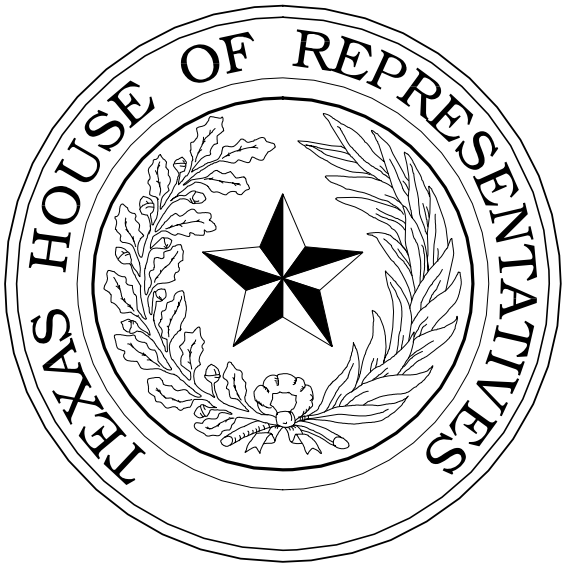

REPORT TO THE TEXAS HOUSE OF REPRESENTATIVES 78TH LEGISLATURE

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The Honorable James E. "Pete" Laney
Speaker, Texas House of Representatives
Texas State Capitol, Room 2W.13
Austin, Texas 78701

Dear Mr. Speaker and Fellow Members:

The Committee on State Affairs of the 77th Legislature hereby presents its interim report for consideration by the 78th Legislature.

Respectfully submitted,

[Signed: Representatives Steven Wolens, Sylvester Turner, Kevin Bailey, Kim Brimer, David Counts, Tom Craddick, Debra Danburg, Bob Hunter, Delwin Jones, John Longoria, Kenny Marchant, Brian McCall, Ruth Jones McClendon, Tommy Merritt, and Debbie Riddle.]

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INTRODUCTION

On November 5, 2001, House Speaker James E. "Pete" Laney issued six interim charges to the House Committee on State Affairs. This report outlines the committee's examination of these issues, presents the facts and data learned by the committee, raises concerns, and summarizes the findings of the committee with respect to its interim charges.

Broadband Policy

> Examine the deployment of advanced telecommunications services throughout Texas and evaluate possible state policies to ensure availability of broadband service to all Texans. Study barriers faced by rural and urban communities in obtaining advanced services and explore ways for these communities, the state, and cities to secure the benefits of affordable broadband access to underserved citizens.
>
> Determine what, if any, broadband access is available to citizens of each rural community of the state and to each inner-city community in the state. Together with the Public Utility Commission, or another agency or university of the state, establish a system for tracking broadband service offerings in rural and inner-city communities on an ongoing basis.

To begin its inquiry into broadband policy, the committee issued a series of ten questions and sought comments from any interested parties. The committee asked questions about solutions to perceived low broadband subscription rates; ideal goals of a state broadband policy; the proper roles of the private sector, the state, and the community; and appropriate regulatory frameworks for broadband services. The committee received responses from 32 entities, associations, and individuals totaling 306 pages. A summary of these responses can be found in the section entitled, "Summary of Responses to 'Ten Questions,'" beginning on page 7.

The committee then began to assemble data on the availability of broadband services across the state. First, the committee worked with several state agencies to develop an inventory of state government networks and state-provided broadband connections. TEX-AN, the state's primary telecommunications system, provides broadband connections to more than 8,800 sites in 600 communities located in 245 Texas counties. Several other state networks, some of which are leveraged from TEX-AN, offer broadband connections to several thousand locations across the state, primarily for educational and government use. A summary of state networks can be found in the section entitled, "Public Telecommunications Networks," beginning on page 33.

With an inventory of public network sites in hand, the committee next surveyed broadband deployment trends nationwide. It then invited broadband providers in Texas to volunteer to submit data on their service offerings, which will be incorporated into a map of broadband deployment in Texas. Data supplied to the committee suggest that high-speed access to the Internet is offered by cable modem service providers in 338 Texas communities and by digital subscriber line (DSL) providers in 462 Texas communities. In at least 230 Texas communities, at least one DSL provider and one cable modem service provider offer service. Broadband

availability is still highest in urban and suburban areas, but the committee notes a significant number of smaller communities in rural areas have access to broadband, particularly DSL offered by small incumbent local exchange carriers (ILECs). Cable operators are offering broadband in smaller communities as well. More detail about these findings can be found in the section entitled, "Overview of Broadband Deployment," beginning on page 39. A list of communities in which broadband providers reported offering cable modem service or DSL can be found, organized by county, in Appendix B, which begins on page 147.

Current state policies regarding broadband and related telecommunications services are discussed in the section entitled, "Current State Broadband Policy," beginning on page 53. In particular, the committee reviewed the requirements established by House Bill 2128, 74th Legislature, and Senate Bill 560, 76th Legislature. These include minimum service requirements for all telecommunications companies, discounted rates for public entities, infrastructure commitments for companies electing incentive regulation, and uses of the Texas Universal Service Fund.

The committee also examined current state regulation of broadband. Today, most state regulation of DSL is a function of federal and state unbundling requirements placed upon ILECs as a means of encouraging competition among telecommunications companies. The principal other state regulation of broadband is a mandate that companies deploy advanced services in rural areas, upon request, if they offer such services in their urban territories. The committee also surveyed the current and potential authority of the state over other broadband platforms. No study of state regulatory authority over telecommunications is complete without an examination of current federal regulatory proceedings. Several important federal activities are summarized in the section entitled, "Federal Broadband Initiatives," beginning on page 65.

The committee undertook its inquiry into broadband policy mindful of its report to the 76th Legislature, which discussed in great detail the issues and arguments surrounding the "open access" debate. That issue pit Internet service providers (ISPs), consumer groups, and many ILECs against cable operators in a battle over access to cable modem service. The debate focused on whether cable operators should be required to offer unaffiliated ISPs transport on their cable systems, much as ILECs are required to offer such access to their DSL platform. In particular, ILECs argued that cable modem service, which had a larger market share than DSL, should be held to the same regulations as DSL. During the discussion, the largest single proponent of open access, America Online, the Nation's largest ISP, merged with Time Warner, one of the Nation's largest cable operators. The combined company opposed open access requirements, and the issue largely fizzled, except federal regulators have begun to require the larger cable systems to offer unaffiliated ISPs access to their transport systems as conditions to various mergers and acquisitions.

Two years later, the ILECs have also switched sides, and now seek changes in statute and regulation to relieve them of obligations to share broadband infrastructure with their competitors. This time, the argument is being made that ILECs should be held to the same regulatory standards as cable modem service, which continues to hold a larger market share. Proceedings before the federal government and legislation before Congress may alter the balance between

federal and state authority over broadband offerings, and it is likely that legislation will be sought in Texas and in other states eschewing state regulation of any broadband platform.

The committee is also keenly aware of the serious economic problems afflicting the telecommunications industry, which has lost more than $2 trillion in market capitalization since 2000 and which has shedded more than a half million jobs. Appendix C provides a timeline of mergers, acquisitions, bankruptcies, and other important events related to telecommunications sector since the passage of the federal Telecommunications Act of 1996. It begins on page 159. Appendices D and E provide a quick snapshot of important financial indicators for selected telecommunications companies and which companies have declared or emerged from bankruptcy. These begin on page 165 and 167, respectively. Finally, Appendix F summarizes the progress of the four regional Bell operating companies—BellSouth, Qwest, SBC, and Verizon—in their efforts to obtain authority to offer long-distance service in their respective service territories. Southwestern Bell is approved to offer long-distance service to customers in its five-state territory. Its parent SBC lacks this authority for the rest of its footprint, though approval for California should come by the end of 2002. This appendix begins on page 171.

Mission and Performance of the TIF Board

> Review the activities and mission of the Telecommunications Infrastructure Fund, assess the extent to which the Fund has met the goal of extending services to underserved client groups, and consider whether the need for the Fund's programs extends beyond the statutory termination.

The Telecommunications Infrastructure Fund Board (TIF) was created by House Bill 2128, 74th Legislature, to fund technology and connectivity projects for public schools, libraries, institutions of higher education, and public or not-for-profit healthcare facilities. TIF offers six kinds of grants: Public School, Higher Education, Library, Health Care, Discovery, and Community Networking. The board also allocates funds to special projects outside of the normal grant award process. Since its inception, TIF has awarded almost $1 billion in grants. Funding for its grant programs comes from a 1.25 percent assessment on telecommunications companies, but grantees use TIF funds mostly for computers, networking hardware, and training.

It is difficult to tell exactly how many entities TIF has funded. Deficiencies in its grant monitoring systems and discrepancies in its data complicated the committee's examination, though TIF staff is working hard to strengthen the agency's analytical capabilities and the integrity of its databases. The committee examined the agency's grant administration, strategic planning, needs assessment, and performance measurement functions. It also reviewed two critical audit reports and independently analyzed grant data in an effort to evaluate TIF's effectiveness and progress in completing its statutory mission.

There is substantial anecdotal evidence demonstrating that TIF's programs have created access to technology and the Internet that may not otherwise have occurred, particularly in rural areas of Texas. However, there is also anecdotal evidence supporting claims that TIF may not have helped underserved urban populations as effectively. Only a thorough analysis of constituents' access to technology across the state can demonstrate the efficacy of TIF's programs and guide

the targeting of remaining grant funds to those who need it most. TIF will undergo sunset review in 2004 and would be abolished, absent legislative action, on September 1, 2005.

"TIF Board Mission and Performance" begins on page 77, and a summary of all TIF grant offerings can be found in Appendix G, which begins on page 175.

Electric Transmission Facility Siting

> Review the laws and procedures governing the siting of electric transmission lines. Consider how the need for transmission lines is determined, how routes are selected, the technology selected for a given route, the interests of landowners on whose property the lines are sited, and the interests of consumers and the public in siting decisions.

This report reviews the current laws and policies related to the siting of transmission lines and explored the complexities in planning and building transmission facilities in a deregulated market. Challenges exist in balancing the interests of landowners, ratepayers, and generators, such as the design, routing, and financing of transmission lines to transport renewable power to the grid and meet load growth. The Public Utility Commission of Texas (PUC) has reviewed its rules for granting a certificate of convenience and necessity (CCN) for transmission lines, and new rules will become effective January 1, 2003. A summary of these issues can be found in the section entitled, "Electric Transmission Facility Siting," beginning on page 113.

Appendix H enumerates the basic steps, time frames, and opportunities for public participation in the current CCN process. It begins on page 203. A more extensive discussion of this issue, including a thorough review of federal and regional planning activities and an analysis of transmission facilities needed in Texas will be part of the Electric Utility Restructuring Legislative Oversight Committee's report to the 78th Legislature.

Sunset of the General Services Commission

> Actively monitor agencies and programs under the committee's oversight jurisdiction, including the transfer of functions and duties of the former General Services Commission to the Texas Building and Procurement Commission and the Department of Information Resources.

Senate Bill 311, 77th Legislature, abolished the former General Services Commission (GSC) and transferred most of its functions to the Department of Information Resources (DIR) and the newly created Texas Building and Procurement Commission (TBPC). During the last session, the committee determined that extensive construction delays, ignored audits, problems with leases, poor contract management, inefficient administration of telecommunications services, questionable financial management, high staff turnover, and numerous other problems with GSC management required the agency's termination. A new board, new executive leadership, and a new charge were given to TBPC to fix the former GSC's problems and, ultimately, to provide the best value to its state agency clients.

A thorough discussion of past problems, the Legislature's solutions, and implementation issues begins on page 123 in the section entitled, "Sunset of the General Services Commission." The

committee asked TBPC to provide possible statutory revisions that would help it manage its programs. That list appears in Appendix I beginning on page 207.

Homeland Security

Gather information related to the security of state-owned buildings and facilities, public and private communications systems, and electric generation and transmission facilities. Review government regulations and business practices to determine whether legislation is needed to protect life and property and to detect, interdict, and respond to acts of terrorism.

The committee reviewed the recommendations and activities of several statewide and local initiatives related to homeland security. The Electric Utility Restructuring Legislative Oversight Committee met in closed session to hear testimony on security measures and terrorism preparedness employed at the state's two nuclear power facilities and on the security of the bulk transmission system. The committee reviewed the activities of the PUC with respect to the security of this state's bulk power and telecommunications systems. The committee notes that state, local, and federal authorities have significant experience responding to natural disasters, which will benefit any response to acts of terror in this state.

The committee expects to consider legislation on all of these topics during the 78th Legislature and intends this report to be a reference for Members, staff, and interested parties when these issues are discussed.

SUMMARY OF RESPONSES TO "TEN QUESTIONS"

On February 27, 2002, the committee invited broadband service providers and other interested parties to comment on a series of 10 questions about various aspects of state broadband policy. These questions were intended to establish a philosophical framework for the committee to use as it considered what policies ("state broadband strategy") would best achieve the state's policy of ensuring access to broadband to all residents of the state.[1] The committee received responses totaling 306 pages from 32 associations, entities, and individuals. A summary of those comments follows.

Question 1: Take Rate

A recent U.S. Department of Commerce study based on 2000 census data indicated that:

- *60.2 million U.S. households had a personal computer;*
- *53.0 million U.S. households subscribed to the Internet;*
- *10.6 million U.S. households connected to the Internet via broadband; and*
- *less than half of Texans use the Internet, at any location and at any bandwidth.*[2]

These findings seem to indicate that the public has not fully embraced broadband services. What needs does broadband serve that cannot be met effectively by other means? Why are so many consumers and small businesses declining to subscribe to high-speed Internet access services? Should the state be concerned about low rates of subscribership ("take rate")?

This questions sought to obtain a basis for why the state should concern itself with broadband policy when it appears that most people who have access to broadband decline to purchase it.

Uses of Broadband

Narrowband connections to the Internet allow users to send and receive e-mails, browse most web sites, buy products from e-commerce web sites, participate in online auctions, and download files for offline use. Even users with dial-up service are capable of transferring large data files, such as video clips, if they have the time and a reliable connection. "At present, one would have to conclude that there are few 'needs' that broadband meets that cannot be effectively met by

[1] Public Utility Regulatory Act (PURA) §51.001(g) provides that "It is the policy of this state to ensure that customers in all regions of this state, including low-income customers and customers in rural and high cost areas, have access to telecommunications and information services, including interexchange services, cable services, wireless services, and advanced telecommunications and information services, that are reasonably comparable to those services provided in urban areas and that are available at prices that are reasonably comparable to prices charged for similar services in urban areas."

[2] National Telecommunications and Information Administration and Economics and Statistics Administration, *A Nation Online: How Americans Are Expanding Their Use of the Internet* (February 5, 2002). After further review, it should have been stated that less than half of Texas *households* (47.7 percent) use the Internet, and between 49.7 and 52.6 percent of Texans use the Internet. See *A Nation Online* at 8-9 and Figure H1.

other means," wrote Dr. Mark Cooper. However, he added, "broadband is a qualitatively superior way" for people to perform these tasks.[3]

Broadband enriches online activities by providing a considerably larger pipe for data to flow through. It also offers features, including the potential for web-based applications, that narrowband simply cannot provide, such as:

- The ability to send and receive large amounts of data quickly, practically in real time;
- A reliable connection that is "always on";
- Effective capabilities for telecommuting and videoconferencing, so that a person could work at home or attend a meeting or conference without traveling;
- Rich multimedia applications and games;
- The capability to conduct fast, secure e-commerce and large-scale business-to-business transactions;
- Telemedicine services;
- Opportunities for distance learning and job training from the home; and
- The benefits of virtual collaboration on projects among people in different locations.

Broadband can multiply the opportunities for using data while decreasing the time it takes to do so. For example, broadband can provide the ability to access, manipulate, combine, and share vast amounts of sophisticated geographic, hydrological, topographic, and satellite imagery for purposes ranging from flood control to economic development to planning a backpacking trip. Though some of these activities can be accomplished with a dial-up connection, the level of detail and the potential for innovative applications increases with the bandwidth.

Low Take Rate?

Several commenters took issue with the characterization of the take rate as "low." Many commenters said the current broadband take rate compared favorably to that of other new technologies as they gained public adoption. The CLEC Coalition pointed out that broadband reached a 5 percent take rate in three years, while it took cellular telephones seven years and television 10 years to reach that mark. Verizon noted that the pace of penetration of broadband has also exceeded that of pagers and video cassette recorders (VCRs). AT&T suggested subscribership is increasing dramatically even though take rates appear low today; broadband subscribership increased 250 percent nationwide and 324 percent in Texas for the 18-month period ending June 2001. The Texas Cable & Telecommunications Association (TCTA) said deployment and acceptance of broadband is proceeding at a "very robust pace" as providers invest billions of dollars in network upgrades.

The Office of Rural Community Affairs (ORCA) commented that broadband is a "new phenomenon, something ordinary folks, business people, and a variety of public service segments have to learn and learn what value it has in their life." Hometown Computing said consumers were adopting broadband rapidly, and businesses will "get onboard as soon as they

[3] For the purposes of this section, references to the various responses will be made in this manner, rather than by using footnotes or page references. The complete original statements can be found under the relevant question in the respondents' written submissions to the committee. All responses received by the committee were posted on the Internet at http://www.geocities.com/texasbroadbandpolicy (accessed December 3, 2002).

Figure 1. List of Associations, Entities, and Individuals Providing Responses to "Ten Questions"

- American Electronics Association with the Metroplex Technology Business Council
- AT&T
- Cbeyond Communications
- CLEC Coalition (Allegiance Telecom, Birch Telecom, Covad Communications, Time Warner Telecom, and XO Texas)
- Coleman County Community Network
- Dr. Mark Cooper (on behalf of the Office of Public Utility Counsel)
- County Information Resource Agency
- Dynegy
- Education Networks of America
- Hometown Computing
- Hughes Network Systems
- Integrated Economic Partnerships
- IP Communications
- Onramp Access
- Rep. Jim Keffer
- Rep. G. E. "Buddy" West
- Rep. Arlene Wohlgemuth
- Rural Caucus of the Texas Legislature (signed by Reps. Leo Berman, Robby Cook, Rick Hardcastle, Judy Hawley, and Jim McReynolds)
- Office of Rural Community Affairs
- Southwestern Bell
- Telecommunications and Information Policy Institute
- Telecommunications Infrastructure Fund Board
- Texas Cable & Telecommunications Association
- Texas Library Association
- Texas Municipal League
- Texas Public Power Association
- Texas State Library and Archives Commission
- Texas Statewide Telephone Cooperative, Inc.
- Texas Telephone Association
- Verizon
- WorldCom

see a legitimate business need."[4] Several commenters said higher take rates can be observed among households and businesses with computers and among households who were Internet subscribers, and this is more indicative of the perceived value of broadband.[5] Verizon and the Texas Telephone Association (TTA) said the current take rate is simply a reflection of actual consumer demand and interest.

The Coalition of Rural Cities said low take rates are partially caused by "gaps in broadband coverage" between urban and rural areas. The Coalition of Rural Cities said the state should be concerned about these gaps in light of the "critical role played by the Internet in creating new economic development," especially for the 17 percent of Texas zip codes that have no high-speed providers. Other commenters said the state and the Nation are falling behind other countries with respect to the adoption of broadband. South Koreans are four times more likely and Canadians are twice as likely to be broadband subscribers than Americans, reported Onramp Access.[6]

Several explanations for low take rates were offered, including cost, the lack of a "killer" application, and a lack of perceived value for broadband service offerings.

[4] Hometown Computing indicated that several national corporations, including John Deere and every domestic automobile manufacturer, have begun to require their dealers to obtain broadband connections for their corporate networks. "Without pressure from a parent company," Hometown Computing advised, "few small businesses see a need to install broadband." However, the number of broadband installations supplied by Hometown Computing is "a bit ahead" of forecasted demand.

[5] According to *A Nation Online* and U.S. Census data, 53.7 percent of Texas households have a personal computer, and 47.7 percent of Texas households have an Internet connection. Using either of these subsets of households as a denominator, instead of all households, increases the take rate to 15-25 percent.

[6] The U.S. is ahead of Europe, where only about 2 percent of households have high-speed Internet connections at home. The European Union has set a goal of providing broadband connections to all of its member states' government offices and schools by 2005. Reuters, "A broadband connection for every home" (May 29, 2002).

Cost. In areas where broadband services are available, consumers may not be seeing a sufficient increase in value to justify the additional price of broadband over traditional dial-up Internet access. According to a recent survey, the average monthly price for cable modem service at the end of March 2002 was $44.95 per month, which represented a 4 percent increase since December 2001. The same survey indicated the average price of DSL was $51.82 a month, representing a slight rise of 1.4 percent during the same period. Ninety-one percent of broadband service providers that had been in business since the beginning of 2001 had raised their rates.[7] Most consumers can purchase unlimited narrowband Internet access for around $20 a month, or less.[8] This means the additional annual cost for a family to migrate to a broadband connection is roughly $300 to $375, not including up-front costs for equipment or installation.

The competitive providers suggested that prices would drop if more competitors entered the market, a finding echoed by Dr. Mark Cooper. In his analysis, Dr. Cooper said the prices charged by the incumbent local exchange companies (ILECs) for DSL and cable operators for cable modem service are "driven by the raw exercise of market power." He noted the incremental price to move to broadband from narrowband is considerably greater than the incremental price of moving to digital cable from analog cable, indicating that cable modem service "is not being priced to penetrate." ILECs will seek to close their networks to competing companies and "leverage their monopoly telephone product with bundling, rather than compete on price," he said. Dr. Cooper predicted cable companies and ILECs would never truly compete on price but would instead allow each other "to capture and hold the monopoly rents of different product markets."

Onramp Access reported that the cost of broadband in the U.S. fares unfavorably to Canada, where broadband is more widely deployed and purchased. Onramp indicated that retail DSL prices in the U.S. are 69 percent higher than in Canada, and wholesale prices are 25 percent higher. IP Communications said the ILECs and cable operators can charge a higher price "because the innovative competitive industry has not been sufficiently strong to discipline monopoly/duopoly pricing behavior." Southwestern Bell said the requirements placed on ILECs to unbundle their infrastructure and provide it to competitors at discounted rates create "investment risks and uncertainty that make it difficult, if not fiscally reckless, to continue committing the enormous amounts of capital to deploy … DSL."

Lack of "Killer Apps." The absence of a compelling application for broadband was cited by most commenters as a reason for low take rates. TTA noted that the most common consumer uses of the Internet today—e-mail, web browsing, checking news and weather, shopping, and playing games—can be accomplished through dial-up access. Many of these were, in some form or fashion, the killer apps of dial-up.

"Unsettled digital copyright issues" and piracy may be holding back some of the content needed to spur broadband demand, said TCTA, but the "killer app" could well be something quite

[7] Sue Ames, "Consumer broadband prices keep rising," CNET News.com (May 29, 2002), citing a May 2002 study by the La Jolla, Calif.-based market research firm ARS.

[8] For example, America Online offers unlimited dial-up service for $23.90 a month, or $19.95 a month if a full year of access is purchased in advance. See http://www.aol.com/info/pricing.html (accessed December 3, 2002).

unpredictable and unforeseen.[9] Onramp Access said the state should foster an environment that makes it easier for innovators to bring their applications to the market.

Lack of Perceived Value. "Many customers simply do not perceive that the value added by broadband subscribership is worth current prices," WorldCom said. Compared to the nearly $600 per year price tag for broadband Internet access, many users are sticking with cheaper dial-up connections, despite the "inconvenience" of dialing into the Internet using a relatively slow modem. The Texas Library Association (TLA) said take rates would increase once consumers were more educated about the benefits of broadband access and its more sophisticated content.

A "fear of the technical hurdles that must be crossed to achieve and maintain broadband Internet access" may also reduce the perceived value, said the Texas State Library and Archives Commission (TSLAC). Problems faced by early ISDN, DSL, and cable modem subscribers have created a perception that "broadband is hard." Additionally, news stories about service quality problems, network outages, long waits for installation, and companies going out of business may be reducing the perceived value of broadband services.

State Actions

Commenters were mixed as to whether the state should be concerned with low take rates. Most commenters agreed that the take rate should not be the focus of public policy, but that it would naturally respond as the market developed. Commenters provided the following options for a state broadband strategy:

- Identify how broadband "fits into the state's … overall economic strategy" and then set policies and goals for broadband that help achieve this strategy (Texas Statewide Telephone Cooperative, Inc.);
- Allow the market to work out take rate issues through "creative marketing, pricing, and consumer education regarding the benefits of broadband" (AT&T);
- Remove policies that limit the ability of providers to invest in broadband infrastructure (Southwestern Bell);
- Foster a "free and open competitive market that gives providers an equal opportunity to meet customers' demand where it exists" (TTA);
- Focus on "expanding competitive alternatives" to "drive down prices" and encourage innovation (CLEC Coalition, IP Communications);
- "Localize" Internet content by increasing the amount and quality of information about local events, weather, businesses, and government available on the Internet (Onramp Access);
- "Engender local leadership" to promote broadband applications in communities and bring together the "scattered resources" of communities into regional technology councils (Telecommunications and Information Policy Institute);

[9] TCTA quoted a March 28, 2002, *Fortune* article about the recently deceased Milton Berle which called the entertainer "TV's original killer app, whose career is proof that salvation often comes from unpredictable sources …. Who would have thought that a middle-aged vaudeville refugee who dressed up in women's clothes would be the key to TV's success? Yet Berle immediately became a national obsession, and to watch Berle you had to have a television set."

- Ensure that companies can bring their "killer apps" to consumers by preventing broadband providers from limiting the content or use of their broadband connections (Onramp Access); and
- Remove barriers to bandwidth aggregation that prevent multiple users, such as different agencies of different levels of government, from taking advantage of broadband (County Information Resources Agency).

A number of these options could be used in concert, but some may be contradictory, if not outright mutually exclusive. For example, "expanding competitive alternatives" could require strengthening access and quality of service mandates on incumbent companies, which is precisely something that Southwestern Bell argues limits its ability to invest in broadband.

The Texas Municipal League (TML) said the state should not rush to commit large amounts of public funds and reduce regulations for the promise of "technological innovation that offers many opportunities to improve quality of life." TML said the state's promotion of the railroad industry led to wasteful spending by government on infrastructure that ultimately left "the citizens of many Texas cities to bear large tax burdens but no local access to a railroad." Likewise, TTA advised against policies that require investment into areas where demand does not exist or that "subsidize uneconomic business decisions." Dr. Cooper also questioned whether the "pay-off" was big enough to "justify early policy intervention."

Question 2: Goals

Should the state adopt a set of policies ("state broadband strategy") seeking the universal deployment of broadband when less than 10 percent of residences and businesses subscribe to high-speed Internet services in areas of the state where they are currently available? If not, what should the state broadband strategy seek to achieve? Should the state broadband strategy focus on the deployment of broadband, the take rate for broadband, or both? In what time frame should the state broadband strategy reasonably seek to achieve its goals? How should its success be measured?

This question sought to comments regarding the ultimate goal of a state broadband strategy and a reasonable timeframe for this goal to be achieved.

Universal Deployment

The Coalition of Rural Cities said "a statewide policy is needed to address gaps in coverage, particularly in rural areas," and this policy must "require deployment at rates and terms reasonably comparable to those in urban areas." Hughes Network Systems (HNS) said the state should pursue a strategy of universal deployment because "the natural evolution of applications is such that inevitably high-bandwidth connectivity will be required." Should this occur, then areas of the state that are not wired for broadband will be "too far behind to be able to recover," said Integrated Economic Partnerships (IEP).

Dr. Mark Cooper advised that the state "will have to challenge federal policy and industry trends" if it seeks to declare broadband an "important infrastructure project that requires public

resources." While saying that having an affordable, open advanced telecommunications network available to all Texans is a laudable goal, Dr. Cooper cited three reasons why embarking on such a policy would be premature:

- The status of broadband service within our information society is not yet clearly defined;
- The industry is developing into a structure in anticipation of a "hands-off approach [that] poses an increasingly difficult challenge" to achieving universal deployment; and
- The FCC is "on the verge of pre-empting virtually all state authority in this area, which may make most state policies futile."[10]

In other words, even if a state policy of ubiquitous deployment were desirable, it may not be achievable in any time frame.

"The market—not the government—should ultimately determine the scope and pace of broadband deployment," said Southwestern Bell, adding that a universal service policy does not make sense for broadband even though it does for basic dial-tone service. The state "should resist uneconomic investment mandates and arbitrary deadlines." AT&T expressed the view that "a policy of universal deployment of broadband would be premature." The state should instead focus on demand, not deployment, as at least one form of broadband is likely to available in any part of Texas. "A large-scale shift in public policy is not warranted," wrote the CLEC Coalition. Instead, the state should continue to encourage competition by enforcing current law.

WorldCom said the state should not adopt a broadband strategy at all because "there is no indication of significant connectivity needs that cannot be met by other means." Hometown Computing advocated letting the market develop on its own, adding that "any actions by the state will be more likely to hamper broadband than promote it."

Alternative Goals

"A healthy competitive marketplace" should be the goal of a state broadband strategy, argued Cbeyond Communications. This goal should be accompanied by enforcement of existing laws to "assist underserved areas of the state in securing access to advanced services," said the CLEC Coalition. The Telecommunications and Information Policy Institute (TIPI) said the state broadband strategy should focus on remedying "barriers to entry in the competitive broadband market," and it should consider using tax benefits, subsidies, or low interest loans to encourage investment in new infrastructure.

AT&T agreed that a more limited approach would be best and supported the use of tax incentives to promote broadband deployment in areas where market forces alone have not been adequate. Southwestern Bell agreed that tax credits and local use of economic development funds could help "offset the up-front costs of extending broadband." The Texas Statewide Telephone Cooperative, Inc. (TSTCI) said the state should provide universal service funding for broadband infrastructure. Any state incentives should be provided in a manner that ensures "investment is not totally out of proportion with the demand for the service."

[10] See "Federal Broadband Initiatives," beginning on page 65.

However, the CLEC Coalition said the state should not "artificially stimulate demand" or encourage companies to make "investments that may not pay off." Citing low take rates, Verizon argued "it would be disastrous to attempt to drive supply in the face of this small or nonexistent demand." TCTA warned that "subsidy mechanisms, such as the Texas Universal Service Fund, would thwart marketplace forces, disadvantage early investors, and inevitably would decrease free marketplace investment in broadband." Several broadband providers said the state broadband strategy should remove disincentives to investment, focus on meeting local needs, be technology neutral, and avoid "locking in" particular technologies.

Hometown Computing said requiring government use of broadband would be "the most positive step the state could take." For example, setting a goal of having every county courthouse wired with broadband within one year would be laudable. ORCA said the initial goal should be "to make access available at community access points," such as schools, libraries, and senior citizens' centers. This access should be combined with "layman's language training and education opportunities." Achieving this goal could ultimately spur demand as people learn about broadband and begin to use it regularly, ORCA said. TCTA agreed that the state should improve access for schools and libraries and provide increased exposure and training opportunities for students in rural and inner-city areas.

IP Communications said the state should be a leader in developing broadband content, such as playing live video feeds of open meetings. A state broadband strategy should also seek to coordinate various statewide telecommunications initiatives directed by several state agencies, said the Coalition of Rural Cities. It should not, however, prevent cities from exercising their duties to manage public rights-of-way and protect public health and safety, said TML.

Measuring Success

Few commenters provided measures of success or reasonable timeframes. WorldCom said the ultimate success of any strategy "should be measured by a customer's ability to easily choose" another provider, much as can be done in the long-distance market. The County Information Resources Agency (CIRA) said a successful strategy would extend the Internet backbone to each county. Within a couple of years, at least 75 percent of counties should be so wired, CIRA said. The Coleman County Community Network (CCCN) said it would expect it to take a year to develop the state broadband strategy, and its goals should be reached in three to five years. Success would be defined as having 25 percent of rural communities "connected to broadband and … sustaining their projects." Education Networks of America (ENA) said two to four years was a reasonable timeframe. Dynegy said the goal should be "reasonably priced access" within two to five years.

Verizon said the state "should not place an artificial timetable on market rollouts of broadband services" but should move forward as quickly as possible to provide "competitive parity" in broadband regulations. TCTA and WorldCom advocated not taking action on a state strategy until 2005, at which point the market will be more mature and the extent of unmet consumer demand will be clearer.

Question 3: Private Sector's Role

What is the private sector's role in achieving a successful state broadband strategy? Who are the players, and what are they doing today? Which players are helpful in achieving the goals of the state broadband strategy, and which are not helpful? What, if anything, does the private sector have to do differently so that the goals of the state broadband strategy can be achieved?

This question sought both the self-perception of the private sector and an identification of which private sector entities should be considered within the mantle of a state broadband strategy.

Role

Every commenter said the private sector's role is to provide broadband services. "Only the private sector has the resources, the expertise, the local and regional workforce, and the access to capital to make and sustain" broadband services, wrote ORCA. Verizon said the private sector is the "risk-taker" that invests capital and builds networks based on the "perception of current and future demand, costs of deployment, and competitive business plans." TCTA said the private sector's role is "to attract broadband customers … through investments in research and development, through marketing, and through education and training efforts." HNS added that the private sector "can provide guidance and insight."

TIPI said a collection of players broadly thought of as information service provides "has been responsible for the accelerated growth of networked communication." These firms are "the source for new and innovative content, services, and applications that drive demand." Cbeyond Communications said the private sector's role was to "respond with competitive offerings, thus bringing lower prices," which will in turn "spur consumer demand."

The Players

In general, commenters identified cable operators, wireline broadband providers, fixed and mobile wireless firms, and satellite companies as the principal private sector players. Several commenters also identified the Telecommunications Infrastructure Fund Board (TIF), makers of computers and modems, network equipment manufacturers, content providers, Internet service providers (ISPs), Internet backbone providers (IBPs), and the investment community. A few commenters said additional entities should be allowed to become players, including electric companies, municipal utilities, and local governments.

Several companies indicated they were providing broadband over more than one platform. For example, AT&T was deploying cable modem service through its cable systems and DSL through its purchase of NorthPoint Communications' assets. AT&T had also experimented with fixed wireless, but "subsequently terminated that service for economic reasons."[11] Several

[11] The FCC approved the merger of AT&T Broadband and Comcast in November 2002. AT&T sold all of the assets from its "Project Angel" fixed wireless experiment in October 2001 for $15 million, far less than the $1.5 billion it had invested in it. See Nancy Gohring, "Fallen 'Angel' Scooped Up by Calif. Firm," *Seattle Times* (January 15, 2002).

commenters said developing technologies, such as Wi-Fi and other wireless platforms, may have the potential to provide broadband services to consumers in areas where wireline deployment is uneconomical.[12] These platforms may also provide competing services in markets where DSL and cable modem service are already available.

Virtually no one chose to identify parties who were being helpful or not helpful. Those few who did typically put ILECs and cable companies within the bounds of the latter.

Changes Needed

For the most part, commenters did not provide much additional guidance here. Clearly, the commenters believed the private sector needs to continue deploying infrastructure, developing innovative products and pricing plans, and searching for the "killer app." The private sector needs to ensure that innovators can continue "to communicate with core network software … [and] interconnect with and access broadband network infrastructure," said TIPI. As such, telecommunications networks and cable operators should resist business models that "limit competition and innovation," such as contracting with a single preferred ISP or engineering networks to allow selective "degradations in transmission quality."

The private sector needs to be more of a partner with rural communities and "provide cash matches, assistance in sustainability, technical advice and assistance, expertise in marketing, and successful business planning," said CCCN. TIF also suggested an increased role for the private sector to help "connect the dots" between public entities that are eligible for TIF funding and the private businesses and community institutions that may not have broadband access today.

In a different vein, Dr. Mark Cooper said each incumbent broadband provider "should stop pricing the service and withholding access in an abusive manner that exploits its market power." Dr. Cooper said recent price increases for broadband services show a willingness "to forego sales to increase profits." In short, he said the private sector needs to develop intramodal competition, lower prices, improve customer service, and offer more innovative services.

Question 4: State's Role

What goals of the state broadband strategy, if any, cannot be accomplished by the private sector alone and require the assistance of government? What actions should the state government take to ensure the success of the state broadband strategy? Are different actions needed to achieve success in rural areas than in urban areas?

This question follows the previous two by asking whether there is a gap between the goals of a state broadband strategy and the ability of the private sector to meet these goals in a timely

[12] "Wi-Fi" is a wireless network running under the commonly used 802.11b standard. It utilizes unlicensed spectrum, which is shared with garage door openers, microwave ovens, Bluetooth-capable portable devices, bar code scanners, and cordless phones. Thus, Wi-Fi networks can become heavily congested, so network designers must choose their frequency ranges, or channels, carefully. A typical Wi-Fi network can provide data transmission speeds of 11 Megabits per second (Mbps), but that speed is distance sensitive.

manner on its own. In general, commenters envisioned some role for the state, and those roles can be broadly categorized as activist and minimalist in nature, though some commenters may disagree as to which they actually advocate. An activist role generally involves the intervention of the state to achieve its goals. A minimalist role generally involves the state allowing the market to develop on its own and stepping in only when the market fails to achieve desired outcomes. For the sake of discussion, the state's current broadband policy would be considered as minimalist.[13]

Activist Role

An activist position follows the general philosophy, succinctly expressed by TIPI, that the state has a "compelling interest in ensuring the development and maintenance of broadband communications networks that reach and serve all Texans in diverse and multiple ways." Commenters advocating an activist role tended to be public, quasi-public, and community-based entities. Some non-incumbent broadband providers also advocated an activist role.

State as Mandater. HNS said "the state needs to legislatively mandate deployment of broadband services in rural Texas," even in areas of the state where terrestrial providers deem broadband uneconomical.[14] Such mandates would serve the "egalitarian provisioning needs of the state." TLA said the private sector would not provide discounted broadband access to public schools and libraries without state mandates. However, the state should examine ways to allow the private sector to gain additional returns on its mandated investments by aggregating demand. Onramp Access said the private sector cannot overcome the effects of "unregulated monopoly control [of] telecommunications in our state." Onramp Access suggested that the state regulate broadband companies and require deployment, or else create competition.

TIPI said the growth of the Internet arose in a regulatory regime where "information service providers were not regulated, but the core network infrastructure was." This regime ultimately provided consumers with the variety of choices that are present in the narrowband market today. TIPI said the state should "apply the same successfully neutral structural policies to broadband networks" and mandate access for unaffiliated information service providers.

State as Networker. CCCN said the state should step in to fund infrastructure and find private sector partners for rural communities. Private sector companies cannot be counted on to provide needed infrastructure in rural areas, so these communities should build community networks and allow demand to "build naturally." Once this occurs, CCCN said, the private sector may step in. CIRA said the state should require demand aggregation and bandwidth-sharing among state and

[13] The state's broadband policy today is largely framed by its implementation of federal mandates related to competitive telecommunications entry, deployment mandates for certain rural areas, discounted rates on advanced services for certain public entities, and direct investment programs like TIF. None of these are particularly "activist," based on the responses provided to the committee. See "Current State Broadband Policy," beginning on page 53.

[14] PURA §55.014 is the state's current deployment mandate. It requires wireline broadband providers to deploy advanced services to groups of customers in its rural territories within 15 months of receiving a "bona fide" request. Such service must be offered at prices, terms, and conditions that are reasonably comparable to a similar service offered by the companies in its urban territories. A discussion of this mandate begins on page 63.

local governments. It should also foster public-private aggregation projects using the public entity as an anchor tenant.

State as Provider. The state should "consider opening the state-administered network to rural and underserved areas" that are "less well served by private providers," TIPI said.[15] The Coalition of Rural Cities, TML, and the Texas Public Power Association (TPPA) said the state should allow municipally owned utilities to provide broadband services. TML said "a city may be the only entity interested in or capable of providing" broadband in rural areas. TPPA said the state should not enact a broadband policy that would "diminish the ability of municipalities or municipally owned electric utilities to provide telecommunications services under current law."[16]

State as Investor. The state should provide "ongoing incentives for financial sustainability until such time as the use of broadband becomes as common as the telephone or electricity for the everyday user," said ORCA. TLA and TSLAC said the state should subsidize the cost of providing broadband to rural areas, public institutions, and residents in low-income urban areas.

An aggressive state role would be appropriate if broadband availability were to be considered an infrastructure issue, said Dr. Mark Cooper. Infrastructure projects often involve large-scale investments typified by huge upfront costs, strong positive externalities, and lower-than-desired returns on private investment. The state can support such a large project—short of building it itself—through loans, grants, tax incentives, franchises, and condemnation power, all with a public interest obligation attached. However, "given the ambiguous legal status of broadband services, it would be easy for the state to spend a lot of resources encouraging deployment of facilities and end up with very little in the way of binding commitments to the public policy goals" justifying the spending of resources, he warned.

Minimalist Role

A minimalist position suggests a state policy of allowing the private sector to develop the broadband market in a largely unregulated environment. The state engages in small initiatives, such as expanding its own use of broadband, but otherwise allows deployment and competition to develop on their own. At most, the state enforces current laws aimed at ensuring access by competitors to broadband networks, although several broadband providers advocated an even smaller state role. Commenters advocating a minimalist role were typically broadband providers and related private sector entities.

State as Demand Creator. ENA said the state should encourage the use of broadband by expanding educational use of computers, increasing the use of telecommuting by state employees, and promoting online government services such as TexasOnline and e-filing. TCTA

[15] See "Public Telecommunications Networks," beginning on page 33, for a description of TEX-AN and other state networks.

[16] PURA §§ 54.201 and 54.202 generally prohibit municipalities and municipally owned utilities from providing telecommunications services to the public. However, they may lease dark fiber on a nondiscriminatory basis to another entity. Several conflicting court rulings address the general notion of prohibiting municipal entry into telecommunications markets. A short discussion of this issue begins on page 36.

agreed that the state should spur the use of broadband by public schools and government offices and expand the online delivery of government services. Several commenters said the state should emphasize the use of TexasOnline.

State as Referee. The American Electronics Association (AeA) said the state "should act as an independent, third party arbiter" that largely allows the market to work and only steps in to help consumers where "disparities may arise." AT&T said the state should "ensure that competition continues to develop by assuring that competitors have access to essential facilities controlled by incumbent local exchange companies."

State as Encourager. Several commenters said the state may need to step in to address market failures that may occur, especially in underserved areas of the state, where broadband services cannot be economically deployed. The typical answer to this problem was targeted tax incentives to lower the cost of deployment in these areas. However, these commenters do not believe that market failure is a certainty and thus do not advocate immediate state intervention.

State as Leveler. Southwestern Bell said the state should develop a technologically neutral policy that would "prevent or remove artificial barriers impeding further broadband investment." Regulations "only increase the cost and risk" of deployment. TTA said the state should "facilitate the acquisition of rights-of-way for the installation of new broadband facilities," remove regulatory barriers, and create incentives to invest.

Verizon said the state has "the highest effective tax rate in the nation for telecommunications services," but any tax reductions or incentives for investment should be provided in a competitively neutral manner.

Hometown Computing said broadband will continue to be deployed and competition will develop "as long as the state does not take action to stop the rollout of broadband, such as subsidizing a specific provider." TCTA said the state should periodically review all of its laws and regulations to ensure consistency with the current state of the competitive marketplace.

Figure 2. Estimated Tax Rate on Telecommunications Services

1.	**Texas**	**28.56%**
2.	Florida	24.47%
3.	Nebraska	24.15%
4.	Missouri	23.79%
5.	Colorado	23.70%
6.	Oklahoma	21.71%
7.	Pennsylvania	21.46%
8.	New York	21.33%
9.	Maryland	20.92%
10.	Kansas	20.59%
11.	Alabama	19.89%
12.	Kentucky	19.70%
13.	Illinois	19.51%
14.	Virginia	19.09%
15.	Washington	19.05%
16.	Georgia	18.98%
17.	North Carolina	18.50%
18.	South Carolina	18.32%
19.	North Dakota	18.24%
20.	Utah	18.09%
21.	Rhode Island	16.95%
22.	West Virginia	16.32%
23.	Wisconsin	16.07%
24.	California	15.99%
25.	Dist. of Columbia	15.75%
26.	Arizona	15.34%
27.	Mississippi	14.40%
28.	Tennessee	14.25%
29.	Louisiana	11.60%
30.	Iowa	10.50%
31.	Oregon	10.25%
32.	Ohio	9.75%
33.	Arkansas	9.67%
34.	South Dakota	9.32%
35.	Minnesota	8.87%
36.	Alaska	8.57%
37.	New Mexico	8.15%
38.	Wyoming	8.01%
39.	Nevada	8.00%
40.	Delaware	7.97%
41.	Connecticut	7.42%
42.	New Hampshire	6.98%
43.	Indiana	6.35%
44.	New Jersey	6.25%
45.	Montana	6.21%
46.	Hawaii	6.14%
47.	Michigan	6.00%
48.	Vermont	5.81%
49.	Maine	5.50%
50.	Massachusetts	5.09%
51.	Idaho	4.94%

Source: Joseph J. Cordes, et al.*, "The Tangled Web of Taxing Talk" (September 2000). State and local taxes and fees are calculated as a percent of an average residential bill.*

Question 5: Community's Role

What is the proper role of the community in achieving a successful state broadband strategy? Should the state broadband strategy include the participation of local governments, local economic development corporations, nonprofit entities, councils of government, school districts, community college districts, other special districts, libraries, or other public or private nonprofit entities? What should be the specific roles of these types of entities?

This question sought to define the role of the community, which was broadly conceived as the citizens and businesses of a particular geographic locality and the various public or public interest entities located there. It was noted that each of the specific entities named have their own roles to play in a community, but a coordinated effort among them may be the key to spurring broadband deployment.

Several themes emerged from the responses, and collectively these themes could describe the community's role in a state broadband strategy. Broadly, communities can:

- Supply the leadership needed to build collaborations, acquire broadband services, sustain those investments, obtain needed expertise, acquire subscribers, and educate citizens;
- Assess the community's broadband needs and determine the extent to which the community's institutions (schools, libraries, government offices, and businesses) are already wired;
- Aggregate demand for broadband, or otherwise demonstrate that demand exists, to spur deployment by the private sector;
- Develop local Internet content, place local government and school information on the Internet, and encourage government's use of electronic communications to citizens;
- Educate citizens about the availability of broadband access points already within the community and about the benefits of broadband connectivity;
- Remove any barriers to competitive carriers for access to public rights-of-way; and
- Provide subsidies, tax incentives, economic development funding, and other incentives to reduce the cost of broadband deployment.

Although no one noted it, another role of communities is to purchase broadband services to meet their demand and local needs.

Where commenters differed was on the question of whether communities should be able to provide broadband themselves. Some commenters representing cities, communities, and certain public entities believed that the prohibitions against cities providing telecommunications services should be lifted.[17] In particular, the Coalition of Rural Cities said municipal utilities should be allowed to provide broadband to their customers, and electric cooperatives were also mentioned as a possible provider in certain areas.

Broadband providers were opposed to municipal entry into the broadband business, except "as a last resort," when no private sector company would step forward to meet a community's demand. In such cases, AT&T said economic development corporations and local governments should be

[17] See *supra*. n. 16. Also, Local Government Code §402.905 authorizes general-law cities to own and operate cable systems. Home-rule cities are not explicitly prohibited from owning and operating cable systems.

"empowered to obtain these services." Southwestern Bell said any cities that became broadband providers should be held to the same rules and requirements of private companies. TCTA agreed that cities should not enter the broadband business, but if they do, they should follow code of conduct rules in place for municipally franchised cable operators.

Question 6: TIF's Role

As of the end of 2001, the Telecommunications Infrastructure Fund Board (TIF) had issued grants totaling $920 million to public schools, libraries, universities, health science centers, not-for-profit healthcare facilities, and community networking initiatives. Under current law, collection of the TIF assessment (currently 1.25 percent of taxable telecommunications receipts) ceases once TIF collections reach a cumulative $1.5 billion. Should TIF continue to play a role in the state broadband strategy? If it has a role to play, how should its mission be expanded or changed to achieve the state's broadband goals? How should TIF be funded?

TIF was created as part of House Bill 2128, 74th Legislature, which significantly overhauled the regulation of the telecommunications industry in Texas and marked the advent of local competition. The TIF assessment is currently applied to wireline telecommunications utilities, including interexchange carriers (IXCs), and wireless providers. Funds collected through this assessment are split evenly into two accounts. The Public Schools Account is dedicated solely to K-12 public school districts and campuses. The Qualifying Entities Account is dedicated to K-12 public school districts and campuses, colleges and universities, libraries, academic health centers, and public or not-for-profit healthcare facilities. Under current law, collection of the TIF assessment will cease at the end of fiscal year 2004, which is the year before the Sunset Commission's recommendations regarding TIF will reach the Legislature.[18]

This question sought opinions as to how, or whether, the TIF fit into a state broadband strategy, either as part of broadband legislation in 2003 or the sunset review process in 2005.

Continuation

Respondents reported varied levels of satisfaction with the TIF's performance and even more varied opinions as to whether, and in what manner, it should continue. Several commenters pointed to specific instances where TIF funding has been instrumental to achieving goals. For example, CCCN declared TIF funding "the only source for rural areas to expand into the 21st century." TIF has been able to leverage its grant money and statewide coverage to fund a series of information resources that individual libraries could not afford on their own, TLA said. This information sharing program, called TexShare, was paid for by a $10 million TIF grant. If bought separately by each library in the state, these resources would have cost $150 million.

Most commenters seemed to believe that TIF had largely completed its current statutory role, which was to fund the infrastructure necessary to connect eligible entities to the Internet. Several

[18] A thorough discussion of TIF's programs can be found in "TIF Board Mission and Performance," beginning on page 77.

commenters noted that any extension of the TIF must fit into a state broadband strategy. The creation and implementation of TIF's grant programs were done without any state broadband strategy, and it resulted in "a patchwork of available technology and telecommunications equipment that begs for the connectivity into a much broader constellation of broadband," said ORCA. A number of commenters suggested the need for TIF continues beyond its initial statutory mandate and lifetime.

In general, broadband providers opposed the continuation of TIF, at least as it is presently financed. TTA called the TIF assessment "an industry-specific corporate tax" that was created to fulfill a narrow public policy purpose. Verizon argued that the assessment is "anti-competitive and ultimately undermines" broadband deployment, as it is not assessed upon the majority of broadband providers. Once the original statutory purpose is fulfilled—TTA said TIF has been "largely successful" in achieving its original purpose—then TIF should end, TTA argued.

Southwestern Bell said the costs of a broader deployment beyond current TIF-eligible entities would be "mind-boggling," and it agreed with TTA that TIF has largely completed its statutory mission. TSTCI said TIF was not structured to achieve universal broadband deployment, and any changes in its mission toward this end would require "a major overhaul." These would include broadening the funding base, allowing ILECs to pass the assessment through to customers, and requiring future grants to be both "technology and carrier neutral," said TTA and several other broadband providers. However, AT&T (as both a CLEC and IXC) demonstrated support for continuing the TIF beyond 2005, noting "TIF continues to help address the increasing technological needs of schools, hospitals, and libraries."

Also opposing continuation is Hometown Computing, a rural ISP operating out of Hamilton, Texas. Hometown Computing said the infrastructure TIF funds "already exists," and the money spent by TIF "does not benefit the community greatly." Several other commenters said the private sector would be a better provider of community networking than a state-supported grant process. These commenters suggested that TIF grants effectively remove the incentive for private investment in these communities.

Changes to Mission

TIF's mission has largely been one of providing the "boxes and wires" and training needed to establish connectivity for its eligible entities. Recently, it has begun to examine the sustainability of its previous grant awards and create collaborative projects, such as its Community Networking grants. Through its working groups, TIF is currently conducting comprehensive needs assessments to determine its eligible entities' ongoing requirements.

When TIF was created in 1995, "the high-speed service offerings available in the marketplace looked very different than they do today," said TCTA, adding that the combination of TIF grants and statutory discounts has the effect of encouraging eligible entities to purchase "more expensive, subsidized services … that may exceed their capacity needs."[19] Any proposed change

[19] PURA §§ 56.028, 57.021, *et seq*.; 58.251, *et seq*.; and 59.071, *et seq*. These provisions specifically mandate or otherwise imply the use of ISDN, T-1, and DS-3 lines, all products offered by ILECs.

in TIF's mission should include an examination of the effects of these statutory requirements and also account for changes in the broadband marketplace that have occurred since 1995, said TCTA.

TIPI said TIF is "well positioned to play an important role in coordinating the development of a broadband strategy," but only if its mission moves beyond the limited connectivity it has provided over the last several years. Specifically, TIPI identified four features of a new TIF mission:

- Evaluate network efficiencies;
- Integrate the telecommunications infrastructure serving the public sector;
- Create metrics for benchmarking service quality throughout the state; and
- Coordinate training needs and opportunities for continuing education in using new technologies.

Other commenters suggested that TIF should focus on using its grants to leverage additional private investment by promoting collaborative grants and extending connectivity beyond eligible entities. TSLAC said it supports the dedication of future TIF funds to the goal of "ubiquitous access" to broadband.

Expansion of Eligible Entities. CCCN said the list of entities eligible for TIF should be expanded to include community action agencies, nonprofit organizations, Head Start programs, housing authorities, economic development corporations, chambers of commerce, alternative schools, and rural state government offices. CIRA said eligibility should be extended to municipal and county government offices. TML said the potential role of cities in expanding broadband availability should also make them a potential candidate for TIF eligibility.[20]

Sustainability. "Connectivity is not a one-time cost," said TLA. "Many of the institutions assisted by TIF will not be able to maintain connectivity without assistance." Sustainability includes not only the hardware and connection charges but also the software and training needed to make use of the connectivity, said TLA. Several other commenters noted that the availability of training and information resources would be diminished without continued funding, especially in rural and isolated areas.

Targeting. ENA said TIF should focus its grants on "outcome-based projects that produce measurable results in educational effectiveness." IP Communications said TIF grantees should be expected "to share access in their communities," and TIF's grant programs should be tailored to broader policy goals that will connect more than the current list of eligible entities. ORCA agreed that TIF should stimulate the creation of connections between the investments it has already made in the community at large, and it should collaborate with other state agencies to develop broader strategies for communities that are awarded grants. CIRA added that TIF should work to bring the Internet backbone closer to rural communities as a way of reducing middle mile costs.

[20] Broadly, TIF eligibility is currently limited to public schools, open-enrollment charter schools, public and private institutions of higher education, public libraries, regional library systems, public or not-for-profit healthcare facilities, and collaboratives of eligible entities. Non-eligible entities may participate in collaborative efforts, but no TIF grant money may be used by non-eligible entities.

Simplification. TSLAC said TIF's "procedures for awarding and distributing grant funds are unlike anything else in state or federal government." Specifically, the commission said the TIF has the following deficiencies:

- Forms are onerous to complete;
- Instructions are often contradictory;
- Reports submitted by grantees appear to have little use; and
- Funds are not made available until after the work has been performed and the equipment ordered.

Onramp Access also expressed frustration at the "daunting" application process. As an example, Onramp Access said it currently provides free Internet access to the Liberty Hill library, but there is little incentive for the community there to apply for TIF funding to extend that connectivity to other users. Several commenters said the administrative costs of applying for the grants and producing required reports can outweigh the grants' benefits. Onramp Access recommended that TIF could simplify the process by developing packages of products that communities could simply choose to apply for.

Funding Sources

Most of the respondents who were not being charged with the current TIF assessment expressed the belief that the current assessment should continue beyond its statutory termination, as is. Some respondents said the assessment should be adjusted to account for changes in the TIF's mission, especially if that mission or the list of eligible entities were to be expanded. TLA said the current assessment meets the "ongoing (and evolving) needs" of current TIF-eligible entities and implied that there would not be enough money for all purposes if TIF's mission were expanded.

ORCA said that a large portion of the TIF grant money was returned to the carriers in the form of fees paid for telecommunications services. The extent to which carriers were essentially able to recover their assessment is not known, ORCA said.[21] TIPI added, "the widespread availability of telecommunications capabilities in the state ultimately is in the best interest … of its telecommunications vendors." TIPI implied that TIF's investments could ultimately be leveraged by the providers into profitable connections. TLA thought the benefits accruing to telecommunications companies should be considered as part of the funding question. Several commenters, including TLA, added that all carriers should be allowed to pass any assessment through to their customers.

The CLEC Coalition argued that "TIF funding should come from all Texans, not merely from users of telecommunications services." Several broadband providers that oppose continuing TIF echoed this concern, adding that any future funding mechanism must apply to all broadband providers equally. Southwestern Bell said "significant disparities already exist among

[21] It has been widely assumed that telecommunications providers receive a significant portion of TIF grant funds. A grant recipient may use TIF funds to pay for up to 10 months of monthly connectivity charges. However, an analysis of TIF expenditure data (conducted months after responses to "Ten Questions" were due) has revealed that telecommunications companies receive less than 1 percent of all TIF grant funds. Wireless providers may receive no TIF funds whatsoever. A discussion of the sources and uses of TIF funding begins on page 78.

competitors regarding the ability to recover current TIF assessments." Any carrier subject to any future assessment should be allowed to pass that assessment through to their customers.[22]

TTA, Verizon, and others argued that funds for expanding the TIF mission should come from general revenue. However, if an industry-specific funding stream were maintained, then it should be assessed on "all players in the broadband marketplace, including manufacturers of computer goods and services, ISPs, and all providers," said Verizon. Several commenters noted that the assessment should be reduced to account for the larger taxable base over which it could be applied. TIPI said an alternative source of TIF funding could come from reassigning the current touchtone service fee to TIF. The fee "is outmoded technologically and indeed has been eliminated in certain states," TIPI said.

In addition to state funding, TML said the state should provide expanded options for local governments to promote broadband availability, such as:

- Allowing economic development corporations to spend their revenues on broadband-related projects;
- Authorizing cities to hold an election to dedicate local sales tax revenue to broadband-related projects (assuming the locality is not already at its sales tax cap);
- Providing for an optional local property tax exemption for broadband infrastructure;
- Enabling municipalities to grant franchise fee abatements for broadband deployment; and
- Including deployment of broadband as a specific purpose for which a neighborhood empowerment zone can be established.

Several of these options were considered by the committee and included in the committee substitute to Senate Bill 1783, 77th Legislature.[23]

Question 7: Middle Mile Costs

A recent National Exchange Carrier Association (NECA) study concluded that "middle mile" costs—the costs of transporting Internet traffic from rural Internet Service Providers to an Internet Backbone Provider—make high-speed Internet service uneconomic in many rural areas.[24] Further, the study warns that middle mile costs could actually increase as take rates increase in many rural areas. Are NECA's conclusions valid? If so, how and by whom should this problem be addressed?

Most of this state's efforts in developing broadband policy have focused on the last mile and the problems faced by rural communities in obtaining this infrastructure. Middle mile costs have largely escaped the attention of policy-makers, yet they may be more crucial to understanding the problems of deployment in rural Texas than last mile issues. This questions sought guidance on the impact middle mile costs may have on broadband deployment.

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[22] ILECs currently do not pass the TIF assessment through to their customers for local exchange services, but it appears that all other telecommunications providers do. See *infra.* n. 176.

[23] Collectively referred to as the "tool kit," the provisions of the proposed new PURA §55.405 would have given communities a series of options for funding broadband deployment projects had the bill become law.

[24] National Exchange Carrier Association, *NECA's Middle Mile Broadband Cost Study* (November 2001).

While many commenters said middle mile costs were a problem, few conveyed the extent to which this problem actually inhibits broadband deployment or identified potential solutions. Part of this is the limited research available on the topic. Unfortunately, the NECA study was never published on the Internet or otherwise made freely available. As such, most commenters did not have the benefit of reviewing the study before answering the question. Consequently, many commenters had no opinion about the study and its specific conclusions. In addition, several independent efforts to quantify the scope of the problem were hampered by the dizzying array of possible combinations of tariffs and fees.[25]

Hometown Computing, a rural ISP, said middle mile costs are "a huge problem which has gone unnoticed by most people." Hometown Computing said the rates for middle mile transport vary widely across its service area, to as much as $40 per mile, and in most cases this transport can be purchased only from a single provider in any location. The PUC should investigate the price variations, Hometown Computing said. Onramp Access, another ISP, said high middle mile costs are "the primary factor inhibiting the delivery of broadband access to rural communities."

Onramp Access suggested several potential solutions that the state could employ, including:

- Setting a regulated rate for middle mile transport at no more than 125 percent of the prevailing market rate in urban areas;
- Developing a statewide Internet backbone that extends the edge of the network closer to rural cities, thus reducing distance and cost;
- Allowing entities such as the Lower Colorado River Authority (LCRA) to provide wholesale transport over their fiber; and
- Encouraging more "peering points," which are interconnections between which providers, or peers, trade data traffic.

Onramp Access said the state should keep its eye on the quality, service, and terms of conditions in addition to price. In other words, the state should not allow a middle mile provider to offer superior quality service to its own affiliates.

The CLEC Coalition said the economics of geography and density of subscribers make it more difficult to recover the cost of higher capacity transport in rural areas. This would lead to higher per-user costs, if the middle mile provider were to recover its costs in a manner that makes investing in the transport infrastructure worthwhile. TIPI said that any approach that keeps traffic local will reduce costs, and the state should establish more peering points so that less data would need to be transported to the Internet cloud.

AeA questioned the study's conclusions given that "there currently exists a capacity glut and prices have fallen to the point where [Internet backbone] providers are concerned they will not recover their investment costs." TCTA said middle mile transport is "priced with no competitive pressures," but noted that there are a "growing number of innovative niche providers" that are beginning to compete with ILECs.

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[25] Middle mile costs are primarily a function of distance, but they are significantly affected by crossing LATA boundaries, connections between carriers, volume, and other contract terms. They affect point-to-point services, which means that every combination of point-to-point routes would need to be costed before any definitive conclusions could be drawn about these costs. PUC staff undertook several valiant efforts to quantify middle mile costs in Texas but, because of the scope of the data involved, were unable to provide any generalizable results.

CCCN said subsidies should be provided to reduce middle mile costs for rural areas. Southwestern Bell cautioned the state not to require ILECs "to bear the entire subsidy burden" or provide "steep discounts" to certain classes of businesses, notably ISPs, similar to those enjoyed by certain public entities.

Question 8: Broadband Map

Would it benefit the state broadband strategy to develop a graphical inventory of public and/or private high-speed infrastructure within the state? If so, what types of high-speed infrastructure and/or services should be included in the graphical inventory? Which players would need to participate for the graphical inventory to be useful?

Several broadband providers said a map or other similar data base would not be useful. Other commenters said a map could be useful in developing policy or assessing needs. AeA said a broadband map "can assist the state in determining which areas or demographic groups are disproportionately underserved." Though TCTA said it could not see "any particular benefit" to a map of infrastructure, it nonetheless may benefit the state to establish a map of service offerings by locality, such as the Ohio E-Com project.[26]

TIPI said any map should capture backbone and last mile facilities, including DSL, cable modem service, fixed wireless facilities, and dedicated lines. Backbone facilities should include points of presence (POPs), Internet peering points, and LATA boundaries. TSTCI said the state should use the data that is already available before embarking on a new data gathering project. Hometown Computing said that any broadband map "would be out-of-date before it is printed." Furthermore, consumers should not need to rely on a state-run broadband map to see if service is available them. "If broadband exists in an area and consumers don't know it, the provider needs a new marketing manager," Hometown Computing said.

Several carriers said participation by the private sector should be voluntary, and any mapping project should take care not to compromise network security or divulge proprietary information. IP Communications said the Texas Open Records Act should be amended to guarantee the confidentiality of any proprietary information that may be used to build the map. Any mapping project should begin with the plotting of state infrastructure and the broadband investment of public entities, such as the LCRA, said several commenters.

AT&T said a broadband map may be unintentionally misleading because "the mere fact that infrastructure is present does not automatically mean that it could be used in connection with the development of a particular broadband network."[27] The Legislative Rural Caucus said a map could help policy-makers evaluate the presence of broadband infrastructure and be an effective tool in developing a state broadband strategy. Consistent with these comments, the committee embarked on a project to map broadband service offerings. Though work on the map is still in

[26] Ohio undertook its mapping project to demonstrate its cities' readiness to support global e-commerce. For more information, visit http://www.ecom-ohio.org (accessed May 19, 2002).

[27] In many communities, public institutions have T-1 or higher connectivity, but there is no broadband service being offered to private entities or consumers. See page 54.

progress as of this report's writing, a preliminary analysis of the data voluntarily provided by broadband carriers begins on page 46 and a list of communities where cable modem service and/or DSL is offered appears in Appendix B, beginning on page 147.

Question 9: Broadband Technologies

How should the state broadband strategy address technical and business differences between broadband technologies, including DSL, cable modems, wireless platforms, and satellite? How do these different technologies contribute toward the success of the state broadband strategy? Should the state broadband strategy seek to establish (or enhance) competition among providers of the same technology or between technologies? Should the state broadband strategy have different goals for competition in urban areas than in rural areas?

This question addresses the need for a state broadband strategy to recognize significant differences in network architecture, regulatory authority, geography, and competitive potential. In a sense, all of the forgoing questions dealt with broadband as a capability rather than as a series of technologies with different applications and potential for use. This question asks commenters how a strategy should be adapted to account for these differences. Their answers touched on a number of federal and state regulatory policies that are discussed in detail in subsequent sections of this report.[28]

Technological Neutrality

Virtually every commenter said a state broadband policy should be technologically neutral, although few commenters provided much guidance on how neutrality would be legislated. TCTA said the state "should leave the technical and business differences between broadband technologies to be addressed in the marketplace," an opinion echoed by many commenters. "By focusing on the demand for broadband services," said AT&T, "the state's broadband policy would be technologically neutral." Demand is not dependent upon a particular kind of technology but on whether consumers have computers, whether broadband service is available, and whether such service is fairly priced and reasonably reliable. Southwestern Bell commended the PUC for its advanced services rulemaking, which it described as a "technologically and competitively neutral policy that acknowledges the diverse geographical needs of the state."[29]

Verizon said the state broadband strategy should "strive for competitive parity between different technologies … as well as differing classes of carriers within a particular technology." TSTCI said it was important for the state to set "service quality goals and standards for speed," but it should not specify the type of technology required. Commenters representing libraries said the state broadband strategy should stress interoperability between platforms so that content, such as data bases developed using the Z39.50 search an retrieval standard, may be utilized by any

[28] Specifically, see "Current State Broadband Policy," which begins on page 53, and "Federal Broadband Initiatives," which begins on page 65.

[29] PUC Subst. R. §26.143. See page 63.

citizen with any broadband connection.[30] Several commenters said interconnection remains an important aspect of the state's policy.

Framework for Competition

TCTA was one of several commenters which said that both intramodal and intermodal forms of competition are needed in the marketplace. While "the success of today's broadband marketplace is directly attributable to … intermodal competition," the competition between ILECs and CLECs offering DSL service over the public switched network has also been an effective force driving deployment, TCTA said. Verizon added that the state should "encourage facilities-based broadband deployment, regardless of technology." The state should do this by reducing obstacles to facilities-based deployment, achieving a "level playing field for all providers," and letting the marketplace "determine the most efficient provider(s) for each area," Verizon said.

AeA said the state should encourage intermodal, facilities-based competition in which "no one market participant controls essential facilities or has the ability to create a bottleneck." The "limited benefits" of intramodal competition "cannot be maintained without strong regulatory oversight that may have unintended consequences," AeA said. Southwestern Bell said the state should avoid policies that "pick winners and losers through application of uneven rules and regulations."

Dr. Mark Cooper warned that "the presence of multiple technologies in the broader market will be mistakenly assumed to represent head-to-head competition in local markets." Because of technological differences between broadband platforms, "they are not likely to compete head-to-head in many markets." Onramp Access said not all technologies available to a particular customer are especially suitable for their needs. A lack of intramodal competition would leave such customers to be served by virtual monopolists.

The CLEC Coalition said intermodal competition "is not sufficient to drive prices down and innovation up." By encouraging intramodal competition, "Texas stands the best chance of developing a marketplace that delivers the most benefits from the broadest number of players." AT&T said the state should continue to provide competitors access to the ILECs' essential facilities because "competing providers of DSL help ensure that consumers have the option of choosing the provider with the best customer service." Absent competitive pressure, a provider has no incentive to improve service, AT&T said. TCTA added that the presence of competitors will "promote customer awareness of broadband services." WorldCom said the state should not embrace deregulation of wireline broadband on a belief that doing so "will somehow incent the incumbent local exchange companies to invest more in broadband technology."

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[30] The Z39.50 search and retrieval standard is a computer-to-computer protocol that allows individuals using one computer system to search the resources of another computer system without needing to know the particular search syntax of that second system. In other words, all a person needs to know is how to use their own computer system, and the protocol will translate their familiar search syntax into the input needed to operate the other system. It is an international standard that was adopted by the National Information Standards Organization in 1988, and it is the standard used by the Library of Congress.

Rural and Urban Considerations

Most commenters either did not address the issue of whether the state broadband strategy should have different goals for rural and urban areas or declared that a technologically neutral strategy would by its nature address geographic diversity. Commenters representing rural areas said the state should recognize the unique needs of these communities and develop a flexible strategy that would meet those needs.

Competition in rural areas may not be a possibility because of geography and population density, said ORCA. Thus, the state broadband strategy should be able to reach a goal of "reasonable access to high speed bandwidth at a sustainable cost and efficiency," even if there is only one potential provider. TTA noted that competition in rural areas is often not sustainable in many business sectors.

Question 10: Success Stories

Are there particular "success stories" that the committee should look to in crafting a state broadband strategy? Please consider both rural and urban areas, as well as the policies and successes of other states or nations.

A number of commenters supplied examples of broadband successes for the committee's consideration. They are presented here in no particular order.

"Cable in the Classroom" is a national public service effort on the part of the cable industry that provides schools with free cable connections and commercial-free educational programming. TCTA said more than 3.4 million Texas students in approximately 5,500 schools have access to these services. AT&T said it also provides free cable modem service to every school and library within its cable service territories. TCTA said cable operators have been able to take advantage of "clustering," whereby several cable systems can be linked together to share broadband connectivity, to bring high-speed Internet access to 40 communities in the Rio Grande Valley. Similar projects are underway in the Corpus Christi and Beaumont/Port Arthur areas.

TCTA also pointed to PowerUP, a national organization aimed at helping young people succeed in the digital age. AOL Time Warner has provided 100,000 free online accounts to the PowerUP program, and Time Warner Cable is committed to providing free cable modem service at PowerUP sites within its service territories. The AT&T Foundation has partnered with the National Association for the Advancement of Colored People (NAACP) and the National Urban League to build community technology centers, including new centers in Houston and Dallas, that provide inner-city communities with technology-skills training.[31]

The Coalition of Rural Cities said several municipally owned utilities are providing Internet access to their customers. Greenville Texas Electric Utility Systems has deployed its own

[31] PowerUP abruptly ceased operations in early November 2002. Many of its technology centers joined the Community Technology Centers' Network and continue to function, but the long-term sustainability of these centers is in doubt.

cable/broadband network and 20-mile fiber optic network, and it began offering cable modem service at about $40 a month in July 2001. Floresville Light & Power Systems provides dial-up Internet access and dedicated lines to customers in its service territory. The coalition said that about 450 of the 2,014 public power systems nationwide offered some form of broadband service.

ORCA said state grants have helped connect the schools, hospital, library, and various other sites in the town of Cuero. More than 1,000 residents have been trained in the use of technology and library resources, and students are able to check out notebook computers which they can use to access the wireless network from home. Telemedicine services are being utilized at school nurses' offices and local physicians' practices. Cuero has even converted an old school bus into a traveling computer lab.

Representative Jim Keffer said the Eastland County Community Networking project is an example of a wireless networking business model that could be successfully adopted by other rural communities. Five communities have banded together to coordinate a county-wide networking effort, which will be overseen by a non-profit organization. Any ISP may use this network to offer high-speed Internet access service. Representative Arlene Wohlgemuth said Texas Unwired Networks has brought broadband to Hill and Bosque Counties and even spurred competition among several other providers.

TIF provided several success stories involving its grantees. Four are summarized here. The Joe Barnhart Bee County Library now offers public access computers, laptops, Internet connectivity, the use of Microsoft Office applications, and training to its users. Darrouzett Independent School District has been able to provide distance learning, including college courses, to its 67 students using a dedicated T-1 line and 25 computers. Before getting a TIF grant, the best the district could provide was dial-up access, at a rate of 15 cents per minute. The Texas Association of Community Health Centers Project has enabled health professionals in rural and underserved areas to receive training and professional consulting services online, thus reducing travel costs and allowing more dollars to be spent on healthcare. The project also established a telepharmacy. With a TIF grant, Sul Ross State University is able to provide distance learning to communities such as Fort Davis, Fort Stockton, Marathon, Marfa, Terlingua, and Van Horn. Students in those communities can check out laptops to access wireless networks, online courses from the university, and the Sul Ross Network.

TLA said TexShare and the Texas Library Connection (TLC) have been successful uses of state funding. TexShare equalizes the provision of information sharing across Texas because libraries in all communities, no matter their size, have access to the same information resources as those in the largest cities. The program uses $10 million to purchase resources that would cost the 517 public library systems and 150 higher education libraries more than $150 million if they purchased them separately. Similarly, TLC provides public schools access to databases that they could not purchase economically on their own. For a $400 commitment, a school library can access $20,000 worth of information resources.

TML identified LaGrange, Ga., which has built a 60-mile fiber network and 150-mile cable broadband network for its businesses and citizens. Having recently lost a textile mill, the city

leaders installed the network to attract new businesses. Marietta, Ohio, formed a nonprofit corporation to provide wireless broadband communications in rural southeastern Ohio after private companies declined to offer service. Even larger cities like Tacoma, Wash., have invested in broadband facilities to provide services to their citizens.

PUBLIC TELECOMMUNICATIONS NETWORKS

The state contracts for an integrated telecommunications network, and several state agencies and institutions of higher education operate networks tailored to their individual needs and programs. Most of these networks are primarily made of leased facilities, although there is some public ownership of infrastructure. Most of the services provided over these networks are purchased from the private sector under the terms of various statewide and agency-specific contracts.

TEX-AN

The Department of Information Resources (DIR) is responsible for obtaining intercity telecommunications services for nearly every Texas state agency.[32] The Texas Agency Network (TEX-AN) is the primary statewide telecommunications system for state agencies. It serves more than 4,500 customers statewide, making it the nation's second largest government telecommunications network.[33] TEX-AN provides an array of telecommunications and advanced services to its customers through contracts with several private telecommunications providers and vendors. The principal vendors are AT&T, which uses the public switched network, and Southwestern Bell, which built a dedicated network to meet the state's needs. Both networks provide unified, scalable, redundant, and cost-effective networking solutions using asynchronous transfer mode (ATM) and frame relay technologies.

The contracts allow the state to reap the benefits of volume buying, including discounts of around 20 percent, but receive the features and functionality of a private network. The current platform is commonly referred to as TEX-AN 2000. DIR this summer negotiated new procurement contracts with AT&T and SBC. These contracts will expire on August 31, 2006.

Most state agencies are required to use TEX-AN services "to the fullest extent possible."[34] Each house of the Legislature, legislative agencies, counties, municipalities, special districts, other political subdivisions, and institutions of higher education may elect to use TEX-AN.[35] Any state agency required to use TEX-AN cannot acquire telecommunications services, or enter into or renew a contract for such services, unless the Telecommunications Planning and Oversight Council (TPOC) grants a waiver. TPOC must evaluate requests for waivers "based on cost-

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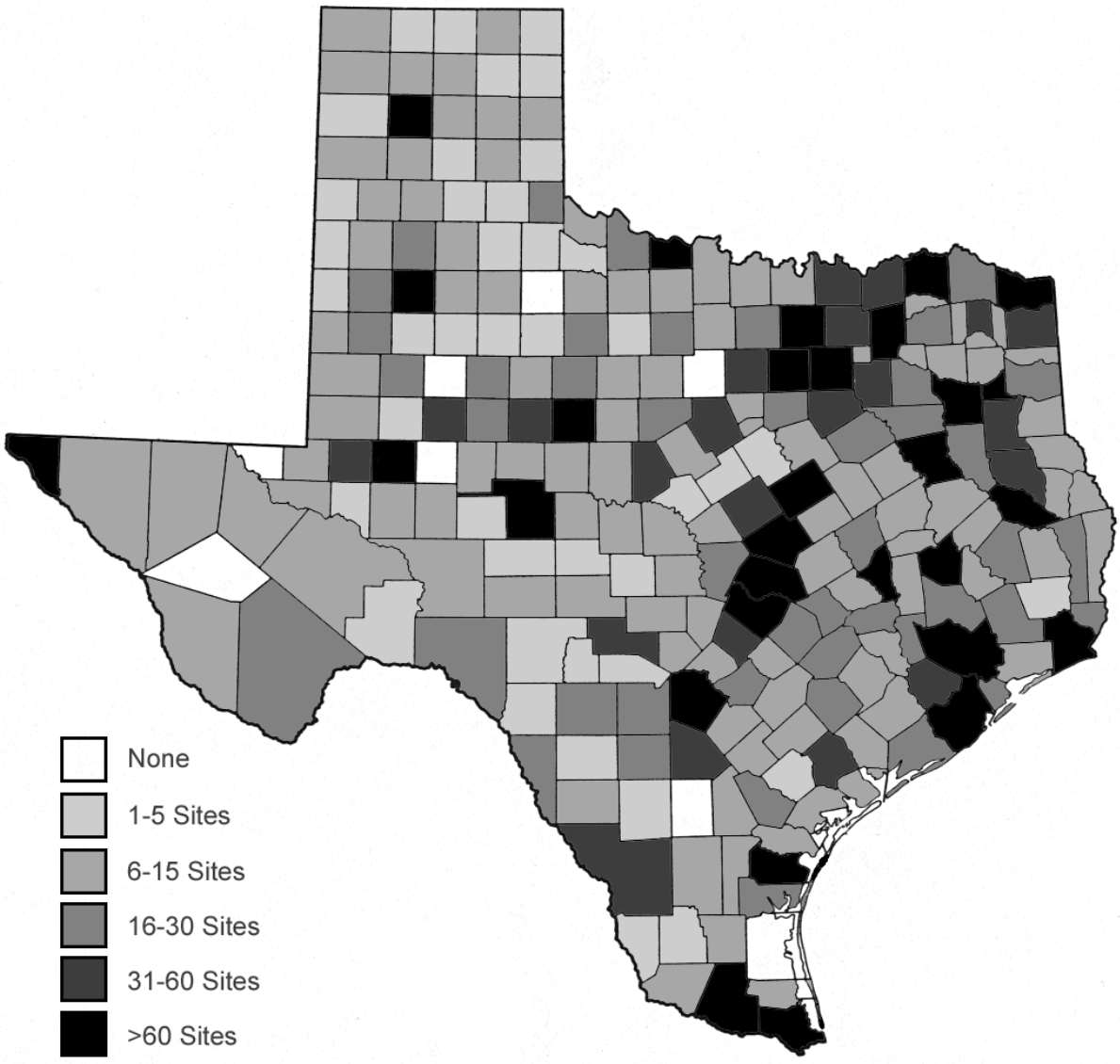
[32] Chapter 2170, Government Code. For more information on TEX-AN, please visit the TEX-AN web site, http://www.tex-an.state.tx.us/ (accessed December 3, 2002). Prior to September 2001, the General Services Commission (GSC) was responsible for providing statewide telecommunications services. Senate Bill 311, 77th Legislature, transferred this responsibility to DIR. This legislation is discussed beginning on page 123.

[33] Telecommunications Planning and Oversight Council, *Strategic Plan for State Government Telecommunications Services 2003-2007* (October 2002) at 13. Only the federal government's system is larger.

[34] §2170.051(c), Government Code.

[35] §2170.004, Government Code and §51.9335(d), Education Code. Institutions of higher education were required to use TEX-AN until September 1, 2001.

Figure 3. Number of TEX-AN Broadband Sites by County



Source: Department of Information Resources

effectiveness to state government as a whole," and a waiver may be granted only for specific periods of time, up to two years or, in certain cases, the length of the contract.[36]

TPOC has granted waivers for the Texas Department of Public Safety to procure broadband via satellite, the Texas Department of Transportation to utilize fiber at its Houston offices, the Texas

[36] §2170.051(d), Government Code and TPOC waiver criteria, available online at TPOC's web site, http://www.dir.state.tx.us/tpoc/docs/policies/waiver.doc (accessed May 3, 2002). TPOC is the successor to the Telecommunications Planning Group.

Department of Health to procure broadband via satellite, and all TEX-AN customers to utilize their choice of wireless and paging equipment. TPOC has delegated authority to grant waivers for high-speed Internet access via digital subscriber lines (DSL), cable modem service, and satellite to the director of DIR's Telecommunications Services Division. Five have been granted to date.

TEX-AN provides broadband connectivity to more than 8,800 sites in 600 communities located in 245 Texas counties. Figure 3 breaks out the number of sites in each county.

Other State Networks

Several state agencies use telecommunications networks that are operated independently of TEX-AN, although some may utilize TEX-AN contracts and services. In general, these networks are only available to governmental entities and provide a variety of information sharing services.

The Texas Education Telecommunications Network (TETN) is a statewide telecommunications infrastructure that utilizes TEX-AN to connect the 20 regional Education Service Centers (ESCs) to the Texas Education Agency (TEA).[37] It uses dedicated T-1 lines to transmit compressed audio, video, and data between these entities. It also allows the ESCs and TEA to connect to schools and other public institutions that are connected to a regional ESC network. Its primary use is videoconferencing. School districts, charter schools, educational professional organizations, institutions of higher education, and other groups (public or private) may use TETN solely for educational purposes that are considered to benefit school districts. It offers no connectivity to the Internet; ESCs provide Internet access to more than 80 percent of the state's school districts over separate networks managed by the ESCs.

The Texas Higher Education Network (THEnet) is operated by the University of Texas System.[38] It was initially created to provide voice, video, and Internet Protocol (IP) data service to components of the UT System. It has since been expanded to include other accredited institutions of higher education, agencies of local government, public and private schools, libraries, and not-for-profit medical facilities. THEnet currently connects more than 330 individual sites to the Internet with a series of dedicated high-speed circuits up to OC-12.[39] Most of the facilities used are leased from private-sector providers, but some are owned by public entities.

The Trans Texas Videoconference Network (TTVN) is a wide area network (WAN) operated by Texas A&M University primarily to provide instructional courses and other similar content to 140 sites in 40 Texas cities.[40] TTVN uses leased T-1, DS-3, and OC-3 lines to connect entities

[37] For more information on TETN, visit http://www.tetn.net (accessed May 3, 2002).

[38] For more information on THEnet, visit http://www.the.net (accessed May 3, 2002).

[39] An OC-12 is a digital optical line capable of transmitting data at 622.08 megabits per second (Mbps).

[40] For more information on TTVN, visit http://ttvn.tamu.edu (accessed April 27, 2002).

in the Texas A&M system, affiliated school districts, state agencies, and nonprofit entities.[41] TTVN does provide Internet access through a contract with Qwest.

Starlink is a statewide teleconference network using satellite technology to distribute training and other distance learning programs to 54 community and technical colleges in Texas. Starlink utilizes downlink facilities that are owned and operated by the various educational institutions, a digital uplink facility in Dallas, and a digital mobile uplink facility. An analog network is also in operation. Several other satellite-based distribution systems, such as T-STAR and StarNet, are used by educational institutions for video programming and instruction. These services do not provide Internet access.

The Texas Health and Human Services Consolidated Network (HHSCN) provides connectivity and local computer network services to the various health and human services agencies in Texas, other Texas stage agencies, several Texas organizations that are not state agencies, and several out-of-state entities.[42] Created in 1994, HHSCN resulted from the consolidation of 14 separate health and human services agency systems. HHSCN serves 221 state and private entities at 861 locations around the state. Staff members from several different state agencies are co-located at 461 sites. More than 50,000 workstations are connected to the HHSCN. It utilizes the TEX-AN contract and has support staff located in more than 60 offices in the state.

The Texas Law Enforcement Telecommunications System (TLETS) connects more than 1,360 local, state, and federal agency locations to provide access to an ever increasing array of law enforcement and criminal justice data bases and applications.[43] A number of federal laws restrict access to many of these data bases and necessitate specific network architecture, security, and controls. TLETS uses a variety of leased and owned facilities, including satellite transmission facilities.

About 15 other state agencies have partitioned networks provided through TEX-AN. Because they are provisioned through TEX-AN contracts, they are not enumerated here.

Municipal Provision of Telecommunications

State law presently prohibits municipalities and municipal electric utilities from offering telecommunications or advanced services for sale to the public.[44] This law was challenged when the City of Abilene petitioned the Federal Communications Commission (FCC) for a declaratory ruling that a provision in the Telecommunications Act of 1996 ("the Act") preempted the Texas law. Specifically, Section 253(a) of the Act provides that "no State or local statute or regulation, or other State or local requirement, may prohibit or have the effect of prohibiting the ability of

[41] T-1 lines transmit data at 1.544 Mbps, DS-3 lines at 44.736 Mbps, and OC-3 lines at 155.52 Mbps.

[42] For more information on HHSCN, visit http://www.tx.net (accessed April 27, 2002).

[43] Visit http://www.txdps.state.tx.us/director_staff/information_management/tlets.htm (accessed May 3, 2002) for more information on TLETS.

[44] PURA §54.202.

any entity to provide interstate or intrastate telecommunications service." The FCC denied the petition on the grounds that Congress had not expressed itself with sufficient clarity to warrant overturning a state's traditional authority to regulate its political subdivisions. The federal Court of Appeals for the D.C. Circuit agreed with the FCC's decision, now known as the *Texas Preemption Order*.[45]

Since that ruling, two different federal courts have drawn different conclusions, most recently in August 2002.[46] In *Missouri Municipal League*, the Court of Appeals for the Eighth Circuit vacated an FCC order denying a petition to preempt a similar Missouri law. The court remanded the order to the FCC for further proceedings. In relevant part, the court did not find the reasoning of *City of Abilene* "persuasive." Indeed, the court concluded, both the meaning of "any entity" and the Congressional intent to preempt state laws were clear.[47] The other case involved the city of Bristol, Va., which sought to have a similar state law struck down. Following the ruling, the Virginia Assembly enacted a new law permitting municipal electric utilities to engage in the business of providing telecommunications services.

Texas is not bound by the Eighth Circuit, so the D.C. Circuit's decision to uphold the FCC in *City of Abilene* still controls. However, the FCC has been directed to engage in proceedings consistent with the Eighth Circuit's ruling. The impact of this upon the *Texas Preemption Order* remains to be seen.

[45] *City of Abilene v. FCC*, 166 F.3d 49 (D.C. Cir. 1999) ("*Texas Preemption Order*").

[46] *City of Bristol v. Earley*, 145 F.Supp 2d 741 (W.D. Va. 2001) and *Missouri Municipal League v. FCC*, No. 01-1379 (8th Cir. 2002). On November 20, 2002, the court in *Missouri Municipal League* denied petitions for rehearing from the FCC and Southwestern Bell. This case will likely be appealed by the State of Missouri to the U.S. Supreme Court.

[47] Specifically, the court, echoing the ruling in *Bristol*, said, "It strains logic to interpret the term 'any entity' in §253(a) [of the Act] to mean 'any entity except for municipalities and other political subdivisions of states.'"

OVERVIEW OF BROADBAND DEPLOYMENT

Broadband is not a technology or a type of service. Broadband is instead a characteristic of a transmission service, defined without regard to a transmission medium or technological platform. The Federal Communications Commission (FCC) considers any transmission technology capable of supporting bandwidth in excess of 200 kilobits per second (kbps) in the last mile, in both the upstream and downstream directions, as a broadband technology. The FCC chose a 200 kbps standard because it is a sufficient speed to transmit full-motion video and allow an end-user to "change web pages as fast as one can flip through the pages of a book."[48] A service that offers broadband transmission is classified as an "advanced service" by the FCC.

Advanced services are themselves a subset of "high-speed" services, which the FCC defines as having the capability to transmit data at speeds faster than 200 kbps in at least one direction, typically downstream.[49] Dial-up Internet access over standard twisted-pair copper telephone wires is a narrowband connection with a maximum data transfer rate of 56 kbps. In between is integrated services digital network (ISDN), a circuit-switched offering that provides an increased transmission rate of up to 128 kbps using standard twisted-pair copper telephone wires.

The Public Utility Regulatory Act (PURA) defines "advanced service" in a different context. An advanced service is "any telecommunications service other than residential or business basic local exchange telephone service, caller identification service, and custom calling features."[50] This definition has been refined by the Public Utility Commission of Texas (PUC) to refer to any retail service capable of transmitting data in the last mile at a speed of at least 200 kbps in one direction and 128 kbps in the opposite direction.[51] Thus, the state's working definition of advanced service in this context is analogous to the FCC's definition of high-speed service.

Broadband Technologies

High-speed Internet access is available over several different types of technologies, although not all types are available in all areas. Not all technologies provide true broadband capability in both directions today, and none of the broadband technologies available today can reach 100 percent of the potential market for broadband consumers. Broadband Internet access is currently available over four different platforms: cable modem service, digital subscriber lines (DSL), fixed wireless, and satellite.

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[48] FCC, *Broadband Today* (October 1999) at 17.

[49] FCC, *Inquiry Concerning the Deployment of Advanced Telecommunications Capability to All Americans in a Reasonable and Timely Fashion, and Possible Steps to Accelerate Such Deployment Pursuant to Section 706 of the Telecommunications Act of 1996*, CC Docket No. 98-146, Second Report, FCC 00-290 (August 21, 2000) ("*Second Report*") at ¶11.

[50] PURA §55.014(a).

[51] PUC Subst. R. §26.143(c)(3).

Cable Modems

Cable operators nationwide have invested more than $60 billion to transform their closed, one-way systems into hybrid systems consisting of fiber-optic and coaxial lines.[52] These hybrid fiber-coaxial (HFC) systems increase transmission capacity, reduce noise, and provide paths for clean two-way transmissions. These new networks allow cable operators to provide more than 100 analog video channels, hundreds of digital video and audio channels, Internet access at speeds up to several hundred times faster than dial-up connections, interactive video and games, and telephony.

According to the National Cable and Telecommunications Association (NCTA), upgraded cable systems pass 75 million homes, or about 75 percent of all homes passed by cable. As of June 2002, there were approximately 16.8 million digital cable subscribers, 9.2 million cable modem subscribers, and 2.1 million cable telephony subscribers.[53]

Under optimal conditions, an upgraded cable system can provide downstream data transmission rates of 27 megabits per second (Mbps) and upstream rates of 10 Mbps. In practice, cable systems deliver rates of several hundred kbps to 1.5 Mbps because the cable network is a shared medium. All subscribers in a given area share bandwidth. Though data transfer rates remain considerably faster than dial-up connections, there is a decrease in performance as more subscribers are online. Transfer rates are also affected by the proportion of the cable system's capacity that is devoted to advanced services. Data transmissions are also vulnerable to interference and degradation caused by individual subscribers' equipment and network connection points.

Cable operators must allocate bandwidth based upon the overall system's limitations and the usage needs of people who are online. During periods of peak usage, there may be substantial performance degradation of the system. However, cable operators have improved their abilities to manage bandwidth and are now able to offer tiered bandwidth products. For example, Charter Communications offers three tiers of service. The low-end service provides up to 256 kbps transmission—about 10 times a typical dial-up connection—for $24.95-$29.95 a month. The middle tier provides 768 kbps downstream and 512 kbps upstream for $34.95-$39.95 a month. The highest tier provides 1 to 1.5 Mbps in both directions for $49.95-$75.95 per month. About 10 percent of Charter's cable modem subscribers choose the highest tier, with the rest split about evenly between the other two service tiers.[54] Tiered pricing is one step cable operators can take to win new customers who would otherwise be discouraged by the high price of one-size-fits-all cable broadband, typically $45-$50 a month.

Cable modem service represented about 63 percent of the 14 million high-speed Internet subscribers as of June 2002.

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[52] Michael Willner, Testimony Before the Subcommittee on Telecommunications and the Internet, House Committee on Energy and Commerce (July 11, 2002).

[53] See the "Industry Statistics" page on NCTA's web site, www.ncta.com (accessed November 3, 2002).

[54] Tiffany Kary, "Cable companies move to tiered pricing," CNET News.com (April 17, 2002).

Digital Subscriber Lines

DSL technology transforms an existing copper loop used for voice grade service into a conduit for high-speed data transmission. The wire's higher frequencies are used to transmit data, and the lower frequencies are used for voice and analog fax transmissions. DSL can function as an Internet connection and telephone line simultaneously. High-speed signals are sent over the upgraded copper loop to a Digital Subscriber Line Access Multiplexer (DSLAM) located at a carrier's central office or a remote terminal. The DSLAM combines the end-user's Internet Protocol (IP) signal with the IP signals of other customers and forwards them onto higher-speed network backbones.

Because it works over existing telephone plant, DSL is significantly less expensive to deploy than HFC cable system upgrades. It is not necessary to upgrade the entire network before service can be sold to customers because subscribers' copper loops are reconditioned individually. Unlike cable modem service, DSL offers dedicated bandwidth, at least to the DSLAM, as the connection is not shared with other users.

DSL technology is not without its limitations. The most significant is signal attenuation, which refers to the dissipation of signal strength as it travels over the copper line. Because higher frequencies are more susceptible to attenuation, the data portion of DSL has distance limitations, which currently range up to 18,000 feet—about 3.4 miles—from the DSLAM. About 80 percent of the country's copper loops lie within this distance of a central office. DSL service is incompatible with bridge taps and load coils, which were installed by telephone companies on portions of their infrastructure to provide improved voice service. Thus, wires fitted with load coils between a customer's premises and the central office will restrict the ability for both the incumbent company and a competitor to offer DSL service to that customer. Thus, not all customers in DSL-upgraded areas may be able to use DSL, also unlike cable modem service.

The largest announced investment in DSL in the U.S. is SBC's Project Pronto, a $6 billion initiative aimed at providing DSL capability to 80 percent of its customers in its 13-state territory by the end of 2002.[55] Essentially, Project Pronto involves the installation of next generation digital loop carriers (NGDLCs) at remote terminals outside central offices. By pushing fiber into neighborhoods, Project Pronto would in essence overcome DSL's distance limitation by moving the starting point closer to potential subscribers. However, SBC slowed its investment in Project Pronto in 2001 and 2002, and DSL is today available to just more than half of its access lines.

In Texas, many of the smaller incumbent local exchange carriers (ILECs) have upgraded their networks and begun to offer DSL. Eastex Telephone Cooperative began offering DSL in December 2000, and it is available to more than 85 percent of its customers. Valley Telephone Cooperative offers DSL services to more than 81 percent of its customers throughout its 7,300-square-mile territory. Valor Telecom has committed to providing DSL service within 15 months of a request for at least 75 access lines, and Sprint has deployed DSL to a significant number of its communities.

[55] SBC, "SBC Launches $6 Billion Initiative to Transform It into America's Largest Single Broadband Provider," News Release (October 18, 1999).

Fixed Wireless and Satellite

Fixed wireless providers can utilize microwave networks to provide high data transfer rates over the last mile between the consumer's residence or business and the network connection. These systems have the potential to deliver high-speed services to residential, rural, and other underserved areas that wireline services cannot economically serve. Despite great promise, fixed wireless services continue to lag behind wired broadband offerings. Many high-profile fixed wireless experiments have ended without wider deployment, and investment in fixed wireless, at least by larger carriers, has fallen off.

Wireless technologies have several economic advantages over wireline systems. Most notably, there is far less physical infrastructure required to roll out a fixed wireless system, and it can be done on a selective, customer-by-customer basis. Thus, wireless providers can enter a market very quickly with far less investment. However, because the spectrum is limited, there are few licenses in any given area for a given band of spectrum. Furthermore, these licenses can be quite costly.[56] However, technological advances may allow for more efficient use of present spectrum licenses, and thus dramatically reduce the acquisition costs for spectrum. In addition, small providers may be able to utilize unlicensed spectrum to offer or share broadband connections within a community. Much of the growth in fixed wireless today appears to be in this realm, known as Wi-Fi. Many wireless community networks are configured using this unlicensed spectrum.

Satellites offer virtually unlimited coverage area, and they may be the best means of reaching rural populations and the only means of reaching remote locations. True two-way broadband capability is offered by at least two satellite providers, and satellite systems are available in all U.S. markets. There must be a clear line-of-sight between the consumer's satellite dish and the satellite, which generally means a clear view of the Southern sky. Satellite broadband is typically more costly than wireline products, both in terms of monthly charges and equipment fees. Unlike other broadband technologies, a satellite broadband connection must be professionally installed.

ISDN

Although integrated services digital network (ISDN) technology is not classified as broadband, or even a high-speed service, it nonetheless offers a qualitatively superior Internet connection to traditional dial-up access. ISDN is a digital, circuit-switched service that can integrate voice, data, and video using twisted-pair copper wires and the public telephone network.

As used today, ISDN comes in two standards. Basic Rate Interface (BRI) is the primary residential offering, and it provides data transfer rates of 128 kbps. As such, it does not meet the PUC's threshold for broadband. Primary Rate Interface (PRI), which is actually a standard T-1 line, offers data transfer rates of 1.544 Mbps. PRI is capable of supporting 24 BRI connections, so it is can be used by Internet service providers (ISPs) or for private branch exchange (PBX)

[56] To date, spectrum auctions have provided the federal government with over $24 billion in revenues.

services. In addition to allowing simultaneous voice and data transmissions, ISDN also provides fast connection times (1 second versus 20 seconds for a dial-up connection) and the capability for videoconferencing.

ISDN requires an end-to-end digital connection along the whole length of the circuit. In 1995, the Legislature began requiring ILECs to upgrade their networks to digital technology and to deploy ISDN upon request.[57] The rate for BRI was also capped by the Legislature at September 1, 1999, levels until September 1, 2005, for most customers.[58] Despite this cap, ISDN is more expensive than either DSL or cable modem service, and it is expensive to deploy. There is little incentive for ILECs to market ISDN, especially to businesses or governmental entities that would otherwise have to obtain T-1 ones, a far more lucrative service offering. There are likely fewer than 200,000 ISDN access lines in the state, but ISDN is likely capable of a wider deployment than any other land-based high-speed platform.

Not all consumers will be able to choose among all these different technologies. More choices between kinds of services or providers are likely to be found in larger metropolitan areas than in rural parts of the state. In a fair number of locations, there may be only one terrestrial high-speed service provider, at least in the near future, with satellite offering a second choice. As mentioned, in some areas, satellite will be the only choice.

National Broadband Deployment

As noted, broadband subscribership continues to show fairly robust growth, especially given the economic downturn over the past 18 months. Much of the available data on broadband adoption comes from the FCC, in the form of its periodic reports on the availability of broadband services, and industry itself, in the form of market reports and financial filings.

FCC Data

Section 706 of the Telecommunications Act of 1996 ("the Act") directs the FCC and the states to encourage the deployment of advanced telecommunications capability to all Americans on a reasonable and timely basis. It requires the FCC to report periodically on the availability of advanced telecommunications capability and, based on the commission's findings, to take action to accelerate deployment, if necessary. The FCC issued its *Third Report* in February 2002.[59]

The FCC concluded that broadband was being deployed "to all Americans in a reasonable and timely manner." Specifically, the FCC found that subscribers of high-speed services were reported in 78 percent of the Nation's zip codes, in which 97 percent of the Nation's population

[57] PURA §55.007(a)(5).

[58] PURA §58.151(11).

[59] FCC, *Inquiry Concerning the Deployment of Advanced Telecommunications Capability to All Americans in a Reasonable and Timely Fashion, and Possible Steps to Accelerate Such Deployment Pursuant to Section 706 of the Telecommunications Act of 1996*, CC Docket No. 98-146, Third Report, FCC 02-33 (February 6, 2002) ("*Third Report*") at ¶1.

resides. As of June 2001, there were approximately 7.8 million residential and small business subscribers of high-speed services, which included 4.3 million subscribers of advanced services.[60] This represents an increase of 5 million high-speed subscribers, including 3.3 million more advanced service subscribers, since the end of 1999.

Figure 4. Percentages of Zip Codes With At Least One High-Speed Line in Service
As of June 30, 2001

No. of Providers	% of Zip Codes
Texas	
None	17%
One to Three	48%
Four	8%
Five	5%
Six	3%
Seven or More	19%
U.S.	
None	22%
One to Three	50%
Four	8%
Five	5%
Six	4%
Seven or More	11%

Source: FCC, Third Report*, Table 10.*

Several groups of consumers could be "vulnerable to not receiving timely deployment" of broadband, the FCC cautioned, including those who are low-income, minorities, rural residents, tribal land residents, or disabled.[61] For example, less than 60 percent of the poorest zip codes had at least one high-speed subscriber, compared with 96 percent of the richest zip codes. Fewer than 37 percent of the most sparsely populated zip codes had at least one high-speed subscriber, compared with 98 percent of the most densely populated zip codes.[62]

According to the FCC's data, Texas had 33 broadband providers as of June 30, 2001. They served a total of 646,839 high-speed lines, of which just over half were cable modem service lines. Slightly less than half were served by wireline technologies (31 percent for DSL with the rest accounted for by other wireline technologies, such as T-1 lines), and an unspecified percentage were served by satellite and fixed wireless providers. This represents a 324 percent increase in lines served in Texas since the end of 1999, compared to 249 percent for the Nation as a whole, suggesting that Texas has provided significant opportunities and markets for companies to invest in and deploy broadband infrastructure.[63]

The data used by the FCC have three main limitations. First, providers were not required to report the number of subscribers or type of services offered within a zip code. Second, providers were not required to distinguish between business and residential subscribers. Third, the data were aggregated in such a manner that it is impossible to determine whether there is a single

[60] Ibid at ¶7.

[61] Ibid at ¶3.

[62] Ibid at Tables 11 and 12. The tables break the Nation's 30,000-plus zip codes into deciles based on population density and median household income. They show the percentage of zip codes within each decile for which at least one high-speed subscriber was reported. For income, the richest decile had a median household income in excess of $53,494. The poorest decile was less than $21,644. For population density, the highest decile had a density in excess of 3,147 people per square mile. The smallest decile had fewer than 6 people per square mile.

[63] Ibid at Tables 6 and 7. Nationwide, there were 9.6 million high-speed lines reported, of which 54 percent were cable modem service, 28 percent were DSL, 16 percent were other wireline (including fiber), and 2 percent were satellite or fixed wireless. Of the DSL lines, 86 percent were provided by regional Bell operating companies (RBOCs), 6 percent were provided by other incumbent local exchange companies (ILECs), and 7 percent were provided by competitive local exchange carriers (CLECs). See Tables 1 and 5 of that report.

provider in a zip code, two providers, or three providers. Thus, there is no distinction between a zip code where three broadband providers serve thousands of residential DSL and cable modem service subscribers and a zip code where a single company serves a single large business subscriber with a single T-1 line.

Industry Data

Broadband deployment and penetration data change rapidly. The data reported by the FCC in its *Third Report* is from June 2001, eight months before the report was issued. It remains the most comprehensive picture of national broadband deployment. However, significant data is reported by broadband providers in the forms of annual and quarterly reports to the U.S. Securities and Exchange Commission (SEC), and periodic surveys and reports by telecommunications consulting firms offer additional glimpses into more recent subscriber numbers.

Based on this data, it appears that there were around 14.2 million subscribers of high-speed Internet access in the U.S. as of June 30, 2002, which represents about a 64 percent increase in subscribers since June 2001. These estimates do not count subscribers to ISDN or T-1 and higher forms of connectivity.

Figure 5. U.S. Broadband Subscribership
in thousands

	June 2001	June 2002	%Chg
Cable Modem	**5,396**	**8,992**	**67%**
Time Warner	1,409	2,466	75%
AT&T Broadband	1,346	1,762	31%
Comcast	676	1,168	73%
Cox	668	1,115	67%
Charter	419	905	116%
Cablevision	368	611	66%
Adelphia	253	460	82%
Others	257	504	96%
DSL	**3,085**	**4,958**	**61%**
SBC	1,037	1,729	67%
Verizon	840	1,500	79%
BellSouth	381	803	111%
Qwest	360	508	41%
Covad	333	357	7%
Broadwing	50	61	22%
Rhythms NetConnections	83	0	-100%
Others	N/A	N/A	N/A
Satellite/Fixed Wireless	**195**	**~250**	**~28%**
TOTAL	**8,676**	**14,200**	**64%**

Sources: SEC filings of individual companies, FCC, Cable Datacom News

Cable modem service providers appeared to have about 63 percent of the overall broadband market, and DSL providers had about 35 percent of the market. The market share of satellite and fixed wireless providers is difficult to estimate—specific subscriber numbers are harder to come by—but was probably less than 2 percent. These numbers include both business and residential customers. The cable numbers may be slightly overstated because some systems included in these totals have some Canadian customers. In addition, because a number for other DSL companies could not determined, the market share of DSL may be slightly underestimated. The number of satellite and fixed wireless subscribers could not be reliably estimated from published data.

Prices for broadband nationally appear to have leveled off after two years of steady increases. During 2001, the average price of cable modem service rose 12 percent to $44.22 from $39.40

per month, and the average price of DSL rose 10 percent to $51.67 from $47.18 per month.[64] In the first quarter of 2002, prices continued to rise. The average price of cable modem service rose another 4 percent to $44.95 per month, and the average price of DSL rose a scant 1 percent to $51.82 per month. Since the beginning of 2001, 91 percent of broadband providers have raised their prices.[65] In the second quarter of 2002, prices held fairly steady. The average price of cable modem service rose a scant 1 percent to $45.31 per month, and the average price of DSL actually fell 1 percent to $51.36 per month. The same study noted that subscriber growth rates "sunk to their lowest percentage levels on record."[66] In response, many cable operators and DSL providers have begun to offer tiered pricing, with lower-priced entry level plans, and ratcheted up promotions for new subscribers.[67]

Broadband Deployment in Texas

Texas had 152,518 high-speed lines (at least 200 kbps in one direction) in service in December 1999, according to the FCC. In June 2000, Texas had 274,130 high-speed lines in service, an 80 percent increase from December 1999. In December 2000, Texas was up to 522,538 high-speed lines in service, a 91 percent increase from June 2000. In June 2001, Texas had 646,839 high-speed lines in service, a 24 percent increase from December 2000, and a 136 percent from June 2000.[68] Unfortunately, there is not a more recent figure reported for the state, and these figures include subscribers who purchase T-1 or greater connectivity, something a typical residential consumer or small business would not be able to afford.

Of the 646,839 high-speed lines in service in Texas as of June 2001, 51 percent were cable modem customers (328,900). Another 31 percent (197,668) were DSL subscribers. The remaining 19 percent (120,271) were other wireline technologies, fixed wireless, and satellite. Taking these out, that meant there were 526,568 cable modem and DSL subscribers in Texas as of June 2001, of which 62 percent were cable subscribers and 38 percent were DSL subscribers. Coincidentally, these are almost the identical shares of cable modem service and DSL nationally.

SBC and Verizon reported national subscriber growth of 67 percent and 79 percent for the 12 months ending June 2002, and cable modem operators reported growth of 67 percent for the same period. If one were to assume a 67 percent growth in subscribership in Texas over the same period, then one would estimate that there were about 550,000 cable modem subscribers and 330,000 DSL subscribers in Texas as of the end of June 2002.

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[64] Sam Ames, "Study: Broadband fees climbed in 2001," CNET News.com (January 17, 2002).

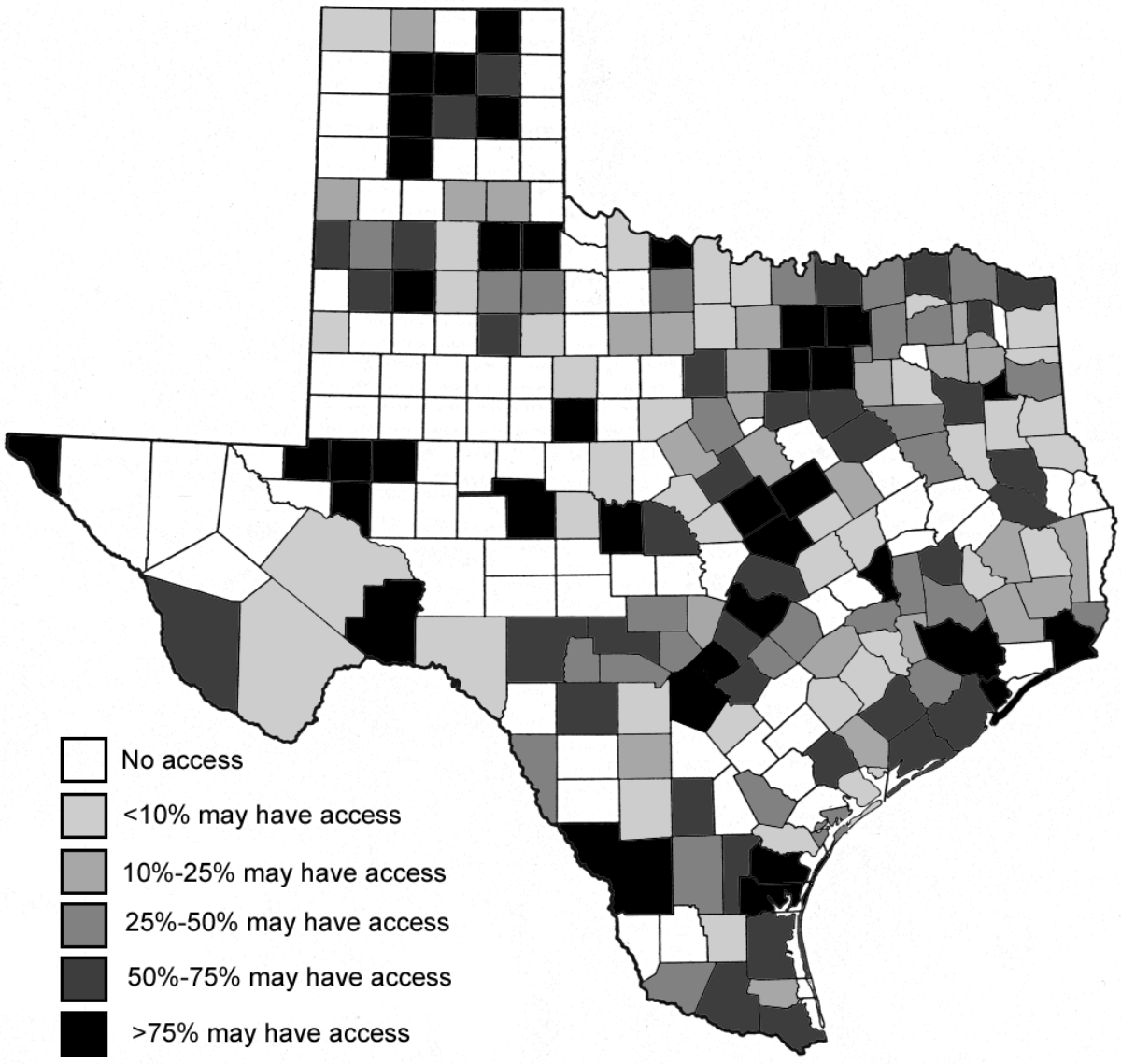
[65] Sam Ames, "Consumer broadband prices keep rising," CNET News.com (May 29, 2002).

[66] ARS, Inc., "ARS, Inc. Study Finds Broadband Prices Held Steady in Second Quarter 2002," Press Release (August 21, 2002).

[67] In November 2002, SBC offered six months of its co-branded Yahoo! DSL at a $13 per month discount, waived activation fees, provided free self-installation kits, and discounted prices for home networking solutions (whereby several computers could share one DSL connection). Yahoo! DSL is also being offered with a tiered pricing structure.

[68] *Third Report* at Table 7.

Figure 6. Estimated Potential Access to Cable Modem Service and DSL by County



Sources: Data supplied by individual broadband providers. Estimate is based on percentage of county population living within municipalities served by at least one cable modem service or DSL provider as of September 1, 2002.

The committee invited broadband providers to submit data on the municipalities in which they offer service in order to better understand broadband deployment patterns across the state. Sixty-seven companies had provided data to the committee as of November 1, 2002. Based upon this data, it would appear that potentially as many as 69 percent of Texans have access to at least one cable modem service *or* one DSL provider, and potentially as many as 60 percent of Texans have access to at least one cable modem service *and* one DSL provider, as of September 1, 2002. Figure 6 shows estimated potential access to broadband services by county.

Data supplied to the committee indicate that cable operators offer high-speed Internet access in 338 Texas communities, in which 62 percent of the state's population resides. Of these 338 communities, 261 of them are located within one of the state's 24 metropolitan statistical areas (MSAs). The remaining 77 communities served by cable modem service are located in counties outside of MSAs. Theoretically, as many as 71 percent of Texans living within an MSA have access to a cable modem provider, but only as many as 12 percent of Texans living outside an MSA have such access.

These estimates represent a maximum potential availability. Not everyone located within the boundaries of a municipality where cable modem service is offered can obtain that service. A cable operator must upgrade its entire network before offering cable modem service, and it is likely that a cable operator's franchise requires it to serve a substantial proportion, if not all, of the city's residents and businesses. As such, the actual figure may not be significantly less than the theoretical figure. The Texas Cable and Telecommunications Association reports that its member companies serve 3.3 to 3.6 million homes and residents, a total that includes multichannel video programming as well as cable modem service.

Data supplied to the committee indicate that local exchange companies provide high-speed Internet access via DSL in 462 Texas communities, in which 66 percent of the state's population resides. Of these communities, 243 are located within an MSA, and 219 are located outside an MSA. Theoretically, as many as 74 percent of Texans living within an MSA have access to a DSL provider, but only as many as 20 percent of Texans living outside an MSA have such access.

Again, these estimates represent maximum potential availability. Because of DSL's technological limitations, only the subset of homes and businesses within approximately 3.4 miles of a DSL-equipped central office or remote terminal can obtain DSL service. It is difficult to estimate the actual number of people who could obtain DSL service. Nationally, SBC and Verizon report that about half of their access lines are qualified for DSL. There are no such numbers available for smaller carriers, and there are no Texas-specific numbers. In Texas, SBC and Verizon have approximately 13 million access lines, so it is plausible that between 6 and 8 million of those lines were DSL-eligible.[69] All other ILECs combined have about 1 million access lines.

Competitive local exchange carriers (CLECs) reported offering DSL in 117 communities in Texas, virtually all of them within an MSA. Data supplied to the committee indicate that as many as 46 percent of Texans may choose to purchase DSL from a provider other than in ILEC. Not all CLECs reported data to the committee, so the full scope of CLECs' offerings is not known. Cable overbuilders report offering competing cable modem service in three communities in Texas, and there are a handful of other communities where two cable operators appear to offer cable modem service, though not necessarily in competition with one another.

[69] According to the PUC's *Scope of Competition in Telecommunications Markets of Texas*, Report to the 77th Legislature (January 2001), there were approximately 1.5 Texans per access line in 1999. If one were to apply that number to the estimates of DSL-eligible access lines, then one would estimate that between 9 and 12 million Texans have access to DSL as of September 1, 2002. Using municipal population as a proxy, one gets 13 million Texans. Thus, one can reasonably guess that DSL is available to 9 to 13 million Texans.

Table 1. Estimates of Access to Broadband Services by MSA

CMSA/MSA	Population	Theoretical Percentage of Population With Access			
		Cable or DSL	Cable Modem	DSL	Cable & DSL
Laredo	193,117	92%	91%	92%	91%
Abilene	126,555	92%	92%	92%	92%
Dallas-Fort Worth	5,221,801	88%	85%	86%	84%
Bryan-College Station	152,415	88%	88%	88%	88%
San Antonio	1,592,383	87%	87%	83%	83%
San Angelo	104,010	85%	85%	85%	85%
El Paso	679,622	84%	84%	83%	83%
Lubbock	242,628	82%	82%	82%	82%
Amarillo	217,858	80%	80%	80%	80%
Odessa-Midland	237,132	78%	40%	78%	40%
Wichita Falls	140,518	76%	0%	76%	0%
Waco	213,517	75%	75%	53%	53%
Corpus Christi	380,783	74%	74%	73%	73%
Austin-San Marcos	1,249,763	74%	73%	70%	70%
Victoria	84,088	72%	72%	72%	72%
Killeen-Temple	312,952	67%	62%	67%	62%
Brownsville-Harlingen-San Benito	335,227	67%	60%	66%	59%
McAllen-Edinburg-Mission	569,463	66%	65%	49%	48%
Houston-Galveston-Brazoria	4,669,571	66%	59%	65%	57%
Longview-Marshall	208,780	63%	59%	51%	47%
Sherman-Denison	110,595	60%	60%	52%	52%
Beaumont-Port Arthur	385,090	60%	1%	59%	0%
Tyler	84,088	57%	55%	50%	48%
Texarkana (Texas only)	89,306	51%	46%	44%	39%
All MSA Counties	*17,691,880*	*77%*	*71%*	*74%*	*69%*
All Non-MSA Counties	*3,159,940*	*24%*	*12%*	*20%*	*8%*
TOTAL	**20,851,820**	**69%**	**62%**	**66%**	**60%**

Sources: Data supplied by individual broadband providers. Estimates are based on percentage of MSA population living within municipalities served by at least one cable modem service or DSL provider as of September 1, 2002.

Data supplied to the committee indicate that there is at least one cable modem service provider and one DSL provider in 230 communities, in which 60 percent of state's population resides. Of these communities, 154 are located within an MSA, and 76 are located outside an MSA. Theoretically, as many as 69 percent of Texans living within an MSA have access to both cable modem service and DSL, but only as many as 8 percent of Texans living outside an MSA have

such access. Again, these estimates represent maximum potential competition between cable operators and DSL providers. There may be many residences and business establishments within these 230 communities with access to only one service, or no service at all.

As one might expect, people living in the state's largest cities and suburbs have the widest array of choices among high-speed Internet access providers. Most rural residents appear to have no terrestrial provider of high-speed Internet access, though as many as a fourth have access to at least one. However, it appears that high-speed Internet access via satellite offers an additional choice to most Texans today, and fixed wireless systems are potentially another solution in less densely populated areas of the state. ISDN, though not a broadband technology, also offers another potential option for improving upon a dial-up Internet connection.

A list of communities for which a cable operator or a DSL provider reported offering service can be found in Appendix B, beginning on page 147. The appendix also contains a list of all companies that responded to the committee's request for data as of November 1, 2002. It would appear that fixed wireless systems are quite sporadic in Texas. Fixed wireless providers reported serving 16 communities, but it is likely that the number of communities served by such systems is significantly greater. Satellite service is believed to be available anywhere in the state, and thus potentially available to 100 percent of Texans. ISDN also appears to be nearly ubiquitously available across the state, and dial-up Internet access appears to be available in virtually every telephone exchange.

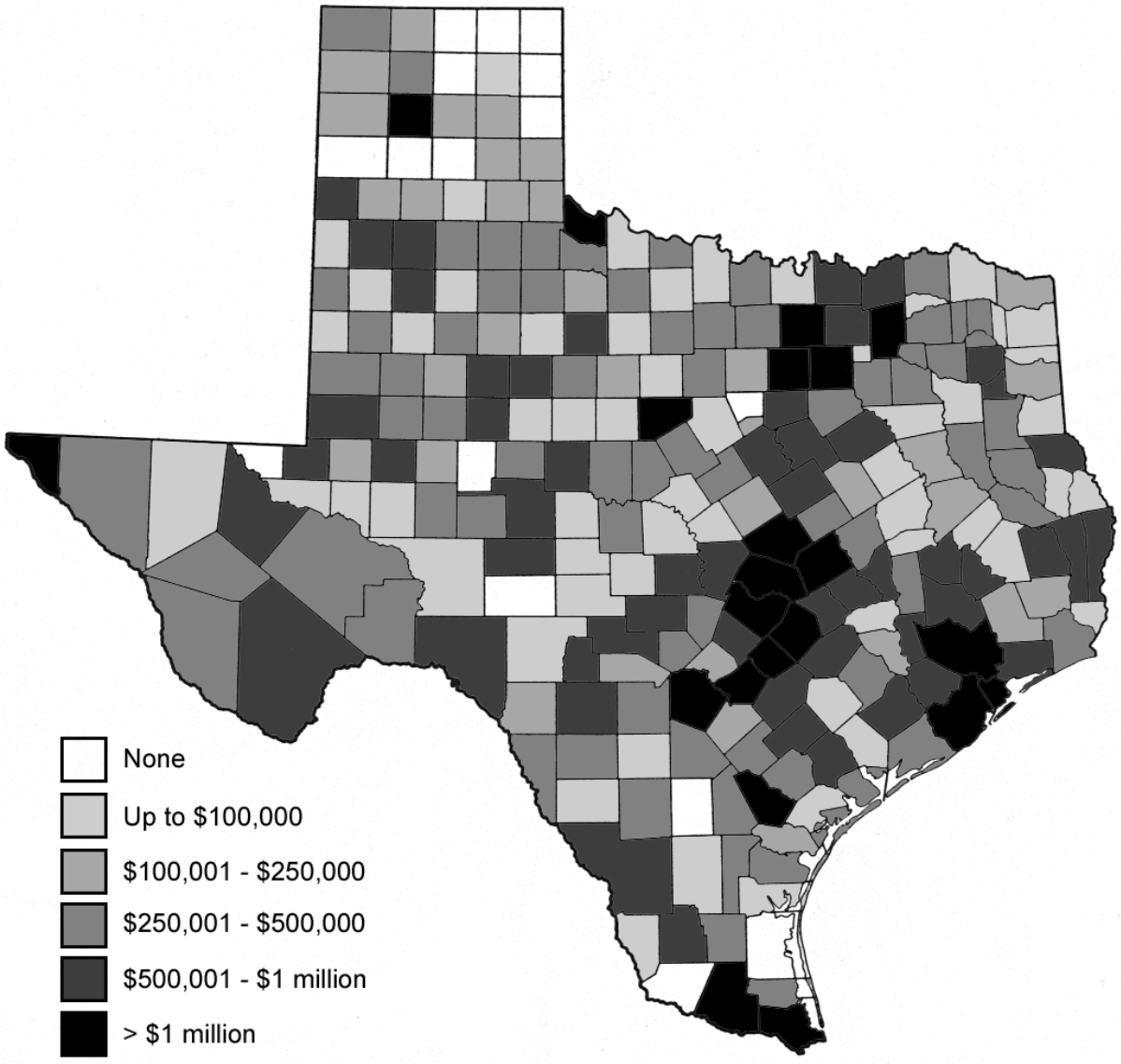
Public Access to the Internet

The preceding discussion focuses on the potential availability of last-mile broadband service to private residences and businesses. These figures do not account for the offering of high-speed Internet access to the public in such places as libraries, senior citizens' centers, schools, other educational centers, and community networking centers. It is difficult to gauge the availability of public Internet access, because its providers are a significantly larger universe of entities than the group of residential and business broadband service providers.

One proxy measure of public access is funding provided by the Telecommunications Infrastructure Fund Board (TIF), particularly through its Library and Community Networking grant programs. Public library grantees and recipients of Community Networking grants are expected to establish or enhance public high-speed Internet access in at least one location in the community. TIF has provided Library grants to at least 440 of the state's 510 public, general use libraries and library systems. In addition, TIF has awarded 244 community networking grants to communities in 166 counties. Combined, these grant awards have totaled $110.5 million since 1997. Figure 7 breaks out the aggregate dollar awards by TIF to public libraries and community networking efforts by county. It appears that TIF has awarded at least one of these types of grants to all but 15 counties.[70]

[70] A discussion of all TIF grant programs begins on page 84. Other TIF grant awards have likely resulted in additional or enhanced public access points. It is likely that TIF could provide an enumeration of public access points in the state that it has funded, but a more comprehensive list of public access points may be outside the capabilities of TIF or any other agency.

Figure 7. Total TIF Grant Dollars Awarded to Public Libraries and Community Networks by County



Source: TIF Board

These grant awards should represent a minimum level of public access to the Internet. Though it is not known how many public access points there are in Texas, it appears that citizens of nearly every county may access a high-speed Internet connection at public locations within their respective counties even if there is no provider of residential or business broadband service in the county.

Even in areas where broadband services are deployed and available to residential consumers and businesses, many people will still be able to access the Internet only from public access locations such as libraries and schools. Significantly, because only slightly more than half of Texas households have a computer, about half of the population could not subscribe to broadband

services even if they were available.[71] Although there are devices that allow high-speed Internet access without a personal computer, nationally the number of high-speed Internet subscribers without computers remains very small. Not all households with computers access the Internet. Less than half of Texas households subscribed to Internet access services, at any speed, in 2001.[72] The establishment and maintenance of public Internet access points provides opportunities to use computer applications and the Internet for citizens who either cannot or do not subscribe to such services at home.

[71] National Telecommunications and Information Administration and Economics and Statistics Administration, *A Nation Online: How Americans Are Expanding Their Use of the Internet* (February 5, 2002) ("*A Nation Online*") at Table H2. Texas ranked 34th among the states in terms of home computer ownership at 53.7 percent. Values ranged from 68.7 percent (Alaska) to 41.9 percent (Mississippi). The median value was 57.5 percent (Kansas).

[72] *A Nation Online* at Table H1. Texas ranked 32nd among the states in terms of households subscribing to Internet access services at 47.7 percent. Values ranged from 64.1 percent (Alaska) to 36.1 percent (Mississippi). The median value was 50.9 percent (Kansas and Ohio). Texas ranked 17th among the states in terms of households and business establishments subscribing to high-speed Internet access service at 8.2 percent. Values ranged from 13.9 percent (California) to 1.7 percent (South Dakota). The median value was 7.1 percent (Illinois).

CURRENT STATE BROADBAND POLICY

The vision and goals of the state's current broadband policy are clearly stated in several sections of the Public Utility Regulatory Act (PURA):

> It is the policy of this state to "ensure that customers in all regions of this state, including low-income customers and customers in rural and high-cost areas, have access to telecommunications and information services … that are reasonably comparable to those services provided in urban areas" and available at reasonably comparable prices. Further, it is the policy of this state to "upgrade the telecommunications infrastructure" and promote the offering of "innovative products and services throughout the entire state." In addition, it is the goal of this state to "facilitate and promote the deployment of an advanced telecommunications infrastructure to spur economic development throughout this state."[73]

These state policies are largely implemented by provisions of House Bill 2128, 74th Legislature, and Senate Bill 560, 76th Legislature. These bills provided incumbent local exchange companies (ILECs) with opportunities to choose reduced regulation of their operations and increased flexibility to change prices and service offerings. In return, electing companies committed to deploying digital telecommunications infrastructure and offering advanced services at discounted rates to schools, libraries, public hospitals, and other similar public interest entities. The Public Utility Commission of Texas (PUC) is the state's regulator of telecommunications services.

Statewide Telecommunications Initiatives

House Bill 2128, 74th Legislature, provided ILECs with the ability to elect "incentive regulation," which has evolved into a more relaxed set of regulatory requirements coupled with greater flexibility to offer new services and adjust prices. In exchange for incentive regulation, electing companies were required to commit to various infrastructure improvement goals. The bill also established minimum requirements for voice-grade services, provided discounted telecommunications service offerings to a variety of public entities, and established the Telecommunications Infrastructure Fund (TIF).

House Bill 2128 also established the basic parameters for competitive entry into local exchange service. These provisions were enhanced by Senate Bill 560, 76th Legislature, which added rural deployment provisions, new customer protections, access charge reform, and rate cap extensions. Relevant provisions of these two bills are discussed below.

Minimum Service Requirements

PURA establishes minimum service requirements for all facilities-based carriers operating in this state. Virtually all of these requirements define standards for plain old telephone service (POTS)

[73] PURA §§ 51.001(g), 58.001(3), 58.001(5) and 58.201(a), respectively.

provided by ILECs over the public switched network, not advanced services. Not later than December 31, 2000, all providers of local exchange service in Texas were required to ensure that all customers have access to:

- Single party service;
- Tone-dialing service;
- Basic custom calling features, such as call waiting and call forwarding;
- Access to the long-distance carrier of their choice without the use of an access code; and
- Digital switching capability in all central offices upon customer request.[74]

Single-party and tone-dialing service are necessary conditions of being able to use a telephone line for the transmission of data, including dial-up Internet access. Digital switching capability is a necessary condition for integrated services digital network (ISDN) functionality, and the digital switching mandate implied ubiquitous ISDN availability by 2001.[75]

Discounted Rates for Public Entities

Dominant ILECs are required to file a tariff with the PUC that includes a 25 percent rate reduction for any telecommunications service that is substantially used for distance learning or information sharing.[76] Entities eligible for these 25 percent discounts include:

- Accredited primary or secondary schools;
- Public institutions of higher education, including any technical institute, junior college, senior college, university, medical or dental unit, or state college;
- Private institutions of higher education that have been accredited by a recognized accrediting entity;
- Texas Education Agency;
- Texas Higher Education Coordinating Board;
- Regional education service centers;
- Public libraries or regional library systems; and
- Libraries operated by institutions of higher education or school districts.

The PUC is generally required to ensure that the discounted rates recover service-specific long run incremental costs (LRIC) and avoid subsidizing educational institutions or libraries.[77] Depending on the ILEC serving the eligible entity, the entity can choose either the 25 percent

[74] The deadline for GTE and Sprint-United to install digital switches in all of its central offices serving exchanges with fewer than 20,000 was two years earlier, December 31, 1998.

[75] ISDN availability has been required for most carriers since February 1995. Specifically, any ILEC that served an exchange with 50,000 access lines was required to provide ISDN to requesting customers in any of its exchanges. House Bill 2128 set deadlines for all ILECs to build the capability of providing digital switched services. Despite the near ubiquitous availability of ISDN, the PUC reported that there were fewer than 200,000 ISDN access lines in the state in 2000. See PUC, *Report to the 77th Legislature on Advanced Services in Rural and High Cost Areas* (January 2001) at 38.

[76] PURA §57.021, *et seq*. and PUC Subst. R. §26.141. Distance learning is the use of telecommunications services to transmit instruction, learning, or training from one site to another. Information sharing is the use of telecommunications services by libraries to share data bases and other educational materials. These discounts are often referred to as Chapter 57 or House Bill 2128 discounts.

[77] PURA §57.023(3).

discount or another discounted rate provided as part of certain ILECs' infrastructure commitments, which are specified below.

Infrastructure Commitments

ILECs may elect one of two types of "incentive regulation," which has evolved into a more relaxed set of regulatory requirements coupled with greater flexibility to offer new services and adjust prices. In exchange for incentive regulation, electing companies were required to commit to specific infrastructure improvement goals and offer discounted rates to specific entities. An ILEC elects incentive regulation by notifying the PUC in writing. Electing companies become known as Chapter 58 or Chapter 59 companies, depending on their election.

Chapter 58 Companies. Electing companies agree that they will not increase the rates charged for basic network services until September 1, 2005, and they will fulfill the infrastructure commitments discussed below.[78] Southwestern Bell, Sprint, Valor, and Verizon (formerly GTE) have elected incentive regulation under Chapter 58.

In addition to the minimum standards described above, Chapter 58 electing companies were required to:

- Provide access to end-to-end digital connectivity to the central office to all customers by December 31, 1996;
- Serve 50 percent of access lines in each exchange with a digital central office switch by January 1, 2000;
- Install only digital (or technologically superior to digital) switches in central offices after September 1, 1995;
- Install only digital switches in central offices that are at least capable of ISDN service after September 1, 1997; and
- Provide backbone facilities between all central offices capable of at least a 45 Megabits per second (Mbps) transmission rate by January 1, 2000.

There are several company-specific infrastructure commitments in addition to those enumerated above. Southwestern Bell was required to install Common Channel Signaling 7 capability in all of its central offices and connect all of its central offices to their respective local access and transport area (LATA) tandem central offices with optical fiber by January 1, 2000.[79] GTE was required to provide digital switching central offices in all of its exchanges by December 31, 1998. According to the PUC, all of these requirements have been met.

Chapter 58 electing companies are required to provide "private network services" at discounted rates upon request of an eligible entity.[80] Private network services include broadband digital

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[78] PURA §58.054. Basic network services are defined in PURA §58.051. They include flat rate residential local exchange service, residential tone dialing service, residential call waiting service, service connection for basic residential services, call trap and trace service, 9-1-1 access, and primary directory listings, among others.

[79] Common Channel Signaling 7 capability removes the signaling function from the voice channel, which improves call processing set-up times and frees circuits for voice and data transmissions.

[80] PURA §58.251, *et seq*.

service capable of transmitting data of speeds of at least 45 Mbps—a T-3 line—and any other customized or packaged network services. Eligible entities include:

- Entities eligible for the 25 percent discount under PURA Chapter 57;
- Public or not-for-profit hospitals;
- Telemedicine centers operated by public or not-for-profit hospitals, including academic health centers;
- Telemedicine centers operated on a nonprofit basis by one or more state-licensed health care practitioners;
- Projects that would have been eligible to be funded by the TIF Board as of January 1, 2001; and
- A consortium or group of eligible entities.

These private network services must be provided under a customer-specific contract at rates equal to no more than 105 percent of LRIC, including installation. Priority must be given to rural areas, areas designated critically underserved either medically or educationally, and educational institutions with high percentages of economically disadvantaged students.

An electing company's rates for these private network services cannot be increased before the sixth anniversary of the company's election of incentive regulation. Southwestern Bell and Verizon reached that anniversary in September 2001. There has been apprehension on the part of eligible entities that these discounts would be withdrawn. At an October 2000 open meeting of the PUC, the commissioners and then-chairman Patrick Wood III discussed the possibility of the expiration of these discounts. The PUC concluded that an electing company would have to withdraw from incentive regulation to end the statutory discounts for private network services. Such a withdrawal would require the revising of numerous tariffs, and there would be a high likelihood that parties would intervene in such a proceeding. In other words, withdrawal from incentive regulation would result in a "protracted analysis of the company's application," something which would discourage such an application.[81]

Chapter 58 electing companies must file a flat monthly tariff for point-to-point intraLATA 1.544 Mbps service—a T-1 line—that is distance insensitive and no more than 105 percent of the service's statewide average LRIC, including installation. These ILECs must provide point-to-point intraLATA 45 Mbps service, the interoffice portion of which must be distance insensitive, to eligible entities at no more than 105 percent of the service's LRIC, including installation.[82] Chapter 58 ILECs must provide to eligible entities broadband digital special access service to

[81] Memorandum to the PUC Commissioners from David Featherston and Janis Ervin (October 17, 2000). PURA §58.021 specifies that an election made under Chapter 58 remains in effect until the Legislature "eliminates the incentive regulation" authorized by that chapter. An electing company serving fewer than 5 million access lines (currently Sprint, Valor, and Verizon) could apply to withdraw their election for good cause, which includes "only matters beyond the control of the company." An electing company serving more than 5 million access lines (Southwestern Bell) cannot withdraw from incentive regulation. These provisions were added by Senate Bill 560, 76th Legislature.

[82] It is important to note that the tariff must be distance insensitive, because such a tariff eliminates high middle mile costs for eligible entities. However, for some communities, the combination of discounted rates and distance insensitive tariffs for some broadband customers may hinder the deployment of broadband to private-sector entities such as businesses and homes. For example, a prospective broadband provider may be unable to overcome high middle mile costs or recover its economic investment if it is unable to attract large bandwidth users, such as schools and libraries, because they will continue to use their discounted T-1 lines.

interexchange carriers at not more than 105 percent of the service's LRIC, including installation. These ILECs must provide expanded interconnection, or virtual collocation, to eligible entities at 105 percent of LRIC, including installation.[83]

State law permits these private network services to be used or shared among eligible entities, but it specifically prohibits the services from being shared with any other customer or resold to any customer. Any service provided by a Chapter 58 electing company to an eligible entity may not be required to be resold to another customer at the discounted rate. However, a service other than the private network service offered by a Chapter 58 electing company through the facilities used to provide that private network service may be resold. Private network services may be interconnected with other similar networks for distance learning, telemedicine, and information sharing purposes.[84]

Recognizing that some eligible entities would require, for at least some time, dial-up Internet connections, state law requires Southwestern Bell to provide toll-free Internet access to schools and libraries located in its exchanges for which toll-free access is not available. The company must provide this service for free until toll-free access becomes commercially available.[85]

Chapter 59 Companies. ILECs serving less than 5 percent of the state's access lines could elect to be regulated under Chapter 59 of PURA.[86] In exchange for increased pricing and service offering flexibility, Chapter 59 electing companies must commit to fulfill an infrastructure plan that prioritizes rural areas, areas designated as critically underserved, and educational institutions with high percentages of economically disadvantaged students.

In addition to the requirements applicable to all carriers, Chapter 59 electing companies were required to:

- Provide access to end-to-end digital connectivity to the central office to all customers by January 1, 2000;
- Serve 50 percent of access lines with a digital central office switch by January 1, 2000;
- Install only digital (or technologically superior to digital) switches in central offices after September 1, 1995;
- Provide backbone facilities between their central offices capable of at least a 45 Mbps transmission rate, such that at least 50 percent of their access lines are served by these high-speed facilities, by January 1, 2000; and
- Install Common Channel Signaling 7 capability in all of its tandem central offices by January 1, 2000.

The PUC could grant waivers to companies that demonstrate such investment is not viable economically, but only after considering the public benefits of investment.

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[83] PURA §§ 58.259-58.262, respectively.

[84] PURA §§ 58.265 and 58.266.

[85] PURA §58.263.

[86] As of September 1, 2002, the following companies had elected incentive regulation under Chapter 59: Big Bend Telephone Co., Century Tel-Lake Dallas, Century Tel-Port Aransas, Century Tel-San Marcos, Fort Bend Telephone, Kerrville Telephone Co., Sugar Land Telephone Co., Texas ALLTEL, and TXU Communications.

Chapter 59 electing companies are required to provide private network services at discounted rates upon request of an eligible entity, similar to the requirement placed on Chapter 58 companies. However, private network services may be provided at 110 percent of LRIC, including installation costs. A customer-specific contract is required. Chapter 59 electing companies must provide a 1.544 Mbps private line or special access service to eligible entities at 110 percent of LRIC, including installation costs.[87]

State law permits private network services to be used or shared among eligible entities, but it specifically prohibits the services from being shared with any other customer or resold to any customer. Any service provided by an ILEC to an eligible entity may not be required to be resold to another customer at the discounted rate. However, a service other than the private network service offered by an ILEC through the facilities used to provide that private network service may be resold. Private network services may be interconnected with other similar networks for distance learning, telemedicine, and information sharing purposes.[88]

Neither set of discounts appears to apply to DSL, cable modem service, fixed wireless, or satellite broadband. By requiring T-1 lines, these discounts may have the unintentional effect of removing significant broadband customers from the marketplace, making it harder for a broadband provider to obtain a return sufficient enough to encourage investment in less densely populated areas of the state.

Texas Universal Service Fund

The Texas Universal Service Fund (TUSF) subsidizes ILECs' provision of basic telecommunications service to high-cost and rural customers, funds the Relay Texas and specialized telecommunications assistance programs for the hearing-disabled, and provides low-income customer discounts on telecommunications services. TUSF is financed by an itemized charge on customers' bills, currently equal to 3.6 percent of taxable telecommunications receipts. About $535 million, or nearly 94 percent of TUSF funds, was paid to ILECs that provide basic telecommunications services to high-cost and rural customers during the first 11 months of fiscal year 2002.[89]

TUSF is not structured to reimburse broadband providers for offering advanced services in rural and high-cost areas, or to reimburse electing companies for their infrastructure commitments.[90] However, Senate Bill 560, 76th Legislature, established a mechanism to provide TUSF reimbursement for non-electing ILECs to recover the cost of discounted T-1 service to the same types of entities eligible for discounted private network services provided by Chapter 58 electing

[87] PURA §§ 59.077 and 59.078.

[88] PURA §§ 59.080 and 59.081.

[89] Carrier-specific reimbursement data is confidential under PURA §56.024, and thus exempt from disclosure under Chapter 552, Government Code.

[90] PURA §56.021 enumerates the purposes for which TUSF was established. PURA §§ 58.206, 58.267, 59.055, and 59.082 provide that TUSF funding cannot be used to reimburse electing companies for their infrastructure commitments.

companies.[91] This reimbursement is equal to the difference between the company's tariffed rate for that service as of January 1, 1998, and the lowest rate offered for that service by any Chapter 58 company. Twenty-nine ILECs receive TUSF reimbursements for this service.[92]

TIF Grants

The Telecommunications Infrastructure Fund Board (TIF) was created by House Bill 2128, 74th Legislature. It receives funds from an assessment—currently 1.25 percent of taxable telecommunications receipts—on wireline telecommunications utilities and wireless providers. These funds are used primarily for grant programs. The Public Schools account is dedicated solely to public school districts and campuses in Texas. The Qualifying Entities account provides grants to public school districts and campuses, colleges and universities, libraries, academic health centers, and public or not-for-profit healthcare facilities. The total amount of funds available for grants is split evenly between the two accounts.[93]

TIF grants cover the costs of hardware and software needed to establish connectivity, training and support, and (typically) the first 10 months of connectivity charges.[94] After the grant period ends, the recipient becomes fully responsible for paying ongoing charges to sustain connectivity. Most TIF grant recipients are required by the terms of the grant to obtain at least a T-1 level of connectivity to the Internet, although alternatives such as cable modem service and DSL are becoming incorporated into the grants. TIF funds may be used in concert with other discounts previously enumerated, and certain grantees, such as libraries, may leverage TIF funds with other grants.

Collaborative grant applications are encouraged, but only eligible entities involved in a collaborative grant can receive TIF funds. All collaborative grantees must sign interlocal agreements, and they must designate a fiscal agent to administer all TIF funding. All fiscal agents must be TIF eligible. In terms of community network grants, non-TIF eligible entities, including private businesses, may participate and receive access to any network built through TIF funding. However, non-TIF eligible entities cannot receive any direct funding from TIF.

For more information of the TIF, please see "TIF Board Mission and Performance," which begins on page 77.

Current State Regulation of Broadband

The state of Texas currently exercises little authority over broadband services. Much of the state's current regulatory authority arises from the PUC's implementation of federal unbundling requirements placed on ILECs and a state law regarding the deployment of advanced services in

[91] PURA §56.028.

[92] The number of companies is derived from data provided by the PUC from the TUSF administrator.

[93] PURA §§ 57.043 and 57.0485.

[94] PURA §§ 57.046-57.0475 detail the statutory uses of TIF accounts.

rural areas under certain conditions. The state has very little authority over non-ILEC broadband providers, such as cable operators, wireless companies, satellite services, and DSL provided by a competitive local exchange carrier (CLEC).

Unbundling Requirements

In general, federal and state law provide that competitive entry into local telecommunications markets may occur in one of three ways. A CLEC may provide telecommunications services through reselling ILEC services, utilizing one or more of an ILECs' unbundled network elements (UNEs), or deploying its own independent switching capability and other infrastructure. For the first two options, the prices charged by ILECs are regulated.

State law requires an ILEC to unbundle its network to the extent the FCC orders, at a minimum; the PUC may order additional unbundling requirements, after considering the public interest and competitive merits of such an order, and following an evidentiary hearing should any party request one.[95] Currently, the PUC requires no further unbundling beyond the federal mandates. All unbundling requirements are placed on ILECs. There is no similar regulatory scheme for any other entity capable of providing broadband services today.[96]

The FCC's rules for unbundling—at least the ones in effect as of this report's writing—prescribe a national list of UNEs that are uniformly applicable in all areas of the Nation.[97] Figure 8 details the UNEs that ILECs must unbundle. Additionally, the FCC has required ILECs to unbundle the high frequency portion of the loop (HFPL), a practice known as "line-sharing."[98] However, a recent federal appeals court ruling has remanded the unbundling rules discussed above and vacated the *Line-sharing Order*. The FCC is in the process of reviewing its UNE rules and could issue a new final order as early as January 2003.[99] Therefore, it is likely that the list of network elements and the circumstances under which unbundling will be required will change during the next year.

Currently, a digital subscriber line access multiplexer (DSLAM) is not a UNE under either federal or Texas state regulations, and no ILEC is required to offer DSL service to competitors at a wholesale rate. Under rules currently in place, a CLEC may utilize UNEs to deploy broadband services, but it must supply its own DSLAM. A CLEC may provide DSL service by leasing the

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[95] PURA §§ 60.021-60.022 and PUC Subst. R. §26.276. The probability that *no* party would request an evidentiary hearing for such a proceeding is remote.

[96] However, state law prohibits municipalities and municipal electric utilities from providing any telecommunications service for sale to the public.

[97] 47 C.F.R. §51.319.

[98] FCC, *Deployment of Wireline Services Offering Advanced Telecommunications Capability and Implementation of the Local Competition Provisions of the Telecommunications Act of 1996*, Third Report and Order in CC Docket No. 98-147 and Fourth Report and Order in CC Docket No. 96-98, 14 FCC Rcd 20912 (1999) ("*Line-sharing Order*").

[99] For a thorough discussion of these developments, please see "Federal Broadband Initiatives," which begins on page 65.

entire loop (and thus providing basic local exchange service as well) or by leasing just the HFPL. Under the latter arrangement, the ILEC continues to provide local exchange service. As noted, this arrangement is subject to federal revision.

Although the FCC's *Line-sharing Order* has been vacated, Southwestern Bell has agreed to continue the status quo in Texas—set out by an abated arbitration award—until the earlier of July 1, 2003, or the date when the FCC issues a final order regarding line-sharing obligations.[100] Southwestern Bell will continue to make the HFPL available to a requesting CLEC for those customers to whom Southwestern Bell provides local exchange service. CLECs must deploy DSL in a manner that does not interfere with the analog voice band transmission portion of the loop. A CLEC may collocate its DSLAM at Southwestern Bell's central office or in a remote terminal (RT) at the fiber/copper interface point.[101] Southwestern Bell is under no obligation to provision DSL-capable loops in any instance where physical facilities do not currently exist. CLECs will pay for any loop conditioning service, and CLECs will own and have sole responsibility for provisioning and maintaining splitters installed in the CLEC's collocation arrangement area. When a CLEC is virtually collocated, Southwestern Bell will install, provision, and maintain splitters under the terms of the virtual collocation tariff.

Figure 8. National List of Items the FCC Requires ILECs to Unbundle

- Local loops, defined as "all features, functions, and capabilities of the transmission facilities, including dark fiber and attached electronics (except those used for the provision of advanced services …) owned" by the ILEC between its central office and the customer premises
- Subloops, which are portions of the loop that can be accessed at terminals in the ILEC's outside plant, such as the pole near the customer premises, the network interface device (NID), or the feeder distribution interface
- NIDs
- Circuit switching, including all features of the switch
- Packet switching, but only to the extent that an ILEC declines to provide a CLEC the ability to collocate a DSLAM remotely
- Dedicated and shared transport
- Signaling networks
- Call-related databases, such as the calling name, 9-1-1, and toll-free calling databases
- Operations support systems, which support functions such as ordering, billing, provisioning, and repair and maintenance
- Loop conditioning

Source: 47 C.F.R. §51.319. The FCC is engaged in a proceeding to revise this list.

The prices for HFPL are also set in the abated *Line-sharing Arbitration* award. The recurring charge for a CLEC to use the HFPL of a Southwestern Bell loop is zero.[102] Other monthly charges include charges for use of the Operation Support System (61 cents), cross connects (20 cents), and, if used, splitters (91 cents). A nonrecurring charge of $20.62 is applied to each

[100] *Complaint of Rhythms Links, Inc., Against Southwestern Bell Telephone Company for Post-Interconnection Agreement Dispute Resolution and Arbitration Under the Telecommunications Act of 1996 Regarding Rates, Terms, Conditions, and Related Arrangements for Line-sharing*, PUC Docket No. 22469, Proposed Revised Arbitration Award (September 21, 2001) ("*Line-sharing Arbitration*"). The PUC has never voted to issue the *Line-sharing Arbitration* and has abated the case. The fact that its terms and conditions are in place today is the result of Southwestern Bell's willingness to maintain the status quo until further proceedings are completed. See *infra*. n. 103.

[101] This is currently required by 47 C.F.R. §51.319(h)(6). As noted, this requirement has been vacated by a federal appeals court, and the FCC is reviewing its UNE requirements.

[102] There is a long story behind this zero price, but it will not be presented here. Suffice it to say, there are vast, vehement differences of opinion about this price, and line-sharing generally, as evidenced by testimony presented during the committee's April 10, 2002, hearing.

initial cross connect ordered, and $19.74 for each subsequent cross connect in an order. As noted, Southwestern Bell has promised to continue to provide HFPL, loop conditioning, and splitters on a line-at-a-time basis in Texas, pending a resolution of the *Line-sharing Order*.[103]

At stake in all of this is the extent to which ILECs will be required to share their DSL facilities with CLECs. For SBC, that architecture is Project Pronto. According to Southwestern Bell, Project Pronto involves the placement of Next Generation Digital Loop Carriers (NGDLCs) at its remote terminals, which effectively increases the range of DSL technologies. In short, Project Pronto extends DSL availability to premises that could not be served via copper wire connected directly to the central office, owing to the distance limitations of DSL technology over copper wires.[104] These NGDLCs are connected to optical fibers that run from the remote terminals back to the central offices, where circuit-switched voice traffic is routed onto the public switched network and packet-switched data traffic is routed for presentation onto the Internet.

DSL is a packet-switched technology.[105] The FCC has established a limited requirement for ILECs to unbundle packet-switching capability "only where" each of the following conditions are satisfied:

- The ILEC has deployed digital loop carrier systems or has deployed any other system in which fiber optic facilities replace copper facilities in the distribution section;
- There are no spare DSL-capable copper loops available to the CLEC;
- The ILEC has not allowed the CLEC to deploy a DSLAM at the remote terminal or other interconnection point, and there is no virtual collocation arrangement at these subloop points; and
- The ILEC has deployed packet-switching capability for its own use.[106]

In regulatory filings, Southwestern Bell contends that none of these four tests is met with the Project Pronto architecture, while AT&T argues that all four tests are met.[107]

Irrespective of the FCC's ultimate determination of its UNE requirements, federal and state laws today provide the PUC with the authority to require access to HFPL or Project Pronto architecture even if the FCC declines to do so on a national basis. It is this possibility that may motivate Southwestern Bell and other ILECs' desire for legislation that would prohibit the PUC from requiring the unbundling and wholesale provisioning of their DSL infrastructure.

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[103] Letter from Jan Newton, President of Southwestern Bell Texas, to the PUC Commissioners (August 7, 2002).

[104] DSL is a distance-sensitive technology. In general, a customer premise must be located within 14,000-18,000 feet of a central office to receive DSL. Using remote terminals, a DSL provider could extend DSL's reach into areas further than 18,000 feet from any central office.

[105] In plain English, a communication is transformed into a string of data; broken into dozens, hundreds, or thousands of tiny "packets" of data; sent along any and all available conduits; and reassembled into the communication at its destination. In other words, the packets do not all take the same route to their destination, and they do not necessarily arrive in the same order. Traditional voice telephone service is circuit-switched, meaning that a single path is established between the sender and receiver, and the signal follows this single path and stays in order the whole way.

[106] 47 C.F.R. §51.319(c)(5). This is part of the package of UNE rules remanded to the FCC.

[107] *Line-sharing Arbitration*, Southwestern Bell's Comments and Request for Public Hearing (April 19, 2002) at 26-31 and AT&T's reply comments (April 26, 2002) at 8-11.

Rural Deployment Mandates

Senate Bill 560, 76th Legislature, established a mechanism for requiring the deployment of advanced services to rural areas by certain telecommunications companies which offer broadband services in urban parts of their certificated territories. Beginning September 1, 2001, an applicable company must provide reasonably comparable advanced services at reasonably comparable prices within 15 months of receiving a "bona fide request."[108] In May 2002, the PUC adopted rules to implement this requirement and established a "competitive response process," by which another carrier could offer advanced services to the community.[109] The competitive response process is intended to provide opportunities for alternative broadband providers to offer services and thus remove the ultimate responsibility from an ILEC.

Under this rule, a rural community seeking advanced services must first submit a written request to the PUC for posting on the commission's web site.[110] This information must contain contact information, the number of lines requested, and the number of customers seeking service. Any interested company may propose a plan to provide advanced services to the community. If no provider has offered such a plan within 60 days of the request's posting, then the community may ask the PUC to establish a proceeding to determine that the community's request is a "bona fide retail request." Though only a bona fide retail request could trigger the deployment mandate, any request for advanced services can utilize the competitive response process.

Under the rule, a bona fide retail request must include a written request for at least 150 lines of advanced services within 14,000 26-gauge cable feet (or its equivalent) of the same central office in a rural area.[111] A bona fide retail request must also state whether a company is already providing advanced services and whether there is an Internet service provider (ISP) capable of providing broadband Internet access to customers in the area covered by the request. If the PUC determines a request is in fact a bona fide retail request, notice of the bona fide retail request shall be published in the *Texas Register*. Within 150 days of publication, the PUC shall determine which company or companies will be required to provide the requested advanced services. A company required to provide advanced services pursuant to these rules could do so directly or through a business arrangement with another provider.

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[108] PURA §55.014. The requirements under this section apply to Chapter 58 electing companies and CLECs that hold either a certificate of operating authority or a service provider certificate of operating authority. This section does not apply to Chapter 59 electing companies or small ILECs governed by Chapter 52. For the purposes of this section, an "urban area" is defined as a municipality with a population of more than 190,000.

[109] PUC Subst. R. §26.143, effective May 15, 2002.

[110] The competitive response web site is http://www.puc.state.tx.us/telecomm/advserv/advservview.cfm (accessed December 3, 2002).

[111] The U.S. standard for measuring wire diameter is the American Wire Gauge (AWG). A 26-gauge wire, a typical type of wire for telecommunications services, is less than 0.5 millimeters in diameter. A higher gauge number indicates a thinner wire. The 14,000-foot standard acknowledges the technical limitations of DSL, which can function properly only within a limited distance from a DSLAM. As defined by the rule, advanced services provide the means of transmitting data at least 200 kilobits per second (kbps) in the last mile in one direction and 128 kbps in the other. Such a standard excludes ISDN.

As of December 1, 2002, no community had submitted a request for a competitive response or a bona fide retail request. However, PUC staff indicated that the city of Brownwood had been preparing such a request, and approximately 200 commercial entities were to have been part of this request. During the process of preparing the request, Verizon worked with community leaders to deploy DSL service to that community beginning in October 2002.

Regulation of Other Broadband Platforms

In general, the state does not regulate cable modem service, fixed wireless, or satellite broadband service offerings. Further, the state's potential authority to regulate cable modem service will diminish should the FCC affirm its finding that cable modem service is an interstate information service and thus under its exclusive regulatory jurisdiction.[112] The FCC has near-exclusive regulatory authority over wireless or satellite carriers.

The state does not regulate the price, either wholesale or retail, of cable modem service. Local franchising authorities (LFAs)—typically city councils—have the authority to regulate the retail price of the basic service tier of multi-channel video programming, which includes all the local broadcast stations, channels set aside for educational and government use, public access channels, and potentially other basic news and entertainment cable networks. LFAs may also assess franchise fees, which are limited to 5 percent of the gross revenues derived from cable services. If the FCC ultimately affirms its conclusion that cable modem service is not a cable service, then it stands to reason that revenues from cable modem service would not be subject to franchise fees. The state exercises jurisdiction over cable operators if they provide local exchange service to the degree that the PUC may regulate a CLEC. Customer protection for cable services is exercised at the local level.

The state has no regulatory authority over issues relating to prices, access (except to approve interconnection agreements related to wireless telecommunications), or content of wireless or satellite services. The state has significantly more authority over wireless systems that receive universal service funding, to the extent that they provide the equivalent of local exchange service, but this authority does not apply to broadband offerings by those companies. The state has potential authority to promulgate customer protection standards for wireless carriers, but most current authority over them is exercised at the federal level. There is no state-specific customer protection authority over satellite services; regulatory authority for satellite is exclusively federal.

[112] FCC, *Internet Over Cable Declaratory Ruling and Appropriate Regulatory Treatment for Broadband Access to the Internet Over Cable Facilities*, CS Docket No. 02-53, Declaratory Ruling and Notice of Proposed Rulemaking, FCC 02-77 (March 15, 2002). A discussion of this proceeding begins on the next page.

FEDERAL BROADBAND INITIATIVES

Several ongoing federal broadband initiatives may impact the state's ability to regulate advanced services, require broadband deployment, or referee competition between broadband providers. Principally, these activities are underway at the Federal Communications Commission (FCC), and the FCC may issue rulings on one or more of these projects during the upcoming legislative session. In addition, several bills were filed in Congress seeking to spur additional deployment of broadband across the Nation. Though most of these bills were not enacted, they may provide guidance into future federal legislation.

FCC Proceedings

The FCC has undertaken several significant notices of proposed rulemaking (NPRM) and other proceedings related to broadband which are discussed below. The FCC has also released its third report on the deployment of advanced services, which is discussed beginning on page 43.

Cable Modem Rulemaking

The statutory classification of cable modem service greatly affects the potential authority of the FCC, the state, and local franchising authorities (LFAs) to regulate aspects of its provision. During the last interim, the Committee on State Affairs studied extensively the proper regulatory framework for access to the Internet provided via cable modems ("cable modem service") and whether the state could mandate "open access" as a matter of policy. An open access policy would require cable operators to provide unaffiliated Internet service providers (ISPs) with access to their networks at nondiscriminatory rates, terms, and conditions. Several parties advocated open access legislation, including Verizon, ISPs, and, at least initially, America Online. The cable industry advocated a policy of regulatory restraint and argued that federal law preempted state authority over cable modem service.

Initially, advocates and opponents of open access contended that cable modem service was a "cable service" under the federal Telecommunications Act of 1996 ("the Act"), as it fell under the definition of "other programming service."[113] For advocates, this position was necessary because most of the activity on open access had occurred at the LFA level as cities passed open access ordinances as part of franchise renewals with local cable operators. LFAs cannot regulate something that is not a cable service. For opponents, calling cable modem service a cable service was desirable because it naturally led to their arguments that common carrier regulations could not be foisted upon cable operators.

[113] 47 U.S.C. §522(6) defines cable service as "(A) the one-way transmission to subscribers of (i) video programming, or (ii) other programming service, and (B) subscriber interaction, if any, which is required for the selection and use of such video programming or other programming service." Other programming service means "information that a cable operator makes available to all subscribers generally" as defined by 47 U.S.C. §522(14).

Over time, the advocates began to argue that cable modem service was a "telecommunications service" under the Act. This would have the effect of cutting the LFAs out of regulating cable modem service, but it would open opportunities for state regulation, as cable operators could be viewed as common carriers to some degree. This argument was the heart of the *Portland* decision, in which the Ninth Circuit ruled that cable modem service was a telecommunications service.[114] Oddly, all sides of the debate expressed support for the *Portland* decision.

Frustrating the committee's inquiry was the lack of any determination by the FCC as to the statutory classification of cable modem service under the Act. Several contradictory court rulings further muddled the picture. Finally, the merger of America Online and Time Warner transformed one of the largest proponents of open access into one of its largest opponents. The committee concluded that the state's authority to require open access was not clear, but the "ultimate determination of the proper classification of cable modem service will be made by the FCC or the courts."[115]

In September 2000, the FCC launched an inquiry into the proper statutory classification of cable modem service.[116] Eighteen months later, the FCC concluded that cable modem service is an interstate information service under the Act and thus subject to FCC jurisdiction.[117] The Act defines information service as "the offering of a capability for generating, acquiring, storing, transforming, processing, retrieving, utilizing, or making available information via telecommunications."[118] As such, cable modem service is not classified as a cable service, and there is no "separate telecommunications service offering to subscribers or ISPs."[119]

The FCC had previously determined that Internet access service is an information service, "because the provider offers a single, integrated service" to the subscriber. This service "combines computer processing, information provision, and computer interactivity with data transport, enabling end users to run a variety of applications," such as electronic mail, newsgroup subscriptions, web-based publishing, and domain name system (DNS) server functions.[120] Following this line of reasoning, the FCC concluded, "as currently provisioned, cable modem service is a single, integrated service that enables the subscriber to utilize Internet access service

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[114] *AT&T Corp. v. City of Portland*, 43 F.Supp.2d 1146 (D.Ore. 1999), reversed on appeal.

[115] See Committee on State Affairs, *Interim Report to the 77th Texas Legislature* (October 2000) at 13-66 for an extensive discussion of the committee's inquiry and the issues surrounding the open access debate.

[116] FCC, *Inquiry Concerning High-Speed Access to the Internet Over Cable and Other Facilities*, GN Docket No. 00-185, Notice of Inquiry, FCC 00-355 (September 28, 2000).

[117] FCC, *Internet Over Cable Declaratory Ruling* and *Appropriate Regulatory Treatment for Broadband Access to the Internet Over Cable Facilities*, CS Docket No. 02-53, Declaratory Ruling and Notice of Proposed Rulemaking, FCC 02-77 (March 15, 2002) ("*Cable Modem NPRM*").

[118] 47 U.S.C. §153(20). In various proceedings, the FCC has refined its understanding of information services to focus on the use of computer applications to act on the content, code, protocol, or other aspects of the service subscriber's information. As such, the FCC distinguishes this type of service from the pure transmission of data over telecommunications facilities. See *Cable Modem NPRM* at ¶36, citing *Federal-State Joint Board on Universal Service*, CC Docket No. 96-45, Report to Congress, 13 FCC Rcd 11501 (1998).

[119] *Cable Modem NPRM* at ¶33.

[120] Ibid at ¶36-38.

through a cable provider's facilities and to realize the benefits of a comprehensive service offering."[121] Because the definition of information service envisions a telecommunications component, the FCC concluded that cable operators do not offer a separate telecommunications service simply by providing cable modem service.[122]

In previous proceedings, the FCC has ruled that Internet traffic is interstate in nature. Its regulation falls under the FCC's authority following an end-to-end analysis of the location of the points among which cable modem service communications tend to travel. Since these points are typically located in other states or nations, the FCC asserted its statutory jurisdiction "over interstate and foreign communications by wire or radio."[123] It further concluded that it should exercise its forbearance authority to prevent the application of common carrier requirements on cable modem service providers. In short, the FCC concluded "the public interest would be served by the uniform national policy that would result from the exercise of forbearance."[124]

In addition to the declaratory ruling, the FCC issued a notice of proposed rulemaking to address its regulatory implications. Specifically, the FCC sought comment on the scope of its regulatory authority over cable modem service, the role of states and local franchising authorities, the need to guarantee ISP access to cable modem service infrastructure, the regulation of pole attachments, the potential impact on universal service, and any effects on subscriber privacy. The FCC asked commenters to address whether it should preempt state and local regulations that could limit its "ability to achieve its national broadband policy."[125] It is not certain when the FCC will issue its final order in this proceeding.

Wireline Broadband Rulemaking

In February 2002, the FCC issued a notice of proposed rulemaking to examine the proper regulatory treatment of domestic wireline broadband Internet access service over DSL.[126] This

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[121] Ibid at ¶38.

[122] Ibid at ¶39-41. Telecommunications service is defined by 47 U.S.C. §153(46) as "the offering of telecommunications for a fee directly to the public, or to such classes of users as to be effectively available directly to the public, regardless of the facilities used." Telecommunications is defined by 47 U.S.C. §153(43) as "the transmission, between or among points specified by the user, of information of the user's choosing, without change in the form or content of the information as sent and received." Common carrier regulation can be applied only to the former.

[123] Ibid at ¶59 and 47 U.S.C. §152(a). The FCC bases its end-to-end analysis primarily on *Implementation of the Local Competition Provisions in the Telecommunications Act of 1996*, CC Docket No. 96-98, *Intercarrier Compensation for ISP-Bound Traffic*, CC Docket No. 99-98, Order on Remand and Report and Order, FCC 01-131 (April 27, 2001), petition for review pending, *WorldCom, Inc. v. FCC*, DC Circuit Nos. 01-1218, *et al*. The ultimate statutory legitimacy of this type of analysis is unclear.

[124] *Cable Modem NPRM* at ¶95.

[125] Ibid at ¶72, 99.

[126] FCC, *Appropriate Framework for Broadband Access to the Internet over Wireline Facilities*, CC Docket No. 02-33, Notice of Proposed Rulemaking, FCC 02-42 (February 2002) ("*Wireline Broadband NPRM*"). For convenience, this paper refers to domestic wireline broadband Internet access service as DSL even though the actual technological specification could be much broader. DSL stands for digital subscriber line.

proceeding is functionally equivalent to the *Cable Modem NPRM*, and it starts from the same basic conclusion as that proceeding. Specifically, the FCC has tentatively concluded that "wireline broadband Internet access services … are information services subject to regulation under Title I of the Act."[127] Further, the FCC tentatively concluded that the transmission component of DSL provided over an entity's own facilities is "telecommunications," not a "telecommunications service," under the Act.[128] Such a determination would seemingly insulate DSL from common carrier regulation placed on providers of telecommunications services and possibly a number of other regulatory requirements intended to foster a competitive market for telecommunications services.

"Information services" were first defined by Congress in the 1996 Act, but the FCC had already begun using the term to define a distinct class of services provided over the telecommunications network in its *Computer Inquiry* line of decisions as far back as 1971.[129] As such, these decisions were made at a time the services provided looked very different that they do today, and they were delivered over a much narrower set of technologies. In *Computer I*, the FCC determined that it should not extend common carrier regulation over "data processing services" because the industry was "characterized by open competition and relatively free entry."[130] Yet, the FCC feared that common carriers might "favor their own data processing activities by discriminatory services, cross-subsidization, improper pricing of common carrier services, and related anticompetitive practices and activities." As such, the FCC required common carriers to provide data processing services through separate corporate entities and prohibited them from offering those affiliates more favorable access to their regulated facilities than non-affiliated data processing service providers.[131]

In *Computer II*, the FCC developed the regulatory categories of "basic" and "enhanced" services to clearly distinguish regulated common carrier services from unregulated data processing services.[132] Basic services were limited to the "offering of transmission capacity for the movement of information," while enhanced services "were described as using computer processing applications to act on the content, code, protocol, or other aspects of the subscriber's information." The FCC found that it had jurisdiction over enhanced services, but it once again

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[127] Ibid at ¶16.

[128] Ibid at ¶17. See *supra*. n. 122.

[129] Ibid at n. 68. A series of FCC decisions beginning with *Regulatory and Policy Problems Presented by the Interdependence of Computer & Communications Services and Facilities*, 28 FCC 2d 267 (1971), aff'd in part sub nom. *GTE Services Corp. v. FCC*, 474 F.2d. 724 (2d Cir. 1973), decision on remand, 40 FCC 2d 293 (1973) ("Computer I") assumed that the telephone network was the primary, if not exclusive, means through which services that came to be known as information services could be provided to end-users. Collectively, these decisions are referred to as the *Computer Inquiry*.

[130] *Wireline Broadband NPRM* at ¶38.

[131] Ibid. This structural separation persists to this day, at least in part. For example, SBC provides DSL through a wholly-owned affiliated company, SBC Advanced Solutions, Inc.

[132] FCC, *Amendment of Section 64.702 of the Commission's Rules and Regulations*, CC Docket No. 20828, Final Decision, 77 FCC 2d 384 (1980), recon., 84 FCC 2d 50 (1980), further recon., 88 FCC 3d 512 (1981), aff'd sub nom., *Computer and Communications Industry Ass'n v. FCC*, 693 F.2d 198 (D.C. Cir. 1982), cert. Denied, 461 U.S. 938 (1983) ("*Computer II*").

declined to regulate them as common carrier services. The separate affiliate provisions of *Computer I* were revisited, and the FCC decided to require them only on AT&T and GTE, the only two common carriers that could engage in anticompetitive activity on a national scale at that time. *Computer I* provisions relating to nondiscriminatory access were retained.[133]

Computer III revisited these issues following the breakup of AT&T.[134] A series of rulings eventually led to requiring GTE and the regional Bell operating companies (RBOCs) to offer the transmission component of information services separately pursuant to tariff. Their affiliated information services providers must acquire transmission for their offerings through this tariff. Smaller common carriers were also required to unbundle their basic services from their enhanced services and offer transmission capacity to unaffiliated providers at nondiscriminatory prices, terms, and conditions. The *Computer III* orders also established requirements for interconnection and open network architecture, service quality, installation and maintenance, and reporting. The FCC has reviewed its *Computer III* decisions on a biennial basis since 1998, and the *Wireline Broadband NPRM* serves at its current biennial review.[135]

The FCC said its current inquiry would be guided by four principles and policy goals. First, the FCC's primary policy goal is to encourage the availability of broadband to all Americans. Second, the overall regulatory framework for broadband must include "any and all platforms capable of fusing communications power, computing power, high-bandwidth intensive content, and access to the Internet." Third, broadband policy should require "a minimal regulatory environment that promotes investment and innovation in a competitive market." Finally, this regulatory framework should be consistent across multiple platforms. However, the FCC noted that "consistent" does not automatically result in "identical regulatory models across platforms."[136]

Broadly, the FCC sought comments as to whether, or to what extent, the unbundling requirements of *Computer II/III* and other common carrier regulations should be applied to DSL. It asked whether the three basic public protection obligations of telecommunications providers—national security, network reliability, and consumer protection—should be applicable to wireline broadband services. It sought comments on the ramifications of declaring wireline broadband service an information service to wireline broadband competition, ISPs, universal service, and states' responsibilities. It is not clear when the FCC will issue its final order in this proceeding.

ILEC Broadband Review

In December 2001, the FCC issued a notice of proposed rulemaking to determine which regulatory safeguards and common carrier obligations, if any, should apply to a wireline

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[133] *Wireline Broadband NPRM* at ¶39-40, citing various paragraphs of *Computer II*.

[134] FCC, *Amendment of Section 64.702 of the Commission's Rules and Regulations*, CC Docket No. 85-229, Report and Order, 104 FCC 2d 958 (1986), *et al*. ("*Computer III*").

[135] *Wireline Broadband NPRM* at ¶41-42, citing numerous FCC decisions.

[136] Ibid at ¶2-7.

broadband provider that is classified as a dominant provider of local exchange service.[137] These safeguards and obligations were "initially developed in a prior era of circuit-switched, analog voice services characterized by a one-wire world for access to communications," the FCC noted, adding that new service offerings via different technological platforms "are becoming increasingly substitutable for the broadband services provided over the traditional telephone network."[138] The current regulatory regime considers an ILEC to be dominant absent a specific finding to the contrary for a particular market or service territory. Wireline broadband is often provided over the same facilities as local exchange service, even though the level of competition may differ between these types of services.

Dominant carriers are subject to a broad range of regulatory requirements aimed at protecting customers and competitors from unjust prices, unreasonable terms and conditions, and discrimination in the provisioning of services. These protections are needed to prevent a company from leveraging its dominant market power into unnecessarily high prices. By contrast, non-dominant carriers are subject to significantly reduced regulation, largely to provide them with as much flexibility as practicable to develop competing services. *ILEC Broadband NPRM* was initiated in response to an SBC petition seeking to have itself declared non-dominant in its provision of DSL.[139] In particular, the SBC Petition identified intermodal competition from cable modem service, which currently enjoys the largest share of the broadband mass market, as a significant justification for its being declared non-dominant in the broadband market.

One of the key analyses in the *ILEC Broadband NPRM* will be the determination of the relevant product market, and the FCC said its goal is "to rigorously define the relevant markets so as to include all reasonably substitutable services."[140] It asked commenters to consider all broadband services offered over all platforms, opine on the willingness of consumers to substitute one service for another, and define classes of customers—typically, mass market (residential and small business) and larger business—within the market. SBC argued that customers in either class had a wide range of substitutable choices, and all of these choices should be considered as part of the relevant markets.[141] A second issue in the product market is its scope geographically. The FCC has previously determined the relevant geographic scope to be local. The SBC Petition sought a determination that the company's entire service territory should be the relevant market scope.[142]

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[137] FCC, *Review of Regulatory Requirements for Incumbent LEC Broadband Telecommunications Services*, CC Docket No. 01-337, Notice of Proposed Rulemaking, FCC 01-360 (December 2001) ("*ILEC Broadband NPRM*"). The committee notes at the outset that the FCC referred to broadband as "telecommunications services" in the title, though, apparently, not in the statutory sense.

[138] Ibid at ¶4.

[139] SBC Petition for Expedited Ruling That It Is Non-Dominant In Its Provision Of Advanced Services And For Forbearance From Dominant Carrier Regulation of Those Services (October 3, 2001) ("SBC Petition").

[140] *ILEC Broadband NPRM* at ¶18.

[141] Ibid at ¶21-22. Specifically, SBC said DSL, cable modem service, terrestrial wireless, and satellite broadband comprised the product market for the mass market class. In terms of the larger business class, SBC identified frame relay, asynchronous transfer mode (ATM), gigabit Ethernet, switched multimegabit data service, and remote local area network service as the product market.

[142] Ibid at ¶27. SBC provides service in 13 states.

The second key analysis will be the determination of the ILEC's market power. The FCC has primarily focused on two types of behavior, both related to the ability to raise prices, that indicate an exercise of market power. In the first case, a dominant company can exert market power and force an increase of prices by withholding service. In this instance, it would be noticed as an unwillingness to deploy infrastructure and offer services so as to cause price increases analogous to those that occur whenever there is a shortage of a good or commodity. In the second case, a dominant company can force an increase in prices by raising the costs borne by competitors or restricting their output. In this case, it would result in a dominant company's increasing the costs of access to "bottleneck facilities," or denying access altogether, such that competitors cannot offer a better price than the dominant company. Either of these can result in prices to end users that contain the equivalent of monopoly rents.[143]

The outcome of these two analyses will lead more or less naturally into the determination of whether an ILEC should be regulated as a dominant carrier in with respect to the broadband market. The more narrowly the market is defined, then the more likely that the FCC would determine that an ILEC was a dominant provider. However, it would appear that the FCC is thinking more broadly, as it stated that the current regulatory scheme for dominant carriers "may be poorly suited to achieving the Act's goals of promoting infrastructure investment." The FCC did seek comment on whether, and to what extent, competitive safeguards should be extended even if an ILEC were determined to be non-dominant in the broadband market.[144] It is not known when the FCC will issue an order on the SBC Petition.

Triennial UNE Review

The Act required ILECs to unbundle certain individual network elements (UNEs) and provide these to CLECs on terms prescribed by the FCC and the states.[145] In determining which network elements must be unbundled, the FCC is charged to consider, at a minimum, whether allowing a CLEC access to network elements is necessary and whether failure to provide access would impair a CLEC's ability to provide the services it seeks to offer.[146]

In 1996, the FCC issued its first unbundling order to implement the local competition provisions of the Act.[147] The *First UNE Order* constructed ILECs' obligations rather broadly. It required

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[143] Ibid at ¶28-29. In classic economic theory, a rent occurs when a supplier of a product increases the price without regard to demand and offers no additional quantity. In other words, the price increase is not a function of either increased demand or reduced supply. Thus, the firm collects an added return, called a rent or an economic surplus. In a freely functioning market, the presence of a rent, or an economic surplus, should trigger the entrance of new firms into the market. If a firm cannot gain entry, then the original supplier has no incentive to reduce price.

[144] Ibid at ¶41-44.

[145] 47 U.S.C. §251(c)(3) provides that an ILEC has "the duty to provide, to any requesting telecommunications carrier for the provision of a telecommunications service, nondiscriminatory access to network elements on an unbundled basis at any technically feasible point on rates, terms, and conditions that are just, reasonable, and nondiscriminatory."

[146] 47 U.S.C. §251(d)(2).

[147] FCC, *Implementation of the Local Competition Provisions of the Telecommunications Act of 1996*, CC Docket No. 96-98, First Report and Order, 11 FCC Rcd 15499 (1996) ("*First UNE Order*") *aff'd in part and vacated in*

ILECs to provide access to a national list of UNEs to requesting CLECs "where technically feasible."[148] The U.S. Supreme Court vacated the FCC's list of UNEs and remanded, specifically because the FCC had not considered the potential availability of elements outside the ILEC's network and had too broadly construed its necessary and impair standards. In response to the Court's ruling, the FCC issued the *UNE Remand Order* to specifically identify instances where CLECs are impaired without access to the ILEC's network.[149] In this order, the FCC determined that a proprietary network element is necessary if lack of access to the element would "preclude a requesting carrier from providing" services, as a practical, economic, and operational matter. Such an analysis must take into consideration the availability of alternative elements outside the ILEC's network, including the self-provisioning of the element by the CLEC. With respect to non-proprietary network elements, the failure to provide access would "impair" a CLEC if it "materially diminishes" its abilities to provide services. Again, the analysis requires consideration of alternative means of providing the element, including obtaining it from a third party.[150]

Surprisingly, the narrower standard employed in the *UNE Remand Order* led to a larger national list of elements that an ILEC must unbundle, including local loops, subloops, network interface devices, switching, transport, signaling, operations support systems, and loop conditioning.[151] The unbundling requirements specified by the FCC are applicable uniformly in all areas of the Nation, except an ILEC is generally not required to provide packet switching and there is a narrow exception to the circuit switching requirement.[152] In a separate order, the FCC also required ILECs to unbundle the high-frequency portion of the loop (HFPL), which results in two companies providing services over the same local loop, or "line-sharing."[153]

With respect to local telecommunications competition in Texas, CLECs have relied heavily on UNEs as a strategy to market entry because the cost of reconstructing even a portion of an ILEC's network is prohibitively high. As of December 31, 2001, CLECs served 16 percent of all access lines in Texas, the highest market penetration for any state except for New York.

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part sub nom., *Competitive Telecommunications Ass'n v. FCC*, 117 F.3d 1068 (8th Cir. 1997) and *Iowa Utils. Bd. v. FCC*, 120 F.3d 753 (8th Cir. 1997) ("Iowa Utils. Bd."), *aff'd in part and remanded, AT&T v. Iowa Utils. Bd.*, 525 U.S. 366 (1999), *on remand, Iowa Utils. Bd. v. FCC*, 219 F.3d 744 (8th Cir. 2000), *petitions for writ of certiorari granted, Verizon Communications Inc. v. FCC*, 121 S. Ct. 877, 878 (2001).

[148] Ibid at 277-88.

[149] FCC, *Implementation of the Local Competition Provisions of the Telecommunications Act of 1996*, CC Docket No. 96-98, Third Report and Order and Fourth Further Notice of Proposed Rulemaking, 15 FCC Rcd 3696 (1999) ("*UNE Remand Order*"). In this order, the FCC announced that it would review its UNE policies every three years.

[150] Ibid generally.

[151] See Figure 8 on page 61 for a list of required UNEs.

[152] The exception to circuit switching applies to local circuit switches serving customers with four or more access lines in the highest-density zone in any of the largest 50 Metropolitan Statistical Areas (MSAs). See *UNE Remand Order* at ¶278-299.

[153] FCC, *Deployment of Wireline Services Offering Advanced Telecommunications Capability and Implementation of the Local Competition Provisions of the Telecommunications Act of 1996*, Third Report and Order in CC Docket No. 98-147 and Fourth Report and Order in CC Docket No. 96-98, 14 FCC Rcd 20912 (1999) ("*Line-sharing Order*").

According to information provided by the PUC, 67 percent of CLEC lines in Texas are provided through a combination of UNEs, 19 percent are provided exclusively through a CLEC's own facilities, and 14 percent are provided through straight reselling of an ILEC's services. Nationwide, CLECs rely less on the UNE option. Nationally, the UNE option comprises about 47 percent of all CLEC access lines, or about two-thirds the Texas experience. CLECs nationally provide 31 percent of access lines over their own facilities, and 22 percent are resold. CLECs typically enter a market by reselling, then migrate to UNE-based solutions as their business grows, and eventually—in theory, anyway—evolve into a facilities-based provider that places fewer and fewer demands upon the ILEC and its network.

In December 2001, the FCC initiated its first triennial review of its policies related to the provision of UNEs "to ensure that [its] regulatory framework remains current and faithful to the pro-competitive, market-opening provisions of the 1996 Act."[154] Specifically, the FCC said its review would be a comprehensive examination of its policies in light of current market conditions that would ultimately lead to "a more targeted approach to unbundling that identifies more precisely the impairment facing requesting carriers."[155] In the *Triennial UNE Review*, the FCC also sought guidance as to its application of the necessary and impair standards.

With respect to these standards, the FCC sought comment as to how it should account for the availability of elements outside the ILEC's network. For example, would the availability of an element's functionality in another technological platform, such as cable telephony, remove an ILEC's obligation to unbundle that element in its own network? The FCC noted that the Act places no limitation on the types of technology that must be considered as part of an unbundling analysis. In particular, the FCC is concerned that its policies with respect to UNE provisioning may be undermining its policies with respect to the deployment of advanced services.[156] The FCC also sought comment as to whether, or in what manner, its analysis should be more "granular" in accounting for local factors, including geography and competition.[157] Finally, the FCC sought comment as to whether it should include discrete triggers that would change an ILEC's obligations, either nationally or locally.

On May 24, 2002, the U.S. Court of Appeals for the District of Columbia remanded the unbundling and line-sharing rules to the FCC.[158] The court ruled that the FCC's unbundling requirements were too broad and its working definition of "impair" presented too low of a standard to require unbundling. Further, the court found that the FCC "completely failed to consider the relevance of competition in broadband services coming from cable (and to a lesser extent satellite)" in issuing the *Line-sharing Order*. The impact of this decision is unclear,

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[154] FCC, *Review of the Section 251 Unbundling Obligations of Incumbent Local Exchange Carriers*, CC Docket No. 01-338, *Implementation of the Local Competition Provisions of the Telecommunications Act of 1996*, CC Docket No. 96-98, and *Deployment of Wireline Services Offering Advanced Telecommunications Capability*, CC Docket No. 98-147, Notice of Proposed Rulemaking (December 20, 2001) ("*Triennial UNE Review*") at ¶1.

[155] Ibid at ¶2.

[156] Ibid at ¶23-28.

[157] Ibid at ¶35-39.

[158] *US Telecom Ass'n v. FCC*, DC Circuit No. 00-1012 (May 24, 2002).

especially considering the current proceedings already underway at the FCC and its leanings in those matters. It was nonetheless embraced by ILECs and generally regarded as ominous by CLECs. The FCC may issue a final order on its *Triennial UNE Review* and the remanded *Line-sharing Order* as early as January 2003.

Congress

Several bills were filed in Congress that would reduce the current ability of the FCC and the states to regulate broadband services, and another bill sought to provide several billion dollars in grants and loans to reduce the costs of deployment in rural and underserved areas. All but one of these bills died at the end of the 108th Congress, but they may nonetheless provide some insight into the scope and content of future federal legislation.

Tauzin-Dingell

On February 27, 2002, amid the spending of tens of millions of dollars by lobbyists in support and opposed, the U.S. House of Representatives passed H.R. 1542, the Internet Freedom and Broadband Deployment Act of 2001, by a vote of 273-157. The bill, authored by Representatives Billy Tauzin (R-La.) and John Dingell (D-Mich.), would have prohibited the FCC and the states from regulating "the rates, charges, terms, or conditions for, or entry into the provision of, any high speed data service, Internet backbone service, or Internet access service" except to the extent provided by the bill. The bill would have defined a high-speed data service as "any service that consists of or includes the offering of a capability to transmit, using a packet-switched or successor technology, information at a rate that is generally not less than 384 kilobits per second in at least one direction."

It would have required, at least nominally, ILECs to continue to provide access to their basic telecommunications networks to CLECs. The bill contained a "savings clause" which would have stipulated that no state's ability to regulate circuit-switched telephone service or cable television service would have been affected by the bill. The FCC would not have been required to repeal or modify its UNE rules, but it would have prohibited the FCC and the states from expanding unbundling obligations. As such, the FCC's line-sharing requirements (and those of the state of Texas) would be have been preserved, but only with respect to copper lines, the aforementioned appeals court ruling notwithstanding.

Had the bill passed, neither the FCC nor any state could have required an ILEC to provide, on an unbundled basis, digital packet switching, the fiber portion of a subscriber loop, or collocation to a remote terminal, which is a node that lies between the ILEC's central office and subscriber premises.[159] In lieu of unbundling, an ILEC would have been required to provide high-speed data service to CLECs "on rates, terms, and conditions that are just and reasonable." However, an ILEC would have been considered nondominant in the provisioning of such a service, which

[159] The placement of DSLAMs in remote terminals would effectively increase the range of DSL technology, because DSL loops would not need to go all the way to the central office. Thus, a greater proportion of subscriber premises would lie within the 18,000-foot (or so) limitation of today's DSL technology.

would have precluded a prior review of pricing by the FCC. An ILEC would have been required to offer high-speed data service for resale at wholesale rates for three years, and then at "just and reasonable" rates thereafter.

The bill would have required ILECs to provide access to unaffiliated ISPs that interconnect with the ILEC's high-speed data service. ISPs would have been allowed to acquire the facilities and services necessary to interconnect, and ISPs could have collocated their equipment at the ILEC's offices. The bill would have allowed RBOCs to provide interLATA data and Internet access service without FCC approval. However, RBOCs would still need FCC approval to offer long-distance voice service under Section 271 of the Act.[160]

In exchange for freedom from regulation, RBOCs would have been required to meet broadband deployment milestones:

- 20 percent of a company's central offices must have been "high-speed data capable" within one year after enactment;
- 40 percent within two years;
- 70 percent within three years; and
- 100 percent within five years.

In terms of individual access lines, high-speed capability would have been required for loops that are less than 15,000 feet in length and are capable of transmitting high-speed data service without significantly degrading the quality of voice service.

The bill would have increased the penalties the FCC could impose by roughly a factor of 10. For example, the range of maximum fines would have been increased to $1 million to a maximum of $10 million from $100,000 to a maximum of $1 million. It would also have increased the statute of limitations to two years from one year for the FCC to bring enforcement actions. The bill would have preserved the FCC's authority over unfair billing practices, disclosure of telephone subscriber information, transmission of pornography, and access by the disabled. H.R. 1542 died in the Senate Commerce Committee.

Breaux-Nickles

On April 30, 2002, Senators John Breaux (D-La.) and Don Nickles (R-Okla.) introduced S. 2430, the Broadband Regulatory Parity Act of 2002. The bill would have required the FCC, within 120 days of enactment, to prescribe regulations to ensure:

- All broadband services are subject to the same regulatory requirements, or to no requirements at all;
- All providers of broadband services are subject to the same regulatory requirements, or to no requirements at all, with respect to the provision of such services and the facilities and equipment used to provide such services; and
- No regulatory requirement applicable to any broadband service, broadband provider, or facility or equipment used to provide such services can be increased.

[160] RBOCs have received FCC approval for 23 states, including Texas, which was the second state for which an application was approved. Appendix F, which begins on page 171, details the progress of the four RBOCs in their efforts to obtain long-distance authority in their respective states.

The bill would have expressly prohibited states from regulating broadband services or the facilities or equipment used to provide such services. "Broadband" would have been defined by the bill as any service that is used to provide Internet access at a rate of generally not less than 256 kilobits per second in at least one direction.

ILECs would have been required to provide all ISPs with the telecommunications necessary to provide broadband services to their subscribers, at rates, terms, and conditions that are just and reasonable. Like the Tauzin-Dingell bill, this bill would have included a savings clause to preserve existing authority over the regulation of circuit-switched telephony, rural ILEC tariffs, and prohibitions against RBOC interLATA service delivery. S. 2430 died in the Senate Commerce Committee.

Hollings

On May 2, 2002, Senator Fritz Hollings (D-S. Car.) introduced S. 2448, the Broadband Telecommunications Act of 2002. The bill sought to foster the deployment and adoption of broadband services, particularly in rural and underserved areas, through a series of federal loans, grants, and pilot projects, including:

- Using the current telephone excise tax to fund loans and grants for four years, beginning in 2003;
- Providing more than $2.5 billion in loans to carriers to deploy broadband facilities in rural and underserved areas and to upgrade remote terminals (which must then be provided to CLECs upon request);
- Providing more than $750 million in grants to colleges, libraries, and museums to develop broadband content and digitize collections;
- Establishing a $2 billion block grant program for states and local governments to develop e-government applications and stimulate deployment; and
- Funding more than $120 million in grants for broadband research and studies.

Like the others, S. 2448 died in Senator Hollings's Commerce Committee.

Farm Bill

The Farm Security and Rural Investment Act of 2002 provided a total of $100 million in grants, loans, and loan guarantees over five years for the purpose of improving access to broadband services in rural areas.[161] Funds could be for construction, improvement, and purchase of equipment and facilities for rural broadband service in eligible communities. Eligible rural communities could have no more than 20,000 residents. A company that serves more than 2 percent of the access lines in the U.S. is not eligible for the grant program, meaning that Southwestern Bell and Verizon could not utilize this program. The U.S. Department of Agriculture will develop rules to implement the program. It convened a public meeting in June 2002, and work on the rules and program details is currently underway.

[161] P.L. 107-171, §6.103.

TIF BOARD MISSION AND PERFORMANCE

House Bill 2128, 74th Legislature, established the Telecommunications Infrastructure Fund (TIF) and a new state agency, the TIF Board, to oversee its programs. TIF is funded by an assessment—currently 1.25 percent of taxable telecommunications receipts—on wireline telecommunications utilities and wireless providers, up to a maximum of $1.5 billion. These funds are used primarily for grant programs. The Public Schools account is dedicated solely to public school districts and campuses in Texas. The Qualifying Entities account provides grants to public school districts and campuses, colleges and universities, libraries, academic health centers, and public or not-for-profit healthcare facilities. The total amount of funds available for grants is split evenly between the two accounts.[162]

In awarding grants, TIF is required to give priority to projects that represent collaboration among several eligible entities, contribute matching funds, show the "promise of becoming self-sustaining," extend educational services to areas not previously served, result in more efficient or effective learning than through ordinary classroom teaching, improve the quality of health care delivery, or increase learning opportunities at schools with a disproportionate number of at-risk youths or a high dropout rate.[163] TIF must also consider school districts' relative property wealth per student when awarding funds to schools and recognize the "unique needs of rural communities."[164]

In general, TIF may award a grant to an eligible entity, or to a consortium of eligible entities ("collaborative"), for a project or proposal that:

- Provides necessary equipment and infrastructure for distance learning, information sharing, telemedicine services, telehealth services, or a telepharmacy system;
- Develops and implements the initial or prototypical delivery of an education course or other distance learning material;
- Trains teachers, librarians, or technicians in the use of distance learning or information sharing materials and equipment;
- Develops a curriculum or instructional material suited for telecommunications delivery;
- Provides electronic information; or
- Establishes or carries out an information sharing program.[165]

Grants from the Public Schools account may be used to fund equipment for public schools, including computers, printers, computer labs, and video equipment; and intracampus and intercampus wiring to enable schools to use the equipment. Grants from the Qualifying Entities account may be used for equipment, wiring, material, program development, training, installation

[162] PURA §§ 57.043 and 57.0485.

[163] PURA §57.047(c).

[164] PURA §57.047(d).

[165] PURA §57.047(a).

costs, a statewide telecommunications network (TEX-AN), and an automated system to integrate client services and eligibility requirements for health and human services across agencies.[166]

TIF is governed by a nine-member board, currently chaired by Blair Fitzsimons of Carrizo Springs. The agency hired its first executive director and eight employees in mid-1996. Staffing has increased since then, rising from 18 full-time equivalents (FTEs) in 1997 to 23 FTEs in 2000. It currently employs 26 FTEs, including seven grant administrators, and it is budgeted for 29 FTEs in 2003. The agency has seen considerable staff turnover in its short history, and more than half of its employees have fewer than two years' tenure at the agency. Its current executive director, Dirk Jameson, was hired in March 2002. The annual appropriation for grant implementation and agency administration is roughly $3 million, or less than 2 percent of its annual grant awards.

Sources and Uses of Funding

TIF's programs are funded by an assessment based on the revenues of wireline and wireless telecommunications providers doing business in this state. Currently, the TIF assessment is equal to 1.25 percent of taxable telecommunications receipts.[167] It will remain 1.25 percent through fiscal year 2003, and then it will be adjusted by the Comptroller of Public Accounts such that the total amount assessed by the end of fiscal year 2004 will be $1.5 billion. Under current law, the assessment will end once $1.5 billion has been collected. Interest and loan repayments deposited to the fund's accounts do not count toward this $1.5 billion cap.

Originally, the TIF assessment was designed to generate $150 million a year over 10 fiscal years. It was intended that wireline companies and commercial mobile radio service (CMRS) providers each pay $75 million into the fund. The wireline component would be dedicated to public schools, and the wireless component would be dedicated to qualifying entities. To achieve this, the Comptroller established initial rates of assessment of 1.347 percent for telecommunications utilities and 6.479 percent for commercial mobile service providers. In late 1995, a group of paging companies under the name of Paging Companies for a Fair Assessment filed a lawsuit claiming that the TIF assessment was an unconstitutional taking of a disproportionate amount of paging companies' revenues.[168] In January 1996, state district judge Scott McCown ruled the TIF assessment as constructed violated the equal taxation provisions of the Texas Constitution, and CMRS providers could not be assessed at a higher rate than the telecommunications utilities.[169] The ruling had the potential to reduce TIF revenues by more than $50 million a year.

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[166] PURA §57.046.

[167] See 34 TAC §3.1101. Taxable telecommunications services include local exchange service; enhanced services such as Extended Area Service; custom calling services such as call waiting, call forwarding, and caller ID; long-distance service; wireless and paging services; private line service; payphone services; installation of telecommunications services or equipment; service connection fees; and fees and surcharges like the federal universal service fund, subscriber line charge, and even the TIF assessment itself if charged directly to consumers as a line item on their bills (These are considered to be part of the rate for telecommunications services and thus are taxable under current law.).

[168] *Paging Companies for a Fair Assessment v. John Sharp*, No. 95-15783 (261st Dist. 1996).

[169] Art. 8, Sec. 1(a) of the Texas Constitution provides that "taxation shall be equal and uniform."

Figure 9. Summary of TIF Fund Account 0345
(in millions of dollars)

	TIF Assessment & Revenues			Expenditures		EOY Cash Balances	
Fiscal Year	Collections	Other	Total	Grants	Expenditures	Unobligated	Total
1996	95.8	12.3	108.1	15.3	19.0	89.1	89.1
1997	95.6	25.5	121.1	67.6	43.1	142.6	167.1
1998	157.3	26.2	183.5	174.6	92.3	151.5	258.3
1999	169.7	30.1	199.8	103.6	111.0	247.7	347.1
2000	190.4	36.9	227.3	215.5	116.8	259.5	457.6
2001	205.5	44.4	249.9	348.5	224.5	160.9	483.0
2002 (est.)	211.8	51.6	263.4	235.5	250.1	188.8	496.3
Totals	1,126.1	227.0	1,353.1	1,160.6	856.8	188.8	496.3

Notes: Revenues and Expenditures include all of Fund 0345, including $126 million appropriated to the Texas Education Agency, Texas Higher Education Coordinating Board, State Board of Educator Certification, Texas State Library and Archives Commission, Texas Department of Health, and Health and Human Services Commission, and funds used for TIF's operations. The Grants column refers to the amount of grants awarded, not expended, during a fiscal year, plus amounts appropriated to itself or other agencies. The actual amount of grants TIF has awarded is $994 million.

Sources: Comptroller of Public Accounts and TIF.

Senate Bill 249, 75th Legislature, established the current 1.25 percent assessment for both telecommunications utilities and CMRS providers. The bill retained the $1.5 billion cap, excluding interest, but eliminated the 10-year collection schedule. The bill also retained the bifurcated account structure, with half of the assessment going toward the Public Schools account and the other half going to the Qualifying Entities account.

Incidence of TIF Assessment

As of the end of fiscal year 2002, the TIF assessment has resulted in $1.1 billion in collections, or about 14 percent more than was estimated during the preparation of what would become Senate Bill 249, 75th Legislature. The growth in telecommunications revenues, particularly wireless revenues, has caused the assessment to be collected faster than expected.[170] Assuming that past trends continue, the TIF assessment will bring in another $210-$225 million during fiscal year 2003, leaving about $155-$165 million to be collected during fiscal year 2004.

The Comptroller was asked to provide the committee with data showing the year-by-year incidence of the TIF assessment upon telecommunications and CMRS companies. The

[170] Letter from Karey W. Barton, Manager of the Tax Policy Division, Comptroller of Public Accounts, to Snapper Carr, Chief Clerk of the House Committee on State Affairs (August 14, 1996).

Comptroller supplied a list of the 100 largest payers, and totals for all payers. This information is confidential under law and cannot be disclosed by the committee.[171] Committee staff met with industry representatives to explore ways in which the data could be aggregated and discussed publicly, and all industry representatives concurred conceptually with the following presentation.

Approximately 4,000 entities pay, or have paid, the TIF assessment. The 10 largest payers account for nearly two-thirds of the TIF assessment, and the 100 largest payers account for approximately 92 percent of the TIF assessment.[172] The average annual assessment for the 10 largest payers is $10.5 million. For the next 90 largest payers, the average annual assessment is about $0.5 million. Taken together, the average annual assessment for the largest 100 payers is $1.5 million. For the other 3,900 or so payers, the average annual assessment is approximately $3,300. Over the life of the fund, each of the top 10 payers will have paid an average of about $100 million, the next 90 will have paid an average of about $5 million, and all other payers will have paid an average of about $30,000 into the fund.

Between 85 and 90 percent of the assessment has been paid by entities (or customers of entities) owned by, partially owned by, or sharing the same "brand name" as just five companies: AT&T, SBC, Sprint, Verizon, and WorldCom.[173]

Figure 10 details the incidence of the TIF assessment by type of company. Of the amounts assessed to date, about 70 percent, or approximately $775 million, is attributable to taxable wireline revenues, sales of calling cards, and interexchange services. About 40 percent is attributable to incumbent local exchange companies (ILECs)—about 38 percent for Chapter 58 companies and 2 percent for all other ILECs—and about 30 percent is attributable to interexchange carriers (IXCs) and competitive local exchange companies (CLECs).[174] Of the amounts assessed to date, about 30 percent, or approximately $330 million, is attributable to taxable CMRS revenues. About 25 percent is attributable to the revenues of the six nationwide wireless carriers, and about 5 percent is attributable to all other wireless carriers and paging service providers.[175]

Between 55 and 60 percent of the TIF assessment has been passed on to customers through a line-item charge on their bills. All wireline, wireless, and paging providers pass through the assessment except ILECs, which do not pass the assessment through for revenues attributable to local exchange service. This arrangement arises from the ILECs' understanding of the

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[171] The Comptroller provided the requested information under Government Code §552.008, which permits confidential information to be disclosed to a legislator or legislative committee for legislative purposes.

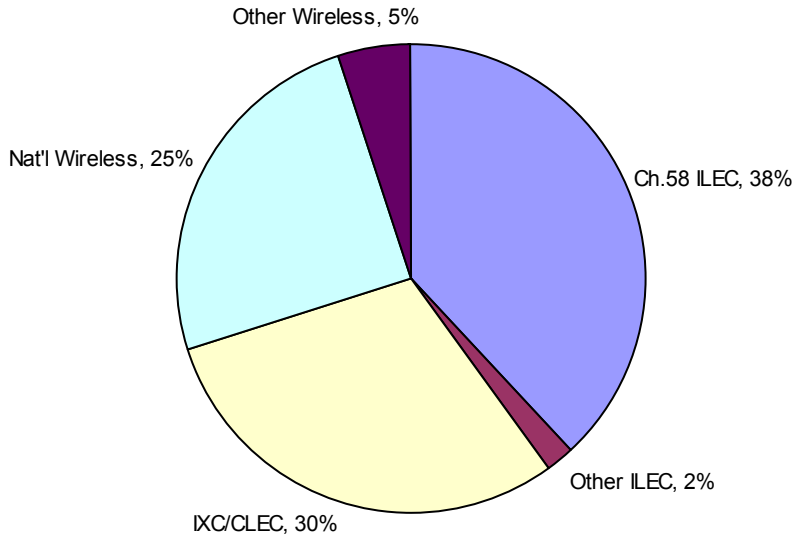
[172] A payer and a company are not the same thing. A company may have several different payers, each aligned with a particular business line or service offering. Also, wireless companies tend to report revenues based on licenses rather than company name, resulting in potentially dozens of payers for the same company.

[173] For example, Cingular Wireless is partially owned by SBC, the parent company of Southwestern Bell. Thus, any TIF payments associated with Cingular's wireless licenses are considered, for purposes of this statement, to be associated with SBC.

[174] Chapter 58 ILECs are Southwestern Bell, Sprint, Valor, and Verizon.

[175] The six nationwide wireless carriers are AT&T Wireless, Cingular, Nextel, Sprint PCS, T-Mobile (formerly VoiceStream), and Verizon Wireless.

Figure 10. Incidence of TIF Assessment



Source: Comptroller of Public Accounts. Covers fiscal years 1996 through 2002. Percentages are approximate.

legislative intent behind the creation of the TIF and not from any specific law, regulation, or order of the Public Utility Commission of Texas (PUC).[176]

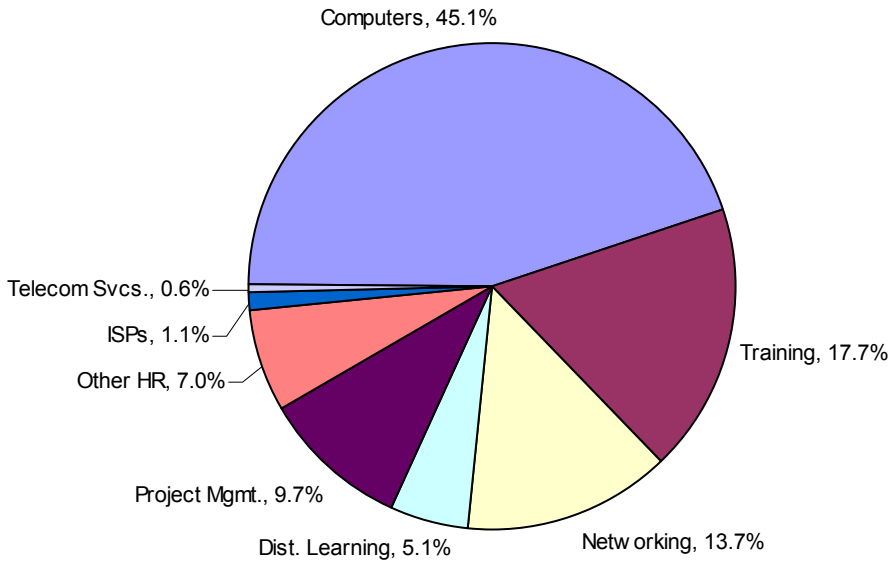
Expenditures of TIF Funds

The committee asked TIF to provide categorized data on the expenditure of TIF funds by grantees since the program's inception. TIF provided data covering fiscal years 1998-2001 and a portion of fiscal year 2002, broken out by type of grantee and divided into 14 categories of expenditures. This data covered $738 million in expenditures, or about 86 percent of all TIF expenditures to date.[177]

[176] Valor noted that it believes that the PUC would not approve a passthrough for electing companies absent specific statutory authority allowing electing companies to pass through the TIF assessment. Valor bases this on *GTE Southwest Inc. v. Public Utility Commission* (978 S.W. 2d 161), in which the court upheld a PUC determination that a proposed passthrough of franchise taxes was precluded by the election of incentive regulation.

[177] It should be noted that the yearly totals for expenditures do not match the annual expenditure totals reported by TIF, and, in some years, vary quite widely. For example, the Comptroller reports TIF expenditures of $224.5 million in fiscal year 2001, but data provided by TIF indicates $401.7 million in expenditures. In addition, expenditures appear to exceed grant awards in some categories. For example, $109 million in expenditures is reported for Higher Education, but TIF only awarded $86 million in grants during the period in question. TIF explained that the expenditure data was based on the fiscal agent for collaboratives and not the grant program itself (such as a university serving as the fiscal agent for a collaborative library grant). Considering both of these problems, and the fact that the data do not cover the entire life of the fund, it becomes virtually impossible to verify the accuracy of these numbers.

Figure 11. Categories of TIF Expenditures



Source: TIF Board. Expenditure data covers all of fiscal years 1998-2001 and part of 2002.

The data provided by TIF suggest that 45 percent of all TIF expenditures have gone to purchase desktop and laptop computers. Almost 14 percent has been expended to purchase switches, routers, hubs, wiring, and other hardware. About 5 percent has been expended to purchase equipment allocated to distance learning. Almost 18 percent has been expended on training. Another 10 percent has been expended on project management, and another 7 percent has been expended on stipends and other human resources. About 1 percent has been expended on fees charged by Internet service providers (ISPs) to access the Internet. Less than 1 percent has been expended on services provided by telecommunications companies, and it is believed that no funds have been expended on services provided by CMRS companies.

In other words, 99.4 percent of TIF grant funds have been expended on products and services to which the TIF assessment does not apply.

Overview of the Grant Process

A typical grant process begins with the development of a Request for Proposal (RFP). TIF consults with its constituent-based working groups to identify which of their needs will be addressed by the RFP, review recent research, and explore new technological developments. The results of these consultations are synthesized into a draft RFP that is intended to meet TIF's statutory obligations, its mission and funding priorities, and grant and reporting cycles. The final RFP includes information about the intended result of the grant, eligibility, application deadlines and process, award guidelines, and grant period. It also includes the expected grant award and

the total amount of grant funding allocated by the board to the RFP. Once it is finalized, the RFP is posted on TIF's web site, and notification letters may also be sent to appropriate contacts within constituency groups.

Most TIF grants are awarded on a noncompetitive basis by constituency group. In fact, nearly 80 percent of TIF grant funds have been awarded on a noncompetitive basis, and another 5 percent were awarded outside of the typical grant process. Of the $993.9 million awarded to date, only $155.7 million has been awarded in a competitive fashion.[178] For noncompetitive grants, the RFP details the eligibility criteria and the anticipated amount of the grant. Any eligible entity meeting the criteria and submitting a complete application will receive a grant award, typically the specified amount. In case there is a shortage of funds allocated to the grant program, TIF may utilize specific criteria to prioritize funding.[179] For competitive grants, the RFP will detail the selection criteria.

All potential applicants are required to notify TIF in writing of their intention to submit an application, typically within three weeks of the RFP's release. A few weeks later, applications must be submitted. Application requirements are specified in the RFP and usually include a local needs assessment, a plan that includes goals and objectives, a budget, performance measures (including outcomes measures), and an evaluation strategy. Applicants must also address how they will sustain their projects after the grant period ends. TIF's grant administrators work with applicants to evaluate project scope and scrub a project's budget before making an award. The budgets are expected to conform with the proposed amount of the grant award. Grantees are then mailed an award packet, which includes an approved budget, grantee acceptance notice, grant management instructions, quality management guidelines, and a calendar of important reporting dates. A grantee may implement the project once the acceptance notice has been sent back to TIF. In fact, grantees are expected to be able to implement their projects immediately.

All TIF grants are ultimately managed by seven grant administrators with support from two finance personnel. Grant administrators educate grantees, troubleshoot and solve grantees' problems, make budget adjustments, complete financial reports, and authorize reimbursements. The latter requires a grantee to complete a Request for Funds (RFF) form, which will identify items to be reimbursed and compare the proposed reimbursement to the budget that was previously approved, and submit supporting documentation, such as receipts. Once approved by the grant administrator, the request goes to TIF's finance department, where it is reviewed and payment is processed.

As noted above, a number of expenses are eligible for reimbursement, including hardware, software, and recurring charges for connectivity. In general, TIF will reimburse grantees for the

[178] In 2002, only 5 percent of the $154 million in grants TIF awarded was done on a competitive basis.

[179] For example, one RFP issued in January 2002 states, "In the event that funds become limited, preference will be given (in order) to campuses with a high percentage of At Risk students, campuses that are classified as rural and remote, and campuses that did not receive a particular grant awarded the year before. For this RFP, the board allocated $72 million and established four award tiers based on the average daily attendance (ADA) of the school: $25,000 for under 100 ADA, $50,000 for 101-500 ADA, $75,000 for 501-1,000 ADA, and $100,000 for ADA above 1,000.

first 10 months of connectivity. From that point forward, grantees are responsible for sustaining connectivity. TIF will not provide reimbursements for expenses occurring either before or after the grant period, and TIF will not reimburse ineligible items.[180] Grantees are expected to submit semiannual Financial Status Reports, as many as six per grant period, and grantees must submit a final report of expenses 90 days after the grant period ends. Grantees must maintain grant records for three years.

Beginning September 1, 2002, TIF operates an in-house quality management program to focus on grantees' financial compliance, technical proficiency, and program outcome measures. This program had previously been outsourced to KPMG. The quality management program produces risk mitigation newsletters, tracks the performance of grantees within a grant award class, allows TIF to assess the grant award process, conducts desk reviews of grantees' records and expenditures, and visits high-risk grantee sites.

Summary of Grant Programs

Since TIF awarded its first grants in November 1996, the agency has issued almost $1 billion in grants to 6,589 fiscal agents. Grants may be awarded to an individual entity or to a collaborative of several eligible entities. For collaboratives, the fiscal agent is responsible for allocating funds to individual members. It is a certainty that TIF funds have been provided to a significantly larger number of entities than the 6,589 fiscal agents. However, TIF has not been able to provide an accurate count of the number of entities that have received grant funding. TIF has reported that every public school district and campus, institution of higher education, public library, and eligible healthcare facility has had the opportunity to receive TIF funding.[181]

TIF has six grant programs. Public School, Higher Education, Library, and Health Care grants target specific constituencies of eligible entities. Discovery and Community Networking grants are aimed at collaboratives of entities across TIF's four constituent groups. The board has also approved special projects outside the normal grant process. All of these are summarized below, and Appendix G provides a complete list of TIF grant offerings beginning on page 175.

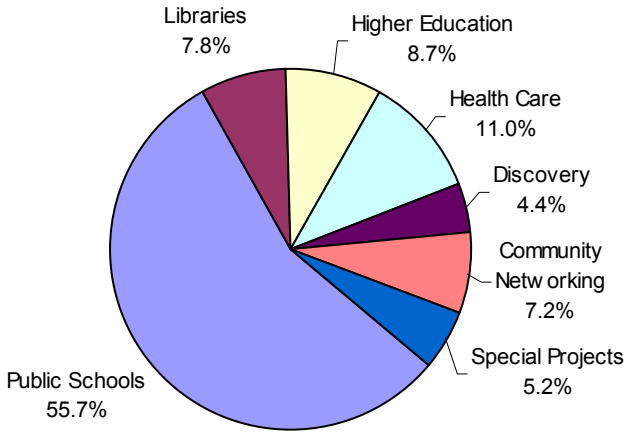
Public School

TIF has awarded 12 grant offerings totaling $554 million to public school districts and campuses. These grants have funded equipment—computers, printers, computer labs, routers, hubs, and video equipment—and items necessary to support intracampus and intercampus wiring, including some recurring connectivity charges during the grant period. Public School grants have been awarded on a noncompetitive basis since the first two offerings. The first grant

[180] A list of ineligible items can be found at http://www.tifb.state.tx.us/grantloan/Unallowables1.htm (accessed November 8, 2002). Ineligible items include consumable supplies (blank media, printer cartridges, and paper), graphing calculators, wireless phones and pagers, copiers, specific curriculum software, furniture (except for use by the disabled), most construction activities, dial-up Internet access, basic telecommunications services, out-of-state travel, consulting fees, attorneys' fees, and advertising.

[181] TIF Board, *Agency Strategic Plan for the Fiscal Years 2003-2007 Period* (June 2002) ("*Strategic Plan*") at 19, 21-23.

Figure 12. Distribution of Grant Funds by Program



(millions of dollars)

Public Schools	553.6
Health Care	109.5
Higher Education	86.2
Libraries	77.5
Community Networking	71.5
Discovery	44.2
Special Projects	51.4
TOTAL	**993.9**

Source: TIF Board

offering, PS1, provided $23.5 million to 124 campuses and districts that had at least 70 percent of its students classified as economically disadvantaged. The second grant offering, PS2, provided $28.2 million to 205 rural school districts.

Subsequent grants have been made available to all public school districts and campuses, although not all districts and campuses could apply for each one. For most grants, only a certain number of campuses within any district could receive funding, and larger districts would often be unable to obtain funding for a number of their campuses over time.[182] In 2001, TIF offered a special noncompetitive grant program open to any public school campus that had not previously received TIF funding. Almost 20 percent of all Texas public school campuses took advantage of this grant, which awarded a total of $80.7 million.[183]

Although these grants have focused on providing technology, initial connectivity, and distance learning capability, all Public School grantees have been required to include a technology training element in their applications. This was satisfied through TIF Tech Training, a workshop to teach grantees how to use, manage, and maintain their new technology. Beginning with PS10, applicants were required to dedicate 15 to 20 percent of grant funds to professional development

[182] For example, PS9 allowed districts with an ADA in excess of 50,000 to apply on behalf of up to 10 campuses. Districts with an ADA of between 10,000 and 50,000 could apply on behalf of up to six campuses. Districts with an ADA of between 2,500 and 10,000 could apply on behalf of up to four campuses. Districts with an ADA of between 500 and 2,500 could apply for two campuses, and districts with an ADA below 500 could apply for one campus. PS9 was awarded in May 2001 to 787 districts representing 1,122 campuses. Other eligibility requirements notwithstanding, approximately 38 percent of the state's public schools could have theoretically received a PS9 grant, although less than 10 percent of schools in districts with an ADA in excess of 50,000 could have received one, and only 20 percent of schools in districts with an ADA between 10,000 and 50,000 could have received one. About 58 percent of all other public schools could have theoretically received a PS9 grant.

[183] TIF did not require matching funds and simplified the application process to encourage very small schools to apply. TIF reported that 1,563 campuses from 286 school districts received grants of up to $44,000 each. If a total of $80.7 million were awarded, as TIF has reported, then the average grant was $51,631, or more than the maximum award.

and technology training. TIF Tech training is still available, but it is no longer the main source of grantee training. Additionally, PS10 applicants had to include specific outcome-based performance measures with their application materials. PS10 grants were awarded in May 2002.

According to TIF, every public school district and campus has had the opportunity to receive grant funding, and public school districts in all but two Texas counties have received funds.[184] Public School grants were initially awarded at the school district level, and each district determined the distribution of dollars to its campuses. This information was not necessarily reported back to TIF. Subsequent grant rounds were awarded at the individual campus level, but this proved unwieldy. Currently, TIF awards grants at the district level with each district identifying and listing individual campuses as collaborative members. TIF may still award grants to specific campuses as conditions warrant.

Public School grants have been awarded to approximately 1,043 of the 1,199 total school districts, including charter schools, and 4,535 public schools campuses and districts have served as fiscal agents for Public School grants. TIF has reported that 8,650 campuses and districts have received grants, but this number does not account for multiple grant awards to the same campus. Further, it does not account for some awards made at the district level for which the distribution to its campuses was never recorded by TIF. Thus, the number of campuses funded by TIF is not known, and neither is the exact number of campuses not funded by TIF. Using the 8,650 figure, the average Public school grant award is estimated to be around $64,000, but the average Public School grant funding per campus is not known. In addition, public school campuses may have received funds through other TIF grant programs.

Higher Education

TIF has released four grant offerings to public and private institutions of higher education totaling $86.2 million. The first Higher Education grant, HE1, provided a total of $14.6 million to 57 two-year community colleges, in awards ranging from $150,000 to nearly $1 million, in May 1998. This grant funded Internet connectivity equipment at these institutions' libraries and other academic facilities and expanded existing distance learning capabilities. The second grant, HE2, provided a total of $28.1 million to 74 four-year colleges and universities to fund enhanced Internet connectivity, videoconferencing equipment, and new workstations. These awards ranged from $150,000 to $1.5 million. In August 2001, HE3 grants totaling $23.8 million were awarded to 119 two- and four-year institutions. In August 2002, HE4 grants totaling $19.5 million were awarded to 104 institutions of higher education.

The first three grant offerings focused on distance learning capabilities and inside-the-walls connectivity for its grant recipients. The fourth offering was designed to improve the quality of pre-service and in-service preparation programs for teachers through the use of technology and distance learning. Grants also funded workforce and academic training programs, including providing Texas high school students with access to advanced placement and dual credit courses.

[184] The school districts serving Kenedy and Loving Counties are based in adjacent counties, and these districts have received TIF funding.

Figure 13. Higher Education Grant Funding by Entity

Abilene Christian Univ.	$562,546	McLennan CC	$498,664	Texas A&M Univ.	$3,199,996
Alamo CC	$2,266,833	McMurry Univ.	$249,599	TAMU-Commerce	$802,463
Alvin CC	$388,522	Midland Coll.	$296,592	TAMU-Corpus Christi	$699,365
Amarillo Coll.	$595,478	Midwestern St. Univ.	$639,197	TAMU-Galveston	$249,745
Amberton Univ.	$200,000	Navarro Coll.	$384,454	TAMU-Kingsville	$714,309
Angelina Coll.	$297,312	North Central Texas Coll.	$377,860	TAMU-Texarkana	$199,339
Angelo State Univ.	$752,759	North Harris Montgomery CCD	$1,397,511	Texas A&M Int'l Univ.	$325,000
Ausin Coll.	$300,000	Northeast Texas CC	$315,800	Texas Christian Univ.	$826,939
Austin CC	$1,571,455	Odessa Coll.	$386,276	Texas Coll.	$238,545
Baylor Univ.	$1,642,572	Our Lady of the Lake Univ.	$372,311	Texas Lutheran Univ.	$174,120
Blinn Coll.	$870,542	Panola Coll.	$261,957	Texas Southern Univ.	$795,718
Brazosport Coll.	$329,635	Paris JC	$340,390	Texas Southmost Coll.	$243,427
Central Texas Coll. Dist.	$680,978	Paul Quinn Coll.	$149,606	Texas State. Tech. Coll. System	$1,061,253
Cisco JC	$321,180	Prairie View A&M Univ.	$564,926	Texas Tech Univ.	$2,805,465
Clarendon Coll.	$250,000	Ranger Coll.	$199,665	Texas Wesleyan Univ.	$287,896
Coastal Bend Coll.	$368,468	Rice Univ.	$536,719	Texas Woman's Univ.	$902,484
Coll. of St. Thomas More	$149,992	Sam Houston St. Univ.	$1,454,223	Trinity Univ.	$363,886
Coll. of the Mainland	$371,204	San Jacinto Coll. Dist.	$1,264,994	Trinity Valley CC	$452,892
Collin Co. CC	$788,494	Schreiner Univ.	$248,987	Tyler JC	$655,562
Concordia Univ.	$250,000	South Plains Coll.	$560,836	Univ. of Central Texas	$150,000
Dallas Christian Coll.	$122,906	South Texas CC	$689,099	Univ. of Dallas	$277,700
Dallas Co. CCD	$2,625,926	Southern Methodist Univ.	$1,098,642	Univ. of Houston	$3,057,417
Del Mar Coll.	$517,138	Southwest Texas JC	$360,781	UH-Clear Lake	$619,339
El Paso CCD	$1,166,378	Southwest Texas St. Univ.	$2,434,578	UH-Downtown	$840,525
Frank Phillips Coll.	$194,880	Southwestern Adventist Univ.	$197,333	UH-Victoria	$200,000
Galveston Coll.	$291,126	Southwestern Assem-blies of God Univ.	$300,000	Univ. of North Texas	$2,814,784
Grayson Co. Coll.	$361,550	Southwestern Christian Coll.	$50,000	Univ. of St. Thomas	$325,000
Hill Coll.	$321,949	Southwestern Univ.	$249,946	Univ. of Texas	$3,196,879
Houston CC System	$2,237,168	St. Edward's Univ.	$84,794	UT-Arlington	$2,000,305
Houston Grad. Coll.	$150,000	St. Mary's Univ.	$494,535	UT-Brownsville	$612,411
Howard Coll.	$75,000	Stephen F. Austin St. Univ.	$1,478,019	UT-Dallas	$953,864
Howard Co. JCD	$262,969	Sul Ross St. Univ.	$300,000	UT-El Paso	$1,128,062
Huston-Tillotson Coll.	$226,603	Sul Ross St. Univ.-Rio Grande Coll.	$158,001	UT-Pan American	$1,407,556
Jacksonville Coll.	$249,997	Tarleton St. Univ.	$820,777	UT-Permian Basin	$284,785
Jarvis Christian Coll.	$250,000	Tarrant Co. CD	$1,576,868	UT-San Antonio	$1,867,456
Kilgore Coll.	$416,200	Temple Coll.	$321,180	UT-Tyler	$274,394
Lamar Inst. of Tech.	$344,077	Texarkana Coll.	$308,841	Univ. of the Incarnate Word	$360,346
Lamar St. Coll.-Orange	$251,032			Vernon Regional JC	$315,032
Lamar St. Coll.-Port Arthur	$311,636			Victoria Coll.	$373,081
Lamar Univ.	$922,032			Weatherford Coll.	$321,180
Laredo CC	$562,432			West Texas A&M Univ.	$736,439
Lee Coll.	$486,676			Western Texas Coll.	$251,200
LeTourneau Univ.	$299,859			Wharton Co. JC	$296,464
Lon Morris Coll.	$249,989			Wiley Coll.	$200,000
Lubbock Christian Univ.	$200,000				

Source: TIF Board

According to TIF, every institution of higher education in the state has had the opportunity to receive grant funding.[185] Since its inception, TIF has awarded grants to 99 percent of the 72 two-

[185] Certain faith-based institutions of higher education have declined funding because of their internal policies relating to the acceptance of government funding. Thus, TIF cannot achieve a 100 percent award rate in this constituent group. The numbers reported are as of HE3. It is not immediately clear whether the HE4 awards added to the total number of institutions receiving funds.

year colleges and 65 percent of the 99 four-year colleges and universities in the state.[186] The minimum amount awarded to any institution of higher education has been $50,000. An average amount of TIF grants awarded to an institution of higher education over the life of the TIF program is about $640,000. Institutions of higher education also receive funds for collaborative projects, such as Discovery grants, and are often the fiscal agent for collaborative projects. The extent to which such projects provide funding for technology or other programs at institutions of higher education has not been determined.

Library

TIF has released 13 grant offerings to libraries since it awarded $3.1 million to 158 public, non-academic libraries in January 1998. This first grant, LB1, was used to establish new Internet connections for public use in libraries that had no such access and to train library staff. Later that year, TIF awarded $12.3 million to 202 libraries through two sets of grants that funded new and upgraded Internet connections for general public use, new workstations, and training for library staff. Subsequent grants have focused on improving the capabilities of libraries to engage in information sharing programs, expand public access to the Internet and computer applications, and increase training opportunities.

Library grant offerings are made available to public libraries and library systems, libraries at public schools, and higher education and health science libraries. In 2002, TIF released five grant offerings for public and academic libraries. Collectively, these five grant offerings provided $13.4 million to 57 library collaboratives and more than 900 public school and school district libraries.

At least for public libraries, one of the conditions for award is the offering of public Internet access. Libraries may also use TIF funds to provide workstations and printers for general use and laptops that are available for patrons to check out. Figure 7 on page 51 shows the amount of combined Library grants to public libraries and Community Networking grants. Together, these represent the minimum amount of public access points that TIF has funded.

According to TIF, every public library in the state, including academic libraries, has had the opportunity to receive grant funding. Through 2001, TIF had awarded grants to approximately 440 of the 510 public, general-use libraries. It has also funded a significant number of the 110 academic libraries through either the library grants or through grants to related entities, such as the academic health science centers. TIF has awarded grants to around 1,100 public school and school district libraries.[187] The total number of libraries receiving grants is not known, and the average grant award per library cannot be determined.

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[186] TIF has indicated that 350 institutions of higher education have served as fiscal agents for Higher Education grants. That number must include double-counted entries, as there are only about 140 institutions of higher education, including two-year institutions, in the state.

[187] As with Public School grants, the exact number of campuses receiving grants is not known. There are also a number of grants awarded to collaboratives that may include school libraries that are not included in this estimate.

Figure 14. TIF Grants Awarded in Fiscal Year 2002

Public School Grant (PS10)
$56.0 million awarded to 835 campuses (Average grant: $67,000)

Public School Grant (PS11)
$12.7 million awarded to 401 alternative campuses (Average grant: $32,000)

Higher Education Grant (HE4)
$19.5 million awarded to 104 institutions of higher education (Average grant: $187,500)

School Library Grants (LB12, LB13, LB14)
$9.0 million awarded to 908 public school libraries (Average grant: $10,000)

Public Library Grants (LB10, LB11)
$2.7 million awarded to 48 collaboratives (Average grant: $56,000)

Higher Ed Library Grant (LB9)
$1.6 million awarded to 9 collaboratives of higher education (Average grant: $180,000)

Healthcare Grant (HC8)
$21.3 million awarded to 247 public, not-for-profit healthcare facilities (Average grant: $86,000)

Competitive Discovery Grant (DI5)
$5.5 million awarded to 12 collaboratives representing 68 entities (Average grant: $450,000)

Community Networking Grant (CN3)
$22.5 million awarded to 91 collaboratives (Average grant: $250,000)

Other Projects
$3.1 million awarded by the Board

Source: TIF Board

Health Care

TIF has released six grant offerings for public and not-for-profit healthcare facilities and two offerings to academic health science centers. The first grant awarded, PH2, provided $13.8 million to 21 collaborative organizations, representing 330 sites, to fund the purchase of computer equipment, networking materials, and Internet connectivity. Each site received up to $45,000 to incorporate the Internet into direct patient care. Subsequent grant awards increased connectivity to the Internet, funded high-bandwidth local area networks, promoted public access to medical and health care information, supported distance learning, and utilized telemedicine in direct patient care. HC8, a partially competitive grant offering, was awarded to a total of 247 entities to develop sustainable models for the delivery of primary care, health care education, and advanced uses of telemedicine.

According to TIF, every public or not-for-profit healthcare facility has had the opportunity to receive grant funding, and all 10 academic health science centers have received funding. TIF has awarded Health Care grant funds to 195 fiscal agents representing an unknown number of entities.[188] The minimum amount awarded to any healthcare facility under these grants has been $40,000, at least through the end of 2001. The total number of healthcare facilities receiving grants has not been provided, and the average grant award per healthcare facility could not be determined.

[188] According to its *Legislative Report on TIF Funding* (February 15, 2001), TIF said it had provided grants to 824 of 1,130 public, not-for-profit healthcare facilities and all 10 health science centers. Health Care grants had been awarded to a total of 368 rural healthcare facilities, and 73 telemedicine collaboratives had received funding, at least as of the date of that report. A more recent number has not been provided.

Figure 15. Discovery Grant Funding by Fiscal Agent

Alamo CC	$830,777	Lamar Univ.	$1,344,435	Sul Ross St. Univ.	$764,256
Aldine ISD	$498,066	Laredo CC	$1,500,000	Texas A&M Univ.	$2,440,149
Alvin CC	$793,373	Lubbock Christian Univ.	$116,120	TAMU-Corpus Christi	$849,992
Amarillo Coll.	$840,834	McLennan CC	$706,299	TAMU-Health Sci. Ctr.	$655,904
Angelo St. Univ.	$750,000	McLennan Co. Med. Ed.		TAMU-Kingsville	$494,200
Austin CC	$783,346	& Research Found.	$1,000,000	Texas A&M Int'l Univ.	$815,490
Austin ISD	$500,000	Midland Coll.	$850,000	Texas St. Tech. Coll.-	
Baylor Univ.	$850,000	Muleshoe ISD	$999,995	Sweetwater	$1,000,000
Cedar Valley Coll.	$508,080	North Harris Montgomery		Texas Tech Univ.	
Clifton ISD	$1,000,000	CCD	$500,000	Health Sci. Ctr.	$110,520
Collin Co. CCD	$843,399	Panola Coll.	$194,494	Tyler JC	$499,160
Community Health		Paul Quinn Coll.	$850,000	Univ. of Houston	$500,000
Development	$500,000	Rice Univ.	$2,599,898	Univ. of North Texas	$1,247,702
Cuero Comm. Hosp.	$492,415	Rockdale ISD	$750,000	Univ. of St. Thomas	$1,265,000
East Texas Area Health		Rogers ISD	$500,000	Univ. of Texas	$1,259,151
Education Center	$1,000,000	Shepherd ISD	$456,779	UT-Houston Health	
El Centro Coll.	$505,232	Sherman ISD	$643,995	Ctr.	$499,340
Fabens ISD	$484,683	Southwest Texas JC	$1,000,000	UT-Medical Branch	$1,000,000
Helen Farabee Regional		Southwest Texas St.		UT-San Antonio	$850,000
MHMR Centers	$378,960	Univ.	$995,304	UT-Tyler Health Ctr.	$646,963
Hendrick Med. Ctr.	$331,128	Spring Branch ISD	$498,674	Weatherford Coll.	$850,000
Highland Park ISD	$488,455	Stephen F. Austin St.		West Texas A&M Univ.	$488,362
Houston ISD	$208,980	Univ.	$842,255	Zapata Co. ISD	$416,232

Source: TIF Board

Discovery

TIF has awarded five competitive grant offerings to TIF-eligible collaboratives to develop innovative solutions to community problems through the use of distance learning, information sharing, Internet access, technology, and networking. Discovery grants can also be used to expand to all TIF-eligible sites in a community the use of technologies that have been piloted at one of the sites. The fourth grant round, DI4, focused on institutions of higher education to promote collaboration on the use of distance learning.[189] In 2002, TIF awarded DI5, which provided $5.5 million to 12 collaboratives, including a group of Uvalde-based health care professionals that is using the grant to develop a database of resources to assist with migrant worker health care delivery.

Discovery grant funding has been awarded to 71 collaboratives, representing an undetermined number of entities, though it has been estimated to be around 500.[190] The average award per collaborative has been $640,000; the average funding per entity is not known.

[189] Overall, 80 percent of Discovery grant funding has been awarded to collaboratives for which an institution of higher education is the fiscal agent. As noted earlier, TIF has not broken out these awards by collaborative member, so there is no way to identify which entities have actually received funding or how much funding was retained by the fiscal agent.

[190] Through DI3, TIF reported funding had been provided to 32 collaboratives comprised of 291 entities. Through DI4, TIF reported funding had been provided to 57 collaboratives comprised of 185 public school districts and campuses, 184 institutions of higher education (See *supra*. n. 186), 13 libraries, and 62 public or not-for-profit healthcare facilities in 128 counties. The number of entities comprising the 12 DI5 collaboratives was not provided.

Community Networking

According to TIF, the Community Networking grant program is the "largest government-funded community technology initiative in the country."[191] This grant program emerged from the perceived need to promote collaboration between entities eligible for TIF funding and the broader community with respect to the development and utilization of technological resources. Community Networking grants aim to connect entire communities by providing significant training opportunities, a single-interface Web portal, and networking infrastructure. Grantees are expected to provide increased public access to the Internet and improved opportunities for using computer applications in public-use settings.

A "community network" is defined by TIF as being comprised of a web site or portal that provides current and relevant information about the community, one or more community technology centers that provide public Internet access and technology training, and/or equitably distributed public access points.[192] Communities receiving funds are expected to achieve the following outcomes:

- Increased equitably distributed access to information including public access points to the Internet;
- Broadened range of enriched local content including providing end users the ability to create, publish, or interact with information;
- Increased access to information and collaboration with underserved populations within the community;
- New development of telecommunications applications such as listserves or web pages;
- Substantial collaboration between TIF-eligible and non-TIF eligible entities;
- Raised awareness about the importance of broadband access and economic development through e-commerce; and
- Secured continuation of the project after TIF funding ends.

Only TIF-eligible entities may be reimbursed by TIF for their expenses in implementing their projects, but community networks may generate and collect income from their inception.

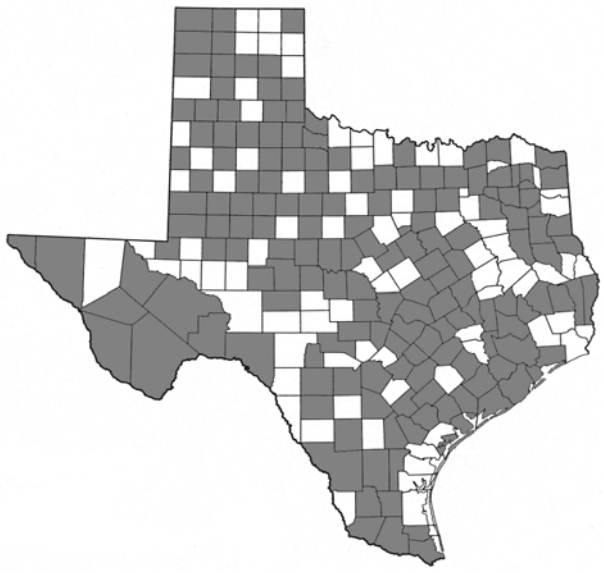
The first two grant offerings were competitive. The process of designing and awarding the first Community Networking grant, CN1, took more than a year. Ninety planning applications were submitted to TIF initially. CN1 was awarded in two phases: a planning phase and an implementation phase. Of the 90 planning applications, 54 were provided an initial planning grant, which offered most recipients $20,000 to carry on the planning process for another four months. These grantees submitted new, final applications, and 36 were given implementation grants. For all but a handful, the implementation grant was $500,000. For CN2, TIF eliminated the planning grant and instead provided grants to 54 new collaboratives, almost all of which were awarded $525,000.

TIF indicated that sustainability was an important award criteria, and collaboratives applying for grants were required to address issues related to sustaining their community networks. The third

[191] TIF Board, letter to the Honorable Steve Wolens in response to "Ten Questions to Begin the Committee's Inquiry Into State Broadband Policy" (April 3, 2002) at 12.

[192] Request for Proposal for CN3 (the noncompetitive Community Networking grant offering) at 3.

Figure 16. Counties Receiving TIF Community Networking Grants



Source: TIF Board

grant release, CN3, emphasized sustainability and outcomes performance measures, but it was awarded in a noncompetitive fashion. In July 2002, TIF awarded CN3 grants of $250,000 each to 91 collaboratives representing 629 sites. The three Community Networking grant offerings have totaled $71.5 million to 242 collaboratives representing around 1,000 TIF-eligible entities and around 200 community partners.

A year after CN1 implementation grants were awarded, TIF said its grantees had provided 1,181 workstations for public use in 208 locations. Training had been provided to 6,958 individuals, and 102 community web sites had been designed by grantees.[193] No more recent figures have been reported. Figure 16 shows the counties in Texas in which a fiscal agent that has received a TIF Community Networking grant is located. More than one Community Networking grant has been awarded to entities in some counties.

Special Projects

The TIF Board has voted to fund special projects outside the boundaries of its established grant process. Since inception, the board has awarded $51.4 million in special projects. Some of this special project funding has been used to:

- Improve access and content through the Texas State Library;
- Enhance online databases available for information sharing;
- Archive government information;
- Develop a web-accessible statewide library catalog;
- Create online teachers' toolkits;
- Promote professional development through a consortium of East Texas school districts and corporate partners;
- Provide public access to the Internet in urban underserved areas through partnerships with private foundations and institutions of higher education; and
- Conduct detailed needs assessments of TIF's constituent groups.

In August 2001, the board awarded a $20 million special project grant to the Texas Public Broadcasting Educational Network and Texas A&M University to digitize the signals of the state's 14 public broadcasting stations. The grant will allow the digital transmission of educational and cultural programming over-the-air to the state's citizens, educators, and students.

[193] TIF Board, *2001 Annual Report* (January 2002) at 5-6.

The Agency's Mission

House Bill 2128, 74th Legislature, authorized the creation of TIF but did not provide a specific vision for what TIF should accomplish. As noted above, TIF was provided a list of allowable projects, a group of eligible entities, and a series of priorities that it must consider when awarding grants. The plain language of its authorizing statute demonstrates a legislative commitment to provide the basic hardware, software, networking, connectivity, and training needed by eligible entities to take advantage of distance learning and information sharing, predominantly using the Internet. As such, TIF's first few years were exhibited by trial-and-error grant offerings that took stabs at the priorities outlined by the Legislature. The agency built itself from scratch, designed grant award processes, created grant monitoring procedures, and established means of addressing the perceived needs of constituents with little outside direction, save from its constituent-driven working groups.

In its *Annual Report for 1999*, TIF stated that its strategic objective was "to catalyze, through the strategic funding of diverse projects and through its various research and communications activities and programs, the development of a statewide network that offers access on demand for a wide variety of applications and purposes." The board reported that is primary focus remained "establishing a foundation of high-speed Internet connectivity within the 'inside' walls" of its four constituent groups. "Many unconnected sites remain," the board noted, despite its progress. As of the end of fiscal year 1999, the board had provided funding to 2,300 public school districts and campuses (including 562 of the 578 rural school districts), all 57 community colleges, 67 universities, 592 public libraries and branches, 410 public and not-for-profit healthcare facilities, and 26 collaborative "model" projects. "A typical TIF grant averages $75,000 and funds telecommunications equipment, wiring, servers, computers, distance learning equipment, printers, and related peripherals," said the report.[194]

A year later, TIF reported that its mission was "to help the citizens of Texas deploy an advanced telecommunications and information delivery infrastructure by stimulating universal and scaleable information and applications access" for its constituency groups. "Priority will be given to rural and underserved populations." Its philosophy was

> To design and provide grants which will prepare Texas' children for the knowledge-based economy of the 21st century, spur economic growth for all Texans, and enrich the lives of all citizens … TIF intends to take this unique, unprecedented opportunity to assist all of the citizens of Texas in achieving equitable access to information and education resources, irrespective of their socioeconomic condition or geographic location.

The board said its focus was "changing from connecting buildings to the Internet to connecting the people who use the technology within those buildings."[195]

In its *Annual Report 2001*, TIF described itself as "a state agency that funds technology in schools; libraries; institutions of higher education; and public, not-for-profit healthcare facilities. Our mission, however, does not end there. TIF also provides the necessary training to help

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[194] TIF Board, *Annual Report for 1999* (January 2000).

[195] TIF Board, *Annual Report 2000* (January 2001) at 2, 3, and 49.

Texans effectively and efficiently use technology to improve how they live, learn, work, and play." The report noted that TIF had shifted its focus from funding "wires and boxes" toward funding "human infrastructure" through training and content development. It also increased its "emphasis on long-term sustainability and measurable outcomes." The board's main goal, put succinctly, was "Connecting people through technology."[196]

The current board has undertaken several initiatives to improve operating procedures, sharpen its mission, and plan for the future. To that end, it has developed a series of governing principles:

- TIF serves disadvantaged, diverse populations that the private sector does not serve;
- TIF programs focus on connecting people, and on providing people with the technological tools—and training necessary to use tools—needed for the 21st century;
- The TIF Board facilitates the implementation of technology by providing vision and leadership, as well as by encouraging leadership among its constituents;
- TIF programs enable low-cost equal access, while encouraging local solutions to local problems;
- TIF encourages programs that are replicable and have wide application;
- The TIF Board gives priority to rural and underserved urban areas;
- TIF promotes collaborative efforts;
- TIF-funded programs supplement but do not supplant other efforts or programs;
- TIF programs are problem-solving oriented, and encourage the use of technology to develop new solutions to old problems; and
- TIF functions, not as entitlement, but as a catalyst for the deployment of technology and to facilitate the development of strategies of sustainability.[197]

In its most recent strategic plan, TIF defined its mission as "lead[ing] Texas in the development of an advanced and sustainable telecommunications infrastructure that stimulates equitable access and universal connectivity through grant awards to" its constituent groups.[198]

Strategic Planning

In June 2002, TIF issued its strategic plan for fiscal years 2003-07. In it, TIF notes that it spent its first four years funding "boxes and wires" to establish initial connectivity. Since then, its focus "has shifted to funding training and content and giving people the tools to use the infrastructure and make it relevant to their lives." The strategic plan identifies several challenges facing TIF as it tries to achieve its goals including the expense of sustaining connectivity, lack of technical expertise in some parts of Texas, lack of a state master plan identifying advanced telecommunications resources, lack of vision for technology within constituent groups, and a lack of coordination at the state level between constituent groups. However, TIF said that every entity within its constituent groups has had the opportunity to apply for TIF funding through noncompetitive grant offerings.[199]

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[196] *Annual Report 2001* at iii and 1.

[197] TIF Board, "Governing Principles" (February 2002).

[198] *Strategic Plan* at 10.

[199] Ibid at 26-27.

The *Strategic Plan* proposes some goals for its performance measures that TIF intends to achieve by the end of fiscal year 2005:

- 70 percent of Public School grants will have been awarded to rural school campuses;
- 60 percent of Public School grants will have been awarded to campuses with 50 percent or more economically disadvantaged students;
- 60 percent of Public School grants will have been awarded to campuses with 50 percent or more at risk students;
- 45 percent of Library and Health Care grants will have been awarded to rural counties;
- 70 percent of districts with fewer than 5,000 students will have been rated "high tech" or above for connectivity;[200]
- 35 percent of school campuses will have been provided distance learning technologies through TIF grants;
- 40 percent of TIF entities will be in collaborative efforts or community networks;
- 100 percent of educators will have completed technical training; and
- 70 percent of grantees will be in acceptable compliance.[201]

Outcomes measures are not projected beyond 2005 because of the statutory sunset of the agency on September 1, 2005.[202]

The *Strategic Plan* proposes to allocate $170 million for grant awards in fiscal year 2004 and $33 million in 2005. The priorities for 2004 are to fund rural and underserved areas based on needs, fund projects with the greatest need, connect existing networks, develop regional networks, and fund training and development of technology skills. For 2005, the priorities are to provide final equipment upgrades and training to regions most in need and close the final gaps of regional integration to the extent possible.[203]

The *Strategic Plan* has two principal shortcomings. First, nowhere does the *Strategic Plan* indicate TIF's current status in achieving its performance measures or assess its progress in completing its mission, namely leading Texas in the "development of an advanced and sustainable telecommunications infrastructure that stimulates equitable access and universal connectivity."[204] Second, it was completed without the benefit of a comprehensive needs assessment for any of its constituent groups. Instead, it notes that the TIF constituent working groups are in the process of identifying the needs of their relevant constituencies.[205]

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[200] "High tech" is defined as "dial-up, direct connectivity, wireless, bandwidth of at least 10/100 MB LAN" (*Strategic Plan* at 74). The committee interprets this to mean having a Fast Ethernet-based local area network capable simultaneously of 100 Megabits per second (Mbps) and 10 Mbps, depending on the devices attached to it. It is not clear how a dial-up connection fits within this definition, but it may be moot because TIF grants have required T-1 access or, beginning very recently, DSL, cable modem service, or fixed wireless.

[201] Strategic Plan at 67. TIF considers a grantee within "acceptable compliance" if it "respond[s] favorably to at least 75 percent compliance issues identified in quality management reporting data."

[202] Ibid at 57.

[203] Ibid at 41.

[204] Ibid at 10.

[205] TIF's seven working groups are comprised of representatives of each relevant TIF constituency, organizations or associations that represent each constituency, and industry experts. These groups serve an advisory function and appear to have no formal authority. The working groups are technology, pubic education,

Consistent with its mission, the board is required to develop a five-year Master Plan for infrastructure development. This plan is required to describe the project, timeline, and resource allocation targets for each year included in the plan. TIF is responsible for updating this master plan annually, and each proposed update is required to be printed in the *Texas Register*.[206] TIF has not fulfilled this obligation since 1998. TIF staff has suggested that its annual reports, though not forward-looking and generally containing none of the elements required in the Master Plan, have been thought of as serving as the Master Plan.

The current board has authorized funding for a scoping study to "identify the elements and issues to be addressed by a major follow-on study that will evaluate alternatives and develop recommendations for a statewide infrastructure to serve the long-term (15-20 years) telecommunications needs of Texas." The scoping study is expected to be presented to the TIF Board in December 2002, at which time it will begin discussions with several institutions of higher education to implement the broader "follow-on" study. This broader study is expected to include an examination of:

- Current and projected demand for telecommunications services statewide;
- Current and projected private and public investment in telecommunications infrastructure;
- Projected gaps that could be met by public investment or services;
- Alternatives for bridging gaps identified, with discussion of related design, cost, governance, legislative, and regulatory issues; and
- Recommendations.

A review of national, regional, and other states' infrastructures and plans will be part of the broader study. In addition, the scoping study description indicates that "all existing, relevant strategic planning documents governing the existing telecommunications systems should be reviewed."[207]

Needs Assessments

From the beginning, TIF has used working groups comprised of its constituents to assist with grant development and agency operations. It appears that TIF undertook its first formal needs assessment process during 2000 to gain more grantee input into the operations and grant opportunities of TIF.[208] The survey was sent to all past grant recipients, other eligible entities, state agencies, and state leaders. Public schools reported that they needed to purchase more workstations so that the ratio of students to Internet-accessible computers was more equitable. They also wanted to establish better distance learning capability for staff development and to offer college courses to students and staff. The survey also indicated that students should have increased access to technology from their homes, and schools needed more technical support staff to maintain infrastructure and train staff and students.

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community networking, library, higher education, public health, and training. See *Strategic Plan* at 28. Also, a brief discussion of the results of the now-completed needs assessments begins on the next page of this report.

[206] PURA §57.0455.

[207] Internal documents were provided by TIF that summarize the scoping study initiative, which was approved by the TIF Board in October 2002.

[208] Information about this needs assessment and how it was conducted is contained in the board's Annual Report (January 2001).

Libraries said they had a difficult time finding people who could provide technical support or write effective grant applications, especially for collaboratives. Libraries requested that TIF incorporate ongoing monthly connectivity charges beyond initial grant awards. Libraries also reported wanting TIF grants to be structured so that all equipment for a project could be purchased at once, instead of in phases. Higher education institutions asked TIF to provide more funding to enhance distance learning, both in terms of developing curriculum and improving access to distance learning for rural citizens and nonprofit entities. Higher education institutions also wanted TIF to offer more noncompetitive funding opportunities.

Healthcare facilities wanted TIF to give attention to applications in the areas of health libraries, education, telemedicine, and rural health care delivery. Healthcare facilities said they needed reduced telecommunications access costs, especially in rural areas, and also needed better training for individuals who serve as technical support and networking staff. Teleconferencing and other online collaboration projects were also important needs for healthcare facilities.

A new round of needs assessments is underway. Reports have been issued for the public schools, libraries, and higher education constituencies. The health care and sustainability reports are still in progress, with planned releases in January 2003.

Public Schools. The needs assessment for public schools was conducted by the Signal and Information Sciences Laboratory of the University of Texas at Austin. A significant portion of the needs assessment analyzes the results of surveys sent to public school teachers, principals, and technology specialists.[209] A summary of selected findings appears below.

Teachers were asked what changes in academic achievement and student performance they had noticed in their students over the past three years that could be attributed to an increase in the use of educational technology:

- 70 percent of teachers said the breadth and depth of students' understanding of subjects have increased;
- 58 percent said the amount of time students spend working with other students has increased;
- 72 percent said students' independence as learners has increased;
- 74 percent said students' engagement in classroom activities has increased;
- 80 percent said the quality of students' work has improved;
- 70 percent said students' research skills have increased;
- 64 percent said students' problem-solving skills have increased;
- 72 percent said the opportunities for students with special needs to learn have increased; and
- 60 percent said students' achievement on state or district assessments has increased.

In addition, over 30 percent of teachers said attendance and graduation rates have been positively affected by the use of educational technology in classrooms.

Nearly half of all teachers surveyed use computer technology in their classroom instruction daily, and almost 40 percent more use computer technology several times a month. The most frequent

[209] Casey Cole, et al., *K-12 Technology Needs Assessment Report* (September 2002) ("*K-12 Needs Assessment*"). The sampling procedures, survey instruments, and weighting methodologies are discussed at 4-12. Surveys were received from 456 educators (57 percent response rate), 516 principals (65 percent), and 454 technology specialists (57 percent).

uses were word processing, the Internet, subject-specific applications, electronic references, and e-mail. About 60 percent of teachers said their access to computers was excellent, and another 30 percent said their access was adequate. Similar access was reported for the Internet and for basic software tools. Less access was reported for printers (50 percent excellent and 36 percent adequate) and research tools such as CD-ROMs, online databases, and science information (40 percent excellent and 40 percent adequate). About 10 percent of teachers reported having inadequate access to computers, 7 percent had inadequate access to the Internet, and 18 percent had inadequate access to research tools.

Figure 17. Student-to-Equipment Ratios "Necessary" to Meet Schools' Educational Goals

- 3.75 students per up-to-date computer
- 7 students per network- or Internet-connected computer
- 14 students per laptop computer
- 15 students per printer
- 30 students per computer projection device
- 50 students per digital camera
- 55 students per scanner

Source: K-12 Needs Assessment, *reporting responses by public school principals*

Teachers were asked to identify barriers to their effective use of educational technology. About a fourth said the technology available to them was obsolete, malfunctioning, or nonfunctioning. Sixteen percent said the reliability and speed of their Internet connection was a problem, and 6 percent said it completely prevented them from using the technology. About a fourth of teachers said their classroom space was inadequate, and 35 percent said their budgets for supplies (like printer cartridges, storage media, and paper) were inadequate.

In terms of training, 30 percent of teachers said they were well prepared to integrate technology into the classroom, and 41 percent were moderately well prepared. Almost 30 percent of teachers reported that they were somewhat or not at all prepared. Teachers indicated that they wanted more of their professional development to focus on integrating technology into the classroom. The median response for how much time was nearly 14 hours, almost two full in-service days. Teachers reported that integrating technology into classroom instruction (65 percent), using multimedia software (37 percent), using presentation software (34 percent), using digital cameras and scanners (26 percent), and using web authoring software (20 percent) were their highest priorities.

The survey also sought information from the individuals designated by their respective schools as the "technology specialists." Over 90 percent of technology specialists indicated that their campus's Internet connectivity was T-1 or greater. Only 2 percent were still using dial-up connections. The average percent of classrooms with local area network connectivity was 90 percent, and the average percent of classrooms with Internet access was 96 percent.

The *K-12 Needs Assessment* also confirmed problems with schools' inability to attract, retain, or even afford technical support staff. Just over 40 percent of principals said they had a full-time paid technology coordinator. Another 20 percent said a teacher or other staff member handled technical support in addition to their other duties. About 18 percent used district-level support. About 1 percent each used volunteers, outside contractors, and no one. The average FTE assigned to technology support is 0.77, or about half of what principals said they needed. Several reasonably basic questions directed to the technology specialists indicated a lack of knowledge that could place some schools' technology programs at risk. For example, nearly a third of technology specialists did not know how old their school's router was, nearly one out of

eight technology specialists did not know what kind of wiring was used in their networks, and 7 percent did not know if their school used an Internet firewall.

Libraries. Almost 5,800 libraries, or about three-fourths of all Texas libraries, participate in the Texas Library Connection. A total of 551 libraries provided responses to the survey, of which 273 were public libraries.[210] Almost 90 percent of academic libraries reported using TexShare databases heavily or daily, compared with only 34 percent of public libraries and 27 percent of school libraries.[211] Larger libraries rely more heavily on TexShare databases: 100 percent of large libraries use TexShare heavily or daily, compared with 51 percent of medium-sized libraries and 12 percent of small libraries. More than 90 percent of academic and public libraries, and more than 80 percent of school libraries, offer personal computers and printers for their patrons' use. Fifty-five percent of academic libraries offer laptops for check-out, but only 18 percent of public libraries and 20 percent of school libraries do. About 50 percent of all libraries offer remote access to patrons, most through a proxy server with login/password.

Academic libraries are far more likely to offer distance learning opportunities. Almost two-thirds of academic libraries offer distance learning courses to students and faculty, while over half of public libraries offer such opportunities. Less than 20 percent of school libraries offer distance learning to students, but a third offer distance learning to teachers. More than 90 percent of academic libraries provide at least one workstation for use by persons with disabilities, as do more than 80 percent of public and school libraries. Fewer than 12 percent of libraries offer instruction in languages other than English.

In terms of equipment, libraries reported that their highest priorities were updating older equipment, maintaining their technology platform, having better technical support, and gaining access to more databases and online research. In terms of training, the highest priorities identified by library staff were learning about how to use TexShare databases, use online library catalogues, search the Internet, and develop and maintain the library's web site.

More than a third of public libraries reported that they have been able to develop sources of local funding as a result of their TIF grants.[212] About 15 percent of academic libraries and 9 percent of school libraries were able to leverage additional funds as a result of their TIF grants. Public libraries were also most likely to develop partnerships with other institutions. Forty-two percent of public libraries had done so, compared with 30 percent of academic libraries and 10 percent of school libraries.

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[210] William E. Moen, et al., *Needs Assessment Study of Texas Academic, Public, and School Libraries: Final Report* (September 2002).

[211] TexShare is a partnership of academic and public libraries that enables each of its members to obtain and access services that few of them could obtain on their own. In 2001, a TIF grant of around $15 million gave TexShare members access to 60 research databases that would have cost $150 million or more if each member library had purchased them separately. For more information on TexShare, visit http://www.texshare.edu (accessed November 22, 2002)

[212] For example, the Joe Barnhart Bee County Library has been able to use TIF funds to leverage two grants from foundations and multiple sources of local donations to provide 40 public access computers, 24 laptop computers available for checkout, applications such as Microsoft Office, Internet browsing, and computer classes for its patrons. Its TIF grants covered only a portion of the hardware, software, and training needed to provide these services to the community.

Higher Education. According to TIF, the higher education working group chose to align its efforts toward meeting the goals established in the *Closing the Gaps* report issued in 2000.[213] This report established a series of goals for higher education participation, student success, excellence, and research by 2015, to be achieved in a series of steps in 2005 and 2010. Significantly, this report does not address the technology and information needs of institutions of higher education. It is difficult to draw conclusions about how TIF should tailor its Higher Education grant programs to meet the goals in the report.

Evaluating TIF's Performance

First and foremost, TIF defines its mission in terms of leading Texas in the "development of an advanced and sustainable telecommunications infrastructure that stimulates equitable access and universal connectivity through grant awards" to its four constituent groups.[214] It is obvious that TIF has enabled public schools, libraries, and healthcare facilities to obtain connectivity that they did not prior to TIF's creation and might not have today without TIF funding, and it is clear that a number of partnerships and collaborations have formed between entities that might otherwise have never banded together.

Most of TIF's performance measures are indicators of outputs of the grant process. They do not measure the impact of TIF funding, either with or without consideration of other forms of funding. The formal needs assessments recently completed or currently underway provide several significant potential outcomes measures. For example, the Public Schools needs assessment establishes several quantitative criteria that determine the adequacy of access to technology. Data obtained from school principals established specific ratios of students to equipment that principals felt were "necessary" to meet the school's educational goals. Data obtained from teachers established their access to technology. Both of these sets of data, and many others contained in these assessments, could become performance indicators that could measure TIF's impacts and guide its future grant awards.[215]

TIF could define what is adequate access to technology and what is excellent access to technology. TIF could adjust these definitions based on the location of a campus (rural or urban), size of a campus (large or small), type of campus (secondary or elementary), and makeup of the student body (percent economically disadvantaged or at risk). Then, TIF could evaluate which campuses in this state have less than adequate access, adequate access, or excellent access. It would then stand to reason that its top priority would be to bring those campuses, libraries, and healthcare facilities that have less than adequate access up to at least adequate access.

However, it does not appear that TIF has ever undertaken such an analysis. Consequently, it is impossible to determine how successful TIF has been in achieving its stated mission.

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[213] Texas Higher Education Coordinating Board, *Closing the Gaps: The Texas Higher Education Plan* (October 2000) ("*Closing the Gaps*").

[214] *Strategic Plan* at 78.

[215] See Figure 17 on page 98 and the discussion of the teachers' responses to the *K-12 Needs Assessment* survey, which begins on page 97.

State Auditor's Findings

The State Auditor's Office (SAO) has conducted two audits of the TIF Board. In the first, issued in February 2000, SAO concluded that TIF had "distributed approximately 25 percent ($382 million) of its fund without adequately identifying Texas' telecommunications needs, effectively collaborating with other agencies, or developing written procedures for its day-to-day operations."[216] In October 2002, SAO issued a *Follow-up Audit* which concluded that TIF "cannot sufficiently demonstrate that it has awarded grants as the Legislature intended because (1) it has not developed quantifiable criteria to evaluate the grant awards program and (2) its grant management system lacks the detail necessary to analyze whether priority constituents are adequately served."[217]

Both audits commended TIF for its accomplishments. The *First Audit* noted that TIF was a start-up agency which had "faced many challenges in its quest to build an advanced telecommunications network."[218] The *Follow-up Audit* acknowledged "there is substantial anecdotal evidence attesting to the accomplishments of various grantees." However, both audits concluded that TIF has not adequately analyzed or communicated its progress in fulfilling its mission.

The *First Audit* stressed TIF's need to improve its strategic planning, internal governance policies, performance measurement, and collaboration with other state agencies. Because it had not yet created a strategic plan, produced written grant administration policies, or developed performance measures, TIF had no basis for evaluating the success of its grant programs and no ability to provide adequate reports to the public and the Legislature. Its emphasis on basic connectivity created a risk that the funds spent on infrastructure would ultimately be unsustainable. It recommended that TIF

- Clarify, strengthen, and document board governance policies;
- Improve strategic planning by assessing Texas' telecommunications needs, increasing collaboration with other agencies, and demonstrating performance through deliberate targeting and more informative reporting; and
- Develop policies and procedures for all aspects of agency operations, including grant administration.

In general, TIF agreed with the conclusions and recommendations in the *First Audit*. TIF said several agency initiatives were underway to address the issues raised in the audit, including an update of its bylaws, an internal review of board procedures, development of a comprehensive strategic plan and a statewide needs assessment, review of the working group structure, and development of a policy manual.

In the *Follow-up Audit*, SAO amplified its earlier concerns that TIF had not developed adequate outcomes-based performance measurements or an effective strategic plan. Where it had been

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[216] Office of the State Auditor, *An Audit Report on the Telecommunications Infrastructure Fund Board*, SAO Report No. 00-010 (February 2000) ("*First Audit*") at 1.

[217] Office of the State Auditor, *An Audit Report on Grant Administration at the Telecommunications Infrastructure Fund Board*, SAO Report No. 03-005 (October 2002) ("*Follow-up Audit*") at 1.

[218] *First Audit* at 2.

previously concerned with the adequacy of TIF's ability to report its progress, SAO indicated in the *Follow-up Audit* that TIF may not be able to demonstrate whether it has awarded funds as the Legislature intended. Complicating this, SAO concluded, was its determination that TIF's grant monitoring process is "inadequate" for determining grantees' compliance with grant agreements, which themselves generally lack performance measures and sanctions.[219]

Legislative Intent. SAO concluded that TIF cannot sufficiently demonstrate that it has distributed grant funds as the Legislature intended, in part because TIF has not established quantifiable goals or objectives by which to measure the progress of its programs. TIF's performance measures track workload (such as grants awarded), but "none of these measures addresses the results of funding grantees." Such measures could include achieving a desired ratio of students to computers or providing a sufficient number of broadband connections to a constituent group. Instead, they measure such program attributes as percent of grants awarded to particular constituent groups without regard to the outcomes achieved by that level of funding.[220]

TIF responded that its enabling legislation has "driven the criteria, objectives, goals, and performance measures for TIF grant programs. TIF performance measures, approved by the Office of the Governor, the Legislative Budget Board, and the Legislature, have consistently been achieved and, in most cases, far exceeded."[221] TIF said it "conducts in-depth analyses of available data to direct grant programs, measures the outcomes of those programs, and ensures that funds have been spent appropriately." TIF said the "explicit objective" of the board from 1995 to 2001 "was to provide Internet connectivity, distance learning, and inside the walls wiring and technology infrastructure." Since 1995, TIF funds have "seeded or leveraged more than 12,000 broadband connections" and purchased "over 375,000 computers, servers, switches, and other critical technology components."[222] In 2001, TIF awarded 52 percent of grants to rural campuses, 33 percent of grants to schools with greater than 50 percent at-risk students, and 60 percent of grants to schools with greater than 50 percent economically disadvantaged students.[223]

SAO analyzed the targeting of Public School grants awarded from 1999-2001 and concluded that priority groups may not be receiving priority treatment. SAO recognized that "there are no criteria for what amount of funding is appropriate" for different types of school districts, but it stated that analyzing funding on a per capita basis "would allow more directed targeting." According to SAO's analysis, schools with more than 50 percent at-risk students received $33.17 in per capita Public School grants, which was 31 percent less than the $48.30 in per capita TIF funding received by schools with less than 50 percent at-risk students. Schools with more than 50 percent economically disadvantaged students received $39.06 in per capita TIF funding, which was 18 percent less per capita TIF funding than the $47.70 in per capita funding received by schools with less than 50 percent economically disadvantaged students. Further, "urban

[219] *Follow-up Audit* at 7, 12, 15.

[220] Ibid at 1.

[221] Ibid at 31.

[222] Ibid at 2, 32.

[223] Ibid at 2, 6.

districts may not be receiving priority funding." Major urban school districts received $13.26 in per capita TIF Public Schools grant funding, which was significantly less than the per capita funding received by all other types of school districts.[224]

Figure 18. SAO's Calculations of Per Capita Public School Grants by School District Type

District Type	No. of Students	Total Awarded	Per Cap.
Rural	137,622	$35.6 million	$258.36
Non-Metro Stable	442,300	$46.0 million	$104.04
Non-Metro Fast Growing	74,531	$7.3 million	$98.52
Independent Town	326,382	$25.3 million	$77.55
Other Central City Suburban	368,187	$25.7 million	$69.74
Other Central City	675,719	$28.2 million	$41.79
Charter	37,978	$1.4 million	$36.60
Major Suburban	1,129,931	$39.8 million	$35.22
Major Urban	866,959	$11.5 million	$13.26
TOTAL	4,059,619	$220.8 million	$54.38

Source: Follow-up Audit *at 5.*

TIF replied that it gathers data to target priority groups through a "deliberative, collaborative, and evaluative" process involving its working groups, needs assessments, research, staff recommendations, and Board interactions with constituent groups. "It is very early to quantify or correlate the synergies, but the positive results are indisputable," TIF wrote in its response to the *Follow-up Audit*. "Every day in Texas schools, libraries, and health care centers, the lives of citizens are being dramatically changed by technology."[225]

Grant Management. SAO projected that TIF has paid approximately $4.4 million to grantees for "items that were not approved in the grantees' budgets" for fiscal years 2000-01 and part of 2002.[226] SAO states TIF does not reconcile reimbursements to budgets, and TIF no longer requires grantees to submit supporting documentation with their requests for funds.[227] SAO found that TIF has not "properly closed out" 73 percent of expired grants and does not consistently "enforce" grantee matching fund requirements. Of a random sample of grants, SAO determined that several grant files it reviewed contained no documentation to verify that grantees actually provided $0.3 million in required matching funds. SAO concludes that "when the agency fails to take a proactive approach toward verification of compliance with matching fund requirements, it has no way of knowing whether grantees comply with these requirements or not."[228]

TIF responded that "the highly technical and complex nature of TIF-eligible items will occasionally not match the specific language in the budget" but emphasized that TIF will reimburse grantees for "budget-approved items only." TIF said grantees have provided

[224] Ibid at 3-6.

[225] Ibid at 6, 32.

[226] Ibid at 7. The $4.4 million figure cited by SAO is about 1 percent of the overall reimbursements issued during the study period, and about $1.4 million less than the amount spent for grant monitoring during the same period. SAO and TIF continue to disagree over the appropriateness of expenditures cited by SAO.

[227] Ibid at 8. This has already changed. Effective October 15, 2002, all RFFs must include invoices, and no other supporting documentation (such as approved purchase orders) will be accepted by TIF. However, for more than a year, TIF did not require grantees to submit supporting documentation with their RFFs.

[228] Ibid at 9-10. SAO and TIF continue to disagree over the amounts of matching funds required in several instances cited by SAO.

significantly more than the 10 percent required match, and TIF pledged to take more aggressive action on closeouts.[229]

Noting that TIF has moved its grant monitoring and quality management programs in-house, SAO predicted that it will be less expensive than using a contractor but doubted that the quality of the grant monitoring function will improve. SAO said TIF has not performed a staffing analysis to determine the number of grantee site visits, teleconferences, risk assessments, or other administrative functions that it can perform each year. Site visits were particularly important to SAO, which said "performing on-site monitoring visits is necessary to verify that grantees are complying with grant requirements and achieving grant goals and objectives." When these programs were contracted out, TIF "did not ensure that an adequate number of on-site grant monitoring visits were performed." TIF's contractors performed on-site visits for 1 percent of grantees, and TIF has performed on-site visits for 3 percent of grantees since taking the program in-house. SAO said TIF has not developed and documented selection criteria it uses to determine whether a site visit should occur.[230]

TIF responded that site visits were "only one part of a multi-layered methodology" that included online surveys, desk reviews, teleconferences, videoconferences, financial reporting, and examinations of spending patterns. TIF said it uses these tools to monitor 100 percent of its grantees. "Site visits are reserved for the most high-risk grantees given travel caps and FTE constraints."[231]

SAO countered that TIF "does not 'monitor' 100 percent of its grantees" and neither the agency nor the contractor could document the number of desk reviews or other non-site-visit monitoring activities they had conducted. Further, TIF has not followed up on outstanding issues identified in site visits or desk reviews, such as failing to determine whether grantees returned funds as required, and grantees' self-reported data are not verified by TIF. Special project awards have largely gone unmonitored.[232]

TIF said it has implemented new policies to follow-up on findings of site visits and desk reviews and to document its follow-up activities.[233] TIF added that "significant changes implemented have raised the compliance level from 75 percent to a rate of 97 percent." TIF has recently tasked an Executive Committee to review special projects.

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[229] Ibid at 8, 10.

[230] Ibid at 15-16. SAO does not indicate what constitutes an adequate number of site visits, and SAO did not visit any grantee sites during its work on this audit. TIF has indicated that its four-person quality management team will travel about 30 percent of the time, which enables visits to as many as 15 percent of sites during a year. Two years ago, TIF requested an additional 10 FTE and $0.5 million to beef up quality management programs and bring them in-house. The final appropriations bill authorized three of the requested FTE. The additional positions bring TIF to 29 FTE. TIF has said that it expects "no overall change" in its employment level, though "staff duties will shift as workload shifts" to grant monitoring from grant administration. See *Strategic Plan* at 82-83.

[231] Ibid at 16-17.

[232] Ibid at 17-18.

[233] Ibid at 19-20. SAO said these new policies appear "sufficient" if fully implemented.

SAO found that 41 of the 44 RFPs issued by TIF since its inception "do not contain performance measures to evaluate individual grantees' accomplishments." Though it requires self-reported evaluations, TIF does not ultimately request grantees to submit them. "The absence of standardized grantee performance measures makes it difficult to identify best practices or to suggest program enhancements," SAO said. In addition, 27 of the 44 RFPs "lack provisions for sanctions." SAO concluded that TIF is inconsistent in its enforcement of grant agreement provisions requiring grantees to provide matching funds or to submit requests for funds within 90 days of the expiration of the grant period, and TIF does not have documentation to support its payment of funds in some cases where the 90-day period has expired.[234]

TIF responded that it tracks performance "based on the intent of the enabling legislation" and pre-approved performance measures. Grantees are required to submit financial reports twice yearly and then a final report at the close of the grant. TIF said it "will continue to seek improvements in grant evaluation" and "refine and incorporate language and processes for sanctions and recouping funds."[235]

Recommendations. In the *Follow-up Audit*, SAO recommended that TIF "establish criteria to quantify the effect that grant funds have had in advancing telecommunications connectivity and technology." It should develop and implement a plan to "ensure that all priority groups are uniquely identified" and monitored. One step in this process is including the TEA campus and district numbers in all grant records. TIF should require grantees to identify the associated budget lines on any RFFs they submit. The agency should implement a plan to close out all expired grants and ensure that grantees provide verifiable documentation of matching funds. TIF should reconcile the amounts paid against the original amounts awarded to detect erroneous or unauthorized charges.

TIF should conduct an "adequate number of on-site monitoring visits to gain assurance that grantees are complying with grant requirements." The agency should develop written policies and procedures to follow up on issues identified in site visits and desk reviews. TIF should implement "post-performance review policies" that determine outcomes measures, track program progress, and verify performance. The agency should also enforce sanctions contained in the Texas Administrative Code and consistently apply its grant rules to all applicants.[236]

In its management response, TIF said, "the major conclusions of this audit represent a conflict of perspectives where achievement of approved performance goals are [*sic*] given less weight than interpretations of legislative intent." The agency said it would "continue to award grants as intended by the enabling legislation while aggressively improving processes across the board." In its response to the management response, SAO said the agency's approved performance measures "do not provide relevant information that is useful in measuring the impact of grant funds."[237]

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[234] Ibid at 23, 25.

[235] Ibid at 24.

[236] Ibid at vii-ix.

[237] Ibid at 31-33.

Legislative Priorities

Within the enabling statute are eight funding priorities for TIF to consider when awarding a grant. Specifically, the board "shall give priority" to a project or proposal that:

- Represents collaborative efforts involving more than one school, university, or library;
- Contributes matching funds from another source;
- Shows promise of becoming self-sustaining;
- Helps users of information learn new ways to acquire and use information through telecommunications;
- Extends specific educational information and knowledge services to a group not previously served, especially a group in a rural or remote area;
- Results in more efficient or effective learning than through conventional teaching;
- Improves the effectiveness and efficiency of health care delivery; or
- Takes advantage of distance learning opportunities in a rural or urban school district with a disproportionate number of at-risk youths or a high dropout rate.

In distributing funds to public schools, the board must consider the relative property wealth per student of school districts that receive funding and recognize the unique needs of Texas' rural communities.[238]

There is significant anecdotal evidence that TIF has followed these priorities when one explores the achievements of individual grantees in local communities. However, there is little systematic evidence indicating whether TIF has awarded funds in the most efficient or effective manner, or whether TIF has balanced these priorities. As noted above, the agency's approved performance measures do not focus on the impacts of grant programs, and individual grantees' reports of their site-specific impacts are not routinely tabulated, summarized, or aggregated by TIF.

Some of TIF's approved performance measures touch on these priorities. For example, one of these measures is the percent of Public School grants awarded to rural school campuses. By 2005, TIF projects that number to be 70 percent. Another is percent of entities that participate in collaborative efforts or community networks. By 2005, TIF projects that number to be 35 percent.[239] However, other priorities are more difficult to quantify, and identifying ways of determining whether the priorities are balanced may also prove quite difficult.

One of SAO's conclusions in its *Follow-up Audit* was that TIF may not be giving the same priority to urban public school campuses as it has done for rural campuses, based on apparent disparities in per capita Public School grants among different types of school districts. SAO did not consider grants awarded from 1996-1998 (including three awarded to a minimum of 966 priority campuses and districts) or in 2002 (including one awarded to 1,563 campuses that had never received TIF funding), and thus draws its conclusions based on a subset of grant awards. Neither SAO nor TIF has included estimates of other sources of technology funding spent by schools to supplement TIF grants or attempted to explain differences in per capita funding between campus types. As mentioned previously, the outcomes of TIF funding have not been analyzed in a manner to determine whether there is relative equity of impacts.

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[238] PURA §§ 57.047(c) and (d).

[239] *Strategic Plan* at 57.

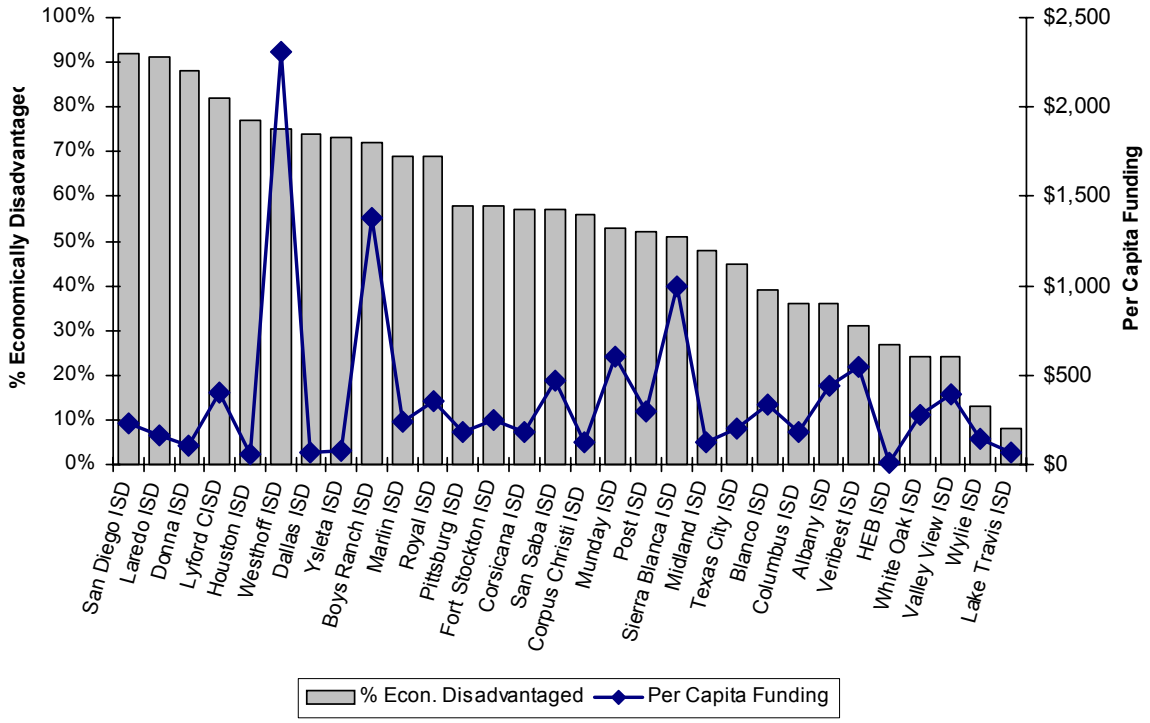
Table 2. Characteristics of Selected School Districts Used to Examine Public School Grant Award Patterns

District Name	County	Avg. Daily Attendance	% Econ Disadv.	% At Risk	Total PS Funding	Per Capita Funding
Westhoff ISD	DeWitt	65	75%	41%	$150,000	$2,307.69
Boys Ranch ISD	Oldham	335	72%	74%	$463,192	$1,382.66
Sierra Blanca ISD	Hudspeth	125	51%	46%	$125,000	$1,000.00
Munday ISD	Knox	389	53%	47%	$233,140	$599.33
Veribest ISD	Tom Green	258	31%	42%	$139,866	$542.12
San Saba ISD	San Saba	768	57%	33%	$362,632	$472.18
Albany ISD	Shackelford	558	36%	28%	$244,375	$437.95
Lyford CISD	Willacy	1,440	82%	66%	$575,637	$399.75
Valley View ISD	Cooke	636	24%	26%	$250,000	$393.08
Royal ISD	Waller	1,350	69%	56%	$481,340	$356.55
Blanco ISD	Blanco	852	39%	26%	$286,812	$336.63
Post ISD	Garza	943	52%	39%	$278,000	$294.80
White Oak ISD	Gregg	1,325	24%	20%	$366,193	$276.37
Fort Stockton ISD	Pecos	2,293	58%	55%	$562,930	$245.50
Marlin ISD	Falls	1,542	69%	44%	$365,000	$236.71
San Diego ISD	Duval	1,513	92%	52%	$353,000	$233.31
Texas City ISD	Galveston	5,473	45%	34%	$1,127,000	$205.92
Pittsburg ISD	Camp	2,077	58%	46%	$381,794	$183.82
Columbus ISD	Colorado	1,508	36%	26%	$273,971	$181.68
Corsicana ISD	Navarro	4,926	57%	42%	$888,660	$180.40
Laredo ISD	Webb	21,558	91%	70%	$3,583,824	$166.24
Wylie ISD	Collin	4,373	13%	22%	$630,111	$144.09
Corpus Christi ISD	Nueces	36,351	56%	41%	$4,613,947	$126.93
Midland ISD	Midland	19,215	48%	32%	$2,372,741	$123.48
Donna ISD	Hidalgo	9,703	88%	69%	$1,059,999	$109.24
Ysleta ISD	El Paso	43,337	73%	49%	$3,146,101	$72.60
Lake Travis ISD	Travis	3,956	8%	21%	$282,000	$71.28
Dallas ISD	Dallas	149,406	74%	54%	$9,328,845	$62.44
Houston ISD	Harris	190,856	77%	58%	$10,618,639	$55.64
Hurst-Euless-Bedford ISD	Tarrant	18,119	27%	29%	$150,000	$8.28
SUBTOTAL, These 30 Districts		**525,250**	**70%**	**52%**	**$43,694,749**	**$83.19**
The 25 Smallest Districts		*83,742*	*47%*	*38%*	*$12,403,393*	*$148.11*
STATE TOTAL		**3,782,009**	**49%**	**39%**	**$558,055,262**	**$147.56**

Sources: Texas Education Agency, TIF Board

Absent an alternative measure of equitable outcomes, per capita grant funding seems to provide a reasonable way of evaluating the relative impacts of TIF funding (and *only* TIF funding) upon the priority groups enumerated by the Legislature. Though such an analysis clearly cannot divine the ultimate outcomes of TIF funding, it is about the only consistently measured aspect of TIF's performance available for analysis. Thirty school districts were selected to form a sample of convenience in an effort to further examine patterns of per capita funding; Table 2 provides

Figure 19. Per Capita TIF Grants Compared to Percent of Economically Disadvantaged Students



some basic characteristics of these 30 districts and measures of total Public School grant funding and per capita funding.[240] No other TIF or technology funding is included in this analysis.

Figure 19 compares the per capita Public School grant funding for the 30 districts with the corresponding percentage of the districts' students who are economically disadvantaged. Figure 20 compares the per capita Public School grant funding with the percentages of the 30 districts' students who are at risk. Figure 21 compares the per capita Public school grant funding with the average property value per student for 29 of the 30 districts.[241] There is no observed relationship between per capita Public School grant funding and any of these three priority indicators.

Seven of the 30 districts are considered rural by TEA: Albany ISD, Boys Ranch ISD, Munday ISD, Sierra Blanca ISD, Valley View ISD, Veribest ISD, and Westhoff ISD. Forty-two percent of these seven districts' students are economically disadvantaged, and 40 percent are at risk. The average per capita grant for these seven districts was $678.60. Six of the 30 districts are considered major urban or other central city by TEA: Corpus Christi ISD, Dallas ISD, Houston ISD, Laredo ISD, Midland ISD, and Ysleta ISD. Seventy-three percent of these six districts'

[240] These districts were selected in an attempt to represent the diversity of geographic, socioeconomic, and size of Texas public school districts. However, this was not a randomly chosen sample, so the analysis presented here cannot be validly applied to the entire state. Instead, the analysis simply should be viewed as another attempt to quantify the results of TIF's grant programs, with an understanding that a comprehensive study of access to technology within and among different priority groups will be needed to judge TIF's ultimate success.

[241] TEA data used for this analysis did not include a measure of property value for Boys Ranch ISD.

Figure 20. Per Capita TIF Grants Compared to Percent of At-Risk Students

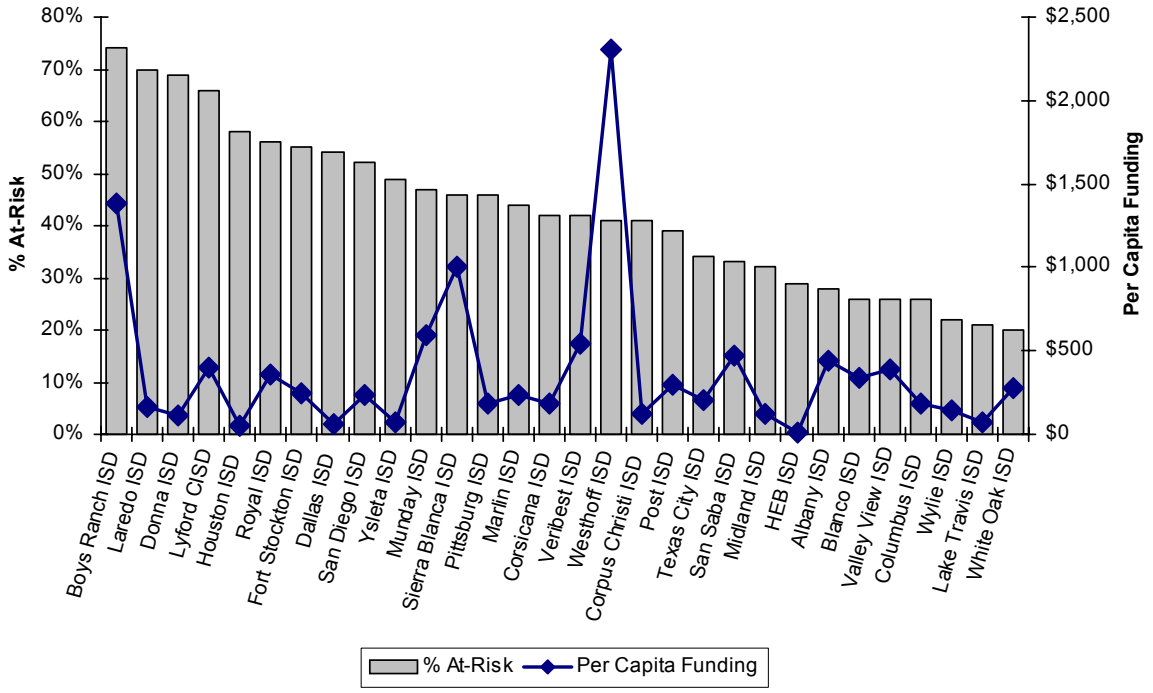
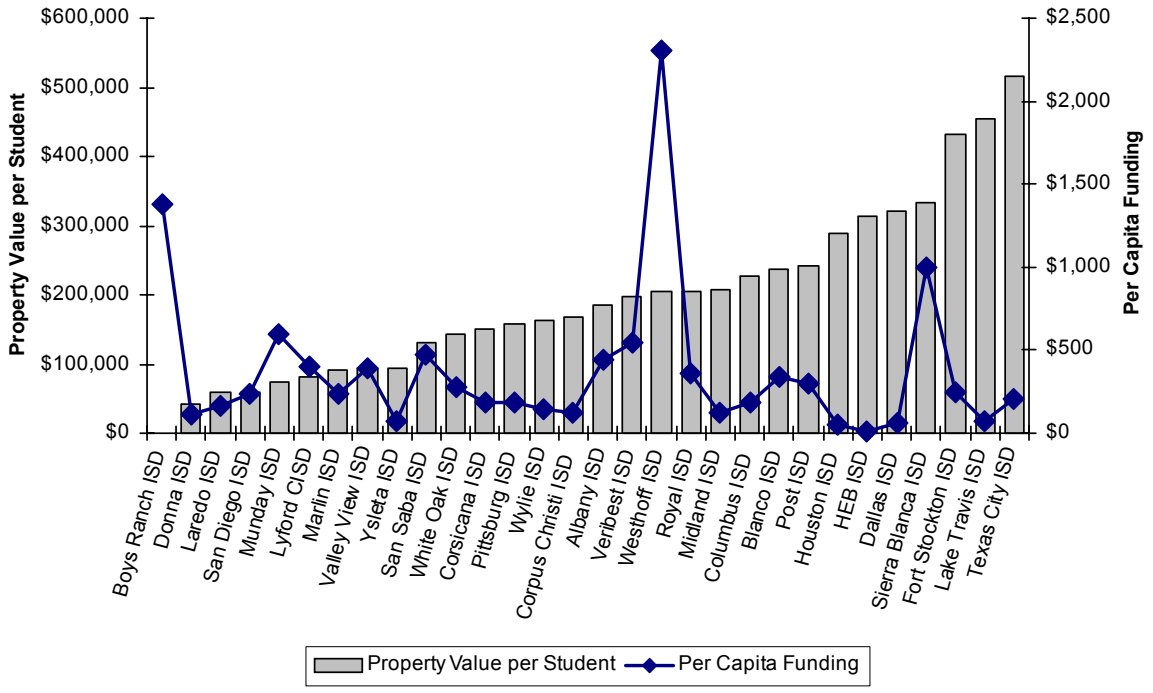


Figure 21. Per Capita TIF Grants Compared to Property Value per Student



students are economically disadvantaged, and 54 percent are at risk. These figures are 31 and 14 percentage points higher than the seven rural districts, respectively. The average per capita grant

for these six major urban and other central city districts was $73.07, or about 11 percent of the corresponding figure for rural districts. In SAO's analysis, the per capita Public School grant funding (for 1999-2001) for major urban and other central city districts was observed to be $25.76, or about 10 percent of the $258.36 in per capita funding observed for rural districts.

This evidence suggests that TIF is recognizing the unique needs of rural districts and has designed programs that prioritize their needs. Given that many of these rural districts likely had little or no Internet connectivity or computer technology in their classrooms before TIF, and little or no capability of acquiring such connectivity or technology without TIF, then this funding result may be appropriate. However, in designing grant programs that give priority to smaller, rural districts, TIF may not be prioritizing the needs of underserved urban areas after all.

TIF's regular grant process is better suited for smaller districts than larger ones. Theoretically, a school district with four campuses—not an unusual arrangement for a district with an ADA of around 1,200—and half of its students considered economically disadvantaged could have applied for the following:

- PS3, which could have provided an average grant of $78,000 per campus, potentially for all four campuses;
- PS6, which could have provided an average grant of $50,000 per district/campus, for a determined number of campuses; and
- PS9, which could have provided an average grant of $82,000 per campus, for up to two campuses.[242]

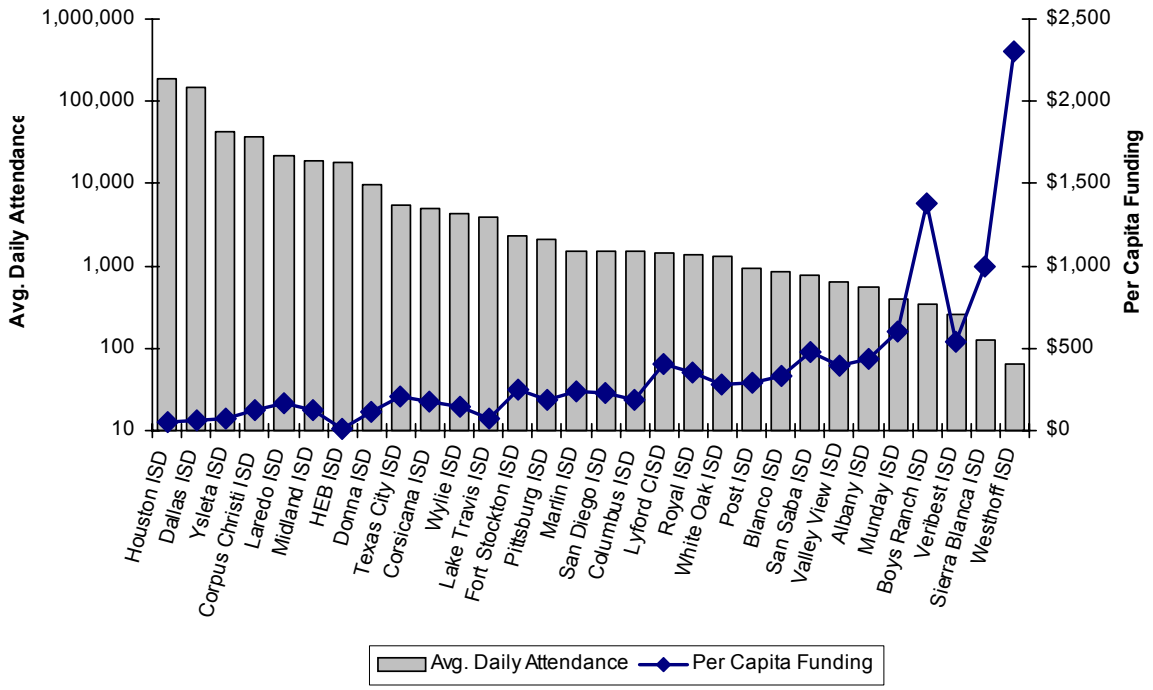
It is possible that all four campuses could have been funded twice. However, a large school district with an ADA of more than 100,000 could theoretically have applied for grants for only about 40 of its campuses through the regular grant programs. In fact, only 29 of Houston ISD's 302 campuses (10 percent) and 26 of Dallas ISD's 230 campuses (11 percent) received funding through the 11 Public School RFPs. The other 477 of these two districts' campuses (90 percent) have not been funded through a regular Public School grant offering.

In an effort to ensure that all campuses had the opportunity to receive TIF funds, the agency designed a special RFP which offered a grant of $44,000 to any campus that had not previously received a Public Schools grant. This special RFP provided 83 percent of all TIF Public School grant funds received by Houston ISD and 71 percent of all Public School grant funds received by Dallas ISD. If the special RFP were excluded from the analysis discussed above, then the amount of TIF Public School funding received by Houston ISD would have been $9.50 per student, and Dallas ISD would have received $18.28 per student.

Other urban districts such as Corpus Christi ISD (36,251 ADA), Laredo ISD (21,558), Midland ISD (19,215), and Ysleta ISD (43,337) received a considerable portion of their total share of Public Schools grants from the special RFP as well. It funded 98 of those four districts' 194 campuses (51 percent). By contrast, the special RFP represented a much smaller share of the other 24 sampled districts' funding: of their 146 campuses, only 11 (8 percent) received a $44,000 grant because it had not already received funding.

[242] There are several other combinations of grant awards that could apply. This pattern was observed for a number of smaller districts.

Figure 22. Per Capita TIF Grants Compared to Average Daily Attendance



For these reasons, it is not surprising that a relationship can be observed between the 30 districts' per capita Public School grant funding and ADA. Districts with larger ADAs are observed to have received smaller per capita grants, and smaller districts have received larger grants, regardless of their socioeconomic circumstances. The fact that many RFPs result in grant awards that are roughly, if not exactly, the same dollar amount regardless of the magnitude of the recipients' technology needs or relative economic disadvantage only compounds this effect. There is no doubt that noncompetitive grants have increased the pool of potential grant applicants, but TIF has not demonstrated that noncompetitive grants awarded in roughly equal amounts have resulted in the most efficient allocation of resources based on the priorities outlined by the Legislature. Further, TIF has not demonstrated that the apparently unequal distribution of its grant funding, on a per capita basis, has resulted in more equitable access to technology regardless of geographic or socioeconomic circumstances.

The data presented here suggest that TIF dollars have far greater impact in smaller districts than in larger ones. If it were the case that TIF grants were the only source of technology funding in small districts while larger districts have significant resources committed to technology, then the observed inequities in per capita TIF funding are helping to achieve equitable access across the state. Without an analysis of students' and citizens' access to technology or a true measurement of the outcomes of all sources of technology investment at TIF-eligible entities, then there is no way to know how much progress the agency has made toward achieving its stated goals or whether, given its resources, whether it has efficiently made as much progress as possible.

The *K-12 Needs Assessment* addressed perceptions of the adequacy of access to technology, the degree to which technology enhances teaching and improves learning, and an understanding of

how much technology investment is needed to achieve the goals of an educational institution. Today, TIF has measured where its Public School grant funds have gone, although not necessarily at the best level of detail. What is lacking is a thorough analysis of students' access to technology in their schools and an evaluation of which schools do not currently provide adequate access first, and excellent access second. Such an analysis would help TIF to better target the RFPs for its remaining $0.5 billion in funds available for grants. Similar analyses are needed to locate inadequate public access to resources at public libraries and inadequate student and teacher access at school libraries; inadequate access to health care delivery resources by doctors and their patients; and inadequate access to distance learning and ability to offer courses via distance learning by community colleges and other institutions of higher education.

There is substantial anecdotal evidence demonstrating that TIF's programs have created access to technology and the Internet that may not otherwise have occurred, particularly in rural areas of Texas. However, ensuring that the remaining funds available for grant awards go to those constituencies and areas most in need is potentially hampered by a heavy and increasing reliance on noncompetitive grant awards that provide the same amount of funding regardless of need; a continued lack of systematically measured outcomes; gaps and inconsistencies in the agency's databases; the absence of a comprehensive study of relative access to technology; and a continued lack of a technology master plan for Texas.

TIF has made great strides, especially considering the task it has been given and the short time it was given to perform it. The board and staff of TIF are clearly committed to the agency's success. They are capable of conducting the kinds of analyses needed to confirm the agency's successes, overcome its weaknesses, and provide the greatest impact for its remaining resources. TIF's next annual report will be provided to the Legislature in January 2003.

ELECTRIC TRANSMISSION FACILITY SITING

High-voltage transmission lines are the link between the generation units that produce electric power and the lower-voltage distribution systems from which most end-use customers take electric power. Transmission lines—typically large wires that run above ground atop large support structures—transport electric power across long distances and are often collectively referred to as the transmission grid. Like many forms of public infrastructure, decisions regarding route selection and use of eminent domain authority often involve attempting to balance the interests of multiple, usually adverse, parties.

Overview of Bulk Power Systems

Electricity is somewhat unique as a commodity in that it cannot be readily stored in significant quantities. Therefore, it must be made and distributed as it is simultaneously consumed. Ensuring electric system reliability requires three key components: adequate generation of electric power, sufficient transmission facilities to move the power from generators to the distribution systems that serve most end users, and an operating and monitoring system to make the minute-to-minute adjustments necessary to keep the grid balanced between available supply and demand at all times.

A defining feature of the bulk power system is the degree of interdependence between its various parts. The need for coordinated system operation stems from more than simple balance between supply and demand. Because the system uses alternating current (AC), every generating plant must be in precise synchronization in order to keep the network at the same frequency and maintain the voltage. The challenge of keeping a power system in supply-demand balance, synchronized, and voltage-supported is made difficult by the fact that the electricity transmission system generally does not allow power to be directed down a specific path from one generator to one consumer. The transmission system is more like a large water pool into which electricity flows from all generators. All users take from this pool, and the system must be constantly adjusted so that the total water flowing into the pool equals the total water being withdrawn by all users at every moment and no ripples are formed across the surface.

Thus the transmission system must reach all generators, reach all distribution systems, and have sufficient capacity at all points to maintain system stability. The first generation facilities were typically located at or near the point of consumption. Over time, larger generation facilities were developed in remote locations and the electric power was transmitted across high-voltage wires to consumption points.

Three major interconnected bulk power systems serve the continental U.S., and all three serve portions of Texas. The Eastern Interconnection covers most of the eastern and central U.S. Parts of the Texas Panhandle and East Texas are covered by the Eastern Interconnection. The Western Interconnection covers most of the western portion of the country, roughly following a line just

east of the Rocky Mountains. The El Paso area is covered by the Western Interconnection. Most of Texas is served by the Texas Interconnection, which operates under a single energy control center operated by the Electric Reliability Council of Texas (ERCOT).[243] Although limited direct current power transfers between the three grids are possible, physical electric system boundaries between them prevent synchronous operation.

Primary regulatory jurisdiction of wholesale power markets in the Eastern and Western Interconnections, including the Texas portions thereof, is exercised by the Federal Energy Regulatory Commission (FERC). Primary regulatory jurisdiction over the Texas Interconnection, which lies wholly within this state's boundaries, rests with the Public Utility Commission of Texas (PUC).

Although the federal government exercises authority over wholesale power rates and transmission service, power plant and transmission facility siting authority has traditionally been left to the individual states. As discussed in greater detail below, proposals to strengthen federal transmission facility siting authority and regional transmission planning are the subject of current debate in the Nation's capital. However, the PUC presently retains final authority to approve or deny transmission facilities in Texas, including areas of the grid nominally under FERC jurisdiction.

With the onset of electric utility restructuring in Texas, the investor-owned utilities (IOUs) in ERCOT separated their generation, transmission, and retail functions of their businesses. Their retail and generation operations became competitive entities subject to less regulatory oversight. The transmission operations were transferred to new companies called Transmission Service Providers (TSPs) or "wires companies" and remained fully regulated utilities. TSPs continue to receive cost reimbursement plus a regulated rate of return on investment through a non-bypassable charge allocated to all customers based on usage. Transmission charges typically make up less than 10 percent of a customer's total retail electric bill.

With limited exceptions, only public utilities may own, construct, and operate transmission facilities in Texas. IOUs, electric cooperatives, and river authorities must receive a Certificate of Convenience and Necessity (CCN) from the PUC prior to beginning construction of any transmission facilities. Municipal utilities are not required to obtain a CCN to construct transmission facilities to serve their load. Some privately-owned transmission facilities are allowed in Texas, provided they exist only to serve the power needs of the line owner. These private transmission facility owners are typically large industrial users of electricity.

Transmission System Planning

Transmission system expansion is periodically necessary to handle the growing demand for electric power, to connect new generation units to the grid, and to relieve transmission system congestion.

[243] The ERCOT region covers 84 percent of the land area of Texas and serves 85 percent of the state's population. For more information about ERCOT, visit http://www.ercot.com (accessed November 23, 2002).

Load Growth

Numerous factors contribute to increased demand for electric power, including population growth, economic development (particularly in the industrial and manufacturing sectors), and the increasing number and use of consumer electronic products. As the demand for electric power increases, new generation facilities are built and require new transmission facilities to deliver power to the grid.

Strong economic growth in Texas during the 1990s increased peak demand on the electric system 28 percent from 1994 to 2002, a figure which excludes the all-time ERCOT peak demand of 57,606 megawatts (MW) during record-setting temperatures at the end of Summer 2000. Although generation capacity in the state has increased more than enough to meet this increased demand, there have been relatively few corresponding major additions to the bulk power transmission system during the same period.[244] In the past five years, utilities have made significant investments in transmission facilities to interconnect new generation facilities and two major new transmission lines are nearing completion.

Figure 23. Annual ERCOT Coincident Hourly Peak Demand, 1994-2002

Year	Peak Demand (MW)	Annual Growth
1994	43,588	--
1995	46,668	7.1%
1996	47,683	2.2%
1997	50,150	5.2%
1998	53,689	7.1%
1999†	54,849	2.2%
2000	57,606	5.0%
2001	55,201	-4.2%
2002 est.	55,703	0.9%

Source: ERCOT

† Peak demand in 1999 would have been higher but for interruptible load curtailments at the time peak demand occurred.

Prior to 1995, the planning processes for generation and transmission facilities were integrated. As load in a utility's service territory grew, generation facilities were planned to meet future energy needs and accompanying transmission facilities were planned to handle the additional resource on the bulk power system. However, adjacent utilities often did not coordinate planning activities, leading to inefficiencies in the system. Senate Bill 373, 74th Legislature, deregulated the siting and construction of power generation facilities, enabling the introduction of generation units that were independent of the traditional utilities. To ensure that independent generators receive non-discriminatory access to the power grid, the interconnection process was standardized and utilities were required to provide transmission facilities and service to all requesting generators.

Before constructing a new power plant, one must obtain a new source emissions permit from the Texas Commission on Environmental Quality (formerly the Texas Natural Resources Conservation Commission) and certification that all local zoning requirements have been met. Utilities are still obligated to plan facilities to meet load growth and to reliably operate the system. However, ERCOT assumed bulk power system planning on a region-wide basis in 1998.

[244] ERCOT, *Report on Existing and Potential Electric System Constraints and Needs Within the ERCOT Region* (October 1, 2002) ("*Constraint Report*") at 41.

Easing Congestion

In addition to constructing new transmission facilities to serve load growth and new generation units, transmission system expansion and enhancements are necessary to relieve the congestion caused by transmission constraints. A transmission constraint is a physical limitation in the transmission system that prevents the reliable delivery of electricity. It also prevents the full economic and competitive exchange of electric power among all market participants. When one or more lines nears its physical limits, the system operator must adjust generation or consumption patterns on the grid to relieve the congestion. This is done by paying one or more consumers to voluntarily shed load or by paying one or more generators to increase or decrease output.

In the pre-deregulation world, the costs of bulk power system congestion were embedded in the fuel costs of the regulated utilities. In other words, if a utility could not run a low-cost, efficient generating unit due to system constraints, a less efficient unit might be called upon to supply power and the higher costs for using that plant would be incorporated into customers' fuel factor. These redispatch costs incurred due to system constraints were not accounted apart from the total cost of generation, so the true cost of congestion in the past is unknown. In the deregulated ERCOT market, these costs now appear as the market-based payments made to the loads or resources called upon to relieve congestion. These entities bid their price for increasing or decreasing generation output or decreasing load into an ERCOT-run balancing energy market.

If the ERCOT operator foresees overloading of a transmission line, balancing energy bids are accepted in order from lowest to highest cost. Sometimes, due to the physical location of a particular generation unit or transmission constraint, the next resource in the bid stack may not satisfy system requirements. In those instances, ERCOT may procure balancing energy service out of merit order (OOM), meaning the necessary resource will be selected on the basis of its ability to solve the problem, rather than on the basis of price, usually resulting in a higher price. These prices signals are one tool available to identify locations where transmission system enhancements are most needed.

Total congestion management costs for the ERCOT market between July 31, 2001, and May 31, 2002, have been estimated to be $250 million. Of that figure, OOM costs accounted for more than $73 million.[245] While some of these costs are directly assigned to specific entities and the rest is socialized among market participants, it is important to recognize that some form of congestion costs are borne by all end users of electric power. Further, the observed congestion costs borne by ERCOT do not include unobserved higher costs incurred by market participants that alter their operations to avoid creating congestion in the first place.

Regional Planning Activities

ERCOT currently leads three in-state regional planning groups (North, South, and West) to determine additional actions needed to resolve transmission constraints. Each planning group consists of TSP engineers as well as ERCOT and PUC staff. The ERCOT regional planning

[245] *Constraint Report* at 20, 23.

groups are usually not involved in the route selection process. Rather, the planning groups analyze the potential system impacts of proposed additions or upgrades to the grid. The ERCOT regional planning groups may recommend certain projects be approved by the PUC and may even give certain projects a "critical" designation. The PUC weighs ERCOT's input along with other evidence gathered through the CCN application process when deciding whether to grant or deny a request to construct additional transmission facilities.

The general public is typically uninvolved in the highly technical and esoteric regional planning process. However, some of the planning groups' work products are available to the public and posted on ERCOT's web site. ERCOT also publishes an annual report on existing and potential transmission system constraints in the ERCOT system, referred to here as the *Constraint Report*. This annual report is available to the public and provides a high-level overview of transmission system constraints and possible solutions, including potential new transmission facilities.

ERCOT transmission system expansion issues are probably most acute near sites suitable for the development of wind generation facilities in West Texas and in the Dallas/Fort Worth (D/FW) metropolitan area. More than 1,100 MW of new wind-powered generation has been added in West Texas in response to the renewable energy goal of Senate Bill 7, 76th Legislature.[246] Because load growth in West Texas is significantly slower than the rest of the state, much of this new wind energy is transported east to the state's Central and North Texas load centers. The existing West Texas transmission system is incapable of supporting the full development of wind energy potential. With just over 5,000 MW of generation serving approximately 3,300 MW of local load, the 1,700 MW of available transferable West Texas generation already exceeds the 1,300 MW transfer capability of the transmission system. ERCOT estimates up to 8,500 MW of wind and gas-fired West-zone generation could be constructed in the next few years, requiring significant expansion of transmission infrastructure.[247]

Likewise, significant transmission system expansion is needed in the D/FW area to maintain voltage support and keep pace with load growth. The area of Collin, Dallas, Denton, and Tarrant counties had a total load in 2001 of about 16,000 MW, but only 5,800 MW of available generation exists in the immediate area.[248] Although almost 6,000 MW of additional capacity has been planned or added in the area, all of it is outside the transmission constrained area, requiring the siting of additional facilities in high-growth metropolitan areas in the near future.

Transmission planning in the non-ERCOT areas of Texas is driven by the same needs: managing load growth, interconnecting new generation, and resolving transmission constraints. However, significant additional transmission in the Panhandle will be needed in the service territory of Southwestern Public Service Company (SPS), a subsidiary of Xcel Energy, to mitigate its market power when the region enters retail competition in 2007.

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[246] Public Utility Regulatory Act (PURA) §39.904.

[247] Kenneth Donahoo, Manager of System Planning for ERCOT, "West Texas Transmission Planning," Presentation to a workshop for PUC Docket No. 25819, Proceeding to Address Transmission Constraints Affecting Wind Power Generators (July 24, 2002).

[248] *Constraint Report* at 31.

Although the PUC still retains final authority to approve or deny a CCN request in the non-ERCOT areas of Texas, transmission planning can be made more difficult by the multi-jurisdictional nature of projects which cross state lines. One state may deny a request for a line perceived to primarily benefit the ratepayers of another state.

National Planning Activities

The increasingly competitive nature of the nation's wholesale power markets necessarily leads to a more regional look at the transmission system. Pursuant to federal orders, and in anticipation of a comprehensive FERC rule requiring a standardized national wholesale market design anticipated in Spring 2003, TSPs are banding together to form large Regional Transmission Organizations (RTOs), which will assume regional grid operations and planning functions.

The FERC has proposed to establish a formal role for the states to participate on an ongoing basis in the decision-making processes of RTOs. To accomplish this, each RTO would have a Regional State Advisory Committee (RSAC) to provide guidance on several key issues, including transmission planning. This committee would have direct contact with the RTO governing board and market monitor. The RSAC would serve to provide the RTO governing board and the FERC with a consensus view of states affected by a particular planning decision. How each RSAC will be structured and operated is to decided on a regional basis.

Difficulties in coordinating interstate transmission planning led the Electricity Infrastructure Task Force of the National Governor's Association (NGA) to recommend the formation of Multi-State Entities (MSEs) to facilitate coordination on transmission planning, certification, and siting at the regional level. Like FERC's RSAC concept, the NGA task force recommends that MSEs actively participate in the RTO planning process.[249]

At the heart of these regional discussions is the question of eminent domain siting authority, a power presently not granted to FERC. Legislation that was proposed during the 107th Congress would have authorized FERC to approve construction or modification of transmission facilities if it made the following findings:

- The relevant state lacked authority to approve the action, has withheld or delayed approval for more than a year or has conditioned its approval such that the action is economically infeasible;
- The facilities being authorized will be used for transmission of electric energy in interstate commerce; and
- The action is consistent with the public interest, as proposed or conditioned.[250]

FERC today has original jurisdiction in siting interstate natural gas pipelines under the federal Natural Gas Act.[251]

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[249] NGA Center for Best Practices, *Report of the NGA Task Force on Electricity Infrastructure* (August 6, 2002) at 29, available online at http://www.nga.org/cda/files/interstatestrategiesplanning.pdf (accessed November 10, 2002).

[250] H.R. 3406 by Rep. Joe Barton (R-Texas). The bill did not become law.

[251] 15 U.S.C. §717f.

Route Selection

As noted earlier, significant transmission system enhancements are expected in both the ERCOT and non-ERCOT areas of Texas to meet load growth and resolve commercially significant constraints. Statewide, an estimated $710 million in transmission facility projects covering approximately 1,120 miles were proposed from January 1, 1999, to September 20, 2002. Of the 83 total CCN applications during that period, 71 were approved by the PUC, one was denied, three were withdrawn, and eight are pending as of this report's writing.[252]

The PUC may approve a CCN only if its finds that the certificate is necessary for the "service, accommodation, convenience, or safety of the public." The PUC must consider several factors before ruling on the CCN application:

- The adequacy of existing service;
- The need for additional service;
- The effect of granting the certificate on the recipient and any nearby electric utility;
- Impacts upon community values, recreational and park areas, historical and aesthetic values, or environmental integrity; and
- The probable improvement of service or lowering of cost to consumers in the area if the certificate were granted.[253]

Where possible, preference is given to use of existing rights of way due to low acquisition costs and potentially expedited construction schedules. This option is not always available. Generally speaking, transmission facilities may not cross environmentally sensitive areas, historically significant sites, parks, schools, or within 10,000 feet of an airstrip.

Service must be extended to meet load growth where it occurs and to interconnect generation units wherever they are constructed. But route selection is more than simply drawing a line on a map from Point A to Point B. Traditionally, a utility will file more than one proposed route with a CCN application, particularly for projects which span significant distances. In some instances, the requesting utility holds meetings with potentially affected landowners prior to selecting possible routes. However, in most cases the utilities develop potential routes prior to holding a public meeting and then seek public input on possible advantages or disadvantages of the potential routes. An outline of the steps in the planning, siting, and CCN-granting processes can be found in Appendix H, which begins on page 203.

Balancing Public and Private Interests

The public interest is served by the effective construction, maintenance, and reliable operation of a bulk power transmission system. Public benefit is achieved when the transmission grid is capable of supporting a liquid, competitive wholesale energy market. Consumers gain access to efficient, low-cost generation, environmentally-friendly generation, and wholesale generator competition serves as a natural hedge against market power and high or volatile prices.

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[252] A summary of monthly utility construction reports is available on the PUC's website at http://www.puc.state.tx.us/electric/reports/cpr/index.cfm (accessed November 23, 2002).

[253] PURA §37.056.

Transmission lines are not inexpensive, and infrastructure must be developed at a pace that can be borne by the ratepayers. For example, the cumulative effect of all four potential transmission upgrades identified in the *SPS Study* to bring wholesale market liquidity to the Texas Panhandle would be to raise all retail electric bills an estimated 3.58 percent for several years.[254]

However, the public need for infrastructure must be balanced with the private interests of the landowners who must surrender property for the siting of transmission facilities. Landowners on whose land transmission facilities are sited typically express a wide array of concerns ranging from land use to adverse health effects. For example, wide steel lattice towers can form obstacles to plowing fields and harvesting crops. In addition, many landowners express aesthetic concerns about the appearance of wires and tall towers crossing the landscape. There is also some public concern regarding potential negative health effects from electromagnetic radiation present near large power lines. Although hundreds of studies have been performed in the past two decades, little evidence exists linking prolonged exposure to disease or death. Typical electromagnetic field exposures are not believed to be harmful to livestock, crops, or the environment. However, more research is needed.[255]

Perhaps the most difficult part of the transmission facility siting process is facilitating meaningful landowner participation in the route selection process. Because landowners are generally unconcerned with transmission planning until receiving notice their land may be affected by a particular route, a significant amount of work has already been done on the project and landowners often feel as though they have been left out of the process. Furthermore, CCN hearings take place in Austin, potentially requiring landowners to travel significant distances or incur legal expenses to hire representation.

The PUC has adopted a series of changes to the CCN process, to be effective January 1, 2003. Notable changes include a requiring utilities to provide affected landowners a brochure explaining the CCN process and increasing the scope of persons required to be provided direct mail notice of a CCN application to those whose property is crossed by the project and those with a habitable structure within 500 feet of a proposed transmission line of 230 kilovolts or greater.[256] In the past, this notice requirement has been 200 feet.

During this process, there were suggestions that an updated compensation model for affected landowners may be one solution to ease resistance to new transmission lines. Wireless communications towers, for example, are typically sited through private agreements between the company and landowners, with landowners generally receiving annual compensation rather than a one-time payment. This argument has been advanced by some landowners, rural interest associations, and environmental groups.[257]

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[254] Xcel Energy, *Southwestern Public Service Company's Transmission Facilities Analysis Presented to the Electric Utility Restructuring Legislative Oversight Committee as Required by Section 39.407(a) of the Public Utility Regulatory Act* (May 1, 2002) ("*SPS Study*")at 15-22.

[255] American Medical Association, *Report 7 of the Council on Scientific Affairs* (December 1994).

[256] PUC Project No. 25515, Electric Utility CCN Rulemaking and Forms Changes.

[257] For a discussion on wireless facility siting issues, please see Committee on State Affairs, *Interim Report to the 77th Legislature* (October 2000) at 146-151.

Technological Developments and Considerations

The technology selected for a given route depends upon physical, environmental, aesthetic, and economic factors. Currently, there are three dominant transmission line technologies structure types in Texas: steel lattice towers; H-frame supports; and monopole construction.

Steel lattice towers are probably what first comes to mind when one thinks of transmission lines. These tall structures are the industry standard for high voltage lines spanning great distances. Advantages include their ability to support great weight, ease of maintenance, and long life span. However, they are huge structures.

H-frame towers cannot support as much weight as lattice towers, so more are required per linear mile. However, because H-frame towers are usually much shorter than lattice towers, often they can be largely hidden from public view behind hills and trees.

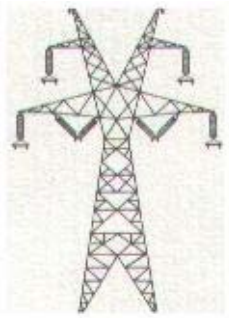
Monopole construction utilizes a single supporting pole, dramatically decreasing the width of necessary right of way. This feature makes monopole construction desirable in dense urban and suburban areas. However, monopole towers must generally be fairly tall and more poles are required per linear mile than lattice towers.

Neither current Texas law nor PUC rule requires the use of any specific technology for new transmission facility construction. The technology chosen for any given route reflects negotiations with landowners, the soil and topology of the land traversed, and the length of the line.

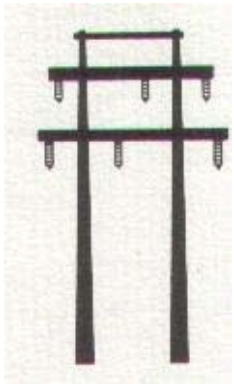
Although no incentives or explicit directives to evaluate or propose alternatives to new line construction are currently in place, historically, PUC staff and transmission system planners assess a variety of possible solutions to identified system needs. Possible alternatives include upgrading existing facilities, installing additional capacitors or substations, and compressed air energy storage to name a few.

A variety of recent technological developments may provide future means to enhance bulk power system stability and reliability with fewer additional transmission lines.

Figure 24. Types of Electric Transmission Towers



Steel Lattice



H-frame

Monopole

Advances in micro-turbine technology coupled with the opening of competitive wholesale and retail power markets have created growth opportunities for distributed generation. Small-scale power generation that can serve private load, usually on-site, when needed is known as

distributed generation. In addition to serving private load, its excess power can be sold onto to the distribution system when available. So-called micropower will likely serve commercial customers in the 100 to 1,000 kilowatt range. Such customers range in size from a fast food restaurant to a large supermarket.

Most of this power stays on the distribution system, never reaching the transmission grid. Small and efficient, micro-turbines deliver high-quality power and in the aggregate could produce a substantial amount of power. Former PUC Chairman Patrick Wood III has said, "The silver bullet for our state and for our economy is little bitty power," suggesting that distributed generation may help solve air quality issues and obviate the need for new large power plants and transmission lines.[258]

Advances in materials science also hold promise for bulk power system enhancements without requiring as many new lines as traditional means. High-temperature superconducting cable and flexible AC transmission system technology can increase the available capacity of existing facilities, reducing the need to site additional new lines.[259]

If and when higher capacity conductors and distributed generation prove reliable and economically feasible, there will still be a need for new transmission lines to serve load growth and stabilize the electric grid.

[258] Testimony of Patrick Wood III before the Electric Utility Restructuring Legislative Oversight Committee (August 22, 2000). He is currently the chairman of FERC.

[259] John B. Howe, "End the Gridlock: Why Transmission Is Ripe for New Technology," *Public Utilities Fortnightly* (January 15, 2001) at 38.

SUNSET OF THE GENERAL SERVICES COMMISSION

Senate Bill 311, 77th Legislature, abolished the former General Services Commission (GSC), transferred some of its functions to other agencies, and established the new Texas Building and Procurement Commission (TBPC). The bill was significantly re-written by the House Committee on State Affairs, and the final version closely follows the committee substitute. It became law without the Governor's signature on June 17, 2001. Most provisions of the law took effect on September 1, 2001. The first TBPC meeting occurred on February 26, 2002. At its next meeting, former state representative Randall Riley was officially named the agency's first executive director.

GSC's Failures

As a sort of umbrella agency for various services for state agencies, GSC was tasked with constructing and maintaining state buildings, leasing space for state agency clients, providing janitorial and landscaping services, obtaining telecommunications services, overseeing procurement of products and services, facilitating opportunities for historically underutilized businesses (HUBs), implementing a statewide electronic procurement system, running a central supply store, handling state employee travel services, managing fleet vehicles, operating a print shop, delivering mail, repairing business machines, disposing of surplus property, and managing recycling programs for state agencies.[260] During its examination of the sunset legislation, the committee determined that GSC had largely failed to serve its customers needs, achieve best value to the state, or effectively manage the programs under its jurisdiction.

Facilities Management

GSC oversaw the construction and maintenance of state buildings. It was responsible for managing 45 state-owned buildings and 17 parking garages in the Capitol Complex. GSC managed about four dozen capital projects, initially budgeted at more than $340 million, in 2001. In addition, GSC leased nearly 12 million square feet of private space for about 100 state agency clients in locations across the state, making it the state's second largest property management firm, trailing only Trammel Crow.

Construction Delays. GSC was behind on 38 of the 55 construction projects in progress during 2001. Of the 33 projects scheduled for completion during 2000, only one was completed: a parking garage that was over-budgeted. Projects costing more than $1 million were rarely

[260] The Legislature consolidated 21 state agencies into the State Board of Control in 1919. In 1979, the name was changed to the State Purchasing and General Services Commission, and this name was shortened to General Services Commission in 1991. In addition to the responsibilities noted above, GSC provided administrative support to the Texas State Cemetery and the Texas Council on Purchasing from People with Disabilities. These entities have separate governing boards.

completed in less than three years. These delays, coupled with alterations in the design and project scope, led to significant cost escalations. GSC often awarded contracts to firms with no track records, and GSC rarely took a bidder's past history into account when awarding contracts.

The Robert E. Johnson Building cost nearly double what was originally budgeted, including $4 million directly allocated to delays in GSC's oversight and another $0.2 million spent to store furniture because the project was more than 15 months behind schedule. Scheduled to be occupied by its new tenants in September 1998, the Johnson Building did not open for business until February 2000. Most tenants did not move in until June 2000. GSC's insufficient oversight of architects and contractors led to significant building flaws that required expensive retrofitting and redesign. Eight months after the building was originally scheduled to be completed, an engineering consultant hired by GSC to assess the condition of the building identified several serious problems, most notably significant leaks.

The John H. Reagan Building renovation also ran into delays and cost overruns. The project was initially delayed 11 months because the building's tenants could not move into the Robert E. Johnson Building. Demolition and asbestos abatement were delayed because of "poor manning." GSC reported in February 2001 that the "contractor has not performed satisfactorily to date" but yet maintained that the October 31, 2000, completion date would be met. That date occurred nearly five months *before* the report was made. In fact, a status report from September 30, 2000, indicated that no work had been completed on the project, just one month before its scheduled completion date. By March 2001, GSC reported that about 20 percent of the work was completed, and the contractor was on schedule to complete the project by December 2001. The Reagan Building officially opened for business on July 15, 2002. Tenants moved in over the next several months.

The Johnson and Reagan projects were being managed by GSC on behalf of the Legislature. Both of these projects were located within four blocks of GSC's headquarters. The committee noted during its consideration of Senate Bill 311 that GSC poorly managed a number of other projects that were for other state agencies and further away. In addition, the committee noted a long history of GSC's failure to correct problems in its construction programs, even as repeated internal and external assessments identified problems and recommended corrective actions.

Ignored Audits. In 1992, the State Auditor's Office (SAO) concluded that statewide policies and standards were needed in the construction management and leasing programs. The fragmented approach to space management presented a risk that state dollars were not being spent efficiently.[261] Later that year, the Comptroller of Public Accounts advised GSC to use construction managers from other state agencies to assist with project management and inspections. GSC had not taken an active role in developing standards for state buildings or the construction process. The Comptroller recommended that GSC use outside experts to assist with the design and planning of construction projects.[262]

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[261] SAO, *Review of the Management Controls at the General Services Commission*, SAO Report No, 92-079 (March 1992).

[262] Comptroller of Public Accounts, *General Services Commission Performance Review* (October 1992).

In 1995, an internal GSC audit concluded that the agency had significant construction management problems, including the absence of written policies and procedures, an over-reliance on fragmented automated reports instead of a comprehensive construction management system, and a failure to maintain copies of important documents. The internal audit noted that these problems had been previously identified and reported to GSC management in a series of internal audits dating back to 1983.[263] In 1996, another internal GSC audit reported that written policies had not been completed, and the construction management program was operating in a "crisis mode." In addition, GSC had no formal mechanisms in place to study complaints from tenant agencies. Collectively, GSC's management problems presented an unacceptably high risk of construction delays and insufficient service.[264]

In 1997, another internal audit identified several significant instances where warranty inspections were not being performed, warranty documents were being improperly disposed of, and notifications of final inspections were being mishandled. This internal audit emphasized that management needed to "reemphasize to all personnel the importance of complying with statutes and internal policies."[265] Later that year, SAO found that inadequate management of construction contracts led to project delays, price escalations, strained relations between GSC and other state agencies, and excessive change orders. "State rules and sound business practices have been frequently bypassed," SAO concluded.[266] Another internal GSC audit in early 1998 found that the automated database being used to track construction projects was "incomplete and inaccurate."[267]

In 1999, SAO reported that GSC "continues to have problems managing construction schedules and budgets." The report said that GSC had still not developed basic construction management processes to effectively plan, monitor, and control construction projects.[268] In 2000, SAO found that GSC still had not developed the resources necessary to manage a complex construction program and *still* lacked a project management system. In late 2000, the Sunset Advisory Commission noted that GSC was developing a project management system, and it was still *being developed* when the Legislature considered Senate Bill 311.

Leasing Problems. GSC often leased space that was inadequate for its clients' needs and often without anyone from state government—either GSC or the agency client—inspecting the property. Thus, GSC often signed leases with no firsthand knowledge that the leased space actually met the agency's need. This particular weakness was identified in a 1997 internal audit

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[263] GSC, *Management Control Audit of the Design, Construction, and Leasing Division*, Internal Audit Report No. 95-2 (February 1995).

[264] GSC, *Special Audit of Design and Construction Division*, Internal Audit Report No. 96-3 (April 1996).

[265] GSC, *Inspections Section Program Control Assessment*, Internal Audit Report No. 97-2 (March 1997).

[266] SAO, *An Audit Report on Management Controls at the General Services Commission*, SAO Report No. 97-080 (August 1997).

[267] GSC, *Follow-up Audit on the Program Control Assessment of the Inspections Program*, Internal Audit No. 98-3 (January 1998).

[268] SAO, *A Follow-up Audit Report on Management Controls at the General Services Commission*, SAO Report No. 99-029 (February 1999) ("*1999 Audit*").

and was never corrected.[269] One lease agreement signed by GSC on behalf of the Texas Department of Health included space, intended for use as a medical lab, that did not have necessary utilities or ventilation appliances. More than 10 percent of leases signed by GSC involved space that did not comply with the Americans with Disabilities Act, which is a violation of state law.[270]

While it was authorized to use several methods to evaluate proposals for leasing, GSC relied exclusively on a lowest-bid selection process. Its processes often resulted in few bids, as GSC did not prepare bid specifications to reflect an area's real estate market or leasing best practices. Though authorized to do so, GSC did not consider the condition of the property, utility costs, access to public transportation, availability of parking, security, type of telephone services, or the financial condition of the lessor when evaluating bid proposals.

Though not necessarily GSC's fault, nearly 20 percent of the state's nearly 1,400 leases were signed on an emergency basis, usually to keep an agency in its existing leased space instead of exploring other space in the same geographic area. GSC estimated that the state pays 120 to 150 percent more than the market rate for at least a fourth of these emergency leases.

Contract Management

GSC provided only limited oversight of less than 20 percent of state agencies' procurement contracts. GSC provided no oversight of the 82 percent of contracts entered into by agencies with exempt purchasing authority. Thus, state agencies were largely left to procure products and services on their own, and the only significant oversight came from SAO and the Legislative Budget Board. Examples of ineffective management have been documented in numerous audits, and many of these stem from inadequate preparation of contracts.

GSC did not regularly study procurement trends to evaluate state contract spending or recommend ways of improving the procurement process. In response to a 1997 audit, GSC management pledged to implement a policy requiring agencies to evaluate projects and services, including an analysis of costs and savings. However, when SAO returned in 1999, GSC could provide no documentation that such evaluations had ever been performed. In fact, the Central Procurement Division had canceled the policy in July 1998. Thus, evaluating the performance of the procurement process was left to informal reports that are largely up to the purchasers' and procurement managers' judgments. Purchasing goods and services from poorly performing vendors costs the state additional dollars and creates inefficiencies. State law required GSC to track vendor performance information, but it did not develop a system for tracking vendor performance and thus did nothing to prevent the state from continuing to do business with poor-performing vendors.[271]

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[269] GSC, *Inspections Section Program Control Assessment*, Internal Audit Report No. 97-2 (March 1997).

[270] Government Code §2167.006(a) provides that the commission may not enter a lease contract unless it complies with the state's architectural barriers law, Art. 9102 V.T.C.S.

[271] Senate Bill 1752, 75th Legislature, provided for a vendor debarment program, whereby GSC would establish a program for managing poorly performing vendors with the ultimate threat of disqualifying them from

The 75th Legislature charged GSC with establishing and operating an electronic procurement marketplace through which state purchasing could be done electronically. This proved to be more than GSC could manage, though for many reasons outside of GSC's control. One key hurdle GSC faced was the difficulty of interfacing the electronic marketplace with state agencies' legacy financial systems. This complicated the already strong reluctance on the part of agencies to participate in the venture. The uncertainty of their participation weakened the prospects of using the electronic marketplace to leverage the state's buying power efficiently, and it left uncalculated the amount of transaction fees needed to support the electronic marketplace. GSC also was restricted from utilizing several types of purchases, such as reverse auctions, that epitomize electronic procurement generally.

Telecommunications

Prior to last session, GSC was responsible for providing statewide telecommunications services. By most accounts, GSC did not adequately address its customers' concerns about the conversion to TEX-AN 2000, and it did not effectively evaluate the ability of vendors to deliver promised services. Transition services, network management, consolidated billing, Internet-based ordering, circuit emulation, integrated network access, sales support, and directory publishing were all contracted for, but not provided, in a timely manner. GSC commissioners delegated to staff the authority to amend TEX-AN contracts, and staff decisions to renegotiate the provision of services by alternative vendors were never voted on by commissioners.[272] GSC staff did not report performance measures to the commissioners, including the number and type of problems encountered by TEX-AN users and the average time taken to resolve these problems. Performance measures were not reported to customers either. TEX-AN customers had no official capacity to review the agency's performance or to recommend improvements to the telecommunications operations.

GSC overcharged its customers for TEX-AN services. As of August 31, 2000, the fund balance of the Telecommunications Revolving Account exceeded $25 million. This amount was essentially equivalent to profit, because the rates charged to TEX-AN customers exceeded GSC's costs. While it is prudent to maintain a surplus balance as a cash-flow reserve or for exceptional contingencies, the amount GSC accumulated equaled the amount TEX-AN customers would pay for *five months* of telecommunications services. This fund balance was essentially off-budget. It was not included in the agency's Legislative Appropriations Requests, and the agency could expend the fund balance without legislative approval. During fiscal year

winning state contracts. Though GSC passed rules establishing the program in late 1997, the systems needed to implement the program were still not in place in 1999.

[272] In fact, the committee reviewed an interagency memorandum dated December 8, 1999, in which a member of the executive management of GSC was "instructed" to execute a significant amendment to the TEX-AN contracts even though the particular manager had "not previously supervised the conduct of any activities associated with the TEXAN [sic] 2000 procurement or subsequent contracts." The memorandum, signed by the then-general counsel, informs the then-associate deputy director that the amendment "had been reviewed and approved by GSC Legal Counsel and Fiscal Management." According to SAO, the amendment added $4 million in costs to the state. It was never voted on by the commissioners. By the time the committee took up Senate Bill 311, the author of this memorandum had been elevated to acting executive director.

2000, nearly 27 percent of GSC's operations were accounted for off-budget and outside the scope of the appropriations process.[273]

GSC's rate-setting practices did not ensure its client agencies received the best prices. GSC management emphasized maximizing revenue to cover costs, instead of controlling costs and improving the efficiency of services. In cases where a rate for a service resulted in a loss, GSC simply raised the rate instead of analyzing the associated costs. No reasons were ever provided for why a rate resulted in surpluses or losses. In addition, GSC had no plan for expending accumulated fund balances on capital upgrades or projections or reducing rates when no further accumulation was needed.

In 1999, there was a misuse of the TEX-AN system by a group of college students who had fraudulently used long distance access codes. These acts cost the state about $0.4 million. SAO said it was not informed in a timely manner as required by law.[274] GSC maintained that they had done what was required of them. GSC reported the fraud to the Texas Department of Public Safety and took the relevant codes out of circulation. Though the first evidence of fraud was reported in November 1999, GSC appeared to have taken no action until July 2000, after a newspaper ran a story about the fraudulent use of the TEX-AN codes.

The Telecommunications Planning Group (TPG) was responsible for developing and maintaining a statewide telecommunications operating plan, developing technical specifications, collecting information about existing and planned state networks, reviewing waiver requests, and reporting to the Legislature the status of the statewide plan. TPG had three voting members, one of whom was the director of GSC's Telecommunications Services Division, a potential conflict of interest.

Other Problems

Surplus property disposition, inventory control, recycling programs, travel programs, and outsourcing its own functions were also beset with problems stemming from poor coordination, insufficient analyses, lax management, and unclear policy directives from within and without. GSC's Business Machine Repair service was operated at a loss, largely because it could not compete with similar private-sector services. Managers responsible for physical inventories at state buildings routinely failed to account for items under $5,000 in value, including computers, peripherals, office equipment, basic construction and maintenance equipment, and supplies. Because there was no up-to-date inventory, redundant items were procured. For example, a requisition order was completed for a ladder even though a later inspection of the building premises revealed more than a dozen such ladders were onsite. GSC also could not account for

[273] In an April 6, 2001, memorandum to committee counsel Phillip T. Golden from GSC's then-acting general counsel, GSC reported that "the budget office of the GSC Fiscal Management [Division] has been severely understaffed since October, when the end of fiscal year reports are normally scheduled to be started. Only 1/5th of the normal staffing level was on the job until recently." GSC promised the provide end of fiscal year 2000 fund balances by mid-April 2001. Fiscal year 2000 ended on August 31, 2000.

[274] Government Code §321.022 requires the heads of state departments to report "fraudulent or unlawful conduct [that] has occurred in relation to the operation of the department" to SAO.

its full agency vehicle fleet, and it could not account for any potentially missing laptops or other equipment. GSC also could not guarantee the accuracy of financial accounting statements.

A common thread throughout many of GSC's deficiencies related to lax management and other staff problems. GSC went through four executive directors between 1999 and 2001. As noted above, agency managers, and presumably the commissioners, were well aware of the agency's management problems. In the *1999 Audit*, SAO concluded:

> The General Services Commission has made little progress in improving the quality and cost-effectiveness of its operations in the key areas of cost recovery, construction management, and procurement since the issuance of [the 1997 audit] …. Even more disturbing is the number of times problems in the same areas have been brought to management's attention. Management has been made aware of problems in the three key areas repeatedly … in 22 different internal and external audit reports issued between 1992 and 1998 …. Although management committed to fixing the problems each time, the fact that the same issues remain today indicates that management is either unable or unwilling to implement the necessary corrective actions.[275]

In 2001, the committee concluded that management again failed to address problems in its construction management, leasing, procurement, telecommunications, travel, recycling, and general agency management programs. It decided that these problems could not be left to the same management to correct.

Senate Bill 311

When it passed the Senate, the GSC sunset bill retained the agency and included several statutory management reforms. The Committee on State Affairs developed several alternative plans, considering management's past failures to implement needed, and legislated, reforms. The committee ultimately reported a bill that abolished GSC, transferred some of its functions to the Department of Information Resources (DIR), established a new agency to absorb GSC's remaining functions, and replaced current GSC board members and agency managers with new people.

Senate Bill 311 transferred all of the former GSC's functions relating to the provision of state telecommunications services and the establishment of an electronic procurement marketplace to DIR. The bill required GSC and DIR to establish a transition plan to ensure the effective transfer of these functions between the agencies. The bill transferred nearly all other GSC functions to the new Texas Building and Procurement Commission (TBPC). The bill established that TBPC would be governed by seven commissioners: three appointed by the Governor, two appointed by the Governor from a list of nominees submitted by the Speaker, and two appointed by the Lieutenant Governor. The former GSC executive director, associate deputy directors, and division directors were required by the bill to reapply for their positions at TBPC.

The bill authorized TBPC to use design-build, construction manager-at-risk, and competitive sealed proposal contracting methods and established procedures for using these methods. The bill required TBPC to adopt rules to determine the circumstances for using these methods.

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[275] *1999 Audit* at 5.

TBPC was required to solicit advice and comment from design and construction professionals in developing these rules. The bill authorized TBPC to use the lowest and best bid method and modified bidding procedures and processes for evaluating bids.

The bill required TBPC to lease space on the basis of obtaining the best value for the state and set forth criteria that TBPC may use to determine best value. TBPC was required to adopt rules to implement this authority. TBPC was allowed to contract with private brokerage or real estate firms to assist it in leasing space. TBPC was required to report state agencies' noncompliance with leasing rules to state leaders.

Senate Bill 311 transferred all state telecommunications functions to DIR. It established the Telecommunications Planning and Oversight Council (TPOC) to succeed the TPG and required the new council to establish service objectives and performance measures for TEX-AN and the Capitol Complex Telephone System (CCTS). The bill required TPOC to send an annual report to all TEX-AN customers containing detailed performance information and a biennial report to the Legislature addressing TEX-AN and CCTS performance, needs, and recommendations.

It required DIR, in consultation with TBPC, to establish and manage the electronic infrastructure of an online travel reservation and ticketing capability. DIR was required to establish and manage the electronic infrastructure of an electronic procurement marketplace and an electronic commerce network. The bill required TBPC to incorporate the *Electronic State Business Daily* into the marketplace, and all functions relating to the business daily were transferred to TBPC from the Texas Department of Economic Development. The bill required TBPC and DIR to ensure that historically underutilized businesses (HUBs) have maximum access to electronic commerce opportunities. The bill authorized the use of reverse auctions in conjunction with the marketplace. The bill required DIR, with TBPC's assistance, to assess whether all or parts of the electronic procurement system should use the TexasOnline portal. The bill also required DIR to create a division to oversee implementation of major information resource projects.

The bill authorized TBPC to use multiple award contracts and required TBPC to adopt rules for a schedule of multiple award contracts. These rules must specify the development and use of such a schedule and define the circumstances under which multiple award contracts may be used. The bill required the Office of the Attorney General (OAG) to develop and periodically update a contract management guide for use by state agencies. OAG must consult with TBPC, DIR, the Comptroller of Public Accounts, and SAO in developing the guide. The bill created a contract advisory team to assist state agencies in improving contract management practices. The bill required TBPC to develop a systematic review process to identify opportunities for outsourcing its functions. The bill prohibited TBPC from providing any service not previously provided by GSC unless it could perform the service at a higher level of quality or at a lower cost than other state agencies and the private sector.

Senate Bill 311 established a mandatory recycling program for state agencies to be managed by TBPC. The bill granted TBPC responsibility for the state's surplus property program, though it may delegate that authority to a state agency if it can perform the function at a greater savings. TBPC must adopt rules to determine the most advantageous method of sale for the state and to contract for disposal of surplus or salvage property in a manner that maximizes value to the state.

The bill required TBPC to strongly encourage each vendor with a multiple award contract to use HUBs and small businesses to sell or provide services under the contract. TBPC was authorized to exclude any vendor that does not make a good faith effort to use HUBs. The bill specified that a nonprofit organization or local government may certify HUBs if its certification program meets or exceeds TBPC's standards. The bill encouraged contractors' participation in HUB mentor-protégé programs.

Senate Bill 311 became law without the Governor's signature, and most provisions took effect on September 1, 2001. Many provisions regarding TBPC took effect on the date of the new agency's first meeting, February 26, 2002.

Transition and Implementation

Lieutenant Governor Bill Ratliff appointed two commissioners in November 2001, and Governor Rick Perry appointed four commissioners in February 2002, including current Chairman Tom Beard of Alpine. New executive director Randall Riley consolidated the former agency's 18 divisions into six, and he replaced three associate deputy director positions with two deputy executive director positions. One deputy executive director oversees the property management, facilities construction and space management, leasing, and support services divisions. The other oversees the procurement and administration divisions. The changes have led to an overall reduction of about 55 full-time employees, and TBPC identified more than $5 million in operational savings in the 2002-03 biennium. TBPC adopted its strategic plan for 2003-07 in June 2002.

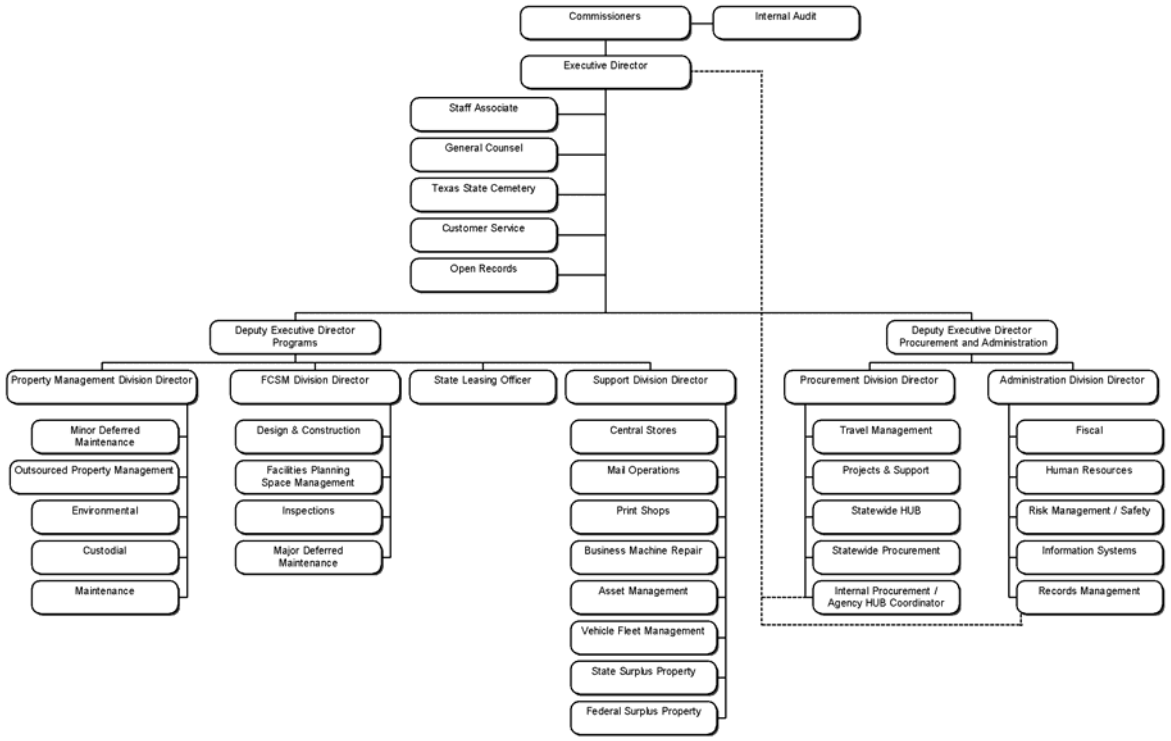
Implementation Activities

New rules regarding the use and determination of contract method—lowest and best bid, design-build, construction manager-at-risk, and competitive sealed proposal—and the evaluation of bids on the best value method were formally adopted in January 2002. TBPC reports that is has used the best value method to award several construction contracts, and it has also utilized the construction manager-at-risk and competitive sealed proposal methods. Rules implementing the determination of the prevailing wage rate were adopted in January 2002.

New rules regarding the best value standard for leasing space were formally adopted in January 2002, and the practice is currently used to award lease contracts. Rules regarding the use of private brokerages or real estate firms were adopted in January 2002. Responses to a Request for Proposal (RFP) soliciting private tenant representation services are currently under evaluation. Other rules regarding aspects of leasing programs, including delegation of authority to state agencies and reporting requirements of noncompliant agencies, were adopted in January 2002.

Final rules regarding the electronic procurement marketplace and the electronic commerce network were adopted in August 2002. Final rules regarding the administration of the *Electronic State Business Daily* were adopted in August 2002, and the complete transfer of this function to TBPC from TDED has been completed. Rules implementing the use of a reverse auction were

Figure 25. Organization of the Texas Building and Procurement Commission



Source: Texas Building and Procurement Commission

adopted in February 2002. TBPC reports that it is currently seeking a reverse auction services provider. The bill's provisions regarding an online travel reservation and ticketing capability have not been implemented. TBPC and DIR developed a Request for Offer (RFO) to develop such a system. It was withdrawn because the two proposals received were not responsive to the RFO.

TBPC developed rules for multiple award contracts and an initial schedule of multiple award contracts, in consultation with OAG and the Comptroller. These were formally adopted in February 2002. Rules implementing a preference for products and services from Economically Depressed Areas were adopted in July 2002. OAG is leading an interagency working group to develop a contract management guide.

New rules regarding local government and non-profit certification of HUBs were adopted in April 2002. Rules regarding participation in the HUB mentor-protégé program and the good faith requirements for contractors were approved in April 2002.

The transfer of telecommunications functions to DIR from GSC was completed September 1, 2001, one month ahead of schedule. Neither agency reported significant problems over the course of developing the interagency contract required to execute the transfer of personnel, assets, appropriations, and functions. TPOC issued its strategic plan for state government telecommunications networks and its report on the status of that plan in October 2002.

New rules to establish a mandatory paper recycling program were adopted in May 2002. Implementation of the program is underway. TBPC adopted new rules establishing the criteria for delegating surplus property disposition authority to other agencies, determining the method of sale, and advertising requirements in April 2002. The agency announced that it was closing the Business Machine Repair shop effective December 31, 2002.

Continuing Challenges

The relatively new TBPC management has inherited a complicated series of problems, many of which were decades in the making. Many of the new management's performance goals and process improvement projects will take several years to achieve. For example, a fully integrated management information system is not expected to be in place until September 2004, and many performance goals are orders of magnitude above recent performance levels. For example, TBPC has established as its goal that 95 percent of construction projects are completed on time and on budget. As noted, the predecessor commission's performance was woefully below this target.

TBPC has committed to ensuring the information it provides state leaders, the Legislature, and other state agencies is accurate and complete. Prior to 2002, the agency's internal accounting and financial records were never reconciled to the General Appropriations Act. A number of discrepancies were uncovered during 2002, and TBPC is working to resolve them. Some of these discrepancies have potential impacts on other agencies' operations. For example, the Texas Public Finance Authority (TPFA) has more than $1 million in outstanding funds on its books that are not associated with any current TBPC project.[276]

In March 2002, TBPC overhauled its fiscal department, staffed it with skilled employees, and hired a cost accountant to track the agency's cost recovery programs. For the first time, the fiscal department, and not the individual program directors, is providing financial performance information to the executive director and commissioners. Significant errors have been noticed by TBPC as inventories of physical assets are completed, and it found that inaccurate inventories have previously been certified to the Comptroller. TBPC pledges that its fiscal year 2002 inventory will be accurate.

The executive director was asked to provide proposed statutory revisions to the committee for its consideration. A summary of these recommendations is contained in Appendix I, beginning on page 207.

[276] TBPC informed TPFA of a series of discrepancies relating to bonds issued by TPFA on GSC's behalf in September 2002, and the two agencies are working to reconcile their accounts.

HOMELAND SECURITY

There have been several significant local, state, and national efforts all aimed at preparing for, preventing, responding to, and recovering from terrorist incidents. Instead of repeating the recommendations and findings from the public reports of these numerous efforts, this report will mention a few highlights, and the committee will otherwise consider homeland security-related legislation as it is offered. One of the challenges in reporting on these activities is, the specific kinds of information that demonstrate the scope and thoughtfulness of these activities cannot be presented publicly because doing so could undermine these efforts.

The state of Texas has established a one-stop web site for homeland security information called Texas Homeland Security.[277] It provides links to relevant state and federal agencies, as well as to reports of statewide homeland security taskforces. One of these is the Governor's Task Force on Homeland Security, which was established by executive order on October 1, 2001. The Task Force was chaired by then-Land Commissioner David Dewhurst, and the vice-chairman was William Sessions, a former Director of the Federal Bureau of Investigation (FBI) and the current chancellor of Texas A&M University. The Task Force held four public meetings before issuing a final report containing its findings and 44 recommendations to Governor Perry in January 2002.[278] The task force concluded that Texas is "generally … well prepared for emergencies," in large part because of experience responding to a variety of natural disasters.[279]

Then-Attorney General John Cornyn created the State Infrastructure Protection Advisory Committee (SIPAC), which was chaired by Adm. Bobby R. Inman, USN (Ret.). SIPAC held four public meetings between November 2001 and March 2002 and issued its final report following its final meeting.[280] Its principal recommendation was the creation of a central point of contact and information sharing for the state, proposed as the Texas Infrastructure Protection Center.

A number of other state, regional, and local planning and coordinating efforts have been completed or are also underway. In addition, the U.S. Congress has approved legislation establishing the federal Department of Homeland Security, which will consolidate the activities of 22 separate federal agencies into a single, 170,000-employee strong federal agency.[281]

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[277] For more information, visit http://www.texashomelandsecurity.com (accessed November 10, 2002).

[278] For more information, visit http://www.governor.state.tx.us/homelandsecurity/index.htm (accessed November 10, 2002).

[279] Governor's Task Force on Homeland Security, *January 2002 Report* (January 2002) at 24.

[280] SIPAC, *The Texas Infrastructure Protection Center: A State Model for Information Assurance and Information Sharing to Protect Critical Infrastructures* (March 25, 2002) ("*SIPAC Report*"). The report is available online at http://www.oag.state.tx.us/sipac/sipac_toc.htm (accessed November 23, 2002).

[281] P.L. 107-296. The bill was finally passed on November 22, 2002, the last day of the 107th Congress, and signed into law by President Bush on November 25, 2002.

Critical Infrastructure

All electric and telecommunications utilities are required to file emergency operations plans with the Public Utility Commission of Texas (PUC).[282] On November 16, 2001, the PUC initiated Project No. 24729 to ascertain whether additional security measures beyond those identified in utilities' emergency operations plans had been identified and implemented since September 2001. The PUC also reviewed utilities' preparedness to cope with situations involving weapons of mass destruction (WMD).

Electric Generation & Bulk Transmission Facilities

All respondents to the PUC's inquiries reported increasing security at and around their electric generation and bulk transmission facilities. In general, the entities have increased patrols, added security posts and checkpoints, improved gates, and reinforced points of entry. The respondents had reviewed their service restoration plans, and some revised those plans in light of the fall's events. All respondents had taken additional steps to secure information systems and critical infrastructure from hackers.

The Electric Utility Restructuring Legislative Oversight Committee met in closed session during its November 2, 2001, meeting pursuant to Section 551.076, Government Code, to deliberate the deployment, or the specific occasions for the implementation, of security personnel or devices at various electric generating and power transmission facilities in this state. During the closed session, the committee took testimony from invited witnesses who briefed the members on the revision and implementation of security protocols, deployment of security personnel and devices, and need for further action related to protecting the state's electrical infrastructure. Witnesses addressed issues specific to their professional responsibilities, which included the state's two nuclear power plants, the bulk electric transmission system, and water supplies critical to power plant operation.

Telecommunications Infrastructure

The PUC asked the state's largest incumbent local exchange carriers (ILECs), AT&T, and the Texas Telephone Association (TTA) to respond to questions relating to network security in November 2001. Southwestern Bell, Sprint, Valor Communications, and Verizon collectively serve approximately 90 percent of the access lines in Texas. AT&T is the largest interexchange carrier in the state and also a significant competitive local exchange carrier. The Texas Telephone Association (TTA) represents most of the states incumbent local exchange carriers.

The respondents reported they had tightened security at their facilities. This included close checking of identification for people entering facilities, changing security codes and passwords,

[282] PUC Subst. R. §§ 25.53 and 26.51(g).

installing and improving key-card access, and limiting access at facilities to essential individuals only. Valor reported that is has enhanced security at facilities serving the Crawford exchange, which provides communications to the "Western White House," and exchanges serving Red River Arsenal and Reese Air Force Base. TTA reported that several of the smaller ILECs have begun installing electronic security.

The respondents have reviewed their service restoration plans and determined that they are adequate. In a typical year, each company runs emergency drills and also evaluates its procedures after natural disasters and other significant service interruptions. All of the companies had activated their emergency operations centers and reviewed procedures. Valor reported that it had added generators following last winter's ice storms in Texarkana to supply power to communications infrastructure in the event of blackouts. TTA said most of its member companies have alternative routing contingency plans to keep their networks connected in emergency situations.

The respondents have imposed additional network security measures to protect information systems from intrusion. Most network systems—switches, routers, and related processes—are not accessible via the Internet. Nonetheless, the companies have reviewed the security surrounding these systems, and some have installed or enhanced intrusion detection monitors and other firewalls. The companies reported that information security practices are regularly reviewed and updated as new cyber-threats are evaluated.

None of the companies had quantified additional costs of incremental security and emergency planning following the September 11 attacks. All reported that such activities were already included within existing budgets.

Response Protocols

Federal law establishes that all acts of terrorism are subject to federal jurisdiction. Primary authority for prevention of and response to acts of terrorism is assigned to the federal government, specifically the FBI. States and local governments provide assistance to the federal government as directed or required.

The primary state organization responsible for coordinated response to emergency situations, including natural disasters and acts of terrorism, is the Governor's Division of Emergency Management (DEM), an office within the Texas Department of Public Safety (DPS). The DEM has two operational bureaus. The Preparedness and Response Bureau coordinates statewide planning and response to emergency situations, operates the state's Emergency Operations Center (EOC), develops the State of Texas Emergency Management Plan, conducts training of local officials and first responders, and maintains alternative modes of communications should normal methods be inoperable. The Recovery and Mitigation Bureau assesses damage, manages recovery efforts with federal and local authorities, prepares disaster declaration requests, conducts hazard mitigation training, and coordinates interstate mutual aid.[283]

[283] For more information, visit http://www.txdps.state.tx.us/dem/ (accessed August 9, 2002).

In the event of a terrorist incident perpetrated within Texas, or offshore along the Texas coastline, a special series of protocols known collectively as the "Terrorist Incident Response" is activated.[284] The protocols involve two distinct, but potentially overlapping, phases: crisis management and consequence management. The FBI will exercise authority and manage the federal response at the incident site, in cooperation and coordination with appropriate state and local authorities. An Incident Command System (ICS), headed by the FBI's Special Agent-in-Charge, will be established as a unified command post to provide law enforcement direction and control during the crisis management phase of operations. A DPS representative will serve as the liaison between the FBI and any state law enforcement function requested by the FBI. A DPS Highway Patrol commander will coordinate the tasking of any state functions, other than law enforcement, to the appropriate state agencies, the Disaster District Committee (DDC), and the state EOC. All 32 state agencies that participate in the state Emergency Management Council are directed to support the FBI as much as practical until the crisis management phase is concluded by the FBI.

Once the crisis management phase is concluded, the FBI cedes jurisdiction for direction and control activities to relevant local and authorities, the Federal Emergency Management Agency (FEMA), and other appropriate federal entities. The DEM is the state's primary functional agency, coordinating state response and assistance, during the consequence management phase of operations. Local governments will have the lead in conducting consequence management operations, unless the Governor appoints an authorized representative, who would then exercise overall direction and control of state response and recovery operations.

State agencies are expected to employ emergency support functions (ESFs) during both the crisis management and consequence management phases, as directed by the Incident Commander. In particular, state agencies should be able to provide evacuation notification, shelter and mass care, radiological emergency management, firefighting, law enforcement, public information, public works inspection and engineering, temporary construction, hazardous materials response and cleanup, search and rescue, transportation, donations management, and military support. Most of these procedures are consistent with the protocols for handling natural disasters.

Bioterrorism

In April 2002, the Texas Department of Health (TDH) submitted a grant application to the U.S. Centers for Disease Control (CDC) to for $51.4 million to upgrade state and local health jurisdictions' preparedness to respond to bioterrorism, outbreaks of infectious disease, and other public health threats or emergencies. As of July 15, 2002, TDH had received 20 percent of the CDC grant, and CDC had approved TDH's plan for the remaining 80 percent. TDH has reserved $36 million (70 percent) for local activities, and the rest has been earmarked for state-level activities.

Part of this grant will be used to complete development of the Health Alert Network (HAN), which is part of the CDC's Public Health Emergency Preparedness and Emergency Response

[284] The Terrorist Incident Response is Annex U of the State of Texas Emergency Management Plan, available online at http://www.txdps.state.tx.us/dem/documents.htm#stateplan (accessed August 9, 2002).

Program.[285] When completed, the HAN will provide secure, high-speed Internet connections for the 64 local public health offices—40 are already connected—to allow rapid and secure communications of health alerts, surveillance, laboratory data, and other sensitive information pertaining to infectious disease response. HAN will also provide access to CDC's prevention recommendations, practice guidelines, disease data, and distance learning opportunities. The Texas Association of Local Health Officials (TALHO) is coordinating HAN's creation and implementation. It officially went online on August 13, 2002. TDH's Office of the State Epidemiologist is responsible for strategic direction for bioterrorism preparedness and planning.

Public Education and Outreach

The Governor's Task Force recommended the creation of a series of public service messages and a web page to make the public aware of what to do in the event of a terrorist threat and how to obtain information on state emergency services. To date, most information dispensed by government at all levels has been generic, and the content has been typically less insightful than information provided in hurricane awareness brochures. Of course, care must be taken to prevent public service messages from seeming alarmist, but it is appropriate to communicate basic steps that Texans should take to plan for emergencies and general contact numbers to call in the event of an emergency situation. Specific, targeted information should be provided to public schools across the state, and this information should be coupled with localized basic safety information, such as building evacuation routes.

[285] The Telecommunications Infrastructure Fund Board (TIF) also provided $3.7 million in grant funding in 2000 to a number of local health departments to help them procure the technology, connectivity, and training needed to participate in the HAN.

APPENDICES