

# Research Report

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## Texas Telecommunications

*Everything's Dynamic Except The Pricing*

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## **EXECUTIVE SUMMARY**

Most major regulatory reforms in telecommunications produce significant benefits for consumers. Deregulation of telecommunications equipment, competition in long-distance service, liberalization of entry into wireless, and the relatively unregulated Internet have all brought lower prices and an explosion of new service options.

State and federal legislation started the process of opening local telephone service to competition in the mid-1990s, but the benefits of regulatory reform in local telephone service have been less significant than those already achieved in interstate telecommunications services and telephone terminal equipment. In contrast to the dramatic decline in competitive long-distance rates, local rates have been relatively stagnant since passage of the federal Telecommunications Act in 1996.

In 1995, the Texas Legislature permitted incumbent phone companies to opt for an alternative regulatory framework that capped basic network service rates at current levels, gave them immunity from rate-of-return regulation, allowed rate flexibility for other services, and required the company to commit to certain infrastructure investments. In 1999, additional legislation permitted most incumbent phone companies to alter many of their prices within 10 days of notifying the Public Utility Commission. However, rates for “basic” residential services such as phone lines, flat-rate calling, and call waiting are capped until September 2005 and subject to commission review thereafter.

The State of Texas continues to pursue policies intended to make basic residential telephone service “affordable” by subsidizing this service and mandating higher charges for other residential and business services. As a result, the rates charged by the four largest incumbent wire-line phone companies fall approximately \$600 million short of the cost of providing local residential service. To make up the difference, consumers pay higher prices for other services, such as intrastate long distance, wireless, vertical services, and many goods and services produced by businesses that use a lot of telephone service. We estimate that cross-subsidies for local residential telephone service in Texas have reduced overall economic welfare by at least \$200 million annually.

The cross-subsidy scheme has also hampered the development of competition in the local residential market. Any competitor seeking to sell local phone service must compete against an incumbent who is forced by regulation to price local phone service below cost.

To complete regulatory reform in telecommunications, several measures are necessary:

- Allow the price of basic local phone service to rise to reflect cost;
- Eliminate the cross-subsidy from intrastate long-distance to local telephone service;
- Allow competition among facilities-based carriers to determine the level of sustainable telephone rates;
- Fund universal service programs by some means that avoids distorting telecommunications prices, such as general tax revenues or a fixed monthly charge on phone bills rather than a percentage assessment;
- Reduce the cost of universal service programs through more careful targeting; and
- Avoid stifling new technologies.

## **ABOUT THE AUTHORS**

**Robert W. Crandall** is a Senior Fellow in the Economic Studies Program of the Brookings Institution. His research has focused on telecommunications regulation, cable television regulation, the effects of trade policy in the steel and automobile industries, environmental policy, and the changing regional structure of the U.S. economy. His current research focuses on competition in the telecommunications sector and the development of broadband services. He was a Johnson Research Fellow at the Brookings Institution and has taught economics at Northwestern University, MIT, the University of Maryland, the George Washington University, and the Stanford in Washington program. Prior to assuming his current position at Brookings, Dr. Crandall served as assistant, acting, and deputy director for the Council on Wage and Price Stability.

Dr. Crandall is the author of *Talk is Cheap: The Promise of Regulatory Reform in North American Telecommunications* (with Leonard Waverman); *Cable TV: Regulation or Competition?* (with Harold Furchtgott-Roth); *The Extra Mile: Rethinking Energy Policy for Automotive Transportation* (with Pietro Nivola); *After the Breakup: The U.S. Telecommunications Sector in a More Competitive Era*; *Manufacturing on the Move*; *Changing the Rules: Technological Change, International Competition, and Regulation in Communications* (with Kenneth Flamm), and numerous journal articles.

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Dr. Ellig has published numerous articles on government regulation and business management in both scholarly and popular periodicals, including the *Journal of Regulatory Economics*, *Managerial and Decision Economics*, *Business & Politics*, *Contemporary Policy Issues*, *Antitrust Bulletin*, *Competitive Intelligence Review*, *Journal of Private Enterprise*, *Texas Review of Law & Politics*, *Wall Street Journal*, *New York Times*, *Barron's*, and the *Washington Post*. His co-authored/edited books include *Dynamic Competition and Public Policy* (Cambridge 2001), *Economic Deregulation and Customer Choice* (Center for Market Processes 1997, with Robert W. Crandall), *New Horizons in Natural Gas Deregulation* (Praeger 1996, with Joseph Kalt) and *Municipal Entrepreneurship and Energy Policy* (Gordon & Breach 1994, with Alison E. Woodward and Tom R. Burns).

Dr. Ellig received his Ph.D. and M.A. in economics from George Mason University in Fairfax, VA, and his B.A. in economics from Xavier University in Cincinnati, OH.

## **INTRODUCTION**

For most of the last century, regulators and legislators considered cheap local phone service akin to a basic human right, nearly as important as free speech itself. Phone companies cashed in on this political preference by promising “affordable” service for all in exchange for monopolies. But now that *competition* in local service is legal, the established incumbent carriers, who are required to provide service to a large number of residential customers at prices well below cost, find themselves up against new firms that are not burdened by such requirements. The regulated price of basic residential services in many areas is so low for these residential subscribers that few competitors are interested in simply selling “plain old telephone service” to them.<sup>1</sup> As a result, the transition from monopoly to competition in traditional local phone service has taken longer than many had hoped.<sup>2</sup>

Regulatory reform has not failed; it has not been given a chance. Competition in all telecommunications services is possible and desirable. But regulators should remove some of the obstacles to competition that they have placed in its way, particularly the cross-subsidies embedded in regulated rates. In today's telecommunications market, long-distance service still subsidizes local service; urban service subsidizes rural service; businesses subsidize residences, and purchasers of additional “vertical” services (extras such as call forwarding) may even subsidize those who only want a phone line. Federal and state regulators should move quickly to eliminate such subsidies wherever possible.

## **BENEFITS OF REGULATORY REFORM**

In the highly-charged debate over regulatory reform of local telephone service, it is easy to forget that most of the major regulatory reforms in telecommunications have produced significant benefits for consumers. Deregulation of telecommunications equipment, competition in long-distance service, liberalization of entry into wireless telecommunications, and the relatively unregulated Internet have all brought lower prices and an explosion of new service options.

### **Deregulation Of Telecommunications Equipment**

Prior to 1970, virtually all telecommunications “terminal equipment” such as telephones, key telephones, and “private branch exchanges” used by businesses was provided by the local telephone monopolist. Phone companies argued that a consumer who plugged in a phone purchased from someone else could compromise the integrity of the telephone system. Federal regulators opened the equipment market to competition in the 1970s, and their efforts were upheld by the courts in 1977.

Prices of most terminal equipment began to fall in the 1970s, with some falling sharply before 1977. Prices for telephone handsets, key telephones, and private branch exchanges declined at a real rate of between six and seven percent per year between 1972 and 1987.<sup>3</sup> This decline moderated slightly between 1975 and 1977, according to AT&T data, while federal regulators' decision to open the market to competition was challenged in court by

state regulators. The decline accelerated once a final decision was rendered. Figure 1 shows that the prices of ordinary telephones and answering machines continued to decline substantially in the 10 years following the AT&T breakup. More recently, the U.S. Bureau of Labor Statistics has developed an index that measures changes in the prices of telecommunications equipment. As Figure 2 shows, this index indicates that inflation-adjusted equipment prices have fallen by more than half since 1997.

**Figure 1**

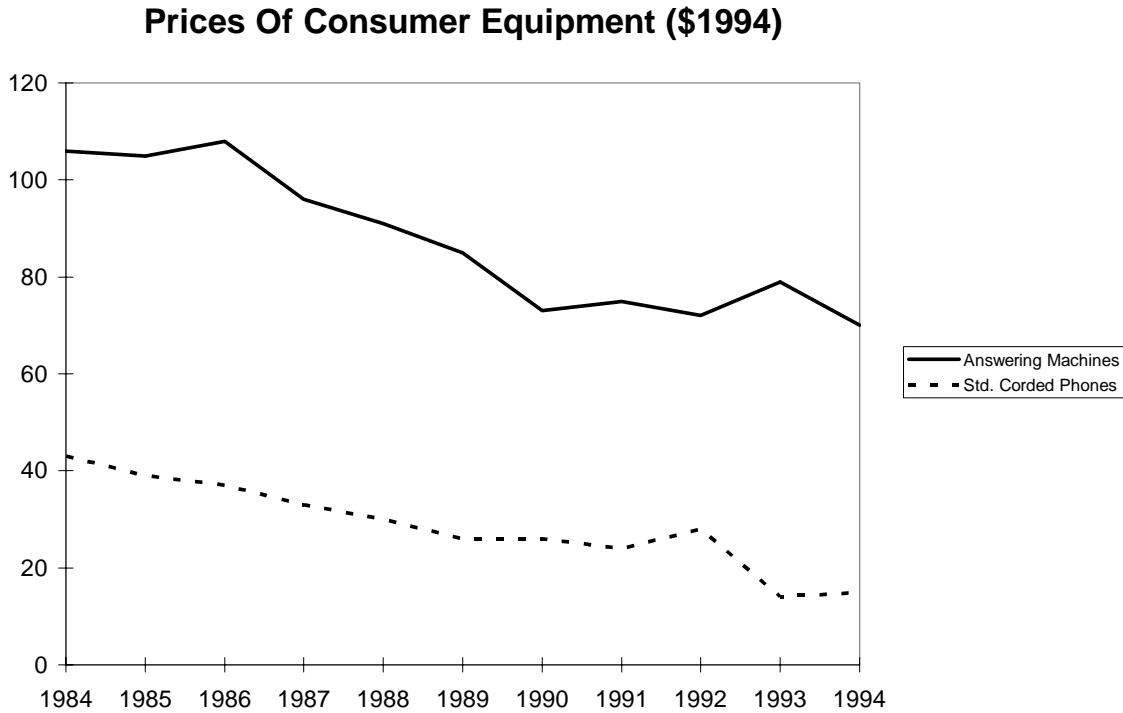
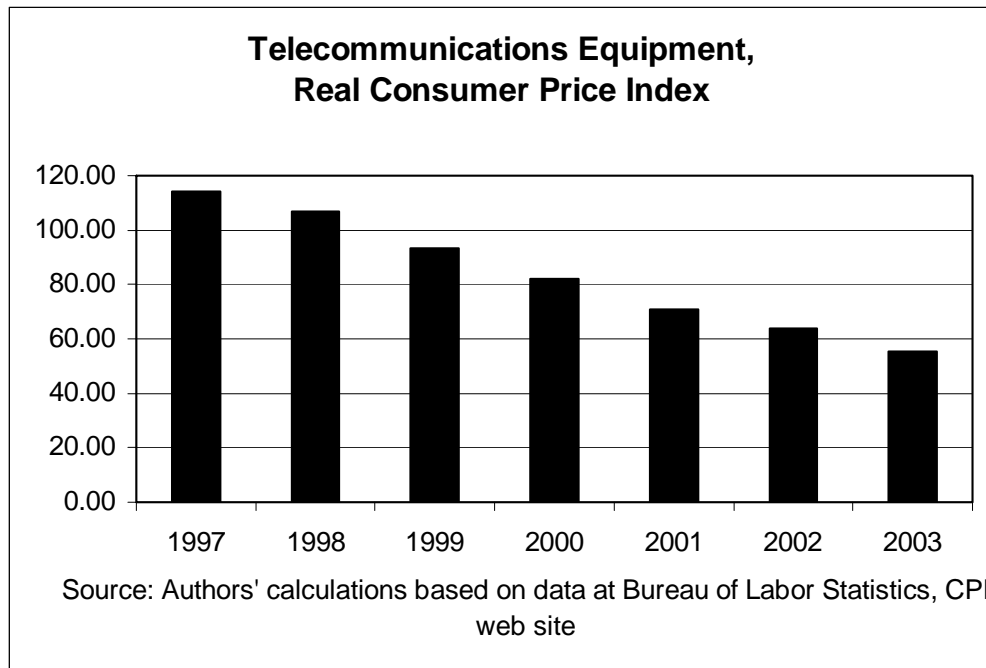


Figure 2



Source: Robert Crandall and Jerry Ellig, *Economic Deregulation and Customer Choice* (Fairfax, VA: Center for Market Processes, 1997), p. 26. Available at <http://www.mercatus.org/regulatorystudies/article.php/839.html>.

### Long-Distance Competition

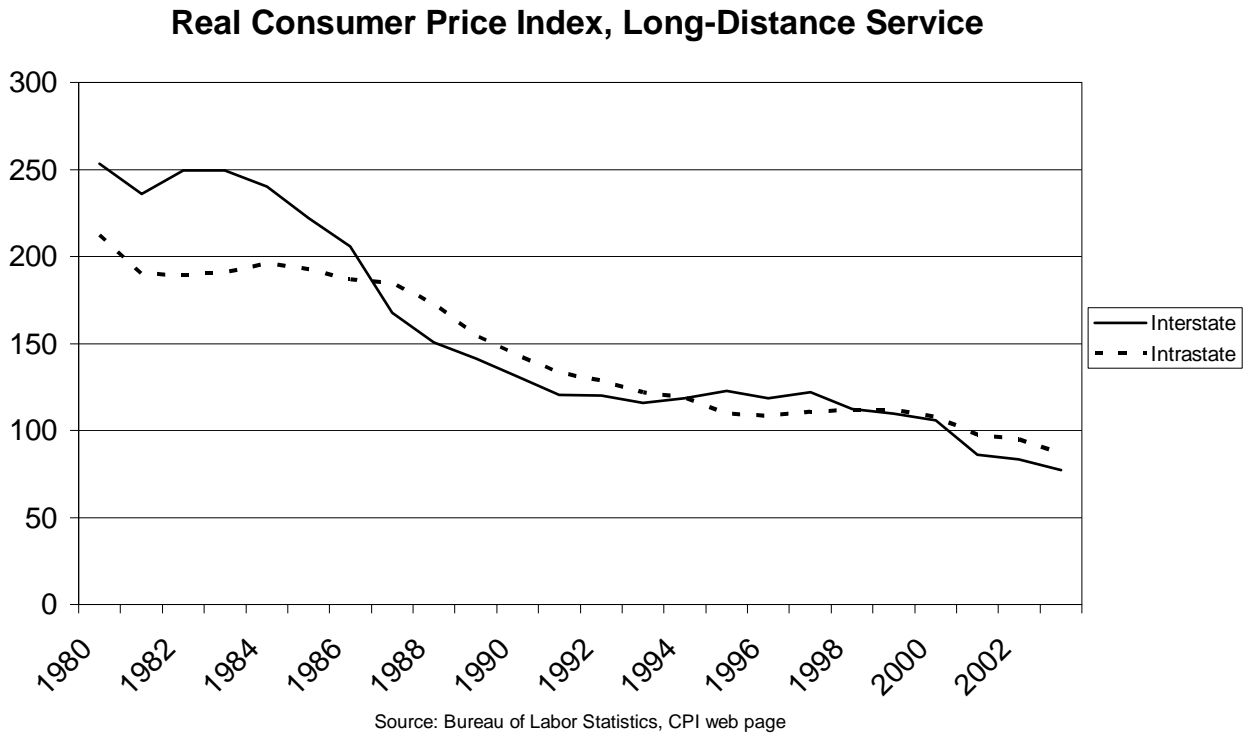
Competition and deregulation of long-distance phone rates came slowly. In 1969, MCI received federal authorization to compete with AT&T in the provision of “private line” long-distance service to small- and medium-sized businesses. Entry into the ordinary interstate long-distance market occurred clandestinely as MCI simply began to offer this service to businesses in 1974 without authorization. The Federal Communications Commission sought to stop MCI but lost in the federal courts.<sup>4</sup> Long-distance service was now open to competition, but the new long-distance competitors had to originate and terminate their calls over local phone networks that were franchised monopolies. Federal and state regulators controlled the connection rates, or “access charges,” and regulated interstate and intrastate long-distance rates. Regulators kept access charges artificially high in order to subsidize local telephone rates.

Responding to complaints that the vertically-integrated AT&T was using its local monopoly bottlenecks to frustrate competition in long-distance service and in the sale of telecommunications equipment, in late 1974 the Justice Department filed an antitrust suit against AT&T. In 1982, AT&T agreed to divest all of its local phone companies on January 1, 1984, and these local companies could not sell long-distance service. Now AT&T as well as the competing long-distance companies had to pay regulated access

charges to the local phone companies. In 1995, the Federal Communications Commission deregulated AT&T's domestic interstate rates.

Long-distance rates have fallen significantly since the advent of competition. Until the late 1990s, the principal competitors were AT&T, MCI, Sprint, WorldCom, and a host of other companies who resold their services. Since 1996, the local phone companies formerly owned by AT&T have gradually received regulatory clearance to sell long-distance services as well. As Figure 3 shows, the real consumer price index for interstate long-distance fell by 68 percent between the AT&T breakup in 1984 and 2003. The decline in intrastate long-distance rates has been somewhat less dramatic – 56 percent. The difference largely reflects the fact that federal regulators have reduced interstate access charges much more rapidly than state regulators have reduced intrastate access charges. Both of these indexes understate the reduction in long-distance rates, because they do not account for special discount calling plans.

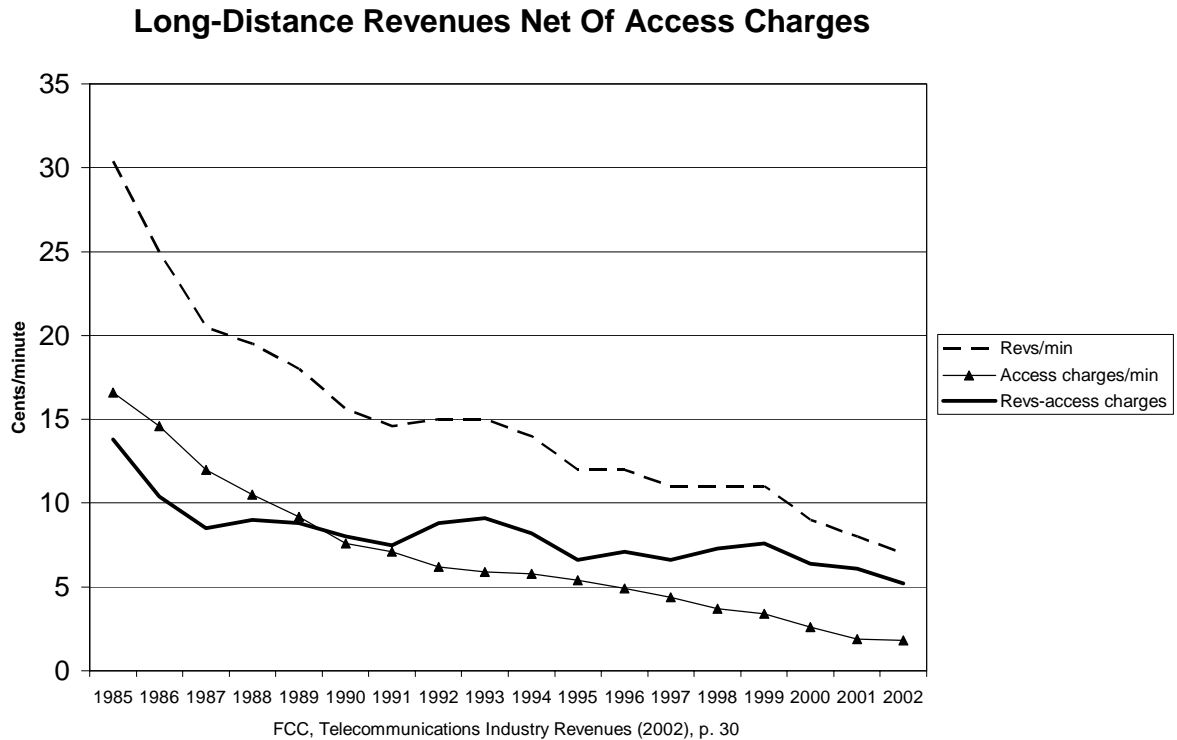
**Figure 3**





Since the AT&T breakup, federal regulators have slowly reduced interstate access charges, which inflate interstate long-distance bills, by substituting a fixed federal subscriber line charge that appears on local telephone bills. Interstate long-distance rates, however, have fallen even more rapidly than access charges. Between 1985 and 2002, interstate long-distance revenues fell by 23.4 cents per minute, while interstate access charges fell by 14.8 cents per minute<sup>5</sup> (See Figure 4). That leaves a reduction of 8.6 cents per minute – a 28 percent drop – which resulted from some combination of competition and technological progress. Competition's actual contribution to the reduction in long-distance rates may be somewhat higher than this figure implies, since arguably federal regulators would not have reduced access charges in the absence of pressure from competing long-distance companies.

Figure 4

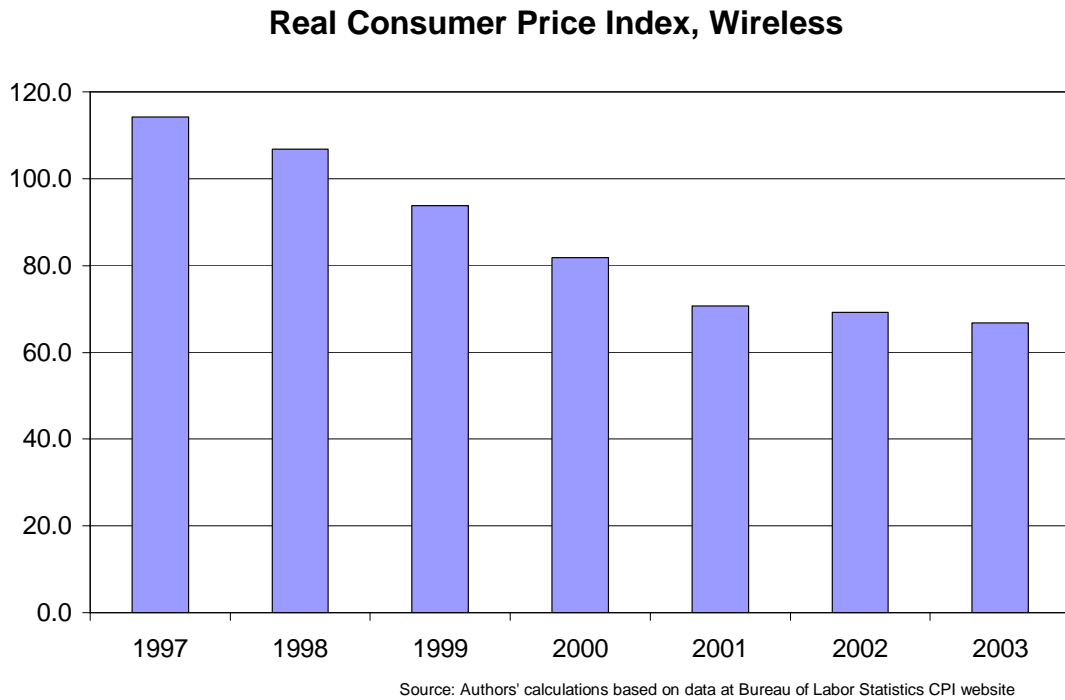


### Wireless Competition

Federal regulators could have licensed spectrum for cell phone service in the 1970s, but the first cell phone operations did not begin until 1983 due to regulatory delays in licensing equipment to use the spectrum. For more than a decade, the federal government licensed only two cellular providers in each market. In 1993, Congress directed the Federal Communications Commission to begin to auction spectrum, and the FCC responded by auctioning almost twice as much spectrum as it had already allocated to cell phone service, effectively making room for at least six wireless providers.

Between 1984 and 1995, when there were just two cell phone companies per market, inflation-adjusted rates fell by an average of between three and four percent annually. Entry of new competitors prompted price reductions averaging 17 percent annually between 1995 and 1999.<sup>6</sup> More recent trends show up in the U.S. Bureau of Labor Statistics' index of wireless telecommunications prices, which begins in 1997. During the past six years, inflation-adjusted wireless prices have fallen by approximately 40 percent, as Figure 5 illustrates. The value that wireless telephone service has created for consumers is truly staggering. One estimate suggests that consumers valued the first generation of cell phone service at \$50 billion per year.<sup>7</sup>

**Figure 5**



In Texas, as in many other states, wireless service has become so attractive that there are now almost as many wireless subscribers as there are fixed-wire telephone lines. Since 1999, the number of regular wired phone lines has actually fallen by about 5 percent, from 13.19 million to 12.54 million. Over the same time, the number of wireless subscribers nearly doubled, to 11.33 million.

Figure 6

**Fixed Wire Access Lines And Wireless Subscribers In Texas**  
(millions as of December 31, 2003)

<b>Access Lines (Subscribers)</b>	<b>1999</b>	<b>2000</b>	<b>2001</b>	<b>2002</b>	<b>2003</b>
Incumbent Fixed-Wire Carriers	12.60	11.89	11.37	10.77	10.27
Competitive Local Exchange Carriers	0.59	1.76	2.17	2.18	2.27
Total Fixed-Wire Lines	13.19	13.65	13.54	12.95	12.54
Mobile Wireless Subscribers	5.79	7.55	9.16	10.13	11.33

Source: Federal Communications Commission, *Local Telephone Competition: Status as of December 31, 2003* (June 2004).

### Internet

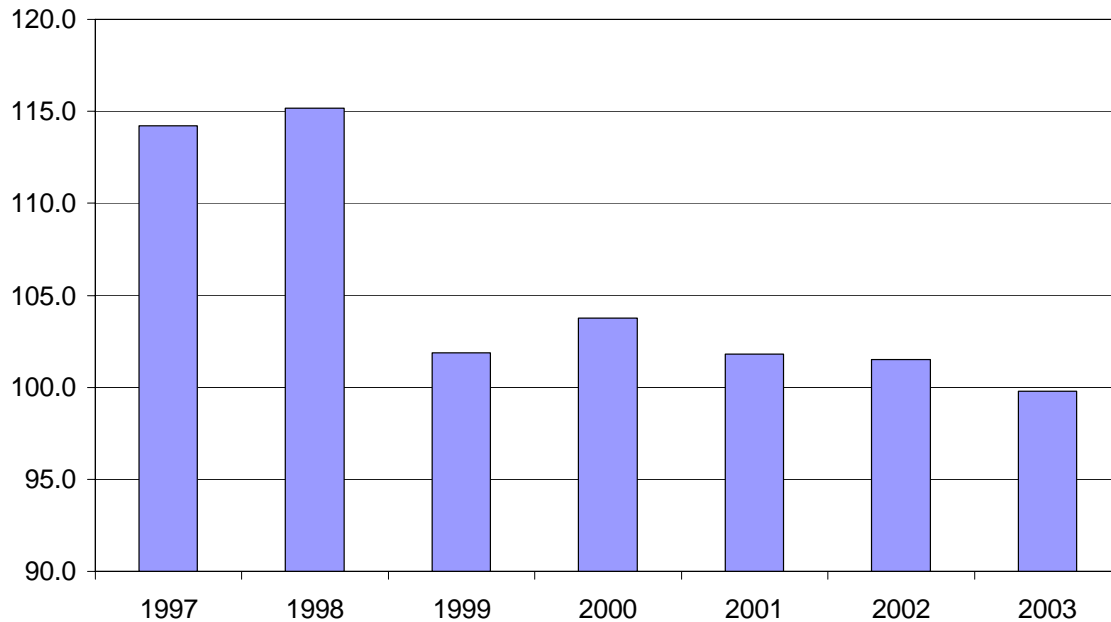
The ongoing explosion of Internet-based services and features is well known. From e-mail and web browsing to newer services like instant messaging and telephony, the Internet offers a cornucopia of information and services that did not even exist when AT&T was broken up in 1984.

Perhaps less well known is the role of regulation – or rather, the absence of it – in fostering the Internet revolution. In a series of proceedings starting in 1966, the Federal Communications Commission decided that data processing, and later Internet services, should be free from the price controls, entry regulations, and other restrictions imposed on telephone service.<sup>8</sup>

Thanks to this policy, Internet services and electronic commerce have flourished. Figure 7 suggests that a substantial price reduction occurred in recent years in spite of the disappearance of “free,” advertiser-supported Internet service.

Figure 7

**Internet Services, Real Consumer Price Index**



Source: Authors' calculations based on data at Bureau of Labor Statistics CPI website

**Broadband Internet**

Broadband Internet service has been somewhat more regulated than dialup or Internet content, but in general somewhat less regulated than telephone service. Different broadband providers are regulated differently, because they employ different technologies that have historically been subject to different forms of regulation.

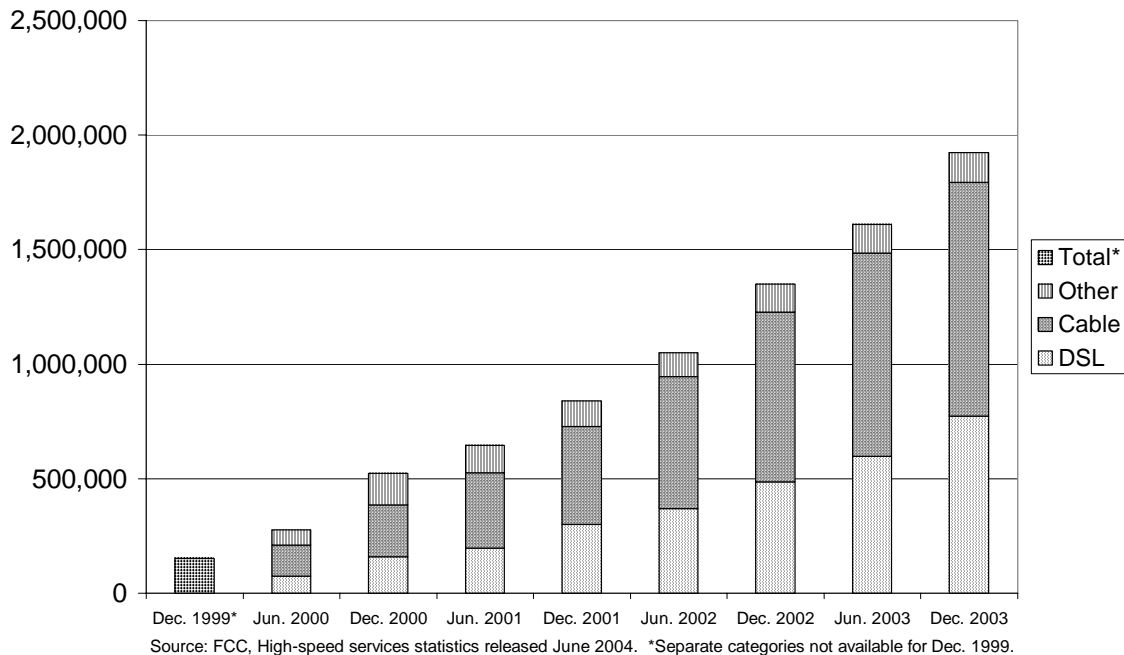
Broadband can be delivered via telephone lines, cable, satellite, or in various wireless forms. The leading broadband providers are cable TV companies, which have seen their own unique cycles of regulation and deregulation over the past two decades. The vast majority of cable regulation, however, has applied to video services, not broadband Internet connections. The principal regulation currently affecting cable's broadband Internet service, or "cable modems," is a federal "open access" requirement that applies to systems owned by Time Warner, a condition imposed by the regulators for their approval of the AOL-Time Warner merger. Time Warner was required to let its broadband customers choose Internet providers other than its own Roadrunner service. A recent court ruling could open the door to further regulation of cable modem service.<sup>9</sup>

While broadband Internet service is still in its infancy, its growth has been impressive. Broadband subscribership in Texas more or less mirrors national trends. Figure 8 shows that Texas broadband subscribership in December 2003 was more than 12 times its level in December 1999, when federal regulators started gathering subscribership data. Of the

1.9 million high-speed lines in service, 1.8 million were residential or small business customers.<sup>10</sup> The Texas Public Utility Commission has noted, “Customer demand for broadband services has been strong, but still lower than many had expected. On the other hand, customer adoption of broadband service has been faster than the adoption of other technology services, such as cell phones, in their early stages of availability.”<sup>11</sup>

**Figure 8**

**Growth In Texas High-Speed Lines**



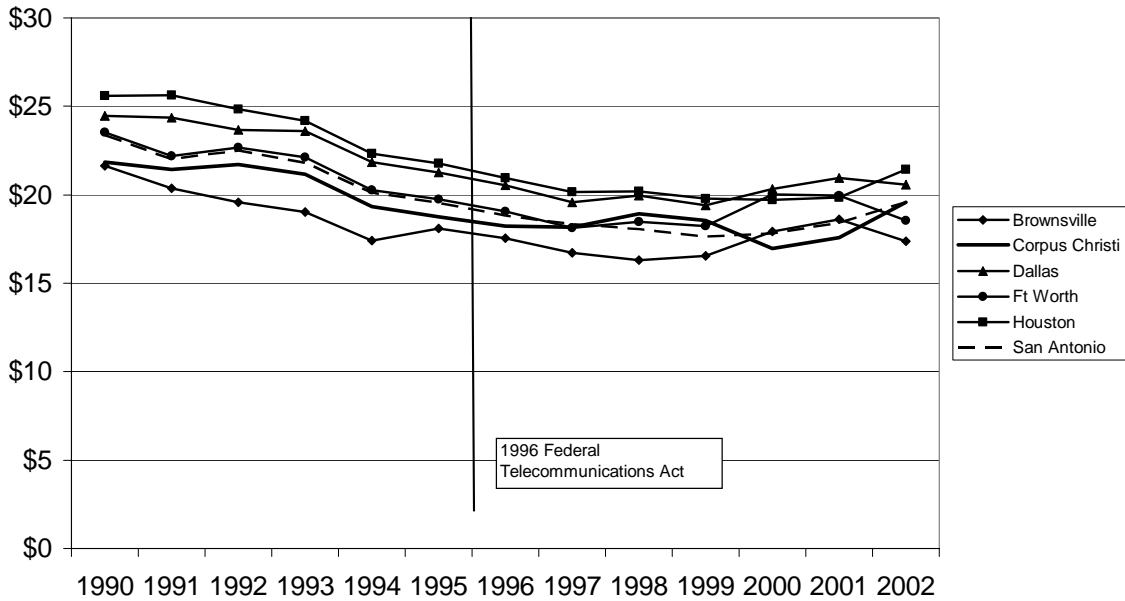
**Local Telephone Service**

Retail local telephone service is regulated by states, not the Federal Communications Commission. Federal legislation started the process of opening local telephone service to competition in 1996, but much of the state regulatory structure was left intact. Thus, it should be no surprise that the benefits of regulatory reform in local telephone service have been less significant than those already achieved in interstate telecommunications services and telephone terminal equipment.

Figure 9 shows trends in inflation-adjusted local telephone rates in a number of Texas cities since 1990. In contrast to the dramatic decline in competitive long-distance rates, local rates have been relatively stagnant since passage of the federal Telecommunications Act in 1996. Rates appear to have increased since 1999, but as Figure 10 shows, this increase largely reflects a rise in the federal subscriber line charge, not in the charges affected by Texas regulation.

Figure 9

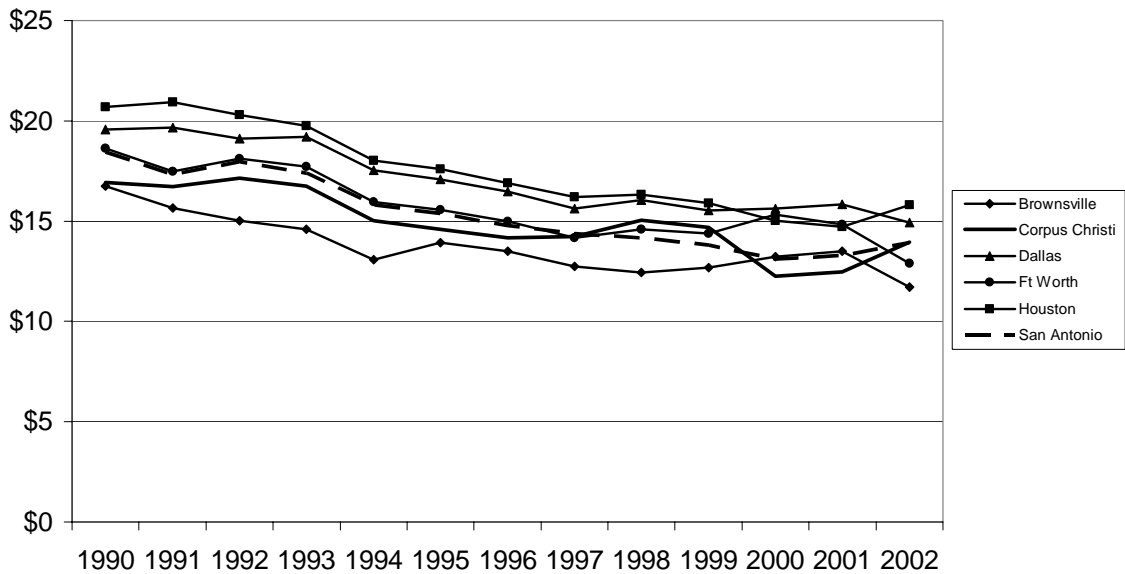
Inflation-Adjusted Local Telephone Rates



Source: Federal Communications Commission, *Reference Book of Rates, Price Indices, and Household Expenditures for Telephone Service* (2003), Table 1.4. Figures include surcharges, taxes, and subscriber line charges.

Figure 10

Real Local Rates  
(excluding federal subscriber line charge)



Source: Federal Communications Commission, *Reference Book of Rates, Price Indices, and Household Expenditures on Telephone Service* (2003), Tables 1.2 and 1.4. Figures include surcharges and taxes.

## **CURRENT TELECOMMUNICATIONS REGULATION**

Both federal and state laws and regulations affect telephone service in Texas.

### **Federal Laws And Regulations**

Some of the federal initiatives that directly affect Texas telephone service originated in the Telecommunications Act of 1996. This legislation marked the first enunciation of a congressional view that competition is possible and desirable in all facets of telecommunications, including local service. The act contains several provisions intended to promote competition in local telephone service:

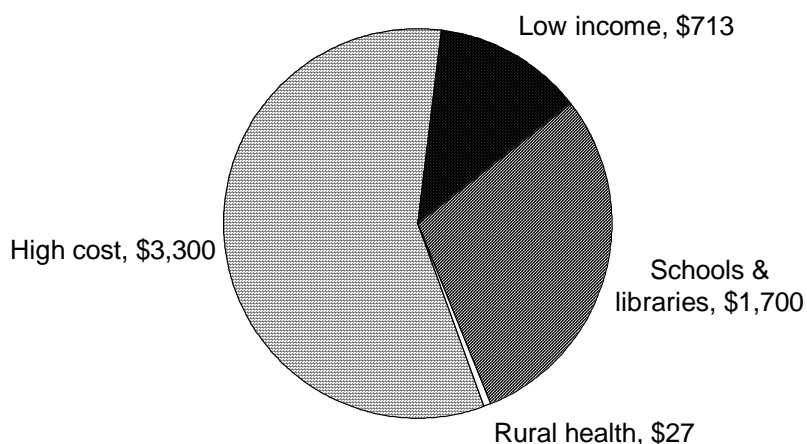
- **Prohibition of government-created entry barriers for telephone, cable, and satellite.** State and local governments are prohibited from granting exclusive franchises to telephone and cable television companies. In addition, neither governments nor private community associations can prohibit property owners or tenants from installing small satellite dishes.
- **Mandatory leasing of parts of the local phone network.** Existing local phone companies (“incumbents”) must make parts – “unbundled elements” – of their network available for use by competitors at regulated prices. The precise scope of facilities that must be made available is still a subject of debate and litigation.<sup>12</sup> Prices are set by state utility commissions using a cost principle enunciated by federal regulators: “total element long-run incremental cost.” Essentially, this is regulators’ estimate of what it would cost a hypothetical firm to reproduce the leased components at today’s most efficient level of costs, rather than the phone company’s historical cost of building the network.
- **Mandatory resale discounts for local service.** Incumbent phone companies must also sell their services to competitors at wholesale discounts which reflect the incumbents’ avoided costs, and competitors can then resell these services to consumers.
- **Temporary prohibition on incumbent local companies providing long-distance service.** When AT&T was broken up, each state was divided into multiple “local access and transport areas,” and the Bell telephone companies were prohibited from selling long-distance service between these areas. The 1996 federal law continued this prohibition until the former Bell phone companies satisfied 14 criteria intended to ensure that local phone markets are open to competition. SBC received approval to sell long-distance service between local access and transport areas from its operating regions in Texas on June 30, 2000, but it was not until the end of 2003 that the Bell companies received approval to offer such service in all states.<sup>13</sup>
- **Mandatory interconnection.** All local phone companies must interconnect, so that their customers can call each other. In Texas, interconnection agreements are

often negotiated; until 2003, carriers could also adopt a standardized, commission-approved agreement that SBC proffered as part of its application for permission to sell long-distance service. Compulsory arbitration occurs when an agreement cannot be negotiated.<sup>14</sup> Interconnection between wireless providers and local phone companies is required by other federal regulations.

Other federal regulations and programs alter telephone rates in order to promote universal service. The Federal Communications Commission administers several types of universal service programs that subsidize basic phone service for low-income customers, subsidize high-cost phone companies, provide reduced-price Internet service to schools and libraries, and offer reduced-price telecommunications services to rural health care facilities. The federal government spent approximately \$5.7 billion on these universal service programs in 2003. More than half of this money — \$3.3 billion — went to subsidize high-cost carriers, and \$713 million (12.5 percent) was spent on programs for low-income customers that help pay initial connection charges (Linkup) and subsidize monthly phone bills (Lifeline). Most of the rest (\$1.7 billion, or 30 percent) subsidized Internet service to schools and libraries.<sup>15</sup> Thus, about 70 percent of the funds were devoted to subsidizing basic telephone service, with the remainder spent on the newer “universal service” programs created by the 1996 Telecom Act, which reduce the cost of Internet service to specified types of institutions (See Figure 11).

**Figure 11**

### Federal Universal Service Funding, 2003 (\$millions)



These federal universal service programs are funded through a surcharge on the interstate and international portion of telephone bills. This surcharge has grown significantly over time; it now equals approximately 8.7 percent of the interstate portion of phone bills.<sup>16</sup>



## **Texas Telecommunications: Everything's Dynamic Except The Pricing**

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In 2002, Texas consumers paid approximately \$333 million as a result of this surcharge, and the federal Universal Service Fund paid \$428 million in subsidies to Texas telecommunications service providers.<sup>17</sup>

Federal initiatives to reduce subsidies from long-distance to local telephone service have had a significant impact on local telephone bills. Since 1984, excessive access charges paid by the long-distance companies have gradually been replaced by the fixed monthly federal subscriber line charge, which currently averages about \$6 for residential lines. Were it not for this charge, the local telephone rates shown in Figure 9 would be substantially lower, as Figure 10 shows. On the other hand, such low rates would also be substantially below the actual cost of providing local service. The federal subscriber line charge effectively moves the fixed monthly fee closer to the actual cost of providing local phone service.

Critics of this policy may complain that it forces some consumers to “pay for service they don’t use,” because consumers now pay a higher fixed monthly charge even if they don’t make many phone calls. Most of the costs of serving an individual customer, however, are fixed; they do not vary with the number of calls the customer makes. The phone company has to make the same investment in building and maintaining the network regardless of how many calls an individual consumer makes. A fixed monthly charge gives the consumer a more accurate price signal, because the consumer’s decision to make another phone call has virtually no effect on the costs of providing the local network.

Finally, federal policies intended to keep the Internet free from regulation constrain the ability of the Texas Legislature or Public Utility Commission to regulate the Internet. Internet services, including the common dialup service most consumers use to connect to the Internet, cannot be taxed and are free from the access charges imposed on long-distance companies. Instead, dialup Internet service providers pay for phone service as business customers.

The regulatory classifications of some types of Internet-based services are still evolving. Internet telephony is a good example. A variety of technologies and services make it possible for people to use their computers and a high-speed Internet connection – one that is “always on” – to make phone calls. Internet telephony using “Voice Over Internet Protocol” allows people to make phone calls without a traditional telephone line. Voice Over Internet Protocol is simply an application that rides over a high-speed Internet connection via a cable modem, satellite, DSL, wireless connection, or an organization’s own high-speed network. Therefore, the companies that provide these connections are direct competitors of telephone companies for traditional voice and vertical services. The Federal Communications Commission has decided that companies offering Voice Over Internet Protocol services solely between parties who use Internet connections are not selling telecommunications services, because these calls do not travel over the telephone network. These services are information services like e-mail or instant messaging.<sup>18</sup> As a result, they are free from access charges and telecommunications taxes. Federal regulators have not yet decided whether a service that lets people use Internet telephone

to call people with ordinary phone service is an information service or a telecommunications service, and therefore, whether it is subject to the welter of taxes and regulations that apply to traditional voice services.<sup>19</sup>

### **Texas Regulations**

Texas telecommunications laws and regulations have a significant effect on competition and on Texas consumers' telephone rates.

### **Local Rates**

Prior to 1995, the Texas Public Utility Commission regulated local telephone rates directly. Rates were raised or lowered in order to achieve what Texas regulators determined was a reasonable rate of return on the company's investment. To establish rates for particular locations, regulators classified local telephone exchanges into "rate groups" based on the number of phone lines in the exchange. Rate groups with more phone lines have higher rates, ostensibly because phone service is more valuable when a customer can reach a larger number of other callers with a local call. Local rates thus reflect "value of service" rather than "cost of service" principles. In practice, this tends to make local phone service less expensive in rural areas than in urban areas.<sup>20</sup>

In 1995, the Texas Legislature permitted incumbent phone companies to opt for an alternative regulatory framework that capped basic network service rates at current levels, gave them immunity from rate-of-return regulation, allowed rate flexibility for other services, and required the company to commit to certain infrastructure investments.<sup>21</sup> "Basic network services" include flat-rate residential service, lifeline and tele-assistance service, 911 access, residential mandatory extended area service, mandatory residential extended metropolitan service, residential call waiting, connection of basic services, and several other services. Services not considered basic include "vertical" services like voice mail, three-way calling, call forwarding, auto redial, caller ID, and directory assistance. Most of the major incumbents, including SBC, Verizon, Sprint, Valor, and Alltel, have opted for alternative regulation.<sup>22</sup>

In 1999, additional legislation permitted most incumbent phone companies to alter many of their prices within ten days of notifying the Public Utility Commission. However, rates for "basic" residential services such as phone lines, flat-rate calling, and call waiting are capped until September 2005 and subject to commission review thereafter. Telephone companies are free to raise or lower rates for other residential services, including packages that include basic and non-basic services.<sup>23</sup> Rates for "basic" business lines and flat-rate local service are also capped until September 2005; all other business services are subject to full pricing flexibility, subject to some rules intended to prevent below-cost pricing.<sup>24</sup> This legislation made it easier for the companies to offer packages of services and different types of business services.<sup>25</sup> In fact, since phone companies have full pricing flexibility for packages that combine basic and nonbasic services, the reform effectively comes close to deregulating telephone rates for residential and business customers who choose to purchase such packages. Incumbents can also increase rates for

a group of local customers by petitioning to reclassify an area into a different local rate band to reflect changes in population or the number of phone lines.<sup>26</sup>

Incumbent phone companies must file earnings reports with the Public Utility Commission each year, and the commission compares the company's earnings with its own estimate of a "reasonable" rate of return. Most incumbents have opted for alternative regulation; as a result, the commission cannot order them to reduce rates if their actual rate of return exceeds the return that the commission believes is reasonable.<sup>27</sup> This may seem to be a strange policy, but it is in fact consistent with the purpose of the alternative regulatory system, which is intended to let companies earn higher rates of return as a reward for increased efficiency. Extensive economic research has documented how rate-of-return regulation tends to inflate costs and diminish innovation.<sup>28</sup> Were it not for the opportunity to earn higher returns, the phone companies' actual costs may have been higher, or their new service innovations less vigorous. Consumers could have been worse off, even though the company would be limited to a "reasonable" rate of return.

### **Intrastate Long-Distance**

Texas also sets the access charges that long-distance companies pay local companies for use of the local phone lines to reach their customers. This mandate applies only to the access charges for intrastate long distance; federal regulators set the access charges for interstate long distance. Legislation directly regulates the access charges of SBC, requiring reductions in 1999 and 2000.<sup>29</sup> Other carriers' access charges have been reduced during the utility commission's universal service fund proceedings.<sup>30</sup> Competitors cannot charge more than the incumbent in whose territory they are located, or a statewide average calculated by the commission.<sup>31</sup>

There are significant disparities between different local companies' intrastate access charges, which means that different customers could pay significantly different rates for similar long-distance phone calls within the state. For example, between 1998 and 2000, a combination of legislation and regulatory proceedings reduced average switched access charges for the largest carrier, SBC, from 12.5 cents to 6 cents per minute, and for the second-largest carrier, Verizon, from 12.7 to 3.25 cents per minute.<sup>32</sup> Though these reductions may seem large, intrastate access charges are still much higher than interstate access charges, which fell from 2.6 cents in 2000 to 1.8 cents in 2002, and are surely much higher than the long-run incremental cost of such access.<sup>33</sup> The intrastate access charges for a call from Houston to Dallas could easily exceed the interstate access charges on a call from Los Angeles to New York. Indeed, the intrastate access charges in Texas are higher than the *total* charge for many transcontinental calls today. For wire-line phone calls, interstate long distance is available at rates as low as 3.5 cents per minute with no minimum or fixed monthly charge.<sup>34</sup>

### **Universal Service Fund**

The state established a Universal Service Fund in 1987 to pay for a number of programs intended to enable all state residents to obtain basic telephone service at low prices.

These programs often mirror the federal programs, which provide matching funds. The state universal service program subsidizes phone companies that provide service in high-cost or small rural areas, subsidizes Lifeline and Linkup service for low-income customers, aids phone companies that do not opt for alternative regulation with certain costs associated with long-distance service, and pays for telecommunications relay service so that individuals who are speech- or hearing-impaired can use the phone network. The vast majority of the funding is for the high-cost and rural subsidies.<sup>35</sup>

Until recently, funding for the universal service fund came from a 3.6 percent monthly assessment on the receipts of each local, long-distance, and wireless telecommunications firm that has access to Texas customers. The fund spent \$613 million in fiscal 2001.<sup>36</sup> This is in addition to the 8.7 percent charge on interstate revenues under the federal universal service program. In 2004, federal courts ruled that the Texas Universal Service Fund cannot levy assessments against phone companies' interstate revenues.<sup>37</sup> In the fall of 2004, the Public Utility Commission initiated a proceeding to restructure the funding.<sup>38</sup>

### **Consumer Protection**

The Public Utility Commission enforces a variety of consumer protection regulations intended to prevent fraudulent, unfair, misleading, deceptive, or anti-competitive practices. Its Consumer Protection Division receives, investigates, and resolves complaints. In addition, dominant phone companies must file quarterly reports with the commission on performance indicators related to service installation, maintenance, and response to customer calls. Fines are assessed if companies fail to achieve commission-determined benchmarks.<sup>39</sup>

## **PRICE DISTORTIONS AND CROSS-SUBSIDIES**

Regulation has historically created a variety of price distortions that mandate overcharges for some telecommunications services in order to subsidize other services. By freezing rates for basic telecommunications services, the Texas Legislature froze many of these distortions into law. In some cases, the distortions take the form of rate structures that allow policymakers to claim credit for reducing rates on some services while hiding mandatory, inflated charges on others. In other cases, cross-subsidies are funded through explicit fees or charges added to telephone bills.

On the state level, there are four potential types of subsidy flows:

1. As a result of mandated intrastate access charges, consumers of long-distance service pay higher rates to subsidize the price of local service;
2. As a result of regulatory rate design, consumers in urban areas pay higher rates and additional fees to subsidize service to rural areas;
3. As a result of regulatory rate design, businesses that use telecommunications (and, ultimately, their customers) pay higher rates to subsidize residential service; and
4. Consumers who purchase "vertical" services, such as call waiting or voice mail, may be subsidizing consumers who purchase only basic service.

Available data permit us to document and measure the impacts of cross-subsidies in varying degrees. Identifying cross-subsidies embedded in telephone rate structures can be a tricky and complex exercise, because telephone networks involve many “joint and common” costs that cannot easily be attributed to individual services or customers. One basic principle useful in identifying subsidies is that if a service fails to cover its “incremental” cost, then that service is receiving a subsidy. Incremental cost is the additional cost a firm incurs as a result of offering a particular service. Economists typically specify that the relevant incremental cost measure is “long-run incremental costs,” which include the additional investment in the plant and equipment caused by the firm’s decision to offer a particular service.

Historically, state policy has held basic monthly phone rates below the long-run incremental cost of providing local phone service.<sup>40</sup> Actual calculation of this cost is often complicated and contentious, but one model widely used in the industry is the Federal Communications Commission’s “Hybrid Cost Proxy Model.”<sup>41</sup> Employing this model, we calculate that in 2002 the local rates charged by large incumbent telephone companies in Texas fell \$487 million short of covering the long-run incremental cost of primary residential lines and \$600 million short of covering the long-run incremental cost of all residential lines.<sup>42</sup> The “large incumbents” in Texas, as classified by the Federal Communications Commission, are SBC, Verizon, Central, and United.

If basic local residential service is subsidized, then others are likely paying inflated prices to provide the subsidy. As the Appendix explains in greater detail, we employed the most recent publicly available data to calculate the size and impact of the subsidies. In some cases, the available data allow us to identify services that pay excessive charges to fund the subsidies. In a few cases, however, we can only conclude that a service *may* be a source of subsidies for other services. Readers interested in the details of the more complex calculations can find them in the Appendix.

### **Long-Distance-To-Local Subsidies**

Texas regulates local telephone rates and the “access charges” that long-distance phone companies must pay the local companies to originate or terminate long-distance calls. Since all long-distance companies must pay the access charges, they add to the carriers’ incremental cost of a call. Therefore, they are likely passed on directly to their customers. Any substantial increases or decreases in access charges will thus directly affect consumers’ long-distance telephone bills.

A good portion of the subsidy to local service comes from long-distance access charges, which are currently set far above incremental cost. Large incumbent carriers in Texas collect approximately \$600 million in intrastate access charges. Although the exact cost is not publicly known, federal regulation has set large Texas incumbent phone companies’ access charges for *interstate* long-distance at about one-sixth the level of the *intrastate* long-distance access mandated by Texas. The interstate access charge is approximately 1 cent per conversation minute, compared to about 6 cents per minute for an intrastate call in Texas. If we take the federally regulated access charge as a proxy for

cost, then large Texas incumbent phone companies collect at least \$172 million more in intrastate access charges than it costs them to provide the access.

Eliminating this subsidy (also called “rate rebalancing”) would have several different effects on consumers. Basic monthly rates would increase, and intrastate long-distance rates would fall, so it might appear that these changes would cancel one another. But that’s not the end of the story. When the price of a service changes, consumers will likely change the amount of the service they purchase. If the price goes down and consumers buy more, the increased consumption represents an additional gain in consumer welfare.

Lower long-distance prices, for example, save the student in College Station some money when she calls her boyfriend in El Paso, but the lower prices also make the couple better off because they can afford to spend more time on the phone together. Lower long-distance prices for business reduce costs, and they also make it possible for communications-intensive businesses to use more long-distance service and expand more rapidly. The total effect of rate rebalancing on users, therefore, depends not just on how prices change, but also on how users respond to the price changes.

Most studies find that subscription levels for local telephone service change very, very little in response to changes in the price.<sup>43</sup> Therefore, an increase in the basic monthly charge for phone service would not change the amount purchased. Consumer use of long-distance service, on the other hand, is highly sensitive to changes in price.<sup>44</sup> Because consumer demand for long-distance service is very responsive to price, access charge policies that inflate the price of long-distance service generate significant reductions in consumer welfare. Because of these differing consumer responses to the price of local and long-distance service, rate rebalancing has the potential to make consumers substantially better off.

The Appendix calculates the consumer impact of two different rate rebalancing options:

- Intrastate access charges are set about equal to interstate access charges for residential customers only; and
- Intrastate access charges are set about equal to interstate access charges for both business and residential customers.

Figure 12 summarizes the effects on consumers of these two options.

**Figure 12**

**Estimated Economic Welfare Gains To Large Incumbents' Subscribers  
From Re-pricing Local And Long Distance Telephone Service In Texas**

Scenario	Gains from Lower Intrastate Long Distance Rates	Losses from Higher Local Rates	Net Gain
Intrastate access charges reduced on residential calls only	\$200.1 million	-\$160 million	\$40.1 million
All intrastate access charges reduced	\$444.7 million	-\$355.6 million	\$89.1 million

Source: Appendix.

If intrastate access charges are reduced on residential calls only, consumers gain \$200 million. Of this amount, \$171.8 million comes in the form of lower rates on the calls consumers were already making, and an additional \$28.3 million is the estimated value to consumers of the additional long-distance calls they would make in response to the lower price. The required increase in local rates would cost \$160 million – \$2.42 per month on all lines or \$2.99 per month on primary lines. Consumers save \$171.8 million, but the local rate increase totals only \$160 million, because the incumbents receive additional revenues due to the additional long-distance call volume. The additional cost associated with the additional call volume is likely negligible. On net, consumers would gain \$40.1 million, or about \$9 per household.

If intrastate access charges are reduced for all calls, the gains to consumers are larger. The increase in consumer welfare would occur both through the direct effect on calls that they make plus the reduction in the prices of services they buy that require long-distance phone service, such as real estate, financial, travel, medical, and a variety of other services. Assuming that businesses pass these reductions in intrastate long-distance rates through to consumers in lower prices, the total consumer savings on current calling volumes would be \$381.8 million per year. The value of additional calls made possible by the lower access charges would be \$62.9 million per year, for a total consumer gain of \$444.7 million per year. Residential rates would rise by \$355.6 million per year – \$5.38 per month on all lines or \$6.66 per month on primary lines. The net gain to consumers would equal \$89.1 million, or about \$20 per residential subscriber per year.

These calculations include only the direct effects on consumers. Rate rebalancing could also confer benefits on Texas businesses and their employees, to the extent that the lower long-distance rates allow them to increase sales and expand in Texas. Such expansion could occur because consumers opt to buy more of the telecommunications-intensive services due to the lower price, and also because reduced long-distance charges would eliminate a cost advantage currently enjoyed by out-of-state businesses, which pay much lower interstate access charges when communicating with their customers in Texas. Lower intrastate long-distance prices might also encourage an expansion-minded Texas

business to expand within the state, rather than expanding into a neighboring state to capitalize on interstate long-distance prices. While such benefits cannot be reliably quantified, the possibility of such benefits may be of interest to policymakers concerned about economic development and job creation.

Any proposal to rebalance rates usually raises concerns about affordability and universal service. Would elimination of the subsidy prompt low-income families to drop their phone service? This concern implicitly assumes that the primary barrier to telephone subscription is the fixed monthly fee, rather than the cost of actually using the phone for something other than local service.

In reality, studies of phoneless households cast doubt on the idea that the fixed monthly cost of local service is a key barrier to telephone subscription. The most common reasons that phoneless households give for not subscribing to telephone service is concern about uncontrollable usage-based charges, not the cost of basic local service. A 1995 survey of Texas households without telephones found that about half of them said the cost of local service makes it difficult to afford a telephone, but about 80 percent said they could afford to pay an amount equal to the average cost of local service in Texas at the time of the survey. The primary barriers to phone service were the fact that long-distance charges are variable and hence perceived as harder to control, the cost of reinstallation for people who previously had service disconnected due to nonpayment of bills, and difficulty in controlling who uses the phone.<sup>45</sup>

These Texas findings mirrored the results of a pathbreaking 1994 study of low-income households in New Jersey, which found that the cost of usage-related charges and optional services – such as long distance, collect calls, calling-card calls, and voice mail – were the most common reasons that households lacked phone service. Heads of households noted that other family members or friends living with them had run up large usage-related bills in the past, often without their knowledge or approval. The authors concluded: “Income, employment, and other measures of wealth or poverty are strongly related to low penetration not because the price of basic local phone service is too high, but because low-income users who run up large usage-related bills are unable to cover them.”<sup>46</sup>

The long-distance-to-local subsidy may even reduce telephone subscription, since consumers subscribe to local phone service in part so that they can make long-distance calls. Some studies find that subscription is more sensitive to changes in long-distance rates than to changes in local rates. Therefore, a reduction in the cross-subsidy from long-distance to local rates may actually increase telephone subscribership. The principal study examining these offsetting effects estimated that the reduction in interstate cross-subsidies that occurred between 1984 and 1990 actually increased telephone penetration rates by 0.45 percent, bringing 450,000 additional households onto the telephone network.<sup>47</sup> If a similar relationship exists for intrastate long-distance, Texas policymakers could make telephone service more affordable and increase telephone subscription by eliminating the cross-subsidy.



In short, elimination of the long-distance-to-local subsidy is unlikely to undermine universal service, and may even increase telephone subscribership.

### **Urban-To-Rural Subsidies**

Subsidies from urban to rural consumers can take two forms: implicit subsidies embedded in the rate structure, and explicit subsidies tacked onto the telephone bill as universal service fees, much of which is used to subsidize rural phone service.

### **Rate Distortions**

The cost of providing wire-line telephone service generally falls as population density increases. Cost-based pricing would result in lower rates for urban consumers than for rural consumers. Texas explicitly pursues the opposite policy, charging higher telephone rates as population density increases. Local rates range from about \$8 per month in rural areas to \$11 in urban areas (or \$13.82 to \$16.72 including the federal subscriber line charge, which takes the place of revenues the local phone companies lost when federal regulators reduced interstate long-distance access charges). But long-run incremental costs range from \$11.84 per month in the most densely-populated areas to more than \$250 per month in rural areas. Using the Hybrid Cost Proxy Model, we estimate that only 281,000 out of 5.5 million residential lines are priced at rates that cover their long-run incremental costs, and these are in the highest two density zones.

This suggests that any subsidy from urban to rural consumers embedded in the current rate structure is relatively small – but only because 95 percent of all residential phone lines fail to pay rates that cover their costs! The relatively small number of lines that do cover their costs chip in only an additional \$9.7 million annually, well below the \$600 million subsidy received by all residential lines as a whole. The *relative* prices of local service in urban and rural areas are clearly distorted, but the actual cross-subsidy is small because even most urban and suburban residential lines are priced below cost.

A somewhat different perspective emerges if we modify these figures to reflect the effects of rate rebalancing to eliminate the subsidy from excessive long-distance access charges. If intrastate access charges are reduced for residential callers only, local residential rates would have to rise by \$2.42 per month to make up the lost revenue. Adding that uniform amount to every local residential bill means that many urban consumers would contribute more than their long-run incremental cost. Eliminating intrastate access charges for all callers would entail a \$5.38 increase in the monthly local phone bill. Under that scenario, even more urban (and perhaps suburban) consumers would pay more than their long-run incremental cost. If Texas eliminated the long-distance-to-local subsidy through a uniform fixed charge on all phone bills, the resulting subsidy from urban to rural residents would likely be substantial.

The principal effect of any urban-to-rural subsidy in the structure of local wire-line telephone rates is to redistribute income. Because wire-line telephone subscription is not sensitive to changes in the monthly rate, it is unlikely that such a subsidy generates any

substantial reduction in telephone subscription among urban residents or any substantial increase among rural residents.

### **Universal Service Fees**

In 2001, the Texas Universal Service fund distributed approximately \$613 million. The lion's share of the money – \$539 million – went to high cost and small rural carriers.<sup>48</sup> By and large, this figure represents a subsidy from urban and suburban customers of large incumbents, long-distance users, and wireless subscribers to high cost and small rural carriers.

This figure is quite substantial – indeed, almost equal to the large incumbents' estimated \$600 million total loss on local residential service. In fact, the four large incumbents received \$286 million from the universal service fund in 2001.<sup>49</sup> This amount is somewhat less than their total loss on local service in the lowest two density zones. Since the Texas Universal Service Fund assessment is not included in the local rate figure we used to estimate whether local rates cover long-run incremental costs, we can safely conclude that the universal service fund makes a substantial contribution toward covering the large incumbents' losses on local residential service. Of course, large incumbents are also major contributors to the fund, so the net effect of the assessment on local bills is to raise rates somewhat closer to long-run incremental cost.

Until 2004, every local, long-distance, and wireless carrier paid an assessment to the Texas Universal Service Fund based on its revenues. The assessment rate was 3.6 percent. The Public Utility Commission has an ongoing proceeding to revise the funding mechanism, in the wake of federal court decisions that Texas can only levy universal service assessments against intrastate revenues.

This subsidy has different effects on different types of consumers. To the extent that the universal service fund merely shifts money between different groups of local phone subscribers, it is a pure transfer program with little distorting effect on consumer behavior. However, a portion of the funding comes from an assessment on long-distance and wireless providers, and consumer demand for these services is much more sensitive to price.

Any assessment, therefore, can be expected to impose other costs on long-distance and wireless consumers in addition to the price increase. These consumers will also be worse off because they reduce their utilization of these services in response to the price increase. Our collegiate couple spends less time talking to each other via long-distance or wireless, even though their bills for local service are artificially low due to the universal service subsidies! The telecommunications companies that provide these services are also worse off, because lower sales reduce their profits.

Previous economic research has estimated the reductions in consumer and producer welfare that occur as a result of taxes or other charges on long-distance and wireless bills. We can apply the results of this research to data on Texas universal service funding to

estimate of the effects of the additional long-distance and wireless charges. The precise structure of these assessments is not yet known, but it is possible to calculate a ballpark estimate based on the assumption that Texas regulators will seek to raise roughly the same amount of revenue for the universal service fund that the 3.6 percent assessment raised previously.

A dollar raised through an assessment on long-distance service reduces consumer and producer welfare by 65 cents to 79 cents, *in addition to* the reduction in consumer welfare that occurs because the consumer now has one less dollar to spend.<sup>50</sup> According to the most recent data available from the Federal-State Joint Board on Universal Service, intrastate long-distance revenues account for about 13 percent of total Texas intrastate telecommunications revenues.<sup>51</sup> If assessments on Texas long-distance providers account for approximately 13 percent of the universal service fund, or \$80 million, then those assessments would reduce the welfare of long-distance users and carriers by about \$52 million to \$63 million annually.<sup>52</sup>

A dollar raised through an assessment on wireless reduces consumer and producer welfare by 53 cents, *in addition to* the reduction in consumer welfare that occurs because the consumer now has one less dollar to spend.<sup>53</sup> According to the most recent data available from the Federal-State Joint Board on Universal Service, wireless revenues account for about 35 percent of total Texas intrastate telecommunications revenues.<sup>54</sup> If assessments on Texas wireless providers account for approximately 35 percent of the universal service fund, or \$215 million, then those assessments would reduce consumer and wireless carrier welfare by about \$114 million annually.<sup>55</sup>

These costs are far above those estimated for other, more general forms of taxation, which usually involve a reduction in consumer welfare (or “excess burden”) of 25 cents to 40 cents per dollar raised.<sup>56</sup> And they are positively huge compared with the impact on consumer welfare of an alternative regulatory policy – paying for the subsidy through a flat-rate charge like the federal Subscriber Line Charge, which would be unlikely to affect subscribership significantly.

### **Business-To-Residential Subsidies**

Another source of revenue to subsidize local residential service is local service to businesses. As Figure 13 suggests, local single-line business rates in Texas tend to be more than double local residential rates.

**Figure 13**

**Single-Line Local Monthly Telephone Rates, 2002 (SBC)**

City	Flat rate, residential	Flat rate, business	Measured, residential	Measured, business
Brownsville	\$17.36	\$34.70	\$12.46	\$26.21
Corpus Christi	\$19.59	\$37.96	\$14.54	\$29.21
Dallas	\$20.56	\$43.40	\$14.76	\$33.65
Ft. Worth	\$18.53	\$39.41	\$13.07	\$29.88
Houston	\$21.45	\$46.93	\$15.32	\$35.68
San Antonio	\$19.56	\$39.26	\$14.12	\$29.76

Source: Paul R. Zimmerman, *Reference Book of Rates, Price Indexes, and Household Expenditures for Telephone Service* (Washington: Federal Communications Commission, 2003), Tables 1.3 and 1.10.

Figures include basic local rate, federal subscriber line charge, local number portability charge, and federal universal service charges.

This disparity by itself does not mean that a cross-subsidy exists. Recall, however, that local residential rates cover at least half of long-run incremental costs for all but 660,000 lines in the most sparsely populated parts of the large incumbents' territories. There is no reason to think that single business lines cost the phone company any more than single residential lines, and they may even cost less on average if a greater proportion of businesses are located in denser areas. Therefore, since single-line business rates are more than double residential rates, it is likely that most businesses with single phone lines are paying rates that more than cover their long-run incremental costs.

In the absence of good data on the distribution of lines used by small to medium-sized businesses, it is not possible to estimate the size of a business-to-residential subsidy or its ultimate effects on consumers, economic development, or job creation. The burden of any subsidy is likely borne primarily by small businesses, because those are the businesses most likely to subscribe to single-line telephone service. Large enterprises are less likely to be good sources of cross-subsidies, because they are likely to have access to a wider variety of competitive telecommunications carriers.

**Vertical-To-Basic Subsidies**

A final potential source of cross-subsidies for basic local service is vertical services, such as call waiting and voice mail. Figure 14 shows that SBC and Verizon increased the prices for many of the most popular of these services substantially when they received flexibility to do so in September 1999. A few of these prices may have fallen since the Texas Public Utility Commission surveyed them in December 2002, but most remain above their 1999 levels. The incremental cost of offering these services is unknown but likely low. Even if the pre-September 1999 prices were roughly equal to incremental cost, it is clear that users of these services likely make a substantial contribution to revenues over and above their incremental cost.

**Figure 14**

**Price Changes For Vertical Services**

Service	Pre-Sept. 1999	Dec. 2002	July 2004	\$Change, 1999-2004 (%)
<b>SBC</b>				
3-Way calling	\$2.10 first use; \$1.40 each addl.	\$5.00 first use; \$4.00 each addl.	\$5.00/month	Increase or decrease, depending on usage
Call forwarding	\$2.10 first use; \$1.40 each addl.	\$5.00 first use; \$4.00 each addl.	\$5.00/month	Increase or decrease, depending on usage
Speed calling	\$2.10 first use; \$1.40 each addl.	\$5.00 first use; \$4.00 each addl.	\$5.00/month	Increase or decrease, depending on usage
Anon. call rejection	\$1.00	\$1.50 first use; \$0.75 each addl.	\$1.50/month	50 cents (50%)
Auto redial	\$2.00	\$4.00	\$4.00	\$2.00 (100%)
Call waiting	\$2.80	\$2.80	\$2.80	0
Call waiting ID	\$3.00	\$4.50	\$4.50	\$1.50 (50%)
Caller ID name/#	\$6.50	\$9.50	\$9.95	\$3.45 (53%)
Call blocker	\$2.00	\$5.00	\$5.00	\$3.00 (150%)
Priority call	\$2.50	\$2.00	\$2.00	-50 cents (-20%)
Personalized ring	\$4.00	\$5.00	\$2.95	-\$1.05 (-26%)
Call return	\$0.50 each use; \$4.00 cap	\$0.95 each use; no cap	\$5.00/month	At least \$1.00 (25%)
<b>Verizon</b>				
3-Way calling	\$2.70	\$4.00	\$4.00	\$1.30 (48%)
3-Way calling (Per event)	\$0.75 each use	\$0.95 each use	\$0.95 each use	20 cents (27%)
Automatic busy redialing	\$0.75 per use	\$0.95 per use	\$0.95 per use	20 cents (27%)
Caller ID name/# with auto. call block	\$6.75	\$7.95	\$7.95	\$1.20 (18%)
Additional directory listing	\$0.55	\$1.10	\$1.10	55 cents (100%)
Unpublished number	\$1.65/month	\$1.65/month	\$1.65/month	0

Source: First two columns of figures are from Public Utility Commission of Texas, *Scope of Competition in Telecommunications Markets of Texas* (Jan. 2003), pp. 56-57. Third column of figures reflects prices quoted on carriers' websites on July 5, 2004.

Customers who purchase these services must first purchase basic local telephone service at the subsidized price. To some extent, the phone companies are merely pricing vertical

services to eliminate the cross-subsidy to local service. In other words, the combined price of basic plus vertical services may now equal the combined incremental costs of the two services. Some customers who use vertical services, however, could be paying so much that they actually subsidize other customers who purchase only basic service.

We estimate in the Appendix that approximately 2.7 million out of 5.5 million local phone lines pay rates that fall about \$3.30 short of covering their long-run incremental cost. A few extra dollars from the price increases on vertical services thus go a long way toward eliminating the subsidy that these lines receive. Heavy users of vertical services on these lines may be subsidizing customers who purchase only basic service.

Another 1.1 million additional lines either pay more than their long-run incremental cost or are within a dollar of covering their incremental cost. Consumers on those lines who purchase even some vertical services may be subsidizing consumers who purchase only basic service.

Unfortunately, we cannot be sure that there is a subsidy from vertical services to basic service, and we cannot calculate the size of any such subsidy. Such calculations would require access to companies' proprietary data on vertical service costs and subscribership.

## **CROSS-SUBSIDIES DISCOURAGE COMPETITION**

Though not all figures can be precisely calculated, it is clear that local residential wire-line telephone service in Texas receives substantial subsidies. Both state and federal regulators seek to encourage competition in local telephone service. Unfortunately, any company selling residential local phone service must compete head-to-head with an incumbent who is required to sell that service at a price that is below long-run incremental cost. Given this situation, it is not surprising that local competition has been slow to develop in areas where local rates are held below cost.

In this environment, a firm seeking to compete successfully with the incumbent for residential customers has four options:

- (1) Obtain access to the incumbent's facilities at prices low enough to allow the competitor to make a profit, in spite of the fact that the competitor must match the incumbent's below-cost price to consumers;
- (2) Utilize a new technology for providing local phone service that costs significantly less than the incumbent's wire-line technology;
- (3) Deploy a technology that provides a source of value to consumers that wire-line technology does not offer; or
- (4) Package local phone service with other services, and compete with the incumbent primarily for those customers who want to buy packages of services.

Option 1 is the option that has been chosen by most competitive local exchange carriers. These carriers have utilized provisions in federal and state law to purchase the incumbent's services at wholesale rates, or lease "unbundled network elements" at regulated prices. To succeed, they must beat down the prices they pay incumbents to a low enough level that they can compete effectively against the incumbents for retail customers. An examination of the merits of these policies is outside the scope of this report. It suffices to say that competitive local carriers have had some success with this strategy, but less success than many envisioned when the 1996 Telecommunications Act was adopted.<sup>57</sup> The future prospects for this strategy are cloudy, since a 2004 court decision overturned key Federal Communications Commission regulations implementing the unbundling policy.<sup>58</sup> At this point it is not clear whether the Federal Communications Commission will write a new set of regulations that can be upheld in court before Congress rewrites the Telecommunications Act.

Option 2 could be implemented in a variety of different ways, but the most prominent one under discussion currently is Internet telephony, or "Voice Over Internet Protocol." Internet telephony works by breaking the phone call down into individually addressed packets of data that are sent over communications networks. This contrasts with traditional telephone service, which typically requires a dedicated path between the users for the entire duration of the call. Recent advances in technology permit Internet telephony to offer sufficient sound quality to make it a competitive threat to traditional wire-line telephone service.

A customer who wants to use Internet telephony usually has to have a broadband Internet connection that is "always on." Some broadband providers, such as cable companies, offer their own brand of Internet telephony. In addition, a number of Internet telephony providers sell their services independently to consumers, who "bring their own broadband." Since Internet telephony that enables both local and long-distance calling is currently available for around \$15 a month, it represents an attractive alternative for customers who have access to broadband.

Voice Over Internet Protocol appears to be cost-competitive even with subsidized wire-line phone service. The principal threat to this competition comes from regulatory proceedings that threaten to bring Internet telephony under the same economic regulation and cross-subsidy tent as traditional telephone service. Some state public utility commissions have attempted to claim jurisdiction over Internet telephony as a provider of telephone service, but thus far courts have determined that this service is under federal jurisdiction. The Federal Communications Commission, meanwhile, has an ongoing proceeding to determine whether or how to regulate Internet telephony.<sup>59</sup>

Option 2 also increasingly includes wireless, especially in rural areas as major national wireless carriers eliminate roaming charges by building out their own networks.

Option 3 characterizes wireless operators and may also apply to Internet telephony. By its very nature, wireless offers a convenience factor that many consumers value, and portability no doubt explains the explosive subscription growth in the early years of

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wireless, when rates were much higher than they are today. Internet telephony is still in its infancy, but to the extent that it offers people opportunities to interact simultaneously with their computers and with other individuals (such as, for example, talking to others participating in an online computer game), it can claim some unique and potentially valuable features that ordinary wire-line telephone service might not easily match.

Option 4 has been undertaken, with apparent success, by a variety of players in the Texas telecommunications market. Because the prices of vertical services are not regulated, incumbent telephone companies can offer packages of basic plus vertical services at a price that equals or exceeds the long-run incremental cost of the entire package. It should not be surprising that when the price of the incumbent's service equals or exceeds costs, competitors find a way of entering the market. A 2003 report by the Progress & Freedom Foundation found a variety of service packages offered at prices that are competitive with the package offered by SBC (Figure 15). Competitors included wireless, cable, long-distance, and Texas-based local companies.

**Figure 15**

### Residential Offerings Competitive With SBC Texas Services

	SBC		Sage Telecom		MCI	AT&T		Comcast		Western Wireless (Cellular One)
	Flat Rate*	All Distance Connections	Home Service Package	Unlimited Plan	Neighborhood Complete	Local One Rate Plus 3	One Rate USA	Primary Access Line/180 Min Block	Comcast Complete 300	2 Year Agreement
	\$8.15-11.05	\$48.95	\$22.85	\$44.00	\$44.99	\$25.00	\$48.95	\$24.45*	\$43.95	\$30.00
<b>Additives/Optional Calling Features</b>										
Additional Feature Choices						2	4			
Call Forwarding	\$5.00	Included	Included	Included		**	**	\$0.70	Included	Included
Call Waiting	\$2.80	Included	Included	Included	Included	**	**	\$2.50	Included	Included
Caller ID	\$9.50	Included	Included	Included	Included	Included	**	\$7.75	Included	
Voice Mail	\$6.95	Included	\$6.95	Included	Included	**	**			Included
Speed Calling 8	\$5.00		Included	Included	Included	**	**	\$2.80		
Three-Way Calling	\$5.00	Included	Included	Included	Included	**	**	\$4.00		Included
Long Distance		Unlimited	60 min	Unlimited	Unlimited		Unlimited	180 min	300 min	Included
Local Toll Calls	\$16.95				Unlimited					Included
Local Calls	Unlimited	Unlimited	Unlimited	Unlimited	Unlimited	Unlimited	Unlimited	Unlimited	Unlimited	Included
Additional Phone Lines	\$16.82							\$13.00	\$13.00	
Anytime Minutes										400, 3500 night and weekend

Notes: All landlines have an approximate \$6.00/month subscriber line charge. \* Prices may be higher with expanded local calling area.

Source: Richard O. Levine, Joseph S. Kraemer, and Randolph J. May, *Trends in the Competitiveness of Telecommunications Markets: Implications for Deregulation of Retail Local Services* (Washington: Progress & Freedom Foundation, December 2003), p. 115. Available at <http://www.pff.org/publications/communications/121103specialreportcontestability.pdf>.



Some of these competitors lease facilities from the incumbent telephone companies; therefore, their ability to compete may be threatened by changes in regulations affecting access to incumbents' facilities. But this table omits numerous wireless carriers, many of which offer service packages likely to be competitive with the packages in the table.

Local telephone competition has arrived, but it has been constrained by subsidy schemes intended to guarantee every Texan the right to a cheap local phone connection, regardless of income. Cross-subsidy schemes helped undermine forms of competition that depend on access to incumbents' facilities. An exciting new technology, Internet telephony, can under-price landline phone service but could have its competitiveness undermined if regulators insist on viewing it as another source of subsidies for ordinary wire-line phone service. Now that the incumbents have price flexibility for packages of services, packaging gives wireless, cable, and other telecommunications providers a chance to compete with the incumbents – but only for those customers who want packages. For customers who only want basic local service and don't have broadband access, competition is unlikely to flourish until the incumbents' basic rates are either deregulated or rebalanced to reflect costs.

### CONCLUSION

Telephone rates in Texas reflect substantial distortions that were intended to make basic local service “affordable.” Measured only by that narrow goal, the policy might be considered a success. Local rates for large incumbent carriers fall about \$600 million short of covering long-run incremental costs, and consumers pay higher prices for other services to make up the difference. Local wire-line rates are cheap, but consumers bear a high cost in exchange for these bargain rates.

There are four potential sources of subsidies: long distance to local, urban to rural, business to consumer, and vertical to basic. The narrow focus on basic local rates ignores the fact that telephone subscribers also make long-distance calls, use wireless phones, purchase vertical services, and buy goods and services from businesses for which telecommunications is a major cost. Consumers are effectively “taxed” when they purchase these other things in order to pay for the local service subsidies. Unfortunately, policymakers have chosen to increase the prices of services whose demand is very sensitive to price, which leads to large reductions in consumer welfare. For several of the cross-subsidies we are able to measure, the net economic welfare loss totals somewhere between \$206 million to \$266 million (Figure 16). These figures do not include the effects of any subsidies from businesses to consumers or from vertical to basic services, because the available data do not permit us to estimate the size and consumer impact of those subsidies.

**Figure 16**

**Dollar Value Of Reductions In Economic Welfare Due To Subsidies For  
Local Wire-line Telephone Service**

Excessive intrastate long-distance access charges	\$40-89 million
Universal service assessment on intrastate long-distance	\$52-63 million
Universal service assessment on wireless	\$114 million
Total	\$206-266 million

Perhaps ironically, the policies intended to keep local residential phone service inexpensive have also constrained competition in the residential market. When a normal business gives away its product at a price below cost, it gets accused of “predatory pricing.” When a local phone company does the same thing, it gets praised for promoting “universal service.” The government-mandated subsidies for universal local phone service are a greater threat to competition than are most alleged cases of predatory pricing.

We are now at the threshold of a technological revolution in telecommunications that is quickly eroding the dominant-firm model of regulation employed over the last 70 years. Interventions designed to cross-subsidize certain interest groups are becoming increasingly costly and can only be retained through the suppression or taxation of new technologies or new services, which will damage Texas’ competitive position in the U.S. economy. If Texas policymakers want to undo the damage, several measures are necessary:

- Allow the price of basic local phone service to rise to reflect cost. At a minimum, regulators should not hold the price of local phone service below long-run incremental cost. The price of local phone service should be capped at some measure of long-run incremental cost, capped at the price of some realistic alternative (such as a basic wireless subscription), or simply deregulated.
- Eliminate the cross-subsidy from intrastate long-distance access charges to local telephone service. One option to accomplish this goal would be a rate rebalancing similar to that undertaken by the Federal Communications Commission, which has substantially reduced interstate long-distance access charges and replaced them with the fixed subscriber line charge on monthly phone bills. Another option (also under consideration on the federal level) would be to adopt a universal default rule establishing that all interconnecting carriers must split the costs of

interconnection and then simply bill their own customers for service. Such a rule would tend to eliminate cross-subsidies. The best approach to implementing such a policy may be a national strategy that addresses all forms of carrier access charges, intrastate and interstate, across the country in order to reduce the incentives for carriers to re-route and re-classify traffic simply to avoid access charges.<sup>60</sup>

- Move quickly towards deregulation of all telephone rates. If local phone rates are deregulated, incumbents may often find that the true cap on local rates is the cost of a basic wireless or Internet telephony package. This will be an especially important protection for rural consumers. Deprived of cross-subsidies, incumbents may find that they cannot cover their historical costs. Policymakers should resist the temptation to label these kinds of losses a “deregulatory taking” and compensate the incumbents for losses that occur because facilities-based competitors capture more of their business.<sup>61</sup>
- Fund universal service programs by some means that avoids distorting telecommunications prices, such as general tax revenues or a fixed monthly charge on phone bills rather than a percentage assessment. Converting this payment to a fixed monthly charge would eliminate the price distortions and concomitant reductions in consumer welfare that occur because the current percentage assessment increases the cost of every additional wireless and long-distance minute.
- Reduce the cost of universal service programs through more careful targeting. Currently, almost 90 percent of the universal service money goes to high-cost and small rural carriers – not to poor households who might not be able to afford phone service. True, some of these rural subsidies may benefit households who are genuinely poor, but subsidizing all rural households in order to subsidize the rural poor means the subsidy gets ladled out with a very leaky sieve. As newer technologies such as wireless and broadband make their way into rural areas, the rural subsidies run the risk of becoming a program to prop up uncompetitive wire-line service in the face of new competitors who may be able to offer phone service at lower incremental cost. If some specifically “rural” subsidies must be retained for political reasons, they should not be awarded where consumers have alternatives to traditional wire-line phone service, such as wireless or Internet telephony, available at some reasonable multiple of their cost in urban areas.
- Avoid stifling new technologies. Some states have attempted to acquire jurisdiction over Internet telephony because they see it as a competitive threat to traditional telephone service that does not contribute to the same cross-subsidy pot as other telecommunications carriers. Calls for a “level playing field” are often tempting, but policymakers need to realize that not all level playing fields are equally beneficial to consumers. Rather than trying to bring Internet telephony under the same regulatory and cross-subsidy tent that has harmed consumers for

decades, Texas policymakers should reform their own regulatory system to eliminate the cross-subsidies.

## **APPENDIX: THE ECONOMIC COSTS OF RESIDENTIAL TELEPHONE RATE DISTORTIONS IN TEXAS**

The need for traditional telephone rate regulation is rapidly disappearing as competition from new competitive carriers, wireless carriers, cable television companies, and independent Voice Over Internet Protocol carriers intensifies. Regulators and legislators could provide a useful service to consumers by undoing some of the worst rate distortions created over the last 50 years. In this appendix, we provide a rough estimate of the potential gains to Texas residential telephone subscribers from a minor rebalancing of telephone rates in Texas.

### **The Problem**

Telephone services are delivered over a network platform whose costs are largely usage insensitive and irretrievably “sunk,” – i.e., the facilities cannot easily be retrieved and redeployed for other productive purposes. A telecommunications service provider typically provides a variety of services over its platform, and the costs of providing each of these services include a large share of joint and common costs of amortizing and maintaining the network. These services include network access, local call origination and termination, long-distance call origination and termination, and vertical services. As a result, the optimal pricing of these services poses a difficult problem.

The traditional approach to pricing services with large shares of joint and common costs is to mark up prices over variable costs in inverse proportion to the elasticity of demand for the service. This approach, called “Ramsey pricing,” minimizes the loss of consumer surplus because it results in the least loss of output.<sup>62</sup> In the context of telecommunications, Ramsey pricing dictates that the markup over long-run incremental cost be much higher for network access – the monthly rate paid for subscription – than for originating, transmitting, and terminating calls because the price elasticity of demand for calling is much higher than the price elasticity for network access.

Unfortunately, most state regulatory commissions, and even the Federal Communications Commission at one time, have pursued precisely the opposite policy. They have allowed the markup over cost for long-distance calls, or the access charges paid to originate and terminate such calls, to be much greater than the markup on the flat monthly fee paid by subscribers to be connected to the network. Indeed, the markup on the latter is often negative – i.e., the flat monthly fee does not even cover the directly attributable costs of connecting residential subscribers to the network. This “access deficit” is recovered through excessive markups on long-distance calls, vertical services, and a variety of business rates, particularly single-line business rates for connecting to the network. This policy is often defended as necessary to promote universal service, but it does not contribute much to the universality of telephone service because of the extremely low price elasticity of demand for network access.

Given the very large disparity in the price elasticities of demand for network access and long-distance calling,<sup>63</sup> these pricing policies reduce network usage without any

measurable offsetting effect on network subscriptions. The result has been a very large loss in consumer welfare. Crandall and Waverman estimate that the rate distortions faced by residential consumers alone cost them as much as \$7 billion per year in 1996.<sup>64</sup> As consumers shift from fixed-wire to wireless calling, and as the FCC has lowered access fees, these costs have undoubtedly been reduced substantially, but there are still substantial costs, particularly from over-pricing intrastate long-distance calls.

### Rate Distortions In Texas

In 2001, the Public Utility Commission of Texas documented the extent to which intrastate long-distance services are being used to offset the losses that incumbent telephone companies incur in providing local access to residential subscribers.<sup>65</sup> It showed that average interstate switched access charges in Texas had been reduced to about 1.3 cents per conversation minute, and that interstate switched access charges for Southwestern Bell had been reduced to 0.96 cents per conversation minute by the Federal Communications Commission's "CALLS" policy.<sup>66</sup> By contrast, average *intrastate* switched access charges were still 7.68 cents per minute in Texas at the time and 5.83 cents per minute for Southwestern Bell – about six times higher than interstate access charges!<sup>67</sup> The costs to the carriers for connecting interstate and intrastate calls should be virtually the same; therefore, intrastate charges were at least 5 cents to 6.5 cents above the direct costs of connecting intrastate calls. Since these charges are costs to long-distance carriers, they translate into higher long-distance rates of similar magnitudes at the margin in a competitive long-distance market.

The Public Utility Commission suggests that all Common Carrier Line Charges, the non-traffic sensitive portion of access charges, could be eliminated for Southwestern Bell if an increase in local charges of \$1.50 per month were levied on residences and an increase of \$3.00 per month were levied on businesses. For Sprint-United, which has much higher intrastate access charges, the increase in local rates would have to be \$2.38 and \$4.76, respectively. These hypothetical increases would mirror the current local rate structure, which tends to charge business customers twice as much as residential customers.

In the remaining sections of this appendix, we attempt to provide an analysis of the clear benefits that are available from raising local rates and lowering intrastate access rates. In so doing, we necessarily must use a variety of approximations to the important variables in such an analysis because there are no easily-accessible public data on a number of these variables. In addition, we focus solely on residential telephone services because of data limitations.

### An Estimate Of The Consumer Impact Of Residential Rate Rebalancing

At the end of 2002, according to the Federal Communications Commission, the large incumbent telephone companies in Texas had 10.8 million switched access lines, of which 5.5 million were residential lines<sup>68</sup> (See Figure A-1). A later Federal Communications Commission report also showed that there were 12.95 million switched access lines in Texas at the end of 2002 and confirmed that 10.8 million of these were

incumbent lines.<sup>69</sup> However, the Public Utility Commission of Texas reported that the smaller incumbents and rural cooperatives accounted for more than 900,000 switched access lines in 2001.<sup>70</sup> Thus, the federal data may understate incumbent lines by about 9 percent. For the remainder of this report, therefore, we focus only on the large incumbent carriers, who apparently account for about 80 percent of switched access lines in Texas.

**The Large Incumbents' Lines And Access Minutes**

Of the large carriers' total residential switched access lines in Texas, 1.1 million were "non-primary" lines.<sup>71</sup> These secondary lines have been used traditionally for fax machines, dial-up Internet connections, or separate lines for various household members. As wireless and broadband services have proliferated, the number of non-primary lines has declined steadily. In 2002, the large incumbent companies reported 128.0 million intraLATA toll calls and 13.8 billion minutes of originating and terminating intrastate, interLATA billed access minutes. Assuming that the intraLATA calls had the same average duration as intrastate interLATA calls, the intraLATA calls required 1.4 billion minutes of access.<sup>72</sup> Therefore, total intrastate originating and terminating access minutes were approximately 15.3 billion minutes in 2002.

**Figure A-1**

**Local Telephone Access Lines In Texas, December 31, 2002**

<b>Access Lines</b>	<b>Residential</b>	<b>Business</b>	<b>Total</b>
<b>Incumbent Carriers</b>	7,054,064 (e)	3,712,063 (e)	10,766,127
<b>Competitive Local Carriers</b>	1,297,296 (e)	885,663 (e)	2,182,929
<b>All Carriers</b>	8,351,360 (e)	4,597,726 (e)	12,949,056
<b>Large Incumbent Carriers</b>	5,517,304	4,583,478	10,177,407

Sources: (1) Federal Communications Commission, *Local Telephone Competition: Status as of 12/31/2002*, June 2003, Table 6 [Total Incumbent and Competitive Carrier Lines]; (2) Public Utility Commission of Texas, *Scope of Competition in Telecommunications Markets in Texas*, 2003, Chapter 3, Table 7 [Business/Residential split]; (3) FCC, *Statistics of Communications Common Carriers, 2002-03*. March 2004, Table 2.4 [Large Incumbent Carriers]

There are no public estimates of the share of switched long-distance services that originate or terminate on residential lines in Texas. We assume that only 45 percent of minutes are accounted for by residences, based on earlier research.<sup>73</sup> This would suggest that residential subscribers pay for long-distance calls that require 6.9 billion minutes of access. In addition, we assume that the average switched access charge for intrastate calls in Texas for large incumbents was 3 cents at each end in 2002.<sup>74</sup>

**The Degree Of Cross-Subsidy**

If intrastate access charges were reduced to 0.5 cents at each end for large Texas incumbents, the reduction would cost the incumbents \$172 million, assuming that there

were 6.9 billion minutes of switched access. However, the reduction in access charges would result in lower intrastate long-distance rates and, as a result, a larger number of intrastate access minutes. We assume that residential intrastate rates averaged 15 cents per minute in Texas in 2002 and that the 5 cent reduction in access charges would reduce intrastate rates to 10 cents, or by 33.3 percent. If the residential demand for intrastate long-distance has a constant elasticity of -0.7, the effect of this reduction in rates is a 32.9 percent increase in minutes. Therefore, the incumbents' switched intrastate access revenues would decline from \$206 million to \$46 million, a \$160 million decline. The carriers' costs would also increase slightly, depending on the share of increased minutes that originate during peak hours. If, for example, half of the increased minutes were on-peak and if the marginal cost of a peak-hour originating or terminating is \$0.001, costs would increase by only \$1 million. As a result, we ignore the additional costs in this calculation.

In 2002, Southwestern Bell's local residential rates ranged from \$8.15 per month in the smallest exchanges to \$11.05 per month in the largest exchanges, despite the fact that the incremental cost of a line in the smallest exchanges was likely much higher than the cost in the largest exchanges. In addition, there were federally mandated Subscriber Line Charges of \$5.62 per month for primary lines and \$5.88 per month for secondary lines in 2002 that were paid to the carriers. The federal telephone excise tax and a state "universal service" tax of 3.6 percent are not included in this calculation of the rate because they are not kept by the subscriber's carrier.

Using the FCC's Hybrid Cost Proxy Model,<sup>75</sup> we estimate that the large incumbents' local residential rates in Texas were \$487 million short of covering long-run incremental cost of primary residential lines and \$600 million short of covering the cost of all residential lines<sup>76</sup> (See Figure A-2 for the latter calculation). This suggests residential rates are being supported by much more than the \$206 million in residential intrastate long-distance access charges or the \$160 million in intrastate access charges in excess of 0.5 cents at each end. Indeed, the "subsidy" to local residential lines exceeds *total* intrastate switched access charges, which were approximately \$458 million in 2002.



**Figure A-2**

**Estimates Of Monthly Losses From Local Residential Access  
(all lines, large incumbents)**

Density Zone (lines/sq.mi.)	Lines	Monthly Rate (\$)	Monthly Rate incl. SLC (\$)	Cost (HCPM) (\$/line)	Monthly Loss (Million \$)
0.5	33,163	8.15	13.82	254.46	7.98
5-100	428,638	8.35	14.82	63.11	21.04
100-200	206,936	8.80	14.47	30.07	3.23
200-650	756,948	9.10	14.77	23.89	6.90
650-850	298,925	9.35	15.02	21.57	1.96
850-2550	2,661,515	9.85	15.52	18.80	8.73
2550-5000	850,046	10.40	16.07	17.18	0.94
5000-10000	230,428	11.05	16.72	14.29	(0.56)
10000+	50,704	11.05	16.72	11.84	(0.25)
<b>Total</b>	<b>5,517,304</b>				<b>49.98</b>

**Economic Welfare Gains From Rate Rebalancing**

We now estimate the potential gains in economic welfare for two scenarios:

1. A reduction in intrastate access charges to 0.5 cents per minute on *residential* intrastate long-distance calls; and
2. A reduction in intrastate access charges to 0.5 cents on *all* intrastate long-distance calls

Were access rates reduced to 0.5 cents per minute on only residential long-distance calls, \$160 million in revenues would have to be raised to offset the loss in carrier revenues. This could be accomplished by an increase in monthly residential rates of \$2.42 per month on all lines or \$2.99 per month on primary lines.<sup>77</sup> The net effect on consumers from this rate rebalancing is equal to the net gain from lower intrastate long-distance rates less the added cost of local monthly subscriptions. Assuming that there are two switched access minutes per conversation minute, the number of intrastate conversation minutes over large incumbents' networks in 2002 was 3.4 billion. The reduction in rates to \$0.05 per minute would save consumers \$171.8 million on this calling volume and provide them with another \$28.3 million in consumer surplus from the additional calls generated by the reduction in rates of at \$0.05 per minute. The increase in local rates would cost consumers \$160 million. Therefore, their net gain would be about \$40 million per year, or about \$9 per household per year (See Table 3).

If all intrastate access charges were reduced to 0.5 cents per minute, residential rates would have to rise by \$5.38 per month on all lines or by \$6.66 per month on primary lines. Since the benefits of the lower long-distance rates would accrue through both residential and business calling, the increase in consumers' economic welfare would occur both through the direct effect on calls that they make plus the reduction in the

prices of services which they buy that require long-distance services, such as real estate, financial, travel, medical, and a variety of other services. Assuming that these reductions in intrastate long-distance rates are passed through fully to consumers in lower prices, the total consumer savings on current calling volumes would be \$381.8 million per year. Assuming, once again, that the price elasticity of demand for intrastate long distance is -0.7 for both business and residential calls, the value of the additional calling would be \$62.9 million per year. Therefore, the total welfare gain from lower access charges would be \$444.7 million per year. Residential rates would rise by \$355.6 million per year, assuming no price elasticity of demand for access lines. The net gain to consumers from this more aggressive rebalancing would therefore be nearly \$90 million per year, or roughly \$20 per residential subscriber per year.

These estimates assume that the demand for local service is not sensitive to increases in the basic monthly rate. If residential subscribers now view cellular telephones as satisfactory substitutes for fixed-line service, this assumption is no longer valid. However, if the five national wireless carriers now offer a service that is widely viewed by consumers as a substitute for fixed-wire residential service, there is surely no need to continue regulating or subsidizing fixed-wire service.

**Figure A-3**

**Estimated Economic Welfare Gains From Re-pricing Local And Long-Distance Telephone Service In Texas.**  
(large incumbents' subscribers; million \$)

<b>Scenario</b>	<b>Gains from Lower Intrastate Long Distance Rates</b>	<b>Losses from Higher Local Rates</b>	<b>Net Gain</b>
Intrastate access charges reduced on residential calls only	200.1	-160	40.1
All intrastate access charges reduced to 0.5 cents/minute	444.7	355.6	89.1

## ENDNOTES

<sup>1</sup> For instance, in Texas, only 59 percent of the entrants' lines were residential and small business lines at the end of 2001. By contrast, 87 percent of incumbent carriers' lines were residential and small business lines. See Federal Communications Commission, *Local Telephone Competition: Status as of December 31, 2003* (June 2004), Table 11.

<sup>2</sup> Robert W. Crandall and Leonard Waverman, *Who Pays for Universal Service?* (Washington, DC: Brookings Institution Press, 2000).

<sup>3</sup> Robert W. Crandall, *After the Breakup* (Washington, DC: Brookings Institution Press, 1991), p. 96.

<sup>4</sup> *MCI Telecommunications Corp. v. FCC*, 561 F.2d 365 (DC Cir. 1977), and 580 F.2d 590 (DC Cir. 1978).

<sup>5</sup> *Telecommunications Industry Revenues*, p. 30.

<sup>6</sup> Robert W. Crandall and Jerry A. Hausman, "Competition in U.S. Telecommunications Services: Effects of the 1996 Legislation," in Sam Peltzman and Clifford Winston (eds.), *Deregulation of Network Industries: What's Next?* (Washington, DC: AEI-Brookings Joint Center for Regulatory Studies, 2000), pp. 102-03.

<sup>7</sup> Jerry A. Hausman, "Valuing the Effect of Regulation on New Services in Telecommunications," *Brookings Papers on Economic Activity: Microeconomics* (1997), pp. 1-38.

<sup>8</sup> Jason Oxman, "The FCC and the Unregulation of the Internet," FCC Office of Plans and Policy Working Paper No. 31 (July 1999).

<sup>9</sup> *Brand X Internet Services v. FCC*, 345 F.3d 1120 (9<sup>th</sup> Circuit, 2003). In this case, a federal appeals court ruled that cable modem service is part telecommunications service and part information service. The Federal Communications Commission had previously ruled that cable modem is an information service. In general, information services are regulated much less stringently than telecommunications services. For an analysis of the issues, see Jerry Ellig, "The Federal Communications Commission's Notice of Inquiry On High-Speed Access to the Internet Over Cable and Other Facilities," Mercatus Center Public Interest Comment No. 2000-21 (Nov. 16, 2000), available at <http://www.mercatus.org/regulatorystudies/article.php/84.html>.

<sup>10</sup> Figures are for "high speed" lines, which have speeds exceeding at least 200 kilobits per second in at least one direction. (A regular phone line is capable of a maximum speed of 56 kilobits per second.) The Federal Communications Commission reports data by state for high-speed lines, but not for "advanced services" lines, which are capable of 200 kilobits per second in both directions. Nationally, approximately 70 percent of high-speed lines are advanced services lines. For the most recent statistics, see Federal Communications Commission, Wireline Competition Bureau, Industry Analysis and Technology Division, *High-Speed Service for Internet Access: Status as of December 31, 2003* (June 2004) at [http://www.fcc.gov/Bureaus/Common\\_Carrier/Reports/FCC-State\\_Link/IAD/hspd0604.pdf](http://www.fcc.gov/Bureaus/Common_Carrier/Reports/FCC-State_Link/IAD/hspd0604.pdf).

<sup>11</sup> Public Utility Commission of the State of Texas, Report to the 78<sup>th</sup> Texas Legislature, *Scope of Competition in Telecommunications Markets of Texas* (2003), p. 118. (Hereafter cited as "Competition Report.") Available at [http://www.puc.state.tx.us/telecomm/reports/scope/2003/2003scope\\_tele.pdf](http://www.puc.state.tx.us/telecomm/reports/scope/2003/2003scope_tele.pdf).

<sup>12</sup> *U.S. Telecom Industry Association, et. al. v. FCC and USA*, No. 00-0012, D.C. Cir. 2004.

<sup>13</sup> Competition Report, p. 47.

<sup>14</sup> Competition Report, pp. 39-41.

<sup>15</sup> Federal Communications Commission, Wireline Competition Bureau, Industry Analysis and Technology Division, *Trends in Telephone Service* (May 2004), Table 19.1.

<sup>16</sup> Federal Communications Commission, Wireline Competition Bureau, Industry Analysis and Technology Division, *Trends in Telephone Service* (May 2004), Table 19.14.

<sup>17</sup> Federal Communications Commission, Federal-State Joint Board on Universal Service, *Monitoring Report on Universal Service* (2003), pp. 1-35.

<sup>18</sup> Federal Communications Commission, *In the Matter of Petition for Declaratory Ruling that pulver.com's Free World Dialup is Neither Telecommunications nor a Telecommunications Service*, WC Docket No. 03-45 (adopted Feb. 12, 2004).

<sup>19</sup> Federal Communications Commission, *In the Matter of IP-Enabled Services*, Notice of Proposed Rulemaking, WC Docket No. 04-36 (March 2004).

<sup>20</sup> Competition Report, p. 115.

<sup>21</sup> Competition Report, p. 54.

- <sup>22</sup> In 2003, SBC and Verizon provided telephone service to approximately 74 percent of Texans. See Competition Report, pp. 54-55.
- <sup>23</sup> PURA Secs. 58.051, 58.054, 58.060, 58.063.
- <sup>24</sup> PURA Secs. 58.151, 58.152.
- <sup>25</sup> Competition Report, p. 54.
- <sup>26</sup> Competition Report, p. 58.
- <sup>27</sup> Competition Report, pp. 59-61.
- <sup>28</sup> Israel Kirzner, "The Perils of Regulation: A Market Process Approach," in *Discovery and the Capitalist Process* (University of Chicago Press, 1985): 119-49; Leon Courville, "Regulation and Efficiency in the Electric Utility Industry," *Bell Journal of Economics* 5 (Spring): 53-74; Paul M. Hayashi and John M. Trapani, "Rate of Return Regulation and the Regulated Firm's Choice of Capital-Labor Ratio: Further Empirical Evidence on the Averch-Johnson Effect," *Southern Economic Journal* 42 (January 1976): 384-97; H. Craig Petersen, "An Empirical Test of Regulatory Effects," *Bell Journal of Economics* 6 (1975): 111-26; Robert M. Spann, "Rate of Return Regulation and Efficiency in Production: An Empirical Test of the Averch-Johnson Thesis," *Bell Journal of Economics* 5 (Spring): 8-52; E. Ray Canterbury, Ben Johnson, and Don Reading, "Cost Savings from Nuclear Regulatory Reform: An Econometric Model," *Southern Economic Journal* (Jan. 1996): 554-66; Michael Crew and Charles Rowley, "Toward a Public Choice Theory of Monopoly Regulation," *Public Choice* 57 (1988): 49-67; James Buchanan, Robert Tollison, and Gordon Tullock, *Toward a Theory of the Rent-Seeking Society* (College Station: Texas A&M University Press, 1980). For empirical discussions of political influence costs in a public utility context, see, e.g., R.K. Huitt, "Federal Regulation of the Uses of Natural Gas," *American Political Science Review* (June 1952): 455-69; Jerry Ellig, "Why Do Regulators Regulate? The Case of the Southern California Gas Market," *Journal of Regulatory Economics* (March 1995); Jerome Ellig and Jack High, "Social Contracts and Pipe Dreams," *Contemporary Policy Issues* 10 (January 1992): 46-48.
- <sup>29</sup> Public Utility Regulatory Act, Sec. 58.301.
- <sup>30</sup> Public Utility Regulatory Act, Sec. 58.302; Public Utility Commission of Texas, Report to the 77<sup>th</sup> Legislature, *Intrastate Switched Access Charges* (January 2001), p17. (Hereafter cited as Access Charge Report.) Available at [http://www.puc.state.tx.us/telecomm/reports/ISAC/rpt77leg\\_isac.pdf](http://www.puc.state.tx.us/telecomm/reports/ISAC/rpt77leg_isac.pdf).
- <sup>31</sup> Access Charge Report, p. 17.
- <sup>32</sup> Access Charge Report, pp. 7-8.
- <sup>33</sup> Federal Communications Commission, *Telecommunications Industry Revenues* (March 2003), p. 30.
- <sup>34</sup> See, for example, [www.bigredwire.com](http://www.bigredwire.com).
- <sup>35</sup> Competition Report, pp. 62-63.
- <sup>36</sup> Competition Report, pp. 63-64 and 163.
- <sup>37</sup> *AT&T vs. Public Utility Commission of Texas*, No. 03-50454 (5<sup>th</sup> Cir. June 30, 2004).
- <sup>38</sup> Public Utility Commission of Texas, Proceeding to Amend Public Utility Commission Subst. Rule 26.420(f) – Assessments for the Texas Universal Service Fund, Control No. 28708.
- <sup>39</sup> Competition Report, pp. 75-84.
- <sup>40</sup> Wayne Leighton, *Consumers and Cross-Subsidies: An Interest Group Theory of Telecommunications Regulation* (Ph.D. dissertation, George Mason University, 1996). For a thorough discussion of theory and evidence, see Steve G. Parsons, "Cross-Subsidization in Telecommunications," *Journal of Regulatory Economics* 13 (1998).
- <sup>41</sup> The Hybrid Cost Proxy Model is an engineering-economics model of local network costs based on current technology and input costs. It was developed by the staff of the Federal Communications Commission as part of its implementation of the new universal service policy required by the 1996 Act. For details, see <http://www.fcc.gov/wcb/tapd/hcpm/welcome.html>.
- <sup>42</sup> Calculations are in Appendix, pp. 41-42.
- <sup>43</sup> A.H. Barnett and David L. Kaserman, "The Simple Welfare Economics of Network Externalities and the Uneasy Case for Subscriber Subsidies," *Journal of Regulatory Economics* 13 (1998), pp. 252-53; David L. Kaserman, John W. Mayo, and Joseph E. Flynn, "Cross-Subsidization in Telecommunications" Beyond the Universal Service Fairy Tale," *Journal of Regulatory Economics* 2 (Sept. 1990), pp. 231-49; Robert W. Crandall and Leonard Waverman, *Who Pays for Universal Service?* (Washington, DC: Brookings, 2000), p. 91.
- <sup>44</sup> Jerry Hausman and Howard Shelanski, "Economic Welfare and Telecommunications Regulation: The E-Rate Policy for Universal-Service Subsidies," *Yale Journal on Regulation* 16 (Winter 1999), pp. 36-37.

- <sup>45</sup> John B. Horrigan and Lodis Rhodes, *The Evolution of Universal Service in Texas* (Sept. 1995), available at [www.apr.org/policy/lbjbrief.html](http://www.apr.org/policy/lbjbrief.html).
- <sup>46</sup> Milton L. Mueller and Jorge Reina Schemet, "Universal Service from the Bottom Up: A Study of Telephone Penetration in Camden, New Jersey," *The Information Society* 12 (1996), p. 287.
- <sup>47</sup> Jerry Hausman, Timothy Tardiff, and Alexander Belinfante, "The Effects of the Breakup of AT&T on Telephone Penetration Rates in the United States," *American Economic Review* 83 (May 1993), pp. 182-83.
- <sup>48</sup> Competition Report, pp. 61-64.
- <sup>49</sup> Competition Report, p. 65.
- <sup>50</sup> Jerry Hausman, "Taxation Through Telecommunications Regulation," *Tax Policy and the Economy* 12 (1998); Jerry Hausman and Howard Shelanski, "Economic Welfare and Telecommunications Regulation: The E-Rate Policy for Universal-Service Subsidies," *Yale Journal on Regulation* 16 (Winter 1999).
- <sup>51</sup> Calculated from data in Federal Communications Commission, Federal-State Joint Board on Universal Service, *Universal Service Monitoring Report* (2003), Table 1.15.
- <sup>52</sup> If Texas has to raise the assessment percentage substantially, this estimate of the effect on consumer welfare may be conservative. We used Hausman's estimate of the average effect of a dollar assessment on consumer welfare. Hausman estimates that the *marginal* effect of assessments on long-distance—that is, the effect of additional contributions—is even higher: \$1.25 for each additional dollar raised.
- <sup>53</sup> Jerry Hausman, "Efficiency Effects on the U.S. Economy from Wireless Taxation," *National Tax Journal* 53 (Sept. 2000), pp. 733-42.
- <sup>54</sup> Calculated from data in Federal Communications Commission, Federal-State Joint Board on Universal Service, *Universal Service Monitoring Report* (2003), Table 1.15.
- <sup>55</sup> If Texas has to raise the assessment percentage substantially, this estimate of the effect on consumer welfare may be conservative. We used Hausman's estimate of the average effect of a dollar assessment on consumer welfare. Hausman estimates that the *marginal* effect of assessments on wireless—that is, the effect of additional contributions—is even higher: 72 cents for each additional dollar raised.
- <sup>56</sup> Jerry Hausman, "Efficiency Effects on the U.S. Economy from Wireless Taxation," *National Tax Journal* 53 (Sept. 2000), pp. 733-42.
- <sup>57</sup> For an extensive documentation of competitive local exchange carriers' experience, see the Texas Public Utility Commission's 2003 Competition Report.
- <sup>58</sup> *U.S. Telecom Industry Association, et. al. v. FCC and USA*, No. 00-0012, D.C. Cir. 2004.
- <sup>59</sup> Federal Communications Commission, *In the Matter of IP-Enabled Services*, Notice of Proposed Rulemaking, WC Docket No. 04-36 (March 2004). The authors have both submitted comments to the Federal Communications Commission analyzing the economic issues at stake in the proceeding. See Robert W. Crandall, Robert W. Hahn, Robert E. Litan, Scott Wallsten, *Why the Government Should Not Regulate Internet Telephony*, Brookings-AEI Joint Center for Regulatory Studies Regulatory Analysis 03-12 (Dec 2003), available at <http://www.aei-brookings.org/admin/authorpdfs/page.php?id=316>; and Jerry Ellig, "Public Interest Comment on Review of Regulatory Requirements for IP-Enabled Services: Notice of Proposed Rulemaking," Mercatus Center Public Interest Comment, available at <http://www.mercatus.org/pdf/materials/785.pdf>.
- <sup>60</sup> *In the Matter of Developing a Unified Inter-carrier Compensation Regime*, CC Docket No. 01-92 (adopted April 19, 2002). An especially attractive proposal from a consumer welfare perspective has been developed by FCC staff in Jay M. Atkinson and Christopher C. Barnekov, "A Competitively Neutral Approach to Network Interconnection," FCC Office of Plans and Policy Working Paper # 34 (December 2000). Interconnecting carriers would simply split the incremental costs of interconnection, then bill their own customers for service.
- <sup>61</sup> The question of what kind of compensation incumbents should receive when regulation forces them to lease their own facilities to competitors at prices below historical cost is a thornier issue that is outside the scope of this report.
- <sup>62</sup> For a derivation of the requirements for Ramsey pricing, see William J. Baumol and David F. Bradford, "Optimal Departures from Marginal Cost Pricing," *American Economic Review*, Vol. 60 (June 1970), pp. 265-83.
- <sup>63</sup> See Lester D. Taylor, *Telecommunications Demand in Theory and Practice* (Boston: Kluwer Academic Publishers, 1994) for estimates of these elasticities. For some recent estimates, see also Robert W. Crandall and Leonard Waverman, *Who Pays for Universal Service? When Telephone Subsidies Become Transparent* (Washington: Brookings Institution Press, 2000), Chapter 5.

<sup>64</sup> Crandall and Waverman (2000), Table 7.2.

<sup>65</sup> Access Charge Report.

<sup>66</sup> Access Charge Report, Appendix B.

<sup>67</sup> Access Charge Report, Appendix B.

<sup>68</sup> Federal Communications Commission, *Statistics of Communications Common Carriers, 2002-03* (March 2004), Table 2.4.

<sup>69</sup> Federal Communications Commission, *Local Telephone Competition: Status as of 12/31/2002* (June 2003), Table 6.

<sup>70</sup> Competition Report, Chapter 3, Table 7.

<sup>71</sup> These large incumbent companies include SBC, Verizon, Central, and United. "Non-primary" lines are second, third, fourth ... lines in the same residence.

<sup>72</sup> Some of the terminating access was undoubtedly on smaller incumbents' networks or on competitive exchange carriers' networks. Lacking data on such terminations, we simply assume that all calls terminated on the large incumbents' networks.

<sup>73</sup> Robert W. Crandall and Leonard Waverman, *Who Pays for Universal Service? When Telephone Subsidies Become Transparent*. Brookings, 2000, Ch.5. We found that residences accounted for 40 percent of long-distance revenues in the late 1990s, but business rates have fallen more rapidly than residential rates; therefore, we use 45 percent in this report.

<sup>74</sup> See the discussion above.

<sup>75</sup> We use the version of the model that Crandall and Waverman (2000) used. We assume that the distribution of access lines across areas of different population density is the same in 2002 as it was in 1995. In addition, we assume that the relative distribution of subscriber access lines across the different rate zones is the same as in 1995.

<sup>76</sup> Because we do not have data on the precise mapping of local residential rates and population density, we have distributed the \$8.15 to \$11.05 rates across density zones somewhat arbitrarily. See Table 2.

<sup>77</sup> We assume that the demand for primary local residential lines has a demand elasticity that is very close to zero. Recent econometric estimates of the own-price elasticity of residential demand for local service are very close to zero. See Crandall and Waverman (2000), Ch. 5, and Taylor (1994).



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