(18.8%)	(7.5%)	77.3%	(14.4%)
Commonwealth	38.20	48.89	(21.9%)	(16.0%)	(0.7%)	(1.2%)	(13.6%)	5.2%	(15.9%)	23.8%	30.0%	(33.8%)	57.8%	29.5%
NTELOS	0.44	15.61	(97.2%)	(97.2%)	(17.0%)	10.0%	(83.0%)	(65.6%)	(73.5%)	85.5%	(12.1%)	(49.3%)	48.7%	4.5%
Surewest	36.23	59.50	(39.1%)	(26.1%)	(5.1%)	14.7%	(44.9%)	(6.1%)	15.5%	8.6%	20.8%	22.5%	18.3%	14.3%
Telephone & Data Systems	51.44	95.85	(46.3%)	(42.7%)	(9.1%)	0.0%	(16.7%)	(31.4%)	(1.7%)	(4.8%)	(0.3%)	(28.6%)	180.4%	(3.5%)
<i>Average</i>			(43.9%)	(38.9%)	(5.7%)	16.0%	(33.8%)	(27.6%)	(12.6%)	10.5%	(4.2%)	(25.0%)	68.6%	25.2%
CLECS														
Allegiance	\$0.87	\$9.60	(90.9%)	(89.5%)	(30.4%)	2.4%	(54.6%)	(39.0%)	(63.8%)	175.4%	(62.8%)	(63.8%)	660.8%	NA
Choice One	\$0.30	\$4.10	(92.7%)	(91.4%)	(21.1%)	(25.0%)	(58.4%)	(45.4%)	(53.4%)	114.7%	(62.4%)	NA	NA	NA
RCN Corp.	0.74	3.30	(77.6%)	(74.7%)	(7.5%)	7.2%	(62.8%)	(2.8%)	(51.9%)	(8.4%)	(53.6%)	(87.0%)	174.2%	3.3%
Time Warner Telecom	2.35	19.30	(87.8%)	(86.7%)	(12.3%)	117.6%	(51.8%)	(72.4%)	(65.6%)	144.0%	(72.1%)	27.0%	NA	NA
XOXO Comm.	0.06	1.10	(94.9%)	(41.7%)	(30.0%)	47.4%	56.3%	(74.0%)	(19.8%)	(76.6%)	(99.5%)	(57.1%)	485.5%	33.1%
<i>Average</i>			(88.8%)	(76.8%)	(20.3%)	29.9%	(34.3%)	(46.7%)	(50.9%)	69.8%	(70.1%)	(45.2%)	440.2%	18.2%
DJIA	8,573.71	10,728.87	(20.1%)	(14.4%)	(3.3%)	0.4%	(17.9%)	(11.2%)	3.8%	13.3%	(7.1%)	(6.2%)	25.2%	16.1%
Nasdaq	1,390.48	2,098.88	(33.8%)	(28.7%)	(6.4%)	2.3%	(19.9%)	(20.7%)	(5.4%)	30.1%	(21.1%)	(39.3%)	85.6%	39.6%
S&P 500	904.40	1,176.97	(23.2%)	(21.2%)	(3.2%)	1.1%	(17.6%)	(13.7%)	(0.1%)	10.3%	(13.0%)	(10.1%)	19.5%	26.7%
Telecom HOLDRS	26.43	46.78	(43.5%)	(40.8%)	(8.2%)	(9.0%)	(25.8%)	(24.4%)	(14.7%)	(10.7%)	(16.3%)	NA	NA	NA
Total Wireline Telecom Average			(58.4%)	(53.2%)	(11.8%)	17.1%	(34.1%)	(35.3%)	(30.4%)	11.1%	(29.4%)	(35.7%)	111.2%	47.9%

Source: CIBC World Markets Corp. & Factset.

Exhibit 18. Wireless Price Performance

	<i>Price</i> 12/10/02	<i>52 Week</i> <i>High</i>	<i>% of 52</i> <i>Week High</i>	<i>Year</i> <i>To Date</i>	<i>One</i> <i>Week Ago</i>	<i>One</i> <i>Month Ago</i>	<i>3Q</i> <i>2002</i>	<i>2Q</i> <i>2002</i>	<i>1Q</i> <i>2002</i>	<i>4Q</i> <i>2001</i>	<i>2001</i>	<i>2000</i>	<i>1999</i>
National													
AT&T Wireless	\$6.82	\$14.63	46.6%	(52.5%)	(15.3%)	0.9%	(29.6%)	(34.6%)	(37.7%)	(3.8%)	(17.0%)	NA	NA
Nextel	12.26	14.67	83.6%	11.9%	(9.1%)	2.2%	135.2%	(40.3%)	(50.9%)	26.9%	(55.7%)	(52.0%)	336.5%
Sprint PCS	5.01	25.45	19.7%	(79.5%)	(19.1%)	36.9%	(56.2%)	(56.6%)	(57.8%)	(7.2%)	19.4%	(60.1%)	343.2%
<i>Average</i>			50.0%	(40.1%)	(14.5%)	13.3%	16.5%	(43.8%)	(48.8%)	5.3%	(17.8%)	(56.1%)	339.9%
Affiliates/PCS													
AirGate PCS	\$0.99	\$54.30	1.8%	(97.8%)	(36.1%)	35.6%	(56.0%)	(92.9%)	(69.3%)	2.5%	28.3%	(32.7%)	NA
Alamosa Holdings	0.68	14.82	4.6%	(94.3%)	(32.0%)	21.4%	(83.7%)	(72.0%)	(57.8%)	(13.9%)	49.1%	NA	NA
Leap Wireless	0.31	23.10	1.3%	(98.5%)	(18.4%)	(48.3%)	(78.7%)	(87.2%)	(59.8%)	33.6%	(16.1%)	(68.2%)	982.8%
Nextel Partners	6.85	12.95	52.9%	(42.9%)	(14.9%)	(1.8%)	97.8%	(54.8%)	(49.8%)	78.3%	(28.6%)	NA	NA
Triton PCS Holdings	4.09	31.40	13.0%	(86.1%)	(15.8%)	48.7%	(46.4%)	(61.7%)	(65.3%)	(22.8%)	(13.5%)	(25.4%)	NA
Ubiquitel Inc.	0.46	9.00	5.1%	(93.8%)	(28.1%)	12.2%	(63.8%)	(71.8%)	(67.1%)	(7.7%)	35.5%	NA	NA
US Unwired	0.85	11.64	7.3%	(91.7%)	(29.2%)	10.4%	(75.0%)	(49.3%)	(45.8%)	0.3%	120.1%	NA	NA
<i>Average</i>			12.3%	(86.4%)	(24.9%)	11.2%	(43.7%)	(70.0%)	(59.3%)	10.1%	25.0%	(42.1%)	982.8%
Rural													
Dobson Communications	\$1.54	\$9.52	16.2%	(82.0%)	2.0%	220.8%	(64.0%)	(72.7%)	(63.1%)	(17.5%)	(41.6%)	NA	NA
Rural Cellular Corp.	1.50	23.86	6.3%	(93.3%)	(26.8%)	(29.6%)	(17.3%)	(76.8%)	(79.9%)	(8.4%)	(24.9%)	(67.3%)	761.9%
U.S. Cellular	26.54	45.50	58.3%	(41.3%)	(11.5%)	(1.4%)	16.2%	(37.9%)	(9.4%)	(8.6%)	(24.9%)	(40.3%)	165.6%
Western Wireless Corp.	6.37	29.75	21.4%	(77.5%)	(0.8%)	19.3%	(15.6%)	(63.4%)	(69.1%)	(16.4%)	(27.9%)	(41.3%)	470.3%
<i>Average</i>			25.6%	(73.5%)	(9.3%)	52.3%	(20.2%)	(62.7%)	(55.4%)	(12.7%)	(29.8%)	(49.6%)	465.9%
Towers													
American Tower	\$3.28	\$10.40	31.5%	(65.4%)	(20.0%)	117.2%	(53.9%)	(37.3%)	(41.9%)	(31.8%)	(75.0%)	23.9%	3.4%
Crown Castle	3.40	11.55	29.4%	(68.2%)	(21.8%)	3.7%	(44.8%)	(40.5%)	(38.1%)	18.7%	(60.5%)	(15.8%)	36.7%
Pinnacle Holdings	0.01	0.69	1.6%	(96.8%)	(12.0%)	(35.3%)	45.8%	(85.0%)	(76.5%)	(12.8%)	(96.2%)	(78.6%)	NA
SBA Communications	0.50	14.05	3.6%	(96.2%)	(30.6%)	6.4%	(22.7%)	(57.1%)	(74.7%)	(2.5%)	(68.3%)	119.0%	NA
SpectraSite	0.06	4.00	1.5%	(98.4%)	24.7%	(36.3%)	(61.1%)	(83.2%)	(70.2%)	49.0%	(72.9%)	21.8%	NA
<i>Average</i>			13.5%	(85.0%)	(11.9%)	11.1%	(27.3%)	(60.6%)	(60.3%)	4.1%	(74.6%)	14.1%	20.0%
DJIA	8,574.26	10,728.87	79.9%	(14.4%)	(3.3%)	0.4%	(17.9%)	(11.2%)	3.8%	13.3%	(7.1%)	(6.2%)	25.2%
Nasdaq	1,390.48	2,098.88	66.2%	(28.7%)	(6.4%)	2.3%	(19.9%)	(20.7%)	(5.4%)	30.1%	(21.1%)	(39.3%)	85.6%
S&P 500	904.41	1,176.97	76.8%	(21.2%)	(3.2%)	1.1%	(17.6%)	(13.7%)	(0.1%)	10.3%	(13.0%)	(10.1%)	19.5%
Telecom HOLDRS	26.43	46.78	56.5%	(40.8%)	(8.2%)	(9.0%)	(25.8%)	(24.4%)	(14.7%)	(10.7%)	(16.3%)	NA	NA
Total Wireless Telecom Average			21.4%	(76.0%)	(16.6%)	20.2%	(24.9%)	(61.8%)	(57.1%)	2.9%	(19.5%)	(24.4%)	387.6%

Source: CIBC World Markets Corp. & Factset.

Companies Mentioned In This Report

Stock Prices as of 12/11/02:

AirGate PCS (PCSA-OTC \$0.98 Not Rated)	Alamosa Holdings (APS-NYSE \$0.72 Not Rated)
Alaska Communications (1, 11)(ALSK-OTC \$1.90 Sector Performer)	Allegiance Telecom (1)(ALGX-OTC \$0.82 Sector Underperformer)
Alltel Corporation (4)(AT-NYSE \$50.80 Sector Performer)	Amazon.com (1, 4)(AMZN-OTC \$22.12 Not Rated)
American Tower (AMT-NYSE \$3.56 Not Rated)	AOL Time Warner (4)(AOL-NYSE \$13.60 Sector Performer)
Asia Global Crossing (ASGX.PK-OTC \$0.01 Not Rated)	AT&T Corp. (11, 2, 4)(T-NYSE \$26.91 Sector Performer)
AT&T Wireless Group (AWE-NYSE \$6.70 Sector Outperformer)	BellSouth (BLS-NYSE \$25.90 Sector Outperformer)
Broadwing (4)(BRW-NYSE \$4.00 Sector Underperformer)	Cablevision Systems Corp. (4)(CVC-NYSE \$15.77 Sector Underperformer)
CenturyTel (11, 2, 3, 4)(CTL-NYSE \$28.98 Sector Outperformer)	Cisco Systems (1)(CSCO-OTC \$13.98 Sector Performer)
Citizens Communications (4)(CZN-NYSE \$9.63 Sector Outperformer)	Commonwealth Telephone (1, 11, 2)(CTCO-OTC \$37.23 Sector Outperformer)
Crown Castle (CCI-NYSE \$3.33 Not Rated)	Dobson Communications (DCEL.OB-OTC \$1.55 Not Rated)
EarthLink, Inc. (1, 11)(ELNK-OTC \$5.60 Sector Outperformer)	Genesys Conferencing (1, 11)(GNSY-OTC \$1.20 Sector Underperformer)
Global Crossing (GBLXQ.PK-OTC \$0.02 Not Rated)	GRIC Communications (1, 11)(GRIC-OTC \$3.34 Sector Performer)
Ingram Micro (IM-NYSE \$12.59 Not Rated)	ITXC Corp. (1, 11, 2)(ITXC-OTC \$2.86 Sector Outperformer)
Leap Wireless (LWIN.OB-OTC \$0.24 Not Rated)	Level 3 (1, 4)(LVL-OTC \$5.15 Sector Underperformer)
Microsoft Corporation (1)(MSFT-OTC \$54.66 Sector Outperformer)	Nextel Communications (1, 4)(NXTL-OTC \$11.83 Sector Performer)
Nextel Partners, Inc. (1)(NXTP-OTC \$6.93 Sector Performer)	NTELOS (1, 11)(NTLO-NYSE \$0.38 Sector Performer)
Pinnacle Holdings (BIGTQ.PK-OTC \$0.01 Not Rated)	Ptek Holdings (1, 11, 4)(PTEK-OTC Sector Outperformer)
Qwest Communications (Q-NYSE \$4.56 Sector Underperformer)	Raindance Communications (1, 11)(RNDC-OTC \$3.60 Sector Underperformer)
Rural Cellular Corp. (RCCC-OTC \$1.40 Not Rated)	SBA Communications (SBAC-OTC \$0.58 Not Rated)
SBC Communications (4)(SBC-NYSE \$25.60 Sector Performer)	SpectraSite (SITEQ.PK-OTC \$0.59 Not Rated)
Sprint Corporation (11, 4)(FON-NYSE \$14.15 Sector Underperformer)	Sprint PCS (4)(PCS-NYSE \$4.99 Sector Underperformer)
Surewest (SURQ-OTC \$36.26 Not Rated)	Tech Data (TECD-OTC \$28.47 Not Rated)
Telephone & Data Systems (TDA-NYSE \$25.09 Not Rated)	Triton PCS Holdings (TPC-NYSE \$4.00 Sector Outperformer)
Ubiquitel Inc. (UPCS-OTC \$0.46 Not Rated)	US Unwired (UNWR-OTC \$0.77 Not Rated)
Verizon (11, 4)(VZ-NYSE \$38.82 Sector Outperformer)	WebEx (1)(WEBX-OTC \$18.89 Sector Performer)
Western Wireless Corp (WWCA-OTC \$6.39 Not Rated)	Witel Communications (WTEL-OTC \$11.80 Not Rated)
WorldCom (WCOEQ.PK-OTC \$0.20 Not Rated)	XOXO Communications (XOXOOQ.OB-OTC \$0.05 Not Rated)
Yahoo! (YHOO-OTC \$16.46 Not Rated)	

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Abbreviation	Rating	Description
Company Ratings		
SO	Sector Outperformer	Stock is expected to outperform the sector during the next 12-18 months.
SP	Sector Performer	Stock is expected to perform in line with the sector during the next 12-18 months.
SU	Sector Underperformer	Stock is expected to underperform the sector during the next 12-18 months.
S	Suspended	Stock coverage is temporarily halted.
DR	Dropped	Stock coverage is discontinued.
NR	Not Rated	Stock is not covered by CIBCWM.
Company Ratings Prior To August 26th 2002		
SB	Strong Buy	Expected total return over 12 months of at least 25%.
B	Buy	Expected total return over 12 months of at least 15%.
H	Hold	Expected total return over 12 months of at least 0%-15%.
UP	Underperform	Expected negative total return over 12 months.
R	Restricted	Restricted
UR	Under Review	Under Review
Sector Weightings**		
O	Overweight	Sector is expected to outperform the broader market averages.
M	Market Weight	Sector is expected to equal the performance of the broader market averages.
U	Underweight	Sector is expected to underperform the broader market averages.
NA	None	Sector rating is not applicable.

**Broader market averages refer to the S&P 500 in the U.S. and S&P/TSX Composite in Canada.

"-S" indicates Speculative. An investment in this security involves a high amount of risk due to volatility and/or liquidity issues.

"CC" indicates Commencement of Coverage. The analyst named started covering the security on the date specified.

Ratings Distribution: CIBC World Markets Corp. Coverage Universe

(as of 11 Dec 2002)	Count	Percent	Inv. Banking Relationships	Count	Percent
Sector Outperformer (Buy)	243	33.9%	Sector Outperformer (Buy)	125	51.4%
Sector Performer (Hold/Neutral)	309	43.1%	Sector Performer (Hold/Neutral)	101	32.7%
Sector Underperformer (Sell)	165	23.0%	Sector Underperformer (Sell)	38	23.0%

Ratings Distribution: Telecommunications Services Coverage Universe

(as of 11 Dec 2002)	Count	Percent	Inv. Banking Relationships	Count	Percent
Sector Outperformer (Buy)	10	33.3%	Sector Outperformer (Buy)	6	60.0%
Sector Performer (Hold/Neutral)	10	33.3%	Sector Performer (Hold/Neutral)	4	40.0%
Sector Underperformer (Sell)	10	33.3%	Sector Underperformer (Sell)	3	30.0%

Telecommunications Services Sector includes the following tickers: ALGX, ALSK, AT, AWE, BLS, BRW, CTCO, CTL, CWON, CZN, ELNK, FCOM, FON, GNSY, GRIC, INLD, ITXC, LVL, NTLO, NXTL, NXTP, PCS, PTEK, Q, RNDC, SBC, T, TPC, TWTC, VZ, WEBX.

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