LOCAL EXCHANGE COMPETITION
UNDER THE 1996 TELECOM ACT

Red-Lining The Local Residential Customer

NOVEMBER 4, 1997
LOCAL EXCHANGE COMPETITION UNDER THE 1996 TELECOM ACT

Red-Lining The Local Residential Customer

SUMMARY

In February 1996, Congress passed, and President Clinton signed into law, a sweeping reform of U.S. telecommunications regulation. The Telecommunications Act of 1996 was intended to open entry to new competition in every segment of the industry: long-distance and local, wireline and wireless, copper and cable, service and equipment. The Act is now over a year and a half old.

How well has competition evolved so far? In local markets, competition has developed rapidly – but only where competition makes strategic and economic sense for the new entrants. It makes sense in the business markets of larger cities. In residential markets, competitors are selling and reselling measured service (often at steep per-minute rates), local toll service, heavily bundled services, and even some basic flat-rate service in some states. But these competitors only build facilities out to business customers. WorldCom, the local competitor most in the news recently, has made red-lining the centerpiece of its competitive strategy. John Sidgmore, WorldCom’s Vice Chairman, has said that “[f]rom the very start, we’ve been focused on the business market rather than the consumer market, and I think that has really set us apart.”

Local Competition

In local markets, competition has developed rapidly – wherever competition makes strategic and economic sense for the new entrants. That competitive sphere includes business services of all kinds: short-haul toll services, mobile services, many data services, and other enhanced services.

C The primary objective of the 1996 Act was to open all telecom markets to competition. As of November 1997, over 280 companies were providing competitive local exchange carrier service of some description – companies like WorldCom and TCG, cable companies, interexchange carriers, providers of personal communications services, providers of shared tenant services, and others.

C Interconnection regulation, Congress recognized, can greatly accelerate the development of competition and efficient collaboration in networked industries. Over 1,500 interconnection agreements had been reached by November 1997.

C In SBC’s seven-state region, competitors are serving over 300,000 lines via resale. Likewise, in BellSouth’s region, competitors are serving 130,000 such lines. Even in South Carolina, a BellSouth state in which competitors have generally shown very little interest, competitors are reselling nearly 4,000 lines.

C Capital investment in competitive local exchange facilities is rising fast. Counting AT&T, MCI, and Sprint among them, the companies currently competing in local exchange markets invested $2 billion less than the Bell Companies in 1993. By 1997, capital investment by that same group had surpassed Bell Company investment by about $4 billion.

C Competitive local carriers installed over 500 new switches in 1996, and another 270 in the first half of 1997 – far more new switches than were deployed by Bell Companies.
Until recently, Bell Companies were by far the largest buyers of fiber-optic cable, even with AT&T and MCI included on the other side of the comparison. Current indications are that other buyers of fiber will outstrip the Bell Companies within the decade, if they have not done so already.

Data traffic is growing much faster than voice and will soon surpass it, if it has not already done so. Since passage of the 1996 Act, cable operators have begun offering data services to a rapidly growing number of customers in this high-growth segment of the market. A projected 80 percent of homes passed by cable lines will be able to access the Internet over cable by 2002, and a quarter of them are expected to subscribe. By that estimate, one third of all Internet users will be accessing the Internet over cable networks.

By November 1997, providers of wireless PCS had concluded negotiations and signed 157 interconnection agreements with incumbent wireline carriers. Since passage of the 1996 Act, PCS providers have launched commercial service in markets that serve half of the U.S. population. Wireless prices are falling.

A study commissioned by AT&T and MCI before passage of the 1996 Act concluded that natural economic forces would prevent cable and wireless operators from having any significant competitive impact on local markets in the foreseeable future. But judged against the historical record in other markets, the competitive record in local markets since 1996 is excellent. Far more has happened in local markets during twenty months of private interconnection negotiation than happened in other markets during years of interconnection regulation minutely orchestrated by federal regulators.

**Competition at the High End of the Market**

Local phone companies spend an average of $27 to $37 per month to provide a local phone line and dial tone for normal levels of local calling. The average business subscriber pays a monthly fee for a basic line, dial tone, and subscriber line charge that aligns fairly closely with that average cost. The average residential subscriber, by contrast, pays a basic fee of about $17—typically 50 to 80 percent lower than business rates. Incumbent local phone companies make up the shortfall on fees charged to provide interexchange access (which generate average net monthly revenue of $3-$4 per line), local toll charges (net monthly revenue of $3 per line), vertical services like call waiting and Caller ID (another $4 per line), and business services generally.

These numbers reflect a deliberate regulatory policy to maintain affordable service and promote universal connection. In most markets, subsidies of any kind are inefficient, but their effect on efficiency in networked industries is less clear. The value of the telephone network is enhanced each time a customer is added to the network—every new connection creates a positive “network externality.” All other subscribers benefit from every new subscriber added to the network. There are thus strong social and political reasons to maintain affordable residential rates, and legitimate economic and efficiency arguments too.

Price regulation of local residential service does, however, clearly affect the trajectory of competition. Lowering prices on one side of the local market channels competitive investment toward the other, at least initially. Any company with money to invest in a new network will surely build out to business customers who currently pay $30 a month for measured service before it builds out to residential customers who currently pay a flat-rate $17 for unlimited service.

This is precisely what has happened so far, in the twenty months since the 1996 Act
opened local markets to competition. In residential markets, competitors are selling and reselling measured service (often at steep per-minute rates), local toll service, heavily bundled services, and in some states, basic flat-rate service. When it comes to building networks, however, they build out to business customers alone. Competitors thread competitive fiber-optic networks through areas of high daytime population – business areas – while bypassing areas with low daytime population.

WorldCom, which recently announced a $30 billion stock bid for MCI, has been an explicit and unapologetic leader in implementing a red-lining strategy of this kind. WorldCom’s existing long-distance, local, and Internet operations serve business customers almost exclusively. The company has repeatedly stated that residential service plays no part in its business plans. The proposed acquisition of MCI generally fits with this established strategy. On the long distance side, WorldCom has suggested that it might sell or shed MCI’s current base of 20 million residential customers, keeping only MCI’s three million business customers. MCI’s local networks, particularly MCImetro, run almost exclusively to business customers. And WorldCom’s local arm, MFS, has no plans at all to build out to residential customers. According to the company’s chairman Bernard Ebbers, “[n]ot AT&T, not MFS or anyone else, is going to build local telephone facilities to residential customers. Nobody ever will, in my opinion.”

Competitive Opportunities and Regulatory Impediments

That some elements of basic, residential, local service are priced below cost complicates the competitive picture, but it should not, standing alone, make competition impossible. The typical customer buys enough additional local toll and vertical services to remain an economically attractive target, absent other obstacles to entry. And the typical customer strongly prefers to buy the entire bundle from a single vendor, if (s)he can. Vendors recognize that bundling lowers their marketing costs, raises customer loyalty, reduces churn levels, and increases overall usage – in business and residential markets alike. In some markets, at least, MCI, AT&T, Sprint, and WorldCom, among others, are already assembling bundles of service to accommodate customer demand.

Competitors are legally free today to sell complete bundles of local, long-distance, and other telecom services, and – regulation aside – have compelling business reasons and opportunities to do so. As soon as one vendor begins offering fully bundled local and long-distance service in any major market, other vendors will immediately follow. They will have no choice. Customers will buy bundles, rather than bits and pieces of service, if they can.

There remains, however, one final – and decisive – obstacle to local competition in residential markets. Bell Companies remain formidable potential competitors in all telecom markets in which they do not already compete. The regulatory artifact is equally well understood, at least within the industry itself. Bell Companies are not currently permitted to compete in the highly profitable long-distance toll markets. That first handicap creates a second one: Bell Companies are also hobbled in competing for most lucrative business customers even in local markets, because all customers prefer to buy complete service packages, not bits and pieces. Finally, the FCC has made clear that AT&T, MCI, and other potential competitors can keep Bell Companies caged by not competing in local residential markets.

Every actual or potential rival of the Bell Companies benefits from this perverse regulatory policy. Incumbent long-distance providers clearly benefit, AT&T and MCI most strongly among them. These two companies completely dominate residential long-distance markets, and residential service generates the bulk of their interexchange profits. Other competitors with no interest in residential markets, or no long-distance networks of their own, have equally strong incentives to
help preserve the Bell Company quarantine. The most profitable opportunity for these competitors is to sell bundled services to business customers, and they accommodate customer demand by doing so. Preventing Bell Companies from offering comparable bundles is very much to their advantage.

Every potential competitor in local residential markets will assess the opportunities for competition not only on its economic merits, but also on its regulatory de-merit – the risk that competition will end up letting the Bell Companies compete too. In most local markets today, the potential profit from capturing some share of residential markets – profits that are depressed from the outset by an array of subsidies and below-cost prices – is plainly outweighed by the potential losses that new Bell Company competition would then entail.
Policies to Promote Competition

Few casual observers, however, are prepared to accept that local markets are competitive when the populist consumer – the residential subscriber – can still buy the populist service – basic, local, voice – from only a single provider. When will there be a second?

In some of the largest states, a second and more are up and running today. In California and New York, for example, regulators have chosen to set residential prices at levels fairly close to business rates, and that has helped tip the competitive calculus in favor of entry. But in most other states, the best competitive strategy is to keep the incumbent caged. The way to do that, so far at least, is not to compete in local residential markets at all.

In these circumstances, the only way to get competition started is to simply let the bundling begin. Of course, local phone companies will try to bundle first, if they can: they have much to gain by doing so, and nothing to lose. But insisting that they start second only guarantees that no bundling – and therefore no competition in residential markets – will start at all. Only by allowing local phone companies to go first will regulators impel others to beat them to it. AT&T, MCI, and other long-distance carriers have no incentive at all to be first. But they do have a strong incentive not to be second or third. The moment it becomes clear that a first is coming, one way or another, long-distance carriers will take steps to make sure they are not left far behind. They may not build out their own networks immediately, but they will certainly begin packaging what they already sell with local loop and dial tone supplied to them by local carriers at discount rates.

The few parts of the country that have seen relaxed regulation of local and other markets have realized tremendous benefits from them.

Connecticut would hardly appear to be the nation-leading target for competition: much of the southern part of the state is a residential suburb of New York City, and Connecticut’s residential rates are well below business rates. Hartford, the state’s main business center, ranks only 143rd in population nationwide. Nevertheless, Connecticut was one of the first states targeted by major carriers for local competition. AT&T began offering residential service in Connecticut only a few months after it entered California. MCI included Hartford on its short list of initial targets for local entry. TCI chose Hartford and surrounding suburbs as its first U.S. locality in which to offer advanced digital telephone, cable, and Internet access services, and invested heavily in its Hartford network during a period when the company virtually froze investment everywhere else. Over 20 other cable, wireless, and fiber-optic competitors have been certified to offer local exchange service in the state. TCI has invested $300 million on a new digital network in the state. MCI and several other competitors are pouring money into other networks. The incumbent local carrier is responding with $4.5 billion of new investment in higher bandwidth, long-distance service, and video.

All of this competitive activity can be traced to the competitive initiatives of Connecticut’s incumbent local phone company, Southern New England Telephone (SNET). Connecticut is the only state in the continental United States whose phone company is permitted to offer bundles of service to residential customers. SNET began offering a complete bundle of local and long-distance services to Connecticut customers in April 1994. SNET immediately undercut AT&T’s prices by an average of 18 percent; by February 1997, SNET was providing long-distance service to about 35 percent of access lines in the state.

Unable to block SNET in the regulatory arena, AT&T, MCI, TCI, and other companies simply had to respond in the marketplace, and that is exactly what they did. Both AT&T and MCI even sought FCC permission to cut their interstate toll rates in Connecticut alone, to respond to
“the rapidly emerging competition from SNET.” When permission was denied, they started offering extremely low in-state toll rates instead. Connecticut consumers thus benefited from the early arrival of local competition. And they benefited even more from heightened competition in long-distance markets. Households that sign up for SNET’s cut-rate service save about $7 per month. By comparison, their residential local service averages about $18 per month. The competitive gains in both residential and long-distance markets resulted from a single regulatory policy: Let competitors compete.

Local residential competition in the United Kingdom has flourished under a very similar regulatory regime. The U.K. has over 20 facilities-based competitors offering local service at prices equal to, or in most cases below, British Telecom’s rates. SBC, US West, and other Bell Companies have formed business alliances with U.K. cable companies and other competitors. Nearly 40 percent of U.K. households now have the option to purchase cable telephony. All of this has occurred under a regulatory regime very much less interventionist than our own. As competition has developed, British regulators have deregulated further still.

The Connecticut and U.K. experiences confirm that the important challenge for policymakers is not how to promote competition to provide the single component of residential service that is already ubiquitous and artificially cheap. It is to promote competition in the entire bundle of services that residential consumers buy. Over the longer term, the objective must be to promote new investment in advanced services, and to make sure that the investment is not channeled only to the many profitable peaks of the market, and away from the one unprofitable valley.

**Promoting New Investment in Broadband Services**

The benefits to be gained from new investment in local infrastructure have never been greater. The Internet is the most important development in mass communications of our times. It is a major driver of economic growth in the United States and around the globe. Demand for bandwidth is rising rapidly, doubling every 3 months. Key components of the supply chain are not keeping pace, however. The supply of Internet bandwidth is lagging seriously, especially for residential subscribers. The reasons are again rooted in regulatory policies that block entry by the companies most able to meet the surging demand, and with the strongest incentives to do so.

Contrary to many popular perceptions, the worst problems of blocking and slow speeds in the Internet today are centered not in the local exchange but in the networks among the ISPs and backbone carriers. On average, users cannot download across the backbone networks faster than about 40 kilobits per second, considerably slower than the high-bandwidth local access technologies currently being deployed allow.

At the level of the Internet backbone, AT&T and MCI show little promise as architects of the network of the future. AT&T and all other long-distance carriers who derive most of their current revenues from voice must recognize that growth of the Internet threatens their profits almost as much as Bell Company entry into long-distance markets. By doing little to add to Internet infrastructure, incumbent long-distance carriers have left the field largely to a single ambitious upstart that is buying up large parts of the infrastructure already in place.

In these circumstances, Bell Companies clearly should be playing integral roles in supplying new Internet bandwidth, not only for local access, but up through the highest tiers of the network as well. The Bell Companies certainly have the right incentives to invest in this market, because the growth of the Internet helps them to sell additional telephone lines and new local bandwidth through services like ISDN. Unlike the incumbent long-distance companies, local phone companies have much to gain by migrating customers, residential customers in particular,
off subsidized, flat-rate analog lines and onto high-capacity, properly priced, digital lines. But most of the local telephone companies (aside from GTE) are legally barred from providing Internet backbone services. The current regulations that apply to Internet services discourage only one class of provider – the Bell Companies.

A second cluster of regulatory policies is creating equally strong disincentives to new investment in local Internet access facilities. Under the 1996 Act, Bell Companies are now required to “unbundle” and sell to their competitors whatever new capabilities and services they add to their networks, at rates determined by regulators, not market forces. On new, risky investment in facilities and services that turn out to be very popular, Bell Companies can therefore hope to recover only their original costs. New, risky investments that fail, by contrast, are charged to Bell Company shareholders, through the vehicle of price-cap regulation. Worse still, all Bell Company prices must be deflated according to a “productivity offset” concocted by the FCC, and pegged at a level that is unrealistically high. Regulation alone may thus transform any well-engineered, efficiently-priced, new broadband service into a source of steadily growing loss in subsequent years.

Under unbundling and interconnection regulations promulgated by the FCC, neither competitors nor incumbents will deploy such technology to reach any but the largest and most profitable business users. Competitors have little incentive to deploy the technology themselves, and the FCC has directed that they may lease successful new technologies from incumbent local carriers at FCC-determined cost, with no risk of losing on unsuccessful investments. Facilities-based competition by new entrants, and new investment by incumbents, will occur only when interconnection prices are properly aligned with underlying costs. Local phone companies will not deploy the technology either, because if the new services prosper, competitors will be able to buy them piece by piece, at sharp discounts, and capture the profits.

Finally, many of the traditional sources of profit allowed by regulators to support below-cost residential service in local markets are immediately put in jeopardy by new broadband services. The new digital lines will overwhelmingly be categorized as “enhanced services,” from which local phone companies do not currently collect long-distance access charges. High-bandwidth lines will also displace profitable second lines and other vertical services – the main sources of revenues that allow local phone companies to comply with regulatory mandates to set the price of basic residential service well below cost.

The stated goal of the 1996 Telecommunications Act is “to accelerate rapidly private sector deployment of advanced telecommunications and information technologies.” As the experience in Connecticut has shown, less regulation promotes more investment. Section 706 of the 1996 Act gives regulators the flexibility they need to learn from the Connecticut experience. It authorizes both the FCC and state authorities to “encourage the deployment . . . of advanced telecommunications capability” through “price cap regulation, regulatory forbearance, measures that promote competition in the local telecommunications market, or other regulating methods that remove barriers to infrastructure investment.”

In sum, regulators have in hand all the authority they need to unleash local competition and spur rapid new investment in high-bandwidth infrastructure. It is time to use it.
# TABLE OF CONTENTS

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>SUMMARY</td>
<td>i</td>
</tr>
<tr>
<td>TABLE OF CONTENTS</td>
<td>ix</td>
</tr>
<tr>
<td>1. LOCAL COMPETITION</td>
<td>1</td>
</tr>
<tr>
<td>Open Entry</td>
<td>1</td>
</tr>
<tr>
<td>Interconnection Agreements</td>
<td>3</td>
</tr>
<tr>
<td>Capital Investment</td>
<td>6</td>
</tr>
<tr>
<td>New Switches</td>
<td>7</td>
</tr>
<tr>
<td>Fiber Deployment</td>
<td>7</td>
</tr>
<tr>
<td>Facilities Interconnection and Resale</td>
<td>8</td>
</tr>
<tr>
<td>Data Services</td>
<td>9</td>
</tr>
<tr>
<td>Wireless Services</td>
<td>10</td>
</tr>
<tr>
<td>A Fast Transition</td>
<td>11</td>
</tr>
<tr>
<td>2. COMPETITION AT THE HIGH END OF THE MARKET</td>
<td>13</td>
</tr>
<tr>
<td>Costs and Prices of Local Exchange Service</td>
<td>13</td>
</tr>
<tr>
<td>Business Services</td>
<td>19</td>
</tr>
<tr>
<td>Local Toll Service</td>
<td>26</td>
</tr>
<tr>
<td>Vertical Services</td>
<td>27</td>
</tr>
<tr>
<td>Measured Service</td>
<td>30</td>
</tr>
<tr>
<td>3. COMPETITIVE OPPORTUNITIES AND REGULATORY IMPEDIMENTS</td>
<td>33</td>
</tr>
<tr>
<td>Customer Demand</td>
<td>33</td>
</tr>
<tr>
<td>Supply-Side Incentives</td>
<td>34</td>
</tr>
<tr>
<td>Regulatory Impediments</td>
<td>35</td>
</tr>
</tbody>
</table>
4. POLICIES TO PROMOTE COMPETITION ................................................................. 41
   Rebalancing Local Rates ......................................................................................... 41
   Unleashing Competition to Provide Bundled Service .............................................. 43
   The Connecticut Experience .................................................................................. 43
   U.K. Experience ....................................................................................................... 51
   Local Competition in Perspective ......................................................................... 54

5. PROMOTING NEW INVESTMENT IN BROADBAND SERVICES .................. 57
   Impediments to New Investment in Internet Backbone Networks ....................... 61
   Impediments to Competitive Investment in Internet Access Networks ................. 63
   Impediments to Investment by Incumbent Local Phone Companies
   in High Speed Local Networks ............................................................................. 66
LOCAL EXCHANGE COMPETITION UNDER THE 1996 TELECOM ACT

Red-Lining The Local Residential Customer

1. LOCAL COMPETITION

Open Entry. The primary objective of the Telecommunications Act of 1996 was to “open[] all telecommunications markets to competition.”\(^1\) The Act therefore eliminates legal barriers to entry.\(^2\) The framers of the Act fully recognized that in some local markets “a facilities-based competitor is not likely to emerge in the near term.”\(^3\) In writing standards for when Bell Companies would be permitted to enter long-distance markets, Congress therefore rejected all metric tests of competition in favor of a clear statutory “test of when markets are open.”\(^4\)

As of November 1997, over 280 companies had signed interconnection agreements to provide competitive local exchange service of some description in over 450 cities. Figure 1. These new “CLECs” include companies like MFS/WorldCom or TCG (formerly called “competitive access providers” or “CAPs”), cable companies, interexchange carriers, providers of personal communications services (PCS), providers of shared tenant services, and others. Table 1.


\(^3\) House Report at 72.

Interconnection Agreements. While the 1996 Congress saw open entry as the most essential change in the regulatory environment, it recognized that “it is extremely unlikely that
competitors will have a fully redundant network in place when they initially offer local service.”
Precisely because ubiquitous facilities-based competition might prove uneconomic, Congress
directed all incumbent local carriers to interconnect their networks with competitors upon request.
Interconnection regulation, Congress recognized, can greatly accelerate the development of
competition and efficient collaboration in networked industries; this regulatory lesson had already
been learned in markets for customer premises equipment, long-distance service, cellular
service, and Internet services.

Under the 1996 Act, competitors may lease unbundled, separately priced network elements
for resale to end users. Competitors may alternatively resell the incumbent’s local service,
buying that service at a discount from the price charged to retail customers and bundling it with the
reseller’s own long-distance, wireless, or other services. In August 1996, the FCC promulgated
rules purporting to implement these requirements; those rules are currently under review in the
courts. The FCC set the discount range for the resale of local loops at 17 to 25 percent of the
existing retail rates.

Interconnection negotiations began well before the FCC acted and have progressed rapidly,
even as major parts of the FCC rules have (to this point) been rejected by the courts. Some 200
interconnection agreements had been reached by February 1997, the first anniversary of the Act.
As of November 1997, the number of agreements signed exceeded 1,500. Figure 2. SBC
alone has signed over 200 interconnection agreements in its seven-state region, 150 of which have

\[Conference Report\] at 148.

\[47 U.S.C. § 251(c)(1), (2).\]

\[See, e.g., Use of the Carterfone Device in Message Toll Telephone Service, 13 FCC 2d 420 (1968).\]

\[See, e.g., MCI Telecommunications Corp. v. FCC, 580 F.2d 590 (D.C. Cir. 1978); MTS and WATS
Market Structure, Phase III, 100 FCC 2d 860 (1985).\]

\[See, e.g., An Inquiry Into the Use of the Bands 825-845 MHz and 870-890 MHz for Cellular
Communications Systems, FCC 2d 469 (1981); The Need to Promote Competition and Efficient Use of Spectrum
for Radio Common Carrier Services, 2 FCC Rcd 2910 (1987).\]

\[See, e.g., Report and Order, Amendment of § 64.702 of the Commission’s Rules and Regulations (Third
Computer Inquiry), 104 FCC 2d 958 (1986).\]

\[47 U.S.C. § 251(c)(3).\]

\[47 U.S.C. § 251(c)(4).\]

\[Local Competition Order, 11 FCC Rcd 15499, 15616 (unbundling), 15812 (pricing of interconnection and
unbundled elements), 15930 (resale).\]

\[Order on Petitions for Rehearing, Iowa Utils. Bd. v. FCC, No. 96-3321 (8th Cir. filed Oct. 14, 1997).\]

Competition Order ("8th Circuit Decision").\]

\[United States Telephone Association (USTA), Draft Competition Report, Nov. 1, 1997 (excludes
agreements between LECs and cellular carriers, but includes PCS providers). The USTA data on interconnection
agreements is preliminary; a final release of the updated Competition Report is expected in the first week of
November 1997.\]
been approved by state commissioners. Twenty months after the Act was signed, these dramatic numbers provide irrefutable evidence that the Act is rapidly accomplishing its first and most central purpose. Legal barriers to entry are gone. Interconnection agreements are being signed at a rapid and accelerating pace. Table 2. Companies do not negotiate and sign over 1,500 interconnection agreements for the fun of it. They sign them to compete.

![Figure 2. Interconnection Agreements](image)


Table 2. Competitive Carriers with Interconnection Agreements

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>ACM</td>
<td>Covad Comm.</td>
<td>Havre Answering</td>
<td>Multi-Family Comm.</td>
<td>Spectranet International</td>
</tr>
<tr>
<td>ACN</td>
<td>Crescent City Networks</td>
<td>Innovative Access</td>
<td>Multi Technologies Services</td>
<td>STL Partner</td>
</tr>
<tr>
<td>ACSI</td>
<td>CRG International</td>
<td>Interlink</td>
<td>National Tel</td>
<td>Strategic Technologies</td>
</tr>
<tr>
<td>Advanced Telecom</td>
<td>Cybernet</td>
<td>International Telecom</td>
<td>National Telecom of FL</td>
<td>Supra Telecom</td>
</tr>
<tr>
<td>AL 1-Franklin</td>
<td>Cytel</td>
<td>Interstate Tel</td>
<td>N.A. Telephone &amp; Telecom</td>
<td>Talk One America</td>
</tr>
<tr>
<td>ALEC</td>
<td>Data &amp; Electronic Services</td>
<td>Intertech</td>
<td>Network Multi-Family</td>
<td>TCG</td>
</tr>
<tr>
<td>America’s Tel</td>
<td>DeltaCom</td>
<td>Inter-World</td>
<td>Nielsen Comm.</td>
<td>Telecarrier Services</td>
</tr>
<tr>
<td>American MetroComm</td>
<td>Dial &amp; Save</td>
<td>IRSA Rockford</td>
<td>Northeast Telephone</td>
<td>Telecom Service Center</td>
</tr>
<tr>
<td>Annex</td>
<td>Dial Tone/Move</td>
<td>Jerry Laquier</td>
<td>NOW Comm.</td>
<td>Tel-Link</td>
</tr>
<tr>
<td>Arch Comm.</td>
<td>Dial USA</td>
<td>Jetcom</td>
<td>NTS Comm.</td>
<td>Telephone Co. of Central FL</td>
</tr>
<tr>
<td>Arkansas Comm.</td>
<td>Don-Mar</td>
<td>KADCOM</td>
<td>OCI</td>
<td>Tele Sys</td>
</tr>
<tr>
<td>Atlantic Connections</td>
<td>East Florida Comm.</td>
<td>Kansas Comm.</td>
<td>OmniCall</td>
<td>Texas CommSouth</td>
</tr>
<tr>
<td>AXCES</td>
<td>Eatel</td>
<td>Kentucky RSA</td>
<td>OnePoint Comm.</td>
<td>Texas Teleconnect</td>
</tr>
<tr>
<td>AXSYS</td>
<td>ELI</td>
<td>Kingsgate Midsouth Telecom</td>
<td>Orlando Business</td>
<td>Tie Comm.</td>
</tr>
<tr>
<td>Birdsong Leasing</td>
<td>ENTERGY</td>
<td>KMC</td>
<td>Telephone Services</td>
<td>Tortoise Comm. &amp; Paging</td>
</tr>
<tr>
<td>Business Telecom</td>
<td>ETC</td>
<td>Lambda Comm.</td>
<td>PacWest</td>
<td>Tricomm</td>
</tr>
<tr>
<td>California RSA</td>
<td>EZ Phone</td>
<td>LDM Systems</td>
<td>Pam Oil</td>
<td>TTE</td>
</tr>
</tbody>
</table>
### Capital Investment

While precise figures are elusive, capital investment in competitive local exchange facilities is rising fast. In 1993, the Bell Companies spent over $9 billion more on capital investment than cable operators, wireless companies, and four of the largest competitive access providers combined. There is almost no remaining gap between the capital investments of those two groups today. Counting AT&T, MCI, and Sprint among them, the companies currently competing in local exchange markets invested $2 billion less than the Bell Companies in 1993. By 1997, capital investment by that same group had surpassed Bell Company investment.

---

17 Few CLECs provide breakdowns of their investments between local exchange and other types of facilities, so there is no way to ascertain precisely how much CLECs – particularly those who also provide facilities-based long-distance service – are spending on facilities to provide purely local services.

18 In 1993, total capital expenditures of all wireless companies, cable operators (excluding Time Warner), and the four largest CAPs (MFS (combined with WorldCom), Brooks Fiber, TCG, and ICG) were $7.4 billion, compared with Bell Company capital expenditures of $16.7 billion.

19 Since the Act was passed, the Bell Companies have spent $32 billion, whereas cable companies have invested $13 billion, wireless companies have spent $13 billion, and the four largest CAPs have spent $3 billion. Due to conservative methodology, actual CLEC spending may be significantly higher than reported, and may have actually surpassed Bell Company spending since the Act.

20 1995 Annual Reports of AT&T, MCI, and Sprint.
by about $4 billion.\footnote{Second Quarter 1997 Quarterly Reports of AT&T, MCI, and Sprint. The Bell Companies have invested a great deal of capital to meet their obligations under the 1996 Act. For example, SBC estimates that by the end of the year it will have spent $1.1 billion to upgrade its networks. About $450 million of this was spent on long-term number portability alone.}

**Figure 3.**

![Figure 3. Capital Expenditures](chart)

### New Switches.
Competitive local exchange carriers installed over 500 new switches in 1996, and another 270 in the first half of 1997. Bell Companies have deployed far fewer new switches in that same period.\footnote{Although the number of switches deployed by Bell Companies has remained flat (and actually fallen in some regions), Bell Companies have been replacing many older switches with a fewer number of new, higher capacity switches.}

The difference is partly attributable to the fact that Bell networks are mature, so capacity increases can often be accommodated within existing Bell facilities.\footnote{Up to a point, it is possible to accommodate increases in capacity by adding modules to existing switches, rather than purchasing entire new switches; however, the LERG database only reports additions of entire switching entities, not the addition of modules.}

Nevertheless, since passage of the Act, competitive carriers in Arizona have deployed almost twice as many new switches as US West;\footnote{TCG added 3 switches; GST added 2; and MCI, Brooks Fiber, Cox, and ACSI each added one in the state.}
competitors in Florida have deployed four times as many new switches as BellSouth;\footnote{WorldCom and MediaOne each deployed 5 additional switches, while Intermedia Communications (ICI) deployed 3.}
competitors in Texas have deployed more than six times as many new switches as SBC.\footnote{TCG added 9 in the state; AT&T added 11; MCI added 6; and ICG and WinStar each added 4.} **Figure 4.**
Fiber Deployment. Until recently, Bell Companies were by far the largest buyers of fiber-optic cable nationwide. But the gap has been closing steadily during the last twenty months. In 1995, CLECs (including AT&T and MCI) deployed less than a quarter of the fiber the Bell Companies deployed. Since passage of the Act, competitive companies, excluding AT&T and MCI, doubled their installed base of fiber, deploying more than half the fiber of the Bell Companies. Figure 5. In 1996, non-Bell Companies purchased two-thirds of all fiber sold. Current indications are that other buyers of fiber will outstrip the Bell Companies within the next decade.

Figures 4 and 5 show the significant increase in fiber deployment by competitive companies since 1993. The data for Figure 4 come from the Bellcore LERG Database (versions: 7/93, 12/94, 7/95, 4/96, 10/96, 4/97 and 8/97); Northern Business Information, U.S. Central Office Equipment Market: 1996 Database 64-65 (1997).

Figure 5. Incremental Fiber Deployment

Facilities Interconnection and Resale. CLECs are interconnecting their networks at a rapid pace as well. Over 100,000 interconnection trunks – used to connect a CLEC’s network and switches to the Bell Companies’ – are operational in SBC’s seven-state region. BellSouth has installed 30,000 in its nine-state region. Over 300 physical or virtual collocation arrangements are operational in SBC’s region, though nearly all of these are in California, with another 140 pending. There are 14 physical collocation arrangements in place in BellSouth’s region and another 86 in progress, and 133 virtual collocation arrangements with an additional 45 in progress. CLECs are also beginning to resell Bell Company services. In SBC’s region alone, competitors are reselling more than 330,000 lines (180,000 in California and over 115,000 in Texas). Nearly 40,000 were converted to resale in September alone. Similarly, in BellSouth’s region, competitors are serving 130,000 resold lines.

Data Services. Because voice telephone service is ubiquitous and familiar, many observers assess the state of local competition in terms of voice alone. But data traffic is growing much faster than voice and will soon surpass it, if it has not already done so. Much of the current growth in lines supplied by incumbent local phone companies is attributable to second phone lines, which are used mainly for fax and Internet services.

Since passage of the 1996 Act, cable operators have begun offering data services to a rapidly growing number of customers in this high-growth segment of the market. By early 1997, 1.5 million homes could reach the Internet via high-speed cable modems. By mid-1997, Time Warner alone was offering cable data links to over 800,000 homes; TCI claims to reach nearly three million homes. Cable operators continue to invest ambitiously in fiber optics, signal

28Brief in Support of Application at 35, Application by BellSouth Corporation, BellSouth Telecommunications, Inc., and BellSouth Long Distance, Inc., For Provision of In-Region, InterLATA Services in South Carolina, CC Dkt. No. 97-208 (F.C.C. Sept. 30, 1997).
30J.L. Barlage, et al., Smith Barney, Ind. Rpt. No. 1761069, Technology Topics, at 6 (Jul. 9, 1996) (voice traffic will grow 4 percent a year, while data traffic will grow by more than 40 percent annually).
31More Traffic on The I’way, Industries in Transition (Jan. 1997) (Data traffic constituted approximately one half of all user traffic in 1996 and is expected to reach 60 percent by 2001).
32L. Selwyn and J. Laszlo, ETI, The Effect of Internet Use on the Nation’s Telephone Network at Table 3 (Jan. 22, 1997) (prepared for the Internet Access Coalition) (the demand for 6 million “second” residential subscriber lines in 1995 – almost half of all “second” residential lines – can be attributed principally to on-line access).
35TCI Press Release, @Home Network Announces First Public Quarter Results; Subscriber Base Grows To 26,000, Marketable Homes Passed Increases To 2.7 Million, Oct. 16, 1997.
compression, and high-speed cable-modem technology. Microsoft has invested $1 billion in Comcast, and is reportedly considering a similar investment in TCI. A projected 80 percent of homes passed by cable lines will be able to access the Internet over cable by 2002, and a quarter are expected to subscribe; by that estimate, one third of all Internet users will be accessing the Internet over cable networks.

Wireless Services. The FCC completed the largest of its auctions of PCS spectrum in 1995, before the 1996 Act was signed into law. By November 1997, PCS providers had signed 157 interconnection agreements with incumbent wireline carriers. By all accounts, PCS providers are deploying their new networks much faster than anticipated only a year or two ago. Since passage of the 1996 Act, they have launched commercial service in markets that serve half of the U.S. population. Wireless prices are falling. And because wireless offers the great convenience of mobility, many analysts believe wireless will compete with wireline even at premium prices, in much the same way subscription cable competes with free broadcast television. Table 3. AT&T has also announced ambitious plans to compete in local markets using some of its PCS spectrum for the provision of fixed-wireless loops.


40DLJ Cable Outlook at 13, 18.

41The A and B Block auctions, for 30 MHz MTA licenses, were completed in March 1995. The 30 MHz C Block auction was completed in May 1996, and the D, E, and F blocks were completed in January 1997. FCC, Wireless Bureau, http://www.fcc.gov/wtb/auctions.


44L.J. Runyon, et al., Merrill Lynch Capital Markets, Ind. Rpt. No. 1938067, Telecommunications/Wireless, at Table 4 (Jul. 28, 1997) (showing that PCS service is available in 67 of the top 100 MSAs in the United States, accounting for 131,609,000 people).


46J. Keller, AT&T Unveils New Wireless System Linking Home Phone To Network, Wall St J., Feb. 26, 1997, at B2 (quoting AT&T Wireless Vice Chairman, Wayne Perry: “While everyone thought we were going to use these licenses for mobile phone services, we were getting them for the fixed wireless local phone system as well.”).
Table 3. Wireless/PCS Competition: Predicted Growth

“There are predictions that 40 percent of the population will be wireless users in ten years and that wireless will challenge the traditional wired network for basic phone service.” (FCC Chairman Reed Hundt, 1995).

“A small but growing number of consumers are ... embracing an exclusively wireless telephonic experience.” (Wall Street Journal, 1997)

“By the year 2006, the number of wireless phone users is expected to grow from one in ten Americans to five in ten.” (Kansas City Star, 1997)

“Eventually, the companies [PCS providers] expect, customers will start canceling their local telephone service and using wireless phones exclusively.” (Kansas City Star, 1997)

“According to Yankee Group, 14 percent of the U.S. population used a PCS or cellular phone last year, but that is expected to swell to a quarter of the population, or 67 million subscribers, by 2000.” (Mark Lowenstein, Wireless Analyst, 1997)

“Our analysis projects that over the next 5 to 8 years wireless prices will drop from the current 60¢ - 70¢/minute to 10¢ - 20¢/minute, and penetration will rise to the 30 percent - 40 percent range. Hence, wireless will become a very competitive domestic telephone service supplier.” (P. William Bane, Stephen Bradley and David Collis, 1995)


A Fast Transition. A study commissioned by AT&T and MCI before passage of the 1996 Act concluded that natural economic forces would prevent cable and wireless operators from having any significant competitive impact on local markets in the foreseeable future. 47 Competition, the study asserted, had taken 30 years to develop in long-distance markets, 16 years for customer premises equipment, 9 years and counting in markets for enhanced services, 6 years for competitive access services, and 4 years for 800 numbers. 48 Competitors in local markets would require “anywhere from 5 to 8 years to generate a positive cash flow,” and their new businesses might never prove profitable at all. 49 Anyone who believed “entry will be quick and easy” would face a “big surprise when they meet the hard, cold facts of the income statement and they must incur the costs of being in the local telephone business.” 50 Both the FCC and the

47 Economics and Technology, Inc./Hatfield Associates, Inc., The Enduring Local Bottleneck: Monopoly Power and the Local Exchange Carriers 151 (1994) (“[I]t will be a long hard climb for cable and wireless providers who plan to provide local telephone service in competition with the LECs”).

48 Id. at 6-7.

49 Id. at 151.

50 Ibid.
Department of Justice were presenting comparably downbeat projections about the prospects for local competition.51

At the very least, then, it should come as no surprise that competition in local exchange markets is not fully mature 20 months after passage of the 1996 Act. Indeed, what is remarkable is how far local competition has advanced in such a short time. Judged against the historical record in other markets, the competitive record in local markets since 1996 is excellent. Twenty months after terminal equipment manufacturers and long-distance carriers were first offered interconnection, almost nothing at all had happened. By contrast, incumbent local carriers and new competitors launched interconnection negotiations within weeks after the 1996 Act was signed into law. Far more has happened in local markets, during twenty months of private interconnection negotiation, than happened in other markets during years of interconnection regulation minutely orchestrated by federal regulators.

But will competitors ever arrive to challenge local incumbents in the market for basic, residential, voice service? Few casual observers are prepared to believe that local markets are competitive when the populist consumer – the residential subscriber – can still buy the populist service – basic, local, voice – from only a single provider. When will there be a second?

51Reed Hundt, Chairman, FCC, Statement on S. 1822, the Communications Act of 1994 and Telecommunications Equipment Research and Manufacturing Competition Act of 1994, Before the Committee on Commerce, Science, and Transportation, United States Senate, Feb. 23, 1994 (“Of course, telecommunications markets that have been dominated by a single firm for many years do not mature into competitive markets overnight simply by the removal of entry barriers.”); Anne Bingaman, Assistant Attorney General, Antitrust Division, U.S. Department of Justice, Promoting Competition in Telecommunications, address before the National Press Club, Washington, D.C., Feb. 28, 1995 (“[I]mplementation issues mean that the growth of local competition may take time, even under the best of circumstances”).
2. COMPETITION AT THE HIGH END OF THE MARKET

That hundreds of competitors are signing local interconnection agreements and offering service is beyond dispute. Equally clear is that they are carefully picking where they compete, for which customers and which services, and on what timetable. As AT&T puts it, the company will build competitive local facilities only “where and when it makes economic sense.”

But where does local competition make “economic sense”? The answer turns on both economic and regulatory factors.

Costs and Prices of Local Exchange Service. Local phone companies currently spend an average of between $27 and $37 per month to provide a local phone line and dial tone for normal levels of local calling. This is a national average for all lines, urban and rural, residential and business, and includes the average cost of supplying “interexchange access.”

The average business subscriber pays a monthly fee for a basic line, dial tone, and subscriber line charge (SLC) that aligns fairly closely to that average cost – about $27 per month, plus an average of about 1.7 cents per minute for local calls. The average residential subscriber, by contrast, pays a basic fee of about $17. In addition, every major incumbent local carrier

---

53 This assumes that the cost of providing local service is about $27 per month, the median of estimates provided by the FTC and Hatfield Associates. The FTC has calculated that between 1983 and 1987 the average cost per line of providing basic local service (excluding interexchange access) fell from $35.51 to $33.15 per month. Comments of the Staff of the Bureau of Economics of the Federal Trade Commission at Table 2, Expanded Interconnection with Local Telephone Company Facilities, CC Dkt No. 91-141 (F.C.C. filed Mar. 5, 1993) (“FTC Comments”). Assuming costs have continued to decline at that rate and adjusting for inflation, local service would cost around $31 per month per line. Hatfield Associates’ Hatfield Model version 3.1 (endorsed by AT&T and MCI) estimates the cost of providing local service by state and by carrier within each state. Weighting these costs by the number of lines for each carrier in each state yields a national average cost of around $21 per line per month. Hatfield Associates, Hatfield Model Release 3.1 Model Description, CC Dkt. No. 96-45 (F.C.C. filed Feb. 28, 1997) (“Hatfield Model Release 3.1”). An additional $6 of cost per line per month should be added to account for the non-traffic-sensitive costs of providing interexchange access. Third Report and Order, MTS and WATS Market Structure Phase I, 93 FCC 2d 241, 281-82 (1983) (indicating FCC desire to set SLC at $6 per month to cover NTS costs).
55 Id. at 17. This rate is for unlimited local calls, SLC, and touch-tone service. The residential SLC was set at $3.50 (under pressure from advocate groups, state regulators, Congress, and Judge Greene) to keep local telephone service affordable, but the FCC has noted that $3.50 is not sufficient to cover the NTS costs of interexchange access. See, e.g., First Report and Order at ¶ 24, Access Charge Reform, CC Dkt. No. 96-262 (F.C.C. May 16, 1997) (“Access Charge Reform Order”) (noting that some of the “cost of the loop [is] not recovered from end users through the [SLC] flat charge”).
offers “lifeline” service of some sort, averaging around 50 percent lower than the basic rate, to subscribers who cannot afford more.\textsuperscript{56} Figure 6.

![Figure 6. Local Service Prices (selected cities)](chart)

Incumbent local phone companies make up a net of $4 to $5 of the residential revenue shortfall on fees charged to provide interexchange access.\textsuperscript{57} Figure 7. These are average numbers. For subscribers that make few if any interexchange calls, the cost of providing basic loop and dial tone remains well above the price charged. Only the very heaviest interexchange callers pay off the whole subsidy through interexchange access charges alone.\textsuperscript{58}

---

\textsuperscript{56}Id. at ¶ 27.

\textsuperscript{57}This is derived by multiplying the average number of interLATA minutes generated by a residential line by the average amount per minute that the LEC charges IXCs for interstate access and subtracting the cost of that access. According to FCC phone bill surveys, the average residential line made and received 249 minutes per month of interLATA calling. FCC, Long Distance Market Shares, First Quarter 1997 at Table 11 (July 1997) (“FCC Long Distance Market Shares”) (reporting 1996 surveys of 6,700 residential lines which generated 835,000 interLATA minutes of use). LECs charge IXCs an average of 3.5 cents a minute to deliver those calls. FCC, Statistics of Communications Common Carriers at Tables 2.6, 6.2 (1995/1996 ed. 1996) (“FCC Statistics of Common Carriers”) (in 1995, total access revenues, excluding SLCs and private line access were $19.5 billion; total originating and terminating interLATA minutes were 548 billion). The average residential line therefore generated nearly $9 per month in access revenue. Assuming that access costs are half of its price, interLATA access generates $4 to $5 profit per residential line per month. FTC Comments at Table 2.

\textsuperscript{58}And only the largest business customers generate enough access revenue to make competition profitable.
The average residential customer generates, in addition, about $6 per month in local toll charges,\(^5\) that is, on average, probably about twice the incremental cost of providing the service.\(^6\) Figure 8. It is here that the revenue earned by the incumbent local phone company on the average residential line begins to catch up with cost.

---

\(^5\)This was calculated by multiplying the quotient of total LEC intraLATA toll revenue divided by the total number of intraLATA toll minutes by the average number of intraLATA toll minutes per month generated by each residential line; this yielded a result of $5.80 per month in local toll revenue. *FCC Long Distance Market Shares* (LECs generated $14 billion in local toll revenue in 1996); *FCC Statistics of Common Carriers* at Table 2.6 (22.8 billion total local toll calls in 1995). To derive the total average number of intraLATA toll minutes per month generated by each residential line, we assumed the following: (1) the average intraLATA toll call is the same length (3.5 minutes) as the average intrastate interLATA toll call, *ibid.* (20.1 billion intrastate interLATA calls made in 1995; 77 billion originating minutes – assuming that originating minutes are half of total); (2) that 52 percent of intraLATA toll minutes generated per month are from residential lines, *ibid.* (52 percent of all interLATA minutes per month are generated by residential lines), which means that there were 43 billion residential interLATA toll minutes in 1995, or 400 minutes per year (34 per month) per line.

\(^6\)This is a conservative estimate; MCI has estimated its own local toll margins at 66 percent. K.M. Leon, Lehman Brothers, Inc., Co. Rpt. No. 1567651, MCI Communications, at 6 (Mar. 7, 1995); see also R. Klugman, PaineWebber Inc., Ind. Rpt. No. 1537197, RBOCs and GTE, at 33 (Dec. 13, 1994) ("RBOCs and GTE Industry Report") (margins for local toll calls are “typically an astronomical 80-90 percent”).
Finally, local phone companies make up another part of the shortfall from basic services – another $4 per average residential line per month – on vertical services like call waiting and Caller ID. Figure 9.

In the aggregate, local phone service today is a solvent business. But only because some components are profitable enough to make up for others that are not. Overall, local phone

---

61 This was calculated by weighting the prices of various vertical services with the penetration of such services and adjusting for costs. Adjusted for penetration, call waiting generates an average of $2.55 per residential line per month; voice mail, $0.83 per month; Caller ID, $1.17; additional lines, $1.50; and all other services combined, $0.50 per month. The following assumptions were made: (1) Call waiting penetration nationwide is 51 percent at a cost of $5 per month; voice mail penetration is 11 percent at a cost of $7.50 per month; Caller ID penetration is 18 percent at a cost of $6.50 per month; and second residential line penetration is 15 percent at a cost of $10 per month. D. Reingold, et al., Merrill Lynch Capital Markets, Ind. Rpt. No. 1864842, Telecom Services: RBOCs & GTE, at Table 10a (Feb. 19, 1997) (penetration rates); SWBT tariffed rates in Houston, Texas (proxy for service prices); (2) All other vertical services – including speed dialing, three-way calling, and many others – have a combined penetration of around 10 percent and a total cost of $5 per month; (3) vertical services are provided at 60 percent margins above cost. See, e.g., RBOCs & GTE Industry Report at Table 7.
companies lose a net of about $19 billion a year – about $15 per month, per line – providing basic local service to residential subscribers. The losses are offset by above-cost prices charged for local business service, interLATA access charges, local toll, and vertical services. **Table 4.**

<table>
<thead>
<tr>
<th></th>
<th>Service</th>
<th>Revenue $ billions</th>
<th>Cost $ billions</th>
<th>Net profit/losses* $ billions</th>
<th>Profit/loss as a percentage of cost national average</th>
</tr>
</thead>
<tbody>
<tr>
<td>Residential local service</td>
<td>17</td>
<td>33</td>
<td>-15</td>
<td>-47</td>
<td></td>
</tr>
<tr>
<td>Single line business local service</td>
<td>5</td>
<td>4</td>
<td>1</td>
<td>26</td>
<td></td>
</tr>
<tr>
<td>Multiple line business local service</td>
<td>17</td>
<td>11</td>
<td>6</td>
<td>57</td>
<td></td>
</tr>
<tr>
<td>Residential NTS access</td>
<td>4</td>
<td>7</td>
<td>-3</td>
<td>-41</td>
<td></td>
</tr>
<tr>
<td>Single line business NTS access</td>
<td>0.5</td>
<td>1</td>
<td>-0.5</td>
<td>-40</td>
<td></td>
</tr>
<tr>
<td>Multiple line business NTS access</td>
<td>2</td>
<td>2</td>
<td>0</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>Residential TS access</td>
<td>11</td>
<td>5</td>
<td>5</td>
<td>100</td>
<td></td>
</tr>
<tr>
<td>Business TS access</td>
<td>10</td>
<td>5</td>
<td>5</td>
<td>100</td>
<td></td>
</tr>
<tr>
<td>Residential intraLATA toll</td>
<td>7</td>
<td>4</td>
<td>4</td>
<td>100</td>
<td></td>
</tr>
<tr>
<td>Business intraLATA toll</td>
<td>7</td>
<td>3</td>
<td>3</td>
<td>100</td>
<td></td>
</tr>
<tr>
<td>Vertical services</td>
<td>8</td>
<td>3</td>
<td>5</td>
<td>166</td>
<td></td>
</tr>
</tbody>
</table>

*Note: Numbers may not add up due to rounding.

These numbers did not arise by accident; they reflect deliberate regulatory policy. The FCC and state utility commissions are charged with maintaining “affordable rates” for all subscribers. The Commission has recently held that the rates in effect before implementation of the Act were indeed “affordable.” Report and Order at ¶ 2, Federal-State Joint Board on Universal Service, CC Dkt. No. 96-45 (F.C.C. May 8, 1997) ("Universal Service Order").

62 This assumes the median local service cost figure of $27 per line per month. Using the FTC-based cost estimate of $31 per line per month yields a deficit of over $24 billion per year; using the Hatfield data yields a deficit of over $12 billion per year.

63 The Commission has recently held that the rates in effect before implementation of the Act were indeed “affordable.” Report and Order at ¶ 2, Federal-State Joint Board on Universal Service, CC Dkt. No. 96-45 (F.C.C. May 8, 1997) ("Universal Service Order").
distant, difficult-to-reach customers, and however few additional, more profitable services beyond basic dial tone customers may use. As the FCC itself has noted, low rates for basic residential service are maintained “through, among other things, a combination of: geographic rate averaging, high rates for business customers, high interstate access rates, high rates for intrastate toll service, and high rates for vertical features and services such as call waiting and call forwarding.”

In most markets, subsidies of any kind are inefficient. Whether they are in local telephony, however, is not entirely clear. The value of the telephone network is enhanced each time a customer is added to the network – every new connection creates what economists call a positive “network externality.” As the FCC recently explained, “[a]t the simplest level, increasing the number of people connected to the telecommunications network makes the network more valuable to all of its users by increasing its usefulness to them.” And whether or not they promote global efficiency, subsidized rates for basic residential service do undoubtedly promote connection and social equity.

Equally clear is that they do profoundly affect the evolution of competition. Their initial impact, of course, is to divert all competitive effort toward the most profitable, subsidizing side of the market, and away from the least profitable, subsidized side. This is precisely what has happened so far, in the twenty months since the 1996 Telecom Act fully opened all local markets to competition.

Business Services. The most effective way for a competitive local carrier to red-line unprofitable customers out of its service territory is to shun residential customers completely, and serve only businesses. In serving business customers, competitors don’t need to undercut below-cost service; business service rates are already close to cost. Additional revenues from measured local service, interexchange access, local toll, and other vertical services add significantly to

As the California Public Utilities Commission has noted, this requires each local phone company “to set a rate which reflect[s] an average of the higher cost exchanges with the more profitable exchanges.” Decision No. 96-10-066 at 24, Rulemaking on the Commission’s Own Motion into Universal Service and to Comply with the Mandates of Assembly Bill 3643, Rulemaking No. 95-01-20 (Cal. PUC Oct. 25, 1996).

Access Charge Reform Order at ¶ 11. See also California Decision No. 96-10-066 at 24, Rulemaking on the Commission’s Own Motion into Universal Service and to Comply with the Mandates of Assembly Bill 3643, Rulemaking No. 95-01-20 (Cal. PUC Oct. 25, 1996) (“The LECs were also able to price certain services above costs so as to subsidize basic local exchange service, which was generally priced below cost.”).

Universal Service Order at ¶ 8 (“Increasing subscribeship also benefits society in ways unrelated to the value of the network per se. For example, all of us benefit from the widespread availability of basic public safety services, such as 911.”). See also Reed Hundt, Chairman, FCC, remarks before the Institute for International Economics, Washington, D.C. (Oct. 23, 1996) (“Economists teach us that the more people who use the network, the more valuable it becomes to each user. Within countries this provides a strong reason for promoting universal service.”).

The average business line adds an additional $17 in local charges per month, under the assumption that the average business line makes 200 five-minute business-day calls per month, at 1.7 cents per minute. This is the same assumption made by the FCC in preparing its national averages for business calls. FCC Reference Book at 24.

The average business line generates approximately $9 per month in access revenue above cost, under the following assumptions: (1) there are 45 million business lines that account for 48 percent of total interLATA
the overall profitability of providing business service. Figure 10.

Because they are also much heavier users of long-distance services, business customers tend to be more attractive to carriers than residential customers.70 Competitors target their competition accordingly. 71 As with residential local toll service, interexchange carriers are able to carry business local toll minutes economically, and are moving to provide business local toll service, often in combination with their local or long distance offerings. 72 “Competitive Access Providers” go directly after the profitable business of providing interstate access for larger business users.

Businesses typically cluster in downtown areas and business parks – the areas of highest daytime population. Accordingly, competitors have deployed their fiber networks to areas of high

---

69 The average business line generates approximately $12 per month in local toll profits, under the following assumptions: (1) the 45 million total business lines generate 39 billion minutes of intraLATA toll traffic per month, see note 59 (residential lines generate 43 billion of 72 billion total); and (2) the average charge for an intraLATA toll call is 17 cents per minute, see note 59.

70 California Decision No. 96-10-066, Rulemaking on the Commission’s Own Motion into Universal Service and to Comply with the Mandates of Assembly Bill 3643; California Investigation on the Commission’s Own Motion into Universal Service and to Comply with the Mandates of Assembly Bill 3643, Rulemaking No. 95-01-020 at 145 (Cal. PUC Oct. 25, 1996) (“[B]usiness customers tend to be more attractive to carriers than residential customers because businesses tend to make more toll and long-distance calls.”).

71 Correspondingly, the FCC has recognized that “[b]usiness customers who spend more on telephone service will generally get the first benefit as new entrants market services for them. Residential customers . . . may wait longer to see results.” FCC, Common Carrier Competition Report 1 (Fall 1995).

72 For example, “MCI One” is MCI’s bundled offering of toll (long distance, local toll, and toll-free), local, Internet access, and cellular services. MCI, MCI One for Your Business, http://www.mci.com/aboutus/products/mcionetextbus2.shtml. “ATT.ALL” is AT&T’s bundled offering of toll (long distance, local and 800 services), international, local, calling card, and cellular services. AT&T, AT&T.ALL, http://www.att.com/attall/.
daytime population, while bypassing areas with low daytime population. **Maps 1-6.** In Atlanta, for example, MFS (WorldCom), TCG, and Intermedia Communications have meticulously threaded their networks through the business areas down Peachtree Street and Edgewood Avenue, past government buildings, banking headquarters, investment firms, law firms, and newspaper offices like the Atlanta Journal and Constitution. In Denver, MCI’s, MFS’s, and TCG’s fiber networks run through the dense clusters of business high-rises in the heart of the downtown area, past First Interstate Bank and Arthur Andersen, then north and east to the industrial areas along the train tracks, and along the perimeter of, but not into, the low-income areas north and east of City Park. In the San Francisco Bay area, the competitive fiber networks of TCG, MFS, and ICG run through the downtown business, financial, and shopping districts, then south to the hundreds of high-tech firms in Silicon Valley; they never touch the low-income Tenderloin district, nor even the high-income residential areas around Golden Gate Park.

---

73The fiber then runs up Piedmont Avenue, passing upscale high-rise apartment buildings and shops, but avoids the low income areas south of I-20 and east of Moreland Avenue. Leaving downtown, the networks continue up Piedmont and Peachtree to another cluster of stores, high-rises, and financial offices, including Merrill Lynch, Prudential, and Alex Brown. In the suburban areas, the fiber runs to and through the business parks surrounding Perimeter Mall directly north of the city.

74South of City Park, the fiber runs east through a high income residential area, passing, among other things, three hospitals, and out to the Colfax Corridor, a stretch of small businesses along Colfax Street heading to Aurora. The networks head south to the Denver Technology Center – a collection of high-technology office buildings, including Lucent and TCI – passing business parks, small businesses, clusters of apartment complexes, Denver University, and South High School along the way. The fiber continues south to pass companies in the electronics industry, but does not enter any of the residential areas west and north of the city.

75The fiber passes the Bank of America headquarters, the Transamerica tower, and the Hyatt and St. Francis hotels around Union Square. It then heads south of the city, through industrial South San Francisco, to Silicon Valley, home to such firms as Intel, Apple Computer, Motorola, and Sun Microsystems. The fiber then runs north along the highways of the East Bay suburbs, but does not incorporate residential areas, ending up in downtown Oakland to meet, among other professional and industrial office buildings, Aetna, Pacific Gas & Electric, and Kaiser Permanente hospital.
Map 1. Competitive Networks In Atlanta

- Top 25 Percent of Area ZIP Codes in Daytime Population
- Bottom 25 Percent of Area ZIP Codes in Daytime Population
- CLEC Fiber

Map 2. Competitive Networks In Denver

- Top 25 Percent of Area ZIP Codes in Daytime Population
- Bottom 25 Percent of Area ZIP Codes in Daytime Population
- CLEC Fiber
Map 3. Competitive Networks In Dallas

Top 25 Percent of Area ZIP Codes in Daytime Population
Bottom 25 Percent of Area ZIP Codes in Daytime Population
CLEC Fiber

Map 4. Competitive Networks In Miami

Top 25 Percent of Area ZIP Codes in Daytime Population
Bottom 25 Percent of Area ZIP Codes in Daytime Population
CLEC Fiber
Map 5. Competitive Networks In Seattle

- Green: Top 25 Percent of Area ZIP Codes in Daytime Population
- Red: Bottom 25 Percent of Area ZIP Codes in Daytime Population
- Yellow: CLEC Fiber
WorldCom, which announced an unsolicited $30 billion stock bid for MCI on October 1, 1997,\(^6\) has focused its competitive efforts almost exclusively on the business side of the market. The company’s local arm, MFS, has constructed 52 fiber networks to serve businesses in major markets, and has plans to purchase fiber networks in 40 other markets as part of its Brooks Fiber and MCI acquisitions.\(^7\) WorldCom/MFS has a “[b]usiness customer focus,” and a “focus on major U.S. and international cities.”\(^8\) Counting both the MCI and Brooks Fiber assets that WorldCom proposes to acquire,\(^9\) the new WorldCom would own local fiber networks in 92 cities.\(^8\) But WorldCom is equally committed to staying out of residential markets. “Our strategy


\(^7\)WorldCom Press Release, WorldCom and Brooks Fiber Announce Merger; Expands WorldCom’s Local Presence from 52 Metropolitan Areas to 86; Adds Significant Local Access Expertise, Local Fiber Networks and Switching Capacity, PR Newswire, Oct. 1, 1997.


\(^8\)WorldCom serves 52 cities, Brooks Fiber serves 34 cities that WorldCom does not already serve, and MCImetro serves another 8 cities that neither of the other two companies serve. WorldCom Brooks Fiber, Reuters, Oct. 1, 1997.
is not in the consumer business,” the company flatly declares. “It’s very difficult for us to find a way to make economic sense out of the advertising budgets, the customer service budgets, etc., required to be in the consumer business.”

According to Chairman and CEO Bernard Ebbers, “[N]ot AT&T, not MFS or anyone else, is going to build local telephone facilities to residential customers. Nobody ever will, in my opinion.”

Even WorldCom’s long-distance business is overwhelmingly focused on business customers. Only 5 percent of WorldCom’s revenues come directly from residential end users. WorldCom and MCI would serve some 27 million presubscribed long-distance lines (about 17 percent) and earn about $20 billion in long-distance revenues (a roughly 25 percent market share). Soon after the proposed acquisition of MCI was announced, one WorldCom official candidly remarked that WorldCom’s “religious focus is on the business customer . . . [i]t is a jihad . . . [t]his other market is something new,” and suggested that the company “would consider” turning MCI’s 20 million residential customers over to other long-distance companies when the merger was completed. WorldCom plans to compete aggressively for business customers, however, offering them bundles of local, long-distance, and Internet service.

Until competition has permeated every last corner of the business market – a process that will surely take some years – no other competitive strategy would make sense. Residential rates are pegged some 50 to 80 percent lower than business rates everywhere in the country.

Figure 11. But the actual cost of providing service to businesses is almost always much lower, because businesses congregate in more urban areas, and because many businesses use multiple lines. For new entrants, the price-to-cost ratios are at least twice as attractive, and more typically 4 or 6 times as attractive, in business markets than they are in residential ones. For multi-line businesses, the


84FCC Long Distance Market Shares at Tables 2, 3, and 5.


87Virginia and Tennessee have the highest residential discount, at 80 percent; Illinois the lowest, at 45 percent. FCC Reference Book at App. 2. Statewide figures are averages of the rates for the cities surveyed in each state.
ratios rise higher still.

![Figure 11. Residential Discount from Business Rate (selected states)](image)

Local Toll Service. For business and residential subscribers alike, the highest profits, and lowest costs, are certainly centered in the market for local toll services. In states that have ordered local toll dialing parity— including the two most populous states, California and New York—competitors are already aggressively bundling resold local service with their own local toll services. In California, for example, MCI bundles resold Pacific Bell service with its own local toll service to offer unlimited local and local toll calling for $24.95. For most residential subscribers, this is almost certainly less than the cost PacBell alone incurs to provide the local service that MCI resells. But PacBell provides that service for resale at 17 percent off its retail rates, or about $11, which allows MCI, in effect, to charge $15 a month for unlimited local toll calling over MCI’s network.

MCI, AT&T, and other interexchange carriers offer local toll services in many markets at steep discounts below incumbent carrier rates. In June, MCI announced it would offer flat-rate

---

88In the 40 states that have thus far ordered dialing parity, the orders are contingent upon fulfillment of the Act’s requirements. 47 U.S.C. § 251(b)(3) (requiring all LECs to provide dialing parity to competing providers). But see California v. FCC, No. 96-3519 (8th Cir. Aug. 22, 1997) (vacating FCC’s dialing parity rules); 47 U.S.C. § 271(e)(2)(B) (exempting the Bell Companies from providing intraLATA toll parity in any state that had not ordered it as of December 19, 1995 until (1) the Bell Company obtains authority to provide long-distance service in that state, or (2) 3 years from enactment, whichever is sooner).

89AT&T, MCI, and Sprint are not, however, permitted to bundle a resold local service obtained from a Bell Company with their own long-distance service in any state, until the Bell Company in that state receives in-region interexchange authority, or three years from enactment, whichever is sooner. 47 U.S.C. § 271(e)(1).


91Rulemaking on the Commission’s Own Motion Into Competition for Local Exchange Service at App. B, Decision No. 96-03-020 (Cal. PUC Mar. 13, 1996).

92MCI’s rates are up to 44 percent lower than the average LEC rate – 12 cents per minute in most regions,
local toll calling plans to residential customers in 40 states. As of May 1997, AT&T claimed more than five million customers had signed up for AT&T local toll service. LCI announced in July that it is offering local toll service through presubscription in 23 states. Hundreds of other companies compete in the local toll market using 10-XXX “dial-around” access codes. Figure 12.

BellSouth estimates it has lost 1 million local toll customers in Florida alone, or 20 percent of its base in that state, during the past 20 months to competitors such as AT&T. Nationwide, analysts estimate that competitive carriers have already captured 15 percent of all local toll traffic, and predict 50 percent capture within three years.

Vertical Services. Wherever it is technically feasible to do so, local competitors compete to offer residential customers the vertical services alone, or a bundle of basic and vertical, but not just basic. Manufacturers of answering machines and electronic databases provide some competition through sales of stand-alone equipment. AT&T bundles call waiting into its basic local service in some cities in Illinois. MCI openly admits that its “focus is on high-value customers who use
down to as low as 4 cents per minute in PacBell’s serving areas. MCI Press Release, Local Toll Revolution: MCI Offers Millions of Dollars in Savings to Consumers in 40 States, June 2, 1997.

Ibid.


The demand for such access codes has been so high that the industry has been forced to transition from 3-digit to 4-digit Carrier Identification Codes. Order, Administration of the North American Numbering Plan Carrier Identification Codes, CC Dkt. No. 92-237 (F.C.C. July 18, 1997).

S. Rosenbush, Competition Bringing Cheaper Local Toll Calls, USA Today, Aug. 5, 1997, at 1B.


multiple services,” and that it intends to “continue to transition away from low-value Mass Market customers who respond only to price promotions.” Providers of shared tenant services have had great success in offering vertical service packages to their subscribers. 

Figures 13 and 14.

Figure 13. Targeted Competition: Vertical Services (per line)

<table>
<thead>
<tr>
<th>Local service</th>
<th>SLC</th>
<th>InterLATA access toll</th>
<th>Call waiting</th>
<th>Caller ID</th>
<th>Voice mail</th>
<th>Other services</th>
<th>Second lines</th>
</tr>
</thead>
<tbody>
<tr>
<td>$25</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>$50</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>$75</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>$100</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

LEC (national average)

CPE manufacturers, answering services

Cost Revenue

Penetration (%)

100%
75%
50%
25%


103 Ibid.; see also LD Firms Reject Local Service Price War, Telecommunications Alert, Apr. 11, 1997 (citing AT&T, Sprint, and MCI representatives saying that they will not start a price war with the Bell Companies as they move into the local service market, and that they will focus on the quality and range of services, rather than price).

102 For example, Jones Communications in Alexandria, Virginia reports that 61 percent of its customers purchase a vertical service package in addition to basic service. K. Gibbons, Jones Primes the Pump for Advanced Calling Buys, Multichannel News, July 15, 1996, at 30A.
Bundling likewise defines the residential competition provided by cable. Cable companies have already begun to offer high speed Internet access to their existing cable subscribers, using their existing networks. These offerings will in time make cable a formidable competitive threat as Internet services expand to encompass all others. The very last thing they will add, if they add it at all, will be conventional voice service, at conventional phone company prices. For example, TCI in Hartford offers cable and basic local services for a total of $24.07 per month, vertical services for between $5.95 and $14.95 per month, and Internet access for $39.95 per month.103 Figure 15.

**Figure 15. Residential Monthly Revenue and Cost (per line)**

Mobility (wireless) itself is another “vertical” add-on of sorts. Wireless service remains more expensive than wireline, but less so than meets the eye. PCS providers routinely bundle in Caller ID, voice mail, and paging. On a bundled basis, these services are already priced at levels directly comparable to those charged for similar bundles of wireline residential alternatives – $40 to $50 per month. The one thing no PCS provider is much interested in offering is, once again, basic voice service, at the basic phone company price. Figure 16.

---

Figure 16. Targeted Competition: Mobility (per line)

![Graph showing targeted competition: Mobility (per line)]

<table>
<thead>
<tr>
<th>Service</th>
<th>LEC (national average)</th>
<th>Local service</th>
<th>SLC</th>
<th>InterLATA access</th>
<th>IntraLATA toll</th>
<th>Vertical services</th>
<th>Mobile services</th>
</tr>
</thead>
<tbody>
<tr>
<td>Revenue</td>
<td></td>
<td>$25</td>
<td>$50</td>
<td>$75</td>
<td>$100</td>
<td>PCS providers</td>
<td></td>
</tr>
<tr>
<td>Penetration (%)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Revenue</td>
<td>Penetration (%)</td>
</tr>
</tbody>
</table>

**Measured Service.** A final strategy recently adopted by some resellers is to offer residential service under pricing plans radically different from those prescribed by regulators for incumbent local phone companies. MCI, for example, has begun reselling Bell Atlantic’s (formerly NYNEX’s) local residential service in New York. MCI charges a modest $9.80 a month for the resold line and dial tone. But on top of that, MCI charges 10.6 cents per minute for local calls. MCI also bundles in local toll calls at 10 cents per minute. For a customer able to subscribe to a dime-a-minute long-distance service, it will therefore be cheaper to place a toll call of any kind, 30 miles or 3,000, than it is to call across town. In effect, MCI is offering to install the equivalent of a payphone on private premises, reselling Bell Atlantic’s below-cost service at a price even further below cost, while hoping to make a profit on measured services priced well above cost. Bell Atlantic itself – which is actually providing both the switching and transport for the cross-town call – receives only a discounted share of the per-minute charges that are needed to make MCI’s re-packaging of the service economically viable.

The average residential customer subscribing to MCI’s service would pay MCI about $10 per month in fixed charges and nearly $44 in local per-minute charges – with the service itself being supplied to MCI at discounted rates. The service isn’t aimed at average customers; it is aimed at customers who make few local calls but many toll calls. MCI plainly has no interest in reselling basic local residential service alone; even the 19.1 percent

---

104 This is the daytime rate. MCI charges 8.7 cents per minute in the evening and 3.7 cents at night or on weekends. MCI, MCI Home Phone Service - New York, http://www.mci.com/aboutus/products/local/NY2.shtml.

105 The average residential customer originates 619 local calling minutes per month. NECA, Statistics on Network Usage by Carrier 1995 (1996) (in 1995 LECs reported over 2.2 trillion local dial equipment minutes); FCC Statistics of Common Carriers at Table 2.5 (166 million total access lines, 63 percent of which are residential). For the purposes of this calculation two assumptions were made: (1) the average residential line originates the same number of local minutes per month as the average business line; and (2) the number of originating and terminating minutes on all access lines are equal. The calculation for local per minute charges assumes that the 619 minutes per month break down as follows: 20 percent daytime, 40 percent evening, and 40 percent weekends.
discount it gets from Bell Atlantic probably would never cover MCI’s costs of marketing and overhead. And it is inconceivable that MCI would ever build any facilities of its own simply to offer residential basic service at prices comparable to Bell Atlantic’s undiscounted rates. There is no profit to be made undercutting incumbent prices that already sharply undercut economic reality.

The FCC itself has reached precisely that conclusion in the analogous context of payphones. Users of residential phones pay $17 a month and 0 cents per minute; users of payphones have, in the past, typically paid $0 a month and 10-25 cents per three-minute call. Competitive payphone providers resell local service much as MCI attempted to do in New York, but they resell it in drugstores and supermarkets rather than in homes or apartments.

With open entry and a right to interconnect, only price regulation remains as a possible obstacle to competition. States that set prices too far below cost, the FCC recently concluded, “prevent the market from operating efficiently to deploy payphone facilities.” Competition rises

---


108 Report and Order, Implementation of the Pay Telephone Reclassification and Compensation Provisions of the Telecommunications Act of 1996, 11 FCC Rcd 20541, 20548 (1996). The Commission also noted some impediments to competition that might arise from inadequate consumer information, or from market power that derives from control of real estate. Id. at 20549-20550. But these locations, the FCC determined, were likely to be the exception rather than the rule. For the most part, payphones “are likely to face a sufficient level of competition from payphones at nearby locations to ensure that prices are at the competitive level.” Id. at 20549.

109 Id. at 20548.
as price regulation falls. Several states have in fact deregulated, and the overall state of competition is excellent. Competitors that won’t resell residential service resell business service instead – often to “residential” consumers – through payphones located in convenience stores and gas stations. The indigent user too poor to pay even for highly subsidized residential service is served instead by payphone operators who compete aggressively for the business.

\textsuperscript{110} Id. at 20547 (“Entry into the payphone business appears to be easy.”).
That some elements of basic, residential, local service are priced below cost complicates the competitive picture, but it does not, standing alone, preclude competition altogether. At current prices, incumbent local carriers themselves could not provide just basic residential service and nothing more, but they don’t have to. Neither do their competitors. The typical customer buys enough additional local toll and vertical services to remain an economically attractive competitive target, absent other obstacles to entry. And the typical customer strongly prefers to buy the entire bundle from a single vendor, if (s)he can.

Customer Demand. That customers much prefer to buy a bundled package of telecom services is widely recognized in the industry. Local phone companies retain significant shares of local toll markets even where competitors undercut their prices quite significantly in states that have fully opened those markets to competition. A 1996 survey of over 800 U.S. households found that nearly 80 percent would prefer to subscribe to bundles of local and long-distance, wireless, data, and video services supplied through a single vendor.111 From the supply side, vendors recognize that bundling lowers their marketing costs, raises customer loyalty, reduces churn levels, and increases overall usage112 – in business and residential markets alike. MCI and AT&T have already begun to bundle long-distance and local toll services.113 Sprint is moving to “a common Sprint identity for all our products and services, including local telephone service, complex data systems, everything.”114 WorldCom is striving to define itself as “the single point-
of-contact for . . . telecommunications needs.” GTE and Southern New England Telephone are already allowed to add bundled long-distance service to their residential offerings, and have been notably successful in doing so. Customers will buy bundles, rather than bits and pieces of service, if they can.

In light of these strong consumer preferences, it seems clear that as soon as one vendor begins offering fully bundled local and long-distance service in any major market, other vendors will have to follow. They will have no choice.

Supply-Side Incentives. On the supply side of the market, providers have equally good economic reasons to bundle, too. Long-distance carriers can provide local services on the Class 4 switches already widely deployed in their networks. Cable companies have already deployed their wires, and loaded their costs, on video services; they can now offer high-speed data services at the margin. Electric companies may have similar opportunities to use their customer base to sell competitive local services. PCS will likewise forge ahead regardless, because for them the marginal costs of serving residential subscribers are quite low.

Even in the least attractive regulatory jurisdictions, there may be some profitable opportunities to build out facilities to reach low-cost residential subscribers. The costs of

115 MFS Press Release, MFS Now Offering Local Telephone Services Over Its Own Fiber Networks in Hartford and Stamford, July 29, 1996. See also MFS Prospectus, Registration No. 333-4395, July 4, 1996, (WorldCom believes it is “uniquely positioned to take advantage of technical, regulatory and market changes which promote demand for an integrated set of communications services.”).

116 D. Reingold, et al., Merrill Lynch Capital Markets, Ind. Rpt. No. 1705201, Telecom Services: Long Distance, at 23 (Feb. 15, 1996) (the players achieving the full bundle soonest and at lowest investment cost are likely to be able to offer more attractive cross-discounts to customers). See also B. Bath, et al., Lehman Brothers, Inc., Ind. Rpt. No. 1892197, Telecom Services: RBOCs & GTE, at 14 (July 9, 1997) (“Without [the ability to offer bundles] the RBOCs face significant degradation of their business customer base, as the IXCs and CLECs will be offering a bundled package of services to attract the most profitable customers.”).

117 AT&T already offers local service to 2,500 of its dedicated access customers in 45 states using its existing 4ESS switches, through a service called Digital Link. Digital Link provides AT&T with “the ability to take the existing network configurations of our large customers, add local traffic and route it accordingly.” J. Dix and D. Rohde, AT&T Plots Invasion of Baby Bell Turf, Network World, July 8, 1996, at 1 (quoting Harry Bennett, vice president and general manager of AT&T’s local services division); see also L. Turmelle, AT&T Takes First Step to Local Service, Bridgewater (NJ) Courier-News, Jan. 28, 1997, at A2.

118 Restrictions that barred utility companies from providing telecommunications services were removed by § 103 of the 1996 Act. See, e.g., D. Pauly, Electric Utility Will Add Telephone Service to Offerings, Rocky Mountain News, Jan. 19, 1997, at 4f (Central & South West Corporation announced it would provide service in conjunction with ICG); A. Salpukas, Texas Utilities Buys Texan Phone Company, Austin American-Statesman, Aug. 26, 1997, at D1 (Texas Utilities recently purchased Lufkin-Conroe Communications, the fourth-largest local telephone company in Texas).

119 Moreover, the potential profits from innovative new service outweigh any competitive losses stemming from unleashing the Bells – the regulatory issue discussed later in this section. And there may be no losses at all if regulators can be persuaded that cable data services and wireless services don’t actually offer true local competition.

120 Competitors may find other reasons to build out networks to residential subscribers, even if it costs more
providing basic residential service vary by a factor of 15 or more.\textsuperscript{121} It costs a Bell Company, on average, 6 times more to serve its sparsely populated areas than its densely populated ones.\textsuperscript{122} Thus, while the overall average rate for basic residential service may be 50 percent below the overall average cost, cost itself varies by much more than 50 percent. As a result, the lowest-cost residential customers are already attractive competitive targets today, even if they buy basic service alone. This is why providers of “shared tenant services” are already targeting some large apartment buildings and condominiums.\textsuperscript{123}

**Regulatory Impediments.** But at present, all potential entrants to local markets also have strong reasons not to take any steps that would unleash powerful new rivalries from the Bell Companies. Bell Companies remain formidable potential competitors in all segments of telecom markets in which they do not currently compete. In the aggregate, Bell Companies earn more money, serve more customers, and employ more workers than long-distance carriers, cable companies, and wireless providers.\textsuperscript{124} \textbf{Table 5}. Bell Companies also have excellent name recognition among all types of customers and in all sectors of telecommunications, and strong reputations for providing reliable service.\textsuperscript{125}

<table>
<thead>
<tr>
<th>1996 Revenues ($ billions)</th>
<th>Employees (thousands)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

than buying discounted service from incumbents. The “make or buy” decision is affected by many factors other than price. Competitors may build, rather than buy, to gain independence, flexibility, or the opportunity to differentiate their services, even when buying is nominally cheaper. See, e.g., B. Lyons, Specific Investment, Economies of Scale, and the Make or Buy Decision: A Test of Transaction Cost Theory, 26 J. Economic Behavior and Organization 431 (1995); J. Welch and P. R. Nayak, Strategic Sourcing: A Progressive Approach to the Make or Buy Decision, 20 Engineering Management Review 58 (1992); \textsuperscript{8} Circuit Decision at 148.

\textsuperscript{121}The Hatfield Model calculates the per-line monthly cost of providing service for nine different density categories. The range in costs calculated by this model is enormous; for example, while it costs SBC over $200 per month to provide service to a customer in the remotest area of Nevada, it only costs about $13 per month to provide service to a customer in the densest area. Hatfield Model Release 3.1.

\textsuperscript{122}Monthly costs to Bell Companies for providing service in the sparsest areas ranged from $51.23 per line (Delaware) to $204.57 (Nevada). Costs for the densest areas ranged from $10.88 (Indiana) to $14.81 (Nebraska). Hatfield Model Release 3.1.

\textsuperscript{123}\textit{Universal Service Order} at ¶ 236 (“In general, as more households are in multi-tenant units rather than single-family dwellings, the amount of cable required to serve the households decreases.”).

\textsuperscript{124}Individual Bell Companies, like SBC, are the only companies on the horizon with revenues even approaching AT&T’s. SBC/PacTel’s 1996 revenues were $24 billion, compared with AT&T’s $52 billion. 1996 Annual Reports.

\textsuperscript{125}H.E. Blount, Rauscher Pierce Refnses, Ind. Rpt. No. 1777513, Telecommunications Reform: Winners & Losers, at 5 (June 14, 1997) (“With their installed customer base and brand name recognition in local markets [the Bell Companies] will be powerful [long-distance] competitors.”).
<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Bell Companies</strong></td>
<td>97</td>
<td>460</td>
</tr>
<tr>
<td><strong>Interexchange Carriers</strong></td>
<td>82</td>
<td>250</td>
</tr>
<tr>
<td><strong>Cable Companies</strong></td>
<td>30</td>
<td>120</td>
</tr>
<tr>
<td><strong>Wireless</strong></td>
<td>26</td>
<td>120</td>
</tr>
<tr>
<td><strong>Other CLECs</strong></td>
<td>2.2</td>
<td>24</td>
</tr>
</tbody>
</table>


The single best competitive fact for their competitors is that Bell Companies are not currently permitted to compete in the highly profitable long-distance toll markets. That handicaps competition not only in long-distance markets, but in local markets too. Local customers prefer to buy complete service packages, not bits and pieces. Finally, the FCC has made clear that AT&T, MCI, and other potential competitors can keep Bell Companies caged by competing only in the more lucrative business markets, while staying out of the less profitable residential markets entirely.

Every potential competitor in local residential markets will quite rationally assess the opportunities for competition not only on their economic merits, but also on their regulatory de-merit. The de-merit is the threat of freeing the Bell Companies to compete. In most markets today, the potential profit from entering the residential side of local markets – depressed in any event by an array of subsidies and below-cost prices – is plainly outweighed by the potential losses entailed by any form of competition that would free Bell Companies to compete too.

For AT&T and MCI, the paramount competitive objective is to thwart Bell Company entry into long distance. These two companies serve 84 percent of residential interexchange access lines, and also provide most of the facilities used by another 11.4 percent of lines served by resellers. 126 Together, they earn some $31 billion in revenues from the residential side of the interexchange market.127 Independent analysts estimate that residential service accounts for 70 to 80 percent of interexchange profits,128 and agree that Bell Companies present the biggest threat to those profits.129 The entire domestic residential market is “in theory a potential opportunity for the

126FCC Long Distance Market Shares at Table 9. Sprint has been generally unsuccessful in penetrating residential markets, while most of the other smaller competitors, including WorldCom, do not even offer interexchange service to residential customers. Id. at Table 10.

127AT&T and MCI derive 54 percent and 33 percent of their long-distance revenues, respectively, from residential services. FCC Long Distance Market Shares at Tables 6 and 10.


[Bell Companies].” AT&T, in particular, is seen as “disproportionately vulnerable to RBOC entry,” at risk of losing $8 billion annually to Bell Company competitors.131 Accordingly, both companies are doing their utmost to block Bell Company entry into the residential long-distance markets by persuading regulators that local competition has failed.132 They resisted signing interconnection agreements: combined, they have signed a total of only 60 agreements, even fewer than the 76 agreements signed by their much smaller rivals, TCG and WorldCom. Figure 18. They have filed with regulators ever-expanding lists of trivial demands: US West employees, for example, are called upon to don Velcro patches on their uniforms so as to appear to be AT&T employees when servicing lines resold by AT&T. Table 6. Both companies have complained endlessly that local competition is being thwarted by the nefarious stratagems of local carriers.133 They have moved much less aggressively than their smaller rivals in terms of capital spending in general,134 and deploying new local switches in particular.135 (See Figures 3 and 18).

7, 70 (May 16, 1997) ("Merrill Lynch Long Distance Report").

130J. Grubman, Salomon Brothers, Telecommunications Services, Regional Bell Operating Companies - Opportunities Ring . . . While Danger Calls, at 8 (Jan. 6, 1996).


132On several occasions, the FCC has suggested that only AT&T, MCI, and Sprint will “count” as local exchange competitors for the purposes of § 271. See, e.g., Statement of Reed E. Hundt, Chairman, FCC, on Implementation of the Telecommunications Act of 1996, before the Subcommittee on Telecommunications and Finance, Committee on Commerce, U.S. House of Representatives, at 18-21(July 18, 1996).


134Since passage of the Act, capital spending by other local competitors has been twice that of AT&T and MCI. Compare 1996 Annual Reports and Second Quarter 1997 Quarterly Reports of AT&T and MCI with 1996 Annual Reports and Second Quarter 1997 Quarterly Reports of Continental Cablevision, Cox, Comcast, TCI, WorldCom, TCG, Brooks Fiber, ICG, and Sprint.

135It is not even clear how many of AT&T’s “deployed” switches have been made operational. See D. Rohde, Bagging a Bargain, Network World, July 21, 1997, at 1.
Figure 18.
CLEC Status: January 1996

AT&T/MCI

Other CLECs

Customer Base

Local Switches

AT&T

MCI

AT&T

MCI

Stock Prices

Switch

Deployment

Interconnection

Agreements

Percent change relative to DJIA

Notes:
1. Includes tandem switches that can be upgraded to perform local services.
2. Other CLECs include Sprint, Excel, Frontier, LCICablevision, Cox, TCI, Time Warner, and Comcast.
3. Number of switches as of July 1, 1997.
4. Excludes agreements signed by cellular providers.


CLEC Progress: January 1996 to November 1997
<table>
<thead>
<tr>
<th>Demand</th>
<th>Resolution</th>
</tr>
</thead>
<tbody>
<tr>
<td>AT&amp;T and MCI demanded that the Missouri PSC allow SBC’s customers to “abrogate their contracts in order to accept proposals from AT&amp;T and MCI.”</td>
<td>“The Commission finds that a decision on this issue is not required to dispose of the arbitration.”</td>
</tr>
<tr>
<td>AT&amp;T demanded that AT&amp;T’s logo be placed on BellSouth’s telephone directories.</td>
<td>“At no point in 251 of the Act, or anywhere in the Act for that matter, does the issue of directory covers appear. Such an issue does not even bear a casual relationship to any of the exclusive issues for negotiation (and therefore arbitration) appearing in the Act . . . AT&amp;T’s request for an order directing the placement of its name and logo on the directory cover is rejected.”</td>
</tr>
<tr>
<td>AT&amp;T proposed that “repair and maintenance services provided [by U S West personnel] on behalf of AT&amp;T be rebranded to AT&amp;T’s brand, to prevent customer confusion.”</td>
<td>“CLECs must recognize that they are in fact not employing the individuals if they contract with an ILEC. Any requests to rebrand uniforms and vehicles by such items as Velcro patches and rolling signs is rejected by the Commission.”</td>
</tr>
<tr>
<td>AT&amp;T insisted that bills or receipts given to customers for repair service provided by U S West personnel (on behalf of AT&amp;T) bear the AT&amp;T logo.</td>
<td>“It is not reasonable to dispatch a repair vehicle for the day, with instructions to use a selection from a variety of paper provided which would provide the brand of the particular reseller who contracted for service at each location.”</td>
</tr>
<tr>
<td>AT&amp;T demanded exemption from administrative fees for pole and conduit attachments that are routinely charged to cable TV providers.</td>
<td>“SWBT shall be allowed to charge administrative fees and shall determine rates for access to poles, conduits, ducts, and rights-of-way identical to those applied to CATV providers.”</td>
</tr>
<tr>
<td>AT&amp;T demanded specific notification of “changes in terms or conditions under which services are offered at retail to subscribers, including introduction or discontinuation of features, functions, services or promotions.”</td>
<td>“AT&amp;T can obtain reasonable notification of the matters it requested upon U S West’s filing for Commission approval of such matters. We believe that additional notification is unnecessary and may competitively disadvantage U S West.”</td>
</tr>
<tr>
<td>AT&amp;T demanded that all of BellSouth’s services be provided for resale in Louisiana, regardless of whether they are priced below existing tariffed rates.</td>
<td>“[Specifically with regard to resale availability of Contract Service Arrangements:] CSAs are, by definition, services provided in lieu of existing tariff offerings and are, in most cases, priced below standard tariffed rates. Requiring BellSouth to offer already discounted CSAs for resale at wholesale prices would create an unfair competitive advantage for AT&amp;T and is rejected.”</td>
</tr>
<tr>
<td>AT&amp;T demanded that BellSouth be held financially responsible for any unbillable or uncollectible revenues due to personnel error.</td>
<td>“Even a casual review of the Act will readily disclose that the requested contractual language governing liability for unbillable or uncollectible revenues is not among those issues specifically enumerated for negotiation and arbitration in the Act. This issue is therefore inappropriate for arbitration, and should properly be addressed on case-by-case basis in an appropriate judicial forum.”</td>
</tr>
</tbody>
</table>


While these tactics may or may not persuade regulators that local competition has failed, they apparently have persuaded Wall Street that AT&T and MCI show little promise as
competitors in any market. The stock prices of both companies have fallen far behind the rest of the market, even as the stock prices of companies like WorldCom and TCG have forged far ahead.\textsuperscript{136} (See Figure 18).

AT&T and MCI have the most to lose in residential long-distance markets, but WorldCom and other players with no direct interest in that market have their own equally strong incentives to keep Bell Companies under regulatory quarantine. The most profitable opportunity for these companies is to sell bundled services to business customers. WorldCom uses its own long-distance network to supply the long-distance component of the bundle; other companies may resell AT&T’s, MCI’s, or WorldCom’s service and accommodate customer demand by doing so. Their business strategy thus centers on creating bundled products that their main rivals, the Bell Companies, are not permitted to match. A calculated strategy of competitive failure in residential markets thus preserves a vital competitive edge in business markets. If Ford could block General Motors from selling tires with any of its cars it would surely do so – even if Ford competed against GM only in sales to business customers.

\textsuperscript{136}As of the end of October 1997, AT&T’s and MCI’s stocks were 50 and 18 percent below the Dow Jones Industrial Average, respectively. WorldCom and TCG, on the other hand, were 23 and 125 percent above, respectively. Quicken, http://quotes.quicken.com. BT’s recent reduction of MCI’s purchase price has caused MCI’s stock to tumble even further (by 17 percent, a drop in market value of $3.4 billion). \textit{MCI and British Telecom Cut Merger Value by 20 Percent, to $18 Billion}, Communications Daily, Aug. 25, 1997.
4. POLICIES TO PROMOTE COMPETITION

Understanding the regulatory environment, and the tactical maneuvering it elicits, is thus essential to answering the question raised at the end of Section 1: Will competitors ever arrive to challenge local incumbents in the market for basic, residential voice service? Residential competition is unfolding more rapidly in some states than in others. Connecticut is different from Texas or Florida. This is partly because each state’s regulatory commission adopts its own regulatory priorities, and partly because certain anti-competitive federal policies apply to some local phone companies and not to others.

The balance between the various regulatory factors will vary from state to state, depending on the level at which residential prices are set, the cost of providing competitive service, and the perceived competitive threat from the incumbent local phone company. Today, the main obstacle to local residential competition is regulation itself.

**Rebalancing Local Rates.** In most U.S. jurisdictions, the defining economic fact of local exchange competition today is that price regulation is channeling close to 100 percent of the competition and new money into about 30 percent of the total market. AT&T, MCI, WorldCom, and other companies are all behaving quite rationally in directing all their competitive efforts toward the high end of the market. Any company with money to invest in new networks will build out to business customers who currently pay $30 a month for measured service before it builds out to residential customers who currently pay a flat-rate $17 for unlimited service.

Local rates are often set so far below cost that they make even resale competition very difficult. Under regulatory directive, incumbent phone companies now offer lines and dial tone service to resellers at a prescribed discount (generally 12 to 25 percent) from the already below cost prices. But it costs AT&T an estimated $37 in marketing to sign up each new customer, and an estimated $4 per month thereafter for billing and administrative expenses. Even a 25 percent wholesale discount does not easily cover such expenses when applied to monthly residential rates that – even at retail – have already been pushed far below actual costs. In many states, the best competitive strategy is to keep the incumbent caged, and the way to do that is not to compete in residential markets at all.

One way to promote competition in basic, residential wireline service is therefore to bring residential rates into closer alignment with cost, and narrow the gap between business and

---

137 The initial marketing cost will increase to $60-80 per customer in later years as competition tightens. S. Comfort, et al., Morgan Stanley & Co. Inc., Co. Rpt. No. 2516924, AT&T Corp., at Table 8 (Nov. 1, 1996).

138 When the new Act was signed in February 1996, AT&T immediately declared it could “almost taste” the large market share it would soon acquire in local markets, and predicted it would win “at least a third of the local market” using a resale strategy. Robert E. Allen, Former Chairman and CEO, AT&T, The 1996 Telecommunications Bill, remarks delivered at a News Conference, Washington, D.C., Feb. 8, 1996. However, an independent analyst quickly dismissed AT&T’s goals as “implausible,” pointing out that although resale is the least expensive strategy, “[t]he economics of local resale simply can’t yield such high market share gains.” C. Arnst, Ready, Set, Devour?, Business Week, July 8, 1996, at 118 (quoting Scott Cleland, Analyst, Washington Research Group).
residential rates. Over the past several years, California, New York, and a few other large states have taken such steps. See Figure 11. And as a result, competitors in these states have already begun to offer competitive local service to residential subscribers. In these states, competitors have finally concluded that the competitive opportunities in residential markets outweigh the risk of unleashing competition by the incumbent Bell Companies. In California, which has one of the smallest residential-business disparities, competitors are providing over 180,000 resold lines; facilities-based competition is likewise significantly advanced, with 7,600 unbundled loops, over 100,000 interconnection trunks, and 270 physical collocation arrangements in service. Likewise, Texas, which has a residential discount well below the national mean, especially for SBC’s region, is seeing significant residential competition, with over 115,000 lines converted to resale. Britain has pursued a similar policy, and with considerable success. The 1996 Act takes some steps in that direction too: it directs the FCC to replace some implicit subsidies with explicit ones, in connection with service to schools, hospitals, high-cost rural areas, and the very cheap service options reserved for low-income subscribers.

But the federal government and most states remain committed to inexpensive, price-averaged, residential rates. There are strong social and political reasons to maintain below-cost residential rates, and, because of network externalities, some legitimate economic justifications too. The challenge is to prevent this policy from creating competitive gridlock: economic conditions that deter long-distance carriers from entering local markets, and regulatory conditions that prohibit local carriers from entering long-distance markets. Losing the benefits of competition in both local and long-distance residential markets should not be the hidden price consumers pay for affordable residential service.

Unleashing Competition to Provide Bundled Service. If one component of residential service is to remain heavily subsidized, as it undoubtedly will in most states, competitors must be motivated to bundle that component with a broader package of more profitable services. If they aren’t, they will probably never offer the subsidized component at all.

As noted at the end of Section 2, many consumers will buy bundled services if they can. The demand is there; the consumer preferences are strong. As soon as one vendor begins offering fully

---

139 See Section 1.

140 In 1983, British regulators set in place a price-cap plan that allowed BT to raise basic residential subscription fees 2 percent a year beyond inflation, while lowering measured and toll rates commensurately. A Brief History of Recent U.K. Telecoms and OFTEL, Office of Telecommunications, OFTEL, http://www.oftel.gov.uk/history.htm (“OFTEL Brief History”). In price cap terms, BT’s prices for basic services were allowed to increase annually by an “X-factor” set 2 percentage points above the inflation rate while high-end services were reduced by an X-factor 3 percentage points below the inflation rate from 1985 to 1989. In 1990, the X-factor increased to 4.5 percentage points and has changed every 3 years since. M. Lambert, et al., NatWest Securities Ltd., Ind. Rpt. No. 1856381, UK Telecommunications, at 56 (Feb. 12, 1997). This gave cable operators a stronger incentive to deploy networks, offer phone service, and undercut BT’s basic rates. For example, in 1996 Bell Cablemedia cut its line rental charges by 14 percent. Bell Cablemedia Gives “Powerful” Price Message, FinTech Telecom Markets, July 4, 1996. Competition overtook regulation as the main factor disciplining BT’s prices, and in 1996, British regulators eliminated the price cap entirely. OFTEL Brief History.

141 The FCC recently implemented this mandate in its Universal Service Order. But this initiative affects only a small minority of subscribers.
bundled local and long-distance service in any major market, other vendors will have to follow. They will have no choice.

To promote competition effectively, regulators must therefore articulate the right regulatory objective. Not “local residential competition,” but rather “residential competition” – the whole bundle, local, local toll, long-distance, and other vertical services. The former objective cannot be achieved without significantly re-balancing local rates. The latter can.

Only the local incumbent, which already sells the least profitable piece of the package, has a clear incentive to sell the entire bundle the moment it’s allowed to. These companies are already providing the most expensive, least profitable component of the bundle – local service itself. Adding on more profitable vertical services is obviously an attractive business proposition. The local carrier’s incentive to bundle up into profitable markets is strong. The incentive to bundle down into unprofitable markets is weak. Worse than weak: there is no incentive at all if bundling down will unleash your most serious rival.

In these circumstances, the only way to get competition started is simply to let the bundling begin. Of course, local phone companies will try to bundle first, if they can: they have much to gain by doing so, and nothing to lose. But insisting that they start second only guarantees that no one will start at all. Only by allowing local phone companies to go first will regulators impel others to beat them to it. AT&T, MCI, and other long-distance carriers have no incentive at all to be first. But they do have a strong incentive not to be second or third. The moment it becomes clear that a first player is coming, long-distance carriers and others will make sure they are not left behind. At the very least, they will quickly begin packaging what they already sell with local loop and dial tone supplied to them by local carriers at discount rates.

This idea is not just theoretical. It has been tried, and it works.

The Connecticut Experience. Connecticut would not appear to be the nation-leading target for competition. Much of the southern part of the state is a residential suburb of New York City; business customers in the region are overwhelmingly located on the New York side of the border. As in most other states, residential rates are well below business rates – the discount in Connecticut is about 62 percent. Connecticut features a cluster of medium-sized cities – five between 100,000 and 140,000, ranking from 137th to 184th in size nationwide – but has no major city to draw competitive attention.142 Even Hartford, the second largest city in the state and primary business center, ranks only 143rd in population nationwide.

Nevertheless, Connecticut was one of the first states targeted by major carriers for local competition. Four months before passage of the 1996 Act, AT&T announced that it would start with Connecticut when it entered local markets.143 AT&T ultimately entered California residential markets a few months earlier, but Connecticut came second, in March 1997,144 just four months

---

142Bureau of the Census, County and City Data Book 1994 at 698 (12th ed. 1994). The five largest cities in Connecticut are Bridgeport (137,020), Hartford (131,995), New Haven (123,966), Stamford (107,590), and Waterbury (106,904).


144S. Higgins, AT&T Goes Local With Service Today, New Haven Register, Mar. 1, 1997, at A1. AT&T was unable to enter the Connecticut market until it completed interconnection negotiations and arbitration over resale
later. For its part, MCI included Hartford on its list of 31 initial targets for local entry; Hartford tied as the smallest market (by far) on MCI’s list. MCI has rapidly expanded its Connecticut network, has offered local business service on its own facilities since May 1996, and says it will offer residential service in 1998.

Connecticut has proved equally attractive to cable, wireless, and other local competitors. In October 1996, TCI, the state’s dominant cable operator, chose Hartford as its first U.S. locality in which to offer advanced digital telephone, cable, and Internet access services, including its People Link local phone service, ALL TV digital video service, and @Home high-speed Internet access. TCI announced plans for a $300 million structural upgrade in its Hartford network in 1995. Since 1995, however, TCI virtually stopped upgrading its systems in all but two other cities. In June 1997, TCI raised its cable rates an average of 6.5 percent almost everywhere in the country — except Connecticut. Cablevision began offering 45 percent discounts to Fairfield customers in May 1997. Connecticut Telephone, a cellular reseller, began offering a bundle of resold local and long-distance service to business and residential customers statewide in 1996. At least 19 other competitors — including major players Brooks Fiber, Cable & Wireless, MFS, Sprint, and Teleport — have been certified by the DPUC to offer local exchange service.


147 K. Donnelly, MCI Celebrates the Anniversary of Connecticut Local Telecommunications, Business Times - New Haven Connecticut, May 1997, at 1 (since it lit up Hartford network, MCI has “expanded throughout the area, a radius of twenty to twenty-five miles”).

148 W. Hathaway, AT&T is Warned After Call to State Regulator, Hartford Courant, Apr. 3, 1997, at F1.


151 TCI upgraded networks in two other markets, Fremont, California, and Arlington Heights, Illinois, as it was upgrading Hartford. It rolled out telephony and digital video services in February 1997. TCI Rolls Out Digitally in IL, CA, Media Daily, Feb. 10, 1997.

152 P. Colman, TCI Rate Hikes Run Gamut, Broadcasting & Cable, June 2, 1997, at 68.


155 AT&T and MCI Appeal Conn. Decision to Allow SNET to Operate as CLEC, Comm. Daily, Aug. 14, 1997; D. Haar and W. Hathaway, Options for Phone Users Could Be Slow to Emerge, Hartford Courant, June 7, 1997, at A1. These companies are currently providing only business services.
What made Connecticut so fortunate? It is the only state in the continental United States whose main phone company – Southern New England Telephone (SNET) – is permitted to offer complete bundles of service to residential customers. SNET began offering such a bundle to Connecticut customers in April 1994. At the time, AT&T provided about 85 percent of the residential long-distance services in the state; SNET immediately undercut AT&T by an average of 17 percent. SNET steadily gained, and AT&T steadily lost, long distance market share in the state. By February 1997, SNET was providing long-distance service to

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Dec. 1996 - DPUC approves AT&amp;T-SNET arbitrated agreement, with 17 percent resale discount.</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

156SNET serves 97 percent of Connecticut access lines. Bell Atlantic - New York (formerly New York Telephone) serves around 38,000 access lines in Greenwich; Woodbury Telephone serves approximately 17,000 customers in the Woodbury area. Decision, DPUC Review of Telecommunications Policies, Dkt No. 91-10-06 (Conn. DPUC July 7, 1993).


158MCI and Sprint had garnered just 8.4 and 2.4 percent market shares, respectively. FCC Long Distance Market Shares at Table 9 (July 1997).

159SNET prices averaged a 24 percent discount below AT&T’s standard rates, and a 10.6 percent discount below AT&T’s discount plans. Declaration of Professor Jerry A. Hausman at 11-12, attached to Application by BellSouth for Provision of In-Region InterLATA Services in South Carolina (F.C.C. filed Sept. 30, 1997). (“Hausman Decl.”). The weekend rate is 23 percent lower. Even AT&T’s 1997 price cuts and one-rate plans were matched and bettered by SNET. Ibid.

about 35 percent of access lines – mainly residential lines – in the state. 

Provider concentration in the Connecticut long-distance market dropped sharply. 

Figure 1. 

Unable to block SNET in the regulatory arena, AT&T and MCI simply had to respond in the marketplace, and that is exactly what they did. As one Connecticut newspaper reported, “AT&T chose Connecticut for its first major thrust in part because SNET has been so aggressive in going after AT&T’s long-distance customers.”

TCI and Cablevision were spurred to compete in just the same way by the deregulation of SNET, followed by SNET’s aggressive entry into

1773310, Telecom Services, RBOCs & GTE (Aug. 9, 1996). These share gains were at the expense of AT&T, whose share dropped to 45 percent. 

FCC Long Distance Market Shares at Table 9 (July 1997).


163According to a TCI spokesman, Hartford was chosen for the network upgrade because of SNET’s likely
According to some accepted wisdom, long-distance markets are already highly competitive. The Connecticut experience establishes otherwise. Residential subscribers in Connecticut gained even more in long-distance markets than in any other. In April 1996, AT&T petitioned the FCC to be able to reduce its long-distance rates in Connecticut alone. AT&T had to do this, the company argued, to respond to “the rapidly emerging competition from SNET in Connecticut.” MC1 asked for permission to reduce rates charged to Connecticut customers as well, “to address special competitive situations.” Perhaps the FCC feared that the success of competition in Connecticut would expose the failure of federal regulatory policy elsewhere. In any event, the Commission denied both requests, insisting that AT&T and MCI must offer the same prices nationwide. AT&T, followed by MCI, quickly worked its way around this ruling, however, by offering extremely low in-state toll rates (5 cents a minute) to Connecticut customers who signed up as AT&T customers for all their long-distance services. One day after AT&T cut in-state toll rates, entry into cable. B. Keveney, *TCI Service to Expand Next Month*, Hartford Courant, Dec. 20, 1995, at A3 (quoting Matt Fleury, TCI spokesman). TCI offered its advanced services in Hartford just one month after SNET had received permission from the state to compete with TCI. TCI did not raise rates in Connecticut due to SNET’s presence. P. Colman, *TCI Rate Hikes Run Gamut*, Broadcasting & Cable, June 2, 1997, at 68 (“In virtually all of its Connecticut systems . . . TCI has decided to hold off on rate increases for the time being. The primary reason: competition.”). Cablevision cut its rates soon after SNET entered its Fairfield franchise. S. Higgins, *SNET Cable TV Service Expands Into Third City*, New Haven Register, July 3, 1997, at C12.


SNET responded with a per-second billing plan – another effective price cut, in an industry that normally bills calls by the minute, and always rounds upward.\textsuperscript{171}
Connecticut’s gains in long-distance markets came as little surprise to those who study the record in other markets. The 1996 Act frees Bell Companies to enter long distance in wireless markets. SBC, BellSouth, and other Bell Company cellular affiliates immediately began to offer flat-rate long distance at around 20 cents per minute, often with additional discounts for off-peak calls. Non-Bell cellular carriers responded quickly with steep cuts. Overall, the long-distance cellular market is now much less concentrated than before Bell Companies were permitted to enter. Similarly, in the two interLATA corridors where Bell Atlantic is allowed to compete, Bell Atlantic offers customers rates 30 to 40 percent below AT&T’s, and has a market share of about 20 percent.

Figure 22.

As noted, local competition is developing faster in Connecticut than in almost any other state, and residential subscribers in Connecticut already benefit from it. But heightened competition in long-distance markets alone has enriched Connecticut residential consumers by an estimated $40 million a year – about $7 per month for households that sign up for SNET’s cut-

---


175 AT&T concedes that Bell Atlantic’s rates are as much as one-third lower than AT&T’s and credits Bell Atlantic’s widespread marketing of “savings over AT&T basic rates” for Bell Atlantic’s market share gains. AT&T Petition for Waiver of Section 64.1701 of the Commission’s Rules at Att. A, CC Dkt. No. 96-26 (F.C.C. filed Oct. 23, 1996).

176 If the interexchange carriers had been able to match SNET’s rates statewide, the consumer welfare gain
rate service. By comparison, residential local service in Connecticut averages about $18 per month. The important lesson is that the competitive gains in both residential and long-distance markets resulted from a single regulatory policy: Let competitors compete.

If competition can save $7 a month for residential consumers in Connecticut, it can save comparable amounts for consumers in Texas and Florida, too. MIT’s Professor Jerry Hausman estimates that extending comparable policies nationwide would yield consumer welfare benefits of $7 billion per year. Californians would gain $900 million a year, or over $7 per residential consumer per month. Texans would gain $400 million, or just under $7 per line per month; residential subscribers in Florida would gain over $350 million per year – also about $7 per month. These benefits would be enjoyed by residential customers indefinitely into the future.

![Figure 23](image-url)

Figure 23 shows the five-year net present value of these gains, using a conservative 5 percent discount rate.

would have been about $120 million statewide, or $7 per month for every household in Connecticut.

177 FCC Reference Book at App. 2.

178 Hausman Decl. at 14-15. These benefits take two forms: the first is the direct savings to consumers of lower prices for long distance; the second is the savings that would be enjoyed on the additional long-distance service purchased by consumers due to lower prices. Dr. Hausman calculates the direct savings at $6.2 billion per year, and the benefits from additional long distance usage at $406 million per year. Id. at 14.

179 This calculation applies Professor Hausman’s methodology for calculating consumer welfare gains, see id. at 14, using an estimate for the size of the long-distance market in each state derived from FCC statistics. FCC, Preliminary Statistics of Communications Common Carriers (July 1997) at Tables 1.4, 2.6 (average revenue per interexchange minute), Tables 2.3, 2.5 (Bell Company residential lines per state); FCC, Long Distance Market Shares at Tables 9, 11 (July 1997) (interexchange minutes per residential line per state).

180 Figure 23 shows the five-year net present value of these gains, using a conservative 5 percent discount rate.
U.K. Experience. While competition is stalled in many residential local markets in the United States, it is booming in the United Kingdom. The contrast is instructive.

In July 1992, after a decade of deregulatory development, Britain authorized cable operators to provide competitive telephone service over their networks. Interconnection rules had been put in place some years earlier. Today, five years later, the U.K. has over 20 facilities-based competitors offering local service at prices equal to, or in most cases below, British Telecom’s rates. SBC, U S West, and other Bell Companies have formed business alliances with U.K. cable companies and other competitors. Nearly 40 percent of U.K. households now have the option to purchase cable telephony; that figure is projected to rise to 75 percent by 2002. Fully one-quarter of the households that can subscribe to competitive local service opt to do so. Figure 24. More customers subscribe to cable telephony than to cable video services; telephone service generates more than half of cable operator revenues. Approximately 60,000 residential customers per month are switching from BT to the cable companies, resulting in negative growth for BT residential lines. Competing carriers that target large businesses have captured 25 percent of the lines and 40 percent of the total telephone service expenditures of those customers. The average U.K. phone bill – business and residential – dropped almost in half, in real terms, between 1991 and 1997. BT has responded to competition by cutting costs and introducing innovative new pricing plans. According to MCI, “[c]ompetition in U.K. local markets today significantly exceeds the

181 OFFEL Brief History.
182 OFFEL set the terms of interconnection for BT’s and Mercury’s networks in October 1985. Ibid.
183 Applications and Notification, Volume One, at 33, The Merger of MCI Communications Corporation and British Telecommunications plc (F.C.C. Dec. 2, 1996) (“BT/MCI Merger Application”). BT’s evening and nighttime rate in 1995 of 1.6 pence per minute was the same as MFS’s daytime rate of 1.6, and higher than NYNEX’s rate of 1.2. Ibid.
184 Opposition and Reply of British Telecom and MCI at 14, The Merger of MCI Communications Corporation and British Telecommunications plc, Dkt. No. 96-245 (F.C.C. filed Feb. 24, 1997).
187 BT/MCI Merger Application at 26-27.
188 Id. at 25. “Large customer” is defined as a customer site with 20 or more access lines. Total expenditure is the sum of the charges for access lines plus local, national, and international calls.
level in the U.S. or in any other country.” 191

Figure 24. Competitive Growth in the UK Residential Market

![Graph showing competitive growth in the UK residential market.](image)


All of this has occurred under a regulatory regime very different from our own. U.K. competitors interconnect with BT’s network at prices ultimately determined by OFTEL, the British counterpart to the FCC. OFTEL makes no attempt to push prices down to long run incremental cost; BT recovers both its fixed and its variable costs. 192 Nor is BT required to sell its local services to competitors at wholesale rates, and OFTEL expressly declined to require BT to provide access to elements of its local networks on an unbundled basis. 193 Regulations on toll-call dialing parity are also much less demanding than in the United States. 194 Table 7. In a recent filing with the FCC, MCI nevertheless declared that the U.K. has “fully opened its telecommunications business to effective competition.” 195 As competition has developed, British regulators have deregulated. Price regulation has been eliminated entirely from business and high-usage residential markets. 196 The proportion of BT’s revenues under direct regulation has fallen from 65 percent to usage customers, have narrowed the cable pricing gap).

191 BT/MCI Merger Application at 24.


194 Id. at ¶¶ 9, 23, 36-37.


196 NatWest Securities Report at 5.
around 25 percent.\textsuperscript{197}

<table>
<thead>
<tr>
<th>Requirement</th>
<th>US</th>
<th>UK</th>
</tr>
</thead>
<tbody>
<tr>
<td>Resale</td>
<td>Yes\textsuperscript{1}</td>
<td>No\textsuperscript{2}</td>
</tr>
<tr>
<td>Unbundling</td>
<td>Yes\textsuperscript{3}</td>
<td>No\textsuperscript{4}</td>
</tr>
<tr>
<td>TELRIC</td>
<td>Yes\textsuperscript{5}</td>
<td>No\textsuperscript{6}</td>
</tr>
<tr>
<td>Dialing parity</td>
<td>Yes\textsuperscript{7}</td>
<td>No\textsuperscript{8}</td>
</tr>
<tr>
<td>Separate long-distance affiliate</td>
<td>Yes\textsuperscript{9}</td>
<td>No</td>
</tr>
</tbody>
</table>

Local Competition in Perspective. Promoting competition in the provision of basic voice service to residential markets is an important policy objective. But less important than it may at first appear. Local telephony remains strictly regulated – at both the state level, where retail prices and service are closely regulated, and at the federal level, where wholesale prices and competitor access are regulated. Rates charged by local phone companies will remain regulated so long as local phone companies retain high market shares in residential markets. Even if regulation itself is what maintains those market shares by keeping price well below cost. No amount of competition can spur any provider to deliver service cheaper than that.\textsuperscript{198}

When a market is so closely regulated, the benefits of new competition are sharply diminished.\textsuperscript{199} If new entrants rely on resale, rather than their own facilities, to compete in local markets, the consumer benefits of competition are lower still. Resale alone has little market-disciplining effect because a reseller competes only for the “marketing” slice of the overall service cost – the 20 percent or so gap between retail and wholesale. The potential for cost reduction or

\textsuperscript{197} Ibid.

\textsuperscript{198} Courts have recognized that, where regulation accomplishes the pricing constraints usually driven by competition, there is less concern that a lack of additional competitors “would or could have any effect upon prices in the market or otherwise deprive purchasers or consumers of the benefits they derive from free competition.” Redwing Carriers, Inc. v. McKenzie Tank Lines, 443 F. Supp. 639, 641 (N.D. Fla. 1977), aff’d, 594 F.2d 114 (5th Cir. 1979); see also Letter from James R. Young, Bell Atlantic, to Joel Klein, Acting Assistant Attorney General, Antitrust, at 7-8 (Jan. 16, 1997).

service enhancement is accordingly limited.\textsuperscript{200} In Connecticut, where AT&T resells SNET local service, its monthly rate is 25 cents lower than SNET’s.\textsuperscript{201} By contrast, SNET’s price cuts in long-distance markets saved consumers about $7 per month. As Professor Hausman concluded, “the consumer welfare gains from increased competition in long distance will more than outweigh the incremental gain from the last step to regulatory perfection that the Commission[,] . . . demands.”\textsuperscript{202}

The worse the economic prospects of local competition, the more important it is to get the regulatory priorities straight. GTE and Sprint, for example, provide local service to about 18 million and 7 million customers respectively\textsuperscript{203} – but almost entirely in rural areas,\textsuperscript{204} where costs are highest, and where residential service is typically subsidized the most. Regulators have repeatedly recognized that local competition will arrive in such areas last, if it ever arrives at all. \textbf{Table 8}.

<table>
<thead>
<tr>
<th>Table 8. Competitive Prospects For Rural Areas</th>
</tr>
</thead>
<tbody>
<tr>
<td>“(I)t is unlikely that there will be competition in a significant number of rural, insular, or high cost areas in the near future.”\textsuperscript{1} (FCC, 1996)</td>
</tr>
<tr>
<td>“In certain (most likely rural) markets, it is possible that . . . entry will not be forthcoming in the foreseeable future.”\textsuperscript{2} (Joel Klein, DOJ, 1997)</td>
</tr>
<tr>
<td>“Competition . . . may never develop in certain remote, rural, low-density areas.”\textsuperscript{3} (Missouri PSC, 1996)</td>
</tr>
<tr>
<td>“It is far from clear that substantial local competition will develop for rural or suburban customers.”\textsuperscript{4} (Competitive Telecommunications Association, 1994)</td>
</tr>
<tr>
<td>“[R]ural [areas] will not see competition at a local level.”\textsuperscript{5} (Washington Citizens Action, 1997)</td>
</tr>
</tbody>
</table>

\textsuperscript{200}The 1996 Act makes resale a particularly unlikely tool for forcing an incumbent phone carrier to lower its prices. Under section 251, wholesale price is a fixed percentage of retail price, and therefore the incumbent has no competitive advantage to gain by lowering retail price. \ 47 U.S.C. § 251; First Report and Order at ¶ 32, Implementation of the Local Competition Provisions in the Telecommunications Act of 1996, CC Dkt. No. 96-98 (F.C.C. Aug. 8, 1996).  

\textsuperscript{201}D. Haar, \textit{AT&T to Begin Basic Service in State March 1}, Hartford Courant, Feb. 15, 1997, at A1. AT&T offers its customers a single bill for local, local toll, and long-distance, but does not offer a discount on the bundle.  

\textsuperscript{202}Hausman Decl. at 18.  

\textsuperscript{203}FCC, Preliminary Statistics of Communications Common Carriers, at Table 2.10 (June 1997).  


53
Fortunately for many of these customers, however, the 1996 Telecom Act freed GTE to bundle long-distance with local exchange service.\textsuperscript{205} GTE began doing so in March 1996, about two years after SNET.\textsuperscript{206} GTE immediately undercut AT&T by 14 to 35 percent.\textsuperscript{207} After one year of service, GTE has already signed up one million mainly residential customers, or just over 5 percent of subscribers in its service areas.\textsuperscript{208} Professor Hausman estimates the consumer welfare gains to the United States from nationwide residential long-distance competition on this scale would again be in the $7 billion range annually, or $5 per customer per month.

Sprint has the same freedom to compete, but different incentives. Unlike GTE, Sprint is also a national long-distance provider, with 5 million presubscribed residential customers\textsuperscript{209} and $2.5 billion in residential long-distance revenue. Over 80 percent of that business comes from customers who buy their local phone service from Bell Companies. Signing an additional 20 percent of its own local customers for Sprint long-distance service would add roughly 1.4 million new Sprint customers\textsuperscript{210} but losing 30 percent of existing Sprint customers to Bell Company long-distance competitors in Bell regions would subtract somewhat more. Keeping the Bells caged therefore remains the best competitive strategy for Sprint. Particularly because the 1996 Act prohibits Sprint from bundling or jointly marketing interexchange service and resold local service in most Bell Company regions until the Bell Company itself wins the right to market similar bundles.\textsuperscript{211}

Experience from Connecticut, the U.K., and the GTE territories unambiguously supports the same conclusion. The important challenge for policy makers is not how to promote competition to provide the single component of residential service that is already ubiquitous and artificially cheap. It is to promote competition in the entire bundle of services that residential consumers buy. Over the longer term, the objective must be to promote new investment in advanced services, and to make sure that the investment is not channeled only to the many

\textsuperscript{205} Telecommunications Act of 1996 at § 601(a)(2).
\textsuperscript{206} GTE Brings Affordable Long-Distance Calling to Consumers with Lowest Per-minute Flat Rate of All Major Long-Distance Carriers, Edge, Jan. 20, 1997.
\textsuperscript{207} Professor Hausman estimated that GTE’s residential rates, on average, were 17 percent lower than AT&T’s. Hausman Decl. at 16.
\textsuperscript{209} Sprint has 5 percent of presubscribed residential access lines nationwide. FCC Long Distance Market Shares at Table 9 (July 1997).
\textsuperscript{210} Sprint already provides long distance to about 10 percent of its local customers. PNR Associates, Call Detail database (1996).
\textsuperscript{211} 47 U.S.C. § 271(e)(1).
profitable peaks of the market, and away from the one unprofitable valley.
5. PROMOTING NEW INVESTMENT IN BROADBAND SERVICES

The benefits to be gained from new investment in telecom infrastructure, both local and long distance, have never been greater. The Internet is the most important development in mass communications of our times. It is a major driver of economic growth in the United States and around the globe.

Demand for bandwidth is rising very rapidly. The Internet had 19 million host computers in July 1997, over 20 times the number five years earlier. The number of Internet Service Providers (ISPs) in the United States doubled in 1995 alone. The Net serves an estimated 51 million U.S. subscribers today, double what it served a year ago. According to WorldCom, demand for bandwidth is doubling every 3 months.

Demand is surging, but key components of the supply chain are not keeping pace. The

---

212 Comments of the United States Internet Providers Association at i, Usage of the Public Switched Network by Information Service and Internet Access Providers, CC Dkt. No. 96-263 (F.C.C. filed Mar. 24, 1997).


218 M. MacLachlan, WorldCom Makes Megadeals to Develop Network Infrastructure, InternetWeek, Oct. 6, 1997.
supply of Internet bandwidth is lagging seriously, especially for residential subscribers. The reasons are again rooted in regulatory policies that block entry by the companies most able to meet the surging demand, and with the strongest incentives to do so.

The Internet divides roughly into five layers. Figure 26. At the lowest level are some 50 million users – or more precisely, their computers, serial ports, modems, and ISDN adapters. The users connect to the next level up, local access, mainly through the local phone companies, using some 136 million access lines, countless miles of fiber and copper wire, and 22,000 local switches. Local phone lines link users to about 4,000 Internet Service Providers (ISPs). The largest ISPs include America Online, CompuServe, Microsoft Network, AT&T, and WorldCom’s UUNet division.

![Figure 26. Internet Architecture](image_url)

The ISPs receive the incoming calls and connect them to Internet routers, from which they are passed on to larger ISPs until they reach the “backbones” that carry Internet traffic across the United States and the world. Some 29 national providers operate Internet backbone networks. The backbone providers connect their networks at 11 major “network access points” (NAPs).

---


221 J. Rickard, Internet Architecture, Boardwatch Magazine Directory of Internet Service Providers, July/Aug. 1997, at 8-13. These interconnection points are: four official Network Access Points (NAPs) in San Francisco, Chicago, Washington, D.C., and Pennsauken, New Jersey; four Metropolitan Area Exchanges (MAEs) operated by
About nine backbones – including AT&T, MCI, Sprint, UUNet, and AOL – comprise an elite group of “peers” that pass traffic back and forth at no cost, and handle the vast majority of traffic.

The final elements of the Internet are the 19 million servers, the computers on which content is stored and transactions are executed. Some of these computers are operated by ordinary “users,” some by ISPs like AOL, CompuServe, and Microsoft, others by dedicated Web content providers like HotWired and Salon, still others by traditional commercial enterprises like banks and airline companies.

Demand for Internet services is fast outstripping supply. Contrary to many popular perceptions, the worst problems of blocking and slow speeds in the Internet today are centered not in the local exchange, but in the networks among the ISPs and backbone carriers. A recent, major study of 29 of the then 31 Internet backbones conducted Internet trials in 30 cities, using download measurements taken every 15 minutes for 30 days. The study found that on average, users cannot download across the backbone networks faster than about 40 kilobits per second – significantly slower than a 56 kbps modem, less than a third of the top speed of full ISDN (128 kbps), and slower still than forecasted speeds for ADSL (6 Mbps) or cable modems (10 Mbps). And the 40 kbps figure represents a 20 percent decrease in the average speed of the Internet since this summer, when Keynote and Boardwatch calculated the average speed at about 50 kbps.

The network access points (NAPs), where the backbone networks interconnect, are a further source of congestion.

As a result of the congestion on the backbone networks, users complain that they do not see the benefit of faster connections using ISDN or cable modems. Residential users cannot be

---


223 Download speeds are significantly slower when users connect during popular business or evening hours, or for users connecting in more congested parts of the country. Ibid. Jim Barrick, President and CEO of Keynote, noted that, “Most Web users will actually experience performance worse than the measured average. That’s because our measurements were conducted over faster connections than most users have available and included measurements performed at night when traffic was light.” Keynote measured Internet speed using T-1 or T-3 connections only one or two router “hops” from the backbones themselves; residential users will likely not have such fast or close connections. Ibid.


225 According to one analyst, WorldCom’s MAE East in Washington, D.C. handles more than 60 percent of all worldwide traffic and an estimated 85 percent of all intra-European traffic. Any traffic running through this NAP is choked by mediocre bandwidth. J. Dvorak, Breaking Up the Internet Logjam, PC Magazine, Apr. 8, 1997, at 87.

226 This “means that performance of next-generation technology such as cable-TV or satellite modems will be severely limited, at least until overall Internet throughput for standard Web content is substantially improved.” Keynote Press Release, Keynote Systems Clocks True Speed On The Internet Highway At 5,000 Characters Per Second, or Only 40 Kbps, Oct. 21, 1997. “[Y]ou have to wonder exactly what these cable modem boosters are about. While it’s possible for a cable modem to get the home Web page from the local cable modem server at some
expected to spend more for Internet access until they can be assured that the product they are buying is fast and reliable. Until adequate bandwidth and stable backbones are built, consumer adoption of ADSL and ISDN, and of competing technologies like cable modems, will be delayed.  

Thus, despite frequent allegations to the contrary, the local exchange is not currently the main choke point for Internet traffic. Analog phone lines can still accommodate the 56 kbps of the fast modems now on the market, and ISDN lines, supporting 128 kbps rates, are available to 93 percent of subscribers nationwide, both residential and business. But the problems in the upper regions of the network are being addressed, albeit more slowly than they should or could be. Over the next few years there clearly will have significant new investment in local facilities, too, or local networks will replace the backbones as the choke points in the system.

Impediments to New Investment in Internet Backbone Networks. At the level of the Internet backbone, AT&T and MCI show little promise as architects of the network of the future. Both companies have announced and then killed a succession of data and Internet services. AT&T recently announced activation of a “high-performing” Internet backbone, but the blazing speed, this is simply misleading if the average time of all the backbones is 50 kbps. 50 kbps is the average speed you will get, period! [Similarly,] 128K ISDN . . . isn’t that useful.” J. Dvorak, Slower Than You Think, PC Magazine Online, Aug. 11, 1997. See also R. Gareiss, Mapping a High-Speed Strategy, Data Communications, Apr. 1997, at 62 (“Increasing the speed of the local loop won’t work miracles with sluggish Internet access, since factors like server speed and congestion at Internet NAPs . . . affect actual throughput.”); D. Hoye, Cox @Home; The Access Is Easy; But Even its Fast Speed Can’t Overcome Peak-Time Congestion On The Internet, Arizona Republic, Oct. 13, 1997, at E1 (“I’ve found that roaming the Internet with souped-up access doesn’t guarantee great results.”)

Indeed, the inability of the backbones to provide sufficient bandwidth to allow users to take full advantage of cable modem transmission speeds was one of the reasons TCI helped found the “@Home backbone.” B. Dalglish, Investors Bet Big on Pure Cable-Modem Play, The Financial Post, Oct. 9, 1997, at 31.

The Keynote study concluded that “most of [many websites’] performance problems occur out in the Internet’s infrastructure somewhere between the web site and its users: at the NAPs (Network Access Points) where backbone providers interconnect, in one or more routers along the communication path, or in a DNS (Domain Name Service) close to the user.” Keynote Systems, Top 10 Discoveries About the Internet, http://www.keynote.com/measures/top10.html.

In May 1994, AT&T announced that it would offer three on-line services in 1995: NetWare Connect Services, Network Notes, and PersonaLink. Less than three years later, AT&T was substantially out of the on-line industry, with the exception of its WorldNet Internet services (begun in February 1996). K. Patch, Integration Key to AT&T’s On-Line Plan, PC Week, May 30, 1994, at 14; J. Davis, AT&T Shifts to WorldNet on NetWare Connect Services, InfoWorld, July 15, 1996, at 12; J. Schwartz, and J. Rendleman, AT&T Drops Notes in Face of Internet, Communications Week, Mar. 4, 1996, at 1; P. McKenna, AT&T Ends PersonaLink Service, Newsbytes, July 12, 1996; P. McKenna, America Online Acquires The Imagination Network, Newsbytes, Aug. 7, 1996. MarketplaceMCI, “one of the most notable Internet business collapses,” vanished from the Internet after “fail[ing] to attract sufficient sales.” S. Alexander, Christmas Shopping Has New Meaning on the Net, Star Tribune, December 14, 1996, at 1A.

prospects for this latest venture must be judged in light of AT&T’s late arrival, limited involvement, and even more limited success in Internet markets in the past.

AT&T and all other long-distance carriers who derive most of their current revenues from voice must recognize that growth of the Internet threatens their profits almost as much as Bell Company entry into long-distance markets. Existing voice customers pay for service on a per-minute-of-use basis. Long-distance carriers therefore have an incentive to keep the Internet noncompetitive with their existing high-margin services, most particularly in the arenas of 800 numbers, fax transmission, and international toll calls.

This may explain why WorldCom, almost unknown a few years ago, is fast emerging as “the King of the Internet.” If WorldCom’s proposed acquisition of MCI goes through, the combined firm will own 45,000 route miles of fiber and will be by far the largest provider of Internet access and backbone services. WorldCom owns and operates UUUnet, through which – consistent with its general strategy of serving only business customers, not residences – WorldCom provides Internet services directly to businesses and ISPs. In September 1997, WorldCom purchased the America Online and CompuServe fiber networks but did not take

---

231 Federal Express, for example, has installed a package tracking website that receives 107,000 hits per day. These inquiries substitute for calls to FedEx’s 800 number, and thereby diminish the long-distance carriers’ lucrative pay-by-the-minute 800 services. The FedEx Web site uses only 1/25 as much long-distance circuit capacity per customer inquiry as the 800 service. To use the site, the user needs to download two Web pages, the standard tracking page and the page that contains the tracking results. These two pages (excluding unnecessary graphics) represent roughly 120,000 bits. Using FedEx’s automated calling system, on the other hand, ties up a voice channel for about 46 seconds. A voice conversation converted into digital form requires 64 kbps. The automated calling system therefore uses capacity equal to that needed to transmit 2.8 million bits. N. Negroponte, Psst! Transactions, Forbes, July 7, 1997, at 166.


235 See 1996 WorldCom Annual Report 28 (1997) (UUUnet is the world’s largest provider of Internet access services to “businesses, professionals and on-line services providers”); see also S. Comfort, et al., Morgan Stanley, Dean Witter, Co. Rpt. No. 2556537, WorldCom Inc., at 10 (June 3, 1997) (UUUnet’s services are “tailored to meet the needs of business customers”).

236 According to the Keynote study of backbone performance, CompuServe’s network is “the best performing network on the Internet.” J. Rickard, Measuring the Internet, Boardwatch Magazine Directory of Internet Service Providers, July/Aug. 1997, at 24. In comparison to average backbone speeds of 50 Kbps, CompuServe’s backbone delivers roughly 300 kbps. The backbones operated by UUUnet and ANS, by contrast, perform only at about average speeds. J. Rickard, Measuring the Internet, Boardwatch Magazine Directory of Internet Service Providers, July/Aug. 1997, at 26-27; J. Dvorak, Slower Than You Think, PC Magazine Online, Aug. 11, 1997,
their subscriber bases, a combined 14 million strong. Rather than attempt to break into the residential online service market itself, WorldCom purchased only extra capacity for its commercial and ISP Internet access business. WorldCom’s proposed acquisitions of MCI and Brooks Fiber would both add high-margin, business-only elements to WorldCom’s network and service offerings. By doing little to add to Internet infrastructure, incumbent long-distance carriers have left the field largely to a single ambitious upstart that is buying up large parts of the infrastructure already in place.

In these circumstances, Bell Companies clearly should be playing integral roles in supplying new Internet bandwidth, not only for local access, but up through the higher tiers of the network as well. The Bell Companies certainly have the right incentives to invest in this market, because the growth of the Internet helps them to sell additional telephone lines and new local bandwidth through services like ISDN. Unlike the incumbent long-distance companies, local phone companies have much to gain by migrating customers, residential customers in particular, off subsidized, flat-rate analog lines and onto high-capacity, properly priced, digital lines. But most of the local telephone companies (aside from GTE) are legally barred from providing Internet backbone services. The current regulations that apply to Internet services discourage only one class of provider – the Bell Companies. Figure 27.


237*EarthLink Pins Growth on Two-Fold Strategy Key Elements Involve Referral, Acquisition Programs,* InternetWeek, July 14, 1997.

238*47 U.S.C. § 271.* The Bell Companies may act as ISPs to a limited extent, but by most constructions of the 1996 Act are forbidden from arranging the long-distance transport over the backbone networks on behalf of the customer. As a result, customers of Bell Company ISP services must choose a second ISP to handle the long-distance connections, and the customers receive separate charges from each ISP. The extra bill has been a significant deterrent to the Bell Companies offering a competitive service.
**Impediments to Competitive Investment in Internet Access Networks.** A second cluster of regulatory policies is creating equally strong disincentives to new investment in local Internet access facilities. Under the 1996 Act, Bell Companies are now required to “unbundle” and sell to their competitors whatever new capabilities and services they add to their networks, at rates “based on the cost[s] of providing” them. On new, risky investment in facilities and services that turn out to be very popular, Bell Companies can therefore hope to recover only their original costs. New, risky investments that fail, by contrast, are charged to Bell Company shareholders, through the vehicle of price-cap regulation.

Worse still, all Bell Company prices must be deflated according to a “productivity offset” or “X-factor” concocted by the FCC. The FCC’s latest Price Cap Order sets the X-Factor at a level

---


that the FCC itself has admitted is well in excess of what is “reasonable,” thus threatening to choke off investment in new advanced services. Regulation alone may thus transform any well-engineered, efficiently priced, new broadband service into a source of steadily growing loss in subsequent years. The more advanced the technology deployed, the greater the threat, because in such circumstances further technological advance is least likely to deliver the instant, ongoing improvements in performance and declines in price that the Commission presumes into existence indefinitely into the future.

Under existing regulatory structures, almost any increase in bandwidth re-engages a snake’s nest of old regulatory pricing debates. ISDN, for example, is one line that contains either three (for Basic Rate Interface ISDN) or 24 (for Primary Rate Interface ISDN) digital channels. It took the FCC over two years to decide whether such lines should therefore be subject to one, not three or 24, subscriber line charges; the Common Carrier Bureau and the Commission as a whole reached opposite conclusions. That was in 1995. In 1997, the Commission changed course: it ordered one, newly-calculated, ISDN-only SLC to be charged per ISDN line, but changed the amount of the SLC. The SLC helps to pay for interstate uses of local networks. Meanwhile, many of those who use local phone networks most heavily to reach the Internet pay no access charges at all. The FCC recognized in 1987 that this distinction made no sense – interstate data callers use precisely the same local access lines as interstate voice callers, and indeed (on a per-customer basis) use them much more heavily. But the disparate treatment remains in place, because in the ten years since, nobody has been able to muster a political consensus on how to correct it.

This regulatory environment leaves new entrants with little incentive to invest in local

---

241 The FCC set the X-factor at 6.5 percent, even though historical productivity gains (the measure the Commission admittedly considers most reliable) have never showed productivity gains even approaching 6.5 percent. See Fourth Report and Order at ¶¶ 137, 141, Price Cap Performance Review for Local Exchange Carrier, CC Dkt. No. 94-1 (F.C.C. May 21, 1997).


243 Access Charge Reform Order at ¶ 116. Because PRI costs five times as much to provide as basic service, the PRI SLC was set at five times the basic SLC, subject to a cap of $45; because BRI costs about the same as regular service, the BRI SLC was set to equal the regular SLC. Ibid. The LECs are also allowed to assess additional end-user charges to recover the additional costs of ISDN line cards. Access Charge Reform Order at ¶ 126.


246 See Immediate Hill Backlash, FCC Considers Linking ESP Access Charges to ONA, Communications Daily, Nov. 17, 1988, at 1 (“[A] cyclone of protest from Congress, NTIA and hundreds of computer-service users” killed the FCC’s initiative.). In its Access Charge Reform Order, the FCC succeeded only in raising monthly fees on second residential phone lines, the lines most often used for data access. See Access Charge Reform Order at ¶¶ 78, 344.
residential markets. Even if they put aside concerns about unleashing the Bells, they cannot ignore the fact that — under current regulatory mandates — reselling Bell service is by far the cheapest way to enter most local residential markets. Every major player has reached that conclusion. “There’s not one company that intends to enter the local market by duplicating the local networks that already exist today,” declared AT&T’s former chief executive Robert Allen. “That would be redundant, not to mention financially prohibitive. Instead, companies like AT&T intend initially to buy service from the local companies at a discount and resell the service to their own customers.”

Sprint likewise says it will focus on a “resale approach that does not entail a significant up-front investment;” the company won’t invest in infrastructure “until it becomes clear to us that regulatory conditions exist that would support a significant financial commitment.” One of MCI’s potential new owners, British Telecom, says it will “purchase bulk capacity from local telephone carriers” and thereby “leverage other people’s infrastructure.” And as noted earlier, the CEO of one of MCI’s other suitors, MFS/WorldCom, is certain that “[n]ot AT&T, not MFS or anyone else, is going to build local telephone facilities to residential customers. Nobody ever will, in my opinion.”

Interconnection regulation has thus accelerated new entry of brand names and marketing organizations. It has lowered entry barriers, but at a price to competition itself. The whole point of interconnection regulation is to allow competitive entry with less new building, less new capital investment, than would be necessary otherwise. No economically rational new entrant will build anything that it can buy from others more cheaply, least of all when it can buy from others below cost. Facilities-based competition by new entrants, and new investment by incumbents, will occur only when interconnection prices are properly aligned with underlying costs.

Impediments to Investment by Incumbent Local Phone Companies in High Speed Local Networks. All of this might not matter much if at least the incumbent local phone companies still had strong incentives to upgrade their networks. But regulation has sharply undermined those incentives, too.

Consider again the basic economics of providing residential phone service over existing analog copper plant. The basic loop and dial tone are provided at a price well below cost, but on average, the local phone company makes up the difference on local toll, access charges, and vertical services. See Figure 9, Section 2. But what happens under the new regulatory regime

---

247 Robert E. Allen, Cutting the Barbed Wire: Lessons of a Reformed Monopolist, delivered at the University of Texas, Austin, Texas, Oct. 21, 1996. See also AT&T Press Release, AT&T Response To WorldCom Announcement, Oct. 1, 1997 (“AT&T’s strategy” is to use “every possible option to enter local markets without laying out undue amounts of capital.”).


250 M. Mills, Hanging Up on Competition?, Washington Post, June 1, 1997, at H1 (quoting Bernard Ebbers, Chairman and CEO of WorldCom).

when that line is upgraded (or replaced) to support much higher bandwidth digital services?

Many of the traditional sources of profit are immediately put in jeopardy. Even if used for fax or Internet telephony, the new digital lines will overwhelmingly be categorized as part of the universe of “enhanced services” – not “long distance” – from which local phone companies do not currently collect long-distance access charges. Because it provides high-bandwidth service, one new line may displace two or more old ones. But multi-line service is generally profitable for local phone companies, because providing the first line costs so much more than providing the second. As a matter of course, phone companies run wires that contain four or six pairs of phone lines; the marginal cost of including the additional lines in the wire is very low. High-bandwidth digital lines may readily support (with the help of CPE and the Internet) highly profitable vertical services already provided over analog lines, such as Caller ID, call forwarding, and voice mail. Figure 28.

---

252 Access Charge Reform Order at ¶ 341. The FCC has reserved judgment on the application of SLCs to non-ISDN high-bandwidth technologies that, like ISDN, create more than one communications channel per wire. ADSL, for example, contains three major channels: a high-speed (6 Mbps) downstream channel, a medium-speed (640 kbps) upstream channel, and a voice channel. But the upstream and downstream channels can each be divided into as many slower channels as the user wants. ADSL Forum, ADSL Tutorial: Twisted Pair Access to the Information Superhighway, http://www.adsl.com/adsl_tutorial.html. Judging from the FCC’s treatment of ISDN, ADSL lines will likely be assessed a unique SLC adjusted to reflect any additional costs to the LEC. See Access Charge Reform Order at ¶¶ 116, 126.

253 Since the 1970s, telephone companies have routinely equipped homes with two copper pairs, and there are now about 1.3 telephone lines in place per customer. A. Lindstrom, Pulling Bandwidth Out of a Copper Hat, America’s Network, July 15, 1997, at 59. The cost of providing a second line for these homes, then, is only the labor cost of connecting the unused pair at both the user end and the switching end, and the cost of the switch port itself. This is significantly cheaper than laying a second wire. See N.J. Muller, Strategic Information Resources, What Can We Expect From Telcos in the Post-Regulatory Telecommunications Age?, http://www.ddx.com/postregu.shtml (telcos use “idle capacity in an existing plant” to bring second line costs down).

254 Indeed, in Europe, “ISDN . . . has driven the digitalisation of networks and additional services offerings (such as Caller ID) of the carriers.” N. Berezak-Lazarus and F. Arnold, Internet Breathes Life Into xDSL, Communications International, Dec. 1996, at 63. ISDN, for example, includes Caller ID signaling information with every incoming call; the right CPE can easily display Caller ID, with no revenue going to the telephone company. See S. Warren, Building a WAN With ISDN BRI Routers, Teleconnect, June 1997, at S30. New ISDN routers, like the $500 YoYo Professional, use ISDN signaling information to provide Caller ID, call transferring, conference calling, and paging. Remote Access, Data Communications, July 1997, at 112. ISDN user forums and standards bodies are developing ISDN protocols to offer six-way conferencing, call forwarding, and voice mail. J.W. Ellis IV, Hot, But For How Long?, Telephony, Aug. 4, 1997. ADSL and other, higher bandwidth technologies will be more efficient ways of offering vertical features than analog lines. See C.H. Ferguson, The Internet, Economic Growth, and Telecommunications Policy, http://www-eecs.mit.edu/people/ferguson/telecom/index.html, Apr. 14, 1997.
None of this would matter if local phone companies could continue charging traditional rates for service over upgraded lines. But they can’t. As noted, access charges may be lost entirely when digital lines are linked to providers that call their business “enhanced service” rather than “long distance” – whether or not the service actually provides long-distance voice telephony, fax, and so forth. Beyond that, the general formula for competition in the Telecom Act will force incumbent telephone companies to unbundle (and offer at incremental cost-based prices, as discussed below) the equipment used to provide digital lines – including the copper loops themselves, of course – and to offer the complete service for resale, at sharp discounts to all comers.

In the past, even as residential prices were maintained well below cost, the quality of service was steadily upgraded system-wide. Since the Bell divestiture, for example, over 90 percent of Bell Company switches have been converted from analog to digital, and SS7 has been fully deployed. Existing copper plant has been upgraded to support digital circuits; ISDN is now widely available to residential subscribers and prices are dropping.

Demand for new, broadband digital services is surging in homes and schools, just as it is in corporate boardrooms. Phone companies, like their competitors, now have in hand the next-generation technology – Digital Subscriber Line technologies (which support simultaneous, digital transmission of voice and video over existing copper plant), hybrid fiber-coax, and switched digital video architectures – in their local loops.

The new technology is at hand; the economic incentive to deploy it widely isn’t. If local

---

256 FCC Infrastructure Report at Table 9(a).
257 Ibid. (ISDN was available in 66 percent of the Bell Companies’ access lines at the end of 1995). More recent reports show ISDN to be available in 85 percent of residential access lines and 100 percent of business lines. R. Gareiss, Mapping a High-Speed Strategy, Data Communications, Apr. 1997, at 62.
phone companies introduce these services successfully, competitors will be able to buy them piece by piece, at sharp discounts, and capture the profits. As currently formulated, the Commission’s pricing standards require local carriers to give competitors access to network elements at prices below even the incremental cost of providing them, and still further below the actual book cost including capital and depreciation.\textsuperscript{259} For just the same reason, competitors have little incentive to deploy the technology themselves. Why would they, when the FCC has directed that competitors may buy the existing network below cost, and successful new technologies at cost – with no need to face the risk of losing unsuccessful investments?

As the experience in Connecticut has shown, less regulation promotes more investment. TCI poured $300 million into the state, even as it all but froze investment elsewhere.\textsuperscript{260} MCI is investing money in a large fiber network in Hartford, which is one of only two small markets that MCI is entering. SNET, the incumbent, is responding with $4.5 billion of new investment in higher bandwidth, long-distance service, and video.

The 1996 Telecommunications Act – whose stated goal is “to accelerate rapidly private sector deployment of advanced telecommunications and information technologies”\textsuperscript{261} – includes provisions that give regulators the flexibility they need to learn from the Connecticut experience. Section 230(b) articulates a national policy “to promote the continued development of the Internet and other interactive computer services and other interactive media; [and] to preserve the vibrant and competitive free market that presently exists for the Internet and other interactive computer services, unfettered by Federal or State regulation.”\textsuperscript{262} Section 706 expressly authorizes both the FCC and state regulators to “encourage the deployment . . . of advanced telecommunications capability” through “price cap regulation, regulatory forbearance, measures that promote competition in the local telecommunications market, or other regulating methods that remove barriers to infrastructure investment.”\textsuperscript{263} The clause was “intended to ensure that one of the primary objectives of the bill – to accelerate deployment of advanced telecommunications capability – is achieved.”\textsuperscript{264}

This is not the first time Congress has directed the FCC to create a more favorable, more deregulatory environment for new technology. Section 157 of the Communications Act, enacted in

\begin{footnotesize}
\begin{itemize}
\item \textsuperscript{259} The Commission has expressly precluded recovery of embedded costs – whether they are due to regulated depreciation or to prudent but unsuccessful innovation efforts – from consideration in the calculation of Total Element Long Run Incremental Cost (TELRIC). 47 C.F.R. §51.505(d)(1).
\item \textsuperscript{260} B. Keveney, \textit{TCI Service to Expand Next Month}, Hartford Courant, Dec. 20, 1995, at A3.
\item \textsuperscript{261} \textit{Conference Report} at 1; see also S. 652, §4 (“to promote and encourage advanced telecommunications networks, capable of enabling users to originate and receive affordable, high-quality voice, data, image, graphic and video telecommunications services”).
\item \textsuperscript{262} 47 U.S.C. §230(b).
\item \textsuperscript{263} §706(c)(1) defines “advanced telecommunications capability” as “high-speed, switched, broadband telecommunications capability that enables users to originate and receive high-quality voice, data, graphics, and video telecommunications using any technology.”
\end{itemize}
\end{footnotesize}
1983, was precipitated by crippling FCC delays in approving the new technologies of that era, most notably cellular. 265 Section 157 specifically aimed to “foster the delivery of new services and new technologies to the public in order to increase competition and promote diversity.” 266 Well over a decade ago, Section 157 made it “the policy of the United States to encourage the provision of new technologies and services to the public,” and directed the Commission to determine within a year “whether any new technology or service proposed in a petition is in the public interest.” 267 At least 20 other sections in the Communications Act are explicitly concerned with speeding up deployment of new technology. 268

In sum, regulators have in hand all the authority they need to unleash local competition and spur rapid new investment in high-bandwidth infrastructure. It is time to use it.

---

265 “Recent Commission decisions have authorized a number of new common carrier services. However, applications to provide these service have created an enormous backlog.” Federal Communications Commission Authorization Act of 1983, P.L. 98-214, 1983 U.S.C.C.A.N. 2219, 2220.

266 Ibid.
