

# **Developing Telecommunications Infrastructure: State and Local Policy Collisions**

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## **Introduction**

As the 1996 Telecom Act sets the stage for national deregulation of telecommunications services, state and local governments are striving to implement and adapt to the pro-competitive thrust of the Act. Most of the research addressing the near-term outcomes of the 1996 Act focuses on issues of unbundling or the RBOCs' entrance into long distance services or on reformulating universal service requirements. Very little work has addressed other aspects of state and local roles in fulfilling the promises of the 1996 Act.

While attempting to promote telecommunications competition, the Act makes clear that states have a substantial role in preserving the longstanding aims of universal service. Many states have laboriously overhauled their universal service programs even as they grapple with the array of demands and conflicts among the vendors moving into new competitive positions. Attempts to "level the playing field" for new entrants challenging incumbents have sometimes faced state or local obstacles. The newest wave of CLECs and broadband connectivity/advanced services providers are challenging the abilities of cities and state utility commissions to treat all vendors equitably while at the same time guaranteeing comparable services for urban and rural populations as well as all corners of towns and cities.

Multiple systems of regulatory authority have created dilemmas for cities in particular. In some states, cities are encouraged to develop their telecommunications infrastructures. In others, they are expressly forbidden to own or manage telecommunications facilities or services. On the front lines of vendors clamoring for

more access to rights of way and lower fees to use those resources, cities often are not well equipped to evaluate and adjudicate the competing claims of telecommunications service providers. The political structure of cities generally demands equal treatment throughout all parts of a city region when it comes to the city sanctioning services, while service providers' business demands typically focus on just a subset of a city's constituencies. This balancing act mirrors the situation faced by state regulators as on the one hand they smooth the way for businesses that might desire to serve only the most lucrative areas of a state while on the other they uphold the need to fulfill universal service obligations.

Several state and local governments have launched public and private-public projects that foster advanced telecommunications infrastructure as a strategic investment, their arguments being that such initiatives will encourage economic development, strengthen education, enhance governmental services and information, revitalize the role of libraries, advance telemedicine, and bolster universal service. Incumbent industries, whether telephone companies or cable operators, have objected strenuously to many of those projects and in a few cases have successfully derailed them. Many economists argue that public investment in infrastructure distorts normal marketplace operations and therefore destroys the positive effects of competition. Nevertheless, those projects do exist, some of them directly extending or embedded in the spirit of universal service.

Given competing claims and a fundamental belief in and legal commitment to competition, how do states and cities grow into their new roles? This research seeks to investigate three basic questions: (1) Under what circumstances are state and local investments in telecommunications infrastructure undertaken? (2) What are the

economic and political factors that explain the outcome of such investments? (3) How do their universal service policies or interests in service parities intersect the dynamics of telecommunications competition?

## **METHODS**

The study consists of a review of current literature and secondary analysis of existing data that explore federal, state, and local policies directed at promoting the development of telecommunications infrastructure. Most of the data and information were collected in 1998 and the first half of 1999. Information was gathered from a variety of existing research reports, telecommunications trade publications, and state and municipal web sites. Follow-up email and phone interviews with selected individuals were conducted to clarify and expand on collected data.

This review allowed us to discovery of the varying regulatory actions of state government in promoting competition. This process also identified the innovative programs that encourage regional telecommunications infrastructure development. Finally, details about state and municipally sponsored telecommunications projects and networks were collected.

Two databases collected data on (1) *State Policies* for all 50 states, including a summary of innovative policies or legislation dealing with telecommunications competition, universal service and regional telecommunications development; and (2) *Telecommunications Networks*, including innovative state and city sponsored telecommunications networks.

In the *State Policy Database* legislative web site searches were conducted to discover recent bills that promote competition among telecommunications carriers and

offer innovative programs or policies affecting telecommunications services within each state. Each state's utility commission web site also was visited to discover additional regulatory issues affecting competition. Follow-up email and phone interviews were conducted with state staff to clarify state policy or to obtain the status of pending legislation.

For the *Network Database* initial data were gathered from existing publications listing public managed networks--primarily the American Public Power Association's 1999 Annual Directory & Statistical Report and the National Association of State Telecommunication Directors' 1998 State Report. Information from various articles in trade publications and web site searches of home pages for state municipal associations, utility associations, and states and cities provided the bulk of information. Email and phone interviews clarified collected data. Data on cities likewise came from secondary literature as well as some interviews.

Here we organize findings around three general areas: (1) Cities and Advanced Telecommunications, (2) State Policy towards Municipalities, and (3) Statewide Infrastructure Development.

## **FINDINGS**

### **I. Cities and Advanced Telecommunications**

#### *Municipal Telecom Initiatives*

The vision of an information superhighway promulgated by the National Information Infrastructure initiative pronouncements and the promise of competition through the Telecom Act have prompted many states and municipalities to explore

creating government owned or public-private partnered advanced telecommunications networks.

In the most common model, cities like Glasgow, Kentucky have simply extended the technological capabilities of their existing municipal cable systems to allow high-speed Internet service or provide other conventional cable services. Other cities have sought a more advanced telecommunications system such as a switched broadband network providing two-way voice, data, and video. Currently a number of localities (See Table 1) have developed or are considering entirely new city-initiated telecommunications networks or advanced municipal cable systems.

There are several explanations for the increasing number of municipal telecommunications infrastructure projects. For cities, the expanding telecommunications market has potentially enormous consequences. Cities tend to be the electronic hubs for telecommunications networks and they often are concentrated centers of business and communication that demand advanced telecommunications systems and services. Telecommunications infrastructure long has been considered a strategic tool for economic growth, and in today's information economy rural towns as well as urban cities are well aware of the potential benefits that might be gained by possessing an advanced telecommunications network.<sup>1</sup>

Moreover, in many communities local government is the biggest user of telecommunications service and often has existing telecommunications infrastructure in place for city telephony and data needs in the form of city-run municipal power utilities. These typically have supporting telecommunications infrastructure with abundant unused

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<sup>1</sup> Graham S, Marvin S. Telecommunications and the city: Electronic spaces, urban\_places. London: Routledge; 1996.

capacity. Cities also utilize networks for internal governmental purposes whether for simple telephony or for data networking. Some cities, particularly those that manage their own utilities, have developed or are considering advanced telecommunications systems in direct competition with their local telephone company or cable system. Leveraging existing telecommunications infrastructure makes it far easier and efficient for cities to develop an advanced telecommunications network for the entire community.<sup>2</sup>

Finally, universal service is not exclusively a federal or state government interest. Cities desire telecommunications services (particularly advanced telecommunications services) for every residence, business, and institution in the city in order to realize the economic development possibilities. However, the Telecommunications Act of 1996, while maintaining universal service goals and promoting discounts to schools and libraries, does little to promote access to *advanced* telecommunications services for residences, nor does it adequately make provisions for regions in which normal market forces of supply and demand translate into a paucity of services or service choices.<sup>3</sup> So, for example, several small cities dissatisfied with the local cable operator have created local, city-sponsored competitors.

Most municipal telecommunications initiatives fall into two categories:

1) cities issuing Request for Proposals (RFP's) to partner with private firms in developing broadband networks to serve institutions, residents, and businesses, or 2) cities expanding their current public telecommunications infrastructure (a municipal utility network or municipal cable system providing cable TV and Internet services) to serve residents,

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<sup>2</sup> Berquist L, Grant AE. The emerging municipal infrastructure: The Austin experience. In: Hurley D, Keller J. editors, The first hundred feet: Options for Internet and broadband access. Cambridge, MA: MIT Press; 1999.

<sup>3</sup> Fidelman, M. The new universal-service rules: Less than meets the eye. *Civic.com*\_1997; 1(7):30-33.

sometimes in response to perceived poor cable service by incumbent operators. These categories reflect very different goals and opportunities, and successful implementation appears to be dependent on city size, complexity of local politics, state policy, and civic entrepreneurship.

### **City Public-Private Partnerships**

Attempts to attract private investors to partner in the building of municipal networks have had limited success. Most cities attempting to partner are larger, and have a longstanding interest in having up-to-date telecommunication capabilities. Of the cities highlighted below, Anaheim offers the only successful case of actual implementation of a public-private telecommunications network (though they have recently filed a lawsuit against the private partner). The examples noted below tend to be large cities that attract considerable attention when governmental action is initiated--leading to intense lobbying and political pressure from established private telecommunications firms. The rarefied political process these cities face is directly related to the lack of success they have had with these partnerships.

#### **Anaheim, California**

The City of Anaheim, with a municipally run electric utility and its own internal telephone system has developed a public/private network with First World Communication that connects Anaheim's businesses, schools, residents, and government buildings utilizing 50 miles of the Public Utility Department's (PUD) existing fiber optic cable. As mentioned, litigation with the partner ensued.

## **Austin, Texas**

The City of Austin explored the possibility of building its own telecommunications network in 1994; however, in response, the Texas Legislature passed a comprehensive telecommunications bill that prohibited municipal “direct or indirect” involvement in the provision of telecommunications services. Responding in turn to this legislation, the City issued a Request for Strategic Partners (RFSP) for a public/private partnership with hopes that a private firm would offer advanced broadband services. A handful of firms expressed interest.

In April, 1996 the City Council voted to negotiate a franchise with CSW Communications to build a hybrid fiber-coax (HFC) network to interconnect all homes, businesses, and institutions in the city. However, the completed network has not developed into a sophisticated broadband system, and CSW sold the system to another company, ICG, which currently only offers limited, competitive telephone service.

In 1999, three private telecommunications providers sought and received cable franchises to offer voice, video, and high-speed data services in competition with the existing phone company and cable operator. Essentially, the advanced services model had changed by late 1999: the new companies did not want partnerships; they just wanted to operate private businesses without the complication of a city partnership.

## **Los Angeles, California**

In 1996, the City of Los Angeles issued a request for information to build a public/private telecommunications infrastructure. They expected to build an advanced fiber optic network to serve internal city government needs as well as schools, businesses, and homes. In 1999, a Master Request for Proposals was released seeking

private partners to expand the city's fiber optic network with the possibility for partners to utilize a portion of the network for their own private ventures.

### **San Diego, California**

In 1996, San Diego issued an RFP to encourage private firms to partner with the city in building a "community-wide information infrastructure." During their deliberations, however, the Telecommunications Act of 1996 passed, and the city abandoned the process with the hope that competition among private sector telecommunications firms, touted by sponsors of the Act, would accomplish the goals expressed in the original RFP.

### **Seattle, Washington**

Seattle issued an RFP seeking investors/developers interested in building an information highway in Seattle in 1995, but abandoned the process when Viacom sold its Seattle cable franchise to TCI, and the city was able to leverage a major part of its stated goal—residential high speed Internet access—in negotiations with TCI. Seattle's contestations with its cable company garnered a great deal of press coverage, and the case illustrates the difficult situation a municipal "voice" faces in attempting to embed its values (for open access here) in local, privately-provided infrastructure.

### **Leveraging Existing Infrastructure**

Most successful cases of city telecommunications initiatives occur in smaller cities and towns with established municipal cable systems or municipally owned utilities. This allows for upgrading existing networks with marginal investment. Often, newer municipal cable system development (with added high-speed Internet connectivity) is in reaction to the public outcry against poor service or high rates of incumbent private cable

operators. We observe that these smaller venues are better able to manage the political problems that occur when industry performance does not meet public expectations. The initiatives illustrate the high degree of utility company involvement.

### **Cedar Falls, Iowa**

Voters approved the city's utility telecommunications efforts in 1994. The municipally-owned utility has built a Hybrid Fiber-Coax system that can provide video, voice, and data services to every resident and business in Cedar Falls.

### **Eugene, Oregon**

The Eugene Water & Electric Board plans to contract with a private company to install fiber-optic lines to municipal buildings, the University of Oregon, public schools and other institutions.

### **Glasgow, Kentucky**

Since 1990, the Glasgow Electric Plant Board has offered a combined service (4 Mbps Internet link and 52 channel cable television) over its coaxial cable system. Primarily built to service Glasgow's utility, the coax system subsequently offered service to compete with the cable operator.

### **Lakeland, Florida**

Over one hundred miles of fiber are being built in Lakeland to aid its utility efforts.

### **Palo Alto, California**

The City of Palo Alto is developing a 26 mile fiber-optic ring to serve the City's internal needs as well as to connect schools, libraries, and medical clinics. The city also initiated a Fiber-to-the-Home trial in 1998-99.

## Tacoma, Washington

City-owned Tacoma City Light is building a fiber-optics network throughout the city that will compete head-to-head with the existing cable operator and phone company. Anticipated services include high-speed data transport, electronic meter reading, and a 65 channel cable television system.

## Springfield, Oregon

The Springfield Utility Board began work in the summer of 1997 on an initial \$1.5 million project to lay fiber-optic cable with plans to spend \$20 million to connect every home and business in town.

Table 1 is a comprehensive list of cities providing data services through existing utility telecommunications networks, municipal cable service, or city-initiated public-private networks, current as of 1999.

**Table 1**  
**City Initiated Networks.**

<b>CITY (BY STATE)</b>	<b>NETWORK</b>
<b>Alabama</b>	
<b>Scottsboro</b>	<b>Scottsboro Electric Power Board</b>
<b>Paragould</b>	<b>City, Light, Water, and Cable</b>
<b>Conway</b>	<b>Con.nect</b>
<b>California</b>	
<b>Alameda</b>	<b>Alameda Fiber Network</b>
<b>Anaheim</b>	<b>Anaheim Universal Telecommunications System</b>
<b>Palo Alto</b>	<b>Palo Alto Fiber Backbone</b>
<b>San Bruno</b>	<b>San Bruno Municipal Cable TV</b>
<b>Colorado</b>	
<b>Longmont</b>	<b>Longmont Power &amp; Communications</b>
<b>Florida</b>	
<b>Gainesville</b>	<b>GRUcom (Gainesville Regional Utilities)</b>
<b>Ocala</b>	<b>Ocala Electric Utility Fiber Network</b>

**Georgia**

<b>Fairburn</b>	<b>Fairburn City Utilities</b>
<b>Newnan</b>	<b>Newnan Utilities Cable</b>
<b>La Grange</b>	<b>La Grange Advanced Telecommunications</b>
<b>Marrietta</b>	<b>Marietta FiberNet</b>
<b>Tifton</b>	<b>City-Net</b>
<b>Thomasville</b>	<b>Community Network Services</b>

**Iowa**

<b>Cedar Falls</b>	<b>CFU Net</b>
<b>Coon Rapids</b>	<b>Coon Rapids Municipal Cable</b>
<b>Harwarden</b>	<b>Harwarden Integrated Technology</b>
<b>Harlan</b>	<b>Harlan Municipal Utilities</b>
<b>Indianola</b>	<b>Indianola Municipal Utilities</b>
<b>Lenox</b>	<b>Lenox Municipal Utilities</b>

**Kentucky**

<b>Barbourville</b>	<b>Barbourville Online</b>
<b>Glasgow</b>	<b>Glasgow Electric Plant Board (HomeLAN)</b>

**Massachusetts**

<b>Braintree</b>	<b>BELD.net</b>
<b>Easton</b>	<b>Easton Online</b>
<b>Holyoke</b>	<b>HEG Net</b>
<b>North Attleborough</b>	<b>North Attleborough Electric Fiber Services</b>
<b>Shrewsbury</b>	<b>Shrewsbury Community Cablevision</b>

**Michigan**

<b>Coldwater</b>	<b>City One Cable</b>
<b>Sturgis</b>	<b>Digital Community</b>

**Minnesota**

<b>Alexandria</b>	<b>Alexandria Light &amp; Power</b>
<b>Moorhead</b>	<b>Moorhead Public Service</b>

**Nebraska**

<b>Lincoln</b>	<b>Lincoln Fiber Network Study (proposed)</b>
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**North Carolina**

<b>Cary</b>	<b>Fiber Optic Overlay Project</b>
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**Ohio**

<b>Bryan</b>	<b>Bryan Fiber Optic Network</b>
<b>Lebanon</b>	<b>Lebanon Electric Bureau</b>
<b>Wadsworth</b>	<b>Wadsworth Electric and Communications</b>

<b>Oregon</b>	
<b>Ashland</b>	<b>Ashland Fiber Network</b>
<b>Eugene</b>	<b>Eugene Fiber Optic Network</b>
<b>Springfield</b>	<b>Springfield Fiber Optic Network</b>
<b>Tennessee</b>	
<b>Chattanooga</b>	<b>EPB Telecommunications</b>
<b>Tullahoma</b>	<b>Tullahoma Network Resource Center</b>
<b>Virginia</b>	
<b>Abingdon</b>	<b>Electronic Village of Abingdon</b>
<b>Blacksburg</b>	<b>Blacksburg Electronic Village</b>
<b>Lynchburg</b>	<b>Lynchburg Fiber Optic Cable</b>
<b>Washington</b>	
<b>Tacoma</b>	<b>Click Network</b>

## **II. State Policy and Cities**

The passage of the Telecommunications Act of 1996 presented a unique challenge for federal, state and local governments to work cooperatively on telecommunications policy issues. State public utility commissions are required to open the local telecommunications market and encourage the deployment of telecommunications infrastructure, which forces them to create a balance between promoting a business environment that is conducive for private investments while fostering competition among providers. At the same time, vendors anxious to enter new lines of business (e.g. local exchange companies desiring to enter long distance) chafe under regulatory scrutiny and attempt to insure that their barriers to entry are as low as possible. As will be evident, competition from the public sector (such as in the case of city-owned infrastructure) is sometimes seen as threatening to incumbent industries. How states have dealt with their

own cities' attempts to obtain telecommunications infrastructure illustrates strong divergences around the country. In several states this sort of potential competition has been stymied from the outset, while some other states seem to encourage it.

State commissions engage in arbitration and mediation, order unbundling and interconnection agreements between incumbents and new entrants, and provide incentives for deployment of telecommunications infrastructure. Most state policies establish rules for competition through the removal of traditional price regulation combined with incentives to spur local competition.

FCC studies have shown the initial effect of these deregulatory policies has led to a small gain in market share by competitive local exchange carriers (CLECs), but their presence is recorded as only about 6% of local access lines at the end of 1999.

Competitive services typically target businesses, not residential users, and CLECs have not moved rapidly in developing their own infrastructure. As of 1998 CLECs provided a total of between 4 and 5 million switched lines in 1998, which is less than 3% of nationwide switched access lines.<sup>4</sup> This percentage grew slightly to 3-4% of local switched access lines by the close of 1999.

The FCC reports on local competition, however, fail to offer detailed data on competition within markets. Because their studies concentrate on the number of CLEC entrants within each state (or within a LATA, often a rather large geographic region), they do not offer insight into head-to-head competition that might be developing within markets. They also do not provide detailed data on residential as opposed to business

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<sup>4</sup> Federal Communication, Commission Local Competition, Industry Analysis Division Local Competition, December, 1998; also see Trends in Telephone Service, Industry Analysis Division, March, 2000.

offerings. Some of the ways that state legislation or regulation has dealt with municipalities wishing to influence their local telecommunications merit attention.

States vary quite a bit in how they have implemented policies allowing or encouraging public initiatives in local telecommunications infrastructure development. Several public telecommunications initiatives are developed in response to the lack of private investment in advanced telecommunications infrastructure, and some infrastructure initiatives are developed in order to meet the needs of particular constituencies whether governmental, educational, or institutional. (As our next section will indicate, many states have formed special commissions or panels to broadly examine the statewide telecommunications needs of government, education, business and citizens--beyond the narrow regulatory mission of utility commissions.) The FCC's attention to broadband deployment under section 706 also appears to have encouraged some states to adopt measures that facilitate more municipally-based telecommunications infrastructure development.<sup>5</sup> To promote advanced broadband services, the FCC convened a Federal-State Joint Conference to provide a forum for ongoing dialogue between the Commission, state utility commissions, and local and regional entities regarding the deployment of advanced telecommunications.<sup>6</sup> That Joint Conference appears to have succeeded in putting the issue of broadband deployment before individual legislatures or utility commissions of several states, often framed in terms of combating a "digital divide."

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<sup>5</sup> Federal Communications Commission, Broadband Competition Report, 1999.

<sup>6</sup> Federal Communications Commission. In the Matter of Federal-State Joint Conference on Advanced Telecommunications Services, CC Docket No. 99-294, Order (rel. October 8, 1999)  
<[http://www.fcc.gov/Bureaus/Common\\_Carrier/Orders/1999/fcc99293.txt](http://www.fcc.gov/Bureaus/Common_Carrier/Orders/1999/fcc99293.txt)>

Table 2 illustrates the handful of state policies that have promoted local telecommunications competition, that is, the building of additional infrastructure at the municipal level.

There is a much longer list of generally competitive (i.e., rate relaxation) measures adopted by states that demonstrates the broad extent of such initiatives, and most of these target rate reform of some sort. However, the small list here that speaks directly to promoting competition in cities is striking. Most such initiatives encourage market competition by allowing cities' municipal utilities, or utility cooperatives to provide telecommunications service. This particular remedy is not widely popular among private sector competitors, and the product of some of that distaste appears in Table 3.

**Table 2**

**States with legislation, or utility policy promoting local telecommunications competition**

<b>STATE</b>	<b>POLICY</b>
<b>Alabama</b>	<b>Allows Electric Cooperatives to provide rural Telecom service</b>
<b>Florida</b>	<b>Counties and Cities can provide Telecom services in some instances.</b>
<b>Georgia</b>	<b>Allows municipalities to overbuild private cable systems</b>
<b>Indiana</b>	<b>Allows rural electric cooperatives to furnish Telecom services</b>
<b>Iowa</b>	<b>Municipally owned utilities allowed to offer Telecom services</b>
<b>Kentucky</b>	<b>Permits some cities with municipal utilities to provide Telecom services.</b>
<b>Maine</b>	<b>Allows water utilities to provide fiber optic telecom services</b>

Table 3 illustrates the states that expressly prohibit cities from developing their own telecommunications services. Some states, such as Ohio, have failed to pass bills prohibiting public telecommunications networks, but it is likely many states will initiate or re-introduce these bills in future sessions. Not surprisingly, telephone companies and

cable operators are alarmed by the growing interest in public telecommunications systems and they were active claimants in the legislative or regulatory processes behind the decisions to prevent city telecom initiatives. Despite the evidence that Congress clearly expected municipal power utilities to be among the entrants in a competitive telecommunications market,<sup>7</sup> recent court battles and regulatory conflicts have decided against or have inhibited municipal telecommunications efforts. Many incumbent telephone operators have successfully lobbied state legislatures to pass bills preventing or limiting municipal involvement in telecommunications services.<sup>8</sup>

Florida appears in both lists because on the one hand it does allow for some municipal telecommunications services, but its rules on how those operations must conform to typical firms' accounting practices effectively erodes the benefits of municipal utility involvement. While municipal utilities make the same arguments concerning achieving efficiencies and economies of scope that any business might make, they are limited by such rules from implementing services in such a way that realizes substantial consumer savings.

Justifications for prohibiting cities from offering or being involved in providing telecommunications services typically are absent from legislation, although hearings and legislative histories reveal strongly worded opinions from incumbent vendors.

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<sup>7</sup> Baller, J. & Stokes. S. The public sector's authority to engage in telecommunications activities. *Journal of Municipal Telecommunications* 1999; 1 (1). <<http://www.munitelecom.org>> The authors argue Section 253(a) of the Telecommunications Act of 1996 makes clear that no state or local law may prevent "any entity" from providing telecommunications services--suggesting cities, as "any entity" may provide telecommunications services.

<sup>8</sup> Harris, B. Telecom wars. *Government Technology* 1998; 11(3):1,38-39, 72.

**Table 3**

**States Prohibiting or Limiting Municipal Telecom Networks**

<b>STATE</b>	<b>POLICY</b>
<b>Arkansas</b>	<b>Government entity may not provide directly or indirectly, basic local exchange service.</b>
<b>Florida</b>	<b>Cities and Counties must separately account for telecom services and are subject to same requirements as private firms.</b>
<b>Missouri</b>	<b>Prohibits local governments from selling or leasing telecommunications services to the public or to other telecommunications providers.</b>
<b>Nevada</b>	<b>Prohibits Cities with over 25,000 residents from offering telecommunications service.</b>
<b>Texas</b>	<b>Prevents cities for direct or indirect involvement in providing telecommunications services.</b>
<b>Virginia</b>	<b>Generally, prohibits municipalities from offering telecommunications service or infrastructure.</b>

**III. State Investments in Infrastructure**

As more states awaken to the potential economic gains associated with advanced telecommunications infrastructure, and as popular emphasis on broadband deployment penetrates political circles, more states are attending to targeted infrastructure building plans. The intrinsic problem with such plans of course is that they muddy the hand of the market: to the extent that government loans, incentives, and grants tip the hand of competition, they eliminate precisely the "self righting" forces worshipped in the 1996 Telecommunications Act. In effect, many such infrastructure plans implicitly or explicitly acknowledge that some areas, or some applications, are "less economic" than others. Carrying this argument to its logical conclusion is not popular.

For example, we found that several states have established specific rural telecommunications policies or funding programs that encourage rural infrastructure development. Table 4 highlights those states with specific programs meeting the needs

of rural areas. The intended role of utilities is particularly notable in some of these programs.

**Table 4**

**States with Funds Earmarked for Rural Telecommunications**

<b>STATE</b>	<b>RURAL INITIATIVE</b>
<b>Alabama</b>	<b>Electric cooperatives can offer telecom service in rural areas.</b>
<b>Colorado</b>	<b>Colorado High Cost Fund and Colorado Rural Technology Project funds rural areas.</b>
<b>Georgia</b>	<b>Municipal Cable possible in small rural towns neglected by private firms</b>
<b>Idaho</b>	<b>Limits interconnection requirements for rural operators.</b>
<b>Indiana</b>	<b>Allows rural electric corporations to furnish telecommunications services.</b>
<b>Iowa</b>	<b>Municipal utilities (including rural) allowed to offer Telecom services</b>
<b>Kentucky</b>	<b>Permits cities (including rural) with municipal utilities to provide Telecom services.</b>
<b>New Hampshire</b>	<b>Legislative Oversight Committee will examine issue of rural access and delivery</b>
<b>Oregon</b>	<b>Infrastructure fund targets rural areas of state.</b>
<b>South Carolina</b>	<b>State Rural Infrastructure Fund provides telecommunications funding for rural cities</b>
<b>Texas</b>	<b>TIF specifically targets underserved rural regions of state.</b>

Another tier of programs has begun to emerge in 2000, epitomized by the recently announced agreement between North Carolina and BellSouth, Sprint and GTE. In that plan, the vendors will provide affordable, high-speed Internet access to all areas of the state by 2003 in exchange for various tax incentives. Similarly, Georgia's program with BellSouth would deliver high-speed Internet access to rural Georgia residents and all of Georgia's K-12 schools through funding provided by the company as well as tax

incentives. These programs illustrate a contrast with those noted in Table 4 insofar as having utilities provide services in rural areas may constitute a small competitive threat and consequently is less problematic to large incumbents. Plans for statewide Internet access, however, if not controlled by the dominant LECs, could easily grow into unwelcome competition. By working with state government, the LECs eliminate that prospect, while the states gain statewide coverage.

In another type of infrastructure program, nearly every state sponsors some sort of educational telecommunications network, although the nature of that network can be quite different from state to state, with some supporting data communications and other supporting radio, television and even satellite networks for distance education. Likewise, governments support networks for their own uses, often linking state agencies and offices across huge distances. Our database documents various aspects of these networks, particularly those dedicated to advanced telecommunications applications. We discover that major issues for state network development include 1) when to use public or private ownership and management; 2) offering "postalized" services that set specific use rates (distance insensitive) across the state; and 3) determining how advanced the technological capabilities of networks should be. Highlights of representative statewide networks follow.

### **CALNET**

CALNet is the statewide publicly managed network (though operated by private telecommunications firms) that serves California state agencies with voice and data needs. Previously operated exclusively by the state, CALNET follows a trend among many states to outsource network operations to private carriers, and its transition

highlights some of the questions states ask in deciding who should own and manage such facilities dedicated to public use.

### **Iowa Communications Network**

ICN is a state managed and operated fiber optic network with full motion capabilities for connecting government, education, and medical facilities. It has come under fire for years from the private sector as an instance of unfair competition in telecommunications by virtue of the state "doing business" with its own program.

### **Connecting Minnesota**

Connecting Minnesota is a public/private partnership initiated by the departments of Transportation and Administration to bring fiber-optic communications to significant portions of greater Minnesota and to increase telecommunications capacity in the Twin Cities metro area. The state contracted with a single vendor to build the network in return for exclusive use by the vendor of a number of fiber strands.

### **North Carolina Information Highway**

The North Carolina Information Highway (NCIH) provides state government entities with a broadband network for high-speed data, voice, and video. One of the first statewide fiber optic networks, early users complained that little money was earmarked for "last mile" costs which hindered many institutions' ability to connect to the backbone.

### **TEX-AN 2000**

TEX-AN 2000 is the statewide consolidated telecommunications network for telephone, video, and data serving government and education in Texas. The state establishes the specifications for the network and allows the private vendor community to come up with infrastructure solutions to meet the demands of state agencies. For

telecommunications services, the state has contracted for "postalized" rates through a bid process. This means that the state will pay a set price for designated circuits (56 kbps, T1, etc.) ordered from the vendor (currently AT&T) within a LATA (Local Access and Transport Area, a geographic region that defines the boundaries of local versus long distance services). These contracted rates offer significant savings to the state, and significantly, may provide opportunities for local government and educational districts to enter the statewide "cloud" of services at steep discounts.

### **The Telecommunications Infrastructure Fund**

The byproduct of 1995 deregulation legislation largely focused on Southwestern Bell, the Telecommunications Infrastructure Fund in Texas is the country's largest such program dedicated to providing high-speed connectivity to K-12 schools, public libraries, higher education and rural, not-for-profit hospitals. It is supposed to be a 10-year, \$1.5 billion dollar program. While the program's emphasis on funding T-1 connectivity brings some of its revenue back to local exchange carriers, it has been criticized for putting state money where private investment should be fostered. Nevertheless, Internet connectivity is now enjoyed by nearly every school and library in the state.

### **NET.WORK.VIRGINIA**

NET.WORK.VIRGINIA is an advanced, broadband network delivering ATM (asynchronous transfer mode) service statewide. In addition to serving government and education, private industry and other entities can connect directly to NET.WORK.VIRGINIA for the purpose of participating with educational programs.

This list represents a range of statewide infrastructure programs, but the controversies behind some of them are telling. Constructing specific state-provided

programs that target users, regions, or functionalities runs the risk of alienating would-be private sector providers. Unfortunately, the transition to competition has not given us clear markers for those occasions when competition will be slow or when it will not materialize at all, and those hazy domains are precisely the regions where state intervention is generally requested. The more recent crop of collaborations between states and dominant, private vendors such as BellSouth may represent the politically and economically expedient way of solving this dilemma: such programs do not create competition for incumbents. In fact, they enable the state to actually invest in already large and local providers.

## **CONCLUSIONS**

We have briefly reviewed the patterns of telecommunications deregulation as they are unfolding at the local and state levels. Three primary areas were addressed: the role of municipalities in drawing or creating new infrastructure; the actions and incentives of states in either limiting or encouraging municipal-level telecommunications involvement; and the configuration of statewide infrastructure programs.

### **Role of Municipalities**

As noted above, issues of public network ownership need to be explored recognizing the growing role of city and regional attempts to develop advanced telecommunications networks to meet the needs of local government, education, business, and residents. Although the nationwide residential deployment of broadband services through the private sector's cable modem and DSL services continues to grow, it offered an unimpressive penetration rate of approximately 0.3% of U.S. households according to early 1999 estimates, although it has tripled to about 1% by the end of 1999

(high speed plus advanced services are estimated to have penetration of 1.6%). At the same time, estimates for public utility deployment showed that advanced fiber networks passed 122,000 homes.<sup>9</sup> To the extent that cities' own efforts are encouraged, such penetration rates could rise more quickly. Using anchor tenants and collaborations are two strategies cities may use where not prohibited by the state.

### ***Anchor Tenants***

Increasingly, city and county governments have economic incentives to develop internal communications networks to save taxpayer dollars. Local government's abilities to provide public information more efficiently online are enhanced with advanced telecommunications capabilities, and government units are consistently held to private sector standards in terms of efficiency and performance. Cities with municipal utilities have existing telecommunications networks for utility management purposes, and as the primary tenant of a public network, cities have the ability to share excess network capacity with other institutions, businesses, or residents. In this fashion they would perform much as any business would in maximizing the use of their resources.

### ***Collaborations***

The ability to share excess capacity with others institutions often leads to regional collaborations among local government, school districts, other government agencies, as well as businesses. This can be particularly important in rural areas where aggregate demand can draw services that single (small) users could not command. If competition among private carriers fails to offer advanced telecommunications at affordable rates, it is likely that collaborative public and public-private telecommunications networks will

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<sup>9</sup> According to the FCC, early 1999 figures estimate 350,000 cable modem subscribers and 25,000 DSL subscribers. From Inquiry Concerning the Deployment of Advanced Telecommunications Capability.

continue to grow as long as policymakers allow them to do so. Some programs, such as Texas' TIF, are deliberately encouraging this.

### **States and Municipalities**

As interest in publicly funded networks grows, competitive concerns among private carriers also will grow. As has been the case in many state legislatures more states will see legislation introduced in an attempt to limit or prohibit cities and other governmental bodies from developing telecommunications networks.

Most states concede they must take a much more active role in promoting competition, developing advanced infrastructure, and ensuring telecommunications services continue to be available to all. It is much too early to declare which state policies will lead to achieving the goals set out by the Telecom Act, but the data offered in this report suggest that creating competition is tricky, uneven, and subject to highly political interpretations and actions.

Who should be allowed to compete and on what terms constitutes a thorny area: should all types of utilities be able to go "head to head" with conventional telecommunications providers? Should local ISPs be able to offer their services on cable modem networks? As utilities continue to be deregulated, their legitimate role in providing telecommunications services should be addressed by state policy. The differences and similarities between public and privately owned utility systems with respect to providing advanced telecommunications infrastructure should be addressed

What type of regulation yields the best competitive outcomes? Comparing alternative state regulatory policies and infrastructure outcomes should provide answers

as to what models are most effective at enhancing competition, holding down prices, and encouraging investment in advanced telecommunications capabilities.

What sorts of infrastructure investments are optimal? In addition to comparing state regulatory policies' impact on infrastructure development in terms of what incentive regulations or price caps or rate moratoria lead to greater infrastructure investment, exploring the outcomes associated with increasing public investment in state networks offers an opportunity to evaluate private vs. public investment in telecommunications infrastructure and how states may benefit from either approach.

As the United States attempts to develop the much-touted Information Superhighway, researchers and policymakers need to focus on the regulations and policies of states as well as the infrastructure projects of states, regions and cities. While the Federal government has a continuing and important role in developing information infrastructure, a great deal of policy and infrastructure development must occur at the state and local level. Too often states are unaware of other states' efforts and whether they succeed or fail; states generally lack the resources to undertake their own broad-ranging studies, and certain parochial attitudes may hold sway. There is the additional problem at the state level of political influence by large industries. More shared information across states and across localities can yield a better understanding of the most viable approaches, and produce a pool of experts who can work with each other in crafting the most effective programs.

