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Intermodal Competition in Florida Telecommunications

Prepared for: BellSouth Telecommunications, Inc., Embarq Florida, Inc., Verizon Florida Inc., and Windstream Communications Florida, Inc.

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I. Summary

The communications industry is in the midst of a fundamental transformation that is providing every type of residential and business customer with an increasing array of communications options, while forcing traditional wireline service providers to meet new competitive challenges. Thanks to substantial and continuing private investment in Florida's communications infrastructure, customers throughout the State may choose from competing providers for voice and broadband services and increasingly for video services as well. This ongoing transformation has resulted from technological and market forces that must be taken into account when assessing the state of communications competition in Florida.

Until recently, different networks were constructed to provide different sets of services: telephone networks carried switched voice traffic and private line services; coaxial cable transmitted television signals; and cell towers relayed wireless voice calls. All of this has changed since the long-awaited "network convergence" has provided the technological catalyst for facilities-based "intermodal competition" throughout the country including, of course, Florida. Convergence has brought at least three formerly disparate industry sectors into direct competition with each other by allowing each of their different network platforms to provide similar bundles of communications services. For example, cable companies now provide video, broadband Internet and other data services, *and* voice; mobile wireless networks provide voice, data, short text messaging, *and* video services; and wireline services platforms provide voice, DSL, Internet, instant messaging, VoIP, *and* now video. As the Florida Public Service Commission, Division of Competitive Markets and Enforcement recognized in its *Report on the Status of Competition in the Telecommunications Industry as of May 31, 2005* ("Florida PSC 2005 Competition Report"), intermodal competition has intensified in Florida as

both wireless and cable networks are well positioned to provide the basis for vigorous head-to-head competition with traditional wireline companies. The advancement of broadband technology has allowed each of the different technologies—wireline, wireless, and cable—to provide voice, video, and data services in varying degrees. In addition, by partnering with other providers, each competitor can add services and convenience in an effort to appeal to a wide variety of consumers on a one-stop-shopping basis. Cable and wireline companies, for example, can provide mobility by offering or partnering with wireless providers.... (p. 64)

Today, several platform providers are competing with the traditional wireline carriers to serve Florida consumers. Cable companies such as Comcast, Bright House Networks and Cox have deployed broadband and telephony services to large portions of the State, and have experienced great success in attracting customers to their bundled products. Wireless service is ubiquitous in Florida and many residents are replacing wireline service with wireless, both through line substitution and usage substitution. The spread of broadband throughout Florida enables residents to receive service from numerous independent VoIP providers such as Vonage and Skype. Moreover, emerging services such as Wi-Fi, WiMAX and broadband over power lines (BPL) promise to intensify the competition.

The *Florida PSC 2005 Competition Report* recognizes the necessity of considering these intermodal alternatives to wireline service when assessing the state of competition, noting that:

In previous years, the analysis of this statutory requirement has focused primarily on the wireline sector of the telecommunications market. As noted throughout this report and the 2004 report, wireless and, to a lesser extent, VoIP competition have become a significant portion of the voice communications market...increasing numbers of customers are replacing traditional wireline service with these options and, therefore staff must conclude that they are providing functionally equivalent local exchange service to residential and business customers.... (p. 69)

[A] report on local competition would be incomplete without [an] analysis of the alternatives, such as wireless, cable (VoIP-based), broadband, and ... (VoIP). These... intermodal competitors...have developed and evolved to challenge the traditional telephone wireline companies for market share. (p. 2)

[S]imple CLEC market share ... understates the true market share held by competitors including wireless, cable, and other IP-enabled (Internet Protocol) providers. The gap between the CLEC market share and the true size of the competitive market share is unknown today, but we believe it will continue to grow as alternatives become more generally accepted. (p. 3)

The purpose of this white paper is to fill in that “gap” to the extent possible, given the limitations of publicly available data. Our analysis does not rely upon market share measures for this purpose because these measures are severely limited given their static, backward-looking nature, and because it is nearly impossible to gather complete and accurate share data. Rather, the paper examines the dynamics of the highly competitive communications market and how the market now extends beyond the traditional wireline companies to encompass a host of intermodal competitors.

As discussed in detail below, FCC data for Florida¹ show that intermodal competitors have already made substantial competitive inroads:

- At year-end 2000, there were about 3.4 million more mass market (residence and small business) wireline access lines than total wireless subscribers and mass market high-speed broadband lines.
- Only two years later there were 1.3 million *fewer* mass market wireline lines than total wireless subscribers and mass market broadband lines.

¹ Federal Communications Commission, Industry Analysis and Technology Division, Wireline Competition Bureau, *Local Telephone Competition: Status as of December 31, 2000-2004* (“FCC December 2000-December 2004 Local Competition Reports”) and Federal Communications Commission, Industry Analysis and Technology Division, Wireline Competition Bureau, *High Speed Services for Internet Access: Status as of December 31, 2000-2004* (“FCC December 2000-December 2004 High-Speed Internet Reports”). More detailed data are provided below.

- As the number of wireless and broadband lines has increased dramatically, the number of wired lines has continued to fall; thus, by year-end 2004 there were seven million (or about 80 percent) more wireless and mass market broadband lines than ILEC and CLEC mass market lines combined.
- After a period of rapid growth, interstate switched access minutes of use for the major Florida carriers declined almost 25 percent from 2000 to 2005; over the same period, local usage also fell about 25 percent, from 3,200 calls per line per year to only 2,400.

The impact of intermodal competition is even more pronounced than these data alone suggest: Wireline access lines would have been growing under historical competitive conditions because the Florida population has continued to grow at least as fast as it did historically. Thus, factoring in this growth, we estimate that Florida local exchange companies have lost about 2.5 million residential wireline access lines since 2001, or more than twice the observed decline of about 1 million lines. We find a similar but even more dramatic discrepancy between expected and observed local usage trends.

Although intermodal competition is particularly strong in more densely populated areas, it is present and growing in all parts of the State, including rural areas. For example, our analysis shows that:

- Every Zip Code area in the State has at least two broadband providers with lines in service and, 96 percent of Zip Codes have four or more such providers.
- Cable companies have deployed broadband facilities to 98 percent of their homes passed and 93 percent of total households in the State.
- Cable telephony is available to 63 percent of cable homes passed and 60 percent of total households in the State.
- At least two wireless carriers are available to 99 percent of households in the State, and 99.9 percent of households have at least one wireless carrier available.
- Wireless carriers are experiencing great success in attracting customers in all areas of Florida; and available data imply that the growth in wireless subscribers throughout the State is having a marked effect on wireline carriers. Florida residents in both rural and urban areas view wireless service as a viable substitute for wireline.
- Competitive alternatives are available in areas of Florida served by each of the major incumbent wireline carriers in the State and each incumbent has lost lines and usage due to these alternatives.

The discussion that follows examines the forces behind these competitive developments and demonstrates that growth of intermodal competition will continue unabated in Florida.

We conclude that policy makers should continue to evaluate the role of regulation in light of the changes wrought by convergence and intermodal competition. These changes have

eliminated historical market boundaries, brought formerly distinct industry sectors into direct competition with each other, and thus undermined the historical rationales for regulation. We also note that the costs of delaying regulatory reform would be high and that possible concerns about universal service should not stand in the way of such reforms.²

II. Technological Forces Are Driving Network Convergence and Intermodal Competition

Historically, different networks were designed and deployed to carry different types of traffic. The wireline public switched telephone network and mobile telephone networks were optimized to transport basic voice communications, while cable networks were optimized to transport video, and the Internet was designed to transport packet-based data traffic. Today, these technologies are “converging” so that providers can offer multiple types of services over a single network. Thus, with convergence, the same services are provided (and marketed) over various types of networks—*e.g.*, traditional cable systems as well as traditional “telephone” networks and mobile wireless networks. In short, convergence refers to the provisioning of similar bundles of—voice, data, Internet access, TV, and other communications and entertainment—services by different types of network providers.

Three fundamental factors have driven convergence: (1) technological change (such as the advent of two-way, digital, broadband networks and IP technology) which has allowed all kinds of wired and wireless networks to be used for any kind of service; (2) consumer demand for bundled services; and (3) competition among providers seeking gains from improved efficiency (economies of scale and scope), and the promise of increased revenues and lower churn rates.

Because convergence enables different types of platforms to provide increasingly similar bundles of services, traditional wireline carriers must now compete with: (1) Internet and broadband service providers; (2) cable companies that have made substantial investments in their networks to provide video, data and voice services; (3) wireless services providers; (4) VoIP providers; and (5) other providers using emerging technologies. These industry developments have resulted in dramatic line losses to wireline local exchange carriers in Florida.

III. Intermodal Competition Has Dramatically Affected Florida’s Wireline Carriers

Evidence that intermodal services are substitutes for and compete with LEC services includes data showing that: (1) the growth of wireless, broadband and cable telephony services

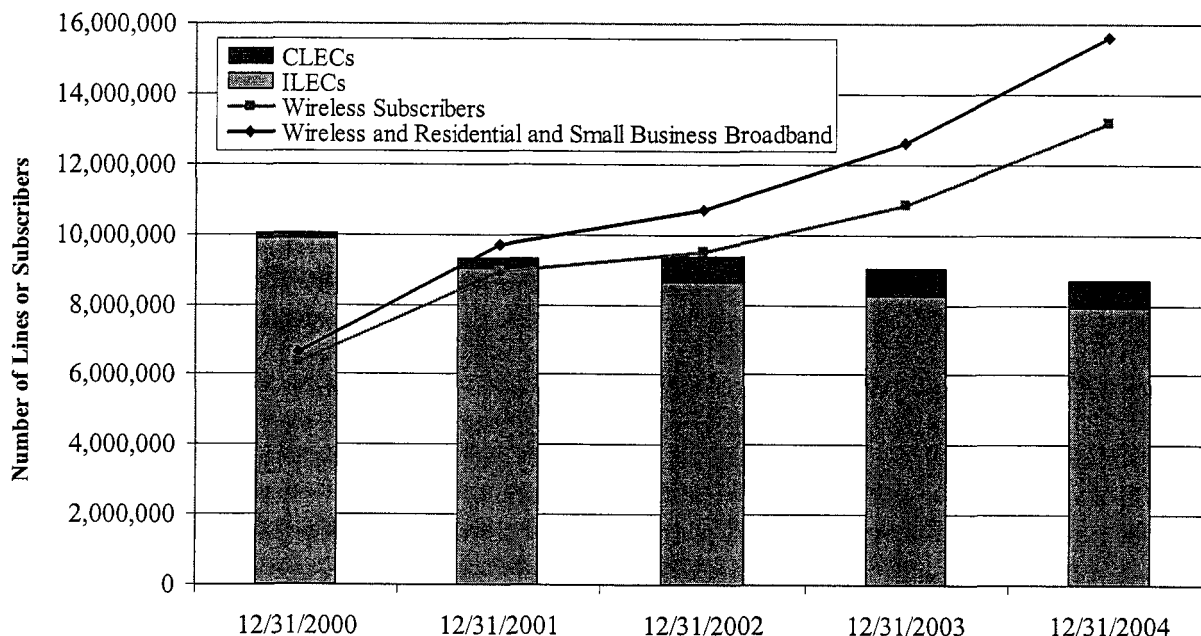
² As we understand it, concerns about universal service have been sparked by recent apparent declines in CPS telephone penetration rates reported by the FCC. These concerns appear to be misplaced in as much as the declines are due to recent changes in the questionnaires administered by the CPS as well as growth in the number of people with wireless phones only.

has been associated with reductions in the number of wireline access lines; and (2) the growth rate of CLEC wireline services has been smaller than it was before intermodal competition began its acceleration—*i.e.*, before 2000. In this section we explore these general trends. In Section IV we look more deeply at the factors underlying the growth of intermodal alternatives to LEC services.

A. Gains by Wireless and Broadband Have Been Associated with Wireline Losses

Intermodal competition from cable companies, wireless providers, Internet/broadband services providers and VoIP providers has caused local exchange carriers to experience losses in access lines and usage. At the same time, wireless subscribers and broadband lines have grown dramatically such that they now exceed the number of traditional switched access lines. Figure 1 below depicts just how dramatic these trends have been in Florida.

Figure 1
Intermodal Competition for Mass Market Customers in Florida



Note: Due to differences in reporting, June 30, 2005 data are not available.

Source: FCC December 2000-December 2004 Local Competition and High-Speed Internet Reports.

As illustrated in Figure 1, FCC data show that Florida is experiencing widespread and growing intermodal competition:

- Residence and small business conventional wireline (*i.e.*, ILEC + CLEC) access lines in the State declined by over 1.3 million lines, or about 13 percent, from December

31, 2000 to December 31, 2004, during which time they would have been expected to grow because of the growth in state population.³

- In contrast, over the same interval:
 - The number of wireless subscribers increased by over 100 percent or 6.8 million new subscribers;
 - The number of residential and small business broadband lines increased by about 2.2 million lines or almost ten-fold; and
 - By December 31, 2004, the total of wireless subscribers and mass market broadband lines reached 15.6 million (or about 80 percent higher than the total number of mass market ILEC and CLEC lines).⁴

Note that Figure 1 actually *understates* the impacts of intermodal competition because the FCC data on which it is based group cable-company coaxial telephone lines with other CLEC provided lines. For example, although state-specific data are not available, FCC data show that coaxial cable telephone lines grew from 308,000 at year-end 1999 to 3.7 million lines at year-end 2004, to almost 4.6 million lines in June 2005, only 6 months later.⁵ Coaxial cable lines accounted for about 59 percent of the growth of CLEC lines nationally in the last year for which data are available. Thus, had we included the coaxial cable lines with other forms of intermodal competition, we would have seen a larger reduction in traditional wireline access lines.

B. Florida Switched Access Lines and Network Usage Are Well Below Expected Levels Based on Historical Trends

The *Florida PSC 2004 and 2005 Competition Reports* show that total residential switched access lines have been declining in the State since 2001.⁶ According to these data, from 2001 to 2005, ILEC residential lines fell by almost 1.3 million lines while CLEC residential lines increased by about 260,000 lines. Thus, in sum, total residential switched access lines fell by 1 million lines, from about 8.3 million to about 7.3 million. This decline has resulted in a level of lines well below what one would expect based on the continued population growth in Florida. From 2001 to 2005, Florida's population increased by 9.4 percent.⁷

³ As discussed below, not only population, but other possible determinants of line growth, such as employment and Gross State Product, increased over this period as well.

⁴ Although mid-2005 wireline access line data are available from the FCC, they are not comparable with mass market data from earlier years because the newer data no longer group small business lines with residential lines. Additionally, wireless subscribers for mid-2005 are not comparable with earlier data because the newer data allocate subscribers to states based on NPA (area) codes, whereas the older data were assigned based on billing address.

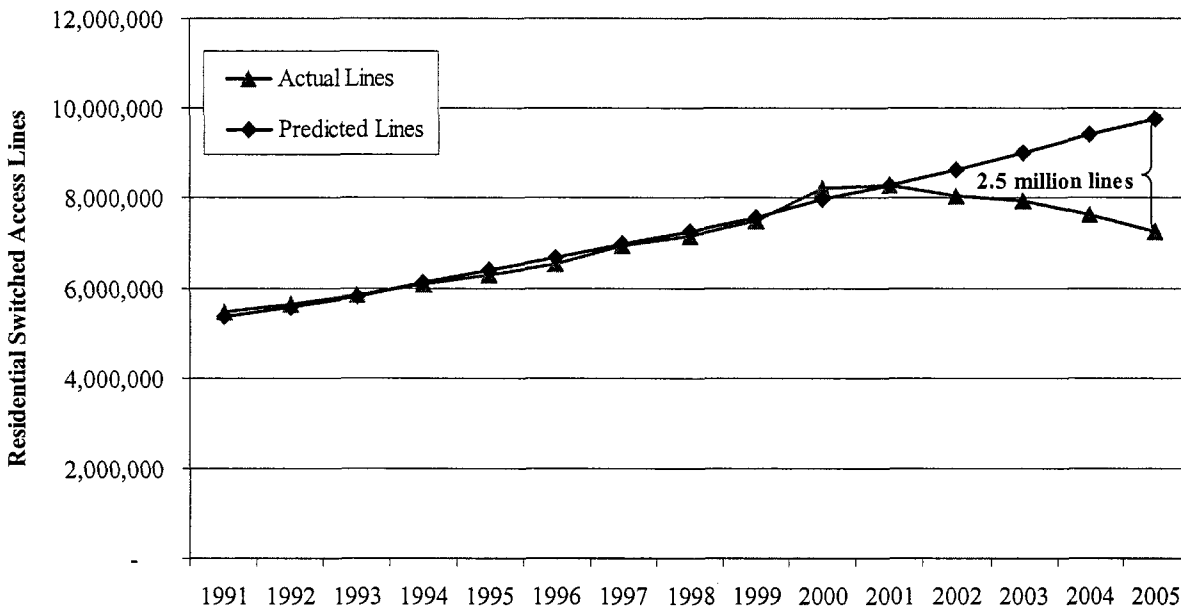
⁵ See *FCC June 2005 Local Competition Report*, Table 5, "Competitive Local Exchange Carrier Lines by Type of Technology."

⁶ See Table 1 in each report.

⁷ Other possible determinants of line growth increased over this period as well. Employment in the State increased from about 7.6 million to about 8.3 million and Florida Gross State Product grew from \$497.4 billion

By statistically estimating the historical (1991 to 2001) relationship between residential lines and population, we can forecast what the number of lines would have been in subsequent years in the absence of intermodal competition. As can be seen in Figure 2, growth in the number of lines was closely correlated with population growth from 1991 to 2001; however, although population growth continued to be at least as strong from 2001 to 2005, the number of lines fell well below what we would have expected based on this growth. By 2005, the shortfall amounted to 26 percent, or 2.5 million residential access lines.⁸

Figure 2
Actual and Predicted Florida Residential Switched Access Lines



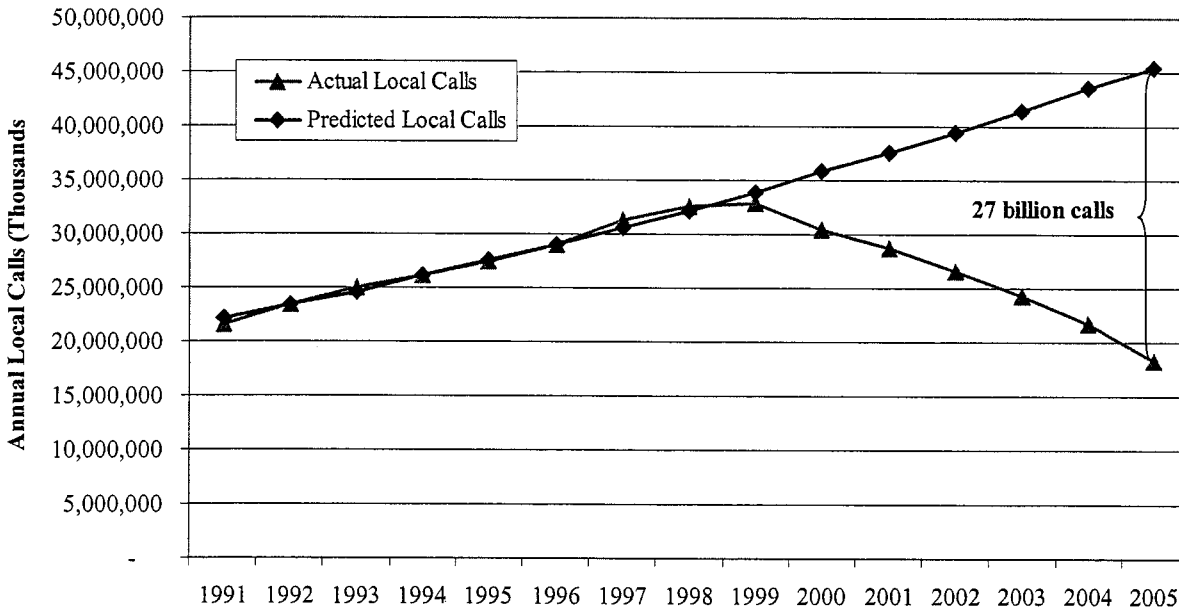
Similarly, intermodal competition has had a substantial impact on local network usage. According to FCC ARMIS data, the number of local calls per year has been declining in Florida since 1999 (data include BellSouth and Verizon). Through 2005, annual local calls had fallen from 32.9 billion to 18.3 billion, or 44 percent. As with access lines, this dramatic decline places

to \$674 billion (in current dollars). Population data from Office of Economic & Demographic Research, The Florida Legislature, Demographic Estimating Conference Database, updated July 2005, available at <http://edr.state.fl.us/population/web10.xls>; Employment data from the Florida Agency for Workforce Innovation, Labor Market Statistic, available at <http://www.labormarketinfo.com/library/laus/historical/histsa.xls>; and Gross State Product data from Bureau of Economic Analysis, U.S. Department of Commerce, available at <http://www.bea.gov/bea/regional/gsp/>.

⁸ Total residential switched access lines for 1997-2005 are from the *Florida PSC Competition Reports 1997-2005*. We obtained data on ILEC residential lines (including BellSouth, Verizon and Embarq) from ARMIS, FCC Report 43-08, *The ARMIS Operating Data Report*, Table III, "Access Lines in Service by Customer," and trended the Florida PSC data back to 1991 using the ARMIS data. Since Embarq only began reporting to ARMIS in 1997, we obtained a series of residential lines for 1991-1996 from Embarq, which we added to the ARMIS data. A linear specification is used to estimate lines. The resulting equation is $y = 0.9577x - 7343653.5$, with an R^2 of .9879, where x = population and y = estimated access lines.

the level of local calling well below what one would expect based on population growth. Estimating usage trends based on population trends, we find that local calling volumes closely tracked population growth from 1991 to 1999.⁹ Beginning in 2000, however, actual and predicted annual local calls diverge, with the predicted level increasing with the population, while the observed level instead declines substantially. By 2005, the difference amounts to 60 percent, representing 27 billion calls per year.¹⁰ These trends are depicted in Figure 3 below.

Figure 3
Actual and Predicted Florida RBOC Annual Local Calls



C. Intermodal Competition Is Occurring Throughout the State

The trends in intermodal competition demonstrated statewide in Figures 1-3 are not isolated to any particular area of the State. Intermodal competitors are present in the service areas of each of the four major incumbent carriers and have had a significant impact on those carriers' lines and network usage:

- In areas served by BellSouth: cable telephony is available to about 50 percent of cable homes passed, cable modem service (and therefore, VoIP service provided by independent providers such as Vonage or Skype) is available to 99 percent of cable homes passed and wireless service is available to virtually all households. In contrast, since 2001, BellSouth residential access lines have declined by about

⁹ Not surprisingly, the data suggest that call substitution preceded line substitution.

¹⁰ Local calls are from ARMIS, FCC Report 43-08, *The ARMIS Operating Data Report*, Table IV, "Telephone Calls" and include BellSouth and Verizon. A linear specification is used to estimate calls. The resulting equation is $y = 5.03499695x - 44593536$, with an R^2 of .9829.

993,000 lines (or 22 percent) from 4.4 million to 3.4 million and since 2000, BellSouth's network usage has similarly experienced a decline.

- In areas served by Verizon: cable telephony is available to 93 percent of cable homes passed, cable modem service is available to 96 percent of cable homes passed and wireless service is available to virtually all households. In contrast, since 2001, Verizon residential access lines have declined by about 355,000 lines (or 21 percent) from 1.68 million to 1.33 million and since 2000, Verizon's network usage has similarly experienced a decline.
- In areas served by Embarq: cable telephony is available to about 69 percent of cable homes passed, cable modem service is available to 99 percent of cable homes passed and wireless is available to virtually all households. In contrast, since 2001, Embarq residential access lines have declined by about 213,000 lines (or 14 percent) from 1.53 million to 1.32 million and since 2000, Embarq's network usage has similarly experienced a decline.
- In areas served by Windstream: cable telephony is available to a small but growing percent of cable homes passed, cable modem service is available to 70 percent of cable homes passed (a figure that is also growing) and wireless is available to virtually all households. In contrast, since 2001, Windstream residential access lines have declined by about 4,700 lines (or 6 percent) from about 75,300 to about 70,600 and its network usage, while not in actual decline, has experienced a substantial reduction in its growth rate since 2000, compared to that seen in the 1995 to 2000 period.

Tables 1 and 2 summarize the availability of cable and wireless services, respectively, in the incumbent carriers' territories. As discussed in Section IV below, cable advanced services are now being deployed in areas of the State that have heretofore had low availability. The data in Table 1 contain a snapshot of deployments as of early 2006; however, that snapshot does not capture ongoing deployments of services. For example, the largest cable provider in Windstream's service area is Comcast, which has announced its intentions to make telephony service available to the vast majority of its systems nationwide, and which, as discussed below, is acquiring Adelphia's Florida systems and plans to upgrade those systems as well. Another example is Atlantic Broadband, a cable provider in Miami Beach, which made telephony service available in July 2006, a development not reflected in the data below. Table 4 in Section IV depicts the current status of Florida's largest cable systems.

Table 1					
Advanced Cable Services Are Available in Each Incumbent's Service Territory in Florida					
Incumbent	Homes Passed			Percent of Homes Passed	
	Total	Broadband Ready	Telephony Ready	Broadband Ready	Telephony Ready
BellSouth	3,588,377	3,567,976	1,799,579	99.4%	50.2%
Verizon	1,407,560	1,346,850	1,313,429	95.7%	93.3%
Embarq	1,186,910	1,177,057	816,379	99.2%	68.8%
Windstream	30,606	21,191	1,842	69.2%	6.0%
Other	38,073	36,644	14,653	96.2%	38.5%
Total	6,251,526	6,149,718	3,945,882	98.4%	63.1%

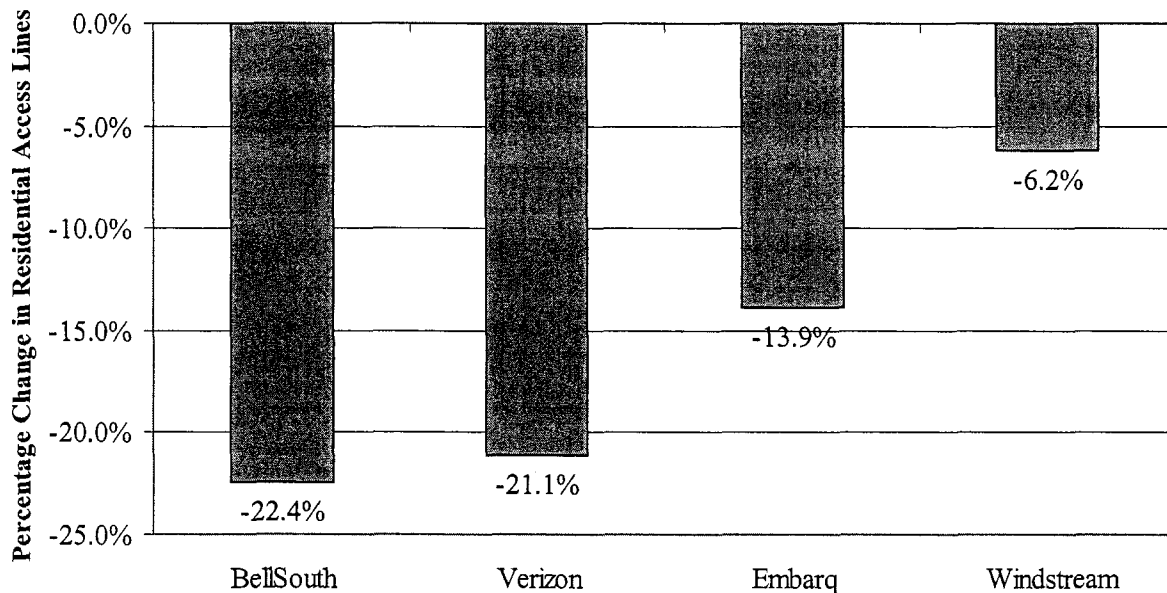
Source: Warren Communications News, *Cable Fact Book*, GIS Format.

Table 2					
Wireless Service is Available in Each Incumbent's Service Territory in Florida					
Incumbent	Total Households	0 Carriers	1 Carrier	2 Carriers	3 or More Carriers
BellSouth	3,771,621	6,104	23,900	116,476	3,625,141
Verizon	1,438,190	611	-	736	1,436,843
Embarq	1,267,627	340	4,840	46,763	1,215,684
Windstream	68,347	25	168	7,068	61,086
Other	49,083	686	4,824	12,205	31,368
Total	6,594,868	7,766	33,732	183,248	6,370,122

Source: Provider websites (service coverage maps) and Census block group information.

As discussed above, each of the major incumbent carriers in the State has experienced line and usage losses in conjunction with the spread of intermodal competition. Figure 4 depicts the percentage change in residential access lines for each of the four large incumbents since 2001. As displayed in the Figure, the decline in residential lines ranges from over 6 percent for Windstream to over 22 percent for BellSouth.

Figure 4
Percentage Change in Residential Access Lines
2001 to 2006

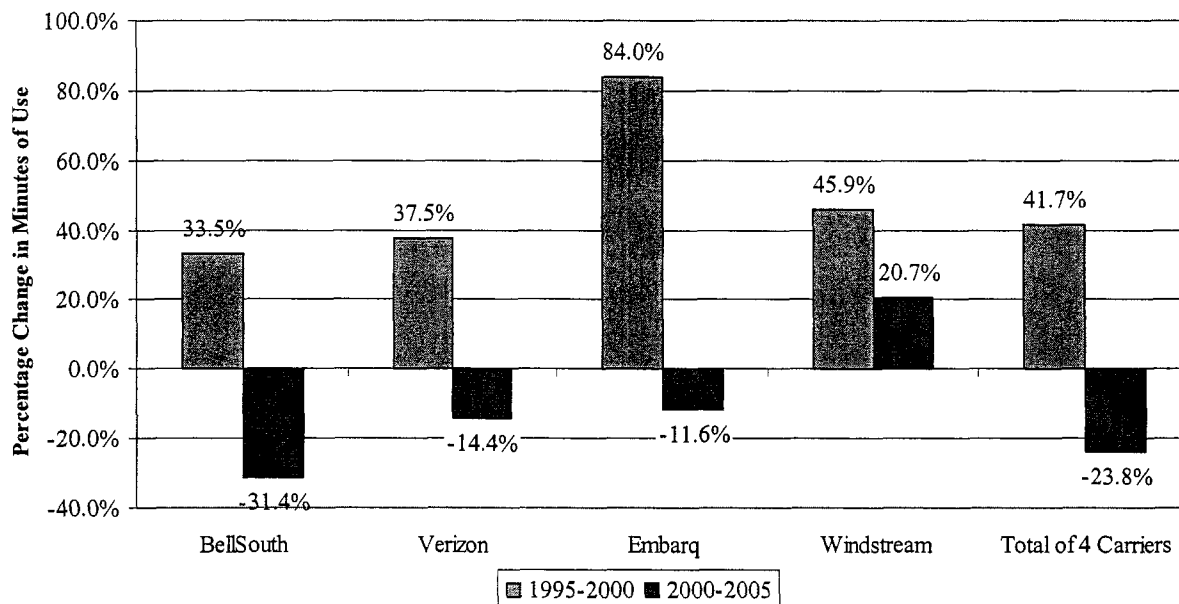


Note: BellSouth, Embarq and Windstream data are as of year-end 2001 and May or June 2006. Verizon data are as of May or June of both 2001 and 2006 (as submitted to the Florida PSC for its annual competition reports).
 Source: Data provided by individual companies.

Figure 5 below depicts the trends in interstate switched access minutes of use for the four major Florida incumbents as reported by the National Exchange Carrier Association. Following large percentage increases for each carrier from 1995 to 2000 (ranging from 34 percent to 84 percent), BellSouth, Verizon and Embarq minutes of use declined between 12 percent and 31 percent through 2005 and the growth in Windstream minutes of use declined, from 46 percent in the early period to 21 percent in the later period.¹¹

¹¹ In the 2000-2005 period, BellSouth saw declines in each year, while Verizon and Embarq each saw a slight increase in 2004 before continuing declines in 2005. The one year increase for these two companies may be due to retroactive true-ups from the prior year or to changes in accounting for CLEC minutes, and thus does not appear to show a reversal of the ongoing trend in reduced wireline usage.

Figure 5
Cumulative Percentage Changes in Switched Access Minutes of Use
1995 to 2000 and 2000 to 2005



Source: FCC, National Exchange Carrier Association, Network Usage Data.

D. Intermodal Competition Affects Wireline Prices

As described above, intermodal competitors have already taken a significant fraction of output from Florida wireline carriers. The relevant question in assessing competition is: how much substitution to intermodal providers is enough for the market to control the price of wireline telecommunications services?

Wireline telecommunications technology has a large proportion of fixed and sunk network costs that do not vary with the number of customers. Firms with high fixed and/or sunk costs must charge prices that are in excess of their marginal costs in order to earn normal profits. Therefore, when such a firm loses customers to competition, its revenues erode much faster than the costs that it can avoid. If the firm attempted to increase prices, the lost profits (revenue minus avoided cost) from even a small decrease in customers can easily exceed the extra revenue obtained from the price increases paid by the customers that remain.

Starting with a hypothetical small but significant and nontransitory price increase (*e.g.*, five percent) that economists routinely assume in assessing market power, Professor J. Hausman¹² poses the following question: What fraction of volume must a firm lose to make such

¹² Hausman, Jerry A., "Regulated Costs and Prices in Telecommunications," in Gary Madden (ed.), *International Handbook of Telecommunications Economics*, Volume 2: Emerging Telecommunications Networks, 2003, p. 226 and Hausman, Jerry, "From 2-G to 3-G: Wireless Competition for Internet-Related Services," in Robert W.

a price increase unprofitable? For a five percent price increase, the answer is given by the formula:

$$\text{Critical fraction} = \frac{0.05}{\left(1.05 - \frac{mc}{p}\right)}$$

where p is the current price and mc denotes marginal cost. Professor Hausman suggests that for wireline companies, marginal cost is about 20 percent of price (with the remainder accounting for the mark-up required to recover fixed or sunk costs). In this example, the critical fraction produced by the equation would be about 6 percent. In other words, under the conditions considered by Professor Hausman, if a wireline provider were to raise price and lose six percent or more of its volume to facilities-based alternatives such as wireless and VoIP providers, even a modest five percent price increase would be unprofitable.

The implications of recognizing that wireline telecommunications departs widely from the textbook model of perfect competition are profound. When fixed and sunk costs are low, a competing product or service has to be a very close substitute to discipline the incumbent's prices: *i.e.*, a small price increase has to produce a disproportionately large loss in volume to be unprofitable, because when such a firm loses volume, the revenue loss is almost completely offset by a reduction in costs. In contrast, firms such as facilities-based wireline carriers cannot sustain large volume losses, because the lost revenue greatly exceeds the costs savings — because such a large portion of costs are fixed or sunk. That is, competing telecommunications products do not necessarily need to be very close substitutes for wireline services in order for attempts at supra-competitive pricing to be thwarted.

IV. Intermodal Competitors Are Present and Growing Throughout Florida

A. Broadband

1. Broadband Competition and the Development of a Single Converged Communications Market

The spread of broadband services provides a key indicator of effective intermodal competition from cable providers and VoIP providers. As shown below, cable companies have typically deployed advanced digital two-way hybrid fiber coaxial technology, used that to offer broadband Internet access and then progressed to offer “cable telephony” services. This strategy has enabled them to capture a significant share of demand for high-speed Internet access and, more recently, has enabled the provision of low-cost cable company Internet-protocol (IP) telephone services, and independent VoIP provider telephony services. The strategy has also

Crandall and James H. Alleman, eds., *Broadband: Should We Regulate High-Speed Internet Access*, Washington D.C.: AEI-Brookings Joint Center for Regulatory Studies, 2002, pp. 126-127.

enabled the cable companies' popular "triple play" bundle of video, broadband and voice services. This has, in turn, led the phone companies to accelerate their own network upgrades—first to DSL, and more recently, to video services. Competition for broadband has lowered prices, and increased the speed and quality of Internet access. The competition will become even more intense because the two formerly distinct communications sectors are now part of a single, more dynamic market.

2. Broadband Competition Is Flourishing in Florida

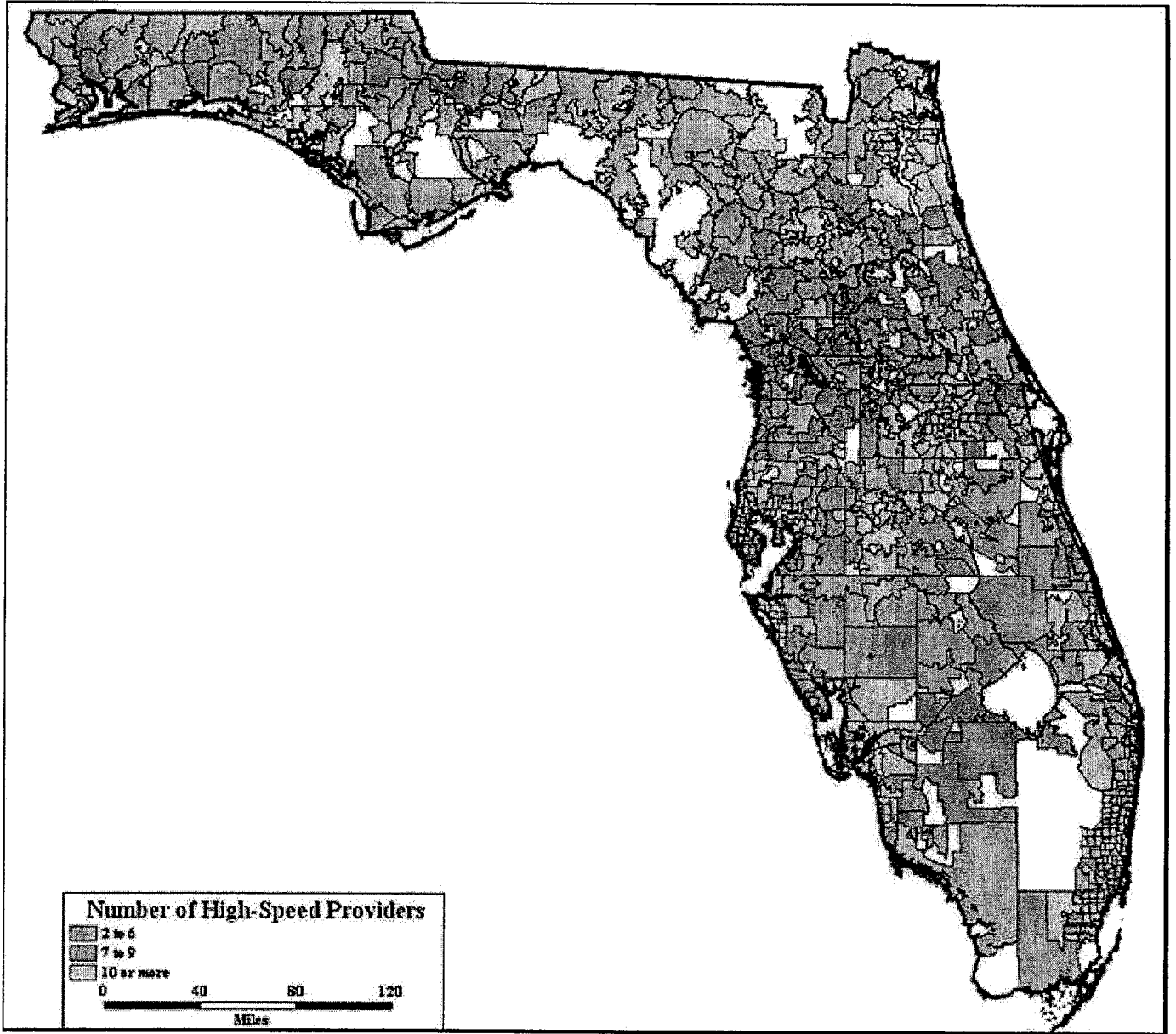
High-speed Internet service is now available throughout Florida. Map 1 below depicts the distribution of high speed providers with lines in service by Zip Code area as reported by the FCC. As shown on the Map, 22 percent of Zip Codes in Florida have 2 to 6 providers, 26 percent have 7 to 9 providers and the remainder have 10 or more.¹³ The FCC data reveal that every Zip Code in the State has two or more high speed providers with lines in service and, indeed, 96 percent of all Zip Codes have four or more such providers.¹⁴ The FCC recently reported that high-speed DSL connections were available to 85 percent of the Florida households where ILECs can provide local telephone service and high-speed cable modem service was available to 94 percent of the households where cable system operators can provide cable TV service.¹⁵

¹³ Additionally, Map 3 in section IV.B.2 depicts the areas that have access to cable company-provided broadband as reported by Warren Communications News.

¹⁴ See *FCC 2005 High-Speed Internet Report*, Table 17.

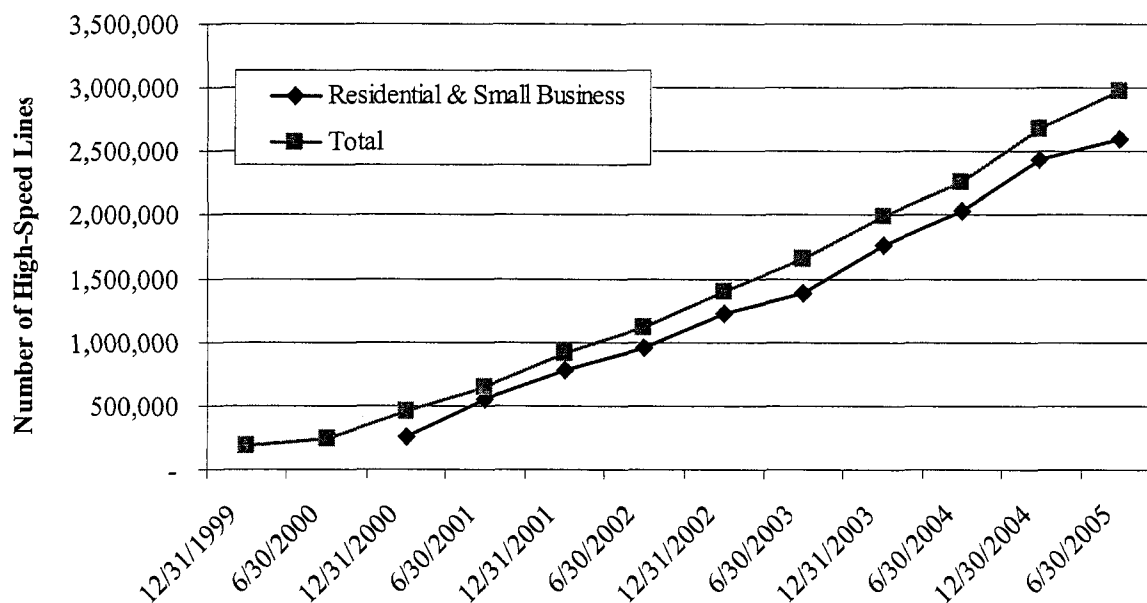
¹⁵ *FCC 2005 High-Speed Internet Report*, Table 14. As discussed below, another source shows that 98 percent of homes passed by cable have access to cable broadband.

Map 1
Florida High-Speed Providers by Zip Code



As displayed in Figure 6 below, Florida has seen tremendous growth of both mass market and total high-speed Internet lines—*e.g.*, high-speed lines have increased over ten-fold from June 2000 through June 2005. A recent Florida PSC survey found that by the end of 2005, broadband penetration as a percent of the population had reached 46 percent in Florida, above the national average of 36 percent.¹⁶

Figure 6
Florida Broadband Line Growth



Note: Data on residential & small business not available until 12/31/00 and is residential only at 6/30/05.
Source: FCC June 2000-June 2005 and December 1999-December 2004 High-Speed Internet Reports.

The number of separate entities offering high-speed Internet services in the State has grown dramatically as well—from 16 providers in mid-2000 to 52 in mid-2005.¹⁷ As of mid-2005, there were 19 ADSL providers (typically, wireline carriers) and 9 coaxial cable providers as well as multiple providers offering Internet services using emerging technologies such as optical fiber and fixed wireless (10 and 11 providers, respectively), for a total of 52 high-speed providers throughout the State.¹⁸

The growth in broadband availability and subscribership is not limited to urban areas. Although the *Florida PSC 2005 Survey* found broadband penetration to be lower in rural areas than urban (65 percent vs. 36 percent in the second half of 2005), rural areas displayed growth of

¹⁶ Florida Public Service Commission, *Consumer Survey Results, July-December 2005* (“Florida PSC 2005 Survey”), p. 27.

¹⁷ See *FCC June 2000 and June 2005 High-Speed Internet Reports*, Tables 4 and 8, respectively.

¹⁸ The remaining providers serve high-speed lines over other technologies, including SDSL, traditional wireline, satellite, mobile wireless and powerline and other. See *FCC June 2005 High-Speed Internet Report*, Table 8.

6 percentage points in penetration since the second half of 2004 alone.¹⁹ As the report stated (p. 33), “the increase of broadband users is present across all age levels and income groups and for both urban and rural customers.” Moreover, the evidence shows that broadband services are readily available to rural consumers. As shown above, the FCC found that no Zip Code in Florida had fewer than 2 broadband providers with lines in service. Of Florida consumers using dial-up connections at the time of the *Florida PSC 2005 Survey*, only 5 percent cited inability to obtain the desired type of broadband as the reason for not upgrading their connection.²⁰

Cable modem service continues to be the major source of broadband in Florida. As of June 2005, cable accounted for about 52 percent and ADSL accounted for about 43 percent of the almost three million high-speed lines serving Florida.²¹

The data indicate that Florida consumers are substituting broadband connections for switched access lines. About 25 percent of survey respondents who disconnected a second telephone line cited broadband replacement as the reason. For the additional 20 percent who cited “no longer wanted or needed” as the reason for disconnecting a second line, it seems likely that new (e.g., broadband or mobile wireless) technologies played a role in making their second telephone line obsolete.²²

Nationally, JPMorgan estimates that by year-end 2005, almost 10 million dial-up and other non-primary phone lines had been replaced by broadband connections, representing substitution of about 37 percent of all non-primary lines; and JPMorgan expects that by 2010, broadband connections will have replaced about 12 million lines, or 45 percent of all non-primary lines.²³

Of course, as indicated by households who have shifted to cable’s triple play or cable telephony, or who have “cut the cord” in Florida, primary lines have also been dramatically affected by intermodal competition.

¹⁹ *Florida PSC 2005 Survey*, Figure 35.

²⁰ Note that total Internet penetration rate (including dial-up) has reached 62 percent in rural areas. *Id.*, Figures 28 and 38.

²¹ The remaining 5 percent is served by other types of technology. See *FCC June 2005 High-Speed Internet Report*, Table 9.

²² *Florida PSC 2005 Survey*, Figure 39.

²³ J. Chaplin, et al., *Telecom Services / Wireline, State of the Industry: Consumer*, JPMorgan, January 13, 2006, Figure 1 and Tables 75 and 78. Substitution rate calculated as lines replaced by broadband connections divided by the total of existing (remaining) non-primary lines and non-primary lines already replaced by wireless or broadband connections.

3. Messaging Services Enabled by Broadband (and Dial-Up) Lines and Wireless Devices Have Caused Significant Displacement of Wireline Usage

As people increasingly communicate via the Internet (through e-mail, instant messaging (“IM”), etc.), their use of wireline services is declining. And Internet communication has proliferated in the last several years, particularly since broadband services have become more widely available. One survey found that the average American Internet user spends three hours a day online, with much of that time devoted to work and more than half of it to communications.²⁴ A recent Pew survey found that: “...internet users have high regard for the internet as a tool of communication; 85% of both men and women say they consider the internet to be a good way to interact or communicate with others in their everyday lives.”²⁵ Pew also reports that about 90 percent of Internet users communicate via email and over 80 percent use the Internet to communicate with friends and family. Over 40 percent of Internet users send IMs and greetings/invites, over 30 percent use text messaging and over 20 percent participate in chats or discussions.²⁶

The use of Internet communications is sizable and still growing. For example, one source estimates that there are about nine billion e-mails per day in the United States alone.²⁷ Other sources report that: 80 million people use IM in the United States; about seven billion IMs are sent each day worldwide;²⁸ and worldwide IMs will grow over four-fold from 2004 to 2008, while IM users will increase from 320 million to 592 million over the same period.²⁹

While it is difficult to determine exactly how much voice traffic has been displaced by these Internet communications, it is clear that they substitute for a substantial number of wireline phone calls. Consumers who would once pick up the phone to communicate now often find it more convenient and less expensive to communicate via the Internet. J.D. Power found that “among high-speed Internet users, instant messaging displaced 20 percent of local calls and email displaced 24 percent of such calls. Among dial-up Internet users, instant messaging displaced 18% of local calls, and email displaced 23% of local calls.”³⁰ According to a recent Frost & Sullivan report:

²⁴ San Jose Mercury News, *Survey Details U.S. Internet Use*, December 30, 2004.

²⁵ Pew Internet & American Life Project, *How Women and Men Use the Internet*, December 28, 2005, p. 17.

²⁶ *Id.*

²⁷ Legal Tech Newsletter, *E-Mail and Records Management in the Legal Environment*, November 14, 2003, cited in UNE Fact Report 2004, Oct. 2004, p. I-6.

²⁸ WEBPRONEWS, *AOL Announces That Instant Messaging Is More Popular Than Ever*, August 2004, available at <http://www.webproneews.com/news/ebusinessnews/wpn-45-20040824AOLAnnouncesThatInstantMessagingisMorePopularthanEver.html>.

²⁹ See F. Esker, *Employers finding business applications for instant messaging*, New Orleans City Business, May 29, 2006.

³⁰ See *Florida 2004 Competition Report*, p. 10. (citing J.D. Power & Associates, *2003 Residential Internet Service Provider Study*, August 2003).

...it is worth noting that some indirect substitution of switched voice traffic is also occurring from data services delivered over both wireless and IP platforms. Email has been the dominant IP application, which has had an adverse impact on...voice calling. Instant Messaging (IM) is another application that has gained in popularity as a result of free versions available from mass providers such as Yahoo, Microsoft and AOL. Text messaging or SMS has been the application on the wireless side, which has impacted both wireline as well as wireless voice calling, and hence had some substitution impact on switched wireline (and wireless) traffic.³¹

E-mails and IMs are not limited to wireline broadband networks. Apart from the fact that these types of communications can be (and are) made using dial-up connections over a common wireline, an increasing number of wireless devices enable these forms of communication. BlackBerries, “smartphones,” text messaging on mobile phones, and the newly arriving “3G” (and “4G”) wireless services are blurring the boundaries between mobile voice and data services. Recent data show that about 65 million U.S. mobile subscribers, or about 35 percent, have used text messaging and about 12 million, or 6 percent, have used mobile IM.³²

B. Cable Telephony

1. Recent Developments Have Stimulated Entry and Expansion by Cable Companies and Have Brought Advanced Two-Way Cable Services to the Vast Majority of Households

Cable providers have made substantial investments to upgrade their infrastructure to provide two-way digital services. Recent National Cable & Telecommunications Association (“NCTA”) reports reveal the substantial size and the dramatic competitive effects of these investments in network upgrades:

In the 10 years since Congress passed the 1996 Telecommunications Act, cable’s \$100 billion investment has delivered a two-way interactive fiber optic network that provides the backbone for an increasingly vast array of services...[including] expanded channel lineups ... high-speed Internet services and wireline and wireless phone services being offered in consumer-friendly bundles.³³

At the end of 2005, cable modem service was available to 103 million homes.... an increase of close to 200 percent from just six years ago.... By the end of 2006,

³¹ Frost & Sullivan, *Trends in Wireline Substitution – North American Markets*, 2005, p. 1-6.

³² ZDNet Research, *Top activities among US wireless subscribers: text messages, photo messages, browsing news, buying ringtones*, May 11, 2006, available at <http://blogs.zdnet.com/ITFacts/index.php?cat=19>.

³³ National Cable & Telecommunications Association, *2006 Industry Overview*, March 27, 2006, p. 9.

Morgan Stanley expects cable modem service will be available in ... 96 percent of the total homes passed by cable.³⁴

Business and residential telephone services delivered over cable's digital infrastructure are another bright spot for cable. With the upgrades made over the past decade, cable companies have the ability to offer digital quality telephone service over the same broadband pipe that carries video and high-speed data into homes and businesses. Cable operators have launched the formerly monopolistic telephone industry into a competitive digital age.³⁵

As the NCTA accurately observed, cable network upgrades are significant because they allow cable companies to "deliver an extensive array of advanced services through a single connection to the home... over a two-way network... [including] high-speed Internet access, High-Definition Television (HDTV), digital cable, Video-on-Demand (VOD) and digital voice service."³⁶

Besides spending billions to upgrade to two-way digital networks, cable companies have embraced a number of technological developments to enter and expand into two-way communications, including the deployment of softswitch technology, which allows them to offer packet-switched telephony or VoIP.³⁷ Due to these technological developments, cable telephony costs have fallen dramatically—first with reductions in the costs to cable companies of circuit-switched telephony and, more recently, with the introduction of less costly IP-based technologies. These cost reductions have greatly facilitated cable entry and expansion in voice telephony. A December 2005 In-Stat report noted that

the provisioning of both VoIP and circuit-switched cable telephony gets cheaper every year...[A] current circuit-switched cable telephony customer costs a cable MSO, like Comcast or Cox, approximately \$375 to activate. This cost has dropped considerably over the past few years, from \$600 in 2000...

[T]he estimated cost for a premise powered VoIP-based cable telephony solution is approximately \$280 per subscriber.³⁸

And Bernstein Research recently observed that

the so-called "Halo Effect" [of VoIP] owes to the marginal economics of bundling. Cable operators can offer voice and data services over a pre-existing video infrastructure. As a result, the incremental cost of each service is extremely low. Cable operators can therefore offer consumers a very attractive bundled

³⁴ *Id.*, p. 11.

³⁵ *Id.*, p. 13.

³⁶ National Cable & Telecommunications Association, *2005 Mid-Year Industry Overview*, p. 8.

³⁷ See, e.g., A. Breznick, *Cox Accelerates Switch to IP Telephony Service*, Cable Digital News, April 1, 2005, available at <http://www.cabledatacomnews.com/apr05/apr05-3.html>.

³⁸ M. Paxton, *Cable Telephony Service: VoIP Drives Subscriber Growth*, In-Stat, December 2005, p. 28.

“triple play” price, while still earning compelling, and indeed accretive, margins and returns on investment.³⁹

In light of these economic factors, cable companies have used IP-based technology to add substantial and increasing numbers of voice subscribers. As noted by the *Florida PSC 2005 Competition Report*,

...cable companies are beginning to step up the pace of their roll out of VoIP.... Another characteristic of intermodal competition that bodes well for consumers in the near future is the promise of head-to-head competition.... [I]t is likely that cable giants such as Comcast, Cox Cable, and Time Warner will be in direct competition with large telecommunications companies such as SBC, Qwest, BellSouth, Verizon, and Sprint. (p. 63)

As shown below, this likelihood has been borne out by cable company VoIP deployments throughout Florida in the last year.

The large cable companies are not the only ones to capitalize on IP-based technology to capture customers from the traditional wireline companies. As one article noted:

VoIP service suppliers such as Net2Phone have made it possible for even the smallest of cable operators to get into the phone business, forcing the Bells to brace for an assault on more of their turf.

"It's one thing when the big cable companies can do it; Cablevision, Time Warner Cable, Comcast, they all have the resources," said Sarah Hofstetter, a cable phone veteran at Net2Phone, which supplies cable operators with VoIP to resell. "But when even the small guys can go head-to-head with the Bells, then (their) competitive edge of even the last mile is lost."⁴⁰

Bernstein Research observes that

the fact that cable is gaining an increasing share of voice subscribers should not be a surprise. VoIP, as part of an attractively priced triple-play bundle, gives the [cable companies] a compelling competitive advantage over standalone [VoIP] providers like Vonage. In addition, cable enjoys a service quality advantage over those same providers....⁴¹

³⁹ C. Moffet, *et al.*, *Cable and Satellite: ~40% of Cable VoIP Customers "New" to Broadband*, Bernstein Research, July 6, 2006, p. 2.

⁴⁰ B. Charney, *Cable raises its voice*, Cnet News.com, March 3, 2005, available at http://news.com.com/Cable+raises+its+voice/2100-7352_3-5597111.html.

⁴¹ J. Halpern, *et al.*, *Quarterly VoIP Monitor: VoIP Growth Still Accelerating*, Bernstein Research, April 18, 2006, p. 4.

the VoIP acceleration shows no sign of letting up. Comcast, [the largest cable provider in Florida] which has until now been a relative VoIP laggard, appears finally to have hit its stride.⁴²

2. Cable Telephony and Broadband Are Available Throughout Florida

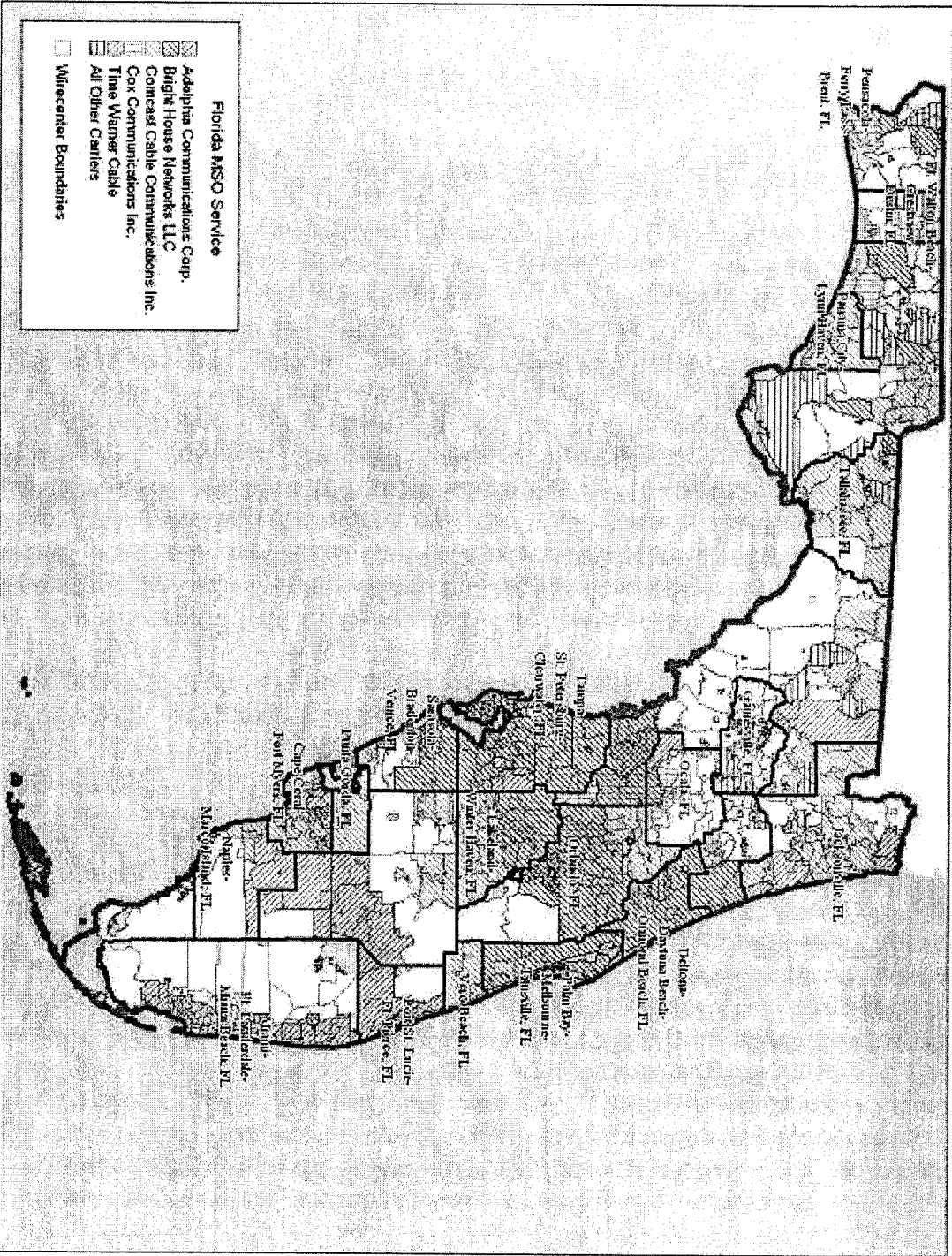
Cable companies present a potent competitive challenge to wireline companies in Florida today because: (1) as illustrated in Map 2, they cover almost the entire population of the State (95 percent of households are passed by cable systems);⁴³ (2) with a penetration rate of 78 percent of homes passed (above the national average of 69 percent), they have already garnered a large customer base to whom they can sell their voice and Internet services as well;⁴⁴ and (3) they have already deployed broadband services to 98 percent of the homes they pass and deployed telephony services to 63 percent of their homes passed (see Table 3, below), which implies that 93 percent and 60 percent of total homes in the State have access to these two services, respectively.

⁴² *Id.*, p. 2.

⁴³ Warren Communications News, *Cable Fact Book*, GIS Format and Census block group information. See Tables 1 and 2.

⁴⁴ See Warren Communications News, *Television & Cable Factbook 2006*, p. F-3, "U.S. Cable Penetration State by State."

Map 2
 Florida Cable Coverage



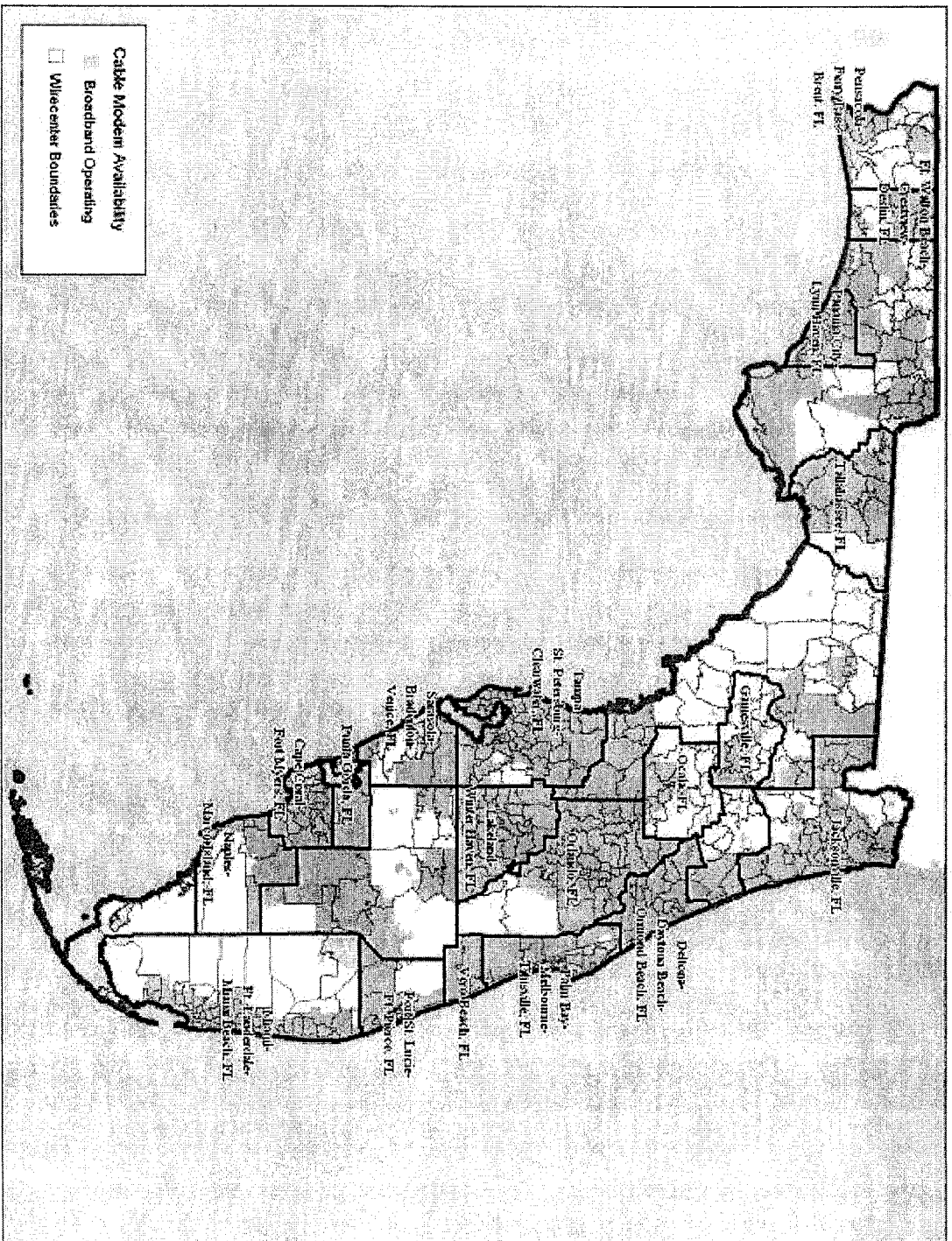
As shown in Table 3, cable modem service is available in virtually every part of the State and cable telephony is now widely available as well. The availability of cable modem services is particularly significant because, as previously discussed, once cable companies have upgraded their systems to provide broadband, as they have done for the vast majority of Florida homes passed, VoIP providers such as Vonage can serve these homes.⁴⁵

Table 3					
Advanced Cable Services Are Widely Available in Florida					
Company	Homes Passed			Percent of Homes Passed	
	Total	Broadband Ready	Telephony Ready	Broadband Ready	Telephony Ready
Comcast	3,392,721	3,304,487	1,203,565	97.4%	35.5%
Bright House	2,024,048	2,024,048	2,005,903	100.0%	99.1%
Knology	334,379	334,379	334,379	100.0%	100.0%
Cox	332,308	332,308	332,308	100.0%	100.0%
Atlantic Broadband	54,748	54,748	-	100.0%	0.0%
Advanced Cable	44,255	44,255	44,255	100.0%	100.0%
Mediacom	28,158	28,158	25,472	100.0%	90.5%
Other	40,909	27,335	-	66.8%	0.0%
Total	6,251,526	6,149,718	3,945,882	98.4%	63.1%
Note: As Knology is generally an overbuild operation, homes were assigned to Knology if the underlying provider did not offer data/voice service or if there was no underlying provider.					
Comcast includes the former Adelphia and Time Warner systems in Florida.					
Source: Warren Communications News, <i>Cable Fact Book</i> , GIS Format.					

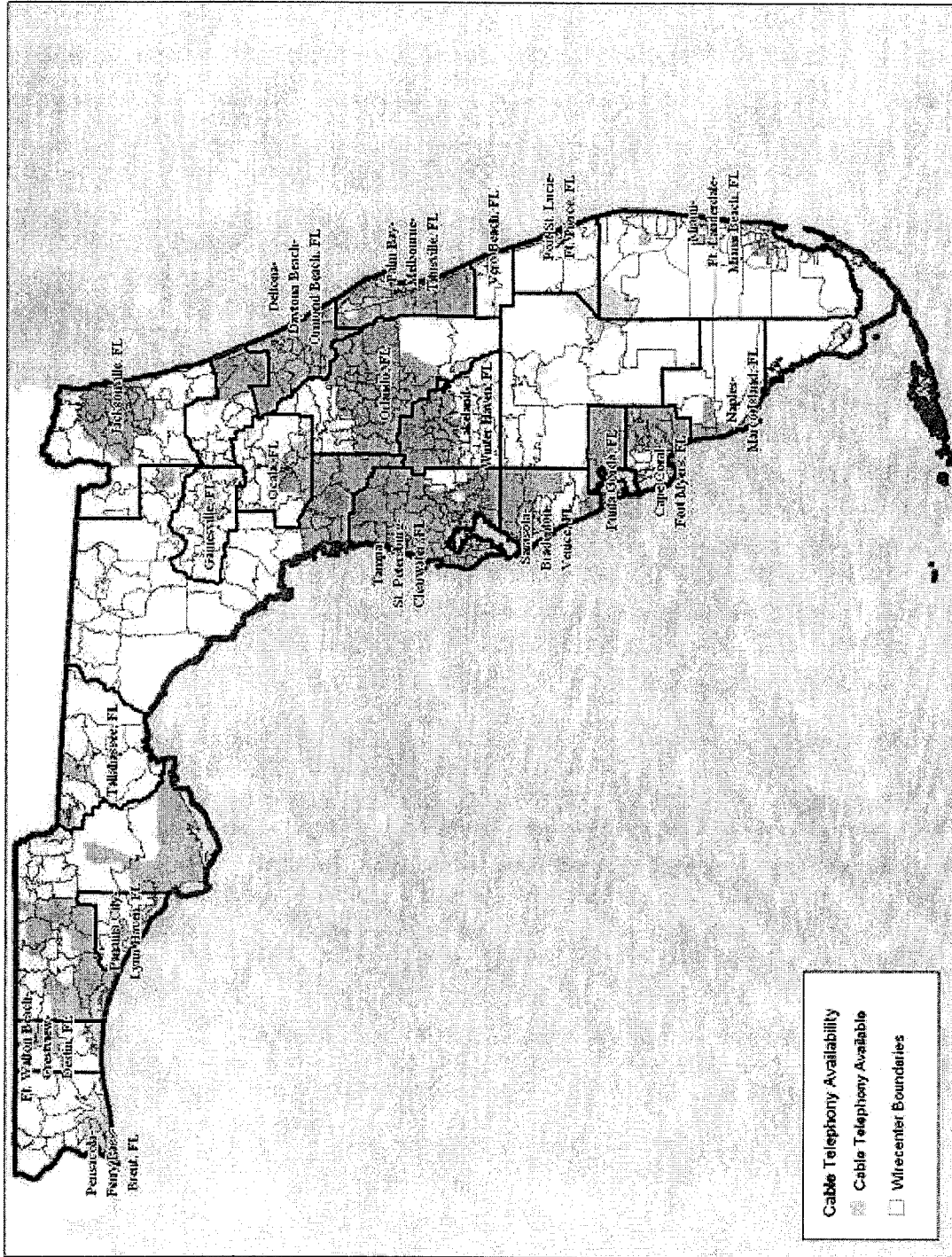
Maps 3 and 4 depict the areas in Florida covered by cable broadband and telephony, respectively, as detailed in Table 3.

⁴⁵ As noted in Section III, the data in Table 3 are only a snapshot of service availability in early 2006 and do not capture the ongoing deployments that are occurring.

Map 3
 Florida Broadband Coverage



Map 4
Florida Cable Telephony Coverage



Four of the top ten cable providers in the country serve Florida customers (as seen in Table 4 below):

- Comcast, the largest cable provider in Florida and in the country, serves various areas of the State, including large systems in Miami, West Palm Beach-Ft. Pierce, Jacksonville, Ft. Myers-Naples, Tampa/Sarasota and Orlando.⁴⁶ Comcast Digital Voice is currently available in Jacksonville, Naples and Sarasota. As discussed below, Comcast is likely to make its voice service available throughout most of its Florida footprint within a year or so. Moreover, as discussed below, Comcast is acquiring Adelphia's Florida systems and has plans to upgrade these systems as well.⁴⁷
- Bright House Networks serves Orlando (Central Florida cluster) and Tampa Bay (now the second largest cable cluster in the United States⁴⁸), along with several smaller systems in the Florida Panhandle.⁴⁹ Bright House has deployed its VoIP service, Digital Phone, to four of its five Florida systems: Tampa Bay, Central Florida, DeFuniak Springs and Cantonment.
- Cox Communications has deployed its Digital Telephone service in both of the systems it operates in the State—its Central Florida system in the Gainesville/Ocala area, and its Gulf Coast system, which serves the Pensacola and Ft. Walton Beach areas.
- Mediacom has recently made phone service available in portions of Pensacola/Fort Walton Beach, Tallahassee and Panama City.

Cable telephony is being deployed by the smaller, regional cable operators around the State as well. For example:

- Advanced Cable Communications, in conjunction with Vonage, offers its Advanced Cable Voice service in Coral Springs and Weston.⁵⁰

⁴⁶ See, e.g., Kagan Research, *Broadband Cable Financial Databook, 2005*, July 2005, pp. 39-40, "Major Cable TV Systems/Clusters (100,000+ Subscribers as of December 2004)" for system list. Comcast data are pro forma for the Adelphia-Time Warner transaction.

⁴⁷ See, e.g., Federal Communications Commission Press Release, *FCC Approves Adelphia/Time Warner/Comcast License Transfer*, July 13, 2006. ("[T]he Commission determined that subscribers would benefit from the resolution of the Adelphia bankruptcy proceeding in the form of new investment and upgrades to the network. Additionally, the transactions would accelerate deployment of VoIP and other advanced video services, such as local VOD programming, to subscribers.")

⁴⁸ Bright House Networks, Central Florida, *Company Overview*, available at http://tampabay.mybriighthouse.com/about_us/overview/default.aspx.

⁴⁹ Bright House Networks, *Company Overview*, available at http://www.mybriighthouse.com/about_us/company_overview.aspx.

⁵⁰ See *Advanced Cable Communications*, available at <http://advancedcable.net/>.

- Atlantic Broadband, which serves customers in Miami Beach, began deploying VoIP service to its Pennsylvania systems in early 2006, and made the voice service available in Miami Beach as of the first week of July 2006.⁵¹
- American Cable Services, an independent cable operator located in Ocala, Fla., recently announced it is deploying the digital telephone component of a new “triple play” offer, which also includes cable TV and high speed Internet. The offering is first being deployed in Little Harbor, a coastal resort community of 2,300 residences in Ruskin, Fl. American Cable has contracts to provide the bundled service to approximately 150,000 multi-family residence units in Florida over the next several years, many of which will have ‘mandatory phone’ under their Home Owners Association covenants. The offering becomes an amenity that is paid for as part of the resident’s monthly dues.⁵²
- Knology launched its voice service in July 2004 and is currently offering service to 60,000 homes in Panama City and over 60 percent of its 272,000 marketable homes in Pinellas County.⁵³

Table 4 shows the status of telephony deployments by the top cable providers in Florida.

⁵¹ See D. Yao, *Atlantic Broadband rolls out phone service, starting in Pa.*, Associated Press Newswires, January 19, 2006 and call to customer service placed July 6, 2006.

⁵² See VoX Communications Corp Press Release, *American Cable Strikes a ‘Triple Play’ in Florida Using VoX’s Wholesale Voice over IP Services*, April 20, 2006.

⁵³ See Knology Press Release, *Freedom of Choice: Knology Launches Phone Service in Pinellas County FL*, July 28, 2004, Knology, Inc., SEC, Form 10-Q, March 31, 2006, pp. 11 and 16 and Knology, Inc., SEC, Form 10-K, December 31, 2005, p. 8.

Table 4
Cable Telephony Deployments of Large MSOs in Florida

Provider	Cluster/System	Basic Customers	Digital Phone Available	Launch Date
Comcast	Ft. Myers-Naples	About 260,000	✓	August 2005
	Jacksonville	Over 350,000	✓	October 2005
	Tampa/Sarasota	About 200,000	✓	January 2006
	Miami	Over 700,000	No	
	West Palm Beach-Ft. Pierce	Almost 400,000	No	
	Orlando	Over 115,000	No	
Bright House	Tampa Bay (serves a seven county area)	Over 1 million	✓	June 2004
	Central Florida (serves a nine county area including	Over 800,000	✓	October 2004
	Cantonment (Pensacola/Fort Walton Beach area)	Over 6,000	✓	June 2006
	DeFuniak Springs (Panama City DMA)	About 10,000	✓	June 2006
	South Florida (Wellington and Palm Beach County)	Not available	No	
Knology ¹	Panama City Beach	About 10,000	✓	1997
	Pinellas County ²	About 60,000	✓	July 2004
Cox Communications	Gainesville/Ocala (Marion and Alachua Counties)	About 100,000	✓	September 2005
	Gulf Coast (Pensacola/Fort Walton Beach area)	About 150,000	✓	Third quarter 2005
Atlantic Broadband	Miami Beach	About 51,000	✓	July 2006
Advanced Cable	Coral Springs/Weston	About 50,000	✓	December 2003
Mediacom	Cape San Blas (Panama City and Tallahassee DMAs)	About 4,500	✓	Second quarter 2006
	Gulf Breeze (Pensacola/Fort Walton Beach area)	About 29,000	✓	Second quarter 2006
	Havana (Tallahassee DMA)	About 1,300	✓	Second quarter 2006
	Wewahitchka (Panama City DMA and the Pensacola/Fort Walton Beach area)	About 10,000	✓	Second quarter 2006
	Port Saint Joe (Panama City DMA)	About 1,600	✓	Second quarter 2006
	Baker (Pensacola/Fort Walton Beach area)	Over 500	No	

¹ Overbuild operations.

² By March 2006, voice service was available to about 60 percent of marketable homes in this system.

See Knology Inc., SEC, Form 20-Q, March 31, 2006, p. 16.

Note:

Comcast systems are pro forma for Time Warner - Adelphia transaction.

Comcast systems include those with over 100,000 subscribers. Comcast's remaining systems in total have about 200,000 subscribers. See A. Harris, et al., *Comcast and Time Warner Acquire Adelphia, At Last*, June 2005, p. 3.

Source:

Company websites; Calls placed to customer service between June 30 and July 6, 2006; Kagan Research, *Broadband Cable Financial Databook, 2005*, July 2005, pp. 39-40; Warren Communications News, Telecom & Media Intelligence, *Television & Cable Factbook: Online*; Media Business Corp., *Databridge*, accessed between June 30 and July 6, 2006; Knology Press Release, *Freedom of Choice: Knology Launches Phone Service in Pinellas County FL*, July 28, 2004; L. Hau, *Weighing the costs of Internet calling*, St. Petersburg Times, January 19, 2004; C. Swirko, *Digital phone service offered in Cox bundle*, Gainesville Sun, September 13, 2005; Business Wire, *Cox Digital Telephone Goes Live in Las Vegas; Cox Digital Telephone Now Available to Approximately 75 Percent of Cox's Footprint*, November 28, 2005; L. Mayk, *In Phone War, You're Worth a Bundle*; Comcast now offers phone service; Verizon offers cable. *Why the turf battles?*, Sarasota Herald-Tribune, January 27, 2006; *Florida PSC 2005 Competition Report*, p. 41; J. Kollin, *People Who Use Web-Based Phone Services May Not Be Able to Call 911*, South Florida Sun-Sentinel, January 19, 2004.

3. Florida Cable Providers are Experiencing Great Success with Their Telephony Services

Florida cable providers have experienced great success in attracting voice customers. For example, Bright House, which deployed cable telephony in June 2004 in its Tampa Bay and Central Florida systems, has reached over 225,000 Digital Phone subscribers in less than two years,⁵⁴ a penetration rate of over 11 percent of homes passed.⁵⁵ The company is gaining 8,000 subscribers per month in the Tampa Bay area.⁵⁶ In response to the success of Digital Phone, Bright House recently announced a new calling plan, Florida Unlimited, that provides customers with anytime calling throughout Florida for as low as \$28.95 per month.⁵⁷

Published national data show that Florida's cable companies have been making dramatic inroads into the telephony business in those areas where they have made the service available. For example:

- Comcast CEO Brian Roberts stated in a recent interview:

In the first quarter [of 2006], we signed up more Comcast Digital Voice customers, 211,000, than in all of 2005. Clearly, we are moving into an acceleration phase. The technical hurdles are behind us. Our platform allows us to have the most sophisticated voice network of anybody that's launched. We have a common platform across the entire country, which will pay dividends as we innovate off that platform, to provide more services than just telephony. We said we hope to sell a million phone subscriptions this year. And again, we already sold 211,000 in the first quarter and we're not fully deployed. We have yet to begin aggressively marketing bundling in all markets.⁵⁸

Comcast expects to achieve 8 million telephony subscribers, a 20 percent penetration rate of homes, by 2009.⁵⁹ Roberts points to Cox, another large Florida provider, as a barometer of Comcast's future penetration rates: "As I look to Cox ... which has been in the Internet telephony business for a lot longer than Comcast...they have some markets that have reached 50%."⁶⁰

⁵⁴ See Bright House Networks Press Release, *More than 225,000 Florida Families Switch to Bright House Networks Digital Phone: Now Announcing a Florida Unlimited Calling Plan*, May 2, 2006.

⁵⁵ Homes passed from Table 3 above. 11 percent is an underestimate, as the homes passed include those of Bright House's smaller Panhandle systems.

⁵⁶ See R. Mullins, *Phone Users Calling on Bright House*, Tampa Tribune, May 3, 2006.

⁵⁷ Bright House Networks Press Release, *More than 225,000 Florida Families Switch to Bright House Networks Digital Phone: Now Announcing a Florida Unlimited Calling Plan*, May 2, 2006.

⁵⁸ See E. Savitz, *At Last, a Bright Cable Picture*, Barron's, May 15, 2006.

⁵⁹ See, e.g., Comcast, *Merrill Lynch, U.S. Media Day*, June 8, 2006, available at <http://library.corporate-ir.net/library/11/118/118591/items/201453/MerrillJune2006.pdf>.

⁶⁰ See E. Savitz, *At Last, a Bright Cable Picture*, Barron's, May 15, 2006.

- In the first quarter of 2006, Cox reported “‘its best first quarter ever’ in terms of subscriber growth, bolstered by growing takeup of the ‘triple play’ bundling of services.” Cox ended the quarter with 1.8 million telephone subscribers.⁶¹ More recently, Cox reported telephone penetration of 33 percent of total cable customers and 24 percent of homes passed.⁶²
- Mediacom ended the first quarter of 2006 with 46,000 voice subscribers, virtually all attained in the preceding two quarters. This represents penetration of VoIP-capable homes of 2.9 percent in only six months.⁶³
- Smaller, more regional providers with a Florida presence are achieving similar growth. For instance Knology ended the first quarter of 2006 with almost 157,000 voice subscribers, representing penetration of 16 percent of homes passed.⁶⁴

4. Competition From Advanced (Telephone and Broadband) Cable Services Will Continue to Increase

The availability of cable telephony in Florida will undoubtedly increase over the next several years. As shown in Table 4 above, Florida cable providers are continuing to deploy voice services. Comcast plans to make Digital Voice available to 30 million homes, or upwards of 80 percent of its customers nationally by the end of 2006⁶⁵ and analysts predict that all Comcast homes passed will have VoIP availability by the end of 2008.⁶⁶ Moreover, as noted, the recent transaction among Comcast, Time Warner Cable and Adelphia brings Comcast approximately 600,000 Adelphia subscribers in Florida, mostly in West Palm Beach and Miami as well as Time Warner’s Florida systems, principally in Cape Coral and St. Augustine.⁶⁷ Based on the size of its Florida systems, it seems likely that Comcast will continue expanding its VoIP offerings in the State throughout the next year or so. When Comcast makes Digital Voice available throughout its Florida systems, including its new acquisitions, 98 percent of homes passed by cable in the State will have cable company-provided voice service available.

⁶¹ See Reuters, *Cox says TV, Web, phone bundle helps keep subscribers*, June 6, 2006, available at <http://today.reuters.com/business/newsArticle.aspx?type=media&storyID=nN06415357>.

⁶² See Cox Communications Press Release, *Cox Digital Telephone to be Available in all Cox Markets by End of Year*, July 13, 2006.

⁶³ See Pike & Fischer, Broadband Advisory Services, *VoIP Deployment & Strategies Update: Cable Operators*, July 2006, p. 9.

⁶⁴ About 6,000 of Knology’s lines are served via leased facilities. Knology has reached 21 percent penetration of marketable homes. See Knology Inc. SEC, Form 10-Q, March 31, 2006, p. 12.

⁶⁵ E. Savitz, *At Last, a Bright Cable Picture*, Barron’s, May 15, 2006.

⁶⁶ Bernstein shows Comcast having 50 million VoIP homes by year-end 2008. Comcast currently has about 42 million total homes. The increase may be due to the inclusion of Adelphia homes. See J. Halpern, et al., Bernstein Research, *Quarterly VoIP Monitor: VoIP Growth Still Accelerating*, April 18, 2006, Exhibit 12 and Comcast Corp, SEC, Form 10-K, December 31, 2005, p. 3.

⁶⁷ See A. Harris and G. Ireland, *Comcast and Time Warner Acquire Adelphia, at Last*, IDC, June 2005, pp. 2-3 and Time Warner Cable Press Release, *Time Warner and Comcast to Acquire Assets of Adelphia*, April 21, 2005.

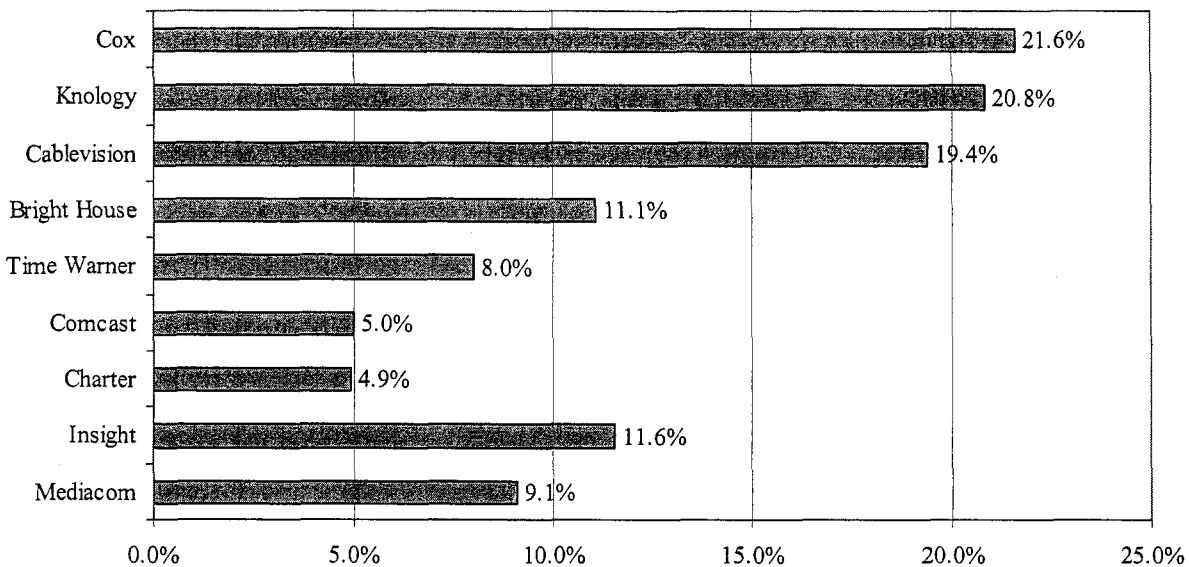
Although we were not able to find state-specific forecasts of cable telephony penetration, the available data imply that penetration will increase in Florida. First, as noted above, FCC data show strong growth of coaxial cable telephone lines.⁶⁸ Second, cable companies have achieved substantial penetration gains over time in those areas where they have made telephone services available. For example, by the first quarter of 2006, Cox Communications, one of the first cable providers to offer phone service, had reached a penetration rate of 22 percent of marketable homes and Cablevision, another relatively early entrant into cable telephony, had reached a penetration rate of 19 percent. Similarly, Time Warner reported penetration rates of 23 percent in its Portland, ME system and 18 percent in Albany, NY—two systems that it had upgraded relatively early—well above its system-wide average of eight percent.⁶⁹ Mediacom, which first offered phone service late in the second quarter of 2005, has already reached a penetration rate of 9 percent of marketable homes.⁷⁰ Figure 7 below summarizes the penetration rates of telephony services for several large cable providers as of the first quarter of 2006. The data are presented in approximate order of telephony deployment, with the earliest deployments at the top and moving down to the most recent. As seen in the chart, cable providers that have offered voice services for a longer duration have achieved significant penetration rates, although even some relatively new entrants have already achieved substantial penetration rates.

⁶⁸ *FCC June 2005 Local Competition Report*, Table 5, “Competitive Local Exchange Carrier Lines by Type of Technology.”

⁶⁹ See Time Warner Cable, *Investor Day*, May 10, 2006.

⁷⁰ See *VoIP Deployment & Strategies Update: Cable Operators*, Broadband Advisory Services, Pike & Fischer, July 2006, pp. 3 and 9.

Figure 7
Cable Telephony Penetration of Marketable Homes
First Quarter 2006

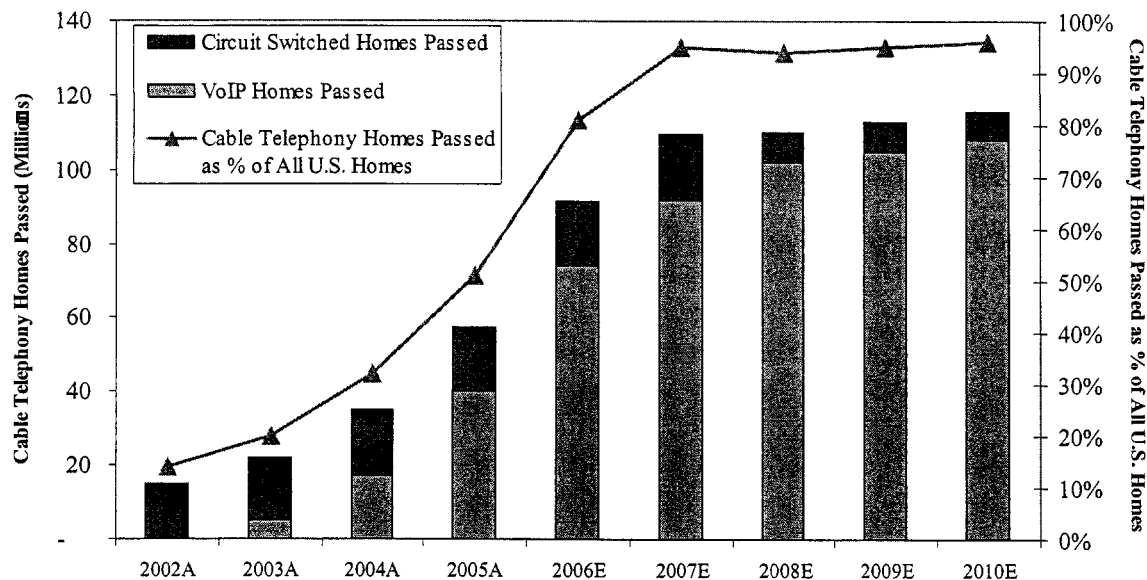


Source: *VoIP Deployment & Strategies Update: Cable Operators*, Broadband Advisory Services, Pike & Fischer, July 2006, p. 3; Bright House Networks Press Release, *More than 225,000 Florida Families Switch to Bright House Networks Digital Phone: Now Announcing a Florida Unlimited Calling Plan*, May 2, 2006 and Table 1; Knology Inc, SEC, Form 10-Q, March 31, 2006, p. 12.

Third, cable companies have plans to continue expanding their voice offerings. Bernstein Research estimates that by year-end 2006, 81 percent of all U.S. homes will have cable company-provided telephony available and that this will increase to 95 percent by year-end 2007.⁷¹ Figure 8 below illustrates the dramatic increase in the availability of cable telephony to date and in the future.

⁷¹ J. Halpern, et al., *Quarterly VoIP Monitor: VoIP Growth Still Accelerating*, Bernstein Research, April 18, 2006, Exhibit 12.

Figure 8
Cable Telephony Homes Passed 2002 - 2010



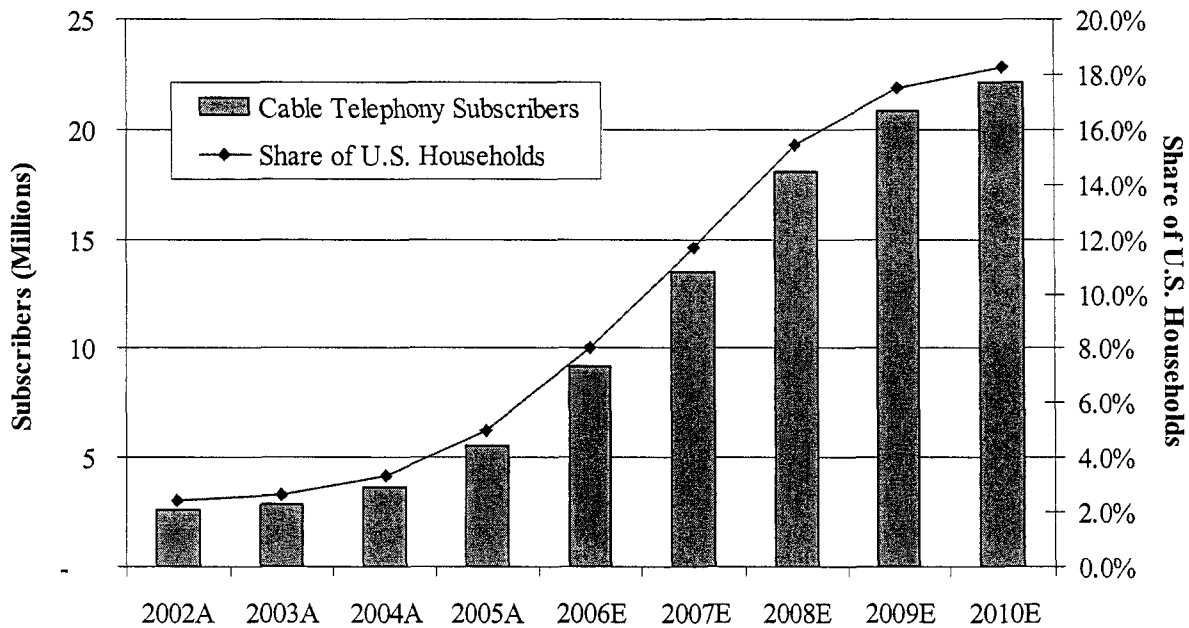
Source: J. Halpern, et al., Bernstein Research, *Quarterly VoIP Monitor: VoIP Growth Still Accelerating*, April 18, 2006, Exhibit 12.

Fourth, market research reports forecast continued rapid growth in cable telephony subscribers. Pike & Fisher estimates that “with practically every major MSO now deploying IP telephony service, cable operators are now adding about 250,000 customers each month.”⁷² At a conference in March, Time Warner Cable CFO John Martin stated “[W]e have been adding phone customers just about as quickly as we possibly can.”⁷³ Bernstein Research estimates that cable telephony subscribers will grow from a little over 5.5 million customers (or 5 percent of U.S. households) at year-end 2005 to over 22 million cable telephony subscribers (or over 18 percent of U.S. households) by year-end 2010. These predicted growth trends are illustrated in Figure 9 below.

⁷² *VoIP Deployment & Strategies Update: Cable Operators*, Broadband Advisory Services, Pike & Fischer, April 2006, p. 3.

⁷³ See J. Halpern, et al., *Quarterly VoIP Monitor: VoIP Growth Still Accelerating*, Bernstein Research, April 18, 2006, p. 3.

Figure 9
Cable Telephony Subscribers
2002 - 2010



Source: J. Halpern, et al., Bernstein Research, *Quarterly VoIP Monitor: VoIP Growth Still Accelerating*, April 18, 2006, Exhibit 13.

5. Competition From Cable Providers Is Adversely Affecting Wireline Carriers

Analysts' reports also show that the gains by cable companies have come at the expense of traditional wireline companies. Bernstein characterizes each of the lines gained by cable providers in Figure 9 above as a line lost by a traditional carrier, stating "[N]ot surprisingly, VoIP's gain has come at the telcos' expense."⁷⁴ As shown in Figure 9, Bernstein estimates that wireline carriers will have lost over 9 million lines to cable telephony by the end of the year and over 22 million by 2010.

Losing a voice customer to cable is especially damaging in today's marketplace, in which competition takes place for the consumer, or the bundle, rather than for one type of service, because the loss of a voice customer likely entails the loss of a DSL (or dial-up customer) and a potential (or even existing) video customer.⁷⁵ For example, Bernstein Research recently found

⁷⁴ *Id.*, p. 7 and Exhibits 11 and 13.

⁷⁵ Additional reasons why losses to cable telephony are particularly painful to wireline carriers include (1) the wireline carrier receives no offsetting wholesale revenue as it would if it lost the customer to a UNE or resale-based CLEC, and (2) a large proportion of wireline costs are fixed with respect to the number of customers, so when a wireline customer switches to cable, the reduction in revenue is not offset by a reduction in costs.

that approximately 40 percent of cable VoIP subscribers are new cable modem subscribers.⁷⁶ Additionally, as discussed below, research shows that customers who cut the cord are more likely to obtain broadband service from the cable company than from the telephone company. Florida cable companies are offering competitive bundles to consumers today. A sampling of the cable companies' "triple play" bundles is depicted in Table 5.

Provider	Comcast	Cox	Cox	Bright House	Bright House
Plan	Cable, High Speed Internet and Digital Voice	Unlimited Connection, Preferred High Speed Internet and Digital Basic Cable	Connection 100, Preferred High Speed Internet and Digital Basic Cable	Unlimited Nationwide, Road Runner, Digital Cable	Unlimited Florida, Road Runner, Digital Cable
Price per month	\$ 99.00	\$ 111.19	\$ 106.19	\$ 143.35	\$ 132.35
Voice service features:					
Local Minutes Included	Unlimited	Unlimited	Unlimited	Unlimited	Unlimited within FL
Long Distance Minutes Included	Unlimited	Unlimited	100	Unlimited	Unlimited within FL
Number of features	14+	15	15	10	10
Internet service features:					
Number of features	4	8+	8+	3+	3+
Note: Comcast's Triple Play offer is currently on sale. Regularly, Digital Voice costs \$39.95, High-Speed Internet \$42.95 and Basic Cable \$47.99 (a total of \$130.89).					
Source: Provider websites.					

LEC customer losses have led to price competition in the provision of both Internet and telephony services, competition that is expected to continue (and expand into video services). For example, Bernstein Research observed that "the Bells appear to be responding to the VoIP threat with price cuts" on their calling plans as cable companies have begun to achieve significant market share in part due to their "aggressive pricing."⁷⁷ One recent article noted that "The battle for broadband subscribers heated up in 2005, as phone companies began offering lower-priced services to attract consumers who may be less tech-savvy."⁷⁸

⁷⁶ C. Moffet, et al., *Cable and Satellite: ~40% of Cable VoIP Customers "New" to Broadband*, Bernstein Research, July 6, 2006.

⁷⁷ J. Halpern, et. al., *Quarterly VoIP Monitor: The "Real" Price Gap for VoIP Driving Rapid Subscriber Growth*, Bernstein Research, July 22, 2005, pp. 3 and 5.

⁷⁸ M. Reardon, *BellSouth cuts DSL pricing*, Cnet News.com, January 9, 2006, available at http://news.com.com/BellSouth+cuts+DSL+pricing/2100-1034_3-6024736.html.

In the face of price competition and LEC entry into video, cable companies are continuing to expand their offerings, especially in the wireless services area, through strategic alliances and exploration of new technologies. For example, in late 2005, cable providers Time Warner Cable, Comcast, Cox and Advance/Newhouse (parent of Bright House Networks), in conjunction with Sprint Nextel, announced a joint venture enabling them to offer the “quadruple play” of video, voice, Internet and wireless services. The venture has the potential to serve approximately 75 million homes currently passed by the cable companies.⁷⁹ The companies have announced plans to launch service in seven metro areas over the next few months and plan a full nationwide launch in the beginning of 2007. The companies are planning to integrate all of Sprint's cellular phone, broadband data, mobile video and other capabilities into cable's traditional services to create a broad array of converged applications.⁸⁰ Cablevision, which did not enter the joint venture with Sprint Nextel, plans to make its digital home phone network compatible with any U.S. wireless network, allowing subscribers to transfer calls between the two.⁸¹

Cable providers are also investigating new technologies to deliver traditional services. For example, Cable Digital News reports that “CableLabs is exploring an industry-wide initiative tentatively titled ‘CableRoam’ to deliver data and voice services to customers over Wi-Fi, WiMAX, home Wi-Fi and other wireless broadband technologies.”⁸² And a recent article in *The Wall Street Journal*, entitled “Cable Takes On Web Video,” describes plans by Comcast and Time Warner “to expand offerings [to] route programs from PCs to TV,” to fend off competition from startups, entertainment companies and Internet sites that offer video on the Web.⁸³

These developments are significant for at least two reasons. First, they are compelling evidence that cable companies compete with the LECs *today*. Second, they exemplify how technological developments are stimulating further competition: as the LECs deploy more advanced—video, Internet and wireless—services and networks of their own, they will continue to spur the cable companies to compete even more vigorously. For example, in describing AT&T's efforts to market its DSL IP video offering, *The Wall Street Journal* pointed out that “cable companies aren't waiting for the parade. . . . [C]ompanies like Comcast and Time Warner are pushing to add a wide range of new features and content to their cable services, sometimes using the same Internet technology that AT&T is using.”⁸⁴

⁷⁹ See, e.g., Comcast Press Release, *Sprint Nextel, Comcast, Time Warner Cable, Cox Communications and Advance/Newhouse Communications to Form Landmark Cable and Wireless Joint Venture*, November 2, 2005.

⁸⁰ See A. Breznick, *Cable-Sprint Wireless Venture Targets Seven Pilot Markets*, Cable Digital News, May 1, 2006, available at <http://www.cabledatcomnews.com/may06/may06-1.html>.

⁸¹ See Reuters, *Cablevision Pursuing Wireless Service Plan*, June 20, 2006, available at http://news.com.com/Cablevision+pursuing+wireless+service+plan/2100-1037_3-6086089.html.

⁸² See A. Breznick, *Cable Weighs Wireless Broadband Push to Fight Telcos*, Cable Digital News, April 1, 2006, available at <http://www.cabledatcomnews.com/apr06/apr06-2.html>.

⁸³ See P. Grant, *Cable Takes On Web Video*, *The Wall Street Journal*, June 29, 2006, B1.

⁸⁴ D. Searcey and P. Grant, *Selling TV Like Tupperware*, *The Wall Street Journal*, June 29, 2006, B1.

C. Mobile Wireless

1. Overview

Major technological advances and cost reductions have enabled wireless carriers to improve service quality, diversify their service offerings, and make them competitive with wireline services. All wireless providers now typically offer free long-distance, large bundles (or “buckets”) of usage (particularly free night and weekend minutes), and large local calling areas, along with low per minute rates for additional usage, and a number of free vertical features—*e.g.*, call waiting and voice mail. New “family” plans are proving to be very popular.⁸⁵ Wireless carriers have also introduced “basic” or “regional” plans, which provide fewer anytime minutes, for as low as \$30 per month. And some providers now offer free “in-network” calling.⁸⁶ Taken together, inherent mobility, low per minute prices, “free minute” allowances, flat rated pricing, no long distance or roaming charges, and nationwide coverage have positioned wireless carriers to capture a significant portion of demand that was traditionally met by wireline service providers.⁸⁷

The FCC reports that the national wireless penetration rate has reached 62 percent of the overall population and more than 90 percent of the population between the ages of 20 and 49.⁸⁸ According to one analyst (cited by the Florida PSC), by 2004, 40 percent of total market minutes were wireless, a figure expected to pass 50 percent in 2005.⁸⁹ From 2000 to 2004, the monthly minutes of use (“MOUs”) per mobile subscriber increased from 255 to 584.⁹⁰ The FCC notes that “increasing MOUs are a result of the demand-stimulating effect of falling prices and the wider acceptance of and reliance upon wireless service,” and cites one analyst as attributing the growth in MOUs to “increasing adoption of the wireless handset as the primary means of voice communications.”⁹¹ In its Tenth CMRS Report, the FCC explains that trends in increased use of wireless over wireline

... appear to be due to the relatively low cost, widespread availability, and increased use of wireless services. As [] discussed in past [FCC] reports, a number of analysts have argued that wireless service is cheaper than wireline,

⁸⁵ See, *e.g.*, PR Newswire, *Family Wireless Plans Prove Popular with Two in Five U.S. Adult Cell Phone Users Participating, According to New Harris Interactive Survey; Only three percent of those in a family plan have a family member who opted out of their plan*, March 30, 2006.

⁸⁶ One carrier recently introduced a feature allowing its customers spending \$60 per month or more to make free calls to 10 phone numbers of their choice, anywhere in the U.S., wireline or wireless, 24 hours a day. See, *e.g.*, K. Fitchard, *Alltel unveils mother of all free calling plans*, Online Exclusive – Telephony, April 21, 2006.

⁸⁷ Tables 7, 8 and 9 below contain examples of the various types of plans that are available to Florida customers.

⁸⁸ Federal Communications Commission, *Annual Report and analysis of Competitive Market Conditions with Respect to Commercial Mobile Services, Tenth Report* (“Tenth CMRS Report”), FCC 05-173, released September 30, 2005, ¶ 195.

⁸⁹ See *Florida PSC 2005 Competition Report*, p. 38 (citing Horan et al., “Transfer of Coverage: We Favor Wireless and Cable Over Wireline,” CIBC World Markets, May 3, 2005, p. 21).

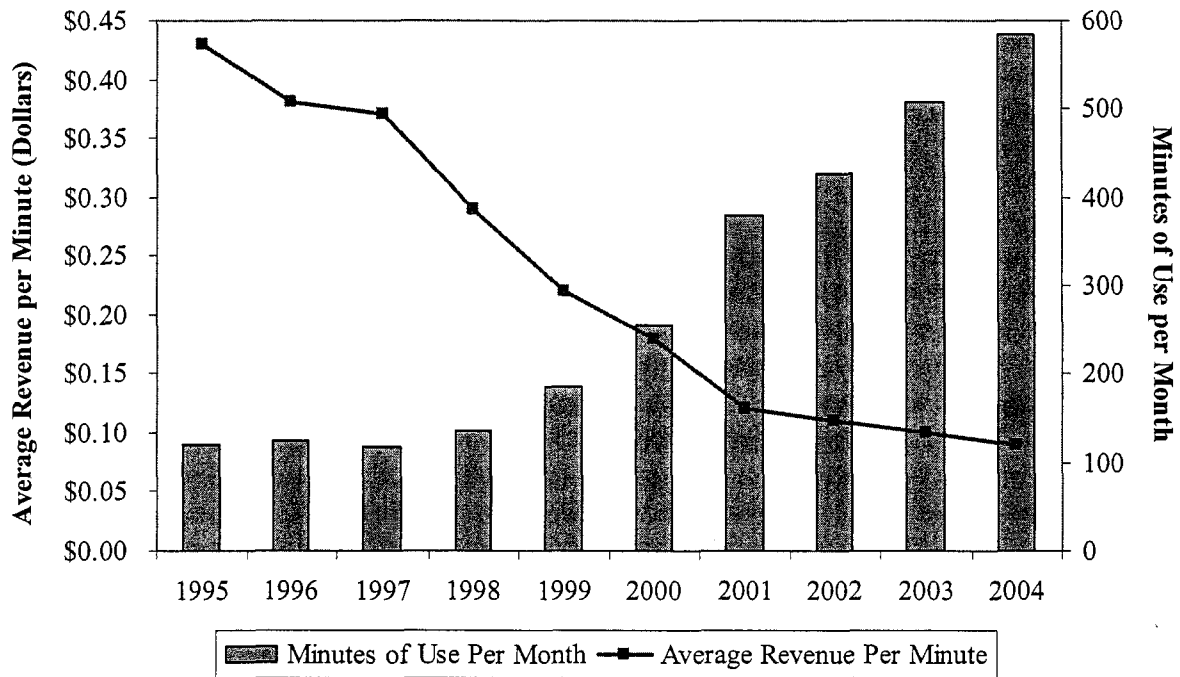
⁹⁰ *Tenth CMRS Report*, Table 8.

⁹¹ *Id.*, ¶ 169.

particularly if one is making a long-distance call or when traveling. As one analyst put it more recently, “For many customers, wireless is cheaper with greater utility than wireline – in contrast to perceptions, wireless prices have indeed been falling, making it more competitive with wireline.”⁹²

Figure 10 below illustrates the growth in MOUs per wireless subscriber that has resulted from and contributed to the declining average charges for wireless usage.⁹³

Figure 10
Wireless Minutes of Use per Month and Average Revenue per Minute



Source: FCC, Tenth Annual CMRS Competition Report, Table 8.

Wireless services have also become more attractive as providers have modified their networks and manufacturers have improved customer equipment to incorporate features such as enhanced data capability, text messaging, color screens, PDAs, greater availability of push-to-talk capability, voice activated speed dialing, speaker phones and cameras. The competitive advantages that these features and other attributes confer on wireless services are demonstrated by the differences in growth between wireless and wireline services – e.g., from December 31, 2000 to December 31, 2004 mobile subscribership in Florida grew by an average of about 21

⁹² *Id.*, ¶ 198 (quoting Frank Governali, *et al.*, *Global Telecom Weekly*, Goldman Sachs, Equity Research, Aug. 9, 2004, at 2).

⁹³ Note that the Bureau of Labor Statistics wireless services price index decreased significantly from the late 1990s through 2001 and continued to fall, although at a slower rate, through the end of 2005; the price index for wireline services, however, stayed relatively constant over this period as declines in toll service prices offset local price increases. Thus, wireless prices have declined by an even greater amount relative to prices for wireline services. Price indexes are from <http://www.bls.gov/>, Series ID CUUR0000SEED03 and CUUR0000SEED.

percent per year, while wireline subscribership in the State fell by an average of about 1.5 percent per year.⁹⁴

As noted in the *Florida PSC 2005 Competition Report*

... Whether an intermodal competitor's service is seen as a substitute or a complement to traditional wireline service depends on how consumers view ... factors such as quality..., availability, price, and convenience. What is undeniable is that the number of wireline access lines in service continues to decline, while the number of wireless and VoIP subscribers is steadily increasing. (p. 62)

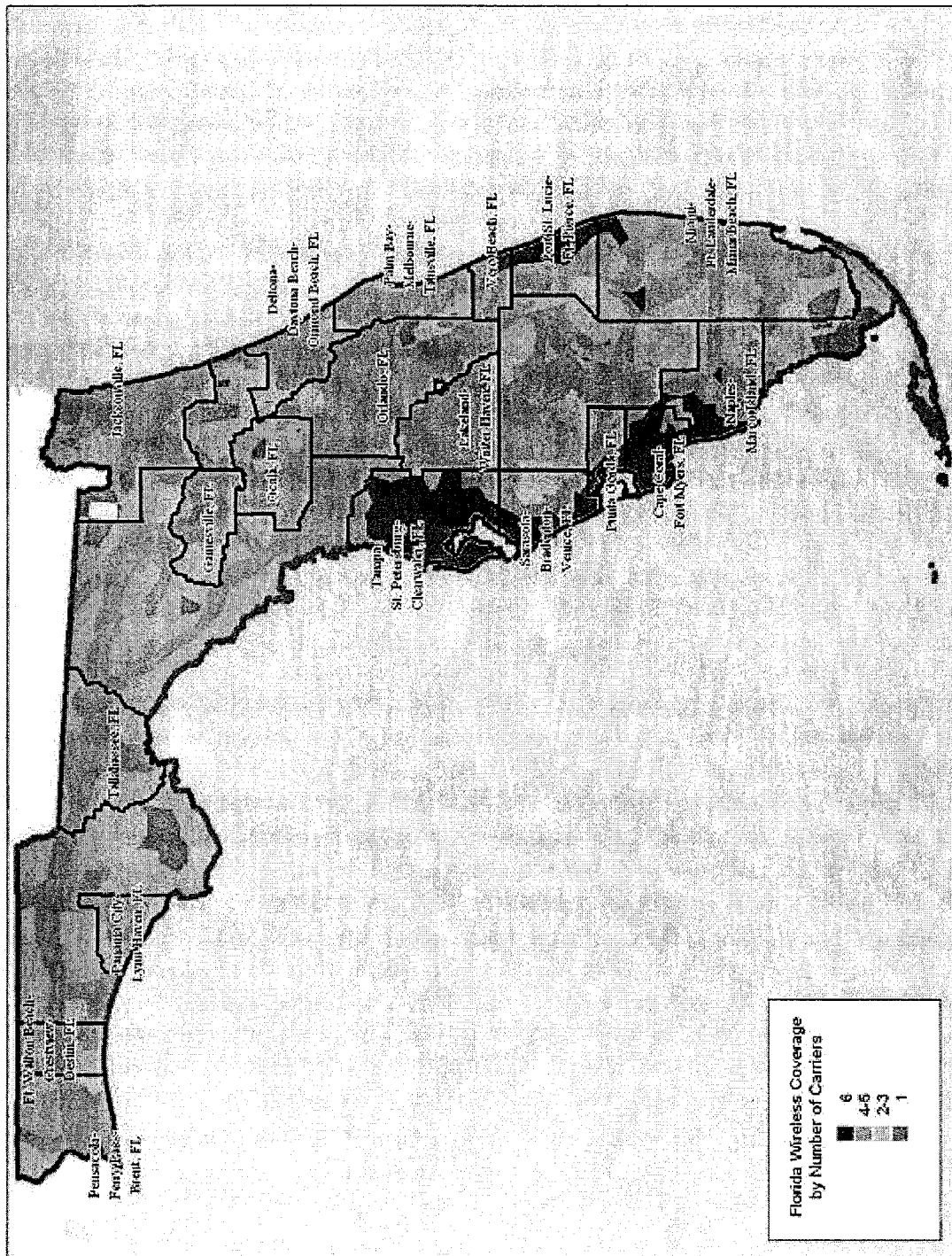
As shown below, this pattern does, in fact, reflect the displacement of wireline services by wireless services.

2. Wireless Service is Available Throughout Florida

Wireless services are available throughout Florida. About 99 percent of households in the State have access to at least two wireless service providers, 97 percent have access to three or more such providers and only .1 percent of households in the State do not currently have access to wireless service (as shown in Table 6 below). Map 5 displays the distribution of wireless availability throughout the State.

⁹⁴ See *FCC December 2004 Local Competition Report*, Tables 8, 9 and 13.

Map 5
Florida Wireless Coverage



The areas served by wireless carriers are not restricted to high density urban areas. For example, Table 6 shows that at least 96.6 percent of households in every MSA in the State have at least two wireless alternatives available to them; and over 97 percent of households in the rural (non-MSA) areas in Florida have access to 2 or more wireless providers. The ubiquity of wireless service in Florida is confirmed by the *Florida PSC 2005 Survey*, which found that 31 percent of urban respondents were considering switching to wireless only service, compared to 28 percent of rural respondents.⁹⁵ Clearly, wireless is a viable alternative for rural customers in Florida.

Table 6					
Wireless Services Are Widely Available in Florida					
MSA	Percent of Households				
	0 Carriers	1 or More Carriers	2 or More Carriers	3 or More Carriers	4 or More Carriers
Cape Coral-Fort Myers	0.1%	99.9%	99.9%	99.9%	99.9%
Deltona-Daytona Beach-Ormond Beach	0.1%	99.9%	99.9%	97.8%	92.5%
Fort Walton Beach-Crestview-Destin	0.0%	100.0%	100.0%	94.5%	38.9%
Gainesville	0.0%	100.0%	100.0%	99.5%	90.0%
Jacksonville	0.1%	99.9%	99.4%	98.3%	90.4%
Lakeland-Winter Haven	0.0%	100.0%	100.0%	99.9%	98.1%
Miami-Fort Lauderdale-Miami Beach	0.0%	100.0%	99.2%	95.9%	88.8%
Naples-Marco Island	0.0%	100.0%	99.9%	95.5%	92.2%
Ocala	0.1%	99.9%	98.6%	93.8%	83.0%
Orlando	0.0%	100.0%	99.6%	98.2%	95.0%
Palm Bay-Melbourne-Titusville	0.1%	99.9%	98.1%	90.3%	69.5%
Panama City-Lynn Haven	0.0%	100.0%	100.0%	98.5%	78.9%
Pensacola-Ferry Pass-Brent	3.3%	96.7%	96.6%	96.0%	81.8%
Port St. Lucie-Fort Pierce	0.0%	100.0%	100.0%	99.5%	95.5%
Punta Gorda	0.0%	100.0%	100.0%	99.7%	95.4%
Sarasota-Bradenton-Venice	0.1%	99.9%	99.9%	99.8%	96.1%
Tallahassee	0.2%	99.8%	99.8%	89.6%	74.1%
Tampa-St. Petersburg-Clearwater	0.0%	100.0%	100.0%	99.8%	99.7%
Vero Beach	0.1%	99.9%	99.9%	99.5%	99.0%
Non-MSA Area	0.2%	99.8%	97.6%	84.4%	57.9%
Total	0.1%	99.9%	99.4%	96.6%	89.2%

Source: Provider websites (service coverage maps) and Census block group information.

National data confirm that wireless carriers' footprints now cover extensive stretches of rural areas as well. The FCC recently found that rural areas were served by an average of 3.7 mobile carriers.⁹⁶ According to a 2002 survey of Rural Cellular Association ("RCA") members, there is: (1) an "average of 5.1 wireless competitors in survey participants' markets, having

⁹⁵ *Florida PSC 2005 Survey*, Figure 26.

⁹⁶ For this purpose, the FCC defined "rural" as counties with 100 persons or fewer per square mile. See *Tenth CMRS Report*, ¶ 94

increased steadily from 3.0 competitors in the 1998 *RCA Survey*;" (2) "robust and effective competition, increasing year-to-year, in the markets served by RCA members;" and (3) "evidence of increasing customer usage and declining per-minute pricing in rural areas, similar to trends that [have been] seen nationally."⁹⁷ Based on this and other evidence, the FCC concludes "that CMRS providers are competing effectively in rural areas."⁹⁸

Wireless providers in Florida are offering a wide variety of packages and services to consumers, including individual, "local," and "family" plans. Florida consumers consider wireless service to be competitively priced and convenient to use. In the *Florida PSC 2005 Survey*, about 70 percent of respondents considering the switch to wireless only service cited price and almost 50 percent cited convenience as reasons they were considering dropping their wireline phone.⁹⁹ A sampling of the wireless offerings available to Florida residents is contained in Tables 7, 8 and 9.

In addition to these plans, wireless providers have introduced a number of low-cost prepaid plans. The popularity of these plans has been growing rapidly and the plans promise to stimulate continued growth of mobile wireless. Although Florida specific data are not available, by the end of 2005, there were about 23 million prepaid wireless lines in the U.S (or 11 percent of total U.S. wireless lines), a figure that is expected to increase to over 50 million in 2010 (or 18 percent of total U.S. wireless lines). A recent article observes that prepaid subscribers generate lower monthly average revenue per user ("ARPU") – only about \$14 to \$37 depending on plan and provider, and the Yankee Group estimates average monthly ARPU of about \$21, showing that prepaid plans provide a low cost means of obtaining telephone service.¹⁰⁰

Wireless pricing plans are competitive to current wireline service charges in Florida. As a basis of comparison, the advertised price for bundled plans (which are preferred by the majority of Floridians) offered by BellSouth and Verizon range from about \$35 to about \$60. Including the Federal Subscriber Line Charge results in prices ranging from about \$41 to about \$66. For a la carte customers in Florida, we estimate that the average monthly expenditure is about \$33 for local service and about \$12 for toll, for a total monthly expenditure of almost \$45.¹⁰¹

⁹⁷ *Ninth CMRS Report*, ¶ 110.

⁹⁸ *Tenth CMRS Report*, ¶ 95.

⁹⁹ *Florida PSC 2005 Survey*, Figure 23.

¹⁰⁰ The article noted: "As the U.S. wireless market becomes increasingly saturated, many analysts expect that carriers will continue incremental growth by turning to prepaid customers that they might have scorned in the past. Alltel Corp. is getting back in the prepaid game; Cingular Wireless L.L.C. showed a huge increase in Tracfone prepaid subscribers in the fourth quarter of 2005, contributing heavily to the 1.8 million net additional customers that the carrier gained. T-Mobile USA Inc. scored 1.4 million net adds in the fourth quarter, about one-third of which were prepaid." See Yankee Group, *North America Mobile Market Forecast, 2Q06*, June 2006 and K. Hill, *Prepaid vs. family plan debate hinges on ARPU*, RCR Wireless News, April 3, 2006.

¹⁰¹ The *Florida PSC 2005 Survey* reports that most respondents prefer bundled packages and that a large majority (i.e., 72 percent of respondents) subscribe to additional services other than basic telecommunications services (p. 2). To estimate a la carte spending, we first average the monthly local rates for the three Florida cities for which the FCC reports data, Miami, Tampa and West Palm Beach. We then multiply this figure, \$21.35, by the ratio of

Table 7
Wireless "Local" Plans for Residential Customers in Florida

Provider	T-Mobile	Cingular	Sprint	Verizon	Alltel
Plan	Basic Plus	Nation 450 w/Rollover	Fair and Flexible	America's Choice	Greater Freedom
Price per month	\$ 29.99	\$ 39.99	\$ 29.99	\$ 39.99	\$ 29.99
Anytime minutes	300	450	0-200	450	300
Weekend minutes	Unlimited	5,000 combined nights and	Unlimited	Unlimited	None
Weeknight minutes	None		Unlimited	Unlimited	None
Access to 411			✓	✓	✓
Call forwarding		✓	✓	✓	✓
Call hold					
Call waiting	✓	✓	✓	✓	✓
Caller ID	✓	✓	✓	✓	✓
Conference calling	✓	✓	✓	✓	✓
Voicemail	✓	✓	✓	✓	✓
Price per additional minute	\$ 0.40	\$ 0.45	\$5 for each additional 50 minutes through 700, \$.10 per minute thereafter	\$ 0.45	\$ 0.45
Other	No nationwide long distance or roaming charges	Unlimited mobile to mobile calling - Nation		Unlimited in network calling	
Note: Not all information available for all plans. Source: Provider websites.					

the average monthly expenditure on local services as reported by TNS Telecoms (which would reflect inclusion of additional local services, such as call waiting), \$37.11, to the national average of \$24.31 reported by the FCC. This results in a monthly expenditure on local services of \$32.59. Multiplying this by the ratio of long distance to local spending reported by TNS Telecoms results in monthly expenditures on long distance of \$11.75. Federal Communications Commission, Industry Analysis & Technology Division, Wireline Competition Bureau, *Reference Book of Rates, Price Indices, and Household Expenditures for Telephone Service, 2005*, Tables 1.1 and 1.3 and TNS Telecoms Press Release, *Wired Line Phone Considered Most Important Household Communication Product*, June 22, 2006, available at <http://www.tnstelecoms.com/press-6-22-06.html>. BellSouth and Verizon bundled prices from respective websites.

Table 8
Wireless "Individual" Plans for Residential Customers in Florida

Provider	T-Mobile	Cingular	Sprint	Verizon	Alltel
Plan	Get More 1000	Nation 900 w/Rollover	Fair and Flexible	America's Choice	National Freedom
Price per month	\$ 39.99	\$ 59.99	\$ 59.99	\$ 59.99	\$ 49.99
Anytime minutes	1,000	900	0-1,000	900	1,000
Weekend minutes	None	Unlimited	Unlimited	Unlimited	Unlimited
Weeknight minutes	None	Unlimited	Unlimited	Unlimited	Unlimited
Access to 411	✓		✓	✓	✓
Call forwarding	✓	✓	✓	✓	✓
Call hold	✓				
Call waiting	✓	✓	✓	✓	✓
Caller ID	✓	✓	✓	✓	✓
Conference calling	✓	✓	✓	✓	✓
Voicemail	✓	✓	✓	✓	✓
Price per additional minute	\$ 0.40	\$ 0.40	\$5 for each additional 50 minutes through 1,500, \$.10 per minute thereafter	\$ 0.40	\$ 0.40
Other	No nationwide long-distance or roaming charges	Unlimited mobile to mobile calling - Nation	No roaming charges	Unlimited in network calling	No answer transfer service included

Note: Not all information available for all plans.
Source: Provider websites.

Table 9
Wireless "Family" Plans for Residential Customers in Florida

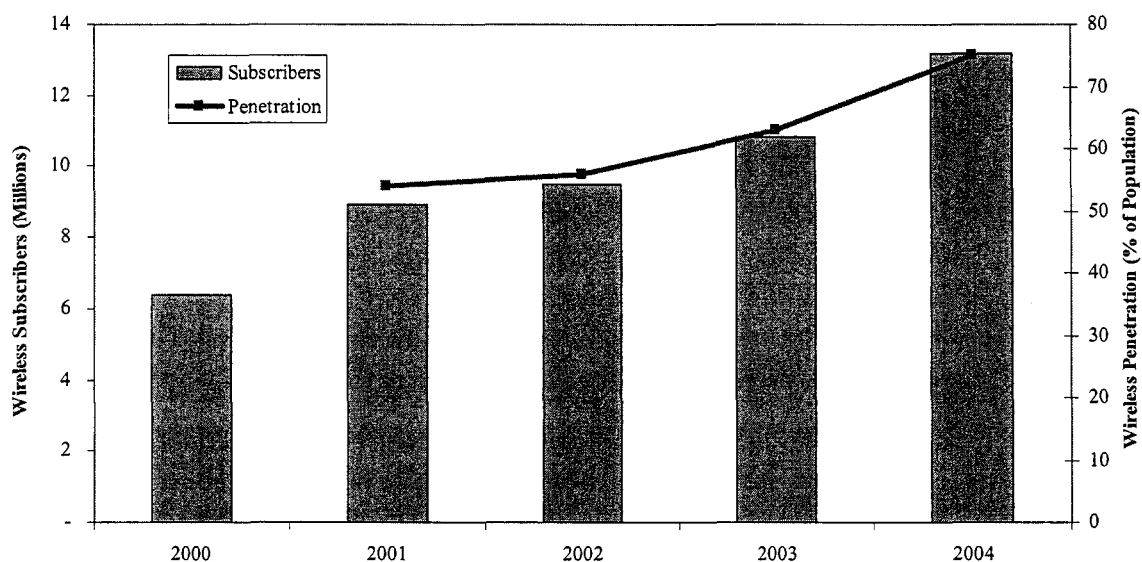
Provider	T-Mobile	Cingular	Sprint	Verizon
Plan	FamilyTime Basic	Nation 700 FamilyTalk w/ Rollover	PCS Fair & Flexible America Plans for Families	America's Choice Family SharePlan
Price per month	\$ 59.99	\$ 69.99	\$ 69.99	\$ 69.99
Anytime minutes	700	700	0-800	700
Weekend minutes	Unlimited	Unlimited	Unlimited	Unlimited
Weeknight minutes	Unlimited	Unlimited	Unlimited	Unlimited
Access to 411	✓		✓	✓
Call forwarding	✓	✓	✓	✓
Call hold	✓			
Call waiting	✓	✓	✓	✓
Caller ID	✓	✓	✓	✓
Conference calling	✓	✓	✓	✓
Voicemail	✓	✓	✓	✓
Price per additional minute	\$ 0.40	\$ 0.45	\$5 for each additional 50 minutes through 1,300, \$.10 per minute	\$ 0.45
Other	Up to 3 additional lines	Unlimited mobile to mobile calling - Nation	Add up to 3 additional lines	Add up to 3 additional lines

Note: Plans include two lines. Additional lines are \$9.99 per month each.
Not all information available for all plans.
Source: Provider websites.

3. Wireless Subscribership is Burgeoning in Florida

The number of wireless subscribers in Florida has grown dramatically, from 6.4 million in 2000 to 13.2 million in 2004. In December 2004, wireless subscribers exceeded traditional lines by almost 2 million.¹⁰² Accordingly, by 2004, wireless penetration in Florida had reached 75 percent. These trends are illustrated in Figure 11 below.

Figure 11
Wireless Subscribers and Penetration in Florida



Note: Wireless penetration not available for 2000.

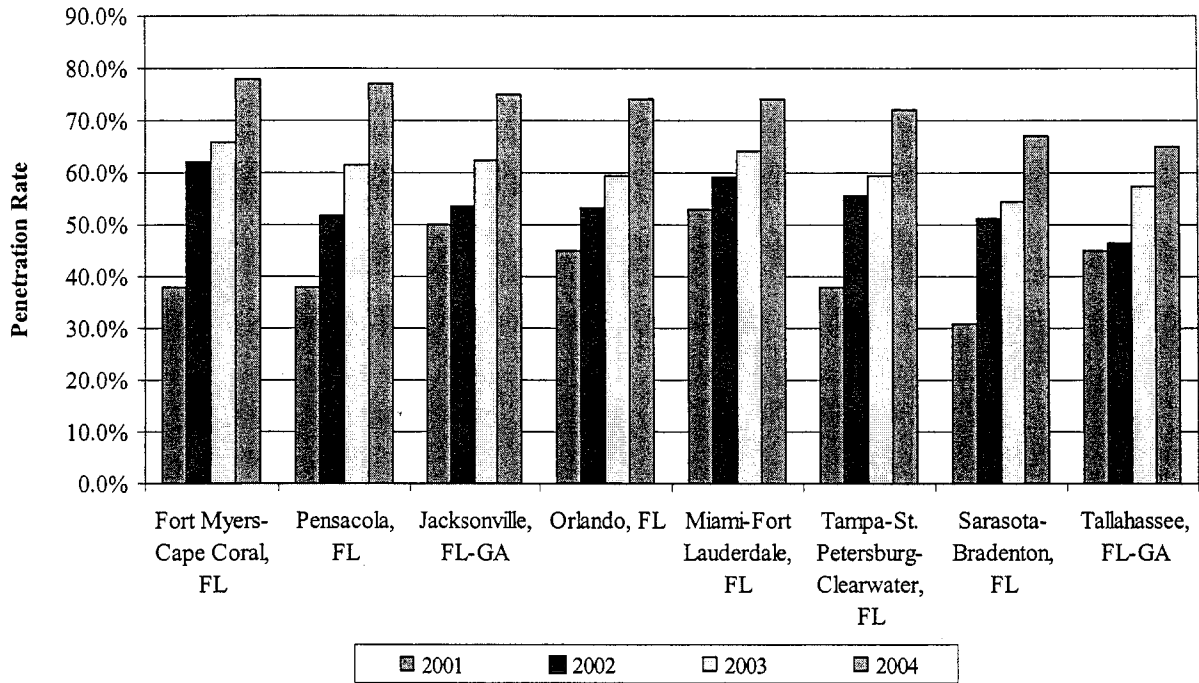
Source: FCC December 2004 Local Competition Report, Table 14 and Florida PSC 2005 Competition Report, Figure 13.

The growth in wireless subscribers is occurring throughout Florida. Figure 12 depicts growth in wireless penetration in the Economic Areas in the State.¹⁰³ As shown in the Figure, by 2004, no area had penetration of less than 65 percent.

¹⁰² See FCC December 2004 Local Competition Report, Tables 8, 9 and 13; we do not report recently released data for June 2005 because the FCC changed the way in which carriers were required to assign customers to states.

¹⁰³ Economic areas are defined by the Bureau of Economic Analysis. "Each economic area consists of one or more economic nodes—metropolitan areas or similar areas that serve as centers of economic activity—and the surrounding counties that are economically related to the nodes. The main factor used in determining the economic relationships among counties is commuting patterns, so each economic area includes, as far as possible, the place of work and the place of residence of its labor force." See, e.g., *Redefinition of the BEA Economic Areas*, available at <http://www.bea.gov/bea/regional/articles/0295rea/>.

Figure 12
Wireless Penetration in Florida Economic Areas



Source: *Seventh-Tenth CMRS Reports*.

4. Wireless Services Are Being Used As Alternatives to Wireline

Gains in mobile subscribers and usage have come at the expense of wireline carriers. There are three principal ways in which customers can use wireless services in lieu of fixed wireline services: (1) “cutting the cord” (*i.e.*, discontinuing fixed line service and using only mobile phone service); (2) shifting voice traffic (or usage) from fixed to mobile networks; or (3) shifting from using wireline to wireless as one’s “primary” line. All three types of wireline displacement are occurring at a substantial rate.

A modest but growing number of wireline customers have already abandoned their wireline phones altogether. As a recent market research report noted:

Mobile wireless services have become a viable alternative to traditional landline services for a large number of consumers in the US... While some barriers still exist to the widespread displacement of landlines by wireless phones, consumer attitudes clearly illustrate the potential for wireless substitution as the landline subscriber base and value proposition relative to wireless continue to deteriorate.¹⁰⁴

¹⁰⁴ R. Luhr and D. Chamberlain, *Cutting the Cord: Consumer Profiles and Carrier Strategies for Wireless Substitution*, In-Stat/MDR, October 2005, p. 1.

Although different estimates reveal varying percentages of cord-cutters, all indicate a growing trend. A recent study in the American Journal of Public Health found that in the first half of 2005, 6.7 percent of adults lived in households with only wireless telephone service. The study found this to be a statistically significant increase from 4.5 percent in the first half of 2004.¹⁰⁵ According to a recent In-Stat/MDR survey, about 9.4 percent of wireless subscribers have already cut the cord.¹⁰⁶ JPMorgan estimates that as of year-end 2005, wireless lines had replaced about 9 percent of primary lines and 38 percent of non-primary lines, for a total substitution rate of 12 percent.¹⁰⁷ A recent Forrester survey found that about 8 percent of households with wireless service had given up their wireline phones (or about twice as large as the 4 percent in 2003). A separate study conducted in January-February 2006 found that 12 percent of respondents reported having only a wireless phone. About 42 percent of respondents reported having a wireline phone, but characterized their mobile phone as their primary phone and only 43 percent reported that their wireline phone is still their primary phone.¹⁰⁸ Clearly, substantial wireless displacement of wireline is already occurring.

It is likely that these trends are present in all areas of Florida. First, as shown in Figures 11 and 12 above, wireless penetration has been growing and by year-end 2004 had reached 75 percent statewide and at least 65 percent in each area of the State for which the FCC reports data. Second, as shown in Figure 15 below, wireless usage has been growing as wireline usage has declined in Florida; and as shown in Figure 1 above, wireline access lines have been declining as wireless subscribership has been increasing. Finally, as mentioned above, data from the *Florida PSC 2005 Survey* show that about 30 percent of Floridians are considering switching to wireless only service, and that percentage is roughly equal in rural and urban areas.

Although Florida specific data on wireless usage growth are not available, usage in Florida will likely mirror national usage trends. These data are very informative, particularly when seen in light of the declines in usage in wireline networks. (The latter data are available for the State and show pronounced declines.) Frost & Sullivan reports that wireline share of total minutes of use was 82 percent in 2004, and predicts that this figure will decrease to 32 percent by 2011, with the remaining 68 percent of minutes having migrated to wireless and VoIP.¹⁰⁹ According to the Yankee Group, by 2005, 42 percent of local calls in households with cellular phones were made on wireless phones.¹¹⁰ This trend in wireless calling is displayed in Figure 13

¹⁰⁵ S. Blumberg, et al., *Telephone Coverage and Health Survey Estimates: Evaluating the Need for Concern About Wireless Substitution*, American Journal of Public Health, Volume 96; Issue 5, May 1, 2006.

¹⁰⁶ In fact, the survey found that 8.3 percent of wireless subscribers are using VoIP and only 86.3 percent have a wireline phone with local service and 67.1 percent have a wireline phone with long distance service. R. Luhr and D. Chamberlain, *Cutting the Cord: Consumer Profiles and Carrier Strategies for Wireless Substitution*, In-Stat/MDR, October 2005, Figure 2.

¹⁰⁷ J. Chaplin, et al., *Telecom Services / Wireline, State of the Industry: Consumer*, JPMorgan, January 13, 2006, Tables 57 and 75.

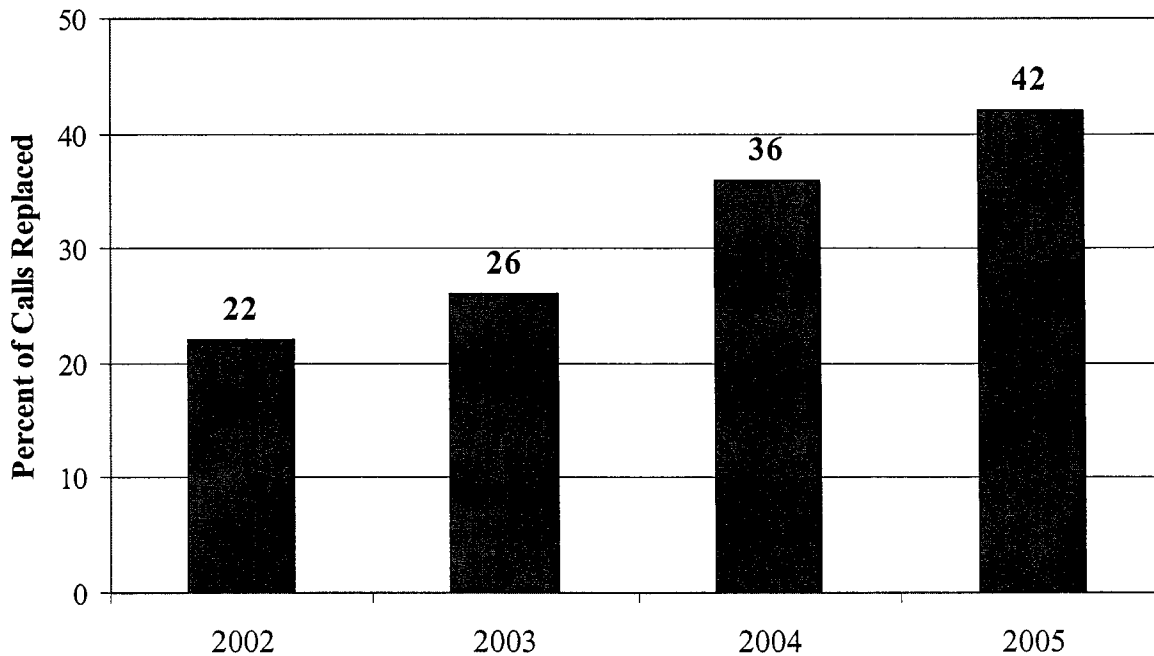
¹⁰⁸ See L. Yuan, *More U.S. Households Are Ditching Landline Phones for Wireless*, The Wall Street Journal, March 31, 2006.

¹⁰⁹ Frost & Sullivan, *Trends in Wireline Substitution – North American Markets*, 2005, p. 1-2.

¹¹⁰ P. Marshall, *Rationalizing Fixed-Mobile Convergence*, Yankee Group, May 2006, Exhibit 2.

below. An earlier version of the same study shows that by 2004, 60 percent of long distance calls in such households were made on wireless phones.¹¹¹

Figure 13
What Portion of Your Local Calls Has Your Wireless Phone Replaced?

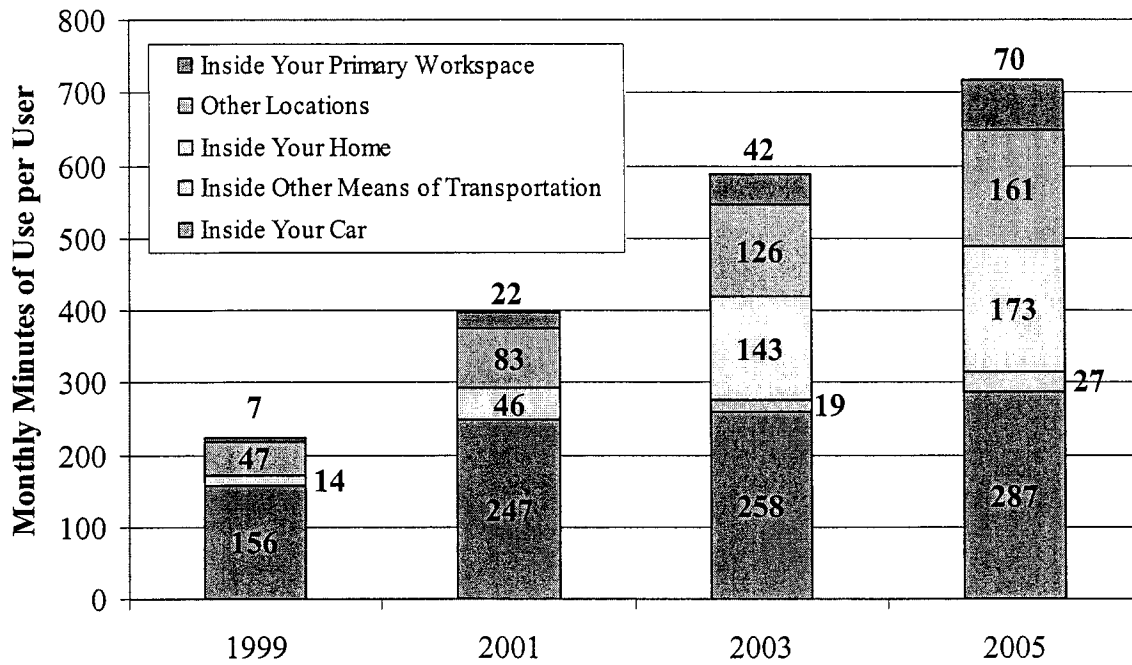


Source: P. Marshall, *Rationalizing Fixed-Mobile Convergence*, Yankee Group, May 2006, Exhibit 2.

In addition, the Yankee Group reports that the volume of wireless calls made at home has increased dramatically in the last several years (as displayed in Figure 14 below). Moreover, the growth in calls from other locations, as displayed in the Figure, may partly result from consumers shifting calls, *i.e.*, making calls from other locations that they would have made at home absent wireless availability. Thus, some portion of these calls would be displacing wireline calls.

¹¹¹ See K. Griffin, *et al.*, *The Success of Wireline/Wireless Strategies Hinges on Delivering Consumer Value*, October 2004, Exhibit 4.

Figure 14
Where Do You Use Your Wireless Phone?



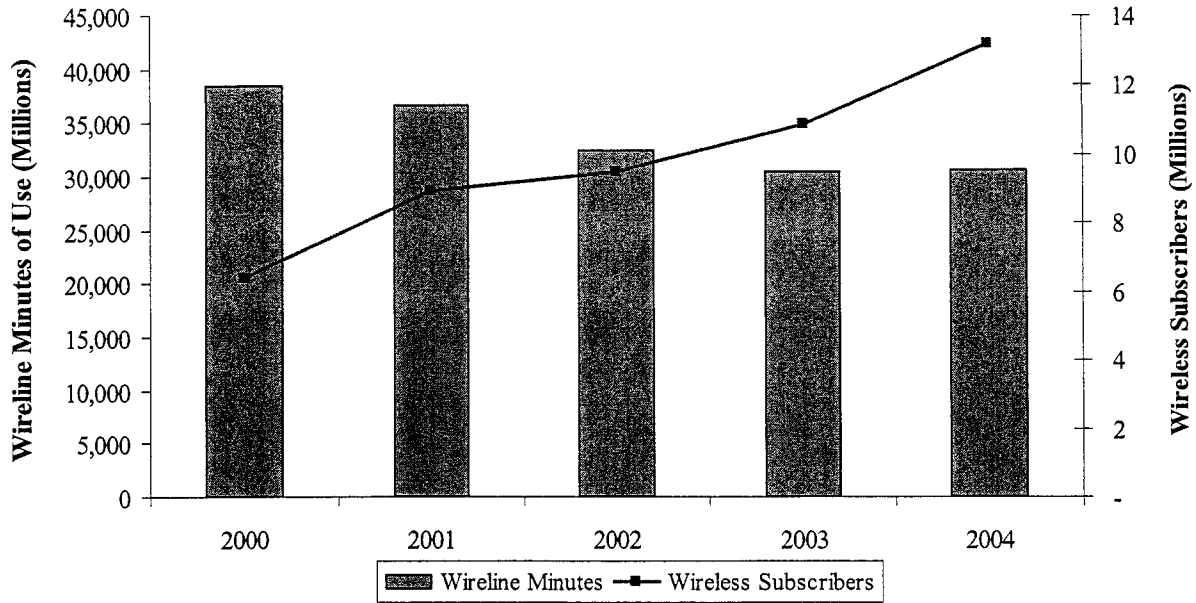
Note: Prior to 2003, Inside Your Car included all means of transportation.

Source: P. Marshall, *Rationalizing Fixed-Mobile Convergence*, Yankee Group, May 2006, Exhibit 2.

Figures 15 and 16 below depict the dramatic impact that this displacement has had on wireline usage in Florida. As noted above, wireless usage is not available for individual states; however, the Figure shows how wireline usage has declined as wireless subscribers have grown in Florida. As Figure 15 illustrates, between 2000 and 2004, wireless subscribers increased by over 100 percent, while wireline minutes of use declined 20 percent.¹¹²

¹¹² As mentioned above, due to changes in the method by which carriers allocate subscribers to states, a consistent count of wireless subscribers is not available for June 2005. During 2005, the trend in wireline minutes of use continued, declining by about 5 percent.

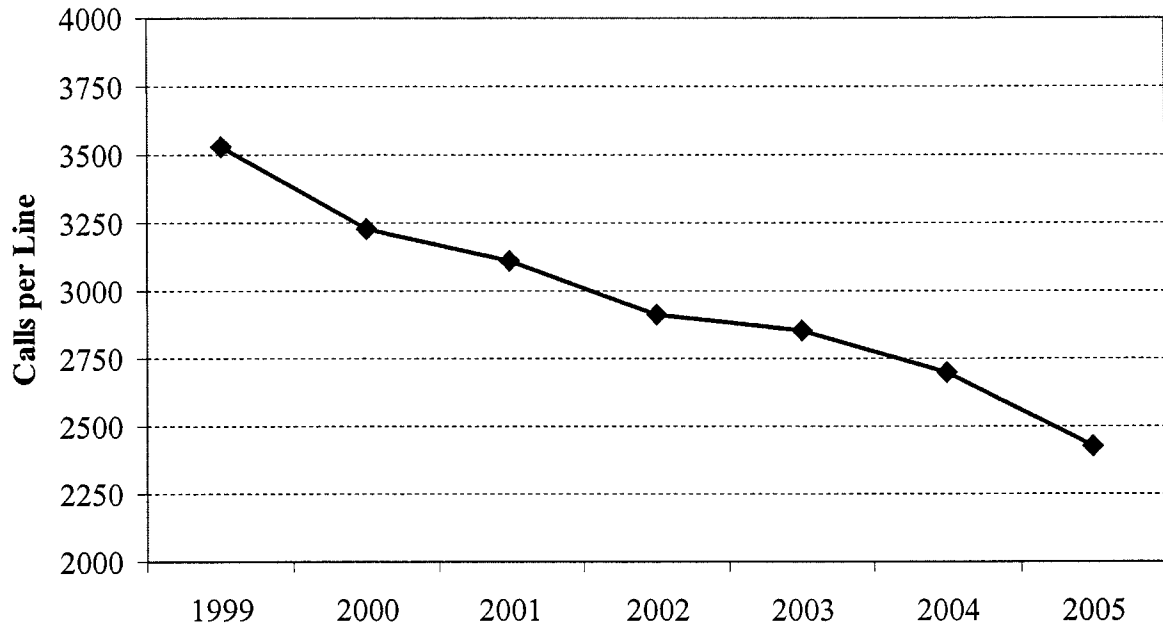
Figure 15
Florida Wireless Subscribers and Wireline Minutes of Use



Note: Minutes of use are interstate switched access minutes for Alltel, BellSouth, Embarq and Verizon.
 Source: FCC, National Exchange Carrier Association, Quarterly Minutes of Use Data; *FCC December 2004 Local Competition Report*, Table 13.

As wireless usage has increased, Florida LEC wireline usage as measured by number of calls has declined steeply over the past four years. In particular, between 1999 and 2005, local calls per ILEC line fell from about 3,500 to about 2,400 per year, as shown in Figure 16 below:

Figure 16
Local Calls per ILEC Wireline per Year in Florida



Note: (1) Total lines are total switched access lines from ARMIS. Data include BellSouth, Verizon and Embarq.

Source: ARMIS, Report 43-08, Tables III & IV

The FCC has concluded in its last two reports on wireless competition that much of the decline in the wireline sector is due to increased competition from wireless providers:

In the *Eighth [FCC CMRS] Report*, we discussed the effects of mobile telephone service on the operational and financial results of companies that offer wireline services. Such effects included a decrease in the number of residential access lines, a drop in long distance revenues, and a decline in payphone profits. In 2003 these trends continued, with the four largest LECs losing 4 percent of their access lines, and wireline long distance voice revenues declining further. One analyst stated, “wireless cannibalization remains a key driver of access line erosion.”¹¹³

In the *Ninth Report*, we discussed the pressures that wireless growth is placing on companies which offer wireline services. In 2004 these trends continued. . . . These trends appear to be due to the relatively low cost, widespread availability, and increased use of wireless service.¹¹⁴

¹¹³ *Ninth CMRS Report*, ¶ 213.

¹¹⁴ *Tenth CMRS Report*, ¶ 197-198.

As with LEC customer losses to cable providers, wireless substitution is especially damaging to wireline carriers in today's market, in which providers are competing to serve the customer, or supply the communications bundle, rather than simply provide an access line. A recent Forrester study found that households that disconnect their wireline phone are four times more likely to buy broadband service from cable operators than from phone companies. As stated by Charles Golvin, a Forrester analyst: "The possibility that phone companies can win these customers back is pretty low. Cord cutting and cable modems are a killer for them."¹¹⁵

5. Wireless Service Will Become an Even More Potent Competitor in the Future

Wireless displacement of wireline service is expected to continue to increase for at least three compelling reasons: (1) the proliferation of wireless services has expanded substantially in every one of the last 20 years and shows no sign of abating; (2) a growing number of young people, especially those on college campuses, are using wireless phones in preference to wireline phones, and are likely to continue using them after graduation;¹¹⁶ and (3) as more consumers become accustomed to the characteristics of wireless services — e.g., slightly lower voice quality offset by greater convenience, portability and more features — they will become even more willing to give up wireline.¹¹⁷

Analysts are predicting continued growth in wireless displacement of wireline and resulting declines in wireline access lines. For example, JPMorgan estimates that wireless substitution will: (1) reach 20.3 million primary lines, or 18 percent of telephony households, by 2010, and (2) claim 8.5 million non-primary access lines, which in conjunction with broadband substitution, will precipitate non-primary access line losses of 11.7 percent per year. Thus, overall by 2010, wireless lines will have replaced about 29 million landlines, representing line substitution of 23 percent.¹¹⁸ In-Stat/MDR forecasts that by 2009, between 23 and 37 percent of wireless subscribers will use their mobile phone as their primary phone, with 30 percent being their "most likely" estimate.¹¹⁹

These expectations are supported by recent surveys, which report that many current wireline users are considering cutting the cord. For example, a recent In-Stat survey found that close to 20 percent of respondents that have wireless service plan to drop wireline service.¹²⁰ A Harris Interactive survey conducted for the National Consumers League released in mid-2005 found that 39 percent of current wireline customers are likely to go completely wireless in the

¹¹⁵ See L. Yuan, *More U.S. Households Are Ditching Landline Phones for Wireless*, The Wall Street Journal, March 31, 2006.

¹¹⁶ See, e.g., Frost & Sullivan, *Trends in Wireline Substitution – North American Markets*, 2005, p. 1-9.

¹¹⁷ See, e.g., *Id.*, pp. 1-11 and 1-12.

¹¹⁸ J. Chaplin, et al., *Telecom Services / Wireline, State of the Industry: Consumer*, JPMorgan, January 13, 2006, p. 4 and Tables 57 and 75.

¹¹⁹ R. Luhr and D. Chamberlain, *Cutting the Cord: Consumer Profiles and Carrier Strategies for Wireless Substitution*, In-Stat/MDR, October 2005, p. 3.

¹²⁰ See Business Wire, *In-Stat Survey Shows That Wireline Erosion Will Accelerate; 20% of Households Plan to Cancel or Not Use Wireline Services*, February 6, 2006.

next two years.¹²¹ The *Florida PSC 2005 Survey* (Figure 26) reports that close to 31 percent of Floridians are considering switching to wireless only.

D. VoIP

VoIP service over existing broadband connections is available to residential and small business customers. Companies such as Vonage, Packet8 and Skype (now owned by eBay) provide VoIP via the cable broadband or DSL connections currently available to households and businesses throughout the US. As described in a recent *New York Times* article entitled “Online Calling Heralds an Era of Lower Costs”:

Competition in the phone business, intensifying this year as Internet-based calling has taken root, has reached the point where many industry experts are anticipating an era of remarkably cheap and even free calls...

Online services like Skype that offer free calls from computer to computer for users with headsets have attracted the tech-savvy and are trying to push into the mainstream. In the process, they are dragging down everyone else’s prices and pointing the way toward a time when it will be harder and harder for companies to charge anything for a basic home phone line on its own.¹²²

A September 17, 2005, article in *The Economist*, entitled “How the Internet Killed the Phone Business,” highlighted the significance of VoIP, and the enormous threat it poses to incumbent telecom operators.

...the rise of Skype and other VoIP services means nothing less than the death of the traditional telephone business.... Skype is merely the most visible manifestation of a dramatic shift in the telecoms industry, as voice calling becomes just another data service delivered via high-speed internet connections. Skype, which has over 54m users, has received the most attention, but other firms routing calls partially or entirely over the internet have also signed up millions of customers.

The ability to make free or almost-free calls over a fast internet connection fatally undermines the existing pricing model for telephony. That means not just the end of distance and time-based pricing – it also means the slow death of the trillion-dollar voice telephony market, as the marginal price of making phone calls heads inexorably downwards.¹²³

¹²¹ See National Consumers League Press Release, *National Consumers League Releases Comprehensive Survey about Consumers and Communications Services*, July 21, 2005, available at http://www.nclnet.org/news/2005/comm_survey_07212005.htm.

¹²² M. Richtel and K. Belson, *Online Calling Heralds an Era of Lower Costs*, *New York Times*, July 3, 2006, available at <http://www.nytimes.com/2006/07/03/technology/03phone.html?th&emc=th>.

¹²³ *The Economist*, *How the Internet Killed the Phone Business*, September 17, 2005.

Since all Florida Zip Codes have at least two broadband providers already present, VoIP can be provided to the vast majority of Florida customers right now. Table 10 lists some VoIP providers and their package offerings for residential and small business customers in Florida. All provide some sort of unlimited local and long distance calling plan with monthly prices ranging from \$19.95 to \$29.99, excluding the cost of broadband connection.

Of course, the millions of Florida customers that already subscribe to broadband for Internet access would incur these charges only incrementally. Even when we include the cost of the broadband connection, these plans are competitive with household expenditures for wireline local and toll services in Florida—which can range to above \$50 per month, depending on type of calling plan and calling volumes. (See Section IV.C.2 above.)

**Table 10
Florida VoIP Plans**

Provider	Plan	Area Codes or Counties Offered	Monthly Price	Anytime Minutes	Additional Minutes	Long Distance
(a)	(b)	(c)	(d)	(e)	(f)	(g)
Vonage	Premium Unlimited	305, 321, 386, 561, 727, 772, 786, 813, 863, 904, 941, 954.	\$24.99	Unlimited	N/A	Included
Vonage	Basic 500		\$14.99	500 & unlimited incoming	\$0.04	Included
Vonage	Small Business Unlimited		\$49.99	Unlimited	N/A	Included
Vonage	Small Business Basic		\$39.99	1,500	\$0.04	Included
AT&T	CallVantage Service	Anyone meeting the technical requirements for AT&T CallVantage Service, regardless of their geographic location, can sign up for the service. AT&T will be rolling out service in additional geographies in the future.	\$29.99	Unlimited	N/A	Included
AT&T	CallVantage Local		\$19.99	Unlimited Local	N/A	\$0.04
AT&T	CallVantage 2-Line Plan ¹		\$49.99	Unlimited (1 st Line)	N/A	Included
Lingo	Link	Broward, Dade, Indian River, Leon, Manatee, Martin, Monroe, Palm Beach, Pasco, Pinellas, Polk, Sarasota, St. Johns.	\$7.95	Unlimited In-Network	\$0.03	Unlimited In-Network
Lingo	Basic		\$14.95	500	\$0.03	Included
Lingo	Unlimited		\$19.95	Unlimited	N/A	Included
Lingo	Business Unlimited ²		\$49.95	Unlimited	N/A	Included
Net2Phone	US/Canada Unlimited	239, 305, 321, 352, 386, 407, 561, 727, 772, 786, 813, 850, 863, 904, 941, 954.	\$29.99	Unlimited	N/A	Included
Net2Phone	US/Canada 500		\$14.99	500	\$0.04	Included
Net2Phone	VoiceLine Basic ³		\$8.99	Unlimited Inbound	N/A	\$0.05
Sun Rocket	Limited Edition ⁴	Tampa Bay, St. Petersburg, West Palm Beach, Miami, Ft. Lauderdale.	\$9.95	200	\$0.03	Included
Sun Rocket	All Inclusive Annual ⁴		\$199 / yr	Unlimited	N/A	Included
Sun Rocket	All Inclusive Monthly ⁴		\$24.95	Unlimited	N/A	Included
Packet 8	Freedom Unlimited	Anywhere in FL w/ high-speed connection.	\$19.99	Unlimited	N/A	Unlimited
Packet 8	Freedom Unlimited Global ⁵		\$49.99	Unlimited	N/A	Unlimited
Packet 8	Virtual Office Unlimited Extension ⁶		\$39.99/extension	Unlimited	N/A	Unlimited
Packet 8	Virtual Office Metered Extension		\$19.99/extension	250	\$0.04	Included
iConnectHere	iCall North America	239, 305, 321, 352, 386, 407, 561, 727, 772, 786, 813, 850, 863, 904, 941, 954.	\$15.99	800	\$0.02	Included
iConnectHere	iCall World		\$24.99	1000 USA/Canada, 250 international	Depends on destination	Included
iConnectHere	iCall Unlimited		\$29.99	Unlimited	N/A	Included
iConnectHere	BizCall Unlimited		\$49.99	Unlimited	N/A	Included
myphonecompany.com	Unlimited Local Home Calling	239, 305, 321, 352, 386, 407, 561, 727, 772, 786, 813, 850, 863, 904, 941, 954.	\$19.99	Unlimited	N/A	\$0.03
myphonecompany.com	Unlimited Home US & Canada		\$24.99	Unlimited	N/A	Included
myphonecompany.com	Unlimited US Canada & Unlimited International		\$34.99	Unlimited	N/A	Included
myphonecompany.com	My Office Unlimited US & Canada + 2nd Voice/Fax Line		\$44.99	Unlimited (1 st Line)	N/A	Included

Sources & Notes:

Provider websites.

¹ CallVantage 2-Line plan includes unlimited faxing to the US and Canada. The second line comes with 500 long distance faxing and calling minutes per month.

² Lingo Business plans includes 500 outgoing fax minutes. The Unlimited Business International plan includes calls to many international countries.

³ Net2Phone VoiceLine Basic: Unlimited inbound calls & pay-as-you-go outbound calls.

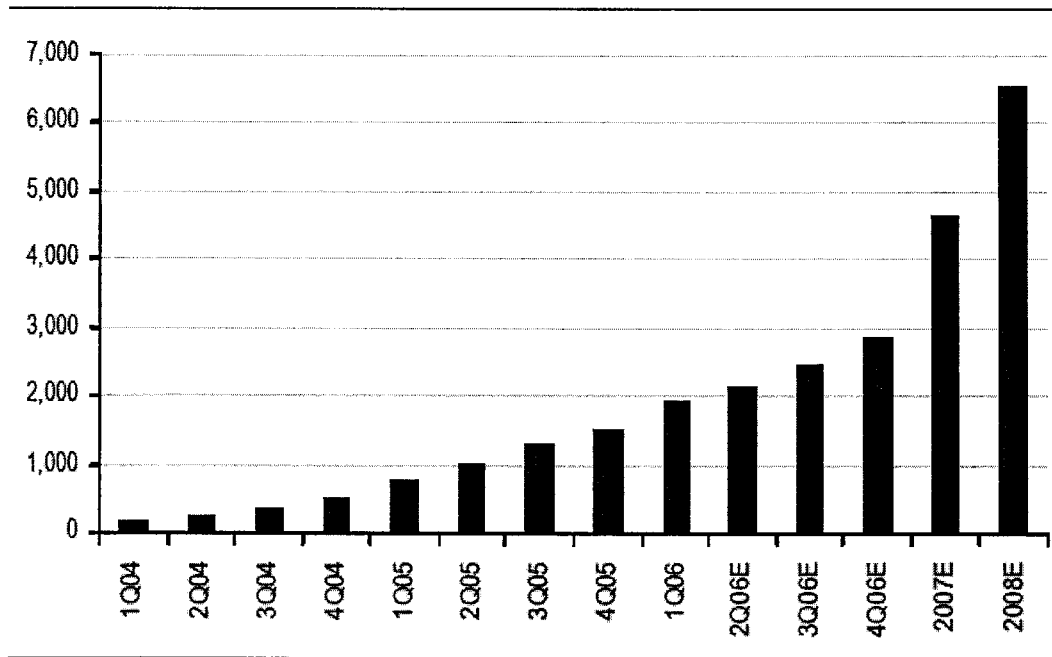
⁴ Sun Rocket plans include calls to US, Canada and Puerto Rico.

⁵ Unlimited global plan includes unlimited calling to select countries in addition to local and long distance.

⁶ A minimum of 3 extensions must be subscribed in order to activate this service.

VoIP growth has been vigorous. For example by April 2006, Vonage was providing service to more than 1.6 million lines.¹²⁴ Smaller, relatively less well-known VoIP companies are also having success in attracting customers. For example, SunRocket, a VoIP service available to 75 percent of the country, recently reported that it was approaching 100,000 customers.¹²⁵ UBS Investment Research forecasts that by year-end 2008 four independent VoIP providers, Vonage, Primus (Lingo), Packet8 and Covad will be serving almost 7 million lines in total.¹²⁶ The UBS forecast through 2008 is reproduced below in Figure 17.

Figure 17
Independent VoIP Subscribers (000)



Note: Data includes Vonage, Primus (Lingo), Packet8 and Covad
Source: Company data and UBS estimates

As more widely known Internet firms enter or expand their VoIP offerings, the competition facing ILECs will become more intense. A September 2005 article in the *Financial Times* stated: "Their [Vonage and other independent VoIP providers such as Skype] success has sent shivers down the spines of some of the biggest telecommunications industry incumbents."¹²⁷ Skype allows customers to make *free* computer-to-computer "telephone" calls and recently announced free calls to all landlines and cellular phones in the U.S and Canada for all U.S. and Canadian customers for the duration of 2006, in order to increase its U.S. presence. A recent

¹²⁴ See http://www.vonage.com/corporate/index.php?lid=footer_corporate.

¹²⁵ See J. Baumgartner, *Hook Resurfaces at SunRocket*, CED Magazine, March 16, 2006.

¹²⁶ J. Hodulik, et al., *Vonage Holding Corp, Initiated Coverage With a Neutral 2 Rating*, UBS Investment Research, July 5, 2006, p. 12 and Chart 7.

¹²⁷ M. Nakamoto, et al., *The internet's next big talking point: why VoIP telephony is quickly coming of age*, Financial Times, September 9, 2005.

article observed: “The move [by Skype] undercuts Yahoo’s rival Phone Out service linked to its instant messenger program. Yahoo itself [had previously] undercut Skype when it announced Phone Out for the US in March, which allowed users to call within the US and to more than 30 countries for 2 cents a minute or less.”¹²⁸

As industry experts correctly predicted, the other Internet companies are entering and attempting to become major influences in the telecommunications market. Such entrants include Earthlink, whose vice president of voice services stated that “the voice business is becoming an Internet business,”¹²⁹ and Google, which offers Google Talk, an application that allows users of Google’s email service to talk and IM for free.¹³⁰ As mentioned above, Yahoo’s Phone Out service is currently offering calls for 2 cents per minute or less.¹³¹ Microsoft is entering the VoIP space in several ways: for example, by teaming with telecommunications providers and by purchasing Teleo, an acquisition that will allow Microsoft to provide voice capability to MSN IM users.¹³²

Customers view VoIP service as a replacement for their telephone line. Approximately 50 percent of Vonage customers maintain their old phone number when they switch to Vonage.¹³³ This substitution is driven in large measure by price. Analysts report that third-party VoIP providers offer service “at rates significantly below comparable RBOC prices” and “significant pricing degradation is becoming evident.”¹³⁴ The LECs and, in particular, the RBOCs, have been forced to respond to the competitive threat presented by VoIP providers. As reported in the *New York Times*:

To stem the tide [of defections to VoIP providers], the traditional Bell operating companies have been moving into new businesses like television and strategically dropping the price of traditional phone service. In New York, Verizon recently sent letters to customers offering a calling plan that includes unlimited phone service for \$35 a month, instead of \$60, a 42 percent cut. For people signing up for service through its Web site, AT&T now offers unlimited local and long distance service for \$40, down from \$50 a year ago.

¹²⁸ C. Nuttall, *Skype in US free calls scheme*, Financial Times, May 15, 2006.

¹²⁹ See M. Richtel and K. Belson, *Online Calling Heralds an Era of Lower Costs*, New York Times, July 3, 2006, available at <http://www.nytimes.com/2006/07/03/technology/03phone.html?th&emc=th>.

¹³⁰ See Google Press Release, *Google Launches Open, Instant Communications Service*, August 24, 2005, available at <http://www.google.com/press/pressrel/talk.html>.

¹³¹ See *Yahoo Phone Out*, available at <http://voice.yahoo.com/>.

¹³² See Microsoft Press Release, *Global Telecommunications Providers to Build Innovative Business IP Phones on Microsoft’s Unified Communications Platform*, June 25, 2006 and M. Nakamoto, et al., *The internet’s next big talking point: why VoIP telephony is quickly coming of age*, Financial Times, September 9, 2005.

¹³³ See J. Hodulik, et al., *The Vonage Story: The Who, What, Where, and How*, November 24, 2003, UBS Investment Research p. 5 and A. Quinton, et al., *US VoIP Update: Competitive, Regulatory, and Other Issues*, Merrill Lynch, November 25, 2003 p. 9.

¹³⁴ J. Halpern, et al., *Quarterly VoIP Monitor: The “Real” Price Gap for VoIP Driving Rapid Subscriber Growth*, Bernstein Research, July 15, 2005, pp. 5-6 & Exh. 5 and V. Shvets & A. Kieley, *VoIP: State of Play*, Deutsche Bank, June 22, 2005, p. 7.

The average user of Internet voice calling, known as ... VoIP, pays \$25 a month for unlimited calling, according to VoipReview.org, a Web site that tracks the industry. International calls are most often not included in the flat rate, but those prices are also coming down.¹³⁵

E. Emerging Technologies Will Intensify Intermodal Competition

1. Wi-Fi

a. Overview

Wi-Fi, short for wireless fidelity, is a wireless broadband network technology that allows users within range of the network to connect to the Internet via a wireless device such as a laptop. A single Wi-Fi network, or hot spot, has a range of up to 1,000 feet in an optimal open environment and speeds of up to 11 Mbps. Wi-Fi hot spots give travellers in numerous public places such as coffee shops and McDonald's restaurants, hotels and airport lounges access to broadband services, including VoIP.¹³⁶

Wi-Fi is also used in homes to connect multiple family computers to each other and to broadband Internet modems, and in businesses to connect employees in different departments and buildings across campuses. Such private network usage is significant because it tends to make the technology more widely available, and greater diffusion drives down costs. Furthermore, as computer makers add Wi-Fi capabilities to laptops, it will likely stimulate further proliferation of Wi-Fi hot spots.

As a result, Wi-Fi is emerging as another potent form of intermodal competition that extends beyond connecting laptops to the Internet at hot spots. For example, both cellular providers and VoIP providers are taking advantage of Wi-Fi to expand their reach and compete more effectively. They do so by employing mobile wireless or portable phones that use Wi-Fi technology and VoIP to route telephone calls for mobile users over the Internet.¹³⁷ A recent In-Stat/MDR report noted, "In 2007 and 2008, the phone segment will noticeably emerge, driven by embedded Wi-Fi in cellular phones."¹³⁸ The service also provides business travellers with the ability to make and receive phone calls from a laptop computer or PDA device, or specialized cordless VoIP phones. We describe the trends in Wi-Fi competition in more detail below.

b. Wi-Fi Is Widely Available in Florida

As illustrated in Figure 18 below, there are over 2,600 Wi-Fi hotspots in Florida and the number has been increasing. Jiwire.com has information for 2,642 hotspots in the State of which

¹³⁵ M. Richtel and K. Belson, *Online Calling Heralds an Era of Lower Costs*, New York Times, July 3, 2006, available at <http://www.nytimes.com/2006/07/03/technology/03phone.html?th&emc=th>.

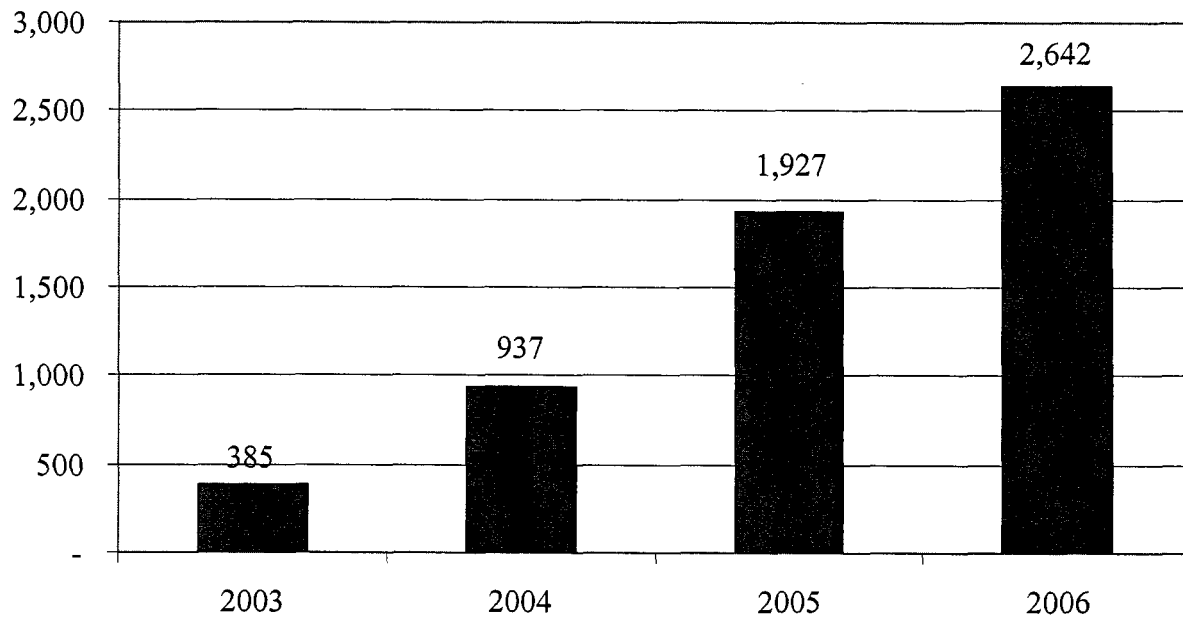
¹³⁶ See the Wi-Fi Alliance at <http://www.Wi-Fi.org>.

¹³⁷ See D. Biercks, *Demand for Wireless VoIP Applications and Services in the Business Environment*, In-Stat, January 2005 ("In-Stat Wireless Voip"), p. 6.

¹³⁸ In-Stat Press Release, *Wi-Fi Chipset Market Continues Impressive Growth*, February 28, 2006, available at <http://www.instat.com/press.asp?ID=1598&sku=IN0501813NT>.

over 10 percent are free. Several municipalities have deployed, or are in the process of setting up, wireless networks. For example, St. Cloud, a suburb of Orlando, was the first municipality in the U.S. to set up a free, citywide, high-speed wireless network.¹³⁹ St. Cloud’s “Cyber Spot” has been available in the downtown area since mid-2004, and the service was recently expanded to the entire city. St. Cloud offers the service free of charge.¹⁴⁰

Figure 18
Florida Wi-Fi Hotspots



Note: 2006 figure as of June.

Source: JiWire Hotspot Directory, available at www.jiwire.com and *Florida PSC 2005 Competition Report*, Figure 24.

As a recent article notes, “In the not-too-distant future, South Florida could be covered in a wireless Internet blanket under which laptop users could check e-mail and surf the Web from sidewalk cafés, parks, libraries and even from their homes.” The article discusses several Wi-Fi networks in South Florida. For example, Broward County recently deployed a free network across downtown Fort Lauderdale. Built mostly for use by hundreds of county employees, it is now available for use in many parks and public places for anyone with a wireless-equipped laptop. If the Fort Lauderdale system is successful, Broward County may consider deploying the

¹³⁹ See City of St. Cloud, Florida, at <http://www.stcloud.org/index.asp?NID=402>.

¹⁴⁰ See Dailywireless.org, *Free Cloud in Florida*, May 17, 2005 and Government Technology News Release, *City of St. Cloud, Fla., Achieves City-Wide Free Wi-Fi*, March 8, 2006.

network countywide. Miami-Dade County is planning a wireless network to serve all residents in the County. Miami Beach recently announced that it is also testing a free citywide network.¹⁴¹

In an undertaking similar in scale to that of a municipal deployment, Florida State University in Tallahassee is deploying Wi-Fi throughout its campus. By May 2005, it had made Wi-Fi available in 75 percent of the outdoor areas on campus and in 90 percent of the library. In May 2005, the network had 132 access points and supported 3,000 total users, 1,500 on a daily basis. The number of users was climbing and could reach as high as 40,000 daily users.¹⁴²

Florida hotspots are not limited to urban areas. For example, in 2003, a hospital with two Florida locations – in the rural panhandle town of Graceville and in Gainesville – connected these locations via Wi-Fi rather than installing a dedicated T-1 connection. The hospital uses this connection to support its telemedicine services. The venture was successful enough that the provider, West Florida Electric, was planning two additional networks in cities near to Graceville.¹⁴³

In addition to these free and low-cost hot spots and networks, private enterprises, too, are offering Wi-Fi service for a fee. Many hotel chains offer access in their lobbies, and many coffee shops offer Internet access with your coffee. For example, among large chains, Panera Bread is enabling their stores for Wi-Fi access. Currently, they have over 150 such locations in Florida.¹⁴⁴ McDonalds offers Wi-Fi at numerous locations throughout the State.¹⁴⁵

Map 6 below depicts just some of the hotspots throughout Florida:¹⁴⁶

¹⁴¹ See E. Bolstad, *South Florida could go wireless*, The Miami Herald, February 20, 2006.

¹⁴² See America's Network, *Florida State commits to Wi-Fi deployment: four-year effort expands to campus classrooms*, May 2005.

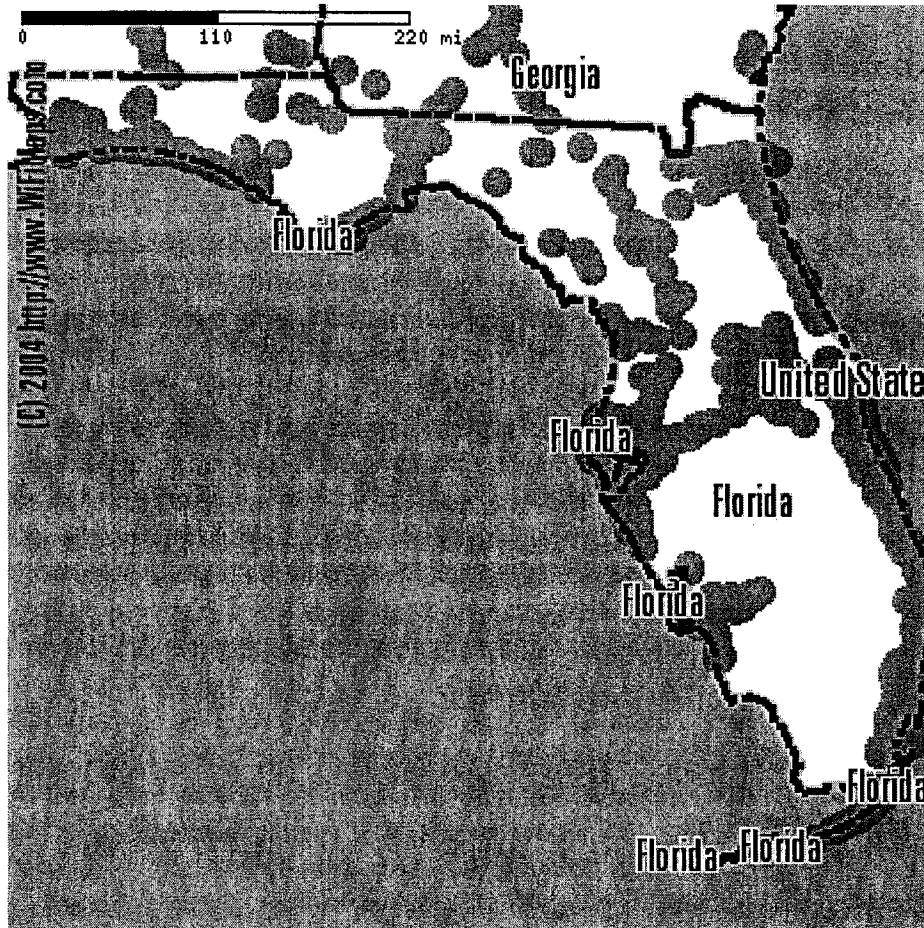
¹⁴³ See National Rural Telecommunications Cooperative Update, *Wi-Fi Meets Rural Florida Hospital's Telemedicine Needs*, January 29, 2003, available at http://www.nrtc.coop/us/main/nrtc_update/Update2003/NRTCUCU_012903.pdf.

¹⁴⁴ See e.g., <http://www.palmbeachpost.com/photo/content/news/photos/wifi/hotspots.html> and *Wi-Fi @ Panera Bread* at <http://www.panerabread.com/wifi.aspx>; <http://www.wififreespot.com/fl.html>.

¹⁴⁵ See <http://www.mcdonalds.com/wireless.html>.

¹⁴⁶ See <http://www.wifimaps.com/>.

Map 6
Florida Wi-Fi Hotspots



c. Trends in Wi-Fi Will Enhance Competition for Voice Services

In this section, we explain some of the trends in Wi-Fi that are likely to enhance intermodal competition for voice services. First, dual mode devices allow mobile wireless users to access both their wireless networks and Wi-Fi networks.¹⁴⁷ Users of these dual mode devices can conserve their mobile minutes by using a Wi-Fi connection to place VoIP calls. Dual mode phones also enhance coverage by allowing the user to stay connected in more locations—*e.g.*, in certain buildings in which mobile wireless coverage may be limited. The *Wall Street Journal* describes how Wi-Fi is increasing competition:

¹⁴⁷ Examples of dual phones include the HP iPAQ h6315 with T-Mobile service, T-Mobile's MDA III and MDA IV, O2 XDA IIs, Vodafone VPA III, and Orange SVP M2000.

All players are moving ahead [with plans to offer a service with the ability to make Internet calls using a cell phone] despite the risks [to their existing businesses]: T-Mobile and Sprint, both pure cellular carriers, see the new technology as an opportunity to steal customers from landline companies and their bigger wireless competitors, people in the industry say. Switching calls over to the Internet will also allow carriers to expand their coverage inside homes and office buildings, where signals are weak, and to free up capacity on their cellular networks.¹⁴⁸

The same article notes that “Cingular Wireless, the largest U.S. cellphone service provider and currently a joint venture of AT&T and BellSouth, says it is exploring technologies to offer a hybrid phone that would use the Internet networks of AT&T and BellSouth.” It adds that “[i]ndustry officials and analysts expect demand for the wireless Internet phone service to be strong” and that “[t]he move to bring Internet calling to cellular networks is another sign of intense competition in the telecom sector.”¹⁴⁹

Other hybrid “smart phones” with dual mode capabilities will become more widely available as Wi-Fi becomes more widely deployed.¹⁵⁰ Both Vonage and Net2Phone have developed wireless VoIP phones that allow users to make calls at home or anywhere a wireless Wi-Fi broadband connection is available. Net2Phone’s VoiceLine XJ100 Wi-Fi Handset automatically and intelligently scans and connects to available access points, so users can make a call over any open Wi-Fi hot spot.¹⁵¹ Vonage, in conjunction with UTStarcom, launched its F1000 portable Wi-Fi phone in December 2005. The handset is configured with Vonage’s standard call features, including three-way calling, call waiting, repeat dial on busy, voicemail and caller ID. Bill Huang, chief technology officer and senior vice president of engineering at UTStarcom commented:

We believe the affordable price point and extensive features of the UTStarcom F1000 offered through Vonage will be a disruptive force in the telecommunications service marketplace. Consumers with Wi-Fi access in their home can replace their traditional home phone with the F1000 and start reaping the benefits of wireless VoIP phone service right away.¹⁵²

According to a recent survey by In-Stat, 23 percent of decision-makers in medium-sized companies and large enterprises said that they had already deployed wireless VoIP in some manner and another 30 percent said they were planning or evaluating the implementation of the technology within the next six to twelve months.¹⁵³ In-Stat forecasts that by 2008, there will be

¹⁴⁸ A. Sharma and L. Yuan, *AT&T Deal Could Speed Move to Wireless Internet Calling*, *The Wall Street Journal*, March 6, 2006.

¹⁴⁹ *Id.*

¹⁵⁰ See Parks Associates, *Residential Voice-over-IP: Analysis and Forecasts (Second Edition)*, 1Q 2005, at 12.

¹⁵¹ See Net2Phone Press Release, *Net2Phone Launches Enhanced Wi-Fi Offer*, March 8, 2005.

¹⁵² See Vonage Press Release, *Vonage® And UTStarcom Liberate Consumers From Their Traditional Phone Lines With Launch Of Portable Wi-Fi Phone*, December 13, 2005.

¹⁵³ *In-Stat Wireless VoIP*, p 1.

close to 40,000,000 cellular voice devices w/WLAN subscribers, with non-business consumers beginning to dominate the subscriber market.¹⁵⁴

Wi-Fi is growing rapidly. According to In-Stat and the Wi-Fi Alliance, over 140 million Wi-Fi chipsets shipped in 2005, representing an average annual growth rate of 64 percent since 2000. In-Stat is forecasting that the rapid growth will continue, with sales reaching 430 million units in 2009. It is estimated that over 90 percent of all notebook computers shipped today are Wi-Fi enabled. Wi-Fi is also moving beyond core PC applications and into consumer electronics and mobile phones, further increasing the potential for growth in sales in the future.¹⁵⁵

Wi-Fi networks continue to proliferate, within people's homes, large and small businesses and via public hot spots. Some analysts estimate that the number of public hot spots will grow from 100,000 locations in 2005 to almost 200,000 locations in 2009, largely driven by branded deployments in the café market (including coffee shops, fast food and full service restaurants). Over the same period, associated revenue will increase from \$969 million to \$3.46 billion.¹⁵⁶ An In-Stat/MDR estimate in 2003 put the number of hot spot users at 4.9 million in North America in 2005, and predicted that the number would grow almost fivefold to 23.9 million by 2007.¹⁵⁷

Municipalities throughout the country are deploying wireless networks. As of June 2006, over 250 U.S. cities had deployed or were planning to deploy citywide municipal Wi-Fi, compared to 122 in July of 2005.¹⁵⁸ The municipal Wi-Fi market is expected to grow to \$512 million in 2010 from \$88 million this year.¹⁵⁹ For example, the city of Philadelphia, in partnership with EarthLink, is deploying a service that will sell for \$10 a month to low-income residents and \$20 a month to the general public.¹⁶⁰ Other cities such as Anaheim, CA and Chaska, MN are also supported by subscriber fees. The emerging business model for municipal Wi-Fi, however, is one that is generally free to residents and paid for through local advertising embedded in the service. Portland, OR is deploying such a system, as did Sunnyvale, CA, whose network now has about 10,000 users.¹⁶¹ Firms providing these services to municipalities include

¹⁵⁴ *In-Stat Wireless VoIP*, p. 25, Table 5 and p. 1.

¹⁵⁵ In-Stat Press Release, *Wi-Fi Chipset Market Continues Impressive Growth*, February 28, 2006, available at <http://www.instat.com/press.asp?ID=1598&sku=IN0501813NT> and Wi-Fi Planet, *Wi-Fi Still Booming*, November 29, 2005, available at <http://www.Wi-Fiplanet.com/news/print.php/3566911>.

¹⁵⁶ In-Stat Press Release, *Wireless Data Hotspot Services to Reach \$3.46 Billion in 2009*, September 20, 2005, available at <http://www.in-stat.com/press.asp?ID=1447&sku=IN0502196MU>.

¹⁵⁷ In-Stat/MDR, *Hotspots: Who's using them, when, where and how often?*, December 2003, at Table 23.

¹⁵⁸ See B. White, *Cities Shop for Lower Prices in WiFi: Free*, *The Wall Street Journal*, June 20, 2006. Also see <http://muniwireless.com/municipal/1035/>.

¹⁵⁹ See B. White, *Cities Shop for Lower Prices in WiFi: Free*, *The Wall Street Journal*, June 20, 2006.

¹⁶⁰ See A. Sharma, *Companies That Fought Cities on Wi-Fi, Now Rush to Join In*, *The Wall Street Journal*, March 20, 2006.

¹⁶¹ San Francisco is deploying a system that gives users a choice of a subscription-based plan or a free advertising-supported plan, in which the latter will have slower speeds. Sacramento is also pursuing an advertising-based system. See B. White, *Cities Shop for Lower Prices in WiFi: Free*, *The Wall Street Journal*, June 20, 2006.

Google, EarthLink and MetroFi. More recently the large phone and cable companies, such as AT&T, Time Warner and Comcast, are attempting to enter the market.¹⁶²

2. WiMAX

a. Overview of WiMAX Technology

WiMAX, like Wi-Fi, provides wireless broadband connections, but has a much wider range, up to 30 miles from the central base station, and has much higher speeds, of up to 75 Mbps.¹⁶³ Thus, a single WiMAX network or hot-zone, can provide broadband access to an entire city. WiMAX can extend service to rural and remote areas.

WiMAX can complement Wi-Fi. The combination of Wi-Fi and WiMAX technologies may allow broadband connections almost anywhere. According to a WiMAX analyst,

Early Wi-Max deployments will start by connecting fixed or stationary subscriber stations, but then will evolve to support nomadic/portable applications and eventually completely mobile services and devices. Wi-Max will also enable the “access anywhere” triple play revolution: high-speed wireless delivery of data, voice and video applications at home, in the office and on the go.¹⁶⁴

As the use of WiMAX spreads, it could grow to challenge established wireline DSL and cable modem services. In-Stat discusses some of the benefits of WiMAX to consumers:

WiMAX will offer consumer and business subscribers a range of technology and service level choices from broadband operators. Fixed and mobile broadband prices will decline, and there will be DSL-like services that offer portability. DSL “blackspots” and “installation” fees will be eliminated. Service providers will have a cost-effective way to offer new, high-value, real-time, multi-media services like wireless picture mail, video mail, and video streaming.

Subscribers will enjoy “anytime, anywhere connectivity.” No more driving around looking for a WiFi hotspot. Dial-up will be a distant memory. As broadband connectivity becomes more ubiquitous, subscribers will use their devices more and leave them on, integrating them more into their lifestyles.¹⁶⁵

¹⁶² See B. White, *Cities Shop for Lower Prices in Wi-Fi: Free*, *The Wall Street Journal*, June 20, 2006 and A. Sharma, *Companies That Fought Cities on Wi-Fi, Now Rush to Join In*, *The Wall Street Journal*, March 20, 2006.

¹⁶³ See, e.g., Shim, Richard. *WiMAX in the Wings*, CNET News.com, June 25, 2004, available at http://news.com.com/Wi-Max+in+the+wings/2100-1039_3-5247984.html.

¹⁶⁴ See Antonello, Gordon. *Just the Wi-Max Facts, Ma'am*, Electronic News, March 16, 2005.

¹⁶⁵ K. Lundgren and N. Bogen, *WiMAX: Challenging the Status Quo*, In-Stat, December 2005, p. 9.

b. WiMAX Deployment in Florida

WiMAX is being deployed in areas throughout the United States, including Florida. For example, Clearwire currently offers wireless broadband service in Jacksonville and Daytona Beach.¹⁶⁶ Clearwater was created by mobile wireless pioneer Craig McCaw. According to the company:

With Clearwire you have true mobility. Your Clearwire connection is so flexible; you're no longer tied to just one location. You can use Clearwire anytime, anywhere in our service area, for instant Internet access.¹⁶⁷

Clearwire uses a state-of-the-art wireless modem that can be plugged into a desktop computer, laptop, or local network. It works by transmitting signals to and from nearby cellular towers instead of using a traditional phone line. That means you have the flexibility to set up the wireless modem in our coverage area and enjoy high speed wireless internet anywhere in your home or office — upstairs or downstairs, inside or outside. Plus, your Clearwire wireless broadband connection is always on and always secure.¹⁶⁸

Clearwire plans an aggressive buildout throughout the United States to offer consumers a simpler, more flexible and cost-effective solution.¹⁶⁹

Clearwire recently announced deals with Intel and Motorola to secure an additional \$900 million to fund its operations,¹⁷⁰ and with BestBuy retail stores to distribute its modems.¹⁷¹

The following maps of Clearwire's two Florida service areas illustrate how WiMAX can be used to cover large geographic areas.¹⁷²

¹⁶⁶ See *Clearwire Wireless Broadband*, available at <http://www.clearwire.com>.

¹⁶⁷ See *Why Clearwire?/Compare*, <http://www.clearwire.com/wireless-broadband/compare.php>.

¹⁶⁸ See *What is Clearwire?/Wireless Broadband*, <http://www.clearwire.com/wireless-broadband/overview.php>.

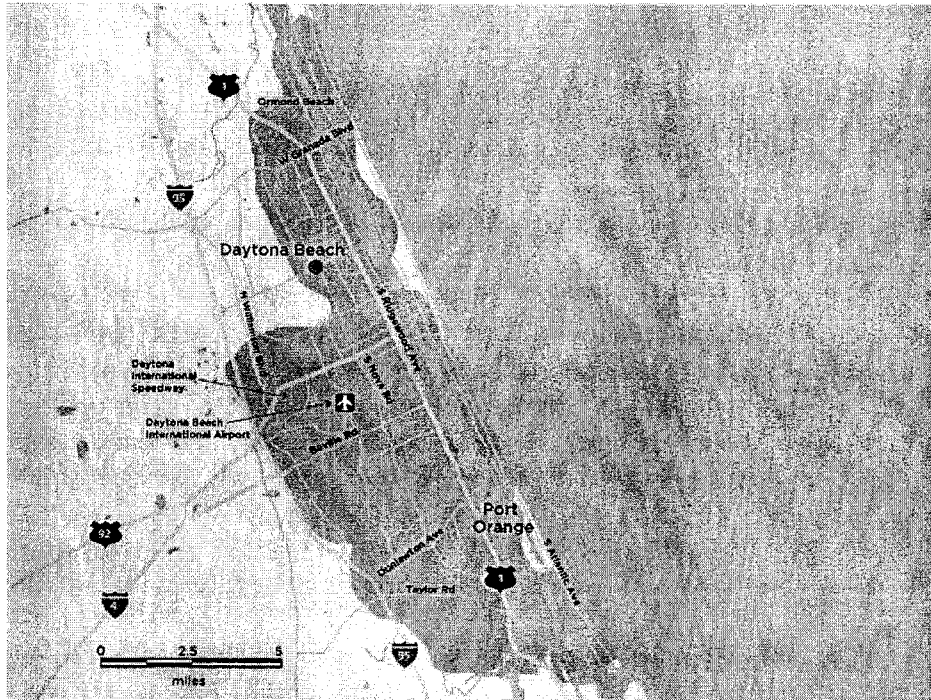
¹⁶⁹ See Clearwire Press Release, *Clearwire Brings Wireless Broadband Internet Service to Daytona Beach, Frees Customers from Confines of Traditional Internet Access*, January 21, 2005, available at http://www.clearwire.com/company/news/01_21_05.php.

¹⁷⁰ See Clearwire Press Release, *Clearwire Secures \$900M In Financing Round Led by Intel Capital and Announces the Sale of NextNet Wireless to Motorola*, July 5, 2006, available at http://www.clearwire.com/company/news/07_05_06.php.

¹⁷¹ See Clearwire Press Release, *Clearwire to Sell High-Speed Wireless Internet Service at Best Buy*, October 11, 2005, available at http://www.clearwire.com/company/news/10_11_05.php.

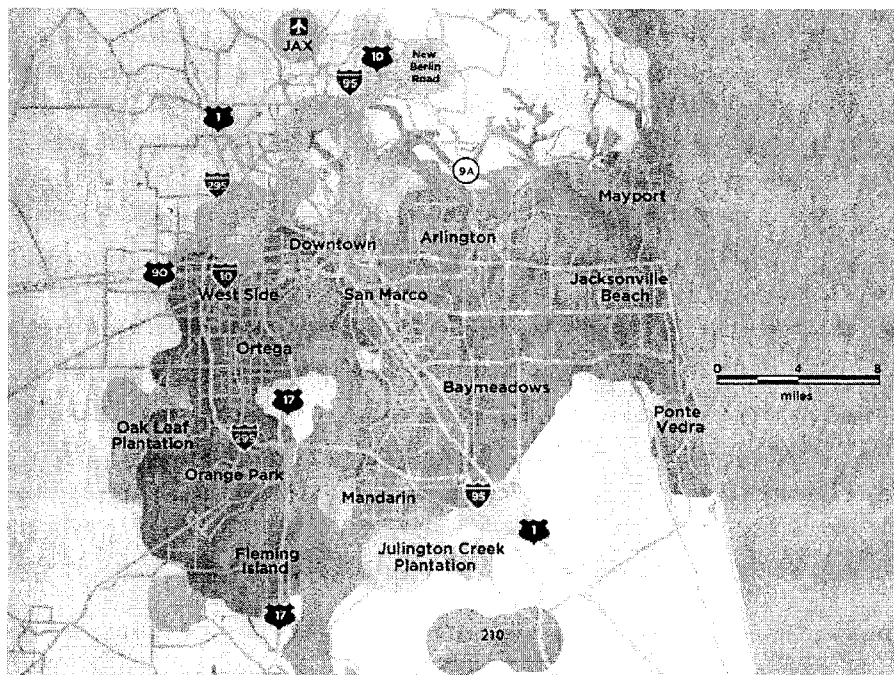
¹⁷² See http://www.clearwire.com/store/service_areas.php.

Map 7
Clearwire's Florida Service Areas



Daytona, FL

Current Coverage



Jacksonville FL

Current Coverage | Future Coverage

Clearwire recently announced its “Clearwire Internet Phone Service,” a “facilities-based phone service specifically designed for use over the Clearwire broadband network.” Clearwire is currently deploying the voice service throughout its service areas.¹⁷³

BellSouth is also deploying wireless broadband in Florida. It currently offers the service (using pre-WiMAX technology) in Palatka and DeLand, Florida, as well as in several other states. The company recently announced it would make the service available in five new markets, including Melbourne, Florida, and plans to deploy the service to additional cities throughout 2006.¹⁷⁴ BellSouth also announced an agreement to trial Alcatel’s WiMAX solution.¹⁷⁵ These developments are important because, as the company states: “Wireless broadband technology can also be used to bring high-speed Internet access to rural areas where wireline broadband cannot be efficiently deployed,”¹⁷⁶ and more generally, the technology can expedite broadband deployment by blanketing an area, without the need to retrofit a voice network with DSL equipment. As a result, WiMAX, whether deployed by independent carriers or ILECs, can provide the broadband needed to transport competing data and VoIP services.

c. WiMAX Development Will Enhance Competition

The availability of WiMAX is likely to increase. In describing its recent \$900 million funding deal with Intel and Motorola, Clearwire stated that it would “accelerate the development and deployment of WiMAX networks.” Motorola will also supply Clearwire with broadband equipment and Intel will work to include WiMAX chipsets in future computing platforms. As stated by Sean Maloney, Intel executive vice president and general manager, Mobility Group:

Wi-Fi has become an essential part of people's lives. WiMAX is next. It is rapidly moving from a technology initiative to real deployments. As Intel plans the integration of mobile WiMAX into our Centrino Mobile Technology notebook platforms, it is incredibly important to collaborate with the broadband wireless providers who will offer WiMAX services. This investment in Clearwire will lay the foundation for high-speed mobile broadband services across North America.¹⁷⁷

A recent report by TelecomView predicts that by 2011, fixed WiMAX networks worldwide will have 88 million subscribers and account for spending of \$43 billion. The report finds that

¹⁷³ See Clearwire Press Release, *Clearwire Becomes First International Wireless Broadband Company to Offer Simple, Reliable Internet Phone Service*, April 10, 2006 and *Clearwire News Releases*, available at <http://www.clearwire.com/company/news/releases.php>.

¹⁷⁴ See BellSouth Press Release, *BellSouth Expands Wireless Broadband Service Into Five New Markets*, June 28, 2006.

¹⁷⁵ See BellSouth Press Release, *BellSouth Selects Alcatel for WiMAX Trial*, June 27, 2006.

¹⁷⁶ See, *BellSouth Expands Availability of Wireless Broadband in Athens*, November 17, 2005, available at http://bellsouth.mediaroom.com/index.php?s=press_releases&item=1402.

¹⁷⁷ See Clearwire Press Release, *Clearwire Secures \$900M In Financing Round Led by Intel Capital and Announces the Sale of NextNet Wireless to Motorola*, July 5, 2006.

WiMAX has already established itself as a viable technology for providing broadband data services. It is being used to bring broadband to developing countries, to compete with fixed broadband services, and to extend broadband to rural areas...¹⁷⁸

WiMAX will complement VoIP by providing wireless broadband internet access anywhere in a metropolitan area. In-Stat discusses some of the potential applications of WiMAX:

802.16-2004, the fixed variant of WiMAX, is designed to accommodate any application currently served by cable or DSL, including the triple play of data, voice and video. A single WiMAX base station...can backhaul traffic from cell sites and WiFi hotspots and provide last mile broadband access to homes and enterprises.

...a key differentiator of 802.16-2004 will be its Nomadic mode, which supports wireless broadband communication within a given area while the end user or device is either stationary or moving slowly at "pedestrian" speeds through the area. This means that a user can connect to a WiMAX network at home, take his WiMAX-enabled device (PDA, laptop, modem, and handset) to work or play, and connect to a WiMAX network at those locations as well. In addition, the user can maintain his broadband connection as he moves around within the WiMAX network coverage area...¹⁷⁹

3. BPL

Broadband Over Powerline, or BPL, has been developed to allow transmission of broadband signals over existing power line facilities. Because it uses the existing utility infrastructure, BPL provides electric utilities a low cost means of entry into the communications markets and allows them to take advantage of economies of scope. Recently retired FCC Commissioner Abernathy explained the significance of BPL this way:

Access BPL may play an important role as a new competitor in offering broadband access to homes and businesses because power lines are available in almost every community. This means that the traditional providers of broadband communications, DSL and cable modem services, will face a new competitor. In addition, Access BPL may serve as a broadband solution in geographic areas where DSL and cable modem services are not yet offered.¹⁸⁰

¹⁷⁸ See FRESHNEWS.COM, *TelecomView Study Says Fixed WiMAX Gaining a Strong Foothold*, June 19, 2006, available at http://www.freshnews.com/news/other-tech-areas/article_32585.html.

¹⁷⁹ K. Lundgren and N. Bogen, *WiMAX: Challenging the Status Quo*, In-Stat, December 2005, p. 10.

¹⁸⁰ FCC Commissioner Kathleen Q. Abernathy, *Broadband Over Power Line*, Focus on Consumer Concerns, Vol. 4, Number 1, May-June 2004.

The deployment of BPL facilitates competition for voice services, in addition to broadband. This occurs in two ways. First, the broadband line allows the customer to purchase service from any of the numerous independent VoIP providers or a VoIP offering from the BPL service provider. Second, the BPL service provider may offer VoIP even if the customer does not purchase broadband service.¹⁸¹

Although certain obstacles have caused a slow commercial deployment of BPL, deployment has accelerated. In a 2006 Report of the Broadband Over Power Lines Task Force, the National Association of Regulatory Utility Commissioners noted:

The year 2005 marked an interesting, albeit mixed, year for BPL. The year's highlights saw encouraging signs that BPL may enhance broadband competition and electric utility functionality on a more widespread basis. BPL supporters could point to such developments as commitments to BPL by major media and technology companies, new trial start-ups, new full-scale commercial deployments, and realization of benefits from application of Smart Grid principles.¹⁸²

It is also worth noting that in May 2006, Current Communications attracted \$130 million in equity investments from new and existing investors to accelerate the deployment of BPL. New equity investors are General Electric; EarthLink, which will serve as a retail provider of Current's broadband services; TXU Corp.; and Sensus Metering Systems, which provides meter-reading products. Existing equity investors include Duke Energy; EnerTech Capital Partners; Goldman, Sachs & Co.; Google; Hearst; and Liberty Associated Partners LP, an investment partnership between Liberty Media and the Berkman family.¹⁸³ Clearly, the market is recognizing the potential of BPL.

As noted in the *Florida PSC 2005 Competition Report*, several utilities with a presence in Florida have been exploring BPL. These include Progress Energy (test in North Carolina),

¹⁸¹ For example, Current Communications is offering a residential broadband and VoIP package to its BPL service area for \$49.90 per month. Residential customers may also purchase phone service only for \$34.95. Current is currently deploying BPL to over 2 million homes and business in the Dallas-Ft. Worth area, in conjunction with TXU Electric Delivery. See <http://www.current.net/ServiceAndPricing/Residential/Voice/PricingAndBenefits/>, <http://www.current.net/ServiceAndPricing/Promotions/> and Current Communications Press Release, *TXU and CURRENT Communications to Create Nation's First Multipurpose Smart Grid*, December 19, 2005, available at <http://www.current.net/OurCompany/PressReleases/PressReleasesDetails/?pressid=15>.

¹⁸² The National Association of Regulatory Utility Commissioners, *Report of the Broadband Over Power Lines Task Force*, February 2006, p. 2. The Report also mentioned that 2005 saw:

news that several BPL trials ended unsuccessfully. BPL detractors continued to question the long-term sustainability of the technology, especially when confronted with the faster deployment and superior funding of its two largest broadband competitors, cable television's cable modem service and telecommunications providers' DSL service. Those who contend that BPL interferes with ham radio and other radio applications also maintained their opposition to deployments of certain BPL technologies.

¹⁸³ See B. Santo, *BPL Specialist Current Raises \$130 M*, CED Magazine, May 4, 2006, available at <http://www.cedmagazine.com/article/ca6331733.html?text=bpl+specialist+current+raises>.

Florida Power & Light (announced that it was testing the technology), and Southern Company (BPL demonstration in Georgia). The Commission also noted Jacksonville Electric Authority's (JEA) partnership with Nemours Children's Clinic to deliver pediatric remote home monitoring services via BPL for asthmatic children in the Springfield community of Jacksonville, Florida. In July 2005, The National Rural Telecommunications Cooperative reported that:

ElectroLinks, one of two broadband over power line (BPL) equipment companies participating in a performance pilot of BPL technology in low-population rural settings, has completed the first stage of its equipment installation at NRTC member West Florida Electric Cooperative (WFEC) in Graceville, FL.

"The demonstration was especially significant since [Electrolinks and WFEC] used WildBlue [Satellite broadband], BPL, Wi-Fi and [voice over Internet protocol], and it was all plug and play," said Steve Collier, NRTC's vice president, Emerging Technologies.¹⁸⁴

Thus, although BPL is in its infancy in Florida, utility providers already represent potential competitors to telephone and cable companies in the provision of broadband, and therefore the provision of voice services, even in rural areas.

V. Policy Implications: Intermodal Competition Implies That Reforms Should be Implemented Rapidly

Intermodal competition is a major force in Florida today. It has already had a tremendous effect on the State's telecommunications market, and it will only intensify in the years to come. Legislators and regulators should reevaluate old assumptions that may have applied decades ago during the monopoly era, but that no longer hold true. To ensure that Florida takes a leadership role in technology and communications, continuing to attract investment to the State, telecommunications regulation must take into account the dynamic competition that has emerged and that is here to stay.

More specifically, the intermodal competition that has developed in the last five years clearly implies that policymakers must allow market forces to play an even larger role than they already do in order to yield economically efficient outcomes. First, as described above, technological change, notably convergence, and intermodal competition, has essentially eliminated the natural monopoly justification for regulating ILECs. LEC (ILEC and CLEC) networks face formidable and increasing competition from advanced technologies such as digital cable and wireless for the "last mile" connection. The emergence of intermodal competition has so broadened telecommunications markets beyond the traditional wireline sector that all communications firms have to adapt much more rapidly than at any time in the past. In this new environment, existing modes of economic regulation are only likely to retard the evolution of the telecommunications market and pose barriers, rather than solutions.

¹⁸⁴ See *NRTC Update*, Volume 3, Number 14, July 6, 2005, available at http://www.nrtc.coop/us/main/nrtc_update/Update2005/NRTCUCU_070605.pdf.

Second, the historic rationale for ignoring costs and subsidizing basic local exchange services to realize the positive network externality traditionally associated with the growth of the wireline public switched network has all but disappeared.¹⁸⁵ As the percentage of households with telephones has grown in Florida (from about 89 percent in 1984 to about 92 percent in 2005),¹⁸⁶ there is little to be gained in network value by adding more subscribers.

As we understand it, concerns about universal service have been kindled by recent apparent declines in CPS telephone penetration rates reported by the FCC for Florida (*e.g.*, the apparent decline from 2003 to 2005). These concerns appear to be misplaced because of: (1) changes in the CPS questionnaires administered after November 2004, (2) growth in the number of people with wireless phones only, and (3) favorable demographic trends—*e.g.*, vigorous income growth and low unemployment.¹⁸⁷

A detailed analysis of universal service is beyond the scope of this paper; however, we can shed some light on the limitations of the FCC data and on the extent to which the shift to wireless phones explains the apparent but spurious decline in telephone penetration. We believe that the shift from wireline to wireless explains virtually all of the apparent decline. This is because data show that a growing percentage of households with no wireline phone report that they use a wireless phone. Thus, while the percentage of Florida households reporting they had a telephone dropped by about three percentage points from 2003 to 2005,¹⁸⁸ available data imply that increases in the percentage of households without a wireline phone that used a wireless phone instead more than offset this drop.¹⁸⁹ Thus, notwithstanding the apparent decline in telephone penetration reported by the FCC, we believe that overall residential (wireline plus wireless) telephone penetration has stayed at about the same extremely high level in Florida.

In addition, the FCC report on telephone penetration states that the CPS data “may be on the low side,” compared to the more complete data obtained in the decennial census.¹⁹⁰ The FCC

¹⁸⁵ Bridger M. Mitchell and Ingo Vogelsang, *Telecommunications Pricing: Theory and Practice*, New York: Cambridge University Press, 1991, p. 55.

¹⁸⁶ Federal Communications Commission, Industry Analysis & Technology Division, Wireline Competition Bureau, *Telephone Subscribership in the United States, Data Through November 2005* (“FCC Subscribership Report”), Table 3.

¹⁸⁷ Florida Gross State Product grew from \$556.7 billion to \$674 billion from 2003 to 2005 and the unemployment rate fell from 5.3 percent to 3.8 percent. Employment data from the Florida Agency for Workforce Innovation, Labor Market Statistic, available at <http://www.labormarketinfo.com/library/laus/historical/histsa.xls>; and Gross State Product data from Bureau of Economic Analysis, U.S. Department of Commerce, available at <http://www.bea.gov/bea/regional/gsp/>.

¹⁸⁸ *FCC Subscribership Report*, Table 3.

¹⁸⁹ For example, as mentioned in section IV.C.4, a recent Forrester survey found that the percentage of U.S. households with cellular service that have substituted wireless for wireline service has increased from 4 percent in 2003 to 8 percent in 2005. Multiplying this by the average wireless penetration in Florida for these years, as reported by the *Florida PSC 2005 Survey* (Figure 18), results in an increase of three percentage points in the number of households that replaced wireline with wireless service in Florida, completely offsetting the telephone penetration decline reported by the FCC.

¹⁹⁰ According to the *FCC Subscribership Report* at page 2: “the results of the CPS cannot be directly compared with the penetration figures... [in the] decennial censuses. This is due to differences in sampling techniques and survey methodologies....” The FCC explains that the difference between the higher figure in the 2000 decennial

also states that “Because of the increasing number of households that have wireless only, there was some concern that some of these households may not think of their cell phones when asked if they have a telephone.” Unfortunately, although the CPS changed the question, it may have exacerbated the undercount of households with phone service. As the FCC states regarding national telephone penetration: “While we note there was an apparent drop in the penetration rate between November 2004 and March 2005, at least some of this drop may be attributable to households that responded to the previous form of the question by reporting phones that were not in service.”¹⁹¹ Moreover, the availability of low cost wireless alternatives such as prepaid calling plans provides a market place solution to universal service concerns.¹⁹²

A recent MIT Communications Futures Program working paper found that, if intermodal competition is strong—as we have shown in Florida—then “In adopting a ‘go slow’ approach to telecom deregulation, policymakers risk repeating the mistakes of the past.”¹⁹³ In general:

The costs of late, slow, or piecemeal deregulation can be quite high. Obsolete regulations . . . can decrease consumer welfare substantially. These losses . . . are paid not only by consumers in lower quantity and quality . . . , foregone innovations, [less] choice, [and] often by taxpayers . . . as the government may end up bailing out failing incumbents . . . and their . . . workforces. Ultimately, deregulation that is too late can drive the incumbent(s) into bankruptcy, and bestow monopoly power on the newly dominant former entrant(s).¹⁹⁴

More specifically, the MIT paper shows that the costs of delaying regulatory reform in industries experiencing intermodal competition have been extremely high. For example, although the railroads were facing substantial intermodal competition from trucking by the mid-1950s, they were saddled with outdated subsidy requirements and pricing restrictions; thus, “the railroads were unable to sustain investment and attract investors. Over time, the railroads’ collapse reduced social welfare and cost taxpayers billions in repeated bailouts.”¹⁹⁵ By the 1970s, every major Northeast railroad had gone bankrupt and the number of operating track miles dropped

census and the lower figure in the CPS data for the same year “is statistically significant and appears to indicate that the CPS value may be on the low side and the decennial census value may be on the high side, with the most probable value lying somewhere in between.”

¹⁹¹ *Id.*, note 3. The new questions asked in the CPS are: “Does this house, apartment, or mobile home have telephone service from which you can both make and receive calls? Please include cell phones, regular phones, and any other type of telephone.” Respondents could answer “no,” because the “house, apartment, or mobile home” does not have telephone service in operation—either because the service was out or because they believe the mobile phone is out of the house or is associated with the person who has the phone, rather than the house or apartment.

¹⁹² As discussed in Section IV.C.2, the number of prepaid wireless subscribers has been growing rapidly and is expected to stimulate wireless industry growth in the future. These plans are low-cost, with monthly ARPU ranging from \$14 to \$37, depending on plan and provider, and averaging about \$21.

¹⁹³ Professors Charles H. Fine and John M. de Figueiredo, *Can We Avoid Repeating the Mistakes of the Past in Telecommunications Regulatory Reform?*, Working Paper 2005-001, MIT Communications Futures Program, Massachusetts Institute of Technology, March 21, 2005, p 5.

¹⁹⁴ *Id.*, p. 10.

¹⁹⁵ *Id.*, p. 14.

dramatically. Delayed banking deregulation in the face of entry and intermodal competition by money market funds generated similarly deleterious effects in that industry.¹⁹⁶

In discussing the application of their findings to telecommunications, the authors of the MIT paper conclude that:

...the history of trucking and railroads has the potential to become an apt analogy for the communications sector today. The results of severely delayed regulatory relief were felt by hundreds of thousands of rail workers, communities ... denied competitive alternatives, and shippers.... The failure of Government to respond to change and foster rail deregulation proved a "lose-lose" situation for railroads, their industrial customers, and consumer welfare generally.¹⁹⁷

... when unconstrained entrants have been able to leverage their advantaged regulatory position to drive incumbent(s) into decline, then deregulation can arrive "too late" for welfare maximization, but is appropriate "as soon as possible" to minimize additional welfare losses.¹⁹⁸

This pattern is consistent with what seems to be unfolding in today's telecommunications marketplace. Consumers are confronted with an increasingly wide array of communications options from wireless providers, from cable TV operators, and from new entrants offering low-cost (or free!) VoIP service.¹⁹⁹

Finally, they make it clear that policy makers must act promptly:

Further, since ... the telecommunications industry today operate[s] at much faster clockspeeds than ... the rail industry fifty years ago, the window of opportunity for timely ("in the zone") deregulation in telecommunications is likely to be short

¹⁹⁶ See *Id.*, p. 19 in which the authors explain that

Similar to what we saw in the railroad industry, in banking an economic shock (rampant inflation) also created a new competitor: money market mutual funds (MMMF's). MMMF's had many of the same properties as simple savings and checking accounts offered by banks and S&L's, but offered higher interest rates to depositors compared with what the S&L's were allowed to pay. The primary response of policy makers to the resulting distress to the banks was NOT to allow banks to respond directly to the competitive threat from the MMMF's and pay higher interest rates to depositors.

Rather, policy makers tinkered around the edges of regulation and allowed more risky loan practices that contributed to the massive and costly savings and loan failures and bailouts that "cost taxpayers hundreds of billions of dollars." Again the message is that markets work more effectively than regulation.

¹⁹⁷ *Id.*, pp. 27-28.

¹⁹⁸ *Id.*, p. 10.

¹⁹⁹ *Id.* p. 10. The authors add that "Unlike many of these competitors, incumbent telephone companies must often seek state regulatory approval and sometimes engage in protracted tariff proceedings if they wish to respond to the price changes of unregulated rivals. That is, the incumbent's natural competitive pricing and product portfolio response to entrants can be delayed because of these regulatory proceedings;" emphasis added.

compared to that for railroads. Although 1996 may have been “too early” for such deregulation, when the conditions are right, deregulation should be comprehensive and quick. Delaying regulation beyond this zone could well prove to be “too late,” resulting in severe and unnecessary losses in social welfare, causing the incumbent telephone carriers to go the way of the railroads.²⁰⁰

When entrants have established themselves to be economically viable and have *begun* to take market power and share from incumbents, the industry is ‘in the zone’ for timely deregulation.²⁰¹

Thus, given that (1) the two traditional rationales for telecommunications regulation—monopoly power, and universal service—have been greatly diminished by technological change and intermodal competition; and (2) regulatory intervention in markets has unintended, but high indirect costs, it is clear that regulation needs to be reconsidered in light of the new realities of intermodal competition.

²⁰⁰ *Id.*, p. 28.

²⁰¹ *Id.* pp. 9-10; emphasis added.

About the Authors

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At NERA, **Dr. Taylor** heads the Communications Practice and the Boston office. He has worked primarily in the field of telecommunications economics on problems of state and federal regulatory reform, competition policy, quantitative analysis of state and federal price regulation proposals, competitive effects of mergers among major telecommunications firms, analyses of vertical integration and interconnection among telecommunications networks, and antitrust litigation in telecommunications markets. He has testified on telecommunications economics before numerous state regulatory authorities, the Federal Communications Commission, the Canadian Radio-Television and Telecommunications Commission, the New Zealand Commerce Commission, the Comisión Federal de Telecomunicaciones de México, federal and state congressional committees and courts. He has appeared as a telecommunications commentator on PBS Radio and on The News Hour with Jim Lehrer.

He has published extensively in the areas of telecommunications policy and in theoretical and applied econometrics. His articles have appeared in telecommunications industry publications as well as the *American Economic Review*, *Econometrica*, the *Antitrust Law Journal*, the *Yale Journal on Regulation*, the *Review of Industrial Organization*, the *International Economic Review*, the *Journal of Econometrics*, *Econometric Reviews*, and *The Encyclopedia of Statistical Sciences*. He has been an Associate Editor of the *Journal of Econometrics*.

Dr. Taylor received a B.A. *magna cum laude* in Economics from Harvard College, an M.A. in Statistics and a Ph.D. in Economics from the University of California at Berkeley. He has taught economics, statistics, and econometrics at Cornell and the Massachusetts Institute of Technology and was a post doctoral Research Fellow at the Center for Operations Research and Econometrics at the University of Louvain, Belgium. He has performed and published research on economics, econometrics and telecommunications policy at Bell Communications Research, Inc. and the Economics Research Center at Bell Laboratories.

Dr. Ware has studied telecommunications regulation and competition issues for over 30 years. At NERA, he has directed and written international comparisons of telecommunications regulation and competition policies for submission to the US Federal Communications Commission (FCC) and to New Zealand's Ministerial Inquiry into Telecommunications.

Dr. Ware's recent work has focused on convergence and intermodal competition among wireless, cable, Internet, and wireline companies, including analyses of:

- Intermodal competition for directory assistance, local, long distance, Centrex/PBX, and other services;
- Convergence of wireline, wireless, cable, and Internet communications technologies;
- Network interconnection costs;

- Costs, pricing, and entry policy, and universal service issues associated with the transition to competition;
- Analyses of the competitive effects of mergers involving wireline and/or wireless communications companies; and
- Carrier access pricing, cross-subsidization, and other pricing and costing issues.

Dr. Ware also has substantial experience with analyses of demand and the economics of network deployment. In particular, he has:

- Directed studies of demand for residential and small business regional telephone services, as well as for high capacity business private line services, telephone switching services, and local telephone services; and
- Testified on the planning and deployment of new technology in telecommunications networks.

He has testified or filed affidavit testimony before the US Postal Rate Commission, state regulatory commissions, the FCC, and the US Department of Justice. Dr. Ware is co-author of three chapters of *Communications for a Mobile Society: An Assessment of New Technology* and has published articles in *Public Utilities Fortnightly*, *The Journal of Regulatory Economics*, *IEEE Communications*, and proceedings of the *Fifth and Seventeenth Annual Telecommunication Policy Research Conferences*. His paper, "Competition and Rate Restructuring for Postal Services" appears in *Managing Change in the Postal and Delivery Industries* (Kluwer Academic Publishers, 1997).

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NERA Economic Consulting is an international firm of economists who understand how markets work. Our clients include corporations, governments, law firms, regulatory agencies, trade associations and international agencies. Our global team of 500 professionals operates in 16 offices across North and South America, Europe, Asia and Australia. Founded in 1961 as National Economic Research Associates, our more than 40 years of practical experience creating strategies, studies, reports, expert testimony and policy recommendations reflects our specialization in industrial and financial economics.

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