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ABSTRACT

DETERMINANTS OF STATE BROADBAND POLICY:
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By

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Both industry and policy makers alike enthusiastically extol the virtues of broadband. However, the federal government has not addressed the creation of a broadband policy nor has it pushed accelerating broadband deployment. Instead, states have taken an active lead in initiating various policies to address broadband. In July 2003, a technology lobby group, TechNet ranked the states' broadband policies. This study examines the top and bottom two states from this TechNet report using a qualitative case study method to ask whether there are any potential determinants to the creation of state broadband policies. The case study looks at socio-economic, political, and telecommunications industry factors. Data show that TechNet's data does not capture the complete policy landscape- notably, Arkansas should not be a bottom ranked state. Initial results indicate that gubernatorial leadership, socioeconomic constraints on the states, and political culture play a significant role in developing state broadband policies.

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CHAPTER 1

INTRODUCTION

Both industry and policy makers alike enthusiastically extol the virtues of broadband. Various reports predict that increased broadband access and use will lead to a revitalization of the economy, creation of jobs, and increased social well-being. Criterion Economics' report (Crandall, Jackson, & Singer, 2003) on the United States projected a potential $179.7 billion in cumulative increase in gross domestic product and additional 61,000 jobs a year if broadband becomes ubiquitous, accounting only for DSL and cable modems over the next 19 years. Combined with investment in advanced technologies, ubiquitous adoption of broadband could result in $146.4 billion in investments and 140,000 new jobs per year. A previous report (Crandall & Jackson, 2001) projected $300 billion or more in consumer benefit with universal diffusion of broadband. They concluded that the net present value of accelerated broadband deployment is $500 billion, looking at the next 25 years at a 94 percent adoption. At a 50 percent adoption rate, the net present value goes down substantially to $140 billion. Rosy economic reports also bless states. Gartner consulting projected a $300-500 billion and 497,000 job opportunity over ten years for Michigan's economy with the adoption of a state-wide broadband infrastructure (Gartner Consulting, 2001). California's Corporation for Education Network Initiatives in California (CENIC) projected a potential $376 billion dollar increase in incremental gross state product over 10 years at 73 percent per capita broadband penetration rate (Gartner Consulting, 2003).

Industry forces strongly advocate for the creation of a national broadband policy to accelerate the deployment of broadband. They advocate a push toward a market-driven

broadband environment with uniform treatment for all broadband technologies. Broadband providers such as Verizon and SBC call for a hands-off approach by the government, uniform regulatory treatment for all broadband providers regardless of technology, and regulatory stability (SBC, n.d.; Verizon, 2003b). High-tech industry leaders such John Chambers of Cisco and Craig Barrett of Intel actively campaign for wider deployment and a national vision in hopes of revitalizing the economy while bringing information technologies to the classroom, hospitals, and rural communities (TechNet, 2002). TechNet (2002), a lobby group representing forces such as Cisco and Intel clearly state the following goals 1. Regulations should foster innovation; 2. Policy should encourage investment and remove deployment roadblocks; 3. States and localities should adopt streamlined laws and regulations; 4. National spectrum policy should follow a market-based approach and reduce artificial scarcity; 5. Investment incentives should target underserved communities; 6. The government should not pick technology winners and losers. The Telecommunications Industry Association's (TIA) broadband principles also align closely with these goals (TIA, n.d.) and actively lobbies the Bush Administration to make a broadband policy a national priority ("TIA continues to pressure Bush for a U.S. broadband policy," 2003). The TIA represents 1,000 companies who provide communications and IT services and products.

In 2001, FCC Chairman Michael Powell outlined his vision for a national broadband policy. He put forth the following objectives: 1. A commitment to universal availability of broadband; 2. Minimal regulation of broadband service; 3. Multiple broadband platforms; 4. An economically sound universal service. To attain these goals, he stated that the commission needed to study and understand the nascent market and

would do so by analyzing market development data. He further expressed that the commission would reexamine how services were classified and take steps to remove the existing roadblocks to deployment (Powell, 2001). However, Powell's vision has not come to pass and he has faced opposition to his vision of deregulation from Commissioners, legislature and judicial branches throughout his tenure as chair of the commission (Salkever, 2003).

In the legislature, over 100 bills related to broadband have been introduced in the United States legislature in the past three congressional sessions (http://thomas.loc.gov). Of these only one addressed the formation of a national broadband policy. Senator Lieberman introduced a bill calling for the President to draft a national broadband policy in the 107th session ("National Broadband Strategy Act of 2002," 2002) which failed to move forward. Senator Daschle expressed support for ubiquitous broadband access to all Americans by 2010 (Dreazen, 2003). However, the majority of the bills have addressed tax credits, rural broadband, and the Internet tax moratorium. It appears that despite the strong advocacy for a policy, it still remains unclear what form an overarching broadband policy in the United States should take or when one might be implemented if at all.

What is known is that with the current lack of a national policy and the unique structure of the United States' telecommunications regulatory scheme and federal system, it is the states that have the power to make a large impact on the deployment of broadband. Following a resurgence in power in the 1980s, states enjoy an active role in self-governance and policy initiatives (Gray, 1996). Furthermore, the FCC's 2003 Triennial Review's decision on unbundling has given states more power over

determining unbundling rules for telephone lines ("Massive FCC triennial review order lays out more UNE guidance for states," 2003).

In recognition of the progress of states and to consolidate best practices, industry associations have assessed state level policies and penetration. The TIA released a guide for their member companies on states that create a telecommunications friendly environment (Beamer, 2002). American Electronic Association (AeA) published a state by state report on broadband deployment statistics earlier in 2003 (AeA, 2003). Following this report, TechNet recently published a ranking of broadband policies and best practices by states (TechNet, 2003). TechNet is a bipartisan group that represents a network of over 200 CEOs in the technology industry. Their report, discussed in depth in later sections of this thesis, highlights the disparities among the states in proactively removing barriers to deployment from the hi-tech industry's point of view.

Such rankings beg the question: Why are some states far ahead of others? Could it be that some states have a critical advantage over others in some key area? Is broadband simply not a priority for legislation in some states? Why have 50 states taken such disparate measures toward broadband deployment, a goal that is positively touted by almost all?

Purpose of Study

Surveys such as the one conducted by TechNet provide comparisons of outcomes between states in an effort to motivate "bottom" states and highlight policies for other states to potentially model. However, in order for these states to proceed, it is necessary for them to have some insight into the root causes of the ratings. For example, a growing state economy may be a prerequisite for creating a state agency for broadband. In other

words, there may be some critical determinants that allow states to create a broadband policy without which progress is severely hampered. On the other hand, states may find that the profile of the "top" state, in this case Michigan, does not apply to their situation and thus serves as a poor model. This study is an exploratory look into possible determinants that facilitate the creation of broadband policies. If salient features emerge for top and bottom ranked states, then further studies can illuminate details of these features and their validity and probability as precursors to broadband policy.

Though this thesis overviews the policy debate in the United States to provide background on the effects that state policies have on the telecommunications industry, this study does not purport to provide any answers as to whether a policy should or should not implemented in a given locale, state, or nation. Its purpose is strictly to assess whether determinants of state policy creation exist and specifically, what factors gave four states the top and bottom two rankings in the TechNet report.

CHAPTER 2

LITERATURE REVIEW

The Current State of Broadband in the United States

This story of broadband begins with data on United States penetration. If broadband adoption rates and penetration were high and ubiquitous previous to the years examined in this study, a discussion on deployment policy becomes moot.

Broadband defined?

Broadband itself is defined in a number of different ways, most easily categorized into definitions of speed and definitions of functionality, but always as an "always on" service and often encompassing "high-speed" and "advanced" services. The Federal Communications Commission (FCC) defines "high-speed" as 200 kbps in at least one direction (FCC, 2003). CENIC and Gartner set 1Gbps as a reasonable broadband goal to sustain next generation applications over the next few years (Gartner Consulting, 2003). TechNet pushes for a goal of 100 Mbps (TechNet, 2002). These speeds are usually based upon future services that may need x Mbps to adequately develop, but are unknown as of yet.

To address the hodgepodge of recommended speeds, the National Academies Computer Science and Telecommunications Board defines broadband as a "convergent platform capable of supporting a multitude of applications and services (Computer Science and Telecommunications Board [CSTB], 2002, p. 9)" They define broadband in two ways. The first focuses on the ability of the end-user to adequately access today's online applications. The second addresses the need for broadband to attain a threshold of

speed and use to encourage development of applications that will require broadband access.

How is the United States doing?

A 2001 global comparison of penetration ranked the United States fourth in broadband penetration behind Korea, Canada and Sweden (Organisation for Economic Co-operation and Development [OECD], 2001). The Organisation for Economic Co-operation and Development's (OECD) report stated that the United States is "well-placed to enjoy rapid expansion of broadband access (p. 45)." However, a 2003 update put the United States at 10th place (OECD, 2003).

Current total high speed access lines in the United States as of December 2002 totaled 19.9 lines, of which 13 million exceed 200 kbps in both directions. These numbers reflected a 23% increase in subscribership in 2002. Of this DSL accounted for 6.5 million lines, and cable modems accounted for 11.4 million. Residential and small business users accounted for about 17 million lines. Not surprisingly, zip codes with higher population densities or higher median household income tended to have at least one access provider at a higher rate than zip codes with lower populations or lower median household incomes (FCC, 2003).

In the FCC's 2002 report (FCC, 2003), the Commission found that broadband adoption in the states was "reasonable and timely." They found that 78% of all zip codes in the United States have access to broadband technologies and that 97% of United States population live in zip codes with access. However, these numbers reflected zip codes with at least one subscriber to broadband services, thereby potentially inflating the number of zip codes with true access. In a dissenting opinion, Commissioner Michael

Copps expressed concern that the FCC data is not granular enough to capture true adoption of broadband. Copps also suggested that the Commission lay out a plan to address the difference in access to low-income and rural areas.

Internet usage is tightly related to broadband capabilities. The Pew Internet and American Life Study reported that Internet usage is unevenly distributed across the country by geographic regions. The eastern seaboard and the west coast led the country in Internet usage at 64-66%, while the South trailed at 48% (Pew Internet and American Life, 2003). The report highlighted that these geographic regions represent regions with higher income and education levels and thus lead the country in Internet usage, consistent with FCC findings on broadband subscriptions.

According to the TechNet survey results only 17 states kept track of broadband deployment in their states in July 2003. Thus, finer detail on where these broadband services are truly located eludes us. Broadband infrastructure is a multi-tiered system, commonly broken down into backhaul, middle mile and last mile. Though the FCC data on subscribership is very telling about the extent of entire network, a state by state or nationwide map of backhaul and middle mile lines would provide a clearer picture of the current availability of broadband. A rural area adjacent to a backhaul line may find it easier to aggregate demand and connect to this network as compared to a rural area that is remote from the entire network entailing higher deployment costs.

Why Broadband Deployment?

Missionaries for broadband describe a world where information shoots down the pipeline at amazing speeds, allowing for great new innovations in interactive content, new media, and previously unimaginable quality of information. The most commonly

cited uses for broadband include but are not limited to e-government, telecommuting, telemedicine, easier access to information for rural communities, revitalization of the economy through e-commerce, public safety, and media and entertainment (Bauer, Gai, Kim, Muth, & Wildman, 2002 see also CSTB, 2002; Gartner Consulting, 2003; TechNet, 2002; Singer, 2002).

The chicken and egg argument for broadband has stated that broadband deployment needs to occur for rich multimedia applications to be realized on a large scale (CSTB, 2002). In order for demand and thus the development of next generation multimedia application to reach critical mass, there must be broadband pipelines to deliver the content. Conversely, without the content, there is no demand for broadband. By forcing the accelerated deployment of broadband, this cycle can be broken. Some next generation experiments that involve high broadband usage have already begun, but are highly limited in distribution. For example, Internet2 research centers are running experiments with collaborative theater, collaborative work groups, and augmented reality videoconferencing systems for groups or individuals over long distances (Internet2, 2003).

A bolder vision for universal access to broadband has argued that "the innovation and diffusion processes are simultaneously defined (Bar & Riis, 2000, p. 101)." Thus, the decisions made early in the cycle of diffusion of broadband access will strongly affect the course of the development of the Internet. Therefore, Bar and Riis argued that the greatest number of lay people should be involved in the evolution of the network to create the widest possible range of innovation trajectories and to ensure that the technological elite do not write the future of the Net.

It is important to note that broadband access is not currently recognized by the federal government as an essential service that requires government subsidies or universal service for all. The exceptions to this are the E-rate program and federal grants for broadband deployment in rural or underserved areas through the Rural Utilities Service (RUS under the United States Department of Agriculture) and the United States Department of Housing and Urban Development (HUD). The e-rate program, funded via the universal service tax on telephone bills, provides discounts to schools, libraries for Internet access. Specifically, broadband access is only discounted when broadband is shown to be the most cost-effective access alternative. RUS provides broadband deployment grants to rural communities, schools, and hospitals. HUD issues grants for economic development of communities.

In July 2002, the FCC decided that high-speed access did not quality for universal service subsidy (FCC, 2002). They concluded that most users of the Internet could adequately find online resources via a dial-up connection or through the schools and libraries that were already supported under the E-Rate and RUS programs. Furthermore, not enough residents subscribed to broadband to demonstrate its essential nature (FCC, 2002).

States vary in their evaluation of broadband's necessity. A California Public Utilities Commission (CPUC) ruling (CPUC, n.d.) agreed with the FCC decision and showed that including broadband access into California's Lifeline program would quadruple the basic service rate for Californians. Consequently, excluding broadband access from universal service meant keeping affordable dial-up for all. Furthermore, the CPUC concluded that universal service of broadband meant little if the target low-income

consumers could not afford computers. Instead of a universal service approach, most states take an economic development perspective to supporting deployment if they provide assistance. This usually takes the form of tax incentives for providers, grants for rural or underserved community projects, and aggregation of state demand to facilitate deployment and reduce prices. The exception is Kentucky where the Kentucky Housing Corporation considers broadband a necessity and thus requires all housing projects that are financed fifty percent or more by them to provide broadband (Kentucky Housing Corporation, 2002).

Regardless of whether it can currently be considered a basic service to which all Americans are entitled, broadband access does bring substantial benefits to those who can access it. That broadband is a positive telecommunications service is now widely accepted (Bauer et al., 2002). The true debate centers over what steps need to be taken if at all to leverage its benefits.

The Debate Over What Policy Should Be

In recognition of the broad potential positives that broadband may bring, policy makers and academics struggle over just what the policy should be. The key issues involve when government intervention is merited, whether there ought to be a national vision for broadband, and how the current regulation of telecommunications services should be restructured to reflect the reality of convergence.

Pointing to South Korea's broadband penetration rate and speed of deployment, many advocates for broadband push for a more aggressive federal plan than the market forces and current regulation in place. There is a fear that the United States will lose its place as a technological leader and is often described as "lagging behind (Dreazen,

2003)." The Digital Divide is often used to justify federal intervention. However, a more historical perspective of diffusion of technologies reveals that broadband adoption is in its infancy. The rate of adoption for broadband remains faster than previous access services across the OECD countries (OECD, 2003). The rate of adoption for any Internet access far surpasses the rate of adoption for electricity, television or PCs (Leighton, 2001). Leighton argued that the digital divide has yet to manifest itself as a problem. Instead, what we are seeing is the early stages of Internet adoption which enjoys unprecedented growth at highly accelerated rates compared to earlier technologies. The adoption of broadband should not be a priority concern as long as dial-up access can deliver the same goods, just at a much slower rate. Perhaps a telling statistic is public school access to broadband. In the fall of 2002, 99% of public schools had Internet access. Of those 94% used broadband services (U.S. Department of Education, 2002a).

David Gross, the Deputy Assistant Secretary in the State Department noted in a speech that the United States faces different social and economic conditions than Canada or South Korea. In South Korea, the high population of young people and their use of broadband to strengthen the social norms of ties between friends has made broadband take off. A Wired Magazine article (Herz, 2002) provided a sobering reality: South Korea's backbone is 13,670 miles of fiber. In contrast, Verizon rolled out 20,500 miles of fiber in West Virginia in 2001 alone. South Korea's concentrated populations and apartment complexes make deployment much easier than in the sprawling United States. Herz painted a playful picture of how the South Korean social infrastructure is driving the PC gaming and broadband revolution. The models presented by other countries may be

driven by factors unique to their culture. Therefore, any adoption of their broadband deployment models should be undertaken with caution.

Still some broadband visionaries believe that deployment in the United States is not fast enough. In particular, despite the growing numbers of broadband and computer users, there is a growing concern that rural users and lower income households will be left behind. The FCC and Pew Internet Life data reflect this reality. Arguments based on the overall growth in Internet connectivity do not reflect a granular level of analysis in terms of access. There may be a place for policy in areas where market forces do not and are not foreseen to rectify this growing divide. Bauer and colleagues (2002) provided a general framework for deciding for government intervention. They argued that the policy response should be analogous to the "spatial and product characteristics of broadband (p.1)" namely that the policy should reflect the level of network infrastructure in which the problem resides and extent of the cost burden and societal benefit of investment. Others see a place for a national vision to unify the country behind an even more accelerated broadband deployment (Gartner Consulting, 2003; TechNet, 2002). The gatekeepers to broadband are not necessarily technology, but policy and economic factors (CSTB, 2002).

Crafting a national broadband policy will not be easy. The FCC has concluded that a universal subsidy of broadband access may end up stifling deployment in the long run due to the process of categorizing technologies that would or would not eligible for subsidies (FCC, 2002). Such categorizations go against the principle of neutrality of technology and may discourage public/private partnerships that have been successful

paths to deployment. This illustrates a fundamental dilemma in crafting policy, namely that creating a policy could unwittingly erect more roadblocks.

A smattering of municipalities have become operators of broadband services while some states prohibit municipalities from owning utilities (data from TechNet survey). A municipality may initially become a provider to hasten deployment. However, if municipalities provide service to private consumers where competition exists, private providers may view this as unfair competition (Gillett, Lehr, & Osorio, 2003). As broadband penetration and competition increases, this situation may pose problems in creating a national vision for broadband down the road.

Many advocate a tax credit for broadband deployment to encourage investments by telecommunications providers especially in rural and underserved areas ("Broadband Internet access tax credit," 2003a; "Broadband Internet access tax credit," 2003b; TechNet, 2002; "TIA continues to pressure Bush for a U.S. broadband policy," 2003). Others have opposed the tax credit as a costly, ineffective way to support existing providers. Rural areas may best be served by fixed wireless or satellite technologies, while the proposed tax credits will benefit the incumbents RBOCs and potentially make deployment a political move as well as a commercial one (Leighton, 2001).

It appears that the United States is far too diverse, in geography, population demographics, and existing broadband infrastructures to implement a one size fits all solution. States have taken disparate measures in addressing the issue. It may be years before a national policy is put forth. Natural diffusion of innovation may beat policy to the punch, making this debate obsolete. The combined effect of local programs, private foundations, market forces, and demand for broadband may accelerate broadband

deployment without the aid of new legislation (Leighton, 2001). On a very practical level, deployment of wireless and wireline facilities depend upon gaining access to the land and rights-of-way permits. State and local regulations regarding this process can have a large impact on actual deployment. States also compete with one another (Gray, 1996). Thus the salient issue may not be the advance of broadband itself, but the relative advance of broadband compared to other states. The focus of effective broadband policies naturally shifts toward states and localities who have implemented several policies to serve their regions.

Examples of roadblocks to deployment and state policies

Obtaining rights-of-way permits to lay fiber has long been a battle between municipalities and providers. Municipalities view rights-of-way as a valuable asset that can gain them the upper hand with telecommunications providers for bargaining for high fees, community centers, or service to local offices (Merline, 2002). For telecommunications providers, the uncertainty surrounding access to rights-of-way in each city raises costs and delays deployment.

To mitigate this problem, some states have limited or standardized the municipality's permit fees and have limited the number of days that a municipality has to respond to a rights-of-way permit request, eliminating the long delays that municipalities could use to frustrate a provider into compliance with their demands. Michigan's Metropolitan Extension Telecommunications Rights-of-way Oversight Act ("METRO Act," 2002) created a central authority that collects standardized permits and fees that are distributed to the municipalities. Municipalities have 45 days to approve or deny the permit.

In another example of local policy action, some states and municipalities actively aggregate demand. Low demand and population density in rural areas dramatically lowers economies of scale for providers and discourages investments. Some states prohibit municipalities from building or maintaining telecommunications services, but for those that do not, successful models of aggregation have been demonstrated. For example, Utah allows municipalities to provide wholesale services. Eighteen cities banded together to provide 100Mbps broadband to almost one third of the state's population at wholesale prices (TechNet, 2003).

RBOCs have made it clear in their broadband investments that states with favorable policies toward them will benefit from increased investment. For example, SBC promised to double DSL availability in Missouri if HB-142 passed ("Broadband bills at forefront as 2003 state legislatures enter home stretch," 2003), a house bill introduced in the 2002-2003 session that would have deregulated broadband services, but deadlocked in the state Senate (Sloca, 2003). SBC has since halted broadband investment in Missouri. In March, Verizon enthusiastically announced that it would expand broadband services in response to the FCC fiber unbundling decision. In a telling caveat, they stated that "specific state-by-state deployment plans will depend on the particular investment environment in each state (Verizon, 2003a)." Before states support pro-RBOC legislation, it is always wise to remember that the RBOCs' deployment announcements are never binding and may not speedily come to pass.

A Policy Analysis Framework

To sort through these policy alternatives, public policy analysis texts often suggest a framework in which to evaluate and initiate policy. Bardach (2000) proposed an

eight-fold path to policy analysis outlined as 1. defining the problem; 2. assembling some evidence; 3.constructing alternatives; 4. selecting the criteria for evaluation; 5. projecting outcomes; 6. confronting the tradeoffs; 7. decision; and 8. telling your story. Framework such as this one explain the process through which policymakers evaluate a situation and craft an appropriate policy. This study will extract several steps in this process, specifically steps one and seven to examine determinants of policy creation. As an outside observer looking into the process, steps one and seven serve as visible checkpoints. The problem may be discussed by the governor in the state of the state address or by legislators as rationale for a bill. The decision point is obvious: a policy or legislation, or lack thereof.

Step one: Defining the problem

The problem for each state can be defined in a number of ways. As an example, a state may view the problem as 1. "specific regions of the state are not serviced with broadband with no projected expectation of future service (deployment)" or 2. "the number of broadband subscribers does not match the potential provided by broadband availability (demand)" or 3. "telecommunications providers are unable or unwilling to deploy broadband in this state (deployment)." Each definition of the problem will dictate the direction of state policy, assuming that one is crafted at all. This type of problem definition can be witnessed at the federal level. As illustrations, the Rural Utilities Service grants overseen by the United States Department of Agriculture attempt to rectify problem 1; a proposed bill provides tax incentives for subscribers address problem 2; and issues related to the deregulation of wireless spectrum revolve around the greater issues of access to telecommunications resources addressing problem 3. States may thus

approach broadband through a myriad of perspectives and consequently arrive at different policies and legislation. States may also choose not to view these as problems at all and deem market forces as a sufficient solution.

Step seven: Decision

The decision point is the second visible point in this framework from an outsider's perspective. Does the state decide to implement a policy at all? Bardach asked the policy analyst "If your favorite policy alternative is such a great idea, how come it's not happening already? (p. 41)" He further recommended a close look at resistance by bureaucratic and other stake holders to policy proposals as well as the lack of an entrepreneur to push innovative policies forward. In the case of broadband, despite the existence of several policy recommendations from academia, policy makers and industry experts, broadband policies have not been implemented, suggesting possible resistance or lack of perceived need.

Determinants of Public Policy

Bardach listed four naturally occurring changes in the environment that may alter the scope of the policy problem. These four are political changes following events such as an election, changes in unemployment and inflation rates, agency budgets, and demographic changes. Broadly put, these variables represent a state's socioeconomic and political condition (Gray, 1996). Socioeconomic factors that result in different policies across states include population size, density and composition, education and skills, migration and urbanization, physical characteristics and natural resources, types of economic activities, personal income, and regional economic forces (Gray, 1996). Political factors include political party control and interparty competition, interest group

strength, gubernatorial power, the political background of judges, professionalism of the legislature, public and elite opinion and political culture (Gray, 1996).

Socioeconomic factors

In the case of broadband deployment, socioeconomic factors play a large role in current adoption rates as seen in the FCC and Pew data. For telecommunications providers, areas with high population density, higher income, higher education levels, and fewer geographic obstacles are lucrative regions for deployment prior to government intervention. However, sparsely populated areas with pockets of people suffer from poor economies of scale. The state as a whole also feels the impact of this in its budget as it must spend more money per person on basic infrastructures (Gray, 1996).

The state's natural resources directly relate to the existing industries. Some industries such as manufacturing and services may benefit substantially from broadband while others such as mining or agriculture may only see marginal benefits in distribution of products. Thus, the industries present in a state will determine the state's economic priorities. Gray (1996) noted that the post industrialization of the global economy has affected heavily industrialized states as they now must retool their workforce and business climate to invite new service industries to the state.

Earlier studies also concluded that states that enact innovative, sweeping changes tend to be urban, industrialized, and wealthy (Dye & Robey, 1980). In general, policy changes are made incrementally to allow policymakers to examine pieces of a problem instead of tackling an unwieldy problem at once. However recent research has also indicated that states innovate in times of fiscal crisis due to necessity (Gray, 1996).

In Dye and Robey's (1980) review of the literature on policy determinants, they stated that socioeconomic variables have been shown to be more influential on policy than political variables such as competition, participation, partisanship, and malapportionment. Morehouse (1981) countered that socioeconomic variables alone cannot explain why states choose to allocate the money to specific interests. States with money have more flexibility in allocating funds to quality of life services, validating Dye and Robey's assessment. However, Morehouse argued that it is ultimately political leadership that translates public demand into policy choices.

Political factors

Political factors describe the players of the political scene and their interactions. The least visible factor, political culture also does matter. Elazar (1984) posited that the United States is composed of three subcultures: individualistic, moralistic, and traditionalistic, with most states falling predominantly in one camp or another, with some variations due to population migration. Individualistic states emphasize market forces as the leading developmental force. Moralistic states tend to view government as a public service. Traditionalist states work to maintain the social and economic hierarchy of the state. In this analysis, only moralistic states invite bureaucracy as a means to public good. Fitzpatrick and Hero's research (1988, as cited in Gray, 1996) supported this theory and found that moralistic states actively pursued policy innovation and economic equality. Thus a moralistic state may be more inclined to address a digital divide problem than an individualistic state. Also, public opinion can shape policies, true to the nature of representative democracy. States with a more liberal population will tend to also have more liberal policies (Gray, 1996).

State governors "are the most salient political actors in state government (Herzik & Brown, 1991, p. ix)" and "no other elected officials plays as an important a role as the governor in setting the policy agenda (Bernick & Wiggins, 1991, p. 75)." In the vast majority of states governors must draw up the budget, a direct involvement in legislation. Bernick and Wiggins (1991) argued that the budget and the state of the state address provide the best insights into the governor's agenda. An analysis of the state of the state address and bills that arise in the legislature that directly link back to the address can indicate a measure of legislative influence of the governor. However, the true extent of this influence and usage of power will depend upon individual personalities of the governor. His/her authority will also be tied to mass popularity, relationships with legislators, and constraints on his/her position.

For both representatives and governors, the rise of professionalism also gives rise to policy innovation. As politicians gather information and attend conferences to establish themselves as leaders and thus rise up the political ladder (Gray, 1996), new ideas are more prone to appear in bills (Dye & Robey, 1980). In a parallel analogy, at the national level, Senator Lieberman's introduction of a national broadband policy bill may have reflected his ambition to become President and can be interpreted as a measure of goodwill toward the technology community. Similar motives exist at the state level.

Interest groups have gained prominence at the state level in parallel with the rising power of states of regulatory issues (Thomas & Hrebenar, 1996). Notable differences emerge between the states in their interest group activity. States with more interest groups tend to pass fewer bills and engage more frequently in gridlock (Gray and Lowery, 1994 as cited in Gray, 1996). Preliminary evidence also suggests that interest

groups tend to have less power in moralistic states than in individualistic states (Thomas & Hrebenar, 1996).

The telecommunications factors

This particular problem also involves the private sector, thus analogous factors in the telecommunications sector are assumed to change this policy environment as both a strong interest group and as a determinant of need. On a statewide level, factors such as the number of broadband subscribers, Internet subscribers, geographic barriers and local barriers to deployment point to a potential need for policy. On a firm level, the financial status of the telecommunications provider and industry outlook indicate the ability of the private sector to deploy broadband.

The challenge in policy analysis lies in its complex nature. The policy process "takes place over time; any policy output has multiple aspects; there are a large number of policy-making participants with varying perceptions; and the process is interactive, not additive (Gray, 1980, p. 218)."

Research Questions

The study examines the top two and bottom two states as ranked by TechNet. As an exploratory study, the first two questions serve to describe each state and each state's broadband providers. This is a necessary first step in identifying root causes for differences in policy.

RQ1: What were the characteristics of top and bottom states: political, economic, geographic and population demographics?

RQ2: What were the characteristics of the broadband providers in top and bottom states: number of players, economic outlook, broadband deployment, customer base and technologies?

RQ3: Do there appear to have been any determinants that facilitated the creation of broadband policies in the "top" states?

RQ4 : Do there appear to have been any determinants that prevented the creation of broadband policies in the "bottom" states?

CHAPTER 3

METHODOLOGY

The crux of this thesis lies in the rankings released July 2003 by TechNet of states' broadband policies. A discussion of the report is now merited.

The TechNet Report

The intent of this report was to highlight and applaud the states that had taken a proactive role in deploying broadband from a high-technology industry perspective. The broadband index is a series of questions asked of the states whose answers were used to rank them. The broadband index was constructed by TechNet's Broadband Taskforce of 20 CEOs and executive management of high technology companies and Analysis Consulting. Data was collected by sending surveys to each state's utilities commission as well as supplementary web searches. Though their criteria for pro-broadband policy is industry- centric, it is nevertheless a comprehensive survey of measures that are in place related to broadband. In general, TechNet supports industry-led deployment, a stance that few argue with in the United States. However, their particular positions of pro-tax incentives, pro-government grants, and pro-centralized rights-of-way permitting remain controversial positions. To date, this is the only known state by state comparison of policies. Therefore, this report's rankings will be used as a basis to compare the top two states and the bottom two states. This inherent bias in the survey will be taken into account in the data analysis.

TechNet ranked only the top twenty-five states in their report and did not publish the answers to the survey questions. TechNet agreed to release the original data to the researcher for the purposes of this study, though this data was not originally available

with the original report. All TechNet data not published in their report is used with special permission.

TechNet ranked the states based on three areas: deployment policies, supply-side policies and demand-side policies. Deployment issues included rights-of-way powers of municipalities, dispensing of permits, and keeping data on existing deployment. Supply-side issues touched on the existence of a formal state plan or agency to address broadband, aggregation of demand by the state, and financial incentives and loans to telecommunications suppliers. Demand-side issues included grants and loans to underserved areas, incentives for broadband access for end-users and support for the development of broadband applications.

The top two broadband states were Michigan (144.4 points) and Florida (80.6 points) and the bottom two were Arkansas and Nevada, both earning 1 point. By far, Michigan's policies outranked all other states earning almost twice as many points on the TechNet scale as second place Florida. Arkansas and Nevada tied with one point for their streaming video of legislative activities. Only the top and bottom two states are examined in this study due to the nature of the TechNet survey results distribution. The third top ranked state drops down to 75.7 points, followed by 73.0, and 71.1. The four states ranked above Arkansas and Nevada jump to 6.5 points. Due to these numbers, this study focuses solely on the top and bottom two states to retain the clarity of the cut-off for "top" and "bottom" states.

Since the release of the report, a flurry of broadband activity has commenced in the states, in part in response to the FCC's triennial decision regarding unbundling. This study only examines events before the publication of the report.

Qualitative Studies: Spotlighting the Case Study

As an exploratory study, this study utilizes qualitative methods to piece together potential sources of broadband policy determinants. Each state represents a unique set of specific conditions and constraints "that are too complex for the survey or experimental analysis (Yin, 1994, p 15)" for which a qualitative analysis, specifically a case study is appropriate. The goal is not to create a generalizable model, but to gain a deeper understanding of what may push a state to adopt broadband policies.

This study draws on methods used in the case study, where each case consists of a state. The context of the states such as socioeconomic factors, population demographics and political leadership is inseparable from the subject of study, the creation of policy, making a case study an appropriate approach (Yin, 1994).

Stake (2003) listed the "responsibilities" of a case study researcher to be:

1. Bounding the case, conceptualizing the object of study
2. Selecting phenomena, themes, or issues- that is, the research questions- to emphasize
3. Seeking patterns of data to develop the issues.
4. Triangulating key observations and bases for interpretation
5. Selecting alternative interpretation to pursue
6. Developing assertions or generalizations about the case (p.155).

Points one and two have been addressed with specific research questions focused on the state-level of analysis. Step three will be elaborated further in the subsequent factors section. Steps four through six pose a threat to validity without further clarification of methods.

To clarify then, in analyzing the data, a within case analysis and cross-case analysis are used (Eisenhart, 2002). Each state is examined individually for salient features. Following that, they are compared with each other for validation of possible

generalizations. When sorting through the data, a thematic framework evolves (Ritchie & Spencer, 2002). The bulk of the data collected is quantitative in nature. Any non-quantitative data is evaluated via these themes and also contribute to their development.

Comparisons between the states provide some insight into differences between the states as they compete with each other. However, without a baseline for comparison, comparisons may not yield satisfactory analysis. Thus, whenever possible, numerical data is compared to the national average or rate. State x may have higher penetration rates than state y, but if both states are far above the national average, neither state x nor y may feel compelled to act upon this difference.

Factors

In accordance with previous research, the study looks at socioeconomic factors, political factors, and the telecommunications industry. To evaluate these variables, the following questions were for years 1999-2002. On the federal level, there were no bills related in broadband in the 105th congressional session (1997-1998) and 32 bills in the 106th congressional session (1999-2000). Thus, 1999 was used as a starting point for political interest in broadband that could have been implemented into policy.

The following questions were asked to determine the characteristics of each state and to compare the states against each other.

Table 1 :Questions to Be Asked

QUESTION	MEASURE
Socioeconomic Factors	
People	
What was the state's	Population according to 2000 Census.

	population?*	People per square mile.
		Households per square mile.
	What was the composition of the	% by age.
	state's population?	% by income.
		% by metropolitan, rural.
	How educated were the people of	% completed high school, college or
	the state?*	above.
		K-12 school ratings based on standardized
		testing.
	Had the state seen a population	% change in population since 1990
	migration?*	Census.
	What was the state's crime rate?*	Average crime rate 1999-2002.
	What was average income of a	Average $ per capita.
	person in this state?*	
Land		
	What is the size of state?*	Sq miles.
	Are there any natural geographic	% land, % water.
	barriers to broadband	Deserts, rugged terrain, mountain ranges,
	deployment?	forests.
State Economy		
	What are the state's natural	Natural resources of the states.
	resources?	
	What were the state's major	Major industries as determined by GSP

	industries?	% employed by sector (i.e. manufacturing, services). % change in productivity of major industries from 1990-2000.
	What was the state's productivity?*	Average Gross State Product % change in GSP from 1999-2002. % change in GSP from 1990-2000.
	What was the state's unemployment rate?*	Average percentage over 1999-2002. % change over 1999-2002.
State Budget		
	What was the size of the state budget?	Average $ of budget over 1999-2002.
	How much and what did the state spend the budget on?	% expenditures broken down by .categories.
Political Factors		
Political Parties		
	What was the political party of governor?	Party of governor who is in office for the majority of 1999-2002.
	What was/were the political party(ies) of the legislature (s)?	Majority party of legislature during the term of the governor who is in office for the majority of the 1999-2002.
Governor		
	Who was the governor?	Governor who was in office for the

	majority of 1999-2002 will be analyzed.
What were the governor's priorities?	Content analysis of state of state address. Largest or new expenditures on budget proposals.
Were the governor and legislature in alignment?	# of bills with direct relevance to priorities.
What were the governor's formal powers?	Tenure potential: Term duration and term limits (Beyle, 1996; Schlesinger in Morehouse, 1981). Appointive powers: governor's power to appoint in six major functions and offices in the state- corrections, K-12 education, health, highways, public utilities regulation and welfare (Beyle, 1996). Budget powers: Level of responsibility for the budget (shared with legislature or full) and power of legislature to change executive budget (Beyle, 1996). Veto powers: Type of veto (line item, whole) and necessary action by legislature to override the veto (Beyle, 1996).
What was the governor's electoral mandate?	Margin of victory in election (Beyle, 1996).

How popular was the governor?	Average of polls.
Legislature	
How active was the legislature?	# of bills presented.
Was there evidence of gridlock?	# of bills passed.
	% of bills passed.
What was the legislature's agenda?	Technology and broadband related bills.
Political Culture	
What was the political culture?	As classified by Elazar (1984): Moralistic, individualistic, traditionalistic.
Did the public participate in politics?	2000 Voter turnout.
Who lobbied in this state?	# of lobbyists, # of telecommunications lobbyists.
Telecommunications Factors	
Penetration	
How many people had broadband?*	Average # of lines as provided by FCC 1999-2002.
	% increase of lines from 1999-2002.
	% change of zip codes with no provider from 1999-2002.
Industry Outlook	
How was the industry as a whole	Average capital intensity of RBOCs 1999-

doing?	2002. % change in capital intensity from 1999-2002.
Key Players in States	
Who were the key players in the states?	Name of RBOC with most customers. Name of Cable company with most customers. Name of any smaller players found in the state.
Financials of Key Players	
How much money did the major broadband deployers have?	Average income from annual report 1999-2002. Average expenditures from annual report 1999-2002.
Other	
What policies were in place by the end of 2002? Are there any points that these questions are not capturing?	TechNet survey and states.

Note: * indicates a comparison to National Averages or rankings

Data

Data for this research was gathered during the period January to March 2004, from public archives, technical reports, almanacs, and news articles. Public government

records were obtained via libraries or directly from the state agency that published the data. The following table summarizes the data sources used.

Table 2: Data Sources

DATA	SOURCE
Population demographics- age, income, education; size of state, number of households, employment by sector, population settlement patterns, ranking of locations' poverty levels.	Census 2000 (2000a, 2000b, 2000c, 2000d, 2000e, 2000f, 2000g, 2000h, 2002).
Population who live in metropolitan vs. nonmetropolitan areas.	U.S. Department of Agriculture (2004).
Test scores and national education rankings.	U.S. Department of Education (n.d., 2000, 2002b, 2002c), National Center for Public Policy and Education (2002).
Crime rates.	Federal Bureau of Investigation (2004).
Natural resources.	Encyclopedia Brittanica ("Arkansas", 2003; "Florida", 2003; "Michigan", 2003; "Nevada", 2003) .
Gross state products.	Bureau of Economic Analysis (U.S Department of Commerce, 2004).
Unemployment rates.	Bureau of Labor Statistics (U.S. Department of Labor, 2004a).
State budget information.	National Association of Budget Officers

	(2001, 2002, 2003).
State of the state addresses.	National Governor's Association (1999a, 1999b, 2000, 2001a, 2001b, 2001c, 2002a, 2002b), State of Florida, Office of the Governor (2000b), State of Michigan (2003a, 2003b, 2003c).
Executive budget of Michigan.	State of Michigan (1999, 2000, 2001, 2002).
Executive budget of Florida.	State of Florida, Office of the Governor (1999a, 2000a, 2001, 2002).
Executive budget of Nevada.	State of Nevada (1999, 2001).
Biennial budget of Arkansas.	State of Arkansas (1999).
Governor's powers, total number of bills presented and passed, number of lobbyists, 2000 voter turnout.	Council of State Governments (2000-2003).
Governor's margin of victory.	Arkansas Secretary of State (n.d.), Florida Department of State (n.d.), Michigan Department of State (1999), Nevada Secretary of State (1998).
Governor's approval ratings, Arkansas.	Arkansas: University of Arkansas Poll (Moritz, 2003), The Arkansas Poll (Parry, Miller, Schreckhise & Shields, 2000, 2001,

	2002). Florida: Mason-Dixon Poll (Coker, 2003). Michigan: Detroit News ("Engler's legacy", 2002). Nevada: Mason-Dixon Poll (Morrison, 2003; Vogel, 1999), Nevada Republican Party (Ralston, 2001).
Length of legislative session, salaries/compensation for legislatures.	World Almanac ("State Officials", 2002).
Technology and broadband related bills (For complete list of bills, please see Appendix)	Arkansas searchable legislative bills (http://www.arkleg.state.ar.us/), Florida searchable legislative bills (http://www.flsenate.gov), Michigan searchable legislative bills (http://www.michiganlegislature.org), Nevada searchable legislative bills (http://www.leg.state.nv.us/).
Names and number of telecommunications lobbyists.	Arkansas Secretary of State (n.d.), Florida Legislature (2002a), Michigan Secretary of State (n.d), Nevada Legislature (n.d.)
Political Culture.	Elazar (1984).
Number of broadband lines.	Federal Communications Commission (2003).

Capital intensity of telecommunications firms.	Brosnan (2003), Telecommunications Industry Association (2002).
Financial information for SBC, BellSouth, Comcast, Charter, Cox.	Retrieved from SEC Annual searchable 10-K filings (http://www.sec.gov/) SBC Communications (2000, 2001, 2002, 2003), BellSouth Corp. (2000, 2001, 2002, 2003), Comcast Holdings Corp. (2000, 2001, 2002, 2003), Charter Communications Holdings (2000, 2001, 2002, 2003), Cox Communication Inc. (2000, 2001, 2002, 2003).

CHAPTER 4

RESULTS

The results are presented here by category (TechNet policy results, socioeconomic factors, political factors, and telecommunications factors), broken down into national trends and states. The states grappled with many similar problems that emerged on a national level, as well as endemic problems stemming from their population's settlement patterns, economic base, and governing structures. As many of the telecommunications firms are national or regional in scope, data about the telecommunications industry will be presented by corporation rather than by states.

TechNet Policy Results

Total possible points on the TechNet survey for broadband policy were 182 points for the three categories of deployment, supply-side, and demand-side policies. Survey questions are provided in the TechNet report. These scores represent the number of pro-broadband policies these states had enacted at the time of the survey multiplied by the category weight. Due to TechNet's policy agenda, deployment received a category weight of four, supply-side received a weight of two, and demand-side received a weight of one, resulting in higher overall deployment scores. Higher scores indicate the presence of more policies. A score of zero indicates no broadband policies. Table 1 summarizes the TechNet survey results. For the 50 states and the District of Columbia, the mean score was a measly 31.6, and the median was 19.4. For deployment scores, the median was 0, indicating that over half of the states have no deployment policies. Supply-side and demand-side policies fared better with a median of 9.8 and 3.5 respectively. The majority

of the states scored abysmally on the scale, an indication that the states are either not able or not willing to actively meddle in accelerating broadband penetration.

Table3: TechNet Policy Survey Scores

	Total Possible Points	US Average	Michigan	Florida	Nevada	Arkansas
Total Points	182	31.6	144	80.6	1	1
Deployment	104	15.8	93.6	41.6	0	0
Supply-side	52	11.6	35.8	26	0	0
Demand-side	26	4.2	15	13	1	1

Nevada and Arkansas scored a total of one point for streaming video of their legislatures. However, as discussed later under political factors, Arkansas' one point may not accurately reflect the broadband activity of the state. There is evidence that this survey data is incomplete. As only the top 25 states were published in the report, it is possible that the bottom twenty-five states did not receive as much detailed attention as the top TechNet champions. Following is a brief outline of the policies of Michigan and Florida.

Michigan

Michigan ranked number one in the TechNet report for having the most comprehensive set of policies aimed toward expanding broadband for Michiganers. The most sweeping of these changes were passed early in 2002 under Governor Engler. Michigan secured its number one spot by placing first in all three of TechNet's categories.

Deployment. Michigan comprehensively attacked deployment issues for telecommunications firms by limiting the power of municipalities to arbitrarily decide permit parameters while also levying an annual per-foot fee that is split between financing broadband deployment and municipalities. Michigan limits the number of days that a municipality can take to process a rights-of-way request to 45 days and restricts the municipalities from requesting extraneous fees or services in exchange for access. Permits are collected through a standardized application form with fixed rates through a centralized authority, the Metropolitan Extension Telecommunications Rights of Way Oversight Authority (METRO). They outlined a dispute resolution system in case of conflicts between municipalities and telecommunications firms. To reduce the frequency of road construction, multiple providers receive a discount for coordination of deployment and the state keeps a map of existing broadband infrastructure. Finally, broadband deployment is rewarded with a tax rebate.

Supply-side. Arguably, the most significant policy is the existence of one. The state has a formal plan, the Michigan High Speed Internet Plan (Public Acts 48,49, and 50 of 2002). These acts created the Michigan Broadband Development Authority, an agency designed to promote broadband through loans. The state provides grants, loans, and tax incentives for deployment, especially for underserved areas. Finally, Michigan owns its own backbone.

Demand-side. Demand-side policies focus on encouraging applications for broadband, to prepare for and hasten the eventuality that the broadband network will be built. The state provides discounts, grants and loans for public and private sector users. The state also promotes broadband applications such as telemedicine, distance learning,

homeland security, e-government applications, and streaming audio/video of legislative sessions.

Florida

Florida placed a distant second by consistently placing in the top six states for the three categories. TechNet documents the following characteristics in their survey.

Deployment. Florida implemented a centralized system of collecting fixed rights-of-way fees and prohibited municipalities from imposing fees and obligations not related to established rights-of-way permit fees. Though its plans are far less extensive than Michigan's, this ranks it sixth in the nation.

Supply-side. Unlike Michigan, Florida claimed no comprehensive plan to encourage broadband deployment. However, their State Technology Office coordinates deployment and the state has created a Digital Divide Council to address underserved areas' needs. The state leases facilities from the telecommunications industry to encourage deployment and promotes aggregation of demand and redundancy via multiple suppliers. The state offers some tax relief for broadband purchases related to the creation of access points and deployment for underserved areas. Finally, the state offers discounts for public end users. These policies ranked Florida fourth for supply-side policies.

Demand-side. In terms of encouraging broadband usage, Florida ranked second with a myriad of programs that indirectly encourage broadband usage. These are a telemedicine program, distance learning programs, homeland security applications, tele-work programs for government employees, and streaming video of legislative sessions.

In summary, on this survey, Michigan far surpasses the other states in comprehensive coverage of the broadband bases. The most important policy decision

may be that Michigan tackled broadband deployment as a part of a vision and a broadband package rather than in a piecemeal fashion. The next section examines the socioeconomic factors that drive the state's policies.

Socioeconomic Factors

People

The demographic composition, settlement patterns, education levels, and population growth of each state emerged as salient differences. Nationwide data serves as a benchmark comparison. Table 2 summarizes the statistical data about the people. For some of the categories, yearly state data was not available, thus federal census data was substituted for average 1999-2002 values which provides the added benefit of a common base of comparison. Specific data sources were listed in Table 2.

Table 4: People

	United States	Michigan	Florida	Nevada	Arkansas
Population	281 million	9.9 million	16.0 million	2.0 million	2.7 million
Population Density (ppl per sq mile)	79.6	175	296.4	18.2	51.3
Household Density	32.8	74.5	135.4	7.5	22.5
Median Age	35.3	35.5	38.7	35	36
Individuals below poverty	12.2%	10.5%	12.5%	10.5%	15.8%
Metropolitan population	80%	82.2%	92.8%	87.5%	46.3%
% population with education	7.0%	4.7%	6.7%	6.4%	9.4%

less than 9th grade					
2002 grade 4 & 8 reading scores	N/A	national average	national average	lower than national average	lower than national average
2000 grade 4 & 8 math scores	N/A	higher than national average	N/A	lower than national average	lower than national average
Scores for college prep in high school for 2000, 2002		B,B	C, C+	D+, D	D, D+
Population change since 1990 Census	13.2%	6.9%	23.5%	66.3%	13.7%
Crime rate: Average crimes per 100,000 ppl 1999-2002	4,167.5	4,097.6	5,722.6	4421.5	4112.5
Income per capita	$21,776	$22,168	$21,557	$21,989	$16,904
Median household income	$41,486	$44,667	$38,819	$44,581	$32,182
Household w/o a phone line	2.4%	2.6%	2.2%	2.3%	4.8%

National data indicate that well over the majority of the country lived in a metropolitan area. Unfortunately, this classification fails to discriminate between urban and suburban dwellers and lumps them into metropolitan. Regardless, this also implies that the bulk of the population lived near a public school or institution of higher learning

with broadband access. Though penetration rates for individual households may be low, the majority of Americans could most likely access broadband services if they so desired.

According to the Census numbers, Michigan's people enjoyed a period of relative prosperity and compared favorably with the United States average on most items. With a population of close to 10 million people, Michigan ranked number eight in population in the 2000 Census. A map of population by census tracts reveals a southern pattern of settlement, with most of the state's population clustered in southern cities. Most of the upper peninsula had less than 15 people per a square mile. Of note, is the city of Detroit, which ranked 7th in individual poverty levels (23.3%) in 2002 (U.S. Census, 2002). As a whole, the statistics paint a relatively rosy picture when compared to the rest of the nation for poverty, crime, and education though pockets of regional problem areas continued to exist.

With close to 16 million people, Florida is the fourth populated state in the nation with a relatively high population density. The highly metropolitan state suffered from high crime rates and pockets of poverty. Specifically, the city of Miami, Florida ranked first in the nation for number of people below poverty (31.2%), far more severe than the state's overall standing (U.S. Census, 2002). Since 1990, Florida has also experienced a population increase of 23.5%, a little less than twice the national growth rate. Of this, 85.3% is due to net migration (Florida Legislature, 2000b). Overall, however, the numbers depict a state floating around the national average on most indicators.

Nevada has experienced explosive growth in the past decade, growing more than 66% since 1990 to a population of almost 2 million in 2000. Census maps show the population clustered around Reno and Las Vegas with the bulk of the land housing less

than 1 person per square mile. State-wide statistics fail to describe a densely populated reality that is more accurately depicted in statistics from these two metropolitan areas. Clark County, home to Las Vegas, and Washoe County, home of Reno, had a population density of 173.9 and 53.5 people per a square mile respectively. The Las Vegas metropolitan area experienced a staggering 85.5% population growth from 1990 to 2000, while Reno grew 33.3% in the same time. Coupled with dynamic growth come problems in sustainable development and a drain on state social services. A positive implication is that the new and vibrant state may incorporate current technology infrastructures into building considerations rather than adding or upgrading the systems as an afterthought. Nevada's astounding growth inevitably directed the course of the state's policies.

Arkansas is the nation's 33rd most populated state with 2.6 million residents. Statistics suggest that Arkansas was struggling to cope with poverty, low educational performance, and a scattered, rural population who may not have ready access to social services. This forces policy priorities to center around rejuvenating poorer areas and distributing social services across the state. The fact that almost 5% of the population does not have a phone line, either by choice or by location does not bode well for broadband distribution.

Simple descriptive statistics illustrate differences in population that could potentially drive policy in divergent directions for these states. Even when tackling similar issues, the unique characteristics of each state's constituents force politicians to frame the issues in the light of the struggles of the state, if not devise different solutions.

Land

The size and geography of an area affect broadband deployment due to the physicality of fiber optics, cable, and copper lines. Naturally, costs can be a prohibitive factor when crossing vast expanses of sparsely populated land to complete a state network aggravated by immovable geographic formations. The following table summarizes the size of the states.

Table 5 : Land

	United States	Michigan	Florida	Nevada	Arkansas
Size (sq miles)	3,794,083	96,716	65,754	110,560	53,179
Rank in US		22	26	7	27
% Land	93%	59%	82%	99%	98%

Michigan's land is unique because of its adjoining lakes. 41% of the state is water and the state is divided into the rolling lower and a slightly rugged upper peninsula. The upper peninsula's distance from population centers poses a challenge for statewide deployment.

Florida's land is mostly flat and less than 100 feet above sea level. The Everglades National Park in the southwest section of the peninsula limits population settlement to the eastern shoreline in the south. Though swampy, the geography itself presents no significant obstacles to deployment.

Nevada is cross-crossed with over 40 mountain ranges and the southern region is part of the Mojave desert. Simultaneously a boon and a bust, 85% of the state's land is federally owned, creating two centers of population in Las Vegas and Reno and leaving the rest of the land sparsely populated. Statewide deployment may be expensive when

considering the geographic expanse of the state, but coverage of the bulk of the population is relatively easy.

Almost half of Arkansas is covered in forests. The landscape varies greatly throughout the state, with the southeast half consisting of lowlands and the northwest half made up of highlands, including the Ozark mountains. The challenge in Arkansas is the population distribution across this land. The mountains in the northwest split two areas of denser population and much of the population is scattered throughout the rest of the state. Connecting the cities and attaining statewide coverage appears challenging.

Variations in state geography coupled with resulting population settlement patterns make Nevada and Florida the easiest for broadband deployment. Arkansas and Michigan have more geographic obstacles and rural areas than the other two states.

State Economy

Population demographics and the lay of the land may create the limitations of policy, but economic indicators continue to be standard political drivers. A state's economy is meshed into the national economy. An overview of the US indicators leads a state- by- state breakdown.

The United Nations Economic Commission for Europe (UNECE, 2001) identified the United States as the "main engine of economic growth in 1995-2000." However, in 2001 and 2002, the United States experienced a decline in investments, slowed consumer spending, and a sliding stock market (UNECE, 2001; Lahart, 2002). The Bureau of Economic Analysis' (BEA) data on the United States' gross domestic product (GDP) shows slowing growth from 1999 to 2001 (4.5%, 3.7%, 0.5% growth for each year) followed by a slight pick up in growth to 2.2% in 2002.

The 2001 economic downturn decreased the gross state products (GSP) of 20 states and decelerated growth in another 26 states (U.S. Department of Commerce, 2003). The BEA reports that goods-producing industries were hardest hit with declines in manufacturing held largely responsible. The tourism industry also experienced declines though the BEA data shows both Florida and Nevada in the top quintile for GSP growth in 2000-2001 despite its reliance on tourism. Of note is the growth of communications in all states except Colorado. In Nevada and Florida, this sector actually contributed to state growth in 2000-2001. A breakdown of economic indicators for the states now follows.

Table 6: Economic Indicators

	United States	Michigan	Florida	Nevada	Arkansas
Average unemployment 99-02	4.7%	4.7%	4.5%	4.8%	4.8%
% change in unemployment 99-02	38.1%	63.2%	41.0%	25.0%	20.0%
Range of unemployment rates 99-02	4.2-5.8%	3.8-6.2%	3.9-5.5%	4.4-5.5%	4.5-5.4%
Average GSP 99-01		$318.7 Billion	$468.6 Billion	$74.8 Billion	$66.6 Billion
GSP growth 99-01 [a]		-.68%	6.26%	8.02%	0.78%
GSP growth 90-00		36.15%	44.42%	83.82%	45.17%
Top 3 GSP shares		Manufactur ing (25.4%) Services (19.8%) Fiannce	Services (25.1%) Finances (21.6%) Governmen	Services (31.9%) Finances (18.6%) Retail	Manufactur ing (21.6%) Services (16.2%) Governmen

		(15.0%)	t (12.2%)	Trade (10.5%)	t (12.7%)
Top 4 GSP growth sectors 90-00		Wholesale trade (99.4%) Retail trade (69.3%) Constructio n (49.1%) Manufactur ing (35.6%)	Wholesale trade (117.4%) Retail trade (68.0%) Transportat ion & public utilities (57.7%) Agriculture (47.7%)	Wholesale trade (153.2%) Retail trade (149.4%) Constructio n (121.7%) Manufactur ing (104.9%)	Wholesale trade (109.9%) Retail trade (92.2%) Agriculture (65.35%) Constructio n (60.45%)
% of GSP of Communicatio ns Industry 2001		1.72%	3.14%	2.26%	2.94%
Top 3 employers	Education, health and social service (19.9%) Manufactur ing (14.2%) Retail Trade (11.9%)	Manufactur ing (22.5%) Education, health and social service (19.9%) Retail Trade (11.9%)	Education, health and social services (18.1%) Retail trade (13.5%) Professiona l, scientific, managemen t, and waste managemen t services (10.6%)	Arts (26.3%) Education, health and social services (12.9%) Retail trade (11.3%)	Education, health and social service (19.6%) Manufactur ing (19.4%) Retail trade (13%)

[a] Growth is presented here in lieu of % change over time to control for inflation and depict the true growth of the economy. The Bureau of Economic Analysis provides GSP in current and chained dollars. The chained dollars are in 1996 dollars, allowing comparisons across regions and years. The growth rate has been calculated using chained dollars. The BEA notes "comparing the growth rate of chained-dollar GSP for an industry to the growth rate of total chained-dollar GSP indicates whether that industry is raising or

lowering the state's growth rate." The size of the industry in each state is calculated using the nominal dollars. "Comparing the share of total GSP in nominal dollars that is accounted for by the GSP of an industry over time indicates whether the industry's claim on the state's resources is increasing of decreasing." (U.S. Department of Commerce, n.d.) 2002 data has not yet been released.

Of the four states, Michigan and Florida had the highest Gross State Products (GSP) on account of their populations. GSP growth data for 1999-2001 show Michigan and Arkansas as the hardest hit by the economic downturn. Over the long term, GSP growth reflects the population growth of Nevada and a slower economy in Michigan. Though the average unemployment rate for the states all hovered around 4.7%, Michigan's unemployment took the harshest blow, increasing from 3.8 to 6.2% from 1999-2002.

Michigan's economy continued to be dominated by manufacturing. Manufacturing employed the most number of people and claimed the highest share of the GSP. However, compared to the state GSP growth rate (36.15%) over 1990-2000, the growth rate of manufacturing is about the same (35.57%). In contrast, retail trade, wholesale trade, and construction contributed substantially to the growth of the state GSP, while mining (-28.4%) and federal military activity (-46.41%) experienced shrinkage. The state's natural resources include iron ore, though mining was not a large contributor to the state productivity.

Down south, employment of Floridians reflected a different economic base in white collar occupations and tourism. Because of its low latitude and position as a peninsula, its most economically valuable resource is arguably the climate and its shoreline. The climate invites agriculture and tourism, which make up part of the

economy's core. Services claimed the largest share of gross state product in both 1990 (21.55%) and 2000 (25.12%). However, the greatest contributors to state growth during this period were wholesale trade, retail trade, and transportation and public utilities. Communications by itself claimed 2.9% of the GSP in 1999, up to 3.1% in 2001.

Nevada's explosive growth since 1990 (GSP growth 83.82%) was primarily fueled into and by wholesale trade, retail trade, construction, manufacturing; and finance, insurance, and real estate (99.46%). Though the labor market indicated that people held the most number of jobs in entertainment, a service well associated with Nevada, actual economic growth stemmed from the needs of the growing business and resident population. The state's natural resources are its many minerals, including gold, barite, and mercury. Mining comprised about 2% of Nevada's GSP.

Arkansas is often thought of as a manufacturing state. Manufacturing employed the second highest percentage of employees and led other sectors in shares of GSP. During this time, however, manufacturing did not contribute to state growth. Instead, wholesale trade, retail trade, agriculture, and construction led the way.

Over the 1990s, Nevada led these four states in GSP growth. Michigan lagged behind, perhaps prompting a more aggressive economic agenda from Governor Engler. A look at the economic impact on the state budgets and state budget priorities follows.

State Budget

Nationwide, states experienced a significant fiscal boom in the 1990s. State spending as a whole increased 32% between 1990 and 2000, with the top three expenditure categories being Medicaid, elementary and secondary education, and higher education (Boyd, 2003). Between 1995 and 2001 states also enacted tax cuts due to

unanticipated revenue from growing personal income and sales taxes and the tobacco settlement funds of $246 billion. However, in 2001, decreases in manufacturing employment, the plunge of the stock market, September 11th attacks, and the increase in the savings rate caused a steep shortfall in revenue. States are not expected to swiftly rebound from this sharp decline in fortunes. Michigan, Florida, Nevada, and Arkansas are no exception. Each state felt the shock of the reversal of economic fortunes during the study period of 1999-2002 which is reflected in their economic outlooks, budget crunches, and state of the state addresses.

Over the 1999-2002 period, Michigan's annual expenditures from all funds ranged from $33.7 billion in 2000 to $ 39.7 billion in 2002. The highest share of the spending was in elementary and secondary spending (31.1-32.2%), following by Medicaid spending (19%), in line with the nationwide trend. Michigan's primary source of revenue for the general fund was the personal income tax, which decreased in 2002 to $4.234 billion from 1999's $5.056 billion and 2000's high of $5.166 billion.

In Florida, K-12 education and Medicaid spending topped other state expenditures. While K-12 spending stayed a little below 19%, the percentage of state money spent on Medicaid rose from 15 to 20% in 1999-2001. Florida's revenue relied primarily on its sales tax, as it collected no personal income tax.

Nevada collected no personal or corporate income tax, generating its general fund revenue from sales tax, gaming tax and other miscellaneous taxes. Consequently, their revenue stream was extremely vulnerable to fluctuations in the economy. The percentage of the state expenditures spent on K-12 education, higher education, and Medicaid

increased every year from 1999-2002, as expected from the national trend as well as its population growth and consequent increase in consumption of public services.

Arkansas' general fund revenue consisted largely of sales and personal income taxes. As in the rest of the nation, the three highest expenditures for 1999-2002 were elementary and secondary education, higher education, and Medicaid. Medicaid rose to be the number one expenditure in 2002.

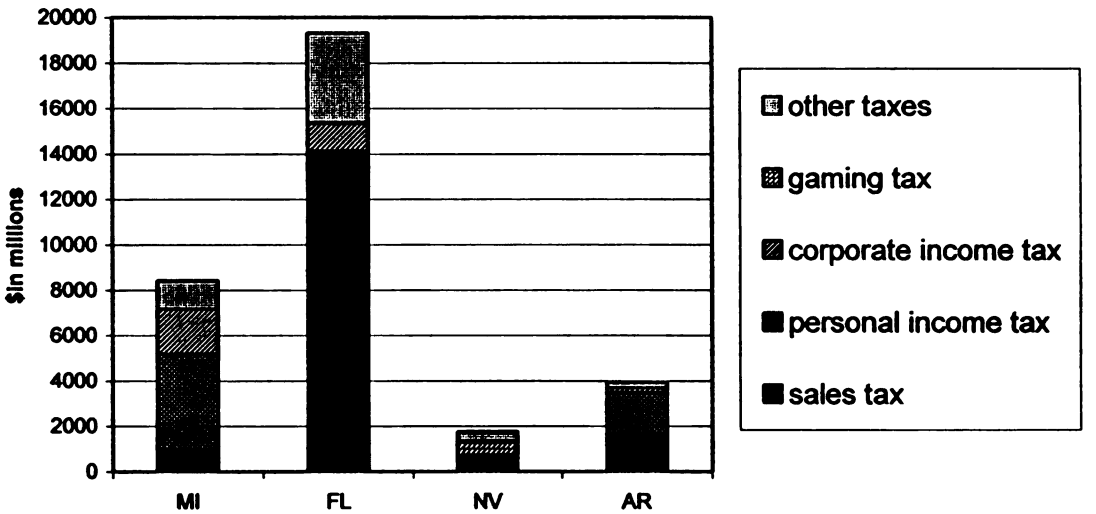


Figure 1: General Fund Revenue Sources

Each state relied on a different tax base to finance their activities, summarized in Figure 1. Some states were by nature of their tax structure more vulnerable than others, as they depended on consumer spending. This added more financial uncertainty for Nevada and Florida.

Political Factors

Characteristics of the population and the state economy determine areas of focus for policymakers. However, governments have quirks and cultures of their own that contribute to shaping the states development and political interventions. This section

opens with an overview of the parties in control, followed by gubernatorial powers and priorities, legislative activity, and the states' political cultures.

Political Parties

Alignment of political parties can determine the ease with which governors can push forward their agendas, though political partisanship is not a requirement. Arkansas' governor faced a split government in both houses, setting the state for potential political battles. Nevada's Governor Guinn had one house democratic and the other not.

Table 7: Political Parties

	Michigan	Florida	Nevada	Arkansas
Governor	Republican	Republican	Republican	Republican
House	Republican	Republican	Democratic	Democratic
Senate	Republican	Republican	Republican	Democratic

Governor

Governors arguably are the most influential leaders in the setting the state's vision and direction. During 1999-2002, all four states enjoyed the same governor. The tenure potential is four years with a two term limit (Council of State Governments, 2003). For Michigan's governor, John Engler, this limit was implemented during his time in office, which started in 1991. Engler served in the state House, Senate or as Governor since 1971, a lifelong politician. Arkansas' governor, Mike Huckabee stepped up from lieutenant governor after the former governor Tucker resigned in 1996. Nevada and Florida were served by new governors starting in 1999.

For governors across the nation, 1999-2002 posed complex challenges that continue to exist today. The National Governor's Association (NGA) (Scheppach & Shafroth, 2000) cited globalization, technology, and deregulation as transformational

forces in the federal-state relationship. The NGA also suggested that governments must 1. become more "flexible, adaptable, customer-oriented, and performance driven (p. 8)" borrowing heavily from the private sector model of catering to customers; 2. build a transportation and telecommunications infrastructure for commerce and education; and 3. overhaul antiquated tax systems and regulations. The four governors responded to these recommendations as evidenced in their priorities. On September 11, 2001, these challenges were exacerbated by deepening economic uncertainty and the imposition of new security requirements. During this time, the classic themes of education, health and human services, and public safety were among the top gubernatorial priorities coupled with accountability of state agencies and an accessible government. A comparison of the governor's formal powers and popularity is presented here, followed by a look at each governor's priorities and visions for technology.

Table 8 :Governor's Formal Powers

	Michigan	Florida	Nevada	Arkansas
Appointive powers[a]	3.1	2	3	2
Budget powers[b]	3	2	3	3
Veto powers[c]	5	4	5	4
Mean	3.7	2.7	3.7	3

[a] Appointive powers: 5.0 governor (gov.) appoints, no approval; 4.0 gov. appoints, board, council or legislature approves; 3.0 someone else appoints, gov. approves or shares appointment; 2.0 someone else appoints, gov. and others (e.g. legislature) approves; 1.0 someone else appoints, no approval (Beyle, 1996).

[b] Budget powers: 5.0 gov. has full responsibility, legislature may not increase executive budget; 4.0 gov. has full, legislature can increase by special majority vote or subject to item veto; 3.0 gov. has full, legislature has unlimited power to change executive budget; 2.0 gov. shares, legislature has unlimited power to change executive budget; 1.0 gov. shares with other elected official, legislature has unlimited power to change executive budget (Beyle, 1996).

[c] Veto powers: 5.0 item veto for appropriations, 3/5 or 2/3 needed to override; 4.0 item veto, majority elected to override; 3.0 item veto, majority present to override; 2.0 no item veto, special legislative majority to override; 1.0 no item veto, only simple legislative majority needed to override (Beyle, 1996).

Table 9: Governor's Approval Ratings

	Michigan	Florida	Nevada	Arkansas
Electoral mandate	62.0%	55.3%	53.1%	59.8%
Approval Rating range	47-60%	50-68%	53-61%	47-70%

Michigan. Michigan was led by the Republican governor, John Engler who was re-elected in 1998 with a fairly significant voter's mandate. In addition to the formal powers presented, Michigan's governor is the only leader of the four states who can reorganize the state government via an executive order. Governor Engler consistently presented his vision of the next Michigan, the transformation of Michigan from a faltering manufacturing Rust Belt state to the home of high-tech industries.

In 1999, his state of the state address, titled "The Smart State," he advocated for job training via distance learning and the creation of the Michigan Economic Development Corporation. This agency, created via executive order, would later fund the broadband study in 2001. Though his call for the removal of caps on the number of charter schools created in Michigan was not met, all of his other major initiatives such as a three year income tax cut, career centers, crime measures, and drugs testing for welfare passed the legislature. Engler's executive budget identifies his top priorities as public education funding, cutting taxes, job training, and welfare reform.

In 2000, his high tech agenda asked for computer training for teachers, advocates online education, aimed to attract high-tech industries, and created a two year agency for

e-government. Engler successfully passed most of his other initiatives, except for the cap of chapter schools, state power to intervene in school districts, agricultural land use taxes, and a $20 million increase in adult learning. The Detroit News (Hornbeck, 2001) reported that the governor obtained eight of his top ten initiatives from the state of the state. His executive budget placed priorities in increasing per pupil K-12 spending, tax cuts, new prisons, and transportation infrastructure.

In 2001, the focus on high-tech transformation continued as he asked that high-tech businesses be exempt from the state business tax, advocated for a cybercourt, and addressed the need for rights-of-way reform. The cybercourt measure passed the same year and the reform of rights-of-way issues passed in 2002. Again, his call for the removal of caps on charter schools was not passed nor was his call to harmonize school district boundaries. The executive budget reflected the economic slowdown with only a 0.44% increase in general fund appropriations from the year before.

In 2002, Governor Engler continued his push for technology initiatives. He addressed the need for research and development for the auto industry, resulting in the passage of an R&D tax credit for alternative energy sources. He obtained funding for the Rare Isotope Accelerator. He talked about Internet2, and the Michigan High Speed Internet Plan, which resulted in the creation of the METRO Authority and the Michigan Broadband Development Authority. His plea to strengthen the insurance commissioner's oversight and restructure the board of Blue Cross Blue Shield did not come to pass. As this was Governor Engler's last term by term limits and the beginning of budget revenue shortfalls, the list of requests was considerably shorter than previous years. This year his executive budget decreased general fund spending by 0.77% from the previous year.

Despite the decrease, Engler managed to squeeze in a new agency of information technology, funded by fees collected by other agencies.

In all of these years, Governor Engler requested increases in flexibility and authority of the executive branch via additional appointments on the State Board of Education, and the University boards, increased authority of the insurance commissioner, state treasurer, and appointment of Supreme Court justices. In 1999, he successfully removed the elected Detroit school board and replaced it with legislative approval (Detroit News, 2001). He consistently put forth an agenda of high-technology and passed the majority of his initiatives through the legislature. Furthermore, he demonstrated a commitment to his ideas by pursuing legislative activity in subsequent years. The broadband package was one of his pet projects that he pushed through the state legislatures in his final year as a lame duck governor (Hoffman, 2002) even though the initiative failed in 2001 (Andrews, 2002).

Florida. In 1998, Jeb Bush, a republican, was elected Governor of Florida with a 55.3% vote. Throughout his term, he maintained a healthy approval rating and won the re-election in 2002. From Governor Bush's state of the state addresses, the following can be inferred: Florida's educational system needed much help, senior citizens were a prominent part and concern of society, crime and drugs problems plagued the state, and the preservation of the Everglades reigned the primary environmental issue. In every year except for 2002, he asked for increases to support these priorities. Notably it was in 2002 that Florida's budget shortfall became an issue, aggravated by resources that needed to be allocated to anti-terrorism measures. With few exceptions, the vast majority of his proposals and new initiatives passed both houses. These initiatives included the A+ plan

for education, the reduction of intangibles tax, reforming civil service to be on a performance based pay scale, 10-20-life legislation that toughens penalties on gun crimes, and expanding financial support for the elderly to provide an at-home alternative to nursing home care.

Governor Bush's budget recommendations followed through on his priorities. Unfortunately, as the state geared up for the transition to e-government, public archives for the executive budget for 2001-2003 are incomplete. The governor also redesigned the budgetary process to reflect policy goals, not agency budgets. Consistently, Governor Bush placed education, health and human services, building economic opportunities, public protection, environmental protection (Everglades), tax relief, and smaller, efficient government as his budget priorities.

Among the governor's priorities in his annual addresses were technology and the Internet. In the 2000 state of the state address, he jumped on e-government, citing lower costs and greater convenience, resulting in Senate Bill 1334, Chapter 2000-164, or "Uniform Electronic Transaction Act." This bill tackled many e-application issues. First it enabled electronic functions by legally recognizing electronic records and signatures. It also created the executively appointed Chief Information Officer, who is charged with coordinating all of the state's technology resources and required all county recorders to make public records accessible via a public website by 2006. It created a Task Force on Privacy and Technology and a laundry list of additional information technology related laws and amendments. One section of note is the sale tax exemption for certain equipment bought for broadband deployment.

In the 2000-2001 fiscal year, Governor Bush increased his recommended state information technology spending 36% to $824.5 million. The initiation of transforming Florida into a high tech state came earlier in 1999 (State of Florida, 1999). On June 11, he broadcast his appointment to the Information Services Technology Development Task Force via the web. This Task Force was charged with helping private broadband deployment. This organization split off from the government in 2001 and became ITFlorida.com, a private non-profit organization (Jackson, 2002).

In the 2001 address, he asked for $6 million for computerized tutoring for education. Governor Bush declared his intent to lure high-tech companies in 2002, in a manner similar to that of Governor Engler. He did so with the Florida Technology Development Initiative which provided money to universities for science and technology research. The governor's broadband push reflected the results of the TechNet survey, a push toward developing applications and helping end-users of businesses, rather than pushing deployment policies.

Governor Bush consistently put forth his priorities through his state of the state address and executive budget. In his 2000 speech, he rebuffed his opposition's complaints that he pushed through initiatives without properly studying them by declaring that "the people sent us here not for study, but for action." This statement may be the best representation of Governor Bush's leadership style.

Nevada. Kenny Guinn, a republican, was elected as governor in 1998 from a background in education and business. His popularity rose throughout his term and he was reelected in 2002. Unlike the other three states, Nevada faced an earlier budget shortfall in the 1999-2001 budgetary session, likely due to its limited sources of revenue.

In 1999, Governor Guinn explained that federally mandated spending increased, the population that required social services grew dramatically, and the tourism based economy failed to weather economic downturns. Nevada struggled to keep up with its own growth. His 1999 address focused on restraining state spending, revising the state budgetary process, the need to diversify the state economic base, and maintaining funding for education. His request for revising the budgetary process was addressed by the legislature, resulting in the creation of the Division of Internal Audits. However, his zero-based budget initiative failed.

His executive budget for the 1999-2001 biennium reflected the need for fiscal restraint. Approximately 95% of the budget was slated for only base funding, funding necessary to continue current programs with no economic adjustments. Nevada organizes its budget by decision units: base, maintenance, and enhancements. Thus in 2001, despite the slowing economy, while other states were mirroring his 1999 address in budgetary spending, Governor Guinn proposed expansions of programs for education, healthcare, seniors, and state workers. In his 2001-03 executive budget, Governor Guinn recommended only 92% base for 2002 and 89% for 2003, indicating more leeway to expand funding. He accomplished this, however, via 91 one-time appropriations which expired in 2003.

In both years, Nevada faced a fight with the federal government over use of lands for nuclear waste. Technology was mentioned only once, as part of an allocation for education technologies and textbooks, included in his executive budget as a one-time $20 million appropriation. Clearly, broadband and high-tech industries were not gubernatorial priorities for these years.

Arkansas. Michael Huckabee originally took the governor's office in 1996 after his predecessor, Governor Tucker resigned. In 1998, the republican governor was re-elected to office. His approval ratings were the highest among the four studied states, averaging at 62%.

In his 1999 state of the state address, Governor Huckabee focused on education, property taxes, juvenile justice reform, and transportation infrastructure. In 2001, the overarching theme of the address was education, as he asked for continued funding under the conceptual umbrella of "education." This included K-12 education and tangential social items such as the right-to-know abortion legislation, covenant marriage, and health prevention education. He mentioned two broadband related changes: e-government and the creation of an Chief Information Officer who would help coordinate efforts to streamline government and to build a broadband backbone for the state, in an effort to recruit high-tech industries. In fact, Arkansas, according to Governor Huckabee, was ranked first in the country for its e-government initiatives.

Governor Huckabee also put out a news column for the public which provides information that helps to fill in the years between sessions. In July 2000, he stated the importance of an advanced telecommunications infrastructure to serve both rural and urban citizens and promised technology legislation in 2001. He followed through on these promises and these bills will be discussed further in the paper. His administration funded broadband applications as well. The state funded $2 million of the Donaghey Cybercollege, an institution that provides welfare to work training in addition to serving its college base.

Unfortunately, the executive budget for Arkansas was not publicly available to complete the picture. The state publishes a biennial budget book that consolidates the recommendations and actions of both the legislature and the governor. To compound the missing data problem, the 2001-2003 budget book was never published due to a transition to an electronic, online format.

Like Michigan, a state that was heavily reliant upon manufacturing, Arkansas was showing the beginnings of transitioning its manufacturing base to high-tech industry and was following NGA recommendations to make state government more accessible and business friendly. These actions were not reflected in the TechNet survey.

Legislature

Governors do not operate in a vacuum but in a concert or conflict with their legislature. The Michigan and Florida legislatures were by far the most active of the four. A summary table of legislative activity from 1999-2002, including all special sessions, is presented below, followed by a description of the broadband-related legislative activity for each state.

Table 10: Characteristics of the Legislatures

	Michigan	Florida	Nevada	Arkansas
Bills presented	7275	9644	2555	4914
% bills passed	25%	15%	50%	70%
Broadband/ state IT related bills	68	106	37	23

Michigan. Michigan's legislature meets annually, and appears to have a high level of legislative professionalism. The term officially lasts all year, each legislator is equipped with year round personal staff and earns about $79,650 a year in compensation.

The legislature churned out a total of 7,275 bills in 1999-2002 and enacted a quarter of them, indicating high activity levels throughout the session. The low passage rates and the existence of multiple versions of similar legislation point to a political sophistication.

In the 1999-2002 time period, the legislature examined approximately 70 bills regarding broadband, Internet, uses of computing, and telecommunications rights-of-way or interconnection issues. A progression and maturation of issues can be observed. In 1999 a proliferation of Internet-related bills sought to address new criminal behavior, while opening doors for conducting official business online. Bills that restricted use included sexual crimes against minors, limiting obscene materials on library computers, prohibiting the distribution of explosives knowledge, prohibiting Internet gambling, protecting Internet privacy, restricting online sale of alcohol, and the criminalization of computer offenses. Enabling legislation addressed Internet voting, guidelines for Internet advertisement for election campaigns, legalization of the electronic signature, arraignment of criminals via interactive telecommunications, and the creation of an accessible database of health professionals and their medical offense records via phone and computers. One failed Internet Access Enhancement bill required Internet access transport providers to open up its unbundled services to Internet Service Providers at rates at least as favorable as its own.

Legislation after 1999 were variations on the same theme. Of note are the bills that prohibit dispensing pharmaceuticals based solely on Internet consult, a three year/ permanent moratorium on Internet taxes, the creation of an Internet crime tracking unit, requirements for disclosure of subscribers for ISPs to authorities, arming teachers with computers, creating distance learning corporations, providing tax breaks for high-

technology companies, and requiring e-government such as posting tax forms online. In 2002, the legislature passed the Michigan High Speed Internet Plan, Public Acts 48, 49, and 50 of 2002 that implemented the majority of the broadband policies documented in the TechNet survey. The Michigan legislature moved to enact laws that enabled online transactions to prepare for the new economy while protecting the public from the harmful uses of broadband technologies.

Florida. Like Michigan, Florida's bicameral legislature meets annually. Though the legislative session only lasts 60 calendar days, the legislators are given year round personal staff and are compensated $29,700 annually plus expenses. Many bills in the Florida legislature are introduced in identical form in both houses, increasing the number of introduced bills, compared to other states. Legislators also present bills that solely clarify legislative intent or provide a slightly different version which may help to explain the over 9,000 bills and the low passage rate.

After eliminating identical bills, the legislature introduced about 100 bills relating to the Internet, telecommunications, potential broadband applications, and computers. Already in 1999, the legislature was debating medical licenses for telemedicine practitioners, the use of laptops in public schools, distance learning, criminializing computer offenses and sexual offenses against minors online, obscenity on library computers via Internet access, and workforce training centers that teach computer skills. Several technology task forces were created: Privacy and Technology, Florida Distance Learning Network Advisory Council, and Telehealth. The Rural Infrastructure Funds was also created which included a provision for expanding rural telecommunications infrastructure.

By 2000, Florida established the Florida On-line High Schools, later to be called Florida Virtual High Schools, approved the use of electronic signature, and passed the Workforce Innovation Act which provided Internet based training. The Communications Services Tax Simplification Law passed this year, fixing the rates of rights-of-way fees and establishing a centralized agency to collect and redistribute them. The following year, the state created the Chief Privacy Officer and the Digital Divide Council in the State Technology Office, codified computer crimes, and decided to pilot test online publications for the state government. Only three pieces of passed legislation were identified in 2002 as broadband-related. One required real estate training to be available via distance learning, another required the posting of some election forms on the Web, and the last was the Florida Technology Development Initiative discussed in Governor Bush's state of the state address.

Florida's legislature moved aggressively to create guidelines for applications that utilize broadband networks. They also moved to implement state supported networks for distance learning, telemedicine, and technology in the classroom.

Nevada. The legislature only meets every odd year, limited to 120 days of session. Legislators are paid $130 a day plus $85 per diem expenses while in session. Personal legislative staff are only provided during sessions, while shared staff are available year round. Compared to Michigan and Florida, the houses introduced a rather low 2,555 bills and enacted almost half of them. This was either a highly efficient organization or a less politically sophisticated one.

Though technology and broadband-related measures did not garner much real estate in the state of the state address, the Nevada legislature did examine a few of these

issues. Five bills were identified in the 1999 session of which three passed. The first created an advisory council for educational technology to address the use of the telecommunications network and educational technologies for public schools. The second created the Task Force for Technological Crime and criminalized computer offenses. The third is legislation that allows telecommunications carriers to be regulated under an alternative regulation plan that includes the removal of price caps on non-essential services and the allowance of more aggressive promotional tactics. It also directed the Public Services Commission to create a dispute resolution process for interconnections.

In 2001, the number of technology and broadband-related bills increased dramatically to 27 bills. 17 of these are budget items for computer upgrades for various departments and projects, of which 14 passed. Five non-budget related items passed the legislature. These 1. required public bodies to post notices on their Websites, 2. prohibits computer crimes 3. establishes penalties for computer crimes and allows for subpoenas of subscriber information from ISPs 4. prohibits unlicensed Internet pharmacies 5. allows for video testimony in grand jury hearings in some instances.

It appears that the legislature of Nevada preferred to proceed with caution on technology issues by creating task forces to examine issues and provide legislative recommendations in later years. Nevada's pursuit of technology guidelines was far less aggressive compared to Michigan and Florida, enacting legislation only for basic concerns.

Arkansas. Like Nevada, Arkansas' legislature meets biennially. The legislature meets 60 calendar days and the sessions can be extended with a 2/3 votes by both houses. The legislators receive $13,100 annually and are provided with shared staff year round.

4,914 bills were introduced in the two houses, with 70% of them enacted. However, it is important to note that each budget line item in Arkansas requires a separate bill, requiring hundreds of bills each session to pass the budget. This inflates the appearance of legislative activity. According to the Arkansas legislature in 1999 and 2001, 691 and 922 appropriations bills respectively were drafted.

Eight technology and broadband-related bills were introduced in 1999 and all but one passed. Three acts were appropriations for the Department of Information Systems for a statewide network infrastructure, statewide telemedicine network, and distance learning network. The remaining acts 1. created a commission on Information Age Communities 2. The Information Network of Arkansas Act promotes e-government 3. created the Arkansas Information Technology Task Force to evaluate utilization of technology by the public sector 4. created an Interagency Distance Learning Commission.

In 2001, 15 bills technology and broadband-related bills were considered. Ten of these bills passed. As promised by Governor Huckabee, 2001 activity included a bill that provided grants to underserved areas for wireline services from the Universal Service Fund. A couple of issues were designated for study by the legislature: creation of the Arkansas Technology and Infrastructure Fund and state IT contracting practices. Basic steps to prohibit and criminalize computers crimes, minimize access to obscene materials through public computers, provide for public notices on the Internet and provide guidelines for Internet pharmacies were taken. A bill to require public schools to use free broadband access and also set a "reasonable" requirement for rates to attach telecommunications lines to utility poles did not pass.

Contrary to the results of the TechNet survey, Arkansas actively encouraged the use of broadband applications and rural deployment. The state also took a proactive role in developing policies to reach out to its rural, underserved population. Though it is uncertain whether Arkansas would have made it into the top 25 states to be published in the results, it certainly should not be ranked last.

Political Culture

Political culture is likely the least observable from archival data. In spite of that limitation, some measure of the political culture of the state will be presented. This section examines lobby activity, voter participation and Elazar's classifications.

Table 11: Political Culture

	Michigan	Florida	Nevada	Arkansas
Elazar's (1984) political culture classification	Moralistic	Traditionalistic	Individualistic	Traditionalistic
2000 Voter turnout (rank in US)	57.6 % (12)	48.6% (36)	41.0% (48)	46.3% (41)
Registered lobbyists 2002	1125	1257	805	344
Telecommunications lobbyists	18	20	22	20

Lobbyists. In the past two decades, state level lobby activity increased dramatically. In the 1980's, the largest lobbyist increase of 95% leveled off to almost 37,000 lobbyists at the end of the 1990s (Gray, 2003). In 1999, 77% of state lobbyists represented business interests versus non-profit organizations, a slight increase from 1980. Interestingly, very few organizations register across states, reflecting the local nature of the state lobby groups. Of note, however, are AT&T Corporation, which

registered in 45 states and MCI WorldCom which registered in 43 states in 2000. Furthermore, a study of interest groups claimed that utility companies and associations such as telecommunications and cable TV were the 3rd most effective interest group in 2002 and among the top 10 most effective in the past 20 years (Hrebenar & Thomas, 2003). State lobbying has evidently followed the nationwide trend of the localization of powers and telecommunications and business forces have not sat idly by.

The special interest groups are abundant in Michigan, as may be predicted by the state's population. Of these, 18 organizations were telecommunications related: AT&T Corporation, AT&T Wireless Services, Cellnet Communications, CenturyTel, Cingular Wireless, Colin Communications, LDMI Telecommunications, MCI WorldCom, MI Alliance for Competitive Telecommunications, Michigan Bell Telephone Company, Michigan Cable Telecommunications Association, Michigan Pay Telephone Association, Nextel Communications, Sprint Communicaitons, Telecommunciations Association of Michigan, T-Mobile USA, Verizon, and Verizon Wireless.

Like Michigan, lobbyists are abundant in Florida. Of these, 20 represented telecommunications organizations, with a hefty number of associations: AOL TimeWarner, AT&T, AT&T Wireless Services, BellSouth, Cingular Wireless, Communications Workers of America, Community Telecommunciations Council, Florida Cable Telecommunications Association, Florida Public Telecommunications Association, Florida Telecommunications Industry Association, Florida Telecommunications Relay Inc, Harbor Communications, MCI WorldCom, Quincy Telephone Company, Sprint, Time Warner Telecom, Verizon, Verizon Florida, Verizon Wireless, and Voicestream Wireless.

Nevada comes in third with 805 lobbyists. 22 were telecommunications related in 2002: Advanced Telecommunicaitons Group, AT&T, AT&T Broadband, AT&T Wireless, Cingular Wireless, Communication Workers of America, Cox Communications, Nevada Bell/SBS Communications, Nevada State Cable Association, Nevada State Cable Telecommunication Association, Nevadans for Local Telephone Competition, Pac West Telecommunications, Sierra Pacific Communications, Sprint, Telco, Verizon, Verizon Wireless, Voicestream Wireless, WorldCom, and XO Communications. The cryptic "Nevadans for Local Telephone Competition" is essentially a telecommunications coalition against SBC (Edwards, 1999).

There are far fewer lobbyists in Arkansas, totaling 344 in 2002, perhaps in relation to the state's population, demographics, and low voter participation. However, there are still 20 telecommunications organizations represented, in a comparable number to the other states. It should be noted, however, that nine of the smaller telephone companies were represented by the same lobbyist agent, perhaps representing an ad hoc association rather than nine separate forces. Arkansas is also one of the few states where AT&T does not lobby. The telecommunications lobbyists are Alltel, Southwestern Bell, CenturyTel, Rural Arkansas Telephone System, Sprint, Cingular Wireless, Cleveland Telecommunications Company (TDS Telecom), Southwestern Bell Long Distance, MCI, Southwest Arkansas Telephone Company, Yell County Telephone, Madison County Telephone, Pinnacle Communications, Magazine Telephone, Northern Arkansas Telephone, Walnut Hill Telephone, Central Arkansas Telephone, Arkansas Telecommunication Association, and Arkansas Cable Telecommunications Association.

In each state, cable and telecommunications associations, the RBOCs, competitors, and wireless providers are well represented in the lobby group. Arkansas had fewer wireless lobbyists than other states.

Political culture. The four states, according to Elazar (1984) represent three political cultures. He labels Nevada an individualistic culture, one that in general "emphasizes the conception of the democratic order as a marketplace (p. 115)" and stays out of the private sector. The limited data shows that Nevada did just that in regard to broadband. The data do not illuminate whether this reluctance to intervene came from lobby pressures, a focus on more pressing issues, a lack of perceived need or an inherited political culture. Elazar's analysis of a strong presence of party norms and political professionalism cannot be verified.

Florida and Arkansas are labeled traditionalistic states. Politicians in traditionalistic states work to retain political power within the established elite and will initiate programs if they "serve the interest of the governing elite (p. 120)." Without further analysis, Elazar's claims cannot be verified, though Governor Bush arguably comes from the political elite.

Arkansas, Nevada, and Florida demonstrate low voter participation as predicted by Elazar's theory. In individualistic states, it stems from a distaste of politicians and in traditionalistic states, it stems from a sense of removal from politics. In both cases, the prediction of low voter turnout is true.

Michigan is a moralistic state where politics is a venue to do common good and government will intervene in the private sector if deemed beneficial. True to Elazar's prediction of higher civic responsibility, Michigan boasts a 57.6% voter turnout in 2000.

Elazar's theory is based on migration patterns of specific cultures in the United States. Thus Florida and Nevada's new influx of people suggests that an update is in order.

Telecommunications in the States

2002 FCC data on broadband penetration render state penetration rates as diverse as the national geography, ranging from 56 lines per 1000 households in Montana to 283 lines per 1000 households in New York. The middle 50 percent ranged from 117-216 lines per 1000 households. In terms of policy, existing deployment by private companies may determine the need for government intervention. The following table pulls out broadband data for the states.

Table 12: Broadband Numbers

	United States	Michigan	Florida	Nevada	Arkansas
Average number of broadband lines 99-02	10,624,630	338,519	742,183	88,105	53,485
Increase in lines 99-02	6.2%	6.9%	6.4%	5.8%	12.5%
Change in % of zip codes with no provider	-70.3%	-87.5%	-92.3%	-76.5%	-64.4%
2002 Broadband lines per 1000 households	188	169	222	212	94

Florida and Nevada led the four states in actual penetration. Arkansas trailed behind and also was in the last quartile of the nation. However, Arkansas exhibited the

highest percentage of growth, partially due to its low starting numbers. Figure 1 shows broadband penetration over time.

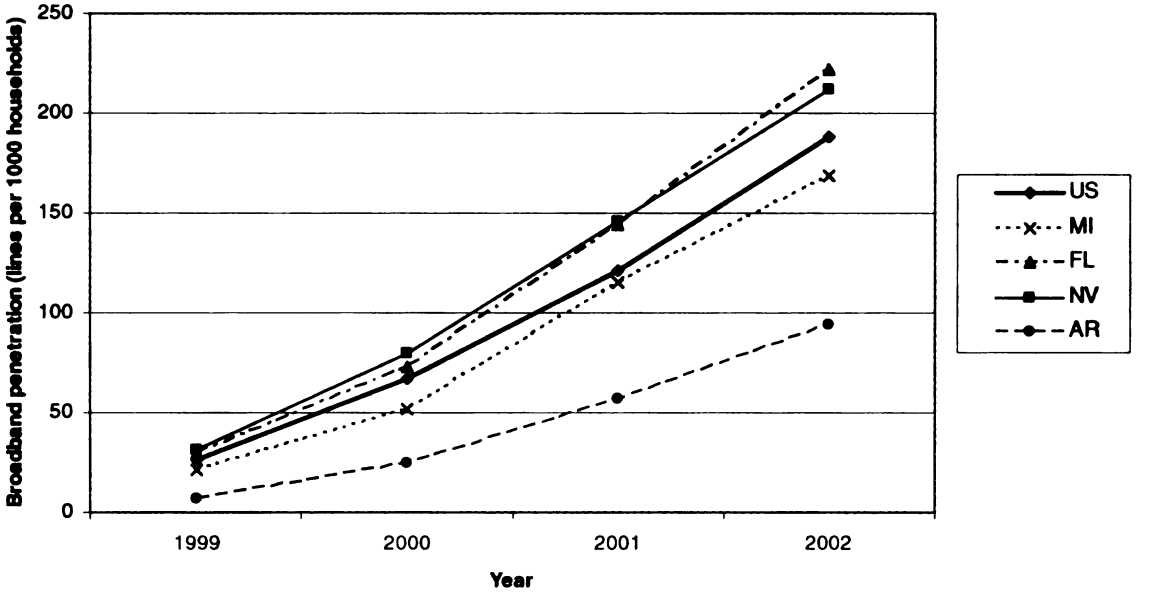


Figure 2: Broadband penetration from 1999-2002

As for incumbent phone companies, Southwestern Bell (SBC) operates in Michigan, Nevada, and Arkansas. Ameritech of Michigan was bought in 1999. Twenty two other ILECs are registered with the FCC. The RBOC, Nevada Bell was bought in 1998 by SBC. Only three incumbent local exchange carriers are registered with the FCC as based in Nevada though the Nevada Telecommunications Map shows 13 carriers operating in the state. SBC is Arkansas' original baby bell since the 1984 breakup. Twenty-five ILECs are registered with the FCC. BellSouth serves Florida as the regional baby bell and only three independent ILECs are registered here. A variety of cable companies serve these states. The larger players are discussed in the results for the telecommunications industry.

Telecommunications Industry

In the period 1999-2001, communications claimed a 2.8-2.9% share of the Gross Domestic Product. Telecommunications is a capital intensive industry, meaning that proportionally more investments need to be made to provide quality service and appropriate infrastructure (TIA, 2002). In the telecommunications industry, including cable, capital spending increased dramatically in the late 1990s, spiking in 2000 to $113 billion. In 2001, capital investment fell 18.2%. Furthermore, in these high spending years, revenue failed to keep up with these investments. Data show that the capital intensity ratios for major ILECs rose after the 1996 Telecommunications Act and fell in 2002, a fall that was expected to continue through at least 2006. The TIA projected that this level of capital intensity will not be sufficient to improve lines for broadband deployment.

Employment trends closely followed trends in capital investment. The Information sector, as defined by the Bureau of Labor Statistics accounts for 2.6% of all United States employees and 1.9% of all establishments (U.S. Department of Labor, 2004b). During the 1999-2002 period, the information sector enjoyed an upswing until 2000 and a decline from 2001-2002, following the same trend as the states. This is evidenced in declines in employment in 2001 and 2002, which had previously been steadily increasing from 1993. The bureau records 299 mass layoffs in this industry for 2002.

In summary, the industry crashed and burned. According to Standard and Poor's (as cited in Brosnan, 2003) during 1999-2002, 74 telecommunications companies defaulted on $112.6 billion of debt.

Data from annual 10-k reports show that the two RBOCs serving the four states included in this study experienced declines in revenue and cut back their capital expenditures, as predicted by the national trend. In contrast, cable companies tended to continue growth, increasing capital expenditures, employees, and revenue.

Table 13: Key Indicators for Telecommunications Companies

	SBC	BellSouth	Comcast	Cox	Charter
Average operating income	$47.5 billion	$24.5 billion	$9.3 billion	$3.8 billion	$3.2 billion
Average operating expenditures	$37.2 billion	$18.13 billion	$9.0 billion[a]	$3.7 billion	$4.9 billion
Average capital Expenditures	$10.3 billion	$4.7 billion[b]	$1.5 billion[c]	$1.9 billion	$2.2 billion
% change in capital expenditures from 1999-2002	-33.9%	-31.24%	103%	67.4%	196.7%
Average revenue from data /broadband services	$9.2 billion	$3.6 billion	$291 million	$426 million	$142 million
% increase in data/ broadband revenue	17.8%	60.6%	1506.7%	107.0%	1854.0%
Broadband subscribers at end of 2002	2,199,000	1,021,000	3,620,000	1,407,950	1,138,100

a Calculated from Operating revenue- operating income

b For Communications Group only

c For Cable segment only

RBOCs

SBC. SBC serves 13 states as the largest RBOC and telecommunications provider in the United States. In 1999, SBC enthusiastically pledged to make broadband available to 80% of their wireline customers with a 6 billion dollar investment. However, in 2001, they decided to scale back their plans substantially.

SBC's total revenue peaked in 2000 at $51 billion, declining down to $43 billion by the end of 2002. However, revenue from their wireline division peaked in 2001 at $40 billion, declining slightly to $38 billion at the end of 2002. Furthermore, employment also peaked in 2000 with slightly over 220,000 employees. From 1999-2002, the company shrunk its workforce by 14%. However, as a testament to broadband growth, their revenues from data operations increased almost 18% since 1999 to a total of $9.6 billion. By the end of 2002, they reported close to 2.2 million DSL lines, an increase of 186% since data reported at the end of 2000. However, in this same period, capital expenditures decreased almost 34% to $6.8 billion dollars in 2002. The bulk of these capital expenditures were spent on upgrading wireline facilities.

BellSouth. BellSouth's annual figures indicate a similar pattern of growth and cut backs as SBC. Their communications segment, which included local and long-distance voice and wireline broadband services, accounted for 81% of the revenue in 2002, 79% in 2001, and 70% in 2000. BellSouth's revenue stream also peaked in 2000 at $26 billion, sliding down to $22 billion in 2002, resulting in an 11% decline in revenue from 1999-2002. The communications division peaked in 2001, with a $19 billion revenue stream and showed an overall growth of 5.8% from 1999. In this same period, however expenses

also grew, resulting in an overall income drop of 49% in 2002 as compared to 1999. Capital expenditures also dropped 39% in this period to $3.7 billion, of which 88% was specifically spent for their communications group. Employment declined 20% from 1999-2002 at BellSouth, similarly peaking in 2000 with 103,900 employees.

Despite these declining numbers, BellSouth's revenue specifically from Digital and Data Services, which is a part of the Communications division, rose 60% from 1999 to 2002 to $4.3 billion. By the end of 2002, 1 million DSL customers were served by BellSouth, 4.7 times the number of subscribers reported merely 2 years before.

As for areas not served by RBOC broadband, rural telephone companies may fill in the gap. However, the National Exchange Carrier Association ("Deployment of Broadband Networks", 2001) noted that the majority of rural switches remain isolated from middle mile nodes, which raises data transport costs to a prohibitive level.

In summary both RBOCs were hit negatively by the declining economy and increased competition. However, as evidenced by their annual filings, data and broadband revenues increased along with broadband subscriptions. The RBOCs can be expected to continue investments in their data services, though at much slower rates than initially announced.

Cable

Comcast. In 2002, Comcast became the largest national cable company when it acquired AT&T's broadband systems. Previously, in 2001, after its acquisition of Jones Intercable and Lenfest Communications, it had risen to be the third largest cable company. Comcast operates in 41 states, including Florida, Arkansas, and Michigan for a total of 21.5 million cable subscribers, including 3.6 million broadband cable modem

subscribers, putting it on par with the size of SBC's broadband operations. That amounts to a 12% penetration rate for cable modems in relation to the number of homes passed that are high-speed Internet ready.

With an operating revenue of $12 billion in 2002, Comcast grew 86% since 1999, including revenue from its most recent acquisition of AT&T. After its acquisition of AT&T, Comcast's operating income became positive, rising to over $1.6 billion. Like the phone giants, capital expenditures peaked in 2001 at $2.2 billion; however, overall increase in capital expenditures for 1999-2002 increased 167%. Capital expenditures specifically for the cable segment was 103%. The number of employee also steadily grew, jumping in 2002 after the completion of the merger, to 82,000 employees.

Cox. Cox has major operations in 14 states, including Florida, Nevada, and Arkansas. Cox has 6.3 million cable subscribers of which 1.4 million subscribe to cable, a 14% penetration rate. Throughout 1999-2001, revenue grew steadily from $2.4 billion to $5 billion. Specifically, data revenue from high speed internet access accounts for $575 million of its revenue. Employment at Cox also grew 75% from 1999-2001.

Again, capital expenditures peaked in 2001, decreasing slightly in 2002, but never dipped below 1999 levels. Most of Cox's capital expenditures were spent upgrading their cable systems for high-speed Internet access. At the end of 2002, 96% of Cox's cable system was capable of delivering high-speed access.

Charter. Charter owns cable systems in Michigan, Nevada, and Arkansas and serves 6.6 million cable customers in 40 states with 1.1 million cable modem subscribers at a 12% penetration rate. Though Charter's revenue grew, its expenses outweighed its revenue and in 2002, the company expected to operate in the red for the foreseeable

future. However, when considering only their cable modem segment, they enjoyed positive growth and positive income for all four years. Employment also steadily rose for the company as a whole. Charter's capital expenditures also peaked in 2001, but maintained a positive growth throughout the four years.

In summary, cable providers emerged as formidable competition to the telephone companies' broadband efforts. The competition for broadband access will only become increasingly intense when utility companies are able to deliver data over power outlets. Cinergy began trials of high-speed Internet access over its power lines in Cincinnati and is already planning a major rollout this year (Cornwell, 2004). In a testimony to cable's dynamic growth, Comcast proposed a takeover bid for Disney's production studios in February of this year (Bates, 2004). Overall, the cable companies in the four states appear to have been less affected by the telecommunications downturn of 2001 than the large RBOCs. It is important to note that the cable companies are not required to open up their lines as the RBOCs are, eliminating the need to retain old lines for competitors that they otherwise would retire in favor of newer technologies. The numbers indicate, however, that data services through DSL and cable modems are a source of growth for all companies. Yet national data anticipates no major capital investments or in other words, no enthusiastic broadband rollout.

Summary

The results of this study reveal salient differences between the states. A summary data table of all of findings is provided in the Appendix, including data that was not presented in this section as it did not add substantial value to the conclusions of the research. Data revealed the following:

· The TechNet survey missed some of Arkansas' broadband policies, erroneously ranking Arkansas a bottom state. Due to the complex nature of policy, unfortunately, even a well-funded study such as this one suffers from missing data.

· Population settlement patterns differed greatly between the states. Florida was highly metropolitan. Nevada's population was densely packed into two metropolitan areas and experienced explosive growth over 1990-2000. Arkansas and Michigan consisted of both highly rural and metropolitan areas, though only 46% of Arkansas' population was classified living in a metropolitan area. Thus about 5% of Arkansas' households did not have a phone line compared to the 2.4% national rate. This state also appeared to be struggling with poverty and education.

· All states suffered a severe budget crunch during 1999-2002 from the slowing economy. Michigan's GSP growth and labor market appeared to be the hardest hit of the four states. Nevada's growth over 1990-2000 mirrored its population influx and continued to grow. However, state economic growth does not necessarily translate into state revenue, depending on their tax base.

· The states that initiated broadband measures had governors that promoted them. All legislatures enacted bills that dealt with online crime, and other basic Internet concerns. However, broadband specific bills were not found in Nevada.

· Michigan and Florida led the four states in actual number of broadband lines, but Florida and Nevada led in penetration. Arkansas lagged behind, at half the national penetration rate.

· 1999-2002 shows decreasing capital expenditures from RBOCs and increasing capital expenditures from cable companies. All companies experienced a positive increase in

revenue from broadband or data services. There are concerns that telecommunications companies have not invested enough into their infrastructure during this period to allow for a national broadband revolution.

CHAPTER 5

DISCUSSION

The data collected paints a portrait of four very different states grappling with similar problems and a telecommunications industry recovering from 2001. By asking questions beyond the typical penetration rates, population density, and regulatory analyses, a variety of constraining and enabling factors have become salient.

The most striking difference between the states that initiated broadband-related programs is the inclusion of a technology driven agenda in the governor's priorities. The TechNet survey does not accurately report Arkansas' push toward technology and plan to lure high-tech businesses. Therefore, a strict comparison between top and bottom states is no longer practical. Arkansas is clearly not the bottom state, but neither does this make it a TechNet champion. The findings from gubernatorial priorities and legislative activity show that Arkansas' state government took some measures. TechNet's missing survey results point to the necessity of replication of studies and to the complex nature of broadband policies. These policies span many governmental agencies and even well-funded surveys such as this one contain missing data.

Both Michigan and Arkansas are manufacturing states, struggling to retool for the changing economies. Governor Bush of Florida also put high-tech jobs as a priority to expand the economic base of the state. Both Governor Engler and Bush had a reputation for aggressive political action. This supports Bernick and Wiggins (1991) and Herzick and Brown's (1991) assertions that governors are the most influential policy agenda setters in their state. Though Michigan and Nevada's governors hold more formal powers than Arkansas or Florida, ultimately it was the governor's agenda setting that put

broadband on the policy map. Specifically, in Michigan, Governor Engler not only had a long history of state service, but a reputation as a determined leader.

The top two states also have an annual legislative process that allowed them to address technological changes in a timely manner. Arkansas and Nevada waited until 2001 to address Internet crime, a byproduct of the Internet and broadband. Nevada and Arkansas both faced more pressing problems to address in each biennium. Nevada struggled to cope with its population growth, an unstable revenue base, and exploding social expenses. Consequently, Nevada's budget shortfall fell upon them earlier than the other three states. It also faced a battle with Washington DC over Yucca Mountain's nuclear waste disposal site. Arkansas' schools were subpar and its people are scattered throughout the state. An avid proponent of broadband could argue that Arkansas' situation creates a prime condition for a broadband push to help deliver health services to rural areas. Arkansas' governor acknowledged it in his 2001 state of the state address as an infrastructure necessary for a healthier economy. Finally, the biennial process of these states does not allow for a public record of gubernatorial policies that can be easily accessed and analyzed.

The nature of the economic downturns also played a part in the policies. The telecommunications downturn pointed to an immediate future of reduced investment, prompting Michigan to step in to attempt to alleviate the gap. Data suggest that Michigan's labor market and GSP was hit especially hard during the 1999-2002 years, prompting the broadband initiative on the promise of job creation. Arkansas and Florida framed the issue as both transparency and access to government through online services and as a lure for high-tech companies in order to expand the economic base of the state.

The age-old lesson is here that the framing of the policies in the context of the state's pressing issues is crucial when presenting the programs.

Elazar's (1984) theory on state political culture holds up to some degree, though further research is necessary to validate this claim. As a moralistic state, it is part of Michigan's political heritage to create bureaucracies and policies in the interest of the people, rather than of the market. Arkansas and Florida are labeled as traditionalistic states, which are "ambivalent (p 118)" toward interfering in the private sphere. Arkansas and Florida put forth applications-based state programs and state infrastructure to leverage existing broadband capabilities for the people, but did not put forth plans to aggressively drive private broadband investments. Though Florida passed a telecommunications tax simplification law that collects telecommunications taxes at a central authority, the intent was to simplify the existing structure of four separate taxes and to limit the local taxes and fees imposed at separate rates upon different telecommunications entities. Unlike Engler's rights-of-way act, the intent was not expressly to facilitate broadband deployment, though it no doubt simplifies the taxation process for these services as well. Nevada's individualistic nature inclines it toward allowing market forces to tackle private telecommunications issues. Nevada also enjoys a high penetration rate that may not push it to accelerate broadband further, regardless of its political inclinations.

Implications

The purpose of this analysis was to draw out strategies and salient issues that allow or prohibit policymakers to push forward a broadband program. A state such as

Nevada may never desire a non-market push for broadband, while other states such as Arkansas may benefit from the success of the top states.

· Gubernatorial leadership is crucial to pass sweeping changes. This change should be incorporated in a vision for the state as part of a larger directive. Governor Engler pushed the broadband initiative through despite budget shortfalls, congressional opposition, and a lame duck year. Though fiscal prudence is key to running a state, budget shortfalls does not necessarily equate to the failure of new agendas.

· Each state does have a political culture in which it operates. Whether it is Elazar's exact categorizations, the professionalism of the legislature, the nature of the budget process, or the public's participation in government, each state has its own quirks that belies generalization. Framing an initiative for these individual challenges is essential for passage and positive media attention.

· Socioeconomic characteristics of a state matter immensely. All states are under the same Medicaid, homeland security, and educational obligation and pressures. However, the fact that Arkansas's population is scattered throughout the state, while Nevada's population sits in two major metropolitan areas drives the course of the policies of the state. Private broadband investment decisions are also affected by these socioeconomic indicators such the customer's ability to pay and ease of deployment due to population density or newer land developments. A state such as Arkansas suffers a double blow: it is neither a wealthy state nor a market-driven telecommunications powerhouse. Without money, Arkansas cannot assume an aggressive policy. As Gray (as cited in Dye & Robey, 1980, p.10) notes, state wealth allows for policy innovation.

Limitations

This study attempts to study three factors, socioeconomic, political, and telecommunications, through representative variables. These three variables are complex enough to merit their own extensive study and consist of dimensions that this research does not begin to delve into. Consequently, other variables, deeper narratives, and explanations are missed. Serendipitous encounters with a governor's press release about an initiative or a story about an initiative helped to fill in some of the missing blanks about legislation, governor's personalities, or lobby groups. However, due to the expansive nature of the questions, many of these insightful stories were omitted or not found. Instead, this analysis attempts to provide a broader overview of the landscape of broadband policy decisions.

As a qualitative study with many complex variables, results provide a narrative of factors that contribute to the creation of broadband policies, but do not definitively link these factors with magnitude or causality. However, this is a first step toward identifying potentially critical variables for a future quantitative or in-depth qualitative study. Such a study would be best performed several years from now, when outcomes of current policies will be apparent.

Some data for this analysis were missing. Legislation and gubernatorial budget recommendations for special sessions were not considered for this research. This was due to the nature of the sessions: the majority dealt with budget shortfalls and homeland security measures which were already documented through other sources of data. Some executive budgets for Florida and Arkansas were not publicly archived, which did not allow for a comparison across the four states. Reliable documentation on independent,

smaller telecommunications players in each state could not be located. Even when public documents did exist, each state operated and documented their operations in a different manner. For example, Governor Bush reorganized his budget by policy initiatives rather than agency and Nevada documents "decision units" and statistics for each agency that record the precise amount of work that it has accomplished. The percent increase of monies that go to one policy or agency to another becomes incomparable.

Despite the limitations of the data, this research takes a step forward in understanding the factors that drive a state's adoption of pro-active technology, specifically broadband policies.

Future Research

Because of the qualitative nature of the research, further analysis is necessary to explore the magnitude of the influence of each variable. As the data is derived from archival data, a richer narrative from a human perspective is missing. Politics is a bizarre mix of personal relationships, public grandstanding, and desire to push forward policies. A deeper understanding of the activity and history of each broadband act would help paint a more vivid picture of why some states favor broadband. Interviews with key people or an analysis of congressional session minutes may shed more light on the power play behind the scenes. How influential are the 20 or so telecommunications lobbyists in each state? Were there any opinion leaders in the capitals not accounted for in the archival data? How do the people feel about broadband? How do the big telecommunications companies react to state intervention? These questions may best be answered several years from now, when key players may be more forthcoming about the roles that they played.

Most importantly, it has yet to be seen whether the policies will have any substantial effect. Mammoth RBOCs carry national or regional expansion plans that balance revenue from various divisions, political motivations, and expected revenue. The national economic downturn, the corporate scandals of WorldCom and Adelphia, the uncertain regulatory environment surrounding fiber and VOIP force these giants to proceed with caution. Whether smaller entrepreneurs will build networks in currently underserved areas has yet to be seen. The Michigan Broadband Development Authority completed its first official loan in April 2003. It is far too early to know if the existence of laudable agencies and policies necessitates success in increasing broadband penetration in several years. By then, there may be a significant economic upturn, the ripening of broadband interest in other states and the slow expansion of RBOC, cable, wireless, and utility broadband networks. New leadership and new agendas may supercede the MBDA. Shifts in the national and state economies may make governmental loans, such as those given by the MBDA undesirable for companies. It will be interesting to track whether these policies accelerate deployment or whether they serve as just another point for political grandstanding.

APPENDIX

COMPLETE DATA TABLES

Table 14: TechNet Policy Survey Scores

	Total Possible Points	**US Average**	**Michigan**	**Florida**	**Nevada**	**Arkansas**
Total Points	182	31.6	144	80.6	1	1
Deployment	104	15.8	93.6	41.6	0	0
Supply-side	52	11.6	35.8	26	0	0
Demand-side	26	4.2	15	13	1	1

Table 15: State Factors

	United States	**Michigan**	**Florida**	**Nevada**	**Arkansas**
Socioeconomic Factors					
People					
Population	281 million	9.9 million	16.0 million	2.0 million	2.7 million
Population Density (ppl per sq mile)	79.6	175	296.4	18.2	51.3
Household Density	32.8	74.5	135.4	7.5	22.5
Median Age	35.3	35.5	38.7	35	36
% Population by age					
< 5 yrs	6.8	6.8	5.9	7.3	6.8
5-14 yrs	14.6	15.0	13.1	14.5	14.2
15-24 yrs	13.9	13.7	12.1	12.9	14.5
25-34 yrs	14.2	13.7	13.0	15.3	13.2
35-44 yrs	16.0	13.7	15.5	16.1	14.9
45-54 yrs	13.4	16.1	12.9	13.5	13.1
55-64 yrs	8.6	8.7	9.7	9.6	9.6
65+	12.4	12.3	17.6	11.0	13.9
Individuals below poverty	12.2%	10.5%	12.5%	10.5%	15.8%

	US	MI	FL	NV	AR
% Population by household income					
>$10,000	9.4%	8.3%	9.6%	7.2%	13.4%
$10-14,999	6.7	5.8	6.7	5.2	8.6
$15-24,999	13.4	12.4	14.5	12.3	16.7
$25-34,999	12.9	12.4	14.2	13.1	15
$35-49,999	16.4	16.5	17.4	18.1	17.5
$50-74,999	19.2	20.6	18.5	21.7	16.3
$75-99,999	10.0	11.4	8.7	11.1	6.4
$100-149,999	7.8	8.6	6.3	7.4	3.8
$150-199,999	2.2	2.1	1.8	1.8	1.0
$200,000+	2.2	2.0	2.3	2.1	1.2
Metropolitan population	80%	82.2%	92.8%	87.5%	46.3%
% Population by education					
<9th grade	7.0%	4.7%	6.7%	6.4%	9.4%
9-12th grade, no diploma	11.5	11.9	13.4	12.9	15.3
High school graduate	29.6	31.3	28.7	29.3	34.1
Some college, no degree	20.5	23.3	21.8	27.0	20.5
Associate degree	6.5	7.0	7.0	6.2	4.0
Bachelor's degree	16.0	13.7	14.3	12.1	11.0
Graduate or professional degree	9.0	8.1	8.1	6.1	5.7
2002 grade 4 & 8 reading scores	N/A	national average	national average	lower than national average	lower than national average
2000 grade 4 & 8 math scores	N/A	higher than national average	N/A	lower than national average	lower than national average
Scores for college prep in high school for 2000, 2002		B,B	C, C+	D+, D	D, D+

	US	**MI**	**FL**	**NV**	**AR**
Population change since 1990 Census	13.2%	6.9%	23.5%	66.3%	13.7%
Crime rate: Average crimes per 100,000 ppl 1999-2002	4,167.5	4,097.6	5,722.6	4421.5	4112.5
Income per capita	$21,776	$22,168	$21,557	$21,989	$16,904
Median household income	$41,486	$44,667	$38,819	$44,581	$32,182
Household w/o a phone line	2.4%	2.6%	2.2%	2.3%	4.8%
Land					
Size (sq miles)	3,794,083	96,716	65,754	110,560	53,179
Rank in US		22	26	7	27
% Land	93%	59%	82%	99%	98%
Economic indicators					
Average unemployment 99-02	4.7%	4.7%	4.5%	4.8%	4.8%
% change in unemployment 99-02	38.1%	63.2%	41.0%	25.0%	20.0%
Range of unemployment rates 99-02	4.2-5.8%	3.8-6.2%	3.9-5.5%	4.4-5.5%	4.5-5.4%
Average GSP 99-01		$318.7 Billion	$468.6 billion	$74.8 Billion	$66.6 Billion
GSP growth 99-01 [a]		-.68%	6.26%	8.02%	0.78%
GSP growth 90-00		36.15%	44.42%	83.82%	45.17%

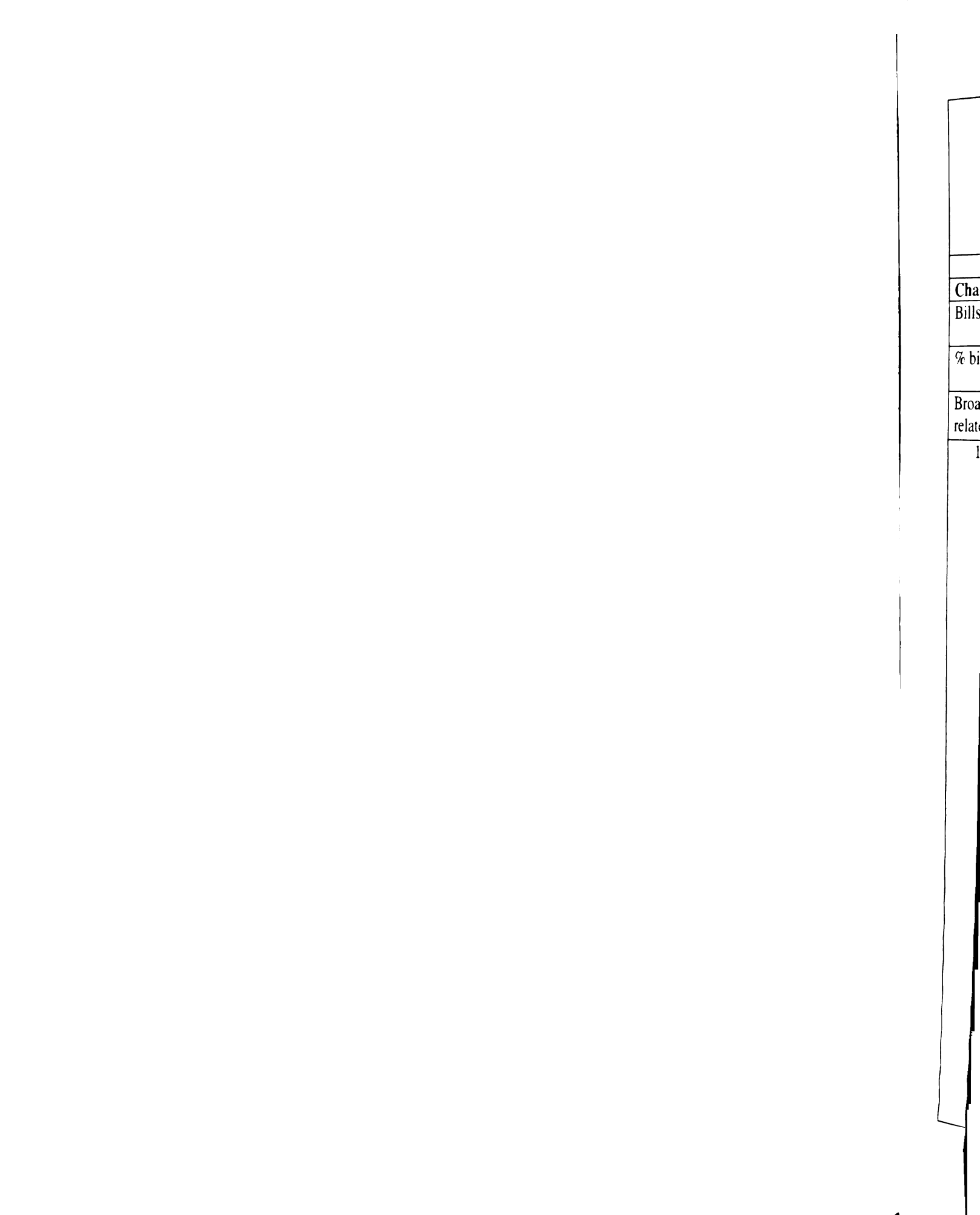
	US	MI	FL	NV	AR
Top 3 GSP shares		Manufacturing (25.4%) Services (19.8%) Finance (15.0%)	Services (25.1%) Finances (21.6%) Government (12.2%)	Services (31.9%) Finances (18.6%) Retail Trade (10.5%)	Manufacturing (21.6%) Services (16.2%) Government (12.7%)
Top 4 GSP growth sectors 90-00		Wholesale trade (99.4%) Retail trade (69.3%) Construction (49.1%) Manufacturing (35.6%)	Wholesale trade (117.4%) Retail trade (68.0%) Transportation & public utilities (57.7%) Agriculture (47.7%)	Wholesale trade (153.2%) Retail trade (149.4%) Construction (121.7%) Manufacturing (104.9%)	Wholesale trade (109.9%) Retail trade (92.2%) Agriculture (65.35%) Construction (60.45%)
% GSP: Communications Industry 2001		1.72%	3.14%	2.26%	2.94%
%Employment by industry					
Agriculture, forestry, fishing & hunting, mining	1.9	1.1	1.3	1.6	3.7
Construction	6.8	6.0	8.0	9.2	7.0
Manufacturing	14.2	22.5	7.3	4.9	19.4
Wholesale trade	3.8	3.3	4.0	2.7	3.3
Retail trade	11.9	11.9	13.5	11.3	13.0
Transportation, warehousing, utilities	5.2	4.1	5.3	5.2	5.9
Information	3.1	2.1	3.1	2.2	2.2
Finance, insurance, real estate & leasing	6.8	5.3	8.1	6.5	4.8

	US	MI	FL	NV	AR
Professional, scientific, management, administrative & waste management services	9.3	8.0	10.6	8.8	5.4
Educational, health & social services	19.3	19.9	18.1	12.9	19.6
Arts, entertainment, recreation, accommodation & food services	8.0	7.6	10.5	26.3	6.3
Other services (except public administration)	4.9	4.6	5.1	3.9	5.0
Public administration	4.8	3.6	5.2	4.5	4.3
State Budgets					
Average state expenditures 1999-2002		$36,898 million	$49,390 million	$4,526 million	$10,8523 million
% Expenditures by category 1999					
K-12	22.1	31.5	18.9	11.1	19.7
Higher education	10.4	5.9	9.8	6.9	16.4
Public assistance	2.5	1.6	0.6	0.5	2.8
Medicaid	19.6	18.9	15.0	7.8	16.1
Corrections	3.7	4.9	3.6	3.1	2.0
Transportation	8.7	8.2	12.0	6.1	6.6
All Other	33.1	29.1	40.1	64.5	36.5
% Expenditures by category 2000					
K-12	22.5	31.6	18.7	17.0	18.2
Higher education	10.9	6.8	9.5	9.4	15.4
Public assistance	2.4	1.3	0.5	0.8	2.7
Medicaid	19.5	19.4	15.7	15.4	16.6
Corrections	3.8	5.3	3.5	3.7	1.9
Transportation	8.8	8.2	12.0	9.7	7.7
All Other	32.1	27.4	39.1	41.7	37.5
% Expenditures by category 2001					
K-12	22.2	32.2	18.5	17.7	18.2
Higher education	11.3	6.5	9.0	11.0	15.4

Public assistance	2.2	1.2	0.4	0.8	2.7
Medicaid	19.6	19.1	17.0	15.4	16.6
	US	**MI**	**FL**	**NV**	**AR**
Corrections	3.7	5.1	3.2	3.7	1.9
Transportation	8.9	8.3	12.7	9.7	7.7
All Other	32.1	27.6	39.2	41.7	37.5
% Expenditures by category 2002					
K-12	21.6	31.1	18.8	23.1	17.3
Higher education	11.2	6.3	11.4	13.0	16.0
Public assistance	2.1	1.2	0.5	1.4	2.3
Medicaid	20.8	19.1	20.0	17.6	19.0
Corrections	3.6	4.8	3.5	4.8	1.8
Transportation	8.1	8.3	12.2	6.5	8.6
All Other	32.6	29.2	33.6	33.6	35.0
Political Factors					
Political Parties					
Governor		Republican	Republican	Republican	Republican
House		Republican	Republican	Democratic	Democratic
Senate		Republican	Republican	Republican	Democratic
Governor's Formal Powers					
Appointive powers[b]		3.1	2	3	2
Budget powers [c]		3	2	3	3
Veto powers [d]		5	4	5	4
Mean		3.7	2.7	3.7	3
Governor's approval ratings					
Electoral mandate		62.0%	55.3%	53.1%	59.8%
Approval Rating range		47-60%	50-68%	53-61%	47-70%
Five largest expenditures by % increase in executive budget					
1999-2000				1999-2001	
		Family Independence (20.37%)	Fish and Wildlife (81.01%)	Office of the Military (0.76%)	

	US	**MI**	**FL**	**NV**	**AR**
		Education (13.02%)	Military Affairs (29.25%)	Colorado River Commission (0.75%)	
		Legislature (9.21%)	Community Affairs (13.64%)	State Treasurer (0.54%)	
		Agriculture (9.07%)	Management Services (12.80%)	Controller's Office (0.32%)	
		Correction (8.65%)	Elder Affairs (12.40%)	Judicial (0.25%)	
2000-2001					
		Management and Budget (16.04%)	Administered Funds (122.60%)		
		Attorney General (10.07%)	Law Enforcement (71.87%)		
		Agriculture (9.72%)	Veteran's Affairs (70.15%)		
		Corrections (8.66%)	Environmental Protection (14.53%)		
		State Police (8.07%)	Management Services (15.30%)		
2001-2002				2001-2003	
		Management and Budget (7.59%)		Colorado River Commission (3.17%)	
		Legislature (6.61%)		Veteran's Affairs	

				(1.17%)	
	US	**MI**	**FL**	**NV**	**AR**
		Michigan Strategic Fund (6.58%)		Minerals (0.78%)	
		Attorney General (6.28%)		Agricultur e (0.41%)	
		School Aid (5.39%)		Office of the Governor (0.36%)	
2002-2003					
		Informatio n Technolog y (100%)			
		State (29.10%)			
		Capital Outlay (15.76%)			
		School Aid (11.74%)			
		Managem ent and Budget (9.24%)			
Gubernatorial priorites expressed in executive budgets		Public Education. Tax cuts. Job training. Welfare to work. Protect environme nt. Harness technolog y to serve people.	Policy needs to drive budgets. Education. Tax cuts. Smaller, more efficient governme nt. Compassi on for children,	Budget crunch. Education. Public safety. Healthcare funding.	



		Safety and security.	seniors, and disabled. Stimulate economy. Environment.		
	US	**MI**	**FL**	**NV**	**AR**
Characteristics of the Legislature					
Bills presented		7275	9644	2555	4914
% bills passed		25%	15%	50%	70%
Broadband/ state IT related bills		68	106	37	23
1999-2000		SB 7 (PA 32) SB 20 SB 117 (PA 33) SB 167 SB 562 (PA 235) SB 667 SB 895 SB 890 SB 883 HB 4171 HB 4191 HB 4345 HB 4406 HB 4642 HB 4689 HB 4690 HB 4797 HB 4804 HB 4869 HB 4870 HB 4965 HB 4985 HB 5165	SB 80 (99-230) SB 170 (99-201) SB 252 SB 256 (99-241) SB 260 SB 274 SB 602 (99-205) SB 662 (99-244) SB 770 SB 886 (99-251) SB 964 SB 1010 SB 1288 (99-249) SB 1332 SB 1566 (99-251) SB 1884 SB 1496 SB 2358 SB 2476 HB 49 (99-235) HB 317 (99-363)	AB 364 SB 49 (Ch 290) SB 207 SB 440 (Ch 313) SB 485 (Ch 530) SB 487 (Ch 120)	SB 32 SB 267 (Act 269) SB 317 (Act 318) SB 325 (Act 278) SB 345 (Act 372) SB 327 (Act 712) SB 378 (Act 538) SB 379 (Act 713) SB 832 (Act 1298)

			HB 433 (99-365) HB 477 HB 751 (99-398) HB 933 HB 965 HB 1015 (99-306) HB 1127 HB 1135 HB 1703 HB 1949 HB 2065 HB 2073 HB 2123 (99-354) HB 2125 (99-397)		
2000-2001		SB 894 SB 936 SB 1192 SB 1310 SB 1312 HB 5184 (PA 178) HB 5185 (PA 179) HB 5186 (PA 180) HB 5187 (PA 181) HB 5330 HB 5396 HB 5397 HB 5443 (PA 144) HB 5721 (PA 295) HB 5726 HB 5824 HB 6030	SB 124 SB 1284 SB 1334 (2000- 164) SB 1338 (2000- 260) SB 1480 SB 1482 SB 1484 SB 1486 SB 1488 SB 1528 SB 1616 SB 1636 SB 1684 SB 1870 (2000- 294) SB 2050 (2000- 165) SB 2264 SB 2276 SB 2326		

			SB 2328 HB 197 HB 513 HB 683 (2000- 246) HB 873 HB 895 HB 1081 HB 1099 HB 1953 HB 2063 (2000- 224) HB 2171 HB 2267 HB 2301 (2000- 289) HB 2371 HB 2415 HB 2417 (2000- 322)		
2001-2002		SB 2 SB 250 SB 251 SB 575 SB 632 SB 633 SB 880 (48 of 2002) SB 881 (PA 49 of 2002) SB 942 (PA 117 of 2002) SB 4205	SB 144 (2001-54) SB 540 (2001-99) SB 1136 SB 1162 (2001-89) SB 1672 (2001-89) SB 1738 (2001- 269) SB 1878 (2001- 140) SB 1898 SB 1944 SB 2072 SB 2220 (2001- 251)	AB 60 (Ch 484) AB 140 AB 244 AB 352 AB 367 AB 503 (Ch 438) AB 524 (Ch 429) AB 525 (Ch 443) AB 529 (Ch 431) AB 533 (Ch 434) AB 592 AB 597 (Ch 493) AB 596 (Ch 492)	SB 717 (Act 912) SB 828 (Act 1411) SB 843 SB 935 (Act 1842) SB 953 SB 965 SB 975 (Act 1496) SB 976 (Act 1662) HB 1003 (Act 1664)HB 1143 (Act 3) HB 1231 HB 2287 HB 2317

			HB 65 HB 611 HB 691 HB 1045 HB 1167 HB 1795 HB 1811 HB 1919 HB 1959	AB 623 SB 32 (Ch 80) SB 48 (Ch 274) SB 397 (Ch 236) SB 440 (Ch 473) SB 441 (Ch 474) SB 446 (Ch 501) SB 479 SB 551 (Ch 560)	(Act 1196) HB 2426 (Act 1769) HB 2500 (Act 1685) HB 2570 (Act 1771)
2002-2003		SB 1461 SB 1462 HB 4204 HB 4316 HB 4488 HB 4653 HB 4680 HB 4977 HB 5100 HB 5238 HB 5482 (PA 36) HB 5514 HB 5605 HB 5774 HB 6068 HB 6393	HB 95 HB 499 HB 531 HB 625 HB 1199 HB 1519 SB 116 SB 1070 SB 1072 SB 1158 SB 1350 (2002-281) SB 1466 SB 1702 SB 1844 (2002-265) SB 2050 SB 2152		
Broadband Numbers					
Average number of broadband lines 99-02	10,624,630	338,519	742,183	88,105	53,485
Increase in lines 99-02	6.2%	6.9%	6.4%	5.8%	12.5%

Change in % of zip codes with no provider	-70.3%	-87.5%	-92.3%	-76.5%	-64.4%
2002 Broadband lines per 1000 households	188	169	222	212	94

[a] Growth is presented here in lieu of % change over time to control for inflation and depict the true growth of the economy. The Bureau of Economic Analysis provides GSP in current and chained dollars. The chained dollars are in 1996 dollars, allowing comparisons across regions and years. The growth rate has been calculated using chained dollars. The BEA notes "comparing the growth rate of chained-dollar GSP for an industry to the growth rate of total chained-dollar GSP indicates whether that industry is raising or lowering the state's growth rate." The size of the industry in each state is calculated using the nominal dollars. "Comparing the share of total GSP in nominal dollars that is accounted for by the GSP of an industry over time indicates whether the industry's claim on the state's resources is increasing of decreasing (U.S. Department of Commerce, n.d.)." 2002 data has not yet been released.
[b] Appointive powers: 5.0 governor (gov.) appoints, no approval; 4.0 gov. appoints, board, council or legislature approves; 3.0 someone else appoints, gov. approves or shares appointment; 2.0 someone else appoints, gov. and others (e.g. legislature) approves; 1.0 someone else appoints, no approval (Beyle, 1996).
[c] Budget powers: 5.0 gov. has full responsibility, legislature may not increase executive budget; 4.0 gov. has full, legislature can increase by special majority vote or subject to item veto; 3.0 gov. has full, legislature has unlimited power to change executive budget; 2.0 gov. shares, legislature has unlimited power to change executive budget; 1.0 gov. shares with other elected official, legislature has unlimited power to change executive budget (Beyle, 1996).
[d] Veto powers: 5.0 item veto for appropriations, 3/5 or 2/3 needed to override; 4.0 item veto, majority elected to override; 3.0 item veto, majority present to override; 2.0 no item veto, special legislative majority to override; 1.0 no item veto, only simple legislative majority needed to override (Beyle, 1996).

Table 16: Key Indicators for Telecommunications Companies

	SBC	**BellSouth**	**Comcast**	**Cox**	**Charter**
Average operating income	$47.5 billion	$24.5 billion	$9.3 billion	$3.8 billion	$3.2 billion
Average operating expenditures	$37.2 billion	$18.13 billion	$9.0 billion[a]	$3.7 billion	$4.9 billion
Average capital Expenditures	$10.3 billion	$4.7 billion[b]	$1.5 billion[c]	$1.9 billion	$2.2 billion
% change in capital expenditures from 1999-2002	-33.9%	-31.24%	103%	67.4%	196.7%

Average revenue from data /broadband services	$9.2 billion	$3.6 billion	$291 million	$426 million	$142 million
% increase in data/ broadband revenue	17.8%	60.6%	1506.7%	107.0%	1854.0%
Broadband subscribers at end of 2002	2,199,000	1,021,000	3,620,000	1,407,950	1,138,100

[a] Calculated from Operating revenue- operating income
[b] For Communications Group only
[c] For Cable segment only

REFERENCES

American Electronics Association. (2003, June 18). *Broadband in the States 2003: A state-by-state overview of broadband deployment.* Retrieved Oct 24, 2003, from http://www.aeanet.org/publications/idet_broadbandstates03.asp

Andrews, C. (2002, March 13). Engler's push to boost broadband widening. *Lansing State Journal.* Retrieved January 27, 2004, from http://www.lsj.com/news/capitol/020311_broadband_1a-5a.html

Arkansas. In *The new encyclopaedia Britannica* (Vol. 29, pp. 310-313). Chicago: Encyclopaedia Britannica.

Arkansas Secretary of State. (n.d.). *Lobbyist Report for Registrants for the year 2002* [Electronic version]. Little Rock, AR: Author.

Arkansas Secretary of State, Elections. (n.d.). *Official 1998 General Election Results by County* [Data file]. Available from http://www.sosweb.state.ar.us/elections_election_results.html

Bar, F., & Riis, A. M. (2000). Tapping user-driven innovation: A new rational for universal service. *The Information Society, 16,* 99-108.

Bardach, E. (2000). *A practical guide for policy analysis : The eightfold path to more effective problem solving.* New York: Chatham House Publishers.

Bates, J., Verrier, R., & Hamilton, W. (2004, February 12). Cable firm makes offer for Disney. *Los Angeles Times,* pp. A1, A22.

Bauer, J. M., Gai, P., Kim, J., Muth, T. A., & Wildman, S. S. (2002, Sept 8-10). *Foundations of broadband policy [Electronic version].* Paper presented at the Regional ITS Conference, Madrid, Spain.

Beamer, J. S. (2002, Fall). *State broadband initiatives.* Retrieved Oct 24, 2003, from http://www.tiaonline.org/policy/states.cfm

BellSouth Corporation. (2000). *Form 10-K. Annual report pursuant to section 13 or 15(d) of the Securities Exchange Act of 1934 for the fiscal year ended December 31, 1999.* Retrieved February 13, 2004, from http://www.sec.gov/Archives/edgar/data/732713/0000912057-00-009518-d1.html

BellSouth Corporation. (2001). *Form 10-K. Annual report pursuant to section 13 or 15(d) of the Securities Exchange Act of 1934 for the fiscal year ended December 31, 2000.* Retrieved February 13, 2004, from http://www.sec.gov/Archives/edgar/data/732713/0000912057010070 97/a2039107z10-k.htm

BellSouth Corporation. (2002). *Form 10-K. Annual report pursuant to section 13 or 15(d) of the Securities Exchange Act of 1934 for the fiscal year ended December 31, 2001.* Retrieved February 13, 2004, from http://www.sec.gov/Archives/edgar/data/732713/000095014402001938/g74113e10-k405.htm

BellSouth Corporation. (2003). *Form 10-K. Annual report pursuant to section 13 or 15(d) of the Securities Exchange Act of 1934 for the fiscal year ended December 31, 2002.* Retrieved February 13, 2004, from http://www.sec.gov/Archives/edgar/data/732713/000104746903007358/a2104641z10-k.htm

Bernick, E. L., & Wiggins, C. W. (1991). Executive-legislative relations: The governor's role as chief legislator. In E. B. Herzik & B. W. Brown (Eds.), *Gubernatorial Leadership and State Policy* (pp. 73-91). New York: Greenwood Press.

Beyle, T. (1996). Governors. In V. Gray & H. Jacob (Eds.), *Politics in the American States: A Comparative Analysis* (6th ed., pp. 207-252). Washington DC: CQ Press.

Boyd, D. J. (2003). State fiscal conditions: 2003 and beyond. In *The Book of the States* (Vol. 35, pp. 321-328). Lexington, KY: Council of State Governments.

Broadband bills at forefront as 2003 state legislatures enter home stretch [Electronic version]. (2003, April 25). *State Telephone Regulation Report, 21.*

Broadband Internet access tax credit, S. 905, 108th Cong., (2003a).

Broadband Internet access tax credit, H.R. 768, 108th Cong., (2003b).

Brosnan, G. (2003). Investment trends in the United States telecommunications sector. *The 2003 Telecommunications Review.* Retrieved March 24, 2004, from http://www.mitretek.org/publications/2003_telecomm_review/04_brosnan_2003.pdf

California Public Utilities Commission. (n.d.). *Broadband Report.* Retrieved Oct 25, 2003, from http://www.cpuc.ca.gov/static/industry/telco/020814_broadband_report.htm

Charter Communications Holdings. (2000). *Form 10-K. Annual report pursuant to section 13 or 15(d) of the Securities Exchange Act of 1934 for the fiscal year ended December 31, 1999.* Retrieved February 13, 2004, from http://www.sec.gov/Archives/edgar/data/1085476/0000950124-00-001851-index.html

Charter Communications Holdings. (2001). *Form 10-K. Annual report pursuant to section 13 or 15(d) of the Securities Exchange Act of 1934 for the fiscal year ended December 31, 2000.* Retrieved February 13, 2004, from http://www.sec.gov/Archives/edgar/data/1085476/000095012301500463/y47243e10-k.txt

Charter Communications Holdings. (2002). *Form 10-K. Annual report pursuant to section 13 or 15(d) of the Securities Exchange Act of 1934 for the fiscal year ended December 31, 2001.* Retrieved February 13, 2004, from http://www.sec.gov/Archives/edgar/data/1085476/000095012302003205/y58920e10-k405.txt

Charter Communications Holdings. (2003). *Form 10-K. Annual report pursuant to section 13 or 15(d) of the Securities Exchange Act of 1934 for the fiscal year ended December 31, 2002.* Retrieved February 13, 2004, from http://www.sec.gov/Archives/edgar/data/1085476/000095012303004284/y85537e10vk.htm

Coker, J.B. (2003, Aug 4). Mason-Dixie Florida Poll. *NBC2 News.* Retrieved February 27, 2004, from http://www.nbc-2.com/News/stories/archive/2003/mason_dixon080403.shtml

Comcast Holdings Corporation. (2000). *Form 10-K. Annual report pursuant to section 13 or 15(d) of the Securities Exchange Act of 1934 for the fiscal year ended December 31, 1999.* Retrieved February 13, 2004, from http://www.sec.gov/Archives/edgar/data/22301/0000950159-00-000066-index.html

Comcast Holdings Corporation. (2001). *Form 10-K. Annual report pursuant to section 13 or 15(d) of the Securities Exchange Act of 1934 for the fiscal year ended December 31, 2000.* Retrieved February 13, 2004, from http://www.sec.gov/Archives/edgar/data/22301/000095015901000150/0000950159-01-000150-0001.txt

Comcast Holdings Corporation. (2002). *Form 10-K. Annual report pursuant to section 13 or 15(d) of the Securities Exchange Act of 1934 for the fiscal year ended December 31, 2001.* Retrieved February 13, 2004, from http://www.sec.gov/Archives/edgar/data/22301/000095015902000191/corp10k12-01.txt

Comcast Holdings Corporation. (2003). *Form 10-K. Annual report pursuant to section 13 or 15(d) of the Securities Exchange Act of 1934 for the fiscal year ended December 31, 2002.* Retrieved February 13, 2004, from http://www.sec.gov/Archives/edgar/data/22301/000095015903000259/holdings200210k.txt

Computer Science and Telecommunications Board. (2002). *Broadband: Bringing home the bits [Electronic version]*. Washington DC: National Research Council.

Cornwell, L. (2004, March 3). Utility to offer high-speed Internet. *Seattle Post-Intelligencer.* Retrieved March 3, 2004, from http://seattlepi.nwsource.com/business/aptech_story.asp?category=1700&slug=Power%20Line%20Internet

Council of State Governments. (2000-2003). *The Book of the States* (Vols. 33-35). Lexington, KY: Author.

Cox Communications Inc. (2000). *Form 10-K. Annual report pursuant to section 13 or 15(d) of the Securities Exchange Act of 1934 for the fiscal year ended December 31, 1999.* Retrieved February 13, 2004, from http://www.sec.gov/Archives/edgar/data/25305/0000950144-00-003573-index.html

Cox Communications Inc. (2001). *Form 10-K. Annual report pursuant to section 13 or 15(d) of the Securities Exchange Act of 1934 for the fiscal year ended December 31, 2000.* Retrieved February 13, 2004, from http://www.sec.gov/Archives/edgar/data/25305/000095014403004265/g81443e10vk.htm

Cox Communications Inc. (2002). *Form 10-K. Annual report pursuant to section 13 or 15(d) of the Securities Exchange Act of 1934 for the fiscal year ended December 31, 2001.* Retrieved February 13, 2004, from http://www.sec.gov/Archives/edgar/data/25305/000091205702011652/a2073562z10-k405.htm

Cox Communications Inc. (2003). *Form 10-K. Annual report pursuant to section 13 or 15(d) of the Securities Exchange Act of 1934 for the fiscal year ended December 31, 2002.* Retrieved February 13, 2004, from http://www.sec.gov/Archives/edgar/data/25305/000095014403004265/g81443e10vk.htm

Crandall, R. W., & Jackson, C. L. (2001). *The $500 billion opportunity: The potential economic benefit of widespread diffusion of broadband Internet access.* Criterion Economics, L.L.C.

Crandall, R. W., Jackson, C. L., & Singer, H. J. (2003). *The effects of ubiquitous broadband adoption on investments, jobs and the U.S. economy.* Criterion Economics, L.L.C. and New Millennium Research Council.

Deployment of Broadband Networks and Advanced Telecommunications (Docket No. 011109273-1273-01): Comments before the National Telecommunications and

Information Administration, U.S. Department of Commerce. (2001, December 19). Comments of the National Exchange Carrier Association.

Detroit News. (2001, April 8). The Engler years: A timeline. *The Detroit News.* Retrieved February 27, 2004, from http://www.detnews.com/2001/politics/0104/08/a08-209204.htm

Dreazen, Y. J. (2003, October 13). What's slowing us down? Broadband is seen as a critical part of the national economy; Yet the U.S. lags behind other countries. *Wall Street Journal,* p. 4.

Dye, T. R., & Robey, J. S. (1980). "Politics versus economics": Development of the literature on policy determination. In T. R. Dye & V. Gray (Eds.), *The Determinants of Public Policy* (pp. 3-17). Lexington, MA: LexingtonBooks.

Edwards, J. (1999, April 6). Telephone companies paid for ads. *Las Vegas Review-Journal.* Retrieved March 2, 2004, from http://www.reviewjournal.com/lvrj_home/1999/Apr-06-Tue-1999/business/10927928.html

Eisenhart, K. M. (2002). Building theories from case study research. In A. M. Huberman & M. B. Miles (Eds.), *The Qualitative Researcher's Companion* (pp. 5-35). Thousand Oaks, CA: Sage Publications.

Elazar, D. J. (1984). *American Federalism: A View from the States* (3rd ed.). New York: Harper and Row.

Engler's Legacy. (2002, Dec 30). *The Detroit News.* Retrieved February 27, 2004, from http://www.detnews.com/2002/specialreport/0212/30/a06-47786.htm

Federal Bureau of Investigation. (2004, March 27). *Uniform Crime Reports.* Retrieved March 1, 2004, from http://www.fbi.gov/ucr/ucr.htm

Federal Communications Commission. (2002). *Federal Joint-State Board on Universal Service (CC Docket No. 96-45).* Washington DC.

Federal Communications Commission, Wireline Competition Bureau, & Industry Analysis and Technology Division. (2003). *High-speed services for Internet access: Status as of December 31, 2002.* Retrieved October 8, 2003, from http://www.fcc.gov/Bureaus/Common_Carrier/Reports/FCC-State_Link/IAD/hspd0603.pdf

Florida. In *The new encyclopaedia Britannica* (Vol. 29, pp. 313-318). Chicago: Encyclopaedia Britannica.

Florida Department of State, Division of Elections. (n.d.). *Election results, November 3, 1998 General Election.* Retrieved January 30, 2004, from http://election.dos.state.fl.us/elections/resultsarchive/Index.asp?ElectionDate=11/3/98&DATAMODE=

Florida Legislature. (2002a). *Registrants by principal name.* Retrieved February 12, 2004, from http://www.flsenate.gov/data/lobbyist/Reports/Principl_LEG_2002.pdf

Florida Legislature, Office of Economic and Demographic Research. (2002b, October). *2000 census reports: Florida components of growth 1980-1990 and 1990-2000.* Retrieved March 24, 2004, from http://www.state.fl.us/edr/population/censuscomponentsofchange.pdf

Gartner Consulting. (2001). *E3 ventures for Michigan Economic Development Corporation [Electronic version]*: Michigan Economic Development Corporation.

Gartner Consulting. (2003). *One gigabit of bust initiative: A broadband vision for California.* Los Alamitos, CA: Corporation for Education Network Initiatives in California.

Gillett, S. E., Lehr, W. H., & Osorio, C. (2003, Sept 18). *Local government broadband initiatives.* Paper presented at the 31st Research Conference on Communication, Information, and Internet Policy, George Mason University School of Law.

Gray, V. (1980). The determinants of public policy: A reappraisal. In T. R. Dye & V. Gray (Eds.), *The Determinants of Public Policy* (pp. 215-222). Lexington, MA: LexingtonBooks.

Gray, V. (1996). The socioeconomic and political context of states. In V. Gray & H. Jacob (Eds.), *Politics in the American States: A comparative analysis* (6th ed., pp. 1-34). Washington DC: CQ Press.

Gray, V., & Lowery, D. (2003). Trends in lobbying in states. In *The Book of the States* (Vol. 35, pp. 257-261). Lexington, KY: Council of State Governments.

Herz, J. C. (2002, August). The bandwidth capital of the world. *Wired Magazine, 10* (8). Retrieved Oct 24, 2003, from http://www.wired.com/wired/archive/10.08/korea.html?pg=1&topic=&topic_set=

Herzik, E. B., & Brown, B. W. (1991). Preface. In *Gubernatorial Leadership and State Policy* (pp. ix-x). New York: Greenwood Press.

Hoffman, K.B. (2002, January 3). Lame duck Engler to push pet projects until term ends. *The Detroit News.* Retrieved February 27, 2004, from http://www.detnews.com/2002/politics/0201/03/d09e-380911.htm

Hornbeck, M. (2001, January 29). Engler poised for great year. *The Detroit News.* Retrieved January 28, 2004, from http://www.detnews.com/2001/politics/0101/29/b01-181299.htm

Hrebenar, R.J., & Thomas, C.S. (2003). Trends in interest group politics in the states. In *The Book of the States.* (Vol. 35, pp. 263-269). Lexington KY: Council of State Governments.

Internet2. (2003). *Internet2 Initiatives.* Retrieved Oct 19, 2003, from http://www.internet2.edu/initiatives/

Jackson, S. (2002). ITFlorida.com is privatized. *Climate Magazine, 13* (1). Retrieved March 24, 2004, from http://www.info-strategies.com/articles/climate19.htm

Kentucky Housing Corporation. (2002, Oct 22). *New policy to connect more Kentucky families to the Internet.* Retrieved Nov 22, 2003, from http://www.kyhousing.org/news/resources/PR10-01-02.pdf

Lahart, J. (2002, July 22). The crash of 2002. *CNN Money.* Retrieved March 19, 2004, from http://money.cnn.com/2002/07/19/news/crash2002/

Leighton, W. A. (2001). Broadband deployment and the digital divide: A primer. *Policy Analysis, 410.*

Massive FCC triennial review order lays out more UNE guidance for states [Electronic version]. (2003). *State Telephone Regulation Report, 21*(17).

Merline, J. (2002). Broadband roadblocks. *Tech Central Station* March 15. Retrieved September 9, 2003, from http://www.techcentralstation.com/031502C.html

Metropolitan extension telecommunications rights-of-way oversight act, MI S.B. 0880 of 2001, 2001-2002 Cong., (2002).

Michigan. In *The new encyclopaedia Britannica* (Vol. 29, pp. 366-371). Chicago: Encyclopaedia Britannica.

Michigan Department of State, Bureau of Elections. (1999). *Election results, general election, November 03, 1998.* Retrieved January 30, 2004, from http://miboecfr.nicusa.com/election/results/98gen/02000000.html

Michigan Secretary of State. (n.d.). *Registered Lobbyists* [Data file]. Available from Michigan Secretary of State Web site, http://miboecfr.nicusa.com/cgi-bin/cfr/lobby_srch.cgi

Morehouse, S. M. (1981). *State politics, parties, and policy.* New York: Holt Rinehart & Winston.

Moritz, R. (2003, Oct 29). Governor's approval rating sinking. *Arkansas News Bureau.* Retrieved February 27, 2004, from http://www.arkansasnews.com/archive/2003/10/29/News/49284.html

Morrison, J. (2003, July 12). Poll shows opinions of Guinn fell after he proposed to raise taxes. *Las Vegas Review-Journal.* Retrieved February 27, 2004, from http://www.reviewjournal.com/lvrj_home/2003/Jul-12-Sat-2003/news/21713319.html

National Broadband Strategy Act of 2002, S. 2582, 107th Cong., (2002).

National Association of Budget Officers. (2001). *State Expenditure Report.* Retrieved January 31, 2004, from http://www.nasbo.org/Publications/PDFs/00exprpt.pdf

National Association of Budget Officers. (2002). *State Expenditure Report.* Retrieved January 31, 2004, from http://www.nasbo.org/Publications/PDFs/nasbo2001exrep.pdf

National Association of Budget Officers. (2003). *State Expenditure Report.* Retrieved January 31, 2004, from http://www.nasbo.org/Publications/PDFs/2001ExpendReport.pdf

National Center for Public Policy and Education. (2002). *Measuring up 2002: The state-by-state report card for higher education.* Retrieved January 28, 2004, from http://measuringup.highereducation.org/2002/reporthome.htm

National Governor's Association. (1999a). *Arkansas Governor Mike Huckabee. Governor's address, January 12, 1999.* Retrieved February 1, 2004, from http://www.nga.org/governors/1,1169,C_SPEECH^D_687,00.html

National Governor's Association. (1999b). *Nevada Governor Kenny Guinn. Governor's address January 18,1999.* Retrieved February 1, 2004, from http://www.nga.org/governors/1,1169,C_SPEECH^D_712,00.html

National Governor's Association. (2000). *Florida Governor Jeb Bush. Governor's address March 07,2000.* Retrieved February 1, 2004, from http://www.nga.org/governors/1,1169,C_SPEECH^D_692,00.html

National Governor's Association. (2001a). *Arkansas Governor Mike Huckabee. Governor's address January 09, 2001.*Retrieved February 1, 2004, from http://www.nga.org/governors/1,1169,C_SPEECH^D_925,00.html

National Governor's Association. (2001b). *Florida Governor Jeb Bush. Governor's address March 06,2001.* Retrieved February 1, 2004, from http://www.nga.org/governors/1,1169,C_SPEECH^D_1442,00html

National Governor's Association. (2001c). *Nevada Governor Kenny Guinn. Governor's address January 22, 2001.* Retrieved February 1, 2004, from http://www.nga.org/governors/1,1169,C_SPEECH^D_1150,00.html

National Governor's Association. (2002a). *Florida Governor Jeb Bush. Governor's address January 22, 2002.* Retrieved February 1, 2004, from http://www.nga.org/governors/1,1169,C_SPEECH^D_3099,00.html

National Governor's Association. (2002b). *Michigan Governor John Engler. Governor's address January 23, 2002.* Retrieved February 1, 2004, from http://www.nga.org/governors/1,1169,C_SPEECH^D_3137,00.html

Nevada. In *The new encyclopaedia Britannica* (Vol. 29, pp. 421-424). Chicago: Encyclopaedia Britannica.

Nevada Legislature. (n.d.). *2001 lobbyist list by employer.* Retrieved February 13, 2004, from http://www.leg.state.nv.us/lobbyistdb/EmployerList.cfm

Nevada Secretary of State. (1998). *Official 1998 General Election Results* [Data file]. Available from http://sos.state.nv.us/nvelection/1998General/o_g1998elect.html

Organisation for Economic Co-operation and Development. (2001). *The development of broadband access in OECD countries [Electronic version].* Paris: Organisation for Economic Co-operation and Development.

Organisation for Economic Co-operation and Development, Committee for Information Computer and Communications Policy. (2003). *ICCP Broadband Update.* Paris: Organisation for Economic Co-operation and Development.

Parry, J., Miller, W., Schreckhise, B., & Shields, T. (2000). *The Arkansas poll 2000: Summary report.* Retrieved February 27, 2004, from http://plsc.uark.edu/arkpoll/fall00/results/APPROVAL.HTM

Parry, J., Miller, W., Schreckhise, B., & Shields, T. (2001). *The Arkansas poll 2001: Summary report.* Retrieved February 27, 2004, from http://plsc.uark.edu/arkpoll/fall01/results/officials/index.htm

Parry, J., Miller, W., Schreckhise, B., & Shields, T. (2002). *The Arkansas poll 2002: Summary report.* Retrieved February 27, 2004, from http://plsc.uark.edu/arkpoll/2002/summary.htm

Pew Internet and American Life. (2003, Aug 27). *Internet use by region in the United States.* Retrieved Oct 24, 2003, from http://www.pewinternet.org/reports/toc.asp?Report=98

Powell, M. (2001, Oct 23). *Digital broadband migration part II.* Retrieved Oct 24, 2003 from http://www.fcc.gov/Speeches/Powell/2001/spmkp109.html

Ralston, J. (2001, Nov 5). Nobody's blaming Guinn. *Reno Gazette-Journal.* Retrieved February 27, 2004, from http://www.rgj.com/news/stories/opinion/1005027741.php

Ritchie, J., & Spencer, L. (2002). Qualitative data analysis for applied policy research. In A. M. Huberman & M. B. Miles (Eds.), *The Qualitative Researcher's Companion* (pp. 305-329). Thousand Oaks, CA: Sage Publications.

Salkever, A. (2003, Oct 8). *So much for Michael Powell's net vision.* Retrieved Oct 24, 2003, from http://www.businessweek.com/technology/content/oct2003/tc2003108_1029_tc119.htm

Southwestern Bell Company. (n.d.). *Broadband policy.* Retrieved Oct 19, 2003, from http://www.sbc.com/public_affairs/broadband_policy/

SBC Communications. (2000). *Form 10-K. Annual report pursuant to section 13 or 15(d) of the Securities Exchange Act of 1934 for the fiscal year ended December 31, 1999.* Retrieved February 13, 2004, from http://www.sec.gov/Archives/edgar/data/732713/000104746903007358/a2104641z10-k.htm

SBC Communications. (2001). *Form 10-K. Annual report pursuant to section 13 or 15(d) of the Securities Exchange Act of 1934 for the fiscal year ended December 31, 2000.* Retrieved February 13, 2004, from http://www.sec.gov/Archives/edgar/data/732713/000091205701007097/a2039107z10-k.htm

SBC Communications. (2002). *Form 10-K. Annual report pursuant to section 13 or 15(d) of the Securities Exchange Act of 1934 for the fiscal year ended December 31, 2001.* Retrieved February 13, 2004, from http://www.sec.gov/Archives/edgar/data/732713/000095014402001938/g74113e10-k405.htm

SBC Communications. (2003). *Form 10-K. Annual report pursuant to section 13 or 15(d) of the Securities Exchange Act of 1934 for the fiscal year ended December 31, 2002.* Retrieved February 13, 2004, from http://www.sec.gov/Archives/edgar/data/732713/000104746903007358/a2104641z10-k.htm

Scheppach, R., & Shafroth, F. (2000). *Governance in the new economy* [Electronic version]. Washington DC: National Governor's Association.

Singer, M. (2002). *The economic and social benefits of broadband* [Electronic version]. Telecommunications Industry Association.

Sloca, P. (2003, April 29). Senate panel rejects broadband bill [Electronic version]. *Associated Press.*

Stake, R. E. (2003). Case studies. In N. K. Denzin & Y. S. Lincoln (Eds.), *Strategies of Qualitative Analysis* (2nd ed., Vol. 2, pp. 134-164). Thousand Oaks, CA: Sage Publications.

State of Arkansas, Department of Finance and Administration. (1999). *State of Arkansas biennial budget for the fiscal years 2000 & 2001.* Little Rock, AR: Author.

State of Florida, Office of the Governor. (1999a). *FY 1999-2000 executive budget summary.* Tallahassee, FL: Author.

State of Florida, Office of the Governor. (1999b, August 20). *Governor Bush announces his appointments to the Information Services Technology Development Task Force live via the Internet.* Retrieved March 15, 2004, from http://www.state.fl.us/eog/press_releases/1999/August/internet_billsign_8-20-99.html

State of Florida, Office of the Governor. (2000a). *FY 2000-2001 executive budget* [CD-ROM]. Tallahassee, FL: Author.

State of Florida, Office of the Governor. (2000b). *State of the state address- Governor Jeb Bush - March 2, 1999.* Retrieved February 1, 2004, from http://www.myflorida.com/myflorida/government/mediacenter/news/speeches/3-2-99_soaddress.html

State of Florida, Office of the Governor. (2001). *Fiscal year 2001-2002 e-budget* [CD-ROM]. Tallahassee, FL: Author.

State of Florida, Office of the Governor. (2002). *State of Florida's e-budget. Fiscal year 2002-2003* [CD-ROM]. Tallahassee, FL: Author.

State of Michigan. (1999). *Executive budget, fiscal year 2000.* Retrieved February 13, 2004, from http://www.michigan.gov/documents/MIFY2000_35871_7.pdf

State of Michigan. (2000). *Executive budget, fiscal year 2001.* Retrieved February 13, 2004, from http://www.michigan.gov/documents/MIFY2001_35869_7.pdf

State of Michigan. (2001). *Executive budget, fiscal year 2002.* Retrieved February 13, 2004, from http://www.michigan.gov/documents/MIFY2002_35859_7.pdf

State of Michigan. (2002). *Executive budget, fiscal year 2003.* Retrieved February 13, 2004, from http://www.michigan.gov/documents/FY03budgetdocument_35344_7.pdf

State of Michigan. (2003a). *Building the next Michigan, Governor John Engler 2001 State of the State Address - Wednesday, January 31, 2001.* Retrieved February 1, 2004, from http://www.michigan.gov/printerFriendly/0,1687,7-103--1931--,00.html

State of Michigan. (2003b). *Lessons from the 20th century: Leadership for the 21st century, Governor John Engler, 2000 State of the State Address - Wednesday, January 19, 2000.* Retrieved February 1, 2004, from http://www.michigan.gov/printerFriendly/0,1687,7-103--1933--,00.html

State of Michigan. (2003c). *Michigan the "Smart State": First in the 21st Century, Governor John Engler, 1999 State of the State Address- Wednesday, January 28, 1999.* Retrieved February 1, 2004, from http://www.michigan.gov/printerFriendly/0,1687,7-103--1940--,00.html

State of Nevada. (1999). *Executive budget. Fiscal years 1999-2000 and 2000-2001* (Vols. 1-3). Carson City, NV: Author.

State of Nevada. (2001). *Executive budget. 2001-2003 biennium* (Vols. 1-3). Carson City, NV: Author.

State officials, salaries, party membership. (2002). *World almanac and book of facts* (pp. 99-102). New York: World Almanac Books.

TechNet. (2002, January 15). *TechNet CEOs call for national broadband policy.* Retrieved Oct 19, 2003, from http://www.technet.org/issues/updates_/2002-01-15.69.html

TechNet. (2003). *The State Broadband Index: An assessment of state policies impacting broadband deployment and demand.* Palo Alto, CA: Author. Available from http://www.technet.org/resources/State_Broadband_Index.pdf

Telecommunications Industry Association. (n.d.). *Broadband.* Retrieved Oct 24, 2003, from http://www.tiaonline.org/policy/broadband.cfm

Telecommunications Industry Association. (2002, November 13). *Investment, capital spending and service quality in U.S. telecommunications networks: A symbiotic relationship.* Retrieved March 15, 2004, from http://www.tiaonline.org/media/press_releases/Nov13-2002_CapEx_QoS_Final.pdf

Thomas, C. S., & Hrebenar, R. J. (1996). Interest Groups in the States. In V. Gray & H. Jacob (Eds.), *Politics in the American States: A comparative analysis* (6th ed.). Washington DC: CQ Press.

TIA continues to pressure Bush for a U.S. broadband policy [Electronic version]. (2003, Oct 27). *Fiber Optics News, 23.*

United Nations Economic Commission for Europe. (2001, Nov 15). *2002- Global economy needs a growth locomotive.* Retrieved March 19, 2004, from http://www.unece.org/press/pr2001/01gen25e.htm

U.S. Census Bureau. (2000a) *Census 2000: Arkansas profile.* Retrieved February 16, 2004, from http://www2.census.gov/geo/maps/special/profile2k/AR_2K_Profile.pdf

U.S. Census Bureau. (2000b) *Census 2000: Florida profile.* Retrieved February 16, 2004, from http://www2.census.gov/geo/maps/special/profile2k/FL_2K_Profile.pdf

U.S. Census Bureau. (2000c) *Census 2000: Michigan profile.* Retrieved February 16, 2004, from http://www2.census.gov/geo/maps/special/profile2k/MI_2K_Profile.pdf

U.S. Census Bureau. (2000d) *Census 2000: Nevada profile.* Retrieved February 16, 2004, from http://www2.census.gov/geo/maps/special/profile2k/NV_2K_Profile.pdf

U.S. Census Bureau. (2000e). *Profile of Arkansas.* Retrieved January 21, 2004, from http://censtats.census.gov/data/AR/04005.pdf

U.S. Census Bureau. (2000f). *Profile of Florida.* Retrieved January 21, 2004, from http://censtats.census.gov/data/FL/04012.pdf

U.S. Census Bureau. (2000g). *Profile of Michigan.* Retrieved January 21, 2004, from http://censtats.census.gov/data/MI/04026.pdf

U.S. Census Bureau. (2000h). *Profile of Nevada.* Retrieved January 21, 2004, from http://censtats.census.gov/data/NV/04032.pdf

U.S. Census Bureau, American Community Survey. (2002). *Percent of people below poverty level (place level).* Retrieved February 28, 2004, from http://www.census.gov/acs/www/Products/Ranking/2002/R01T160.htm

U.S. Department of Agriculture, Economic Research Service. (2004). *State Fact Sheets* [Data file]. Available from http://www.ers.usda.gov/StateFacts/

U.S. Department of Commerce, Bureau of Economic Analysis. (n.d.). *Bureau of Economic Analysis GSP help file.* Retrieved February 27, 2004, from http://www.bea.gov/bea/regional/gsp/OnlineHelp.chm

U.S. Department of Commerce, Bureau of Economic Analysis. (2003, May 22). *Gross state product by industry for 2001: US economic slowdown was widespread.* Retrieved February 10, 2004, from http://www.bea.gov/bea/newsrel/gsp0503.pdf

U.S. Department of Commerce, Bureau of Economic Analysis. (2004). *Gross State Product* [Data file]. Available from Bureau of Economic Analysis Web site, http://www.bea.gov/bea/regional/gsp/

U.S. Department of Labor, Bureau of Labor Statistics. (2004a). *Local Area Unemployment Statistics* [Data file]. Available from Bureau of Labor Statistics Web site, http://www.bls.gov/lau/home.htm

U.S. Department of Labor, Bureau of Labor Statistics. (2004b). *NAICS 51: Information.* Retrieved March 15, 2004, from http://www.bls.gov/iag/information.htm

U.S. Department of Education, National Center for Educational Statistics. (n.d.). *Mathematics Performance of Students in Grades 4, 8, and 12.* Retrieved January 28, 2004, from http://nces.ed.gov/programs/coe/2003/section2/tables/t11_3a.asp

U.S. Department of Education, National Center for Educational Statistics. (2000). *Quick tables and figures: State versus national average mathematics scores, grade 4 public schools: 2000.* Retrieved January 28, 2004, from http://nces.ed.gov/quicktables/Detail.asp?Key=569

U.S. Department of Education, National Center for Educational Statistics. (2002a). *Internet access in U.S. public schools and classrooms: 1994–2002.* Retrieved Nov 22, 2003, from http://nces.ed.gov/surveys/frss/publications/2004011/

U.S. Department of Education, National Center for Educational Statistics. (2002b). *Quick tables and figures: Comparison of state and national public school average reading scores, grade 4: 2002.* Retrieved January 28, 2004, from http://nces.ed.gov/quicktables/Detail.asp?Key=951

U.S. Department of Education, National Center for Educational Statistics. (2002c). *Quick tables and figures: Comparison of state and national public school average*

reading scores, grade 8: 2002. Retrieved January 28, 2004, from http://nces.ed.gov/quicktables/Detail.asp?Key=952

Verizon. (2003a, March 19). *Verizon broadband to be available to 10 million more homes and businesses in 2003.* Retrieved Nov 8, 2003, from http://newscenter.verizon.com/proactive/newsroom/release.vtml?id=79393

Verizon. (2003b, July 21). *Verizon policy chief calls for decisive action on national broadband policy.* Retrieved Oct 19, 2003, from http://newscenter.verizon.com/proactive/newsroom/release.vtml?id=81053

Vogel, E. (1999, Oct 3). Poll: Good job Goodman, Guinn. *Las Vegas Review-Journal.* Retrieved February 27, 2004, from http://www.lvrj.com/cgi-bin/printable.cgi?/lvrj_home/1999/Oct-03-Sun-1999/news/12070420.html

Yin, R. K. (1994). *Case study research: Design and methods* (2nd ed., Vol. 5). Thousand Oaks, CA: Sage Publications.