

The Digital Divide in Vermont

A Policy Brief

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I. The Digital Divide – National Trends

The number of Americans connected to the Internet is increasing at a rapid rate. Few technologies have spread as quickly, or become so widely used, as computers and the Internet. These information technologies are rapidly becoming common fixtures of modern social and economic life, opening opportunities and new avenues for many Americans.

Presently there is unequal access to computer use among U.S. citizens in a time in which the economy greatly depends on technology. This inequity manifests itself in many ways and has come to be called the *digital divide*.

Definitions

The “digital divide” is a term that has been used to characterize a gap between “information haves and have-nots,” or in other words, between those Americans who use or have access to telecommunications technologies (e.g., telephones, computers, the Internet) and those who do not (Kruger 2003). It is generally thought to be a socio-economic phenomenon that essentially places the technology out of reach of those who cannot afford to buy a computer. While there is an element of truth to this, the digital divide discourse in America also has had much to do with those who are computer literate versus those who are not.

Another approach to a definition is that the digital divide separates those who have access to the Internet from those who do not (Birdsall 2000). The American Library Association uses the digital divide to characterize differences in access to information through the Internet and other information technologies and services in the knowledge, skills, and abilities to use information, due to geography, race, economy status, gender and physical ability (2003). More recently the definition has been expanded to mean “the gap between those who have access to *and can effectively use information technologies* [emphasis added] and those who cannot” (Wilhelm 2001).

National Trends

In every income bracket, at every level of education, in every age group, for people of every age and among people of Hispanic origin, among both men and women, many more people use computers and the Internet now than did so in the recent past. Some people are still more likely to be Internet users than others. Individuals living in low-income households or having little education, still trail the national average. However, broad measures of Internet use in the United States suggest that, over time, Internet use has become more equitable (NTIA and ESA 2002, pp. 10-11).

The current story of computer use and Internet diffusion continues to be nothing short of amazing. As economist Wayne Leighton points out, “the latest technologies, including computer use and access to the Internet, are being adopted at a faster rate than technologies of only a generation or two ago” (2001, p. 16). Indeed, these technologies are spreading more rapidly throughout American society than almost any previous good or service. While it took many older technologies many decades to reach 50 percent of American homes (telephones took 71 years;

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electricity took 52; radio took 28), personal computers were available to half of American homes within 19 years of introduction and the Internet hit that mark in just 10 short years (Leighton 2001). A 2002 report by the National Telecommunications and Information Administration (NTIA) and the Economics and Statistics Administration (ESA) implies that things will only continue to get better:

- **Internet use is exploding:** The rate of growth of Internet use in the United States is currently two million new Internet users per month and more than half of the nation is now online. In September 2001, 143 million Americans (about 54 percent of the population) were using the Internet—an increase of 26 million in 13 months. In September 2001, 174 million people (or 66 percent of the population) in the United States used computers. Also, 45 percent of the population now uses e-mail, up from 35 percent in 2000.

- **Income matters less:** Between December 1998 and September 2001, Internet use by individuals in the lowest-income households (those earning less than \$15,000 per year) increased at a 25 percent annual growth rate. Internet use among individuals in the highest-income households (those earning \$75,000 per year or more) increased from a higher base but at a much slower 11 percent annual growth rate. Also, the highest growth rate among different types of households is for single mothers with children (29 percent).

- **Race less of a factor:** Between August 2000 and September 2001, Internet use among African Americans and Hispanics increased at annual rates of 33 and 30 percent, respectively. Whites and Asian Americans experienced growth rates of approximately 20 percent during these same periods.

- **Geography makes less of a difference:** Over the 1998 to 2001 period, growth in Internet use among people living in rural households has been at an average annual rate of 24 percent, and the percentage of Internet users in rural areas (53 percent) is now almost even with the national average (54 percent).

(NTIA and ESA 2002)

Broadband

One important subset of the digital divide debate concerns high-speed Internet access, also known as *broadband*. Broadband is the ability to send and receive data at volumes and speeds far greater than traditional telephone lines (Gilroy and Kruger 2003). Broadband technologies are currently being deployed by the private sector throughout the United States. In the United States, 73% of households have cable modem broadband service available, and broadband digital subscriber line (DSL) telephone services are available to 45%, but only 15% of households have actually adopted broadband access (Gilroy and Kruger 2003). However, the data suggest a disparity: broadband availability and adoption is less likely for those living in rural areas (Kruger 2003).

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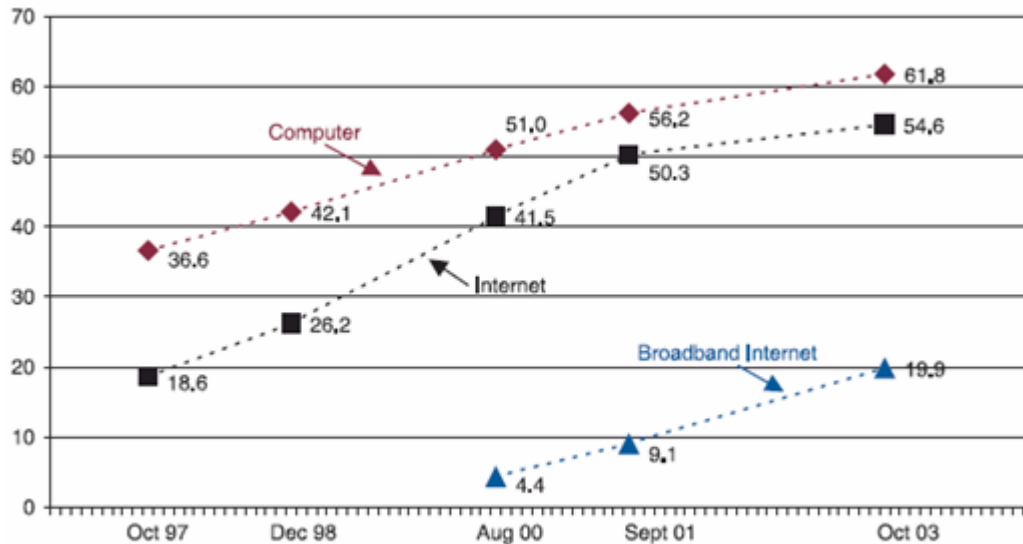
Some policymakers, believing that disparities in broadband access across American society could have adverse economic and social consequences on those left behind, assert that the federal government should play a more active role to avoid a digital divide in this area. One approach is for the federal government to provide financial assistance to support broadband deployment in underserved areas. Others, however, believe that federal assistance for broadband deployment is not appropriate. Some opponents question the reality of the digital divide, and argue that federal intervention in the broadband marketplace would be premature and, in some cases, counterproductive. Legislation introduced into the 107th Congress sought to provide federal financial assistance for broadband deployment in the form of grants, loans, subsidies, and tax credits. Similar legislation has been introduced into the 108th Congress (Kruger 2003).

Figure 1-1 below illustrates recent trends in American household use of computers, Internet connections, and broadband, specifically.

Figure 1-1.

*Percent of Households with Computers and Internet Connections, Selected Years, 1997-2003**

Percent of U.S. Households



Note: 2001 and 2003 reflect 2000 Census-based weights and earlier years use 1990 Census-based weights.

(Source: Figure 1 from NTIA and ESA 2004, p. 4)

II. Computer Ownership and Internet Connectivity in Vermont

The information and data below illustrate aspects of the digital divide in Vermont. A summary of key findings includes:

- There is a divide in computer ownership by household income.
- No significant divide can be found as a barrier to general Internet connectivity in households with computers.
- There is a rural-urban divide in household broadband Internet connections.
- Households with children present are more likely to have computers and broadband connections.

However when looking for further reflections of national digital divide trends in Vermont, one area of need becomes apparent: data and research. Analyses of computer ownership and Internet connectivity by income, location, and the presence of children in households are possible, yet there is insufficient statewide data to test for inequities based on race, age, education, disability and other factors. Subsequent sections will include the recommendation that digital divide research is made a priority to fully understand this problem in Vermont.

Survey Data Sources

Most of the Vermont digital divide data is gathered by the *Vermont Poll*, a project of the Center for Rural Studies at the University of Vermont. The *Vermont Poll* is an annual telephone survey of households in the state.¹ In addition some of the data below comes from a 2003 telephone survey of similar statistical validity conducted for the *Vermont Telecommunications Plan* (DPS 2004).

When possible the *n* – total number of respondents – will be disclosed for data and tabulations below.

Computer Ownership

The 2004 *Vermont Poll* shows 83.0% of Vermont households owning a computer (n = 605). Table 2-1 below is a cross-tabulation of household computer ownership by household income group. It reveals that there is a divide with lower household income groups being less likely to have a computer available. For instance, only half of households making less than \$20,000 annually have a computer, compared to 97% of households making \$65,000 or more and 84.8% of the overall total.

By trending the data over time, Figure 2-1 below visually displays the divide between lower and higher income groups, regardless of the fact that household computer ownership has increased over time.

¹ The Vermont Poll is a statistically representative sample of residential households with telephones with an adult over 18 years of age who can answer the survey questions.

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The 2004 *Vermont Poll* also shows that households with children under 18 years of age are more likely to have a computer than those without children (95.7% versus 75.3%, n = 595).

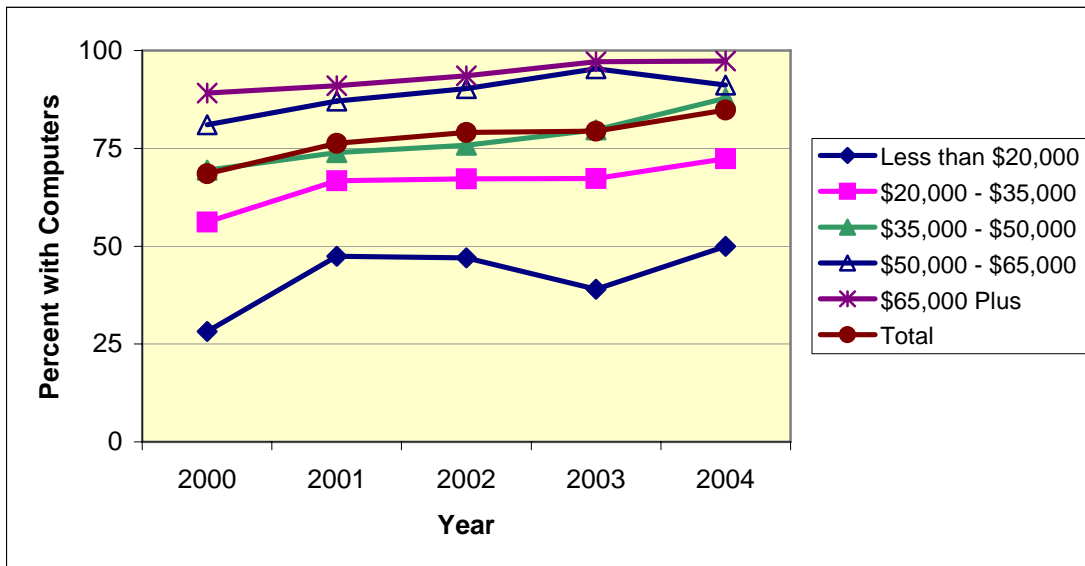
However the poll finds no statistically significant difference² in computer ownership based on the rural, urban, or suburban location of a household.

Table 2-1.
Cross-tabulation of household computer ownership by annual household income, 2004

Household Income	Households with Computers (percent)
less than \$20,000	50.0
\$20,000 - \$35,000	72.4
\$35,000 - \$50,000	87.8
\$50,000 - \$65,000	91.2
\$65,000 or more	97.3
Total	84.8

Source: 2004 *Vermont Poll*, n = 527

Figure 2-1.
Household computer ownership by annual household income, 2000 - 2004



Source: 2000, 2001, 2002, 2003, & 2004 *Vermont Polls*

Internet Connectivity

The 2004 *Vermont Poll* reveals that almost 92.8% of Vermont households with computers have an Internet connection (n = 484). That makes up around 70% of total survey respondents (n

² Significance measured with a Pearson Chi-Square test.

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= 641), which is very similar to the 66% of households that have Internet access according to the *Vermont Telecommunications Plan's* 2003 telephone survey (DPS 2004).

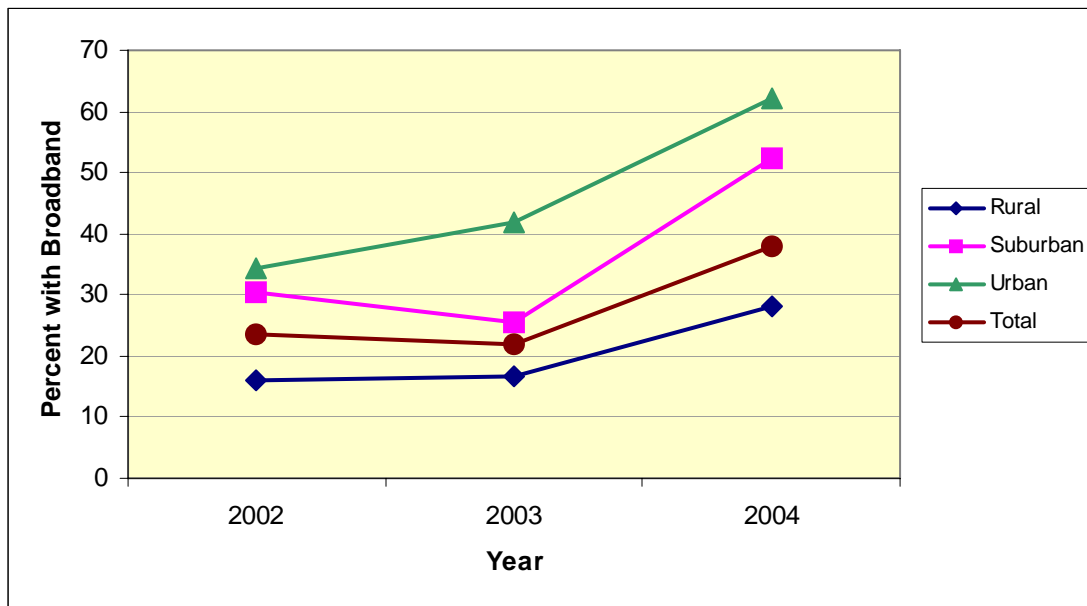
The 2004 *Vermont Poll* shows no clear divide in Internet connectivity. Data from 2000 reveals a divide based on household income, but subsequent years returned no significant differences, and the 2004 data does not show a pattern that can be construed as a divide. The current poll data does not contain significant differences based on rural / urban location or presence of children in the household.

Broadband Internet Connections

More than one third (37.8%) of Vermont households with Internet access have a broadband connection, according to the 2004 *Vermont Poll* (n = 442). That translates 26.1% of the total survey population (n = 641).

Figure 2-2.

Broadband adoption (percent) in households with Internet access by rural, urban, or suburban location, 2002 - 2004



Source: 2002, 2003, & 2004 *Vermont Polls*

Much like in national trends, the key barrier to broadband access in Vermont is rurality. The 2004 *Vermont Poll* shows that only 28.2% of rural households with Internet access have broadband connections, versus 52.5% of suburban households and 62.3% of urban households (n = 436). This is with broadband service being available to 75.3% of Vermont's population (DPS 2004). Looking at Figure 2-3 below, one can see how this is possible - areas of broadband availability largely correspond with areas of high population density in Vermont.

The 2004 *Vermont Poll* reveals no clear divide pattern by household income and shows that households with children and Internet access are slightly more likely to have broadband (43.7% versus 33.5%, n = 438).

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Figure 2-2 illustrates the divide in broadband adoption between rural and urban and suburban households with Internet access over the past few years. Overall broadband adoption has increased in the state.

The Issue of Choice

Further research into the digital divide in Vermont is needed to fully understand why people do not acquire a computer, or a broadband connection, or any Internet access whatsoever. It would be in error to assume that a lower income or a rural location is the *only* reason why a Vermonter may not have access to telecommunications tools and resources. The choice factor must be recognized and studied. For instance:

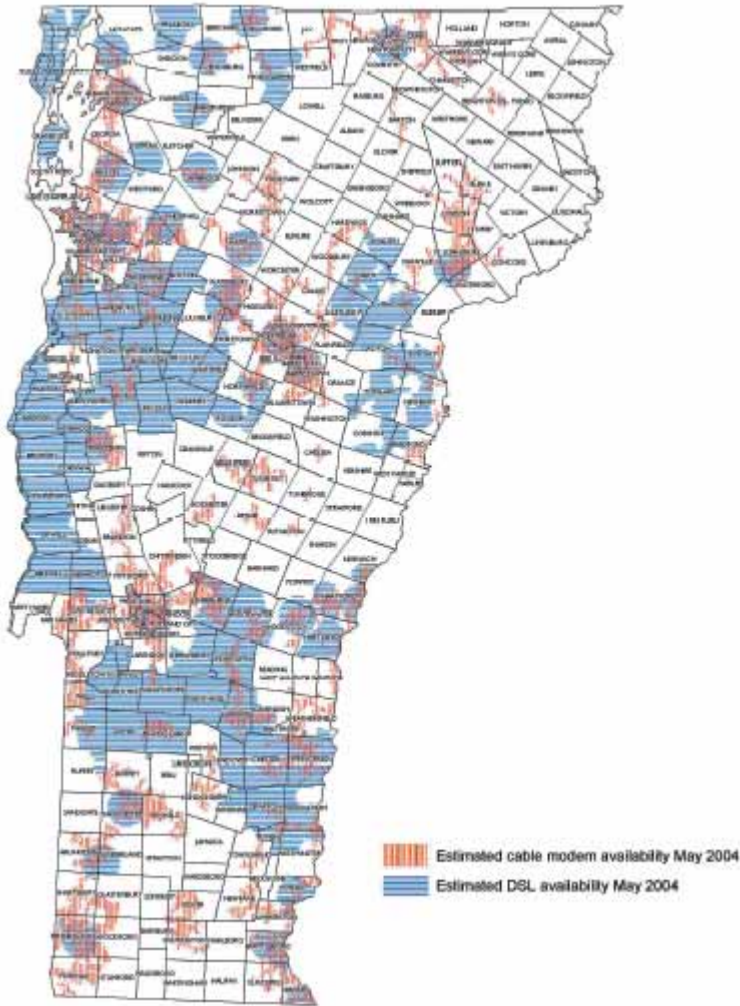
- More than three quarters (75.8%) of households without computers do not want one (2004 *Vermont Poll*, n = 99).
- Dislike of the Internet has a higher frequency than cost or lack of a computer when reasons for not having Internet access are given (DPS 2004).
- The majority (69%) of households without Internet access say they are not likely to acquire it within the next year (DPS 2004).
- A majority (67%) of households say they are not likely to upgrade to a faster Internet connection in the next year (DPS 2004).

One's choice must not be discounted or ignored. Yet the stakes are too high to push the issue aside. A series of questions could be asked by future efforts:

1. For what voluntary reasons do Vermonters choose not to acquire computers, connect to the Internet, or get broadband, if available?
2. What information are those reasons based upon?
3. Is that information valid?
4. Could education convince more Vermonters to make use of telecommunications tools and services, if feasible?

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Figure 2-3.
Areas and Types of Broadband Availability in Vermont, 2004



(Source: Figure 3.3 from DPS 2004, p. 3-7)

III. Problem Statement

Computers and the Internet are recognized as increasingly important economically and educationally in this nation and in Vermont. Furthermore the benefits of broadband high speed Internet access have become an area of focus. Nevertheless inequities, hardships, and choices made are setting up barriers between Vermonters and today's important telecommunications tools and services. That is the digital divide.

Existing data shows that there are inequities in the access to information and tools for success represented by computers and the Internet, primarily by income and rural location. While these inequities exist, e-commerce, e-business, and e-government cannot be realized fully in Vermont. The subsequent touted benefits to economic development and the business climate in this state will never manifest to full potential.

Aside from that is the plain and simple fact that it is not fair that some Vermonters should have less access to computers or the Internet than others based upon income, location, or other factors not entirely within their control. From local start-up businesses to children completing a school project, it is important that all have equal access to the boon of information and resources represented by computers and the Internet.

Even in the absence of a digital divide, there is probable benefit to ensuring that Vermonters are fully informed when making the choice to acquire computers or Internet access.

Questions to be answered:

1. Should digital divide efforts be focused on broadband Internet connections, rather than dial-up?
2. Who are the relevant actors, and what are their roles?
3. What existing policies and activities should be continued?
4. What potential policies and activities should be pursued?
5. Are there benchmarks for success? Can the digital divide be eliminated?

IV. Relevant Actors in Vermont

There are many organizations and agencies, governmental, non-profit, for-profit, and otherwise, whose missions and/or activities are relevant to the digital divide in Vermont. Contacts were made with six of these organizations with summary and contact information herein. Vermont State Government is addressed in section V.

For a summary comparison of these actors, their activities, roles, and more, go to Table 4-1 on page 18.

The Economic Development Council of Northern Vermont (EDCNV)

Contact: Maureen Connolly, Economic Development Specialist

Phone: (802) 524-4546

Website: www.edcnv.org

Contact Date: 11/08/04

EDCNV is a nonprofit development corporation that serves as “a catalyst for growth and development” in the six northernmost counties of Vermont (Caledonia, Essex, Franklin, Grand Isle, Lamoille and Orleans). The Council identifies market opportunities, establishes their intrinsic value to the region, develops implementation strategies and structures financial packages for area businesses. Currently, the Council is involved in a project called North Link, which would finance and build broadband communications lines throughout these northern counties. Toward this end, the Council works to provide the necessary physical infrastructure for broadband provision, and to assist businesses, particularly by introducing them to the power of e-commerce and access to global markets. EDCNV has also established a number of multi-tenant buildings where entrepreneurs can launch and expand businesses. It is the Council’s hope that the North Link Project and widespread availability of high-speed access will attract larger, perhaps even “global” businesses to Vermont’s northern borders. Unfortunately, the Council has thus far had a difficult time attracting the attention or assistance of the state, and takes a somewhat cynical, ambivalent view of state government’s ability to play a critical role in solving issues of access.

The Vermont Council on Rural Development (VCRD)

Contact: Paul Costello, Executive Director

Phone: (802) 828-6024

Website: www. Dover.net/~vcrd

Contact Date: 10/27/04

VCRD is a nonprofit organization “dedicated to the locally-defined progress of Vermont’s rural communities.” Through federal, state, local, non-profit and private partners, VCRD works toward non-partisan, community-based solutions to “policy questions of rural import.” VCRD formed a telecommunications committee in 2000 to address issues of Internet connectivity, as well as equality of access and cost throughout the state. Toward this end, the Council works with local communities to artificially create “aggregate demand” in areas where otherwise there would not be service providers. Based on the “Berkshire Connect” model used in the rural Berkshire region of Massachusetts, aggregations create the demand and financial incentive

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necessary to attract and retain Internet service providers. In particular, VCRD's position is that broadband rather than dial-up access is the technology of the future. Thus, it is necessary for local communities to adopt now rather than later if local citizens (and businesses) are to remain IT-literate, savvy and competitive. VCRD views the state as a crucial policy actor, and sees its financial and political leverage toward policy solutions as crucial to bringing greater access and lower costs to rural as well as urban areas of the state. However, the council maintains that most solutions to narrowing the digital divide will ultimately come from the private sector.

The Vermont Broadband Council

Contact: Jack Hoffman, Executive Director

Phone: (802) 241-2569

Website: www.vtbroadband.org

Contact Date: 10/30/04

The mission of the Vermont Broadband Council is to promote the use and availability of broadband throughout the state. The Council deems high speed Internet access for individuals and businesses as imperative to the future of the state's economic development. Through "demonstration projects" like "MontpelierNet" in the state's capital, the Council strives to give individuals, businesses and legislators exposure to the benefits of high-speed access. This approach allows people to see first-hand the power of broadband as an effective tool for e-commerce, e-business and e-government. The Council sees the state government as an important policy actor, particularly toward legislation potentially friendly to greater infrastructure development and innovations. The Council maintains the position that future government regulation of the Internet service industry may be necessary and beneficial for greater equality of price and access between rural and urban regions.

CyberSkills/Vermont

Contact: Lauren-Glenn Davitian, CCTV Executive Director

Phone: (802) 862-1645

Website: www.cyberskillsvt.org

Contact Date: 11/09/04

The mission of CyberSkills is to "build a community where no one is left out of the economic and cultural promise of the Information Age." With this in mind, CyberSkills provides classes, training and support in Internet Technologies for nonprofit organizations, small businesses and individuals, particularly from lower income brackets or single-parent households. CyberSkills recognizes a disparity between the existing technological infrastructure (including access to computers and the Internet) and levels of actual computer literacy or training in Internet Technologies among the public, particularly among lower income levels. Thus outreach and advocacy are among its highest priorities toward digital equality. CyberSkills does not maintain a strong position on broadband access, although generally accepts the premise that dial-up access is too slow, and thus not an attractive option for users. CyberSkills sees a central role for the state government, particularly as a funder of its activities. Currently, the organization is threatened with dramatically cutting back its educational programming due to a lack of adequate funds, despite the fact that it provides some of the only such IT training in the state for adults and

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lower-income individuals. Thus, the organization hopes to see more financial support from the state for its activities.

SoVerNet

Contact: J. Barton “Tony” Elliott, Chairman and CEO

Phone: (802) 463-2111

Website: www.sover.net

Contact Date: 11/29/04

SoVerNet is a locally owned telecommunications company operating in Vermont since 1995. Internet access is its primary business, and the company is publicly committed toward expanding its services to include high-speed broadband access (although privately, its director, Tony Elliott, voiced his opinion that the dial-up access currently offered by SoVerNet is sufficient for most online transactions besides streaming of large video files). SoVerNet’s commercial goal of profit is not mutually exclusive of its goal to operate as a socially responsible business that considers the interests of the local communities that it serves. Thus, SoVerNet is vocal about the need for greater market competition within the state, particularly with regard to the veritable monopoly enjoyed by Verizon. SoVerNet sees market forces toward more competitive pricing and wider choice for consumers as one solution for narrowing the digital divide. Thus, it sees an important role for state government as the arbiter of subsidies and other financial incentives that might “level the playing field” for providers large and small.

The Snelling Center for Government

Contact: Robin Lane

Phone: (802) 859-3090

Website: www.snellingcenter.org

Contact Date: 10/25/04

The Snelling Center for Government is a non-partisan, non-profit organization that trains, encourages and supports Vermonters who wish to become involved at the state and local level. The Center engages in numerous public policy and leadership initiatives. There is particular interest from within the Center on issues of e-government (online information and services provided by the state to its citizens), and the intersection of governance and technology. Thus, the Center is engaged in analysis of state telecommunications policy, as well as the nature of the digital divide in Vermont, particularly as it relates to readiness of the population for e-government. As the Center continues to analyze policy, it has yet to formulate a position on the necessity of broadband provision. However, the Center maintains that there is a clear and obvious role for state government in supporting and advocating for wider Internet access throughout the state, particularly to rural areas. Furthermore, there may be an important role for the state in terms of funding and encouraging educational initiatives to provide greater training and literacy in Internet and computer technologies.

Vermont State Government

Contact: Thomas Murray, Agency of Commerce and Community Development

Phone: (802) 828-5208

Website: www.vermont.gov

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Contact Date: 11/16/04

Also consulted: *2004 Vermont Telecommunications Plan* (Dept. of Public Service).

State Government is identified as the primary policy actor relevant to the digital divide in Vermont and addressed in section V.

Other Actors Not Contacted

Many other relevant organizations and agencies exist that were not contacted for the purposes of this brief. They include (and are not limited to):

Service Providers

- Verizon
- Local Telephone Companies
- Internet Service Providers
- Adelphia
- Local Cable Companies
- Electric Utilities

Municipal Governments

Federal Government

Libraries

Public Schools

The University of Vermont

Vermont State Colleges

Vermont Small Business Development Center

Vermont Manufacturing Extension Center (at VTC)

Vermont Information Technology Center (at Champlain College)

Regional Planning Commissions

Regional Development Commissions

Correspondence Summary

What follows is a combined summary of the correspondences conducted with the six actors identified at the beginning of this section. Their responses are organized by theme where possible. Full summaries of four of the correspondences can be found in Appendices A – D.

All of the information below comes from correspondences with the people identified conducted in 2004.

Rural vs. Urban

Costello and Hoffman both construe the digital divide in Vermont as a divide between rural and urban areas of the state. Hoffman noted that in this respect, Vermont reflects national trends, where rural areas typically lag behind urban areas in terms of the availability and cost of access. Costello provided an illustrative example, noting that, “in a rural area, people may pay \$2,000 or

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more for the same high speed link which in Burlington would cost \$500. Thus, from an economic development point of view, it's a tremendously significant difference..."

Hoffman concurred, noting that, "we have to figure out ways to push the price down. That's still a barrier for many people." Given statewide data that correlate lower education levels and lower incomes with rurality, higher rural costs may exact a greater toll on individuals from lower income brackets (Bolduc et al. 2000). Thus, a socio-economic disparity also seems to account for the divide, particularly with respect to rural and urban areas.

Like Hoffman and Costello, Tony Elliott, Chairman and CEO of local Internet service provider "SoVerNet," agrees that the divide in Vermont manifests itself as a rural and urban disparity, particularly given the higher cost to providers of serving rural areas. However, while Verizon receives funds to offset the costs of "universal service" in many of these higher cost areas, competitors (like SoVerNet) do not – an issue that Elliott returns to over and over in his interview.

Broadband

Costello and Hoffman are both convinced that a lack of broadband access also accounts for the digital divide in Vermont, particularly in rural areas. Costello says, "My basic definition [of the digital divide] is broadband availability throughout the state." He notes that "in the smallest and poorest towns in the Northeast Kingdom, people use the Internet," yet adds that most of them are using dial-up. This may be due to a lack of broadband availability, or to cost, or to a lack of knowledge about the benefits of broadband over dial-up access. This is where both Costello and Hoffman see an important role for their respective committees in terms of public outreach and advocacy.

Hoffman agrees in the importance of broadband availability, and states, "I think that broadband access is as important as electricity and the telephone. This is something that every house should have." Hoffman notes that like rural electricity and telephone service, it has not been cost effective for businesses to provide services. Thus, government intervention may be necessary to offset the costs of doing business in low density, rural areas. Costello agrees, and notes that his committee operates under the principal of one day achieving "universal service" as under the Rural Electrification (RE) initiative of the 1930s. Use of the RE example by Hoffman and Costello as a parallel model for broadband development situates them squarely on the side of some kind of government regulation of the Internet service industry.

Education and Training

Davitian has had difficulty convincing low-income residents the importance of learning how to use the technology to get ahead. Once they buy into it, she says a whole new world of opportunities opens up and they see the relevance. "We need to bring up the skill and capacity levels of all people in society so that they can utilize these tools," said Davitian, who gave the following real world example: "The last time I taught a class it was to a room full of low-income women who had never touched a computer. Within four hours they were using the computer, looking up things they cared about. By the end of the day they had a huge amount of confidence."

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Davitian believes this training is the first step to securing a job. “If you combine it with where the jobs are – that’s very helpful. You have to think about what skills do you really need to have in order to get a job at, say, Fletcher Allen. You’re not going to get a \$20 an hour job going from welfare, but you can get an entry level position and do data entry and work your way up and ultimately get yourself off welfare and feel pride.”

Hoffman noted that despite the availability of Internet access in many areas, certain segments of the population simply choose not to have it. He says, “there are still a lot of people who don’t appreciate the benefits [of the Internet] . . . There’s still a gap between who’s using it and where it’s available. We need to address two issues: availability of access, as well as education and knowledge to use the technology.” Toward this end, the Broadband Council engages in public outreach efforts, including advocacy and education. Costello agrees that “dialogue itself on the issue of the digital divide helps to create public education and awareness.” He says that he approaches his task of narrowing the digital divide from the perspective of someone familiar with adult education and literacy issues. He notes that IT skills are a necessary means to fit into today’s economy, and says, “Today . . . if you have limited [technical] skills, then your ability to participate in modern life is severely handicapped.” He elaborates that for adults, this may mean not only the ability to obtain employment, but also the ability to access vital information online, on topics ranging from healthcare to personal finances or taxes. For children, this means developing critical learning skills.

Thus, narrowing the digital divide is an issue of equal educational and, subsequently, economic opportunity. In order to successfully promote policies that will address the digital divide, it seems important to incorporate such language into the dialogue. When the digital divide moves beyond being perceived as an issue of material haves and have-nots to being perceived as an issue of “social justice” (to use Costello’s term) it will gain its rightful place on the public policy agenda.

State Government

Both Costello and Hoffman are generally encouraged by the state’s ambitious plan for 100% broadband availability by 2010. However, neither Hoffman nor Costello is sure that this goal is realistic given the current pace of policy advances. Nonetheless, both see methods, large and small, for government to more effectively drive the agenda. Costello would like to see the state use its purchasing resources to demand services, particularly from Verizon. Hoffman also points to some key legislation that might require fine-tuning in order to promote some wireless infrastructure. He says, “I’m a great supporter of Act 250 . . . but I don’t think that some of the WiFi and wireless Internet equipment is in the same category as cell phone towers. They’re very unobtrusive . . . That needs to be looked at.”

Hoffman also supports tax credits as a potential state policy toward addressing the digital divide, although not very enthusiastically. He says, “I’m alright with tax credits, as long as whoever gets them is doing something innovative and using new technology . . . You should do it for people who are really taking a risk.” Costello also favors tax credits, because they subsidize business development and the larger good is served. However, he’s also not convinced that businesses care about the credits or that they really have much effect. These conclusions reflect

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the findings of our research, which indicate that tax incentives are not an effective inducement toward wider access and provision of services.

Although Elliott approaches the dilemma of the digital divide from the perspective of a service provider and a businessman, he reiterated many of the conclusions made by Costello and Hoffman in the nonprofit sector with regard to the role of state government. Indeed, Elliott's responses reflected Hoffman's reservations about tax credits, and he noted that "a fledgling company may or may not need tax credits, depending on the structure of the business, so this does not universally address the problem. It is my opinion that consumers need choice. If tax credits help a large company maintain a monopoly while not helping small companies, then consumers will ultimately not have choice. Government policy must be drafted very carefully to avoid re-creating monopolies or other unintended consequences." Elliott noted that the costs of providing services to some rural customers are often prohibitive.

Toward this end, Elliott thinks that the state government should provide access to some of the subsidies that Verizon receives to smaller competitors. It is also critical to "provide a more level playing field" for what competitors must provide without compensation. Clearly, Elliott's primary concern as a local provider is over fair market competition that will allow his own company to provide the same kinds of competitive services as a prominent regional provider like Verizon. The effect of such healthy competition would not only serve SoVerNet, but also consumers. As Costello maintains, "the solutions to this dilemma are private sector solutions, not government solutions." Although government can strive to create incentives and foster Elliott's "level playing field," ultimately what Costello calls "a profit making enterprise that works as efficiently as possible to make the best return on its investment" will do the most to narrow the divide.

Both Lauren-Glenn Davitian and Maureen Connolly said the most difficult obstacle they face, aside from a lack of funding, is trying to change the mindset of individuals on both sides of the digital divide. For Davitian, trying to convince business leaders and local and state government leaders to rethink the way they operate to utilize the new technology has been difficult. "At the same time we were building this (information superhighway) we had people from all sectors of the country, not just low income people but people who were running companies, who didn't know how to use these tools. You had people who did not understand how to rethink the way they did business." Davitian adds that the capacity issue in cities like Burlington is not of the infrastructure kind, but rather in trying to educate its leadership to think about economic development not just as housing and bricks and mortar.

Davitian and Connolly face funding problems, although Connolly hopes that the \$10 million North Link Project will go a long way in closing the technological disadvantage her county's face. Davitian said CyberSkills is almost out of the low-income training business because of a lack of federal and state funding. Although their views differ on the willingness of the State of Vermont to work with organizations trying to close the digital divide, Davitian and Connolly said it could make a difference.

Robin Lane, a policy analyst with the Snelling Center for Government, is working to shape legislation that would address the divide by giving people more of a voice in the decisions of the

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State of Vermont through e-government services. One policy area that Lane is focusing on is trying to give people a voice in state government that are normally left out of the decision-making conversation. “When you have single moms and dads who have a very limited amount of time to speak out and make their voices heard, or who may feel intimidated to go to the statehouse, sitting at home may empower them to take action. The participatory part is furthest away, but to me it’s the part of e-governance that could make the most difference.”

Some interviewees expressed frustration with the lack of support of state government and the poor communication between departments, although some others Gov. Douglas was making a decent effort. Robin Lane said that there is a “longstanding tradition in Vermont state government of working in silos.” It accounts for some of the problems the state faces with regards to the digital divide; its own technological infrastructure; and why it ranks near the bottom in e-government readiness, she said. “Vermont is like 49th or 50th in terms of where they are in e-government. One of the issues is that Vermont was one of the last states to get a Chief Information Officer. The other problem with Vermont is that other states began from getting away from a silo approach much earlier at least in terms of their IT departments and web services. The picture they paint is that we are one state. In Vermont of course we have fiefdoms. Each department is silos in and of themselves. No two look alike or share information and nobody is talking to anybody. I look at that and say, god, there has to be a better way. It’s nightmarish in scope.”

Economic Development

In trying to spur economic development in the six counties she serves, Connolly has had similar difficulty in trying to change the mindset of business leaders. It’s not uncommon for her to have local business owners ask her why they would need a website when most of their business is local or from tourists. She tells them that when you have a website, “you’re open for business to the whole world and aren’t taking the chance that someone may or may not turn down your dirt road.”

The business owners that have caught on have reaped the benefits, but not as completely as they could if they had high speed Internet capability. Because of this, Connolly says area businesses are at a competitive disadvantage... “by the time you respond to them they’re already ordering the same product from someone else. It’s a world of instant gratification. We could have a superior product, but it wouldn’t matter. Our retailers are completely locked out of the global marketplace.”

General Observations

Despite interviewees saying they were aware of what each other’s work regards to the digital divide, there does not seem to be a lot of collaboration among them. This is unfortunate given the collective knowledge of the individuals and the resources of their respective organizations.

Most interviewees agreed that a more statewide, holistic approach should be taken. “In terms of anyone looking at this as a systemic, big picture issue, I haven’t really seen a lot,” Lane said. “But the state is strapped for resources, in terms of personnel. They’re doing all they can to maintain agency and department level IT issues. The Agency of Human Services is working

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very hard, and their work is no less important, but it’s not a broad approach.” Lane points out that the language creating the new state Department of Information and Innovation does not even mention the digital divide. “With little authority, resources, time or staff, they can’t analyze the big picture.”

Actor Summary Table

The table below summarizes the six actors contacted for this brief plus the State. Using information from the correspondences above the following section on State Government, this table is attempt to provide a quick look at key issues relevant to addressing the digital divide in Vermont.

*Table 4-1.
Actor Summary Table*

Actor	Activity	Role	Motivation	Broadband a Necessity?	Role for the State?
EDCNV	North Link project	1. Infrastructure Provision 2. Business Assistance	Economic Development	Yes	Not really
VCRD	1. Demand Aggregation 2. Pilot Projects	Increase attractiveness of rural service through demand and innovation	Rural Economic Development	Yes	Yes (\$ support)
Broadband Council	1. Pilot Projects 2. Demand Aggregation	Increase attractiveness of rural service through demand and innovation	Broadband Provision and Economic Development	Yes	Yes (\$ support)
CyberSkills	Education and Advocacy	Education and Advocacy	Social Justice, Equality, Accessible Democracy	Somewhat	Yes (\$ support)
SoVerNet	Internet Service Provider	Internet Service Provider	Profit	Not really	Yes (ensure competition)
Robin Lane (Snelling Center)	Policy Analysis	Policy Analysis	Good Policy, Accessible Democracy	Do not know	Yes (primary policy actor)
State Government	Universal Service, Offset Rural Costs, Market Broadband, Regulation	Primary Policy Actor	Economic Development, Competitive Business Climate	Yes	Yes (when politically feasible)

V. State Government – the Primary Policy Actor

Summary:

State government efforts focus on statewide broadband penetration as motivated by economic development needs.

The *Vermont Telecommunications Plan* (DPS 2004) in its currency can be seen to represent, more than any other document, the State's plans, intent, and action items relevant to the digital divide in Vermont. It advocates for universal broadband service, and it identifies the weak market demand of rural areas as a primary barrier. Many relevant action items identified in the plan are:

- support (and limited resources) for demand aggregation programs and similar pilot projects and outreach efforts,
- the creation of a state fund to offset the high cost of rural broadband infrastructure and service development, which would require a retooling of the Universal Service Fund,
- the identification and utilization of other public funds also for the purposes of offsetting costs,
- encouraging competition in the private sector, particularly with alternative regulation plans for service providers, and
- a state-private joint marketing effort inform the general public about the benefits of broadband access.

Many, if not all, correspondences have identified Vermont State Government as the primary policy actor relevant to the digital divide in this state. That would include many departments and agencies, not limited to:

- The Department of Public Service (DPS)
- The Public Service Board
- The Agency of Commerce and Community Development
- ...including the Department of Economic Development
- The Department of Information and Innovation (and Chief Information Officer)
- The Governor's Office

Through these many sub-actors, state government takes many actions relevant to the digital divide, including policy creation, regulation, resource allocation, and the facilitation of innovation.

Most state activity is directed at the goal of statewide broadband penetration. The motivation behind this goal is the great benefit to statewide economic development that would result from the realization of e-commerce, e-business, and e-government. Many executive orders and pieces of legislation cite how crucial broadband Internet access is to economic competitiveness and the business climate in Vermont.³ Similar language can also be found in the 2004 *Vermont*

³ Examples: 2003 Executive Order 3-45 (No. 03-03) of Vermont Governor James Douglas (title: Governor's Jobs Cabinet), 2003 Executive Order 30-7 (No. 15-03) of Vermont Governor James Douglas (titled: Statewide Telecommunications Advancement), and Vermont Act 31 of the 2003-2004 legislative session.

Telecommunications Plan: “There is a new consensus that telecommunications infrastructure and services are key supports of the present and future economy in Vermont...” (DPS, p. 1-1).

Vermont Telecommunications Plan and Universal Service

The *Vermont Telecommunications Plan* in its currency can be seen to represent, more than any other document, the State’s plans, intent, and action items relevant to the digital divide in Vermont. Exploration into the *Telecom. Plan* was supplemented by a 2004 phone conversation with Thomas Murray of the Vermont Agency of Commerce and Community Development.

A central tenet of the *Telecom. Plan* and Vermont telecommunications policy is *universal service*, “the idea that telecommunications service is so important to participation in society that everyone ought to have access to it” (DPS 2004, p. 5-1). The focus of universal service has traditionally been basic telephone services, of which the state largely has achieved its goal of providing to every Vermonter. The implication of this is that nearly every Vermont household can have access to dial-up Internet connectivity. However the new trend is to define higher-speed broadband Internet access as a basic service also to be covered by universal service efforts. The state currently estimates that 75.3% of Vermont’s population has broadband service available. The ultimate goal is 90% availability by 2007 and 100% by 2010.

The *Telecom. Plan* most directly addresses the digital divide when it lists serious barriers to the achievement of universal service. The barriers identified include:

- economic hardship,
- disability,
- geography (e.g. mountain ranges), and
- population density (in a market demand sense).

The plan details resources, strategies, and other tools that can be used to overcome these barriers and achieve universal broadband service. However the barrier that seems to garner the most priority is population density and market demand.

Building Infrastructure for Universal Service

The goal for physical infrastructure is “last mile” development – lines coming directly in to private homes – that is universally available and supports broadband Internet connection, regardless of rural-urban location (DPS 2004, p. 6-1). The problem is that market forces do not stimulate private investment in last mile development in rural areas. Areas with low population densities do not contain enough demand to make it economically viable for private sector infrastructure development or even for service providers to use that infrastructure to offer broadband access (Murray 2004).

Previous sections have discussed the strategies of digital divide-relevant actors that are engaged in broadband pilot projects and demand aggregation activities, namely the Vermont Broadband Council and the Vermont Council on Rural Development. These strategies are meant to inject areas of low population density with coordination, innovation, and activity to make the demand/cost ratios of infrastructure development and service provision more economically attractive to the private sector. The innovation aspect includes use of wireless broadband

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services to span rural distances while limiting the need for physical infrastructure. All of these activities are supported by the State and the *Telecom. Plan* (DPS 2004).

Barring the success of such strategies, it falls to forces outside the private sector to ensure that the desired rural infrastructure and service is developed. Previous sections have also discussed the North Link project of the Economic Development Council of Northern Vermont, which will use federal funds to build significant broadband infrastructure components in the state's northern rural areas. Outright building of infrastructure is something that State Government avoids. The high cost of such development and political implications of treading in the private sector realm are substantial barriers (Murray 2004). The State's primary strategy is to offset the high costs of private investment in rural infrastructure and service development with public resources.

Funds and Resources for Universal Service

There is a diversity of public funds and other resources that can be used to support (primarily financially) infrastructure development and other activities relevant to universal broadband service.

- There are many public grant funds that directly can be used for rural infrastructure and service development, including the Vermont Economic Development Authority's Technology Infrastructure Financing Program, the Community Development Block Grant program, and federal level Economic Development Authority grants. The *Telecom. Plan* also highlights the federal government's 1996 Telecommunications Act, which directs the Federal Communications Commission to supply relevant resources, including funding for rural independent telephone companies (DPS 2004).
- The Vermont Universal Service Fund (USF) is a program that has great potential to help offset costs of broadband infrastructure and service development in rural and other high cost areas. However it is currently used to offset costs for regular telephone service. The fund receives money collected from a charge levied on telecommunications services provided in Vermont – specifically, services provided by companies regulated by the Vermont Public Service Board (PSB). The PSB sets the rate of this charge, which is then imposed by companies upon their customers. One problem identified by the *Telecom. Plan* is that the jurisdiction of the USF is somewhat obsolete – Internet access services are not subject to the PSB's rate. If the USF jurisdiction was expanded to be more in line with telecommunications advances, the *Telecom. Plan* surmises, the State would be in a much better position to use the new money to as a large part of a state fund to support broadband in rural and other high cost areas (DPS 2004).
- 2004 was the first year of the Community Broadband Grant, administered by the Vermont Agency of Commerce and Community Development. This grant represents state support for demand aggregation and other pilot projects. In 2004 grant monies were awarded to four Vermont communities with the goal of providing last mile broadband connection services to each town in its entirety. The number of additional years that this grant will be available is not known. The hope is that there will someday soon be no need for it (Murray 2004).

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- The *Telecom. Plan* does not directly address tax credits, although it does advocate for lower taxes on telecommunications services and facilities overall (DPS 2004).

Relevant Regulatory Policies

The Vermont Public Service Board (PSB) is the primary regulatory body overseeing telecommunications service provision in the state. To benefit universal broadband service, the *Telecom. Plan* calls for changes and revisions to how (and if) the PSB uses the regulatory tools at its disposal. Regulation is not as powerful a tool as it once was for achieving public policy goals and maintaining affordability in the realm of telecommunications. The *Telecom. Plan* states that competition between service providers is now the primary driver of affordability and innovation. It advocates that, “in a marketplace that increasingly relies on competition over regulation to restrain prices, it is important to reduce barriers to competition in low-density [rural] areas” (DPS 2004, p. 5-6).

Traditionally Verizon and its predecessors have operated under heavy PSB regulation, in light of their former status as monopoly utility companies. However for the past five years, Verizon and the state have agreed to an *alternative regulation plan* (ARP) that allows the company to conduct business in a more competitive manner while still holding it to many of the public policy, quality, and affordability goals of the State. The effectiveness of the current ARP is now being evaluated. As a new ARP is agreed upon, the *Telecom. Plan* sees a great opportunity to heighten the priority of broadband service provision. It is not specific as to whether that priority would best be served by prescriptive obligations for Verizon or by allowing the company to operate in an even less regulated, more competitive manner (DPS 2004).

Verizon is the only company with an ARP, but the *Telecom. Plan* advocates the use of ARPs with all service providers in Vermont that may be reluctant to innovate and provide new services because they may come under more PSB scrutiny. This advocacy seems to be operating under the assumption that an increase in local service providers operation competitively will benefit the provision and affordability of broadband Internet access. The *Telecom. Plan* advocates for less stringent regulation of nondominant service providers in general, although it does list the following regulatory roles:

- ensuring fair and nondiscriminatory access to utility poles for infrastructure needs,
- being highly supportive of network upgrades, and
- supporting the participation of electric utilities as broadband access providers - a possible emergent technology (DPS 2004).

Outreach for Universal Service

The *Telecom. Plan* recognizes the need for education and outreach to inform the general public and businesses of the benefits of broadband Internet access, so that they will demand and adopt it (DPS 2004). In addition to its endorsement of organizations that engage in demand aggregation and other pilot projects, the plan touts the work of three programs:

- the Vermont Information Technology Center at Champlain College, which advocates for high-speed Internet access in Vermont;
- the Vermont Manufacturing Extension Center at Vermont Technical College, which provides information technology technical assistance to businesses; and

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- the Vermont Small Business Development Center, with similar programs for small businesses and start-ups.

However the only outreach effort that the *Telecom. Plan* advocates for direct state involvement is a joint state-private marketing effort to help Vermonters see the value of broadband access. The benefits of this effort would be to increase market demand and promote the state as a place where high-speed access is available (DPS 2004). There is no educational or direct technical assistance aspect to this idea that would be relevant to the digital divide, a point which is elaborated upon in subsequent sections of this paper.

Constraints on State Action and Policy

Other than high rural infrastructure and service development costs and the political implications of treading in the private sector realm, there is one other major constraint upon any action the State may take relevant to the digital divide: the federal government. While the 1996 Telecommunications Act is treated as a gateway to resources by the *Vermont Telecommunications Plan* (DPS 2004), federal policies and decisions can also limit the number of tools at the State's disposal or take away jurisdiction altogether.

One example is the federal moratorium on Internet service taxes, which was recently approved by Congress. Such a rule, while beneficial to service providers and customers in many ways, bars Vermont from using such a tax as a possible way of supporting a state fund for offsetting the costs of rural broadband infrastructure and service development (Dalrymple 2004). The ruling could potentially benefit Internet service provision in Vermont, but it also removes a potential tool from the State's use.

VI. Recommendations

Summary of Questions Answered:

1. Should digital divide efforts be focused on broadband Internet connections, rather than dial-up?

Yes, broadband is needed to benefit fully from the Internet, and equality efforts should keep up with technological advancements.

2. Who are the relevant actors, and what are their roles?

Those identified and contacted for this project should continue in their roles, with State Government as the primary policy actor.

3. What existing policies and activities should be continued?

No policies and activities highlighted in this project should be discontinued.

4. What potential policies and activities should be pursued?

- *The State should implement proposed policies in the 2004 Vermont Telecommunications Plan.*
- *The State should provide more support – financial and otherwise – to computer and Internet education and digital divide research to be carried out by the State, the actors identified in this project, and any other relevant organizations.*
- *State Government must provide more coordination, both within its agencies and departments and for efforts throughout the state. An open conference on the digital divide in Vermont should be convened.*
- *The State and other actors should identify and utilize programs to provide affordable, quality computer equipment for Vermont households and public facilities.*

5. Are there benchmarks for success? Can the digital divide be eliminated?

There will always be a digital divide of some sort, yet efforts to address and narrow areas of inequity should not cease. This makes the setting of benchmarks difficult, but some measures of success for the current situation could include:

- *The achievement of universal broadband service (availability) in Vermont.*
- *Data showing a lack of group inequity in household computer ownership, Internet connections, and broadband adoption.*
- *The creation of ongoing support for computer and Internet education and digital divide research in Vermont.*

The Focus on Broadband Internet Connections

The first recommendation is that all efforts toward universal broadband provision and the various activities that support it (e.g. demand aggregation) should continue. Digital divide efforts cannot end with dial-up Internet connections. The Internet is outgrowing dial-up, and there are substantial economic and educational implications for broadband inequities.

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1. High quality images, especially those with moving characteristics, take much longer to download over a dial-up connection. Even when this is not critical to page content, one must still consider the fact that the Internet is increasingly being funded by banner ads with these characteristics. It is a part-and-parcel aspect of the information age.
2. Movie and sound files, especially those being streamed live, are prohibitively large for dial-up connections. This is an educational and economic matter as well as an one of entertainment; broadband is necessary to access educational programs, remote learning opportunities, telecommuting office meetings, newscasts from around the world, and more.
3. Adobe PDFs and other static file formats prized for their security are very prevalent on the Internet. They are a standard form of information dissemination, and they can quickly become too big for dial-up to download expediently.
4. At the citizen's level, the issues above and others factor in together for the realization that broadband is necessary for telecommuting, learning at home, participating in government, and more.
5. At the statewide level, Vermont needs prevalent, affordable broadband available to all Vermonters in order to be a competitive and economically viable business climate. A lack of broadband will not be attractive to companies that need the high-speed connection. Neither will it be attractive to younger generations who have grown used to high-speed Internet at school and especially at college.

The benefits of broadband over dial-up are substantial enough to make inequities a matter of public policy. It is not fair that certain people should be less likely to have access to broadband because they are in a certain group. It is not fair that rural areas of the state should have less access to economic development than urban areas. And it would not be wise for Vermont to ignore broadband and high speed Internet as it positions itself in the national and global marketplace.

As a matter of principle, efforts toward equality must not settle for obsolete technology. Digital divide policies and activities must keep up with technological innovation. It is only fair for all Vermonters, regardless of income, location, etc. to have an equal chance to be an "early adopter."

Lastly, there is a yawning policy window for broadband at this time. This paper shows that broadband dominates the discourse inside and outside government. It would be regressive not to continue the efforts identified herein.

Relevant Actors and Their Roles

All of the actors identified – and especially those contacted – for this brief have relevant roles to play in addressing the digital divide in Vermont. The State of Vermont is the primary policy actor, the responsibilities of which are to lead in problem definition, assist in the coordination of efforts, formulate public policy, and provide funding and other types of support where they are lacking. Other non-governmental and private actors are in the position to act within their areas of specialization and provide regional knowledge and expertise for the implementation of various policies and activities.

Current and Proposed Policies and Activities

Universal Service and State Government

If affordable broadband access for all Vermonters should be the focus of digital divide policies, then the universal service paradigm will be an important piece of the puzzle. The state policies, tools, and other supported effort identified in the 2004 *Vermont Telecommunications Plan* represent a multi-faceted approach – one that includes public funding, regulation, competition, and supplements to market demand. If the State plans to achieve universal broadband service within a setting of ensured private competition, then it will need to implement regulations to provide direction and other tools to augment market demand and offset costs for the development of rural infrastructure and services. Alternative regulation plans must be negotiated with any eye to addressing the digital divide for lacking groups, and the financial sources for relevant state funding programs must be identified and secured.

Other Actors and Their Activities

Vermont benefits from a wide array of organizations whose missions and efforts are relevant to various aspects of the digital divide. Their existence should be continued. Provision for continued and additional State support for their activities should be explored.

The Need for Education and Research

It should be noted none of the State's policies and few, if any, of other actors' activities address the digital divide directly. Even though universal broadband service, in its ideal sense, would eliminate a divide in terms of availability, there is still the adoption factor: people will still need to understand how a connection to the Internet can benefit them and how to use it.

What is at play here is a skill factor and a choice factor. The skill factor is that, even under universal availability of computers and high speed Internet connections, there will most likely still be certain groups of people who do not have the knowledge and expertise to utilize them – there will still be a digital divide. The choice factor was highlighted in the previous section on Computer Ownership and Internet Connectivity in Vermont. The data shows that majorities of people who do not partake of computers and the Internet simply do not want to. Yet more research is needed here – would that hold true even if there were more outreach and education to help people understand the benefits of the Internet? Would people be more likely to choose to use them if they learned more about them?

The recommendation here is that there needs to be a stronger education and technical assistance piece to supplement work toward universal service. Primary funding and coordination for such efforts should come from the State. Provision of education and technical assistance should be carried out by State agencies and non-governmental and private actors, who are in the position to act within their areas of specialization and provide regional knowledge and expertise for the implementation of various policies and activities.

The same model should be replicated for digital divide research. Primary actors most likely would Vermont's colleges and universities, many of which are funded directly by the State.

The Need for Coordination

As the primary policy actor, State Government must lead by example. There has been cited a need for more coordination and empowerment of State agencies and departments, especially the new Dept. of Information and Innovation, to adequately address the digital divide in Vermont, much less any other prevalent information technology issues (Lane 2004). By doing so, the State will be in a better position to lead the coordination of policies and the activities of other relevant actors across the state. To facilitate this, a conference a digital divide conference should be convened in Vermont. This conference would accomplish multiple objectives:

1. allow relevant actors to acquaint themselves with one another,
2. provide an update on current policies and activities,
3. promote understanding of the nature of the digital divide in Vermont, and
4. be a venue for a discussion of solutions, objectives, resources, and roles.

Computers in Households

Preparation for this brief found no existing programs to provide affordable, quality computer equipment for Vermont households and public facilities. Quite frankly all efforts to address the digital divide will be for naught if there remain inequities in Vermonter's access to the necessary equipment. It can be assumed that such programs exist in the state. They must be identified, supported, and expanded by State Government and other relevant actors.

Benchmarks and the Solution to the Digital Divide

Unfortunately this brief cannot see an ultimate solution to the digital divide. With constant advancements in the Internet and telecommunications technology, it must be assumed that there will always be "haves" and "have-nots;" early, middle, and late adopters. Thus there will always be inequities along group lines. Perhaps the delineations will not always be along income, rurality, or the other factors we know of today. This is why continued digital divide research and education is crucial.

While likely unsolvable, the digital divide can be narrowed, in whatever form it manifests. Efforts to fully realize e-commerce, e-business, and e-government must constantly address digital divide issues. That in itself can be seen as a success, and in Vermont's current situation, this brief proposes the following benchmarks to aim for:

- The achievement of universal broadband service (availability) in Vermont.
- Data showing a lack of group inequity in household computer ownership, Internet connections, and broadband adoption.
- The creation of ongoing support for computer and Internet education and digital divide research in Vermont.

Only continuing digital divide research and education can provide such guidance for the future.

VII. List of References

This is a list of the publications, reports, data, and correspondences directly cited in the above text.

Publications and Reports

American Library Association (ALA). 2003. Digital Divide. Retrieved December 8, 2004, from <http://www.ala.org/ala/ourassociation/governingdocs/aheadto2010/digitaldivide.htm>

Birdsall, W.F. 2000. The Digital Divide in the Liberal State: A Canadian Perspective. *First Monday*, 5 (12) (December 2000), Retrieved December 8, 2004, from http://www.firstmonday.org/issues/issue5_12/birdsall/

Bolduc, V., Kessel, H., and Mahoney, E. 2000. *Pulse of Vermont: Quality of Life Study 2000*. Colchester, VT: Center for Social Science Research at St. Michael's College.

Dalrymple, M. (2004). Proposed Internet tax shut down by Congress. *Burlington Free Press*, 11/20/04.

Gilroy, A.A. and Kruger, L.G. 2003. *Broadband Internet Access: Background and Issues*. Washington, DC: Congressional Research Service, Library of Congress.

Kruger, L.G. 2003. *Broadband Internet Access and the Digital Divide: Federal Assistance Program*. Washington, DC: Congressional Research Service, Library of Congress.

Leighton, W.A. 2001. Broadband Deployment and the Digital Divide: A Primer. *Cato Policy Analysis*, 410: 1-34.

Lynch, B.P. 2002. The Digital Divide or the Digital Connection: A U.S. Perspective. *First Monday*, 7 (10). Retrieved October 7, 2004, from http://www.firstmonday.dk/issues/issue7_10/lynch/index.html#11

National Telecommunications and Information Administration (NTIA) and Economics and Statistics Administration (ESA). 2002. *A Nation Online: How Americans Are Expanding Their Use of the Internet*. Washington, DC: U.S Department of Commerce.

National Telecommunications and Information Administration (NTIA) and Economics and Statistics Administration (ESA). 2004. *A Nation Online: Entering the Broadband Age*. Washington, DC: U.S Department of Commerce.

Thierer, A. and Mast, L. 2002. Digital Divide Update: The Rhetoric Finally Matches the Reality. *Cato Institute TechKnowledge*, 33. Retrieved December 8, 2004, from <http://www.cato.org/tech/tk/020227-tk.html>

The Digital Divide in Vermont

Vermont Department of Public Service (DPS). 2004. *Vermont Telecommunications Plan*. Montpelier, VT: Vermont Department of Public Service.

Wilhelm, A.G. 2001. They Threw Me a Computer...But What I Really Needed was a Life Preserver. *First Monday*, 6 (4). Retrieved December 8, 2004, from http://www.firstmonday.org/issues/issue6_4/wilhelm/

Survey Data

The *Vermont Poll* is a telephone survey statistically representative of Vermont households. It is conducted annually, February through March, by the Center for Rural Studies at the University of Vermont. This project contains computer ownership and Internet Use data from the 2000, 2001, 2002, 2003, and 2004 polls. For more information, go to <http://crs.uvm.edu/surveys.htm>

Correspondences

Connolly, Maureen (Economic Development Council of Northern Vermont). November 8, 2004. Personal interview on the digital divide in Vermont.

Costello, Paul (Vermont Council on Rural Development). October 27, 2004. Personal interview on the digital divide in Vermont.

Davitian, Lauren-Glenn (CyberSkills/Vermont and CCTV). November 9, 2004. Personal interview on the digital divide in Vermont.

Elliott, J. Barton "Tony" (SoVerNet). November 29, 2004. Electronic mail correspondence on the digital divide in Vermont.

Hoffman, Jack (Vermont Broadband Council). October 30, 2004. Personal interview on the digital divide in Vermont.

Lane, Robin (Snelling Center for Government). October 25, 2004. Personal interview on the digital divide in Vermont.

Murray, Thomas (Vermont Agency of Commerce and Community Development). November 16, 2004. Telephone conversation on the digital divide in Vermont.