POLICY ALTERNATIVES SUPPORTING DEPLOYMENT OF BROADBAND SERVICES IN RURAL AREAS OF NEW YORK STATE

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EXECUTIVE SUMMARY[1]

Individuals and businesses without access to a high speed Internet connection have become largely disenfranchised. Full participation in the 21st century economy includes access to the services and opportunities of the World Wide Web.

Business firms use the Internet for communication with suppliers and customers, financial transactions and nearly every other aspect of their business operation. As web-based services are dramatically less expensive than the same service delivered in person or over the telephone, firms without broadband access often face higher business costs. Individuals confront similar challenges as service providers either move to "web only" service delivery or charge for services delivered by more traditional means. Even labor markets have moved from the pages of the local newspaper to the Internet, disadvantaging both job seekers and prospective employers who lack satisfactory access.

Access is Limited in Both Rural and Urban New York State

In rural parts of New York State, access is primarily hindered by broadband technology that is not cost effective outside concentrations of users (although more costly satellite technology is available nearly everywhere in the state). In urban areas, the access problem is primarily economic, not technological. Terrestrial broadband — cable, digital subscriber line (DSL) or both — is available in nearly every urban and suburban community. For many of the state's poorer residents, however, broadband access is simply unaffordable.

Recommendations

Empire State Development recommends that the Governor and the Legislature:

1. direct New York State agencies — particularly the Department of Public Service, the NYS Office for Technology and Empire State Development — to develop a statewide telecommunications policy that
   a. encourages the development of infrastructure supporting the expansion of broadband Internet in underserved regions of the State,
   b. stimulates competition among Internet service providers, thus reducing cost to both business and residential users, and
   c. expands free access to broadband Internet in public places such as libraries, schools and other public buildings.
2. develop programs and policies that encourage the aggregation of demand, thus improving the ability of providers to extend their networks in a cost-effective manner.
3. provide greater support to existing, proven programs such as Empire State Development's "Wireless Communities–Wired Buildings" Grant Program.

INTRODUCTION

Access to Broadband Internet in Rural New York

Internet in many rural areas is limited to dial-up — with connection speeds not exceeding 56 kilobits per second (Kbps) — or faster, but more costly, satellite service. Broadband[2] over cable or a digital subscriber line (DSL) is only available in population concentrations such as villages and larger hamlets. Businesses located outside these areas of relatively high density must either pay the higher cost of satellite service or manage their businesses without high speed access.

Residential access to broadband Internet also has economic consequences as the vitality of rural communities is strongly influenced by the characteristics of the resident labor force. The Government Accountability Office (GAO) reports that college graduates subscribe to broadband Internet at three times the rate of individuals with only a high school diploma. Individuals under the age of 50 subscribe to broadband at nearly twice the rate of older residents. Anecdotally, recent college graduates regard broadband as a "necessity" that will influence their location decisions.[3]

[1] Empire State Development was assisted in the drafting of this report by the Center for Govenmental Research, www.cgr.org

[2] Defined by the Federal Communication Commission as connection speeds of 200 Kpbs or more.

[3] Governmental Accountability Office, *Broadband deployment is extensive throughout the United States, but it is difficult to assess the extent of deployment gaps in rural areas*, p. 31, March 2006. See www.gao.gov

In rural areas, access to broadband can be more than just "keeping up." Advanced telecommunications services can address historic disadvantages of rural locations, improving their ability to compete with the urbanized world. Broadband can "level the playing field" between large and small communities and large and small companies because it provides ubiquitous two-way access to goods and services. Specific applications, such as telemedicine and online educational services, can dramatically improve the quality of life of rural residents.

Access to Broadband in Urban Areas

Access to high speed Internet is also limited in urban areas, although for economic, rather than technical, reasons. Apart from temporary promotional rates, the least expensive broadband service costs a residential user about $360 per year, a substantial sum for many poor families. This cost only covers access; effective use of the Internet requires a computer and other hardware and software.

Nor does a connection and computer guarantee true access as the "digital divide" amplifies differences in education and age. Thus divisions between rich and poor, educated and uneducated, rural and urban, young and old, are exacerbated by the dominance of computers and high speed Internet.

Broadband Enhances Economic Growth

Evidence supports the perception that access to advanced telecommunications services contributes to economic vitality. The Massachusetts Institute of Technology (MIT) and Carnegie Mellon University (CMU), working on behalf of the US Department of Commerce, tested the relationship between access to broadband and several indicators of economic growth and performance. Relative to comparable communities without broadband, communities with broadband in December 1999 experienced more rapid growth in employment, the number of businesses overall and businesses in IT-intensive sectors from 1998 to 2002. A tabular summary of the report's findings appears below.

Estimated Magnitude of Broadband's Impacts[4]

Economic Indicator	Result
Employment (Jobs)	Broadband added about 1.0-1.4% to growth rate, 1998-2002
Business Establishments (Proxy for Number of Firms)	Broadband added about 0.5-1.2% to growth rate, 1998-2002
Housing Rents (Proxy for property values)	More than 6% higher in 2000 in zip codes where broadband available by 1999
Industry Mix	Broadband added about 0.3-0.6% to share of establishments in IT-intensive sectors, 1998-2002 Broadband reduced share of small (<10 employees) establishments by about 1.3-1.6%, 1998-2002

The MIT/CMU study emphasizes that the observed growth rate differential is substantial. The "background" rate of job growth over the period for the comparison communities was just over five percent. Job growth in communities with broadband was about one fifth higher than in communities without broadband.

[4] National Technical Assistance, Training, Research, and Evaluation Project; Massachusetts Institute of Technology and Carnegie Mellon University (2006). *Measuring Broadband's Economic Impact.* See cfp.mit.edu

NYS Legislature Directs Empire State Development to Explore Policy Options for an Expansion of Broadband in Rural Underserved Areas

Recognizing the significance of broadband availability for economic growth, the NYS Legislature passed bills S2747-c/A.5633-C as Chapter 295 of New York State law on July 26, 2006. The legislation directs ESD to recommend programs and incentives to hasten the most beneficial and economical expansion and deployment of broadband services for economic development in rural underserved areas. The text of the legislation appears in Appendix A.

This report presents available evidence on the gap in broadband access between urban and rural areas of New York State and discusses different approaches to increasing broadband deployment in rural underserved areas. Possible policy measures were identified on the basis of interviews with stakeholders, a review of the literature and analysis of existing broadband policies in New York State and other states. Regional case studies and programs in place in other states are summarized in Appendices D and F.

MEASURING THE GAP IN ACCESS TO BROADBAND

Information on access to broadband in rural areas of New York State is incomplete. In March 2007, New York's Department of Public Service (DPS) issued a review of the technical issues underlying the expansion of broadband and summarized existing sources of information on the current distribution of broadband access within the State.[5] The DPS report is included as Appendix I (attached).

As the great majority of New Yorkers live in urban or suburban areas, most have ready access to broadband Internet. The GAO conducted a nationwide survey in 2005 indicating that 28% of American households subscribed to a broadband service, 42% of all households owning a computer.[6] Only 17% of rural households reported a subscription to broadband, however. Based on a survey of residential telephone subscribers conducted in August 2006, DPS reports that 85% of New York State households had access to broadband Internet at that time wit 54% purchasing the service.

Data on geographic coverage are more limited. The FCC uses lists of current subscribers to identify zip codes with at least one broadband subscriber. These data indicate that only 1% of New York's zip codes lacked any broadband providers in 2005. Four percent had only a single provider, much less than the 11% reported for the nation as a whole. The weakness of the FCC measurement, however, is acute in rural areas where zip code areas are quite large. Most zip codes contain at least one concentration of residential households with sufficient demand to have spurred either the development of cable service or the capital investment necessary for telephone's Incumbent Local Exchange Carriers (ILECs) to offer DSL service.[7] Many businesses and residences are outside that concentration, however.

A comparison between the FCC figures and a more comprehensive survey is provided by Kentucky. ConnectKentucky conducted an extensive analysis of broadband deployment and concluded that 77% of households had access, a significantly smaller share of the total than the 96% of households in a zip code with at least one broadband subscriber.[8] Clearly there is a need for better information about the availability of broadband.

Access to Broadband in Rural NYS: Survey of Low Density Towns

The findings of national studies of rural access were largely confirmed through a telephone survey conducted by Empire State Development. In brief, broadband Internet is available in at least one location in most communities in rural New York. A more comprehensive assessment of access gaps — i.e., an accurate estimate of households without access — requires a much larger effort.

ESD staff developed a list of town and village clerks, libraries and school districts for 339 New York towns with a population density of 50 persons per square mile or less. Survey results represent 88 different towns, a response rate of 26%.

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[5] See NYS Department of Public Service, *Staff Report on the Universal Broadband Issue, March 12, 2007.* www.dps.state.ny.us

[6] GAO op cit, p. 11.

[7] a telephone subscriber must be no more than 15,000-18,000 feet (2-3 miles) from a provider's central office switch to be able to take advantage of DSL service at that location. The distance is reduced where the copper telephone lines are old or in poor condition.

[8] GAO op cit, p. 17

At Least Three Quarters of Respondent Towns have Broadband Access Somewhere in the Community

Seventy-four percent of respondents (town or village clerk, library or school) reported having a terrestrial broadband subscription at their location. Eighty-five percent of respondents indicated that at least some of the residents in their community have access to terrestrial broadband (either DSL, cable or both). As answers to the second question ("Does anyone in your community have access to DSL, cable or both?") are more speculative than the first ("Do you subscribe to DSL, cable or both at this location?"), these figures may be regarded as lower and upper bounds.

Of the 42 libraries responding, 40 reported broadband access and all reported providing access to the general public. Thirty-five (83%) reported that access was limited to between 10 to 30 hours per week with the remainder providing longer access. Only nine communities reported the presence of an "Internet caf ."

In summary, based on the 26% of towns responding to the survey, between 74% and 85% of rural communities with fewer than 50 people per square mile do have access to either DSL or cable Internet in at least one location in the community. Libraries provide public access as hours permit.

Foundation Exists for Expanded Public Access

From a policy perspective, this suggests that some form of municipal broadband may be feasible, as there is at least one access point for terrestrial broadband in each community. Furthermore, public libraries in rural New York appear to have made access to the Internet a priority and might be able to expand access with additional financial assistance from the State of New York.

Caveats about the Survey

There may be systematic non-response bias in this survey. As this was conducted by telephone, the towns not included in the response group either did not answer the telephone on repeated attempts or did not return messages left on answering machines. It is plausible that non-respondents were disproportionately concentrated in communities with a lower overall level of broadband access. The true proportion of low-density communities with access to broadband may be less than the 74% to 85% reported here.

The population density of respondent towns, 30 persons per square mile, was not markedly higher than that of non-respondent towns, 27 persons per square mile. Thus while the true proportion of towns with some form of broadband access may be lower than what is reported here, the difference is not likely to be substantial. Towns in 30 of New York State's 62 counties were included in the group of respondents.

STRATEGIES FOR INCREASING ACCESS TO BROADBAND IN UNDERSERVED RURAL AREAS

New York is not alone in its concern about access to broadband in rural areas. The federal government and many states are attempting to resolve the same challenges confronting the Empire State. Although the problem is arguably confined to a relatively small proportion of the state's population, the affected communities already find themselves at a competitive disadvantage in the global economy.

Broadband Internet service providers have extended their networks as far into rural areas as expected service revenue makes profitable. In the absence of some reduction in the cost of extending networks or an increase in expected revenue, continued expansion of the broadband network will be slow.

Anticipated Advances in Technology Will Reduce Barriers to Access

Advances in technology will continue to lower both technical and economic barriers to the dissemination of broadband Internet. As the number of alternatives increases, competition can drive down the price of broadband access.

The Promise of New Technology

New technologies, many long discussed, may lower barriers to network extension in sparsely populated areas. Broadband over power line (BPL), for example, remains a tantalizing alternative, although technical obstacles remain. In 2006, the National Association of Regulatory Utility Commissioners (NARUC) engaged the Electric Power Research Institute (EPRI) to conduct an industry survey on the current state of BPL development.[9]

[9] National Association of Regulatory Utility Commissioners, February 2006. See www.naruc.org

Wireless alternatives are falling in price and increasing in signal strength and range. The most common Wi-Fi networks (802.11.b) operate at 11 Mbps within a range of about 25 meters. New standards such as 802.11g with MIMO (multiple-input multiple-output) can increase speeds nearly tenfold (exceeding the 100 Mbps transmission rate of wired Ethernet) and quadruple the range. The 802.11n standard improves speed and range yet further.

Worldwide Interoperability for Microwave Access (WiMAX) has a range of as much as 30 miles in a "line of sight" environment, although the effective range in many installations would be much less. Proponents are optimistic that it is ready for widespread application—the GAO reports that 150 trials are underway. The cost of implementing WiMAX remains uncertain as the technology has yet to mature.

Third generation (3G) cellular networks (such as the EV-DO networks used by Verizon and Sprint and HSDPA marketed by AT&T) provide wireless broadband at slow DSL speeds (400-700 Kbps) over a cell phone signal. With a range of about 15 miles from a cell phone tower, these networks are expanding rapidly in urban areas. Yet as rural areas often lack cell phone coverage, 3G is not a solution for many communities.

Terrestrial Broadband & Satellite Remain Best Hope for Rural Areas

Rural access to broadband still relies largely on conventional terrestrial solutions such as cable (coaxial and fiber optic) or copper telephone wire (DSL). Given the cost of extending cable and the fact that many rural households are too far from their ILEC's central office to permit DSL, growth will continue to be slow.

Although considerable attention is paid to terrestrial broadband, satellite service is already available throughout the state from multiple providers. Satellite has three disadvantages: First, the monthly service cost is higher—for comparable speed — than either DSL or cable. Second, the "latency" involved in satellite service (the delay created by the distance traveled by the signal) makes satellite service less effective for some broadband applications such as voice-over-internet-protocol (VOIP) and computer gaming. Third, the installation cost per household is much higher than what DSL or cable users would pay to attach to an established network. Yet when the network does not exist, the cost per household for cable or DSL can be far higher. The cost of new cable installation, for example, is about $20,000 per mile. Even if a mile of new cable connects ten new users, the $2,000 per household is far higher than the $500-600 charged by the satellite providers. A table of service costs is included in Appendix H. As a "threshold" value, any policy measure encouraging terrestrial broadband that would cost more per connection than satellite service is not economically sound.

As an example, the U.S. Department of Agriculture's Rural Utilities Service (RUS) program (see Appendix E) provided grants of $9 million in 2005 to 19 communities that average 194 households. The cost per covered household (not all of whom would become subscribers) was $2,443, much higher than the roughly $600 per household for satellite installation.[10] This would not seem to be a cost-effective use of public funds when a more affordable solution is available.

Solutions Must Increase Effective Demand or Reduce the Cost of Supply

Public programs to improve broadband access must address one side or the other of the market equation: Public dollars or public initiatives must either

- Increase the *effective demand* for broadband internet, thus making new investment by providers profitable, or
- Increase the *effective supply* by reducing the cost of extending or creating broadband networks, perhaps through direct subsidies or tax credits to providers.

I. Conduct Broadband Assessment and Develop Strategy

As noted in the previous section, information about the prevalence of terrestrial broadband within New York State is incomplete. At this time, there is no formal inventory of areas in the state that are believed to be underserved, although a map of areas likely underserved can be found below (see Appendix G). For this reason, a thorough assessment of the existing broadband infrastructure would be useful and would help form the basis for a broadband strategy.

[10] GAO op cit, p. 40.

A broadband access study was completed by the Southern Tier Central Economic Development Board (encompassing Schuyler, Steuben and Chemung counties). With support from Empire State Development and the Appalachian Commission (administered by the NYS Department of State), the project developed a regional broadband inventory and documented existing access to the counties' telecommunications network. Similar assessments could productively be carried out in other regions or statewide.

II. Improve Demand Conditions for Broadband Providers in Rural Underserved Areas

The principal reason for lower deployment of broadband services in rural areas is the sparse distribution of potential users. Without a threshold concentration of demand, for-profit vendors cannot justify the incremental capital investment necessary to make these services available, e.g. the necessary upgrade to a central office switch (DSL service) or necessary coaxial or fiber optic wiring (cable service).

Thus, even if the cost of actual service delivery can be covered by ongoing service revenue, the initial cost of infrastructure deployment can render service in some low density areas economically unfeasible. Where the financial return is marginal, even the marketing expense required to assemble sufficient customers may be enough to render expansion unprofitable.

Lower the Cost of Broadband Access to Selected Potential Users

Public programs may reduce the cost of broadband access through grants, loans and tax incentives to individuals, businesses or community groups. Several states already have such programs in place. For some of these existing programs, only school districts, higher learning institutions, libraries and hospitals can apply for grants. Other programs are also open to businesses and residential customers. Existing programs providing funds for purchasing broadband access include Vermont's Community Development Broadband Grant Program and Technology Infrastructure Financing Program, Kansas' Broadband Subsidy Program and Pennsylvania's Broadband Outreach and Aggregation Fund.

Provide Technical and Financial Assistance to Communities & Other Demand Aggregators

Municipalities can play a role by aggregating demand in areas with relatively low population density and in negotiating service extension with providers. In some cases the municipalities may choose to sponsor a community solution, e.g. one based on a wireless solution such as WiMAX. The State can provide technical and financial assistance to municipalities seeking to negotiate provision of services for residents through public-private partnerships or to encourage the aggregation of demand. An example of an existing program is Pennsylvania's Broadband Outreach and Aggregation Fund. This fund provides grant assistance to qualified applicants that will implement outreach programs addressing the benefits, use and procurement of broadband services.

Establish a Bona Fide Retail Request Program

Pennsylvania's "Bona Fide Retail Request" program is designed to provide more access for rural underserved areas of the state. If 50 retail customers or 25% of retail access lines in a community (whichever is less) request broadband service and commit to at least one year of such service from the participating provider, then service must be provided within 365 days. Such a program could increase broadband deployment in rural New York without using tax money. The public sector can negotiate the terms and procedures of such a plan with providers.

Stimulate Broadband Deployment by State or Local Government Acting as an Anchor Tenant

The State can stimulate broadband deployment to private users by acting as an anchor tenant in a rural underserved area. A state network developed to serve state agencies plus additional public and community facilities such as schools or hospitals serves as a "core subscriber," enabling the private provider to expand the infrastructure to other customers and businesses. State policy may also aggregate the broadband demand of either public or private sector users, creating the economies of scale that enable suppliers to justify extending its infrastructure.

Increase Availability of Public Access Through Libraries, Schools & Local Government Facilities

As the ESD survey of low density towns demonstrates, public facilities, particularly libraries, already provide public access to broadband. Access to these connections could be expanded. Alternatively, access at a library could serve as the source for a signal to be distributed on a wireless network within a hamlet or village.

Encourage the Use of Satellite-Based Broadband

When terrestrial service is not feasible, information and assistance could be provided to encourage the use of satellite-based broadband. Satellite broadband has improved in performance and pricing, and must be recognized as a viable option in some of the most remote areas of the state. Satellite services have the advantage of access to broadband that is ubiquitous and independent of cable and Digital Subscriber Line (DSL) connections.

Installation and equipment costs are around $500-600 per customer site, and the monthly rates are slightly higher compared to cable and DSL (see Appendix H). A subsidy for satellite installation and equipment costs could increase rural broadband connectivity in underserved rural areas.

Again, satellite service can be used as a signal source for distribution on a wired or wireless network to hamlets or rural villages.

Extend the "Wireless Communities–Wired Buildings" Grant Program

Empire State Development's "Wireless Communities-Wired Buildings" Grant Program improves access to high-speed broadband service through both hard-wired and wireless modes of transmission, as well as encouraging the redevelopment and rehabilitation of older commercial structures.

The "Wireless Communities" component targets development of affordable, wireless broadband services covering a downtown district, industrial park or community-wide settings, including rural access. The "Wired Buildings" component targets incubators and non-Class "A" buildings that meet project requirements and stand the best chance of reaching full occupancy once "wired" by offering a facilities profile attractive to IT businesses. In 2006, $2.5 million in matching grant funds was allocated. (Maximum grant for wireless projects is $200,000; wired buildings projects, $75,000). The future focus of the program should be development of community wireless broadband systems.

The major goal of this program is job creation, retention and attraction. This is accomplished through expanding access to affordable wireless broadband services and "wired" workspace. The wiring of unutilized or under-utilized buildings enhances the State's ability to retain its high-tech college graduates, risk-taking entrepreneurs and companies graduating from incubators. A longer-term objective of providing broadband connectivity is the development of Information Technology Districts: areas of related enterprise and customer-client relationships.

Since the program's inception in 2001, the first four rounds committed over $5.4 million to 74 projects across the state, leveraging more than $41 million in matching investment. In Round Five, 21 Wireless Communities grant applications were received, requesting almost $2.8 million in grant funds and leveraging an additional $4.5 million in matching investment. Of the 21 grant applications, 16 propose rural wireless broadband projects.

As the "Wireless Communities–Wired Buildings" Grant Program has been successful in stimulating investment and expanding broadband services, extending the program and increasing the pool of funding could help hasten broadband deployment in rural areas.

Encourage Increased Demand for Broadband Internet through E-government Initiatives

The state can promote broadband usage by providing online content and applications that require, or are enhanced by, broadband access. As citizens begin to rely more heavily on e-government applications, the increased demand for broadband will put pressure on suppliers to deploy broadband. Examples of e-government applications are allowing citizens to make online appointments or offering voice, video and Internet connections to government facilities in each county.

Encourage Local Government Use of Broadband Applications

States can make broadband applications available for government usage, promoting efficient delivery of government services and providing incentives for public-sector access to broadband that will help to stimulate supply. Examples of such applications include distance learning at public schools and colleges and telemedicine programs that allow state hospitals and clinics to serve citizens in remote locations.

Establish Statewide Franchise for Internet Service Provision

The current system of video franchising compels cable operators to negotiate separate franchise terms with each local government. The local franchise system is defended as facilitating the development of franchise agreements that are tailored to the needs of each community — and provide local governments with bargaining power to ensure universal coverage and provide other benefits to the local community. But local franchising may also slow the extension of networks and prevent or delay cost effective extensions of cable internet. A bill providing for statewide franchise has been proposed by Assemblyman Richard Brodsky and Senator James Wright. Specific provisions of the bill — particularly around the question of build-out requirements — have met with mixed response by stakeholders.

III. Provide Financial Incentives to Broadband Providers for Deployment in Rural Underserved Areas

Financial incentives can help lower the economic barriers hindering rural broadband deployment. Telecommunications service providers have already assessed their service territories in the state and decided where to invest in broadband infrastructure. Areas that have not seen deployment by 2006 are likely to remain unserved without some economic stimulus.

While modest financial incentives cannot be expected to offset the significant capital costs for providers involved in extending broadband to the most remote portions of New York State, such incentives could "tip the balance" toward profitability in many communities. The following incentives targeted at hastening rural broadband deployment in underserved rural areas are possible.

Grant Direct Subsidies to Providers

Modest direct subsidies of service expansion (central office switch enhancement for DSL or cable extension for cable internet) would help stimulate the expansion of the broadband network, bearing in mind that the per-household cost of satellite should serve as a "ceiling" for the efficient level of subsidy.

Grant Property & Investment Tax Credits to Providers

Tax incentives could trigger providers to extend their networks into marginal service territories. Such incentives could include property tax credits and broadband infrastructure investment credits. However, broadband investment tax credits must be tailored to require investment in underserved rural areas before other broadband investment credits can be accessed.

NYS legislation proposed in the last legislative session addressed these issues:

- Assembly bills A.3087 and A.3943 proposed tax credits for providers of broadband service in targeted rural underserved areas (Appendix B);
- Assembly & Senate bills A.11070/S.7167 proposed property tax exemptions for the deployment of fiber optic cable (Appendix B). To stimulate development in underserved areas, the bill language might be revised to authorize such fiber optic and broadband-related investment tax credits only after rural underserved areas have received similar broadband infrastructure investment. The cost of the exemption is estimated to be about $30 for every $1,000 spent on fiber cables.

RECOMMENDATIONS

Empire State Development recommends that the Governor and the Legislature:

- Direct New York State agencies — particularly the Department of Public Service, the NYS Office for Technology and Empire State Development — to develop a statewide telecommunications policy that:
  - encourages the development of infrastructure supporting the expansion of broadband Internet in underserved regions of the State.
    - » Such a strategy would provide support for new technology, exploring state policy alternatives that would stimulate the expansion of wireless technologies in both urban and rural communities, including WiMAX and support for wireless and satellite combinations. In addition, the agencies named should work to identify barriers to expansion of existing technology and ways for NYS to help in overcoming these barriers.
  - stimulates competition among Internet service providers, thus reducing cost to both business and residential users. NYS policy should encourage policies that promote cost effective service by more than a single provider.
  - expands free access to broadband Internet in public places such as libraries, schools and other public buildings. Access to broadband in many rural and urban areas is technically possible but economically difficult. Already widely available in libraries, expanded hours and more sites would improve access to broadband Internet for rural residents without cable or DSL who cannot afford satellite service or urban residents who similarly are unable to bear the cost of a high speed connection and the hardware and software required to take advantage of it.
- Develop programs and policies that encourage the aggregation of demand, thus improving the ability of providers to extend their networks in a cost-effective manner.
  - An expansion of private sector service provision can be enhanced by programs that facilitate the aggregation of demand within sparsely population regions.
- Provide greater support to existing, proven programs such as Empire State Development's "Wireless Communities–Wired Buildings" Grant Program.

CONCLUSION

Access to broadband Internet in rural areas is limited as a consequence of low population density and is limited in urban areas as a consequence of cost. Barring a dramatic technological breakthrough, financial incentives can make a difference. In many rural areas, ongoing service revenue may be adequate to cover the marginal cost of service provision, yet the initial investment is prohibitive. Public programs can "tip the balance" either by aggregating demand or by defraying the capital cost of supply. Finally, the public sector can take a leadership role in the expansion of broadband through education, demonstration and technical assistance.

APPENDIX A: CHAPTER 295 OF THE LAWS OF 2006

Many rural areas in New York State still lack access to broadband services, prompting the NYS Legislature to pass bills S2747-c/A.5633-C as Chapter 295 of New York State law on July 26, 2006. The legislation directs the Department of Economic Development submit recommendations to hasten the most beneficial and economical expansion and deployment of broadband services for economic development in rural under served areas. The text reads as follows:

> *" The Department of Economic Development, in consultation with the Department of State, the Department of Public Service, the State Office of Technolog, and representatives from other agencies and private industry, as necessary, shall recommend alternative financial and other incentives and programs to hasten the most beneficial and economic expansion and deployment of broadband services in support of rural economic development in underserved rural areas of the state. In making such recommendations, the Department of Economic Development shall consider the utilization and expansion of existing federal, state and local programs and capacities and private sector deployments to the extent practicable. The department shall prepare and submit, on or before January 1, 2007, its recommendations to the Governor, Temporary President of the Senate, Speaker of the Assembly and minority leaders of the Senate and Assembly."*

The purpose of Chapter 295 is to "advance the best methods for deployment and expansion of broadband access in support of economic development in underserved rural areas." Definitions of the terms "broadband," "underserved" and "rural areas" are provided below.

Broadband

Empire State Development adopted the definition used by Federal Communications Commission (FCC): connections supporting over 200 kilobits per second (Kbps) in at least one direction. The terms "broadband" and "high-speed Internet" are used interchangeably in this report.

Rural Area

For our purposes, the term "rural" includes very low population density areas with serious obstacles for broadband deployment. Areas with a population density of 50 persons or less per square mile are considered "rural."

Underserved

Underserved areas lack access to a single, terrestrial high-speed broadband service provider.

APPENDIX B: NYS LEGISLATIVE BILLS ON RURAL BROADBAND ACCESS

The table on the page following summarizes bills from the 2005-06 session on the deployment of broadband access.

Tax Credits

A.3087 and A.3943 provide tax credits for providers who deliver broadband services to rural, underserved areas and to educational customers, and for providers who deliver next-generation broadband services to any residential subscriber. The purpose of these bills is to "provide incentives to ensure that all citizens of New York State have the ability to gain timely and equitable access to the Internet over current and future generations of broadband capability. This legislation will accelerate deployment of current generation broadband access for users located in certain low income and rural areas and to accelerate deployment of next-generation broadband."

Property Tax Exemptions

S.7167 and A.11070 provide property tax exemptions for fiber optic cable used in the deployment of broadband technology. The bills encourage faster deployment of broadband services, especially in rural areas. The property tax exemption would start at 100% and would be gradually phased out until completely phased out in the 13th year.

Grants for County-Level Telecommunication Assessments

A.2001 and S.3055 provide match-based grants to county-level economic development organizations that are conducting telecommunication assessments and requires the DPS to conduct a study of the state's high-speed Internet infrastructure. The purpose of the grants is to determine the need for high-speed Internet access and to draft an inventory of the kinds of technologies available in each county.

Creation of the New York State Broadband Development Authority

A.5663 would establish the New York State Broadband Development Authority. During the roundtable on Telecommunications Access on May 30, 2002, one highlighted potential solution to the barriers to telecommunications access in NYS was emulating Michigan's Broadband Development Authority. The Authority would offer low-cost loans to telecommunications companies willing to make broadband investments and offer organizations low-cost financing for the acquisition of hardware/software applications that will improve or increase their use of the services. This recommendation logically follows concerns expressed by stakeholders that a central repository of broadband information & resources needs to be developed.

Table of Legislative Bills on Rural Broadband Access

Bill Number	Sponsor	Date	Summary of Bill	Fiscal Implications
A2001/S3055	Morelle/Alesi	January 24, 2005/ March 4, 2005	Provides match-based grants to county-level economic development organizations that are conducting telecommunication assessments for such county; requires the department of public service to conduct a study of the state's high-speed Internet infrastructure.	$3 million
A3087	Morelle (MS)	January 31, 2005	Create a tax credit to providers for qualified expenses of current- and next-generation broadband. The current-generation broadband tax credit will be 10% and the next-generation broadband 20% of the qualified expenditures for providing Internet access services to rural or underserved subscribers, or any residential subscriber in the case of next-generation broadband.	Not yet determined
A3943	Espaillat (MS)	February 7, 2005	Create a tax credit to providers for qualified expenses of current- and next-generation broadband. The current-generation broadband tax credit will be 10% and the next-generation broadband 20% of the qualified expenditures for providing Internet access services to schools,	Not yet determined
A5663	Morelle (MS)	February 25, 2005	Creates the New York State Broadband Development Authority, which offers low-cost loans to telecommunications companies willing to make broadband investments and offers organizations low-cost financing for the acquisition of hardware/software applications that will improve or increase their use of broadband services.	Not yet determined
S7167/ A11070	Wright/Morelle	March 29, 2006/ May 2, 2006	Telecom businesses that deploy fiber optic cable used in the deployment of broadband technology are eligible for a property tax exemption based on the value of the fiber optic cable. The exemption is 100% for the first 8 years with a phasing out in 20% intervals until it is completely phased out in year 13.	Delay in payment of real property taxes, estimated at $30 for every $1000 spent on fiber cables.

APPENDIX C: RECOMMENDATIONS OF STAKEHOLDERS

During six outreach sessions, input from key stakeholder groups was received. The listing below summarizes the key comments, by stakeholder group.

Cable Telecommunications Association of New York, Inc.

1. Create a statewide telecommunications policy.
2. Develop Requests for Proposals for areas where market fails, which will allow telecommunications companies to compete and address rural broadband concerns.
3. Municipalities should partner with 2-4 telecommunications/cable companies that have the expertise to construct (and maintain) networks.
4. No duplication for areas already served.
5. Determine how to increase revenues and offset expenses to encourage changing the economic model for building to 20 homes per mile or less.

Regional Development Agencies

1. Provide incentives to communities, rather than to service providers, to ensure better services.
2. Provide access to the Shared Municipal Services Incentive Program.

New York Farm Bureau

1. Expand the definition of "universal service" to include high-speed Internet access for purpose of taking advantage of the FCC Universal Service Fund.
2. Continue, in some form, the Advanced Telecommunications Access Task Force, whether through establishing an Office of Telecommunications Access, a working group of the various agencies involved with telecommunications that can provide coordination or some other similar solution.
3. Allow phone customers to voluntarily contribute funds for bridging the rural divide through the use of a "donation" option on each phone and cable bill issued in the state. These donations would be forwarded on to ESD's existing telecommunications grant program.
4. Obtain more state funding through appropriations or a voter-approved bond act for the development of local high- speed Internet access programs.
5. Make statutory changes to allow various public entities to participate in telecommunications access initiatives. for rural areas.
7. Utilize public/private demand aggregation to obtain more cost effective high-speed Internet service in remote areas.

New York State Telecommunications Association, Inc.

1. Tax policies should be adopted to lower the overall cost of building infrastructure and providing telecommunications services. These include:
   a. Reduction of the Section 186 tax rates applicable to telecommunications;
   b. Expansion of sales tax exemptions to cover additional network items;
   c. Property tax waivers, including waivers for new investment in outside plant equipment such as fiber optics;
   d. Institution of investment tax credits and tax deferral programs;
   e. Conforming state tax rules to national, uniform sourcing rules for tax purposes; and
   f. Revising the tax treatment of bundled telecommunications services.

2. Regulatory policies must reflect current competitive realities and must be adjusted to make New York State competitive in attracting investment, including:

   a. Enacting a statewide franchise process for provision of video services;

   b. Reducing the regulatory oversight of Incumbent Local Exchange Carriers, including the disproportionate regulation of small carriers operating in the state; and

   c. Elimination of "royalty" policies that deter diversification.

ECC Technologies

1. Establish formal process for updating and using of GIS technology.
2. Focus on technology-based economic development.
3. Establish a telecommunications committee responsible for long-term telecommunications policy direction for the region.
4. Leverage K-12 Gigabit network.
5. Develop telecommunications competition through aggregation of demand.
6. Give incentives to communities, not to service providers.

APPENDIX D: LOCAL AND REGIONAL CASE STUDIES

Local and regional programs consist mostly of creating municipal wireless networks or aggregating demand among county telecommunications users. For a more comprehensive list of municipal wireless networks and their operating models, see the Federal Trade Commission Report of September 2006.[11]

Finger Lakes Regional Fiber Infrastructure Project

The Finger Lakes Regional Fiber Infrastructure Project is managed by the Finger Lakes Regional Telecom Development Corporation (TDC) and consists of fiber optic cable installed throughout the region. The project will serve as a foundation to support technologies capable of providing the "last mile" deployment throughout the entire region. The project will also provide the backbone infrastructure to establish fiber-to-the-business, fiber-to-the-home and Wireless Community initiatives. The proposed project will interconnect:

- County facilities
- Town and village offices
- Schools
- Colleges
- Health care facilities
- Fire stations
- Public safety facilities
- Communications towers
- Larger industries
- Economic development sites (current and anticipated)

Qualified contractors operating in the region will be contracted to design, build, operate and maintain the infrastructure. A business plan has been completed and anticipated revenues from the project should be capable of meeting operating costs, as well as repayment of debt. Anticipated cost of the project is $7.5 million, which includes a 5% contingency for the 180 miles of fiber to be built and leased segment by segment with a final proposed infrastructure consisting of three diverse rings. Operational costs are projected at $460,000 per year.

[11] Federal Trade Commission, Municipal Provision of Wireless Internet, September 2006.

Ontario County has authorized $2.5 million in initial funding for 12 strands: $1 million will be pre-paid by the county and $1.5 million will be in the form of a loan. The remaining $5 million would be gained from revenues from leased fiber.

The project was designed using the following assumptions and principles:

- fiber will be open to everyone for lease;
- fiber will touch all municipalities (including police, fire and communications towers);
- backbone dark fiber infrastructure only - no services (thus no competition with the private sector);
- TDC to manage the infrastructure with private sector contractors building, operating and maintaining the infrastructure; and
- funding from public sector grants, revenue bonds (20-year) and lease revenues.

The Open Access Telecommunications Network of Northern New York

As part of the region's economic development efforts, the Development Authority of the North Country (DANC) was charged with building a 400-mile fiber optic facility and network throughout Jefferson, Lewis and St. Lawrence counties. Called the Open Access Telecom Network of the North Country (OATN), DANC's mission was to create a public, shared infrastructure that is available on an equal access and open basis, laying the foundation for future growth. The new network allows multiple carriers to tap into the infrastructure and extend a variety of services to the region. DANC received more than $9 million in funding for the telecommunications project from New York State, the New York Power Authority and the U.S. Department of Commerce.

The OATN consists of 550 miles of optical fiber in rural northern New York, and 10 Points of Presence (POPs) containing the electronic and optical equipment that powers the network. The OATN includes a Point of Presence at the regional carrier hotel in Syracuse, facilitating interconnection with major regional and national service providers.

The OATN, which began operations in January 2005 as a wholesale transport network, provides telecommunications circuits to local and long distance carriers, ISPs, data services providers, and cable/TV companies. These companies provide retail services to businesses and other consumers in the region. Eight private sector companies have signed contracts to operate on the OATN.

Benefits

Local telecom service providers that utilize the OATN are offering higher value services to business and residential customers that weren't previously available. For example, within one week of completing the network, an incumbent service provider in the region launched DSL services that had previously been unavailable.

The OATN was constructed on the campuses of Jefferson Community College, SUNY College of Technology at Canton, SUNY Potsdam and Clarkson University. The colleges, individually and collectively, are developing new applications for delivering educational programs and for supporting their students and staff with greater access to the Internet. The OATN, in cooperation with the St. Lawrence Lewis BOCES and the Jefferson Lewis BOCES, constructed gigabit Ethernet services to all school districts in the three counties of Northern New York. These services have allowed local school districts and regional BOCES to offer more efficient and cost effective training programs for teachers as well as other volunteer organizations (e.g., firefighters) that would have had to travel to conduct training. Opportunities are now available for enhanced telemedicine uses, and the public broadcasting network has been able to cut over to a digital format.

An example of private sector benefits include Alcoa, which has connected two northern New York aluminum smelting operations (10 miles apart) via the OATN to improve the efficiency of data, videoconferencing, security and telephone systems. Also benefiting from the OATN is Northern Radiology, a medical imaging company that connected three remote sites with the regional medical center, achieving both cost savings and a higher quality of patient care.

The OATN has been in full operation since January 2005 and has run at a 99.999% in service rate with 100% customer satisfaction.

Funding

The nearly $19 million OATN has been developed through strong public-private partnerships. The project has the full support of New York State, which provided $6.25 million in grant funding. The U.S. Department of Commerce Economic Development Administration provided an additional $3.0 million in grant funding. The high level of grant funding allowed the authority to leverage $9.4 million in private financing from Manufacturers & Traders Bank.

Difficulties

Because of the facilities-based infrastructure, the authority was required to enter into licensing agreements and perform make-ready engineering and construction on over 14,000 existing utility poles to make pole lines ready to accept additional fiber infrastructure. The difficulty came in managing the costs and time-lines associated with completing this phase, without having the control over management of the utility companies that owned the poles. This phase of work had to be completed before cable construction could begin. Leveraging relationships with all utilities allowed keeping the project on schedule and on budget.

According to OATN staff: "The greatest resistance came from private telecom carriers. The statewide telecommunications association opposed publicly-funded telecom networks, declaring them unfair competition, and actively lobbied against the project. The largest private telecommunications company in the state, and their unionized workforce, conducted a very high-profile campaign (locally and in the state capitol) to stop the project. However, their own service record, and lack of next-generation offerings muted their protests about our network. Ultimately, agreements with seven carriers to provide elements of the network were reached, which allowed for a farther-reaching and more cost-effective system. The statewide telecom association also modified their stance to support public network funding, as long as the network operations didn't compete at the retail level."[12]

Berkshire Connect

Berkshire Connect, Inc. was incorporated in February 2000 after three years of working as a community to create an advanced telecommunications landscape that would offer affordable and reliable high-capacity broadband services throughout Berkshire County, located in Western Massachusetts.[13] Prior to the creation of Berkshire Connect, the cost of high-speed Internet connectivity was two to three times the price of connections in New York, Boston and other metropolitan areas. Pricing in the county was dependent upon the size of the customer as well as their geographic location.

By aggregating demand among county telecommunications users, over 50 large and small businesses, hospitals, schools, and nonprofit organizations now receive competitively-priced services and equal pricing throughout the county, regardless of geographic location or size, from the facilities-based preferred providers of Berkshire Connect: Global Crossing Telecommunications and Richmond NetWorx.

Berkshire Connect supports projects aimed at greater broadband deployment. Such projects include the Underserved Communities Pilot Project, the collaborative effort of Berkshire Connect and Pioneer Valley Connect to explore how to bring affordable, replicable broadband to un-served and under-served communities in Western Massachusetts; and the Berkshire Wireless Learning Initiative, a pilot program developed in Berkshire County to evaluate a 1:1 approach of using laptop computers and wireless communication in area middle schools to transform teaching and learning.

In conjunction with the Underserved Communities Pilot Project, a comprehensive assessment was conducted of the existing broadband availability in Western Massachusetts communities. From this database, one can determine which communities have little or no broadband access.

Colorado Wireless Communities

In April 2006, the Cities of Arvada, Broomfield, Boulder, Lakewood and Thornton launched the Colorado Wireless Communities (CWC) to evaluate the feasibility of deploying an affordable community wireless broadband network to improve the efficiency of government, promote digital inclusion and stimulate economic development. The Colorado Wireless Communities members anticipate accomplishing these goals through a competitive procurement process aimed at securing private partner(s) to fund, build, own and operate a region-wide network.[14]

[12] Sources: Nortel, 2005, *Broadband Connectivity Revitalizes Communities – Case Study Development Authority North Country*; and The Computerworld Honors Program, 2006, www.cwhonors.org/case_studies/developmentauthorityofthenorth.pdf

[13] www.bconnect.org/about.html

[14] www.coloradowirelesscommunities.com

APPENDIX E: FEDERAL PROGRAMS TARGETED AT RURAL BROADBAND ACCESS

USDA Rural Broadband Access Loan and Loan Guarantee Program

The Rural Broadband Access Loan and Loan Guarantee Program is designed to provide loans for funding, on a technology-neutral basis, the costs of construction, improvement and acquisition of facilities and equipment to provide broadband services to eligible rural communities. The Program's goal is to ensure that rural consumers enjoy the same quality and range of telecommunications services that are available in urban and suburban communities.

This $2 billion loan program is nationally competitive and open to cooperatives, municipalities, not-for-profit organizations, limited dividend or mutual associations, limited liability companies, Indian tribes and commercial organizations. The loan must be used to build or maintain broadband infrastructure (wired or wireless), have a minimum amount of $100,000, and have a population under 20,000 residents.[15]

Rural Development Community Connect Grant Program

To encourage "community-oriented connectivity," the Rural Utilities Service of the Department of Agriculture provides grants to eligible applicants who will deploy broadband transmission service in rural communities where such service does not currently exist. The broadband service should connect all critical community facilities such as local schools, education centers, libraries, hospitals, health care providers, law enforcement agencies, public safety organizations, fire, and rescue services, as well as residents and businesses. To be eligible for a grant, a community center which provides free and open access to area residents must be established. Grants will be made available, on a competitive basis, for the deployment of broadband transmission services to critical community facilities, rural residents and rural businesses and for the construction, acquisition, expansion, and/or operation of a community center which would provide free access to broadband transmission services to community residents for at least two years. Funding is also available for end-user equipment, software, and installation costs.[16]

APPENDIX F: STATE PROGRAMS TARGETED AT RURAL BROADBAND ACCESS

Numerous states have existing programs to accelerate the deployment of broadband services. While it is impractical to list every state program targeted at acceleration of deployment of broadband access, a brief description of some of the available programs are summarized below.

State of Ohio: Appalachia Broadband Initiative

The Appalachia Broadband Initiative in Ohio is a two-year program to evaluate and coordinate the process for expanding access to high-speed Internet access in underserved areas of the Ohio Appalachian region.[17] The project is intended to help grow the economic development of that area by working to level the playing field for businesses through improved access to the Internet. The objective of the Appalachia Broadband Initiative is two-fold:

- working with the region's businesses and community leaders to develop a greater understanding of the economic capabilities and opportunities high-speed access can create for the region.
- working with local providers of high-speed Internet access to increase availability. When private providers are absent or disinterested, evaluate the potential to leverage state infrastructure to meet the demand.

[15] United States Department of Agriculture. See www.usda.gov/rus/telecom/broadband.htm
[16] United States Department of Agriculture. See www.usda.gov/rus/telecom/commconnect.htm
[17] State of Ohio, Ohio Office of Information Technology. See www.oit.ohio.gov

Commonwealth of Kentucky: ConnectKentucky

ConnectKentucky coordinates the planning, funding, deployment and adoption of high-speed Internet and related technology at the local level. The initiative is charged with supporting the technology planning efforts of Kentucky's executive branch, the Kentucky General Assembly and local community leaders. Additionally, ConnectKentucky:

- provides technology consulting and research for Kentucky companies, communities and government entities that are implementing the technology expansion plans;
- provides a centralized source for government affairs and policy planning related to technology-based economic development;
- maintains a strategic alliance of technology-minded companies, universities and government entities to share knowledge, ideas, and resources and to communicate on issues that impact Kentucky's technological competitiveness; and
- works to identify, recruit, and support entrepreneurs and technology-based companies to Kentucky.[18]

Commonwealth of Pennsylvania

Broadband Outreach and Aggregation Fund

The Broadband Outreach and Aggregation Fund (BOAF) in Pennsylvania provides grants to qualified applicants for outreach programs addressing the benefits, use and procurement of broadband services. It also provides seed grants to aggregate customer demand in communities with little or no service so that the providers can respond to the new demand for services in a more timely fashion. Eligible applicants for BOAF grants are political subdivisions, economic development entities, schools, health care facilities, businesses and residential customers. Grant applications from providers of telecommunications services are explicitly not accepted. The BOAF is capped at $5 million per year. For FY06-07, approximately $2.8 million is made available.[19]

Bona Fide Retail Request Program

Pennsylvania implemented a "Bona Fide Retail Request Program," which was developed and implemented by participating Incumbent Local Exchange Carriers to focus demand and aggregate requests for services. If advanced services are not currently available in an area, the program allows for a submission of a written request for services. If 50 retail customers or 25% of retail access lines in a community (whichever is less) request the same or comparable service, and commit to at least one year of service from the participating provider, then service must be provided within 365 days. Verizon, Embarq (a spinoff from the Sprint/Nextel merger) and Windstream (a spinoff from the Alltel/VALOR merger) have established programs.[20]

State of Vermont

Community Development Broadband Grant Program

Vermont's Community Development Broadband Grant Program provides up to $50,000 to communities to develop broadband infrastructure. The provisions of the grant require that each town have a downtown or center location, provide last mile connections through wired or wireless means to all residents in that service area, and offer a fixed price for service to all residents. For 2006, the grants are up to $50,000 with a total appropriation of $200,000. The grants encourage the use of public-private partnerships to deploy broadband throughout the state of Vermont.[21]

Technology Infrastructure Financing Program

Through their Technology Infrastructure Financing Program, Vermont provides low-interest government loans to build, install or update technology and communications infrastructure. The loans are available for businesses; not-for-profit organizations including municipalities, regional development corporations and educational institutions; and broadband providers.[22]

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[18] Commonwealth of Kentucky, ConnectKentucky. See www.connectkentucky.org/about/

[19] Pennsylvania Department of Community & Economic Development, June 2006, *Broadband Outreach and Aggregation Fund, Program Guidelines*. See www.newpa.com/default.aspx?id=200

[20] ibid. See See www.newpa.com/default.aspx?id=240

[21] Vermont Broadband Council, www.vtbroadband.org/sources_of_financing

[22] Vermont Economic Development Authority. See www.veda.org

State of Georgia: Broadband Rural Initiative to Develop Georgia's Economy (BRIDGE)

Georgia established a fund of $5 million to provide grants for publicly-owned infrastructure based on the number of rural counties receiving new or enhanced high-speed broadband services. The goal of the program is to ensure the availability of broadband connections in every Georgia community.[23]

Not limited to rural areas, the Wireless Communities Georgia Program managed by the Georgia Technology Authority has $4 million available to help finance wireless development in at least three communities. Local and state government agencies are expected to be "anchor tenants" of the wireless network.

State of Kansas: Kan-ed Broadband Subsidy Program

Kan-ed is an initiative encouraging collaboration among the K-12 schools, higher education institutions, hospitals and libraries. Kan-ed awards grants under its Broadband Subsidy Program. In early August 2004, grants of up to $4,000 were issued to 356 Kansas school districts, higher learning institutions, libraries and hospitals in 99 counties statewide. The purpose of Kan-ed's Broadband Subsidy Program is to help grant recipients upgrade to high-speed Internet access. This program aims to provide every school, library, hospital and institution of higher learning in the state the opportunity to benefit from the many online resources available.[24]

State of Idaho: Rural Broadband Investment Program

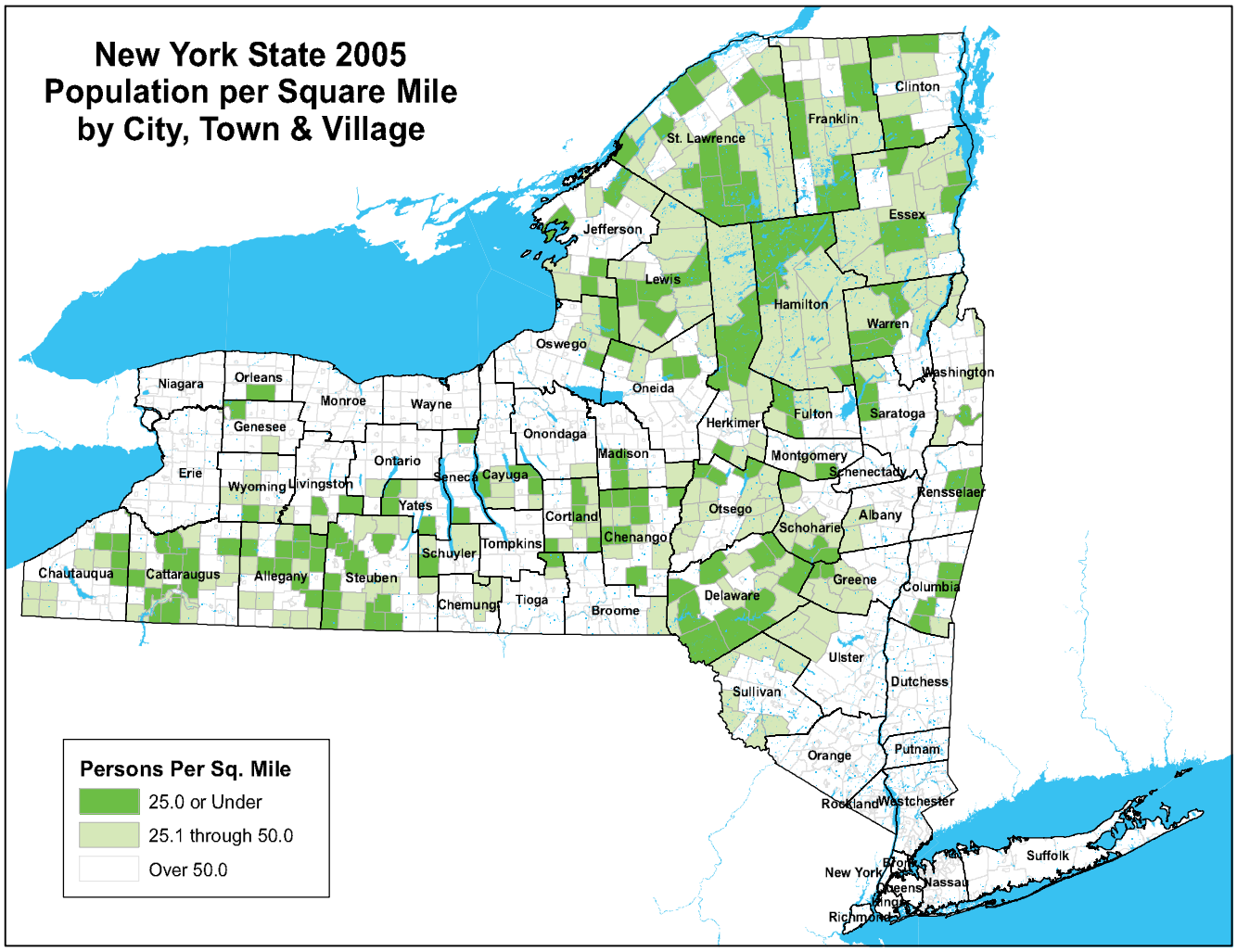
The Rural Idaho Broadband Investment Program developed by the Legislature during the 2006 session offers grants of up to 50 percent of the cost of projects that will provide broadband Internet service to potential new customers in rural areas of the state. The grants of this $5 million program are capped at $1 million for any specific project on a cost-reimbursement basis. Under this program, four companies were awarded grants for extending broadband access to rural communities. Combining these state-funded grants with the dollar-for-dollar cash match from the companies, $9.8 million investment will finance 79 projects that will allow the companies to serve more than 50,000 potential new subscribers. The grants will enable companies to provide affordable broadband service to rural communities by reducing up-front costs to the point that rural extensions are economically viable.[25]

State of Alaska: Rural Broadband Internet Access Grant Program

Alaska submitted an application to the U.S. Department of Agriculture for a $7.5 million grant that would establish a sub-recipient grant program titled Rural Alaska Broadband Internet Access Grant Program. This program aims to provide economic, employment and educational opportunities to some of the most isolated and economically depressed areas of rural Alaska. Telecommunications carriers or cable operators capable of providing broadband Internet service in rural Alaska will be eligible to apply for grants. These grants will provide up to 75% of the funding required for projects that would expand broadband Internet service into rural Alaskan communities currently without local dial-up Internet access or broadband service. Moreover, broadband Internet service has to continue for at least two years at affordable rates, comparable to rates paid by residents of Anchorage, Fairbanks and Juneau.[26]

[23] OneGeorgia Authority. See www.onegeorgia.org/bridge-web/
[24] State of Kansas Board of Regents. See www.kan-ed.org
[25] Idaho Department of Commerce and Labor, cl.idaho.gov
[26] Regulatory Commission of Alaska, www.state.ak.us/rca/broadband/program.html

APPENDIX G: NYS TOWNS AT RISK OF LIMITED BROADBAND ACCESS



APPENDIX H: COST OF SERVICE FOR BROADBAND INTERNET

In communities not connected to a cable network and where DSL service is unavailable as well, satellite service is available (provided there is a clear view of the sky). Since broadband is available through satellite for practically everybody, it is important to distinguish between availability and affordability of broadband service.

Since the term "affordable" is subjective, we provide data on broadband pricing for businesses and residents in the tables below. Generally, the monthly fee for satellite broadband service is higher than the monthly fee for cable broadband with similar speeds. In addition to the higher monthly fee, substantial initial equipment and installation costs accompany satellite broadband, in the range of $450-$600 per customer site. This means rural areas without cable and DSL access experience higher costs for broadband access when compared to urban areas.

However, satellite broadband service should not be ignored, as it can be initiated in a shorter time frame (4-5 days) as compared to terrestrial broadband, where construction can take 1-2 years for build out.

Terrestrial & Satellite Broadband

Broadband Costs for Residential Service			
Provider	**Type**	**Speed in Kbps (down/up)**	**Cost/month**
EarthLink	Cable (Albany area)	up to 768 up to 5000 up to 8000	$29.95 $41.95 $72.95
Road Runner	Cable	5000/384	$44.95
EarthLink	Dish	up to 700	$69.95
WildBlue	Dish installation: $179.95; equipment: $299.00	512/128 1000/200 1500/256	$49.95 $69.95 $79.95
HughesNet	Dish installation: $199.99; equipment: $399.99	700/128 1000/200 500/256	$59.99 $69.99 $79.99
Verizon	DSL	768/128 3000/768 3000/256	$49.95, 1yr term $69.95; 1 yr term $42.99, month to month
EarthLink	DSL	1500/128 3000/768 6000/256	$29.95-$39.95 $34.95-$44.95 $39.95-$44.95
Windstream	DSL	256/128 1500/384 3000/384 6000/384	$24.95 $29.95 $34.95 $39.95
Webjogger	DSL	512/512	$59.95

Broadband Costs for Business			
Provider	**Type**	**Speed in Kbps (down/up)**	**Cost/month**
AT&T	Small Office DSL	768/128 1500/384	$46.71 $49.95
	Business Class DSL	192/192 768/768 384/384 1100/1100 1500/1500	$149.95 $188.96 $199.95 $244.96 $279.96
EarthLink	Small Office DSL Plus	1500/768 3000/768 6000/768	$89.95* $99.95* $114.95*
* Not all speeds are available at all locations. Maximum speed is based on distance from the central office of the local telephone company.			
EarthLink	Business DSL	144 192 384 768 1100 1500	$129 $139 $199 $289 $349 $399
Verizon	DSL	768/128 dynamic IP 3000/768 static IP 3000/768 dynamic IP 7100/768 static IP	$24.95 $39.95 $79.95 $199.95
SpeakeasyDSL	DSL	192 384 768 1100 1500	$109.95 $149.95 $199.95 $249.95 $289.95
Webjogger	DSL	512/512 1000/1000 dynamic IP 1000/1000 static IP	$69.95 $89.95 $159.95
Starband	Dish, Small office-equipment: $299	1024/256	$129.99

Worldwide Interoperability for Microwave Access (WiMAX)

Because WiMAX is a relatively new technology and has not been adopted on a large scale yet, little is known about the costs. Early adopters will pay a premium; as usage increases, prices could fall substantially.

APPENDIX I: DEPARTMENT OF PUBLIC SERVICE STAFF REPORT ON UNIVERSAL BROADBAND ACCESS

(See following document.)

The Universal Broadband Initiative

Introduction

High-speed broadband service is a significant technological development of the late 20th century. Broadband can provide access to many opportunities in education, healthcare, public safety, and communications, and can also enhance economic development. Governor Spitzer's State of the State message recognized that "access to affordable, high-speed broadband is just as important in today's economy as access to a paved road, to a telephone line or to reliable electricity" and provided for a Universal Broadband Initiative "to ensure that every New Yorker has access to affordable, high-speed broadband."

This report summarizes the development and penetration of broadband services in New York. It notes that while everyone does not have access to broadband, the vast majority of citizens and businesses do (from more than one provider, in most cases).

The Public Service Commission (the Commission) considered broadband in its generic telephone competition proceeding (Competition III Proceeding or Comp III), where it agreed that "…broadband is an increasingly valuable tool with a variety of social, political, and economic applications, [and that it remained] convinced that competitive markets are the best tool to ensure appropriate widespread deployment."[1] The Commission also concluded that "because broadband services are already available to the majority of New Yorkers, with prices declining

[1] Case 05-C-0616, Proceeding on Motion of the Commission to Examine Issues Related to the Transition to Intermodal Competition in the Provision of Telecommunications Services, Statement of Policy on Further Steps Toward Competition in the Intermodal Telecommunications Market and Order Allowing Rate Filings, (Issued and Effective April 11, 2006), p. 76.

and the number of customers steadily increasing, it is not yet clear that governmental intervention is needed to achieve ubiquitous access to broadband."[2]

The universal broadband initiative requires that we reevaluate this paradigm. Most importantly, we need to be more exact about penetration levels and identify citizens and businesses that do not have access to broadband. That seemingly simple question is not easily answered inasmuch as most of the data describe access in terms of geographic areas (for example zip codes) and not residences or customers. In addition an evaluation of access to the service must also consider affordability. Very expensive satellite access for example, may not be a reasonable alternative for many citizens.

In addition, a broad set of additional issues related to the role of government must be considered. Rural areas may never generate revenues sufficient to encourage businesses to provide service, so some role for government may be warranted. Policy goals need to be explicit. Universal service hasn't been achieved for telephone customers, so there's some question about whether that goal is reasonable for broadband. An evaluation of existing approaches for providing universal access to broadband should be undertaken in the near term (such as whether further encouragement of broadband access over electric utility power lines is reasonable).

Whether access should be subsidized – and how -- is also an issue. One possibility is to fund broadband access through the State General Fund. An alternative approach is to create a regulatory subsidy through general rates or surcharges. This approach may require resolution of jurisdictional issues.

Creation of a multi-agency broadband task force should be considered to evaluate these issues. The task force could be charged with, among other things, proposing resolution of the access and affordability issues discussed above.

Broadband Defined

For purposes of this report broadband refers to high-speed Internet access services. Initially the primary means to access the Internet was through a dial-up connection using a standard telephone line. This dial-up connection offered data transmission speeds of up to 56 kilobits per second (Kbps). By the late 1990s broadband access became available to the residential market through the introduction of cable modem and Digital Subscriber Line (DSL) services. There are a number of significant differences that distinguish a dial-up from a broadband connection. The primary difference is the speed of the connection, or the rate at which data is transferred both upstream (from the consumer to the Internet) and downstream

[2] Id.

(from the Internet to the consumer). Higher speed broadband connections allow consumers to receive information much faster and enable certain applications to be used and content to be accessed that is not possible with a dial-up connection. Broadband connections also provide the capability for a connection to always be on, eliminating the need to establish a connection each time a consumer goes online.

The Federal Communications Commission (FCC) generally defines a broadband connection as one that exceeds data transmission speeds of 200 kbps in one or both directions. Internationally, the Organization of Economic Cooperation and Development (OECD) defines broadband as having transmission speeds of at least 256 kbps in one or both directions.

Service Offerings

Many consumers have a variety of broadband connection alternatives available to them:

- **DSL:** Local telephone companies offer digital subscriber line service. DSL is provided over traditional copper telephone networks and can provide broadband service with download speeds that range from less than 1 Mbps to 3 Mbps. Newer DSL technologies, which can achieve even higher speeds, have been deployed in some areas.

- **Fiber**: Verizon recently introduced a "fiber optics to the premises" product under the brand name "FiOS" that is designed to deliver high-speed Internet, video and telephone services through a fiber optic network connection directly to the home. Such services are being deployed in several areas of the state and can offer very high-speed data services.

- **Cable Modem:** Cable television companies first began to provide broadband Internet service in the mid-1990s. One of the industry's first deployments was in Elmira, NY in 1996. Cable modem service, which provides typical download speeds of upto 6 Mbps, is now widely available throughout all regions of New York State. Cable companies are also introducing tiered services which offer considerably higher speeds of up to 30 Mbps.

- **Wireless:** Wireless networks can offer a variety of broadband connections. The most prevalent wireless broadband connection is through Wi-Fi networks. Wi-Fi provides broadband access in "hot spots" or areas approximately 300 feet from a transmitter. Hot spots are commonly found in cafes, hotels, airports and offices. Developing technologies, such as WiMAX, may provide wireless broadband service over a much broader area, of up to 30 miles from a transmitter. Wireless telephone companies that provide traditional cell phone service are also beginning to offer wireless broadband access. These services allow customers access to the Internet through mobile phones or laptops wherever a provider supports the service.

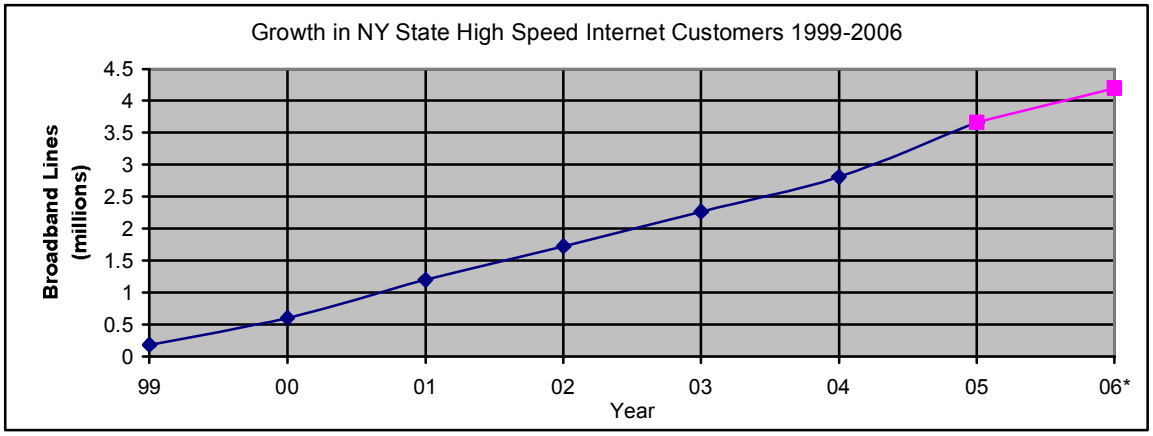
- **Satellite:** There are a number of satellite service providers that offer nearly ubiquitous broadband service in the United States. These providers

use geosynchronous satellites that transmit and receive data directly to and from subscribers. Signals from these satellites can be accessed as long as a user can position a reception dish with a view of the southern sky. Therefore, there may be limits based upon where the satellite dish can be located on a property. Satellite companies provide both upstream and downstream connections with speeds that are comparable to some wireline connections. The price for satellite service is generally higher than most other broadband technologies.

The Deployment of Broadband

The Current State of High-Speed Internet Service

The FCC collects detailed data regarding broadband Internet service availability from all providers which, when combined with similar data resulting from analytical efforts of the Department of Public Service (DPS), describes the status of broadband services provided within New York:



Source: Years 1999-2005 - FCC Broadband Data, Total High-Speed Internet lines; Year 2006 is a DPS estimate based on prior trends. Actual FCC data for 2006 is expected by mid-summer 2007.

Of particular relevance is the estimated potential number of users, which in the case of residential users is the number of actual occupied households which choose to purchase high-speed broadband service. US Census data indicate that in 2005 there were 7,114,431 occupied residences in New York State. According to the FCC data 3,130,657 residences were purchasing high-speed Internet services during the same period. This is a "take rate" of about 44% of all occupied homes within New York State as of the end of 2005. It is estimated that less than 85% of all New York residences actually have a computer that is new enough (less than 10 years old) to make full use of a high-speed Internet service. Therefore, as of December 2005 approximately half of all of the households with high-speed Internet capable computers in New York State were purchasing high-speed Internet service. As of December 2006, it is likely that more than 50% of the New York State households are purchasing broadband service.

Providers of Broadband Service

As of the end of 2005, there were approximately 75 companies providing high-speed Internet service, using one of several different technologies, within New York State. Cable modem service continues to be the largest provider and most widely available type of high-speed Internet service. Within New York, FCC figures for December 2005 show high-speed data is provided to business and residential customers via the following technologies:

Cable Modem	2,444,565
DSL	889,169
Fiber	28,566
Traditional Wireline	16,403
Fixed Wireless	438
Total High-Speed	3,660,501

Source: FCC High-Speed Internet Data as of December 2005

The FCC data also show that, at the end of 2005, 97% of all New York State residences had access to high-speed cable modem Internet service. That data also indicates that 87% of residences had DSL available from the local phone company. These two provider technologies account for over 91% of all high-speed Internet service.

During late 2006 the Department conducted a statewide survey of residential wire-line customers. An estimated 85% of the survey respondents subscribe to both high speed Internet service and cell phone service or are aware of the availability of both services. The survey also found that 54% of the respondents were subscribers of high speed Internet service.

Detailed provider information on the reach of broadband technology into rural areas is not readily available. The FCC uses the number of different high-speed Internet providers serving the percentage of U.S. postal zip code areas in a state as a means of determining availability. The FCC's use of this simple method implies that the more providers in a zip code, the more available and competitive the service is. The presence of one or more service providers within a zip code area is a positive indication of some degree of broadband service availability; conversely, zero providers clearly indicates that no service is available in that area, which is most likely rural. The December 2005 FCC data indicate that New York has the following broadband providers by percentage of zip codes served:

New York State Compared to National Average

Percent of Zip Codes Served by Number of High-Speed Service Providers

Providers	0	1	2	3	4	5	6	7	8	9	10+
New York State	1%	4%	10%	13%	13%	10%	7%	6%	6%	6%	25%
National Avg.	**1%**	**11%**	**12%**	**15%**	**14%**	**10%**	**8%**	**6%**	**5%**	**4%**	**21%**

Source: FCC High-Speed Internet Data December 2005

Within geographically diverse states like New York, areas represented by a zip code can vary widely. Zip code data provides an idea of the availability of broadband in an area but isn't granular enough to show whether everyone in a particular area in the zip code has a service available to them. Still, this data is useful and, absent detailed specific area studies, it can be assumed that beyond the zero provider level some level of service should be available in a given area. An accurate assessment however, requires detailed area-specific data. It is very important to note that this data does not represent satellite based high-speed Internet services which are universally available in all areas of New York and most other states.

Comparison to Similar States

New York can be reasonably compared with the nation's five most populated states since they each have a mix of large urban and agricultural or remote rural areas. Comparisons with states of dissimilar population density, size or non-diverse geography could give misleading indications.

A useful comparison between these states is the total number of customers who choose to purchase broadband services. One way to look at this is to review the total number of high-speed Internet lines per occupied household. The table below shows that of the five states in the study, in 2005 New York ranked second in the number of high-speed Internet lines per occupied household. It is also significant to note that New York State with .4400 high-speed Internet lines per household is significantly above the National average of .3865 high-speed Internet lines per household. This represents a penetration rate of 44% for New York compared to a national penetration rate of 38%.

Population Rank	Geographic area	Comparison of Five Largest States With Diverse Geography				
		US Census Population 2005*	Occupied Households 2005*	High-Speed Residential Internet Lines Dec. 2005**	High-Speed Residential Internet Lines per Occupied Household Dec. 2005	Rank Based on High-Speed Residential Internet Lines per Occupied Household
Nationwide	**United States**	**296,410,404**	**111,090,617**	**42,938,142**	**.3865**	**-**
1	California	35,278,768	12,097,894	6,135,685	.5072	1
2	Texas	22,270,165	7,978,095	2,978,965	.3734	4
3	New York	18,655,275	7,114,431	3,130,657	.4400	2
4	Florida	17,382,511	7,048,800	2,997,216	.4252	3
5	Illinois	12,440,351	4,691,020	1,672,730	.3566	5

* Source: U.S. Census Bureau – 2005 American Community Survey Data
** Source: FCC High-Speed Internet Data as of Dec. 2005

In low-density areas, cable and telephone providers may not have enough customers per mile of outside plant to allow for recovery of capital costs. Cable companies, for example, have a cost of construction of about $20,000 or more per mile. Thus, in an area of five homes per mile, plant construction can cost $4,000 or more per home. In the lowest-density remote areas, a provider may not be able to generate enough revenue to support the annual maintenance, pole rentals and operating costs of serving customers. Nevertheless, most of New York's rural communities have continued to see modest improvements in broadband availability from providers who have been willing to invest capital in broadband even where population densities are marginally profitable. This is evidenced by cable companies such as Time Warner, which has extended, and rebuilt lines, and has interconnected smaller rural cable systems. Likewise, telephone companies such as Frontier have been extending the reach of DSL by deploying improved DSL technology. For the most rural locations, the cost of satellite Internet service has continued to decline and performance has improved to match DSL Internet service performance. Even with evolution in broadband technology, expansion into very low-density population areas will not be easily achieved. These low-density areas will likely not generate adequate revenues to recover capital or operating costs of landline broadband infrastructure, and may lose money for providers of this service. Satellite providers are apparently able to recover their costs at their current pricing levels for even the lowest density single case user. Wireless approaches may hold promise in low-density regions as well.

Regulation and Policies

The Public Service Commission: Jurisdiction

There are essentially two methods for offering broadband: those services offered by a cable company over a cable modem, and those offered by a wireline telephone company whether by copper wires (DSL) or by fiber optic lines (FiOS). Under the New York Public Service Law, the Commission has jurisdiction over both types of companies, and, unless pre-empted, over Internet access services offered over the companies' lines. Thus, whether the Commission retains jurisdiction depends on whether regulation of the specific broadband service has been classified by the FCC as an "interstate" service, whereby state jurisdiction is subject to federal preemption, or an "intrastate" service, where necessary, the state remains free to impose regulation.

The FCC has classified broadband offered over a cable modem as an "interstate information service,"[3] thus subjecting Commission regulation of this service to federal preemption. The FCC has also classified broadband over telephone wireline facilities as an "information service"[4] and did not disturb its earlier finding that Internet access via DSL facilities is jurisdictionally interstate.[5] Therefore, the FCC has subjected all state regulation of wireline broadband Internet access services to federal preemption.

The Public Service Commission: Initiatives

The Commission has taken a number of actions, either directly or indirectly, during the past decade related to and regarding broadband access.

Cable System Rebuild Initiatives

During the 1980s and early 1990s, initial cable franchise agreements were expiring and municipalities and Cable Companies were experiencing their first round of franchise renewals. Generally speaking, by that time cable system deployments in New York were ahead of national deployment trends. With construction activity increasing exponentially at the time outside the state and initial in-state construction activities winding down after the initial surge, the New York State Commission on Cable Television (the Cable Commission, which was merged with the Public Service Commission in 1995) was concerned: (1) that rapidly rising cable revenues

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[3] Inquiry Concerning High-Speed Access to the Internet Over Cable and Other Facilities, *et. al.*, GN Docket No. 00-185, Declaratory Ruling and Notice of Proposed Rulemaking, 17 FCC Rcd 4798 (2002) (emphasis supplied).

[4] Appropriate Framework for Broadband Access to the Internet over Wireline Facilities, *et. al.*, CC Docket No. 02-33, Report and Order and Notice of Proposed Rulemaking, 20 FCC Rcd 14853 (2005).

[5] GTE Telephone Operating Cos., GTE Tariff No. 1, GTOC Transmittal No. 1148, CC Docket No. 98-79, Memorandum Opinion and Order, 13 FCC Rcd 22466, 22480 (1998).

generated by the state's large and growing subscriber base would be diverted to deployments outside of the state; and (2) the resulting lack of investment in systems within the state would cause those systems to lag technologically.

Consequently, the Cable Commission devised an informal policy of reserving long-term (e.g. 10 year) renewal approvals for franchisees that committed to an immediate reinvestment of revenues toward system rebuilds guaranteeing a minimum capacity of 550 MHz. By the early 1990s, with further advances in cable system technology and large increases in available service offerings, most companies were voluntarily committing to guarantee a minimum capacity of 750 MHz or more.

The benefits of that policy continue to the present time, as cable systems in New York were poised at a level of technical capability which allowed seamless engineering and deployment of digital broadband technology, as well as high-speed Internet and digital voice services. As a direct result, these advanced services have been made available throughout the state and to a much wider subscriber base ahead of most other states.

2003 Rural Broadband Study

A 2003 study mandated by the Legislature found that there were 250,000 DSL lines in service and 1.15 million cable modem customers in New York.[6] The study evaluated the various factors involved in the deployment of high-speed broadband services and the unique problems that may apply to the state's less populated rural areas. The study recommended the creation of an advanced services Rural Access Task Force to be charged with evaluating the potential efficacy of proposed inducement mechanisms and, if appropriate, recommending the means for their implementation. It suggested that incentives might include tax or other financial incentives, demand aggregation, and the use of government controlled facilities.[7] The study also determined that the least densely populated areas were likely to have limited options due to the cost of construction and technology limitations. The study noted that in 2003 broadband services were available to more than 85% of the state's population from at least one wireline provider, and that this growth seemed to be continuing.

Declaratory Ruling on Verizon System Improvements

The Commission determined that Verizon has existing authority to improve its telecommunications system and therefore, does not require further state or local authorization to

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[6] Study of Rural Customer Access to Advanced Telecommunications Services, New York State Department of Public Service (Report to Legislature), Feb. 1, 2003.

[7] Id., p. 36.

upgrade its facilities to fiber.[8] A cable franchise would be required if and when Verizon desired to provide cable (i.e. video) service to subscribers or if the nature of its system improvements involve the installation of equipment to be used exclusively for cable service.

This ruling clarified state law on the subject and ensured that Verizon's efforts to improve the technological capabilities of its telecommunications system would not be slowed or impeded by unnecessary regulation. On the other hand, the ruling carefully spelled out the circumstances under which a cable franchise would be necessary and preserved legitimate local authority over the deployment of cable service.

Pole Attachments

In August 2004 the Commission reviewed and reformed the pole attachment process that telephone and electric utility pole owners must follow in order to accommodate all pole attachments including telecommunications and cable pole attachments.[9] In undertaking these reforms, the Commission sought to expedite the attachment process, minimize delays and disputes, and create incentives conducive to achieving the goal of vibrant competition in New York. The Commission recognized that in order for attachers to be competitively viable, they would need pole access on an accelerated schedule to complete upgrades and new builds for deployment of important services, including broadband.

In Orders issued January 24, 2006[10] and June 19, 2006[11], the Commission approved petitions filed by National Grid Communications, Inc. (Gridcom) and Niagara Mohawk Power Corporation (NMPC) which permits the attachment of wireless equipment on NMPC transmission facilities. These Orders allow for the installation of cellular antennas and base

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[8] Case 05-M-0250 – Joint Petition of the Town of Babylon, the Cable Telecommunications Association of New York, Inc. and CSC Holdings, Inc. for a Declaratory Ruling Concerning Unfranchised Construction of Cable Systems in New York by Verizon Communications, Inc. and Case 05-M-0247 - Petition of the City of Yonkers for a Declaratory Ruling Concerning the Installation by Verizon New York Inc. of a Fiber to the Premises Network, Declaratory Ruling on Verizon Communications, Inc.'s Build Out of Its Fiber to the Premises Network, (Issued and Effective June 15, 2005)

[9] Case 03-M-0432, Proceeding on Motion of the Commission Concerning Certain Pole Attachment Issues, Order Adopting Policy Statement on Pole Attachments (Issued and Effective August 6, 2004)

[10] Case 05-M-1481 – Petition of National Grid Communications, Inc. (Gridcom) and Niagara Mohawk Power Corporation for Approval Authorizing Installation of IWO's Wireless Facilities on Niagara Mohawk Property in the Town of Halfmoon; Case 02-M-1288 – Joint Petition of Niagara Mohawk Power Corporation and National Grid Communications, Inc. for Approval to Authorize National Grid Communications, Inc. to Attach Wireless Facilities on Niagara Mohawk Transmission Facilities, Order Approving Petition, (Issued and Effective January 24, 2006)

[11] Case 06-M-0411 – Joint Petition of Niagara Mohawk Power Corporation and National Grid Communications, Inc. Under Public Service Law Section 70 to Authorize Attachment of Cingular Wireless Facilities to Niagara Mohawk Electric Transmission Facilities on Niagara Mohawk property in the Town of Brunswick; Case 02-M-1288 – Joint Petition of Niagara Mohawk Power Corporation and National Grid Communications, Inc. to Attach Wireless Facilities on Niagara Mohawk Transmission Facilities, Order Approving Agreement (Issued and Effective June 19, 2006)

equipment attachments to poles further expanding wireless telecommunications coverage in New York. The ability of wireless carriers to attach to existing utility infrastructure will fill in gaps in wireless service coverage areas including rural areas in the state, and will allow for the increased availability of wireless broadband service throughout the state.

Broadband Over Powerline (BPL)

On October 18, 2006 the Commission issued a Statement of Policy on Deployment of Broadband Over Powerline Technologies[12] which concluded that the use of BPL technology on the electric utility system may provide unique benefits to the public.

> "We requested comments from parties to more clearly understand the technology, its potential uses, and the regulatory issues it may create. We have considered these comments and have concluded that deployment of BPL is in the public interest. This Policy Statement provides guidance on how that deployment may proceed without the potential of undue risk for electric utility customers."[13]

[12] Case 06-M-0043, Proceeding on Motion of the Commission to Examine Issues Related to the Deployment of Broadband Over Power Line Technologies, Statement of Policy on Deployment of Broadband Over Powerline Technologies (issued October 18, 2006)

[13] Id., p. 8.

Competition III Order

In April 2006 the Commission issued its Comp III Order.[14] This Order acknowledged the state of competition in New York's telecommunications markets and set forth the Commission's view of the appropriate level of regulation needed to maintain basic consumer protections while supporting advances in telecommunications technologies and increased customer choice, value and quality of service offerings for New Yorkers. The Commission found that 90% of New Yorkers have the choice of at least two facilities-based alternatives to the incumbents' wireline network for telephone service. This competition will spur innovation, promote investment and will continue to add to customer choice. The Commission "agreed that broadband is an increasingly valuable tool with a variety of social, political, and economic applications, we remain convinced that competitive markets are the best tool to ensure appropriate, widespread deployment." Moreover the Commission concluded that "because broadband services are already available to the majority of New Yorkers, with prices declining and the number of customers steadily increasing, it is not yet clear that governmental intervention is needed to achieve ubiquitous access to broadband."[15]

An overarching objective of the Comp III proceeding is to rely more on market forces where competition is sufficient to discipline service providers' behavior. Where competition is not yet pervasive, certain regulatory protections and oversight will be necessary. The Commission believes that the policies and conclusions reached in the Comp III proceeding will foster further development of the competitive market in New York and lead to more customer choice. While initiating a proceeding (Case 06-C-0481) to consider streamlining various service quality standards and Commission regulations on telephone companies, the Commission acknowledged the important role of regulation as it relates to network reliability, public safety and consumer protections such a E911.

The Commission also addressed the issue of municipally owned networks. As a general policy matter, the Commission has subscribed to the principle that government should support, rather than enter, a competitive market, recognizing that municipally owned networks may in certain situations, have unfair advantages over networks provided by incumbents or their competitors, given the municipalities' tax and financing status. Further, such systems may constrain market development and the provision of new services and choices to consumers, a result that is not in the public interest. The Commission did, however, acknowledge that under

[14] Case 05-C-0616, Proceeding on Motion of the Commission to Examine Issues Related to the Transition to Intermodal Competition in the Provision of Telecommunications Services, Statement of Policy on Further Steps Toward Competition in the Intermodal Telecommunications Market and Order Allowing Rate Filings (issued April 11, 2006).

[15] Id., p. 76.

certain circumstances (such as where the deployment of broadband is unlikely for several years) municipally owned networks could be justified and directed Staff to consider how to best address the concerns of underserved municipalities.[16]

Broadband and Universal Service Funding

Section 254 of the 1996 Telecommunications Act allows the FCC, after consulting the Universal Service Joint Board (Joint Board), to define what service/capabilities may be supported by federal Universal Service Funds (USF). The Act suggests that only services/capabilities that 1) are essential to public health and safety and 2) are already subscribed to by a substantial majority of consumers should be supported by the USF.[17] To date, the Commission has argued that "broadband" does not meet these tests, and both the Joint Board and the FCC have agreed. While this may change in the future, current political realities in Washington don't point to a significant federal undertaking to fund universal broadband anytime soon. The Bush Administration's clear preference is for market-based deployment, rather than government aid programs. Add to that the possibility of the USF getting bigger under almost any form of inter-carrier compensation reform and the odds of further expansion to support broadband look slim.

An obvious concern about USF as a vehicle for supporting broadband is the probability that New York would pay more into such a system than it would get back in support. The FCC estimates that in 2003 New York lost about $2 million (net) in USF funding; in 2004 the loss was almost $90 million. The difference resulted largely from more funding for New York in the schools and libraries program in 2003 ($254 million) than in 2004 ($181 million). But, a USF program for broadband is much more likely to mirror the current USF high cost fund. With respect to this fund, New York experienced a loss of $161 million in 2003 and $177 million in 2004. While it is possible that a federal program for broadband could result in a net gain for New York, odds seem higher that the state would experience a net loss of funds.

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[16] Id., p. 128.

[17] The USF provides funds for four separate programs: high cost; low income (Lifeline/LinkUp); rural health care; and school and library. While the rural health care and school and library programs are aimed at ensuring affordable high-speed Internet services to those types of facilities, the low income program provides subsidies for basic telephone services to low income households and the high cost program provides support to telephone companies for providing basic telephone service in rural and high cost areas. In 2004, the total USF costs were approximately $5.7 billion – high cost $3.5 billion, schools and libraries $1.4 billion, low income $760 million, rural health <$20 million. Funds for the USF are generated by assessments on interstate telecommunications revenues. The current assessment, approximately 10%, is widely considered to be the politically acceptable maximum and a variety of methods of revising the contribution methodology are under consideration. The 1996 Telecommunications Act established a Joint Board, consisting of three FCC members, four state Commissioners and one consumer advocate, to advise the FCC on matters related to universal service programs.

Another consideration is that a federal program would minimize any comparative advantage New York might seek to gain by virtue of offering universal broadband, because other states would also be doing so. A state-funded program, however, could advance the state relative to those states that do not similarly support universal broadband. Moreover, with a state broadband program, New York would make the decisions about what to support, and where, and how to pay for it, while we would have limited ability in designing a federal program.

A state-operated program also poses many issues. The Commission lacks the authority to use traditional ratemaking techniques to restrict broadband prices to "affordable" levels. Efforts to surcharge telephone and cable services to subsidize broadband services will raise serious competitive and jurisdiction issues. A program to support the affordability of broadband access and computers based on general tax revenues may be preferable.

Other Broadband Initiatives

New York City Studies

The City of New York issued a request for proposals in June of 2006 for the selection of a consultant to look into the current state of broadband availability within the city. Earlier studies, such as "Telecommunications and Economic Development in New York City: A Plan for Action", which was issued in March 2005,[18] reported that broadband availability is already high in many neighborhoods but identified some underserved areas such as the Red Hook area of Brooklyn.

The Center for an Urban Future (a New York City based think tank that produces reports and policy solutions on issues facing cities) in a report funded by the Alfred P. Sloan Foundation found a number of pockets in New York City where businesses do not have reliable access to broadband services.[19] The problem was most prevalent in industrial neighborhoods such as the Brooklyn Navy Yard, Hunts Point and parts of Long Island City. Residential neighborhoods, mixed-use areas and dense office districts have a high level of availability and in most cases choice between broadband providers. The report concluded with a number of recommendations including: the need for increased emphasis on telecommunications infrastructure by city and state officials; education efforts for businesses on wireless technology; incentives to providers to extend service; aggregation of users to improve affordability; and extending authority to cities to write universal service requirements into telecommunications franchises.

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[18] This Report to Mayor Michael R. Bloomberg was prepared by the New York City Economic Development Corporation, the New York City Department of Information Technology and Telecommunications and the New York City Department of Small Business Services.

[19] New York's Broadband Gap, Center for an Urban Future, December 2004.

A current study funded by the New York City Economic Development Corporation will look into what may be needed to improve the availability of broadband service using existing providers, wireless networks or municipally owned facilities. The study is organized into two parts. The first part focuses on determining the status of current availability and needs and should be completed in early 2007. The second part will look to possible solutions if significant deficiencies are found. New York City has also undertaken some sponsored wireless projects in areas of the city which have been widely publicized. This study may have an impact on the future deployment of these types of projects.

Empire State Development Corporation (ESDC)

The Legislature passed a bill that created a Rural Broadband Taskforce to examine what incentives are needed to further improve broadband availability to support economic development in rural areas. In mid 2006, the Legislature designated a Rural Broadband Task Force, led by ESDC, to evaluate the economic incentives that may be needed in order to provide service to rural businesses. This work of the ESDC is supported by the New York State Department of State, the New York State Office for Technology and the DPS. This activity will reference work previously included in the DPS Rural Advanced Services study released in February 2003. Staff of the DPS provided ongoing support to this effort through various meetings and discussion sessions and the report is forthcoming.

Wired Buildings - Wireless Communities Grants

The New York State Wired Buildings Grant program is a multi-year grant program funded by the Legislature and administered by the ESDC. It provides matching funds for broadband projects which have a positive economic impact on the communities involved. These grants have been distributed to qualified projects proposed by businesses and municipal agencies around the state. Grants for these projects have been limited to amounts of $70,000 and typically have required at least 50% or greater cost matching by the recipient. To date grants have funded a number of different projects including building broadband wiring and wireless projects both within buildings and in outside areas of communities. Since 2005, 14 wireless projects and 7 wired buildings projects have been funded across the state. For the current round of funding, there are applications for 22 wireless projects including 16 in rural communities.

Suffolk County

Suffolk County has undertaken an effort to provide "WiFi" service to areas of the county not well served by wireless or other broadband services. The county has issued a request for information and expects to move further on this project as funding becomes available. Various entities have responded to the first inquiry and the other incumbent broadband providers (cable and telephone) have also indicated that they are interested in responding to further county initiatives.

Glens Falls

The City of Glens Falls has deployed the "Glens Falls Broadband Initiative" and has received a grant for some of the costs from ESDC. This project offers low cost "WiFi" service in the area surrounding downtown Glens Falls and became operational in the fall of 2006.

Ontario County

The Ontario County legislature has formed a non-profit corporation, the Finger Lakes Regional Telecommunications Development Corporation, to fund and offer fiber optics services to government, healthcare, education, business and cooperating telecommunication providers (telephone companies) in their area. The project is in the planning and contracting stages.

Northern New York

The Development Authority of the North Country (DANC) has formed a non-profit corporation to provide broadband fiber-optic backbone services to several counties in northern New York. At present, DANC is providing services to several organizations and telephone companies. Currently DANC is constructing a 450 mile fiber optic backbone network that connects Syracuse with locations in St. Lawrence, Lewis, and Jefferson counties. This network also has points of presence at a number of telecommunications facilities in Pulaski and Syracuse. Services are also provided to Jefferson-Lewis BOCES and agreements are in place with various telecommunications and cable providers to provide further retail services.

Conclusion

State and federal governments have increasingly relied on the market to provide telecommunications services. That approach has resulted in broadband being available in most areas of New York, and often by more than one provider. As of 2005 New York ranked 2nd amongst the five most populous states with 0.4400 high-speed Internet lines per occupied household. The national average was 0.3865. The Commission has determined that

competition should be relied upon when feasible in order to maximize innovation and efficiency, and it appears that the market has worked efficiently to provide broadband Internet access.

Markets do not accomplish everything, however, and should it be determined that the state has an interest in all New Yorkers having affordable access to broadband, reliance on markets may not be enough. There are low-density areas within the state that do pose challenges for wireline service providers. These low-density areas will likely not generate adequate revenues for companies to recover capital or operating costs of wireline broadband infrastructure and, as such, other technologies including wireless and satellite may need to be considered. There are a number of on-going initiatives and efforts throughout the state to address underserved areas including New York City's Broadband Study and ESDC's "Wired Buildings-Wireless Communities" grant program. As underserved areas become more fully defined and identified, initiatives such as these should be expanded in order to encourage investment in low-density areas. Other technologies may also be able to provide adequate broadband service to meet the demand in underserved areas. These technologies include wireless and satellite delivered high-speed Internet services.

More direct government intervention may be required. One possibility would be to amend the USF, which is designed to ensure affordable telephone service in rural and low-density areas. USF does not currently apply to the deployment of broadband service. So far, New York has argued that broadband should not be added to the USF program, in part because New York would likely pay far more into USF for universal broadband access than it would receive. Another possible solution would be to fund broadband access from the State General Fund, an approach that would avoid federal preemption issues, and that may also avoid the possibility of unequally burdening broadband service providers.

Creation of a multi-agency broadband task force should be considered to evaluate these issues. This task force could be charged with conducting the definitive data collection and analysis necessary to fully and accurately define and identify underserved areas and develop policy recommendations designed to address these inequities without adversely affecting aspects of broadband deployment that are working. This task force might also undertake a full review of state law and regulations which impact or influence the deployment of broadband technologies. Composition of such a task force could include the DPS, the Office for Technology, ESDC, representatives of regional development organizations, municipal representation and various stakeholders and service providers.

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