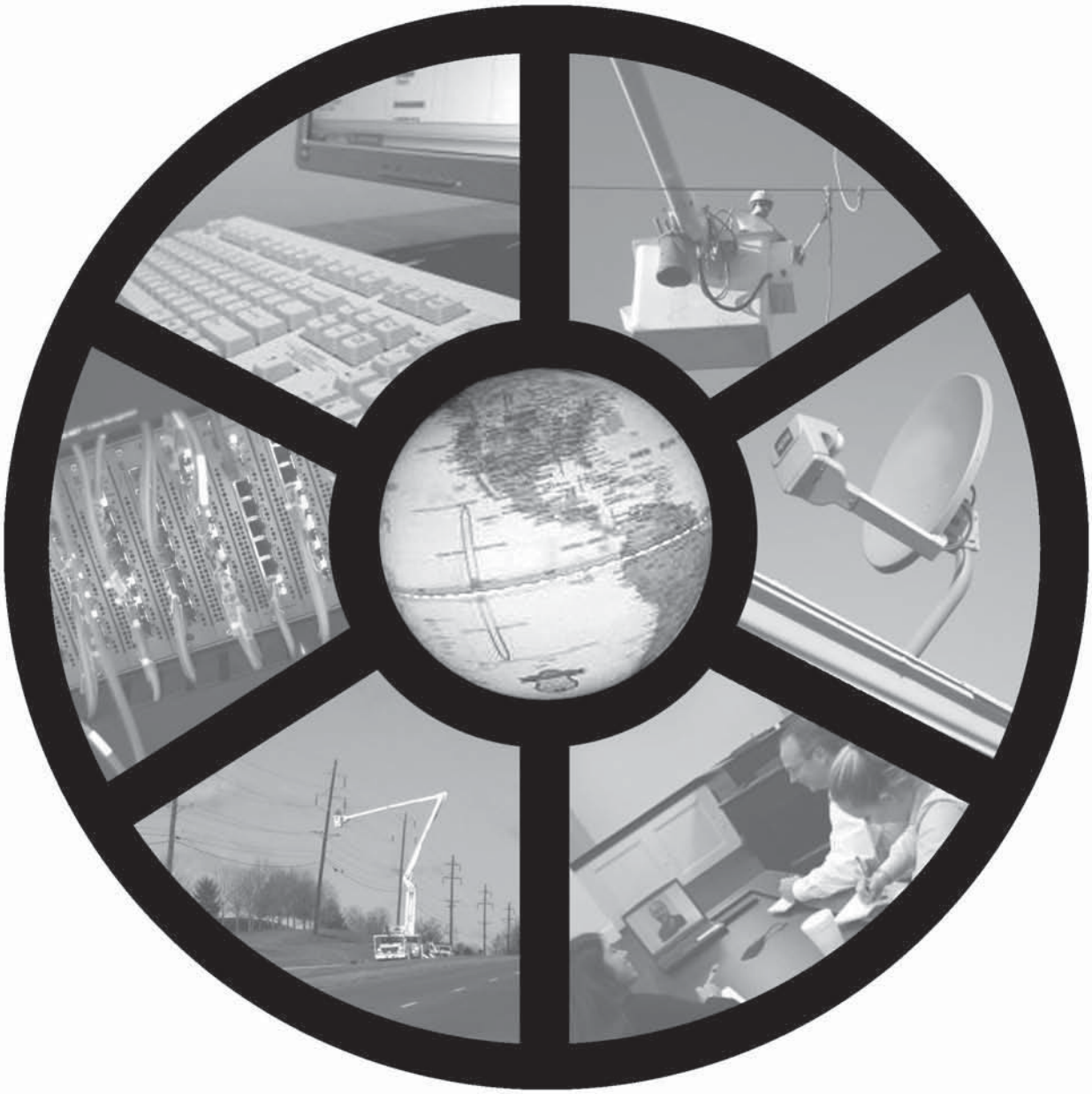
Final Report of the Kentucky Broadband Task Force

2004 House Bill 627



Research Memorandum No. 501

Legislative Research Commission
Frankfort, Kentucky

November 15, 2006

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M E M O R A N D U M

TO: Senate President David L. Williams
House Speaker Jody Richards
Co-Chairs, Legislative Research Commission

FROM: Senator Ernie Harris and Representative Charlie Hoffman

SUBJECT: Report of the Kentucky Broadband Task Force

DATE: November 15, 2006

2004 House Bill 627 established the Kentucky Broadband Task Force to examine the expansion of the availability of broadband Internet access in the Commonwealth, including aspects such as regulation, cost, access to facilities, and market competition. The task force was also to report any findings and recommendations for increasing broadband deployment to the Legislative Research Commission and the Governor. The task force met three times in the 2005 Interim and once in the 2006 Interim to gather information and formulate recommendations. In accordance with provisions of 2004 House Bill 627, the task force report is attached.

Final Report
of the Kentucky Broadband Task Force
2004 House Bill 627

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Foreword

The Kentucky Broadband Task Force was established by the Kentucky General Assembly in 2004. The task force was charged with examining expanding broadband in the Commonwealth including, but not limited to, providing broadband service with respect to regulation, cost, access to facilities, and market competition. The task force was also to consider and report to the Legislative Research Commission and the Governor any findings and recommendations for increasing broadband deployment in Kentucky. Legislative Research Commission staff prepared this report at the direction of the task force.

The task force co-chairs wish to thank the citizen members of the task force and all individuals who attended task force meetings and provided testimony.

Robert Sherman
Director

Legislative Research Commission
Frankfort, Kentucky
November 15, 2006

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Summary

The Kentucky General Assembly in 2004 created the Kentucky Broadband Task Force under House Bill 627. Governor Ernie Fletcher in 2004 launched the "Prescription for Innovation" initiative, which centered on achieving economic benefits through widespread broadband access.

The Kentucky Broadband Task Force was directed to examine all aspects of expanding (deploying) broadband, including regulation, cost, access to facilities, and market competition. Broadband is defined in statute as "any service that is used to deliver video or to provide access to the Internet and that consists of the offering of the capability to transmit information at a data rate that is generally not less than two hundred (200) kilobits per second in at least one direction; or any service that combines computer processing, information storage, and protocol conversion to enable users to access Internet content and services" (KRS 278.5461(1)).

The task force received testimony from numerous representatives of state and federal communications regulatory authorities, private and public telecommunications providers, consumer group representatives, and telecommunication industry associations. The task force also received information from ConnectKentucky, a public/private, nonprofit technology-based economic development alliance charged by Governor Fletcher with primary responsibility for achieving his goal of 100 percent accessibility of broadband service among Kentucky residents by 2007.

Findings and Discussion of Issues

It is estimated that about 60 percent of Kentucky households were able to subscribe to broadband service as of mid-2003. By the end of 2006, approximately 90 percent of Kentucky households are expected to have access to broadband. It is projected that 100 percent of Kentucky households will have some form of broadband available by the end of 2007 as a result of expected new investment. However, there are concerns over difficulties in assessing the extent of where broadband is not available in rural areas, estimated to be the most unserved areas.

There is an ongoing effort to increase public awareness of and demand for broadband access. Widespread availability of broadband is believed to be critical to attracting new industry, business investment, and jobs to Kentucky, where approximately 46,000 manufacturing jobs have been lost since August 2000. At both the state and federal levels, the task force found that regulation of broadband is being greatly reduced or terminated in order to encourage competition.

Access to Facilities

Competitive local exchange carriers (CLECs) and independent Internet service providers (ISPs) have expressed concern about access to broadband facilities owned by incumbent local exchange carriers (ILECs). There is uncertainty as to how a recent Federal

Communications Commission order will apply to access, and ILECs in Kentucky have reported different intentions.

Some people fear that, if ILECs limit access to their facilities, competitors will have proportionately less ability to build their own broadband facilities in unserved areas of the Commonwealth.

Market Competition
Several types of entities use different technologies to provide broadband Internet service. Traditional telephone companies offer DSL over their wire lines, while cable companies offer broadband service over their coaxial cable systems. CLECs offer broadband either through facilities leased from telephone companies or through their own digital subscriber line or wireless facilities. ISPs offer broadband Internet service through facilities leased from telephone or cable companies or over wireless platforms, including satellite. Municipal electric power systems offer broadband in a number of small- and medium-sized Kentucky cities.

Cost
The corporate cost of extending service into an unserved area and the consumer cost of acquiring service are major factors in broadband deployment and adoption. Task force members expressed different opinions about the effects of these costs and whether certain policies would support greater deployment and adoption.

In addition, communications technology is constantly evolving. Designing policies that address the cost of a current definition of broadband may not affect the cost of a different view of broadband in the future. House Bill 627 and the FCC have a similar definition, but other countries are deploying broadband service that operate much faster. The current accepted definition of broadband may not support simultaneous voice, data, and video.

Recommendations

The Kentucky Broadband Task Force unanimously adopted the following recommendations suggested by ConnectKentucky for achieving 100 percent availability and continued deployment progress:

- Creative solutions for broadband satellite cost-share programs;
- Continuation of Kentucky Infrastructure Authority funding; and
- Continuation of policy to achieve safe deregulation.

The task force received additional recommendations to advance broadband awareness and use. While these were not discussed at length during task force meetings, the task force adopted these recommendations, which were also presented by ConnectKentucky:

- Support of online applications;
- Continued support for broadband awareness and adoption programs through the creation of the Kentucky Education Network application, the Kentucky Health

Insurance Partnership, wireless broadband at Kentucky State Parks, No Child Left Offline, and e-government applications for citizen services; and

- General Assembly designation of ConnectKentucky as the state's information technology resource.

Glossary

Broadband

Defined in House Bill 627 as "any service that is used to deliver video or to provide access to the Internet and that consists of the offering of the capability to transmit information at a rate that is generally not less than two hundred (200) kilobits per second in at least one direction; or any service that combines computer processing, information storage, and protocol conversion to enable users to access Internet content and services." It is also generally defined as any circuit significantly faster than a dial-up telephone line, including a cable modem circuit, digital subscriber line, or a T-1 circuit.

Cable Modem

A device that enables transmission and reception of computer information over a cable television line, just as a telephone modem allows transmission and reception of computer information over a telephone line.

Competitive Local Exchange Carrier (CLEC)

Identified by the Telecommunications Act of 1996 as new local telephone companies that would compete with the incumbents either by leasing lines and other facilities from the incumbent to provide voice or Internet service or by installing their own equipment. Currently, 143 CLECs are authorized to do business in Kentucky by meeting the following criteria: having a valid interconnection agreement and having a valid tariff on file with the Kentucky Public Service Commission.

Digital Subscriber Line (DSL)

A generic term for a family of digital lines that local telephone companies and CLECs may provide to their local subscribers for obtaining high-speed Internet access.

Incumbent Local Exchange Carrier (ILEC)

A local telephone company. The Telecommunications Act of 1996 defines an ILEC as a carrier that, as of the date of the Act, provided local exchange service to a specific area. There are 20 ILECs operating in Kentucky.

Internet Service Provider (ISP)

A company that provides access for customers to the Internet and the World Wide Web. Typically also provides other services such as e-mail. A customer typically reaches the ISP by either dialing up with a computer, modem, and phone line over a dedicated line installed by a telephone company.

Local Exchange Carrier (LEC)

The local telephone company. It can be either a Bell Operating Company or an independent. Traditionally, the CLEC had the right and responsibility for providing local transmission and switching services. Defined in KRS 278.516 as "a traditional wire line telephone utility that provides its customers with access to the national public switched network."

Kentucky Broadband Task Force

Issues and Findings

Duties and Activities

President George W. Bush in 2004 set a national goal to make access to high-speed Internet services universal and affordable. One objective to reach that goal is to use broadband technology as a path for access. Broadband is generally defined as a transmission method that can handle large amounts of data at a much faster rate than a standard telephone line.

The Kentucky General Assembly in 2004 created the Kentucky Broadband Task Force under House Bill 627. Governor Ernie Fletcher in 2004 launched the "Prescription for Innovation" initiative, which centered on achieving economic benefits through widespread broadband access (Commonwealth. Office 4).

The Kentucky Broadband Task Force was directed to examine all aspects of expanding (deploying) broadband in the state, including regulation, cost, access to facilities, and market competition. Broadband is defined in statute as "any service that is used to deliver video or to provide access to the Internet and that consists of the offering of the capability to transmit information at a data rate that is generally not less than two hundred (200) kilobits per second in at least one direction; or any service that combines computer processing, information storage, and protocol conversion to enable users to access Internet content and services" (KRS 278.5461(1)).

The task force received testimony from numerous representatives of state and federal communications regulatory authorities, private and public telecommunications providers, consumer group representatives, and telecommunication industry associations. The task force also received information from ConnectKentucky, a public/private, nonprofit technology-based economic development alliance charged by Governor Fletcher with primary responsibility for achieving his goal of 100 percent accessibility of broadband service among Kentucky residents by 2007.

At its first meeting, the task force requested ConnectKentucky to provide baseline and trend data originally required in 2004 by House Bill 627, which formerly were provided through the Governor's office.

Findings and Discussion of Issues

Status of Broadband Deployment in Kentucky

Several communications industry sectors have made important contributions to expanding broadband in Kentucky. For example, the cable television industry has

invested millions of dollars in private capital in equipment upgrades and facility improvements. Municipal electric utilities in Kentucky were among the first public providers of broadband in the nation. Telephone wire line companies have also invested millions of dollars in broadband deployment.

As a result of these contributions, ConnectKentucky estimates that about 60 percent of Kentucky households were able to subscribe to broadband service as of mid-2003. By the end of 2005, the percentage of households with access to some form of broadband service had increased to about 77 percent (ConnectKentucky. "2006" 18). As of September 7, 2006, broadband availability stood at 87 percent of Kentucky households, meaning that more than 429,000 additional households had access to broadband service—an increase of 45 percent—since the passage of House Bill 627 (Taylor. Sept. 7, 2006).

By the end of 2006, approximately 90 percent of Kentucky households are expected to have access to broadband. ConnectKentucky projects that, by the end of 2007, 100 percent of Kentucky households will have access to some form of broadband as a result of expected new investment in broadband infrastructure. There may be some question as to the reliability of the data upon which these estimates were generated (ConnectKentucky. Summer Research Series). ConnectKentucky's data is presented in Appendix A.

Concerns over difficulties in assessing the extent of broadband deployment gaps in rural areas were highlighted in a May 2006 study by the U.S. Government Accountability Office (GAO). Although about 30 million American households use broadband service, the Federal Communications Commission's (FCC's) zip-code level, subscriber-based data "may not provide a highly accurate depiction of local deployment of broadband infrastructures for residential service, especially in rural areas," the GAO found. "[A]...key difficulty for analyzing and targeting federal aid for broadband is a lack of reliable data on the deployment of networks." The GAO recommended that the "FCC collect information regarding the cost and burden that would be associated with various options for improving the information available on broadband deployment" (38).

The GAO included Kentucky among eight states chosen for detailed case studies that incorporated information from interviews with state and local officials, all stakeholders, and results gathered from a proprietary household survey database from Knowledge Networks/SRI to assess the status of broadband deployment and to understand the factors affecting the deployment and adoption of broadband.

The GAO verified the findings for one state: Kentucky, where ConnectKentucky had conducted an extensive analysis of broadband deployment. ConnectKentucky shared data with the GAO indicating that approximately 77 percent of households in the Commonwealth had access to broadband as of mid-2005 (during the period of the GAO study). In contrast, the GAO examined FCC zip-code population data and found that 96 percent of households in Kentucky were located in zip codes with broadband service at the end of 2004. From its analysis of the eight state case studies, the GAO concluded,

"based on the experience in Kentucky, it appears that FCC's data may overstate the availability and competitive deployment of non-satellite broadband" (17).

The remaining percentage of Kentucky households with computers that are not yet served by a broadband provider are largely located in the more remote rural areas. ConnectKentucky is working in each Kentucky county with elected officials, business leaders, civic groups, educators, health care providers, farmers and others in the agricultural industries, and other community leaders to assess and expand public awareness of the benefits of service and thereby increase the demand for broadband.

The U.S. Federal Communications Commission reports that the rate of growth of broadband subscribers in Kentucky recently led the nation, increasing from 22 percent per year in 2003 to 30 percent per year in 2005 (High-Speed 18). Although Kentucky slightly trailed the national average in the percentage of computer-equipped households that used broadband by the end of 2005, the two-year growth rate of adoption was slightly ahead of the national average, with Kentucky on track to achieve a goal of 40 percent adoption of broadband among computer-using households by the end of 2007.

By other measures, Kentucky considerably lags behind the national average. As of 2003, the Commonwealth ranked 44th in its proportion of high-tech companies as a percentage of all businesses, 45th in household computer usage, and 43rd in citizen Internet usage (U.S. Technology Administration).

ConnectKentucky is collaborating with the Kentucky Infrastructure Authority, administratively attached to the Governor's Office of Local Development, to produce and maintain a comprehensive geographic information system (GIS) inventory of broadband infrastructure and service availability. The Kentucky GIS broadband maps—a first in the nation—facilitate strategic decision making regarding regulation and technology investment by identifying areas at the county and census-block levels with inadequate broadband service and existing infrastructure, such as cellular towers and elevated water tanks, which may be useful for broadband deployment. ConnectKentucky is also working with Internet leadership teams in each county to confirm and refine the accuracy of mapped broadband coverage areas.

Widespread availability of broadband is believed to be critical to attracting new industry, business investment, and jobs to Kentucky, where approximately 46,000 manufacturing jobs have been lost since August 2000 (ConnectKentucky. "2006" 10). Full deployment of broadband and the development of a technologically savvy workforce potentially could create up to 14,000 jobs and add up to $5 billion to Kentucky's gross state product annually (Commonwealth. Office 4). While broadband availability itself does not create prosperity, access to broadband infrastructure enables development of a more knowledge-based economy, an enhanced quality of life (in education, health care delivery, government services, and entertainment), and a more inviting environment for attracting business investment and employment (Schirmer 5). Information technology workers in Kentucky earn 50 percent more than the average wage for all Kentuckians employed in the private sector (ConnectKentucky. "2006" 10).

Factors Affecting Deployment and Adoption of Broadband

Regulation

Findings. At both the state and federal levels, the task force found that regulation of broadband is being greatly reduced or terminated to encourage competition and investment in expanded broadband service availability. In Kentucky, KRS 278.5462 requires that "the provision of broadband shall be market-based and not subject to state administrative regulation...with respect to...(a) the availability of facilities or equipment used to provide broadband services; or (b) the rates, terms or conditions for, or entry into, the provision of broadband service."

The Kentucky General Assembly also enacted House Bill 337 in 2006, which continued and extended the deregulation of the Commonwealth's telecommunications industry that began in 2004. House Bill 337 deregulated all but the most basic residential telephone service and allows providers to base decision making more on market forces instead of regulatory mandate with the goal of encouraging greater investment in broadband and other advanced information services. In addition, enactment of House Bill 568 allowed rural electric cooperatives to offer their members additional services, including broadband Internet access, for which federal funding assistance is available through the U.S. Department of Agriculture's Rural Utilities Service.

Two important events in 2005 greatly diminished federal regulation of broadband. On June 27, 2005, the United States Supreme Court, in *National Cable and Telecommunications Assn. v. Brand X Internet Services,* deferred to a 2002 FCC ruling that held that cable modem broadband service is an information service and, therefore, is not subject to the federal requirement to provide Internet access to competitor exchange carriers or Internet service providers (U.S. Supreme Court; U.S. Federal. "Declaratory"; U.S. Federal. "FCC Launches").

On August 5, 2005, the FCC extended the *Brand X* ruling to wire line, or digital subscriber line (DSL), broadband service. The commission ruled that, after a one-year transition period, it would no longer require telephone companies to provide access to the Internet for competitors at discounted tariffed rates (U.S. Federal. *Appropriate*). The FCC stated its intention to develop a consistent regulatory framework across broadband platforms and to remove regulation that it considered detrimental to broadband deployment. (Broache. "Judges").

Access to Facilities

Findings and discussion. Competitive local exchange carriers (CLECs) and independent Internet service providers (ISPs) have expressed concern about access to broadband facilities owned by incumbent local exchange carriers (ILECs).

It is not yet clear how the August 5, 2005, FCC order will apply to continued access to broadband facilities. A large ILEC reports that it continues to lease broadband facilities to

CLECs, while a CLEC in eastern Kentucky asserts that a major ILEC in its region is moving to eliminate competitors' access to broadband facilities.

In its interim report, the task force reported that a CLEC that provides Internet access service and an ISP had expressed concern that regulatory changes meant that competitors seeking to offer Internet access over facilities leased from telephone companies and cable service providers would increasingly need access to such facilities at negotiated prices that were likely to be substantially higher than current tariffed rates, or they would need to reach potential customers via alternate technologies such as broadband over satellite. It was reported that according to one ILEC, the growth in use of alternate technologies is an anticipated outcome of the FCC's movement toward minimal regulation of broadband (Commonwealth. Legislative 3).

Some people believe that if competitive broadband service providers do not have access to the facilities of telephone companies and cable companies, competitors will have proportionately less capital for building their own broadband facilities in unserved areas of the Commonwealth. CLECs and ISPs often have leased access to ILEC facilities in order to provide Internet access to ILEC customers and to aid in financing future expansion of DSL or wireless facilities to unserved areas. Some CLECs and ISPs have expressed concern that an inability to lease facilities may result in the elimination of competitors or in the unavailability of broadband access to many potential broadband customers in remote or sparsely populated areas where no other company wants to invest.

While the full effects of the recent regulatory changes are not yet apparent, ILECs and their competitors may be able to negotiate mutually beneficial agreements for leasing DSL or cable facilities for broadband access. The provision of financial incentives may further encourage the availability of broadband service in areas that are not attractive for business investment.

Market Competition

Findings. The task force found that several types of entities use distinct technologies to provide broadband Internet service. Traditional telephone companies offer DSL over their wire lines. Cable companies offer broadband service over their coaxial cable systems. CLECs offer broadband either through facilities leased from telephone companies or through their own DSL or wireless facilities. ISPs offer broadband Internet service through facilities leased from telephone or cable companies or over wireless platforms, including satellite. Municipal electric power systems offer broadband in a number of small- and medium-sized Kentucky cities.

Discussion. Task force members expressed mixed views concerning the extent to which sufficient competition exists and how best to ensure competition among the various types of broadband service providers. Despite clear indications of competition at the national or regional levels and in the major metropolitan areas of Kentucky, some providers contend that there appears to be little competition at the local level, especially in remote rural areas. These providers assert that rural markets are less likely to have competition for

facilities provided by ISPs and CLEC competitors and are more likely to be limited to ILECs and cable. Some CLECs and ISPs believe government should continue to require that telephone companies provide access to their facilities by competitors. The CLECs and ISPs asserted that, since the Telecommunications Act of 1996, which required telecommunications companies to provide access to switching facilities, there had been insufficient time for competition to develop. They further argued that competition exists between cable and telephone company DSL (Commonwealth. Legislative 3).

Cost

Findings. Cost is a major factor in the deployment and adoption of broadband, both in the consumer's cost of acquiring service and the provider's business plan for extending service into an unserved area. Task force members held differing views about the effects of cost on consumers and about the providers and policies that might support greater deployment and adoption of broadband.

ConnectKentucky outlined possible financial and other incentives to create demand for broadband service and to encourage service providers to extend their service areas, especially to those that otherwise would not be considered economical to serve.

- Financial incentives for any willing provider to lower the cost of investment in unserved areas, such as tax incentives similar to those adopted by Mississippi and South Carolina and funding for the revolving combination loan/grant pool established under the Kentucky Infrastructure Authority (KIA);
- A fund similar to the KIA structure to offset the cost of satellite service installation;
- Opening rights of way for infrastructure expansion; and
- Deregulation of the telecommunications industry (coupled with contract stability in rural areas).

In 2006, the General Assembly enacted additional measures to foster broadband deployment. House Bill 550 established a combination loan/grant fund under KIA to help provide broadband coverage to the 23 percent of Kentucky households that were still unserved. However, there was no appropriation to the fund, which has restricted state financial assistance for broadband deployment primarily to funds reallocated through other state programs, such as the Agricultural Development Board. As of mid-September 2006, only one grant had been applied for and approved by the KIA: a $1 million matching grant to Wayne County in 2005 for broadband deployment via fiber optic cable. However, Wayne County had yet to draw any of the grant funding by the third quarter of 2006 (Commonwealth. Kentucky Infrastructure).

The Agricultural Development Board's Pilot Satellite Broadband Cost-Share Program provides tobacco-dependent agricultural producers who are unable to access DSL or cable broadband service up to 50 percent of the cost of equipment and installation and 50 percent of the cost of satellite broadband service for one year to improve farm operating efficiency and marketing. In September 2006, the board approved the first grants to Spencer County and Morgan County. It anticipates approving additional county

applications under its technology model program in 2007 (Commonwealth. Governor's Office of Agricultural Policy).

At the federal level, a program supported by the Universal Service Fund for Telecommunications has indirectly facilitated broadband service in rural areas. The program's five components provide more than $4 billion each year to more than 1,700 eligible telecommunications carriers. The components include broadband connectivity support for schools and libraries and to rural health care and related postsecondary educational institutions. In addition, the U.S. Department of Agriculture's Rural Utilities Service (RUS) provides grants and loans to promote broadband access and service in rural areas and communities. The Economic Development Administration provides 50 percent matching grants for telecommunications infrastructure improvements, distance learning and skills-training facilities, and business incubator facilities for state and local government entities and public and private nonprofit organizations.

In May 2006, ConnectKentucky submitted four grant applications for the USDA's RUS Community Connect matching broadband grant program for financing broadband facilities. In September 2006, ConnectKentucky was awarded nearly $1 million that will be used among three providers in four communities: SouthEast Telephone for Berry in Harrison County and Monterey in Owen County; Open World, Inc., for Concord in Lewis County; and Heartland Communications Internet Services, Inc., for Columbus in Hickman County (ConnectKentucky. "Nearly").

In addition to establishing broadband networks for the 2,365 households in these communities, the providers will use the RUS grants to expand free high-speed Internet access to local residents by creating community centers equipped with computers. Grant funds will also be used to provide free broadband access for critical community services such as fire protection, law enforcement, and emergency response facilities.

Among other federal programs that have provided significant financial assistance for broadband infrastructure, the Appalachian Regional Commission's Information Age Appalachia program focuses on assisting in the development and use of telecommunications infrastructure. The program also provides funding to assist in education and training, Internet or e-commerce readiness, and technology-sector job creation. In Kentucky, funding from the commission's program assisted the development and operations of ConnectKentucky.

Discussion. Based on its survey data, ConnectKentucky reports that no specific price point for broadband service can be cited as a clear barrier to adoption. Rather, the adoption of broadband is closely related to the perceived value that people and businesses associate with broadband access. To this end, ConnectKentucky has undertaken an initiative to stimulate interest and demand for broadband by organizing and supporting Internet or e-community leadership teams in each county. The GAO found that "strong leadership within a community can help promote broadband deployment by, for example, enhancing the likely market success of companies' entry into rural markets" (4). Kentucky's county leadership teams develop detailed business plans and identify value-

adding software applications for nine community sectors including small business, local government, K-12 education, health care, libraries, higher education, agriculture, tourism, and nongovernmental organizations. In the local government sector, for example, efforts are focused on the development of a meaningful online presence for every community with ready-to-offer citizen services and information resources (Commonwealth. Legislative 4).

Some task force industry members believe that greater emphasis should be given to creating demand for broadband in areas where service is not available or in which broadband has only recently become available. Some rural cooperative ILECs believe that potential incentives should not be limited to unserved areas because many rural areas served by cooperatives have 100 percent broadband availability due to capital already invested by the cooperatives. They argue that incentives should focus on increasing the often low rate of broadband use in rural areas, even those in which service is currently available.

Because the cost of installing DSL or cable in remote rural areas would be prohibitively expensive, satellite receivers, emerging broadband over power lines, and broadband over microwave radio frequencies—Wi-Max—may be used for broadband deployment (Lazarus). Such technologies overcome the problems of mountainous terrain that limit the range of other wireless platforms, including cellular DSL. In some cases, CLECs have worked with ILECs by leasing facilities and installing DSL in rural areas beyond the technical distance limitations of DSL and at reasonable cost.

The use of existing infrastructure such as cell towers and water towers can help improve the business case for broadband investment. Another approach to lowering the cost of broadband deployment may be to dedicate the reallocation of spare DSL equipment into rural areas as DSL facilities in nonrural areas are upgraded over the next decade.

Task force members representing various sectors of broadband providers noted a relationship between deregulation and broadband deployment. There are inherent, substantial costs of regulation incurred by regulated entities that, rather than treated as an expense, could be better used for capital investment in infrastructure. Many broadband service providers believe that deregulation, as in the *Brand X* case, will be an incentive to increased investment in and access to broadband. Similarly, BellSouth's pending acquisition by AT&T, approved by the Kentucky Public Service Commission on July 25, 2006, may speed the deployment of broadband services into Kentucky's rural areas (Commonwealth. Kentucky Public). It is unclear when and with which technologies the new AT&T intends to expand its broadband coverage.

Other factors. Communications technology is constantly evolving, and the definition of what constitutes high-speed Internet access is changing. Other countries are deploying broadband service operating much faster than 200 kilobits per second. Kentucky's statutory definition of 200 kilobits per second may be inadequate for the increasing requirements of simultaneous voice, data, and video. The Kentucky General Assembly may wish to consider tying the Commonwealth's statutory definition of broadband speed

to the prevailing FCC standard. As the GAO report noted, "Despite uncertainties in the reliability of broadband deployment estimates, the GAO found that progress toward the goal of universal availability of broadband to residential customers has been substantial over the past decade" (38).

Future Directions

The major factor affecting the deployment of broadband in Kentucky may be the change in federal regulation of broadband. Significant changes to federal government policies regarding the Internet are included in competing bills to update and rewrite the 1996 Telecommunications Act, which set in motion the current wave of deregulation. The bills have been passed by committees of both houses of Congress, and one has passed the full House of Representatives; although, as of this writing, further action appears unlikely due to time constraints (Broache. "Net").

Legislation to rewrite the Act has spurred intense lobbying in Congress among telephone companies, ISPs, and Internet content companies such as Google, Yahoo, and Amazon regarding provisions for federal pricing regulation that would allow network owners to charge more for delivering data-intensive content such as streaming video. The fundamental point of contention involves who will pay for future upgrades and expansion of broadband infrastructure (Hart).

Other issues addressed by current federal legislation include who should pay for deployment of fiber optic cable, which would allow telephone companies to compete more directly with cable and satellite television providers. Also, the Universal Service Fund tax that subsidizes telephone service to remote areas of the country may be redefined to include broadband Internet connectivity, requiring collection and assessments from Internet telephony and access fees. Critics want to abolish the tax, which tax proponents say would increase the cost of telephone and broadband Internet services to rural customers.

The federal telecommunications legislation could also significantly affect the cost and availability of emerging wireless Internet access nationwide by permitting wireless operators to use certain unused broadcast television frequencies, which is strongly opposed by broadcasters (Reardon).

Recommendations

The Kentucky Broadband Task Force unanimously adopted the following policy recommendations suggested by ConnectKentucky for achieving 100 percent availability and continued deployment progress.

Creative solutions for broadband satellite cost-share programs. Approximately 8 percent of Kentucky households are located in unserved areas that are so sparsely populated or topographically limited that wire line or fixed wireless broadband solutions are cost prohibitive. For these areas, satellite broadband is the only reasonable solution.

Advances in satellite technology have enabled reliable broadband service offerings for these otherwise unreachable areas. Although monthly recurring charges for satellite broadband are comparable to other forms of broadband service, the nonrecurring start-up cost ranges from $400 to $500, which is unaffordable for many Kentuckians.

The Governor's Office of Agricultural Policy in 2006 developed a Pilot Satellite Broadband Cost-Share Program administered through local agencies using county agricultural development funds to make satellite broadband affordable to tobacco-dependent farmers. Additional satellite cost-share programs are necessary to ensure affordable broadband availability for Kentuckians living in remote rural or otherwise unreachable areas.

Continuation of Kentucky Infrastructure Authority funding. To ensure adequate broadband availability for all Kentucky businesses and citizens in the near future, it is necessary to continue funding assistance for deployment through Kentucky Infrastructure Authority loans and grants. In future years, after Kentucky has achieved statewide broadband availability, funding assistance through KIA is essential for network upgrades in rural areas where there is no business case for private investment.

Continuation of policy to achieve safe deregulation. The passage of deregulation legislation (House Bill 627 in 2004 and House Bill 337 in 2006) is a key factor in significantly increased broadband deployment in Kentucky over the past two years. If Kentucky wishes to continue encouraging increased investment in broadband and advanced services, it is critical that government continue to identify regulatory barriers while maintaining effective consumer protections.

The task force also adopted recommendations, suggested by ConnectKentucky, to improve broadband awareness and use:

Support of online applications. Kentucky citizen, business, and government use of technology increases every year. This technology adoption leads to increased business investment, taxpayer savings, and enhanced citizen services and quality of life. For continued progress, policy must support the use of online applications and services across government, health care, education, economic development, and all other sectors. State government's use of Internet Web pages for direct service provision is relatively new, but such use is increasing. Innovative Web page examples include the Cabinet for Public Protection's recent introduction of an online equine registry for thoroughbreds and online building diagrams for electrical inspectors.

Continued support for broadband awareness and adoption programs. In addition to the recognition Kentucky has received for its broadband deployment efforts, the Commonwealth has also received national acclaim for what is widely regarded as a key driver in economic development competitiveness and the true test of a state's broadband policy success: broadband adoption and application creation. Without this effort to ensure Kentuckians have access to meaningful online government and community services, much of the state's deployment efforts would be wasted. Leaders around the nation have

commended Kentucky for its vision to implement not only deployment but also effective adoption policies to make the most of the infrastructure.

ConnectKentucky's 2005 Technology Assessment Study found that nearly 70 percent of adults in the Commonwealth (approximately 2.1 million) reported having a computer at home; and 60 percent of adults (1.9 million) reported having Internet access at home. Of those adults with Internet access at home, more than half (53 percent) reported having broadband service, representing nearly one-third of the population, or 1 million adult residents (ConnectKentucky. "2006" 19).

ConnectKentucky works with both state and local leaders to build technology awareness and adoption across nine community sectors—P-12 education, higher education, government, health care, community-based organizations, libraries, tourism, agriculture, and business. At the local level, e-community leadership teams work in each county to benchmark broadband technology use and implement online applications to drive adoption across all nine community sectors.

At the state level, ConnectKentucky brings together state agencies and the private sector to create cost-effective solutions for improving citizen access to broadband-enabled services. These programs include

- Kentucky Education Network application creation—Dramatically improving educational opportunities for Kentucky students through the Kentucky Education Network by connecting each college, university, and K-12 school district, and Education Cabinet agencies, and equipping them with first-class learning technologies, including virtual instruction and online education resources for underserved areas.

- Kentucky Health Insurance Partnership—Combining the electronic resources of all Kentucky health insurers to enable better patient care and significantly lower costs for both patients and taxpayers.

- Wireless broadband at Kentucky State Parks—Equipping state parks with wireless broadband access for competitive tourism development.

- No Child Left Offline—Leveling the playing field for Kentucky children by distributing refurbished state and university computers to low-income 8th graders.

- E-government applications for citizen services—Working with city and county governments to implement meaningful online citizen services, which create greater exposure for communities, assist in local economic development, increase efficiency, and save taxpayer dollars. Presently, half of Kentucky's counties and three-quarters of its municipalities have no online presence.

Designation of ConnectKentucky as the state's information technology resource. To continue improving Kentucky citizens' access to the most advanced information

technology and telecommunications services, the task force recommends that the General Assembly designate ConnectKentucky as the state's resource for

- working with providers and relevant government agencies to ensure adequate investments in information technology and telecommunications are keeping Kentucky competitive;
- tracking technology progress and reporting regularly to the Legislative Research Commission (LRC);
- serving as a consulting resource for legislators and LRC to address constituent concerns and questions regarding information technology and telecommunications issues;
- providing additional information related to competitive access and availability for increased broadband adoption based on data collected at the county level, while also addressing the need for funding to obtain such information; and
- assessing and evaluating the need for state-of-the-art emerging technologies for providing world-class Internet service in key economic areas of the Commonwealth where broadband technologies should be upgraded.

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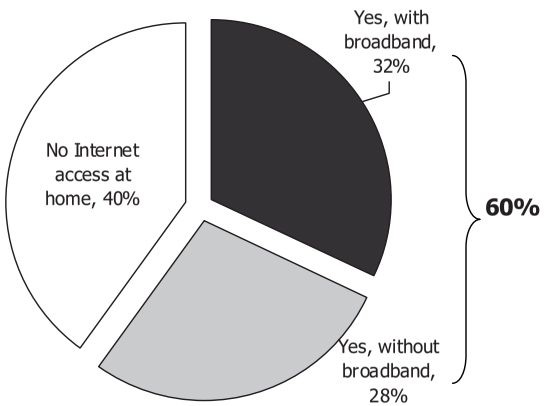
Summary of Results of the ConnectKentucky 2006 Summer Research Series

Key Broadband Statistics:
Broadband Adoption & Barriers

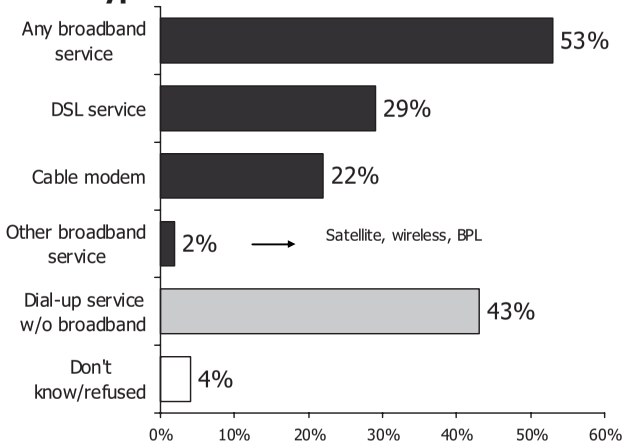
- Six out of ten adults in Kentucky report having Internet access at home.
- In absolute terms, this converts to approximately 1.9 million with access to the Internet at home.
- Over half (53%) of adults with Internet access at home have broadband, including 29% with DSL service and 22% with cable modem service.
- This converts to 32% of the adult population or one million adult residents with broadband at home.
- The leading barriers to broadband adoption among those with dial-up service are:
  - **Lack of need,** (especially among older residents)
  - **Cost** (especially among younger residents) and
  - **Availability** (especially among higher income residents and those in rural counties.)

Have Internet Access at Home



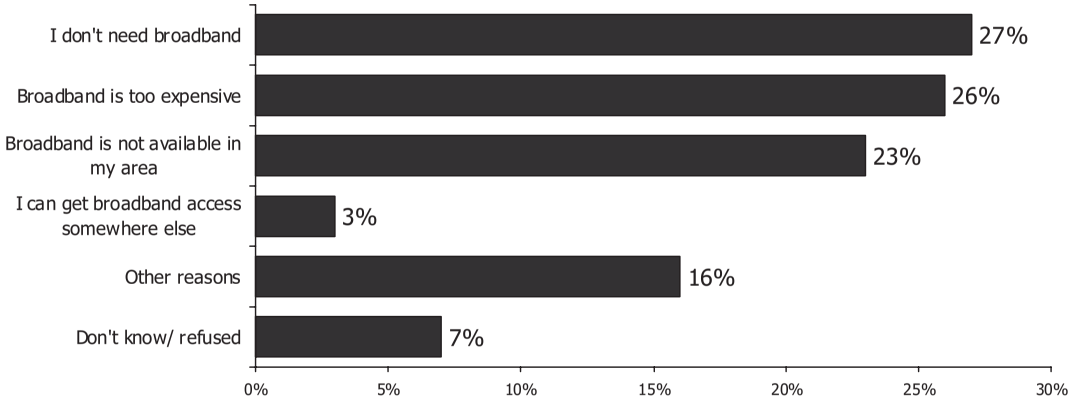
Source: 2005 ConnectKY Technology Assessment Study, n=10,842

Type of Internet Service at Home



Source: 2005 ConnectKY Technology Assessment Study, n=6,050 adults with access at home

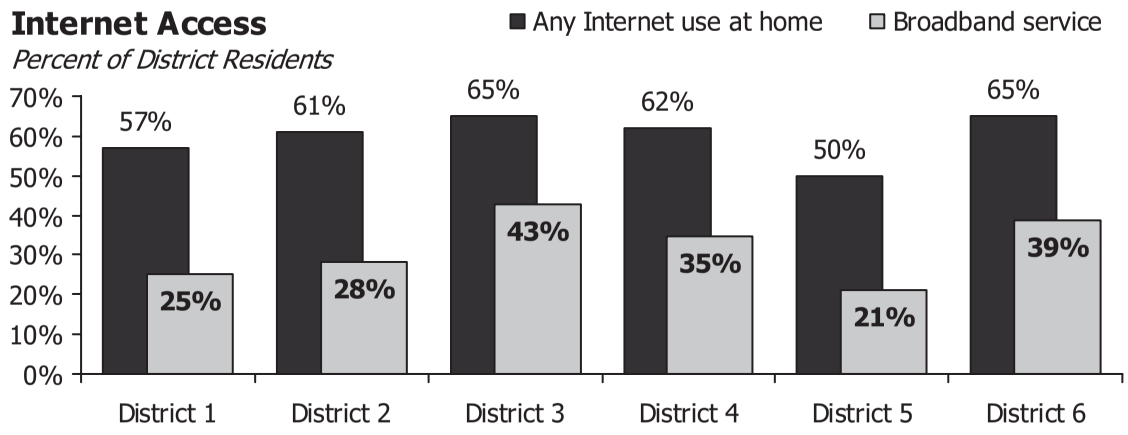
Why don't you have broadband?



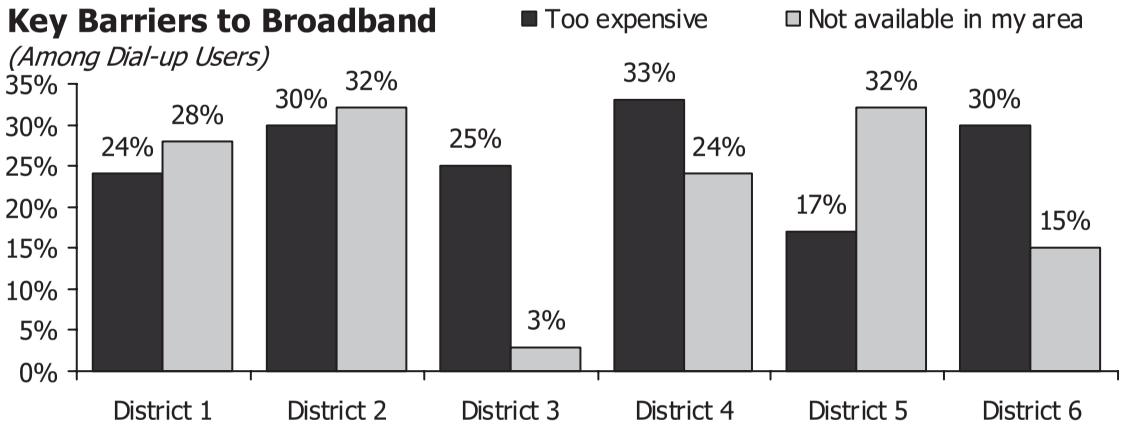
Source: 2005 ConnectKY Technology Assessment Study, n=3,179 adults with dialup access at home

Key Broadband Statistics:
Adoption Rates & Barriers by District

- District 5 reports significantly lower residential adoption of the Internet (50%) than all of the other districts.
- In districts 3, 4 and 6, more people access the Internet through a broadband connection than through dial-up.
- District 3 reports the highest usage of broadband: more than double the rate reported by District 5.
- District 5 reports the lowest usage of broadband service at 21%.
- Cost is a relatively important barrier to overcome in districts 2, 4 and 6 and is less important than availability in district 5, where only 17% of dial-up users feel cost is the issue.
- Availability of broadband service is the leading barrier in districts 1, 2 and 5.



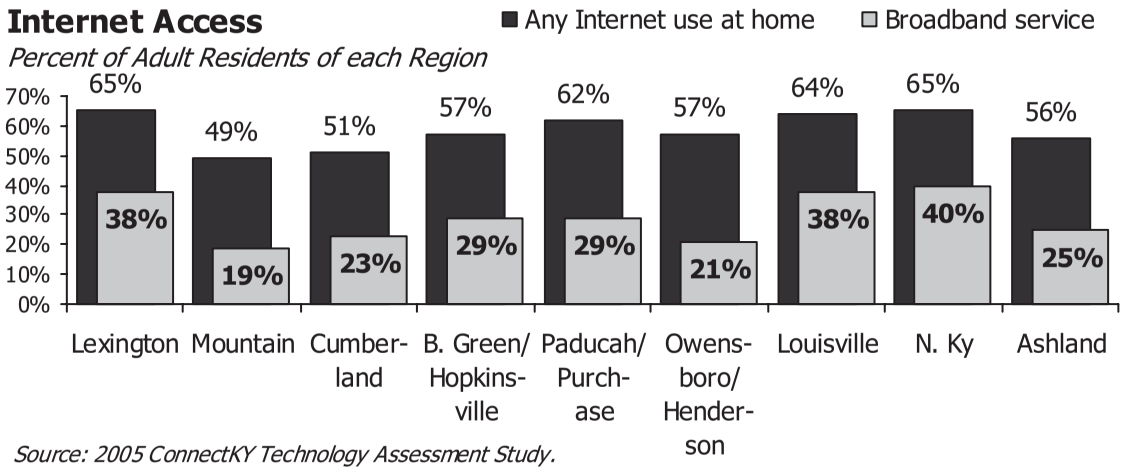
Source: 2005 ConnectKY Technology Assessment Study.



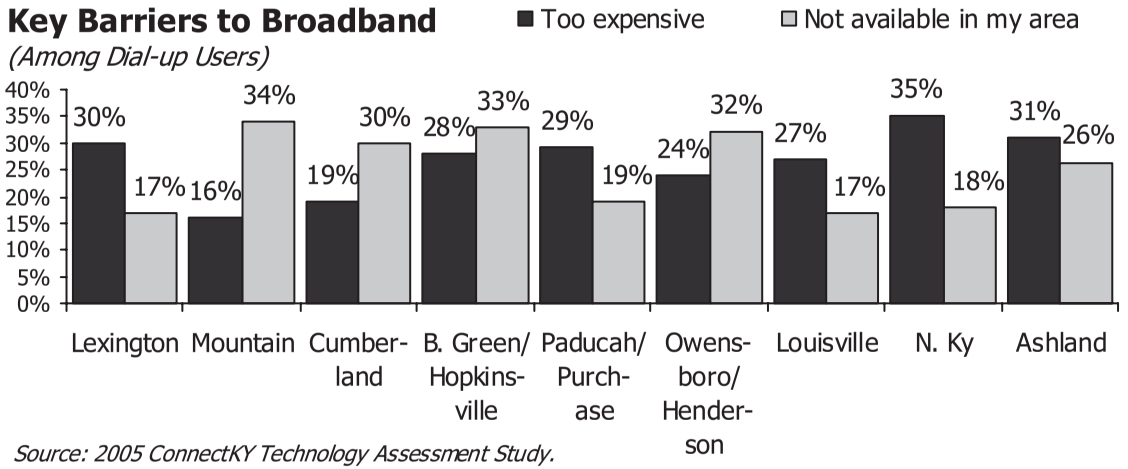
Source: 2005 ConnectKY Technology Assessment Study.

Key Broadband Statistics:
Adoption Rates & Barriers by Region

- At least 60% of adults have internet access at home in the Louisville, Lexington, Northern Kentucky and Paducah-Purchase regions of the state.
- However, broadband penetration rates exceed 30% in the larger metropolitan regions of Louisville, Lexington and Northern Kentucky.
- Affordability of broadband is the main barrier reported by dial-up users in Lexington, Paducah-Purchase, Louisville, Northern Kentucky and Ashland.
- Availability of broadband is the chief barrier for in the Mountain, Cumberland, Bowling Green, and Owensboro areas.



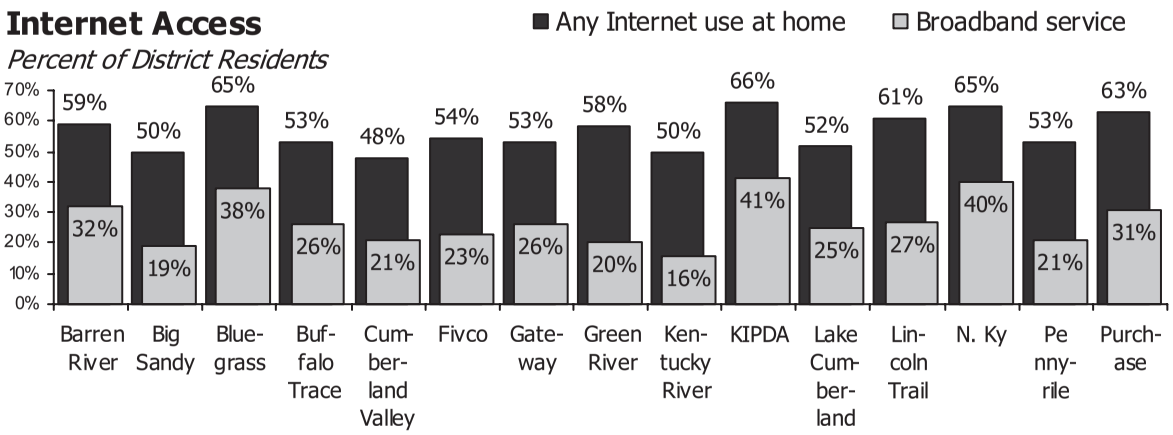
Source: 2005 ConnectKY Technology Assessment Study.



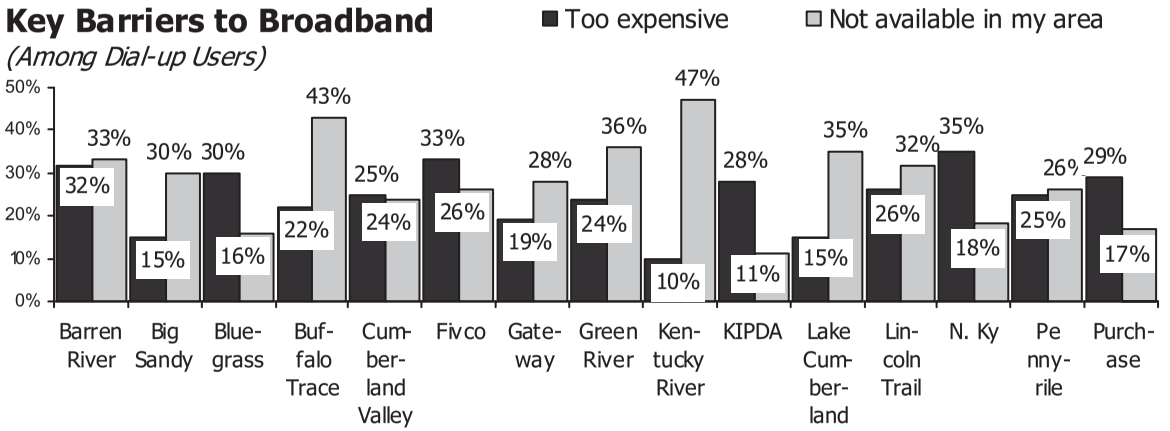
Source: 2005 ConnectKY Technology Assessment Study.

Key Broadband Statistics:
Adoption Rates & Barriers by ADD

- The Cumberland Valley District has the lowest incidence of residential Internet access (48%). However, the Kentucky River District has the lowest broadband adoption rate at 16%.
- Broadband access exceeds the statewide level of 32% only in the districts that are part of the largest metropolitan markets of Lexington, Louisville and Cincinnati.
- Cost is a primary barrier in Barren River, Bluegrass, Fivco, N. Kentucky, and Purchase.
- Availability is a prime barrier in the Barren River, Big Sandy, Buffalo Trace, Gateway, Green River, Kentucky River, Lake Cumberland, and Lincoln Trail districts.
- In Barren River, Cumberland Valley and Pennyrile, these two barriers apply in near equal proportions.



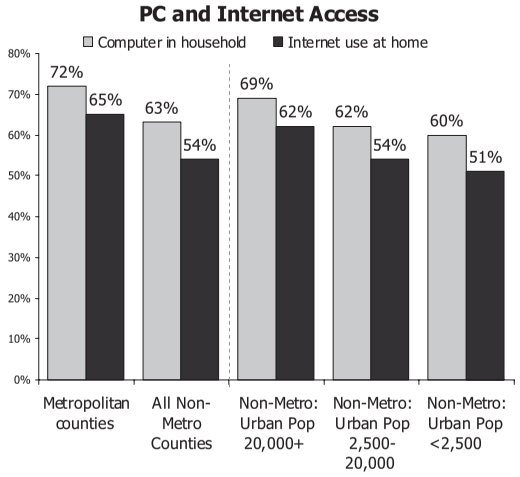
Source: 2005 ConnectKY Technology Assessment Study.

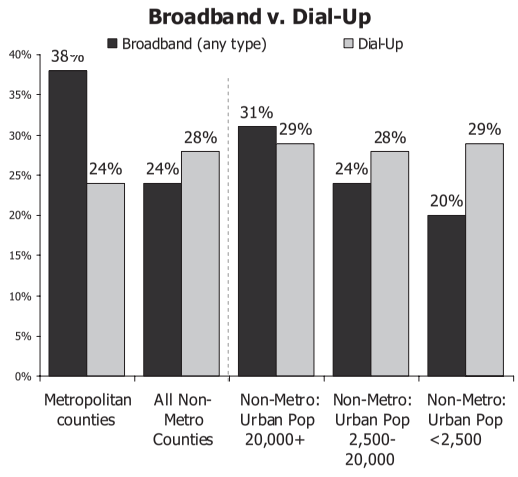


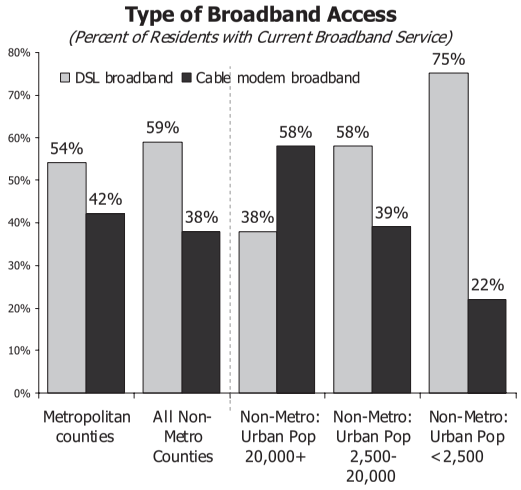
Source: 2005 ConnectKY Technology Assessment Study.

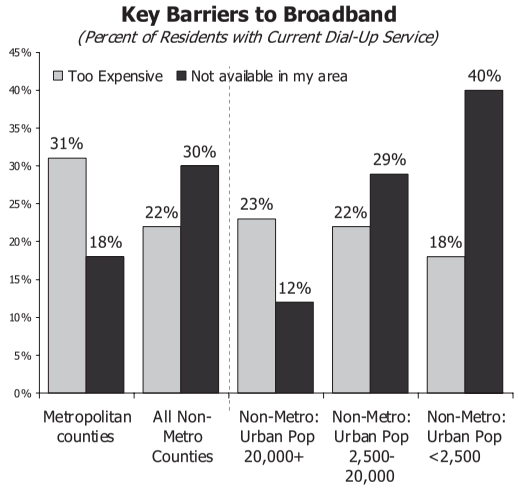
Key Broadband Statistics: Metropolitan v. Non-Metropolitan Areas

- In the context of technology adoption in Kentucky, the relative size of metropolitan areas and adjacency are much less important than overall location in or outside of metropolitan areas and the overall number of people living in cities and towns outside of metropolitan areas.
- Predictably, metropolitan areas have higher residential use of computers, access to the internet, and broadband internet service.
- In non-metropolitan areas, technology adoption and barriers are often a function of urban population size. Counties with urban populations greater than 20,000 tend to mirror the metropolitan patterns for barriers and broadband adoption.
- In non-metropolitan areas with a large (20,000+) urban population, cable modem service is the preferred type of broadband, while DSL service is dominant in rural counties with a small number of residents living in urbanized areas.
- For non-metropolitan areas, in general the largest barrier to broadband adoption is availability. This barrier rises significantly in importance as the overall size of the urban population decreases.



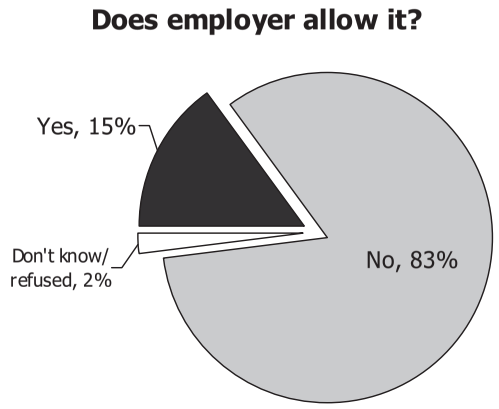




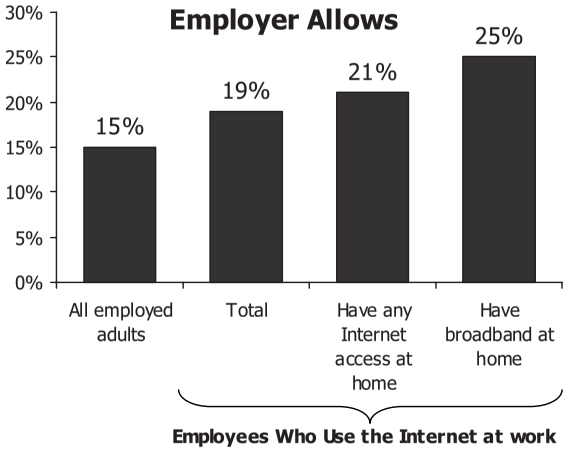


Key Broadband Statistics:
Potential for Telecommuting

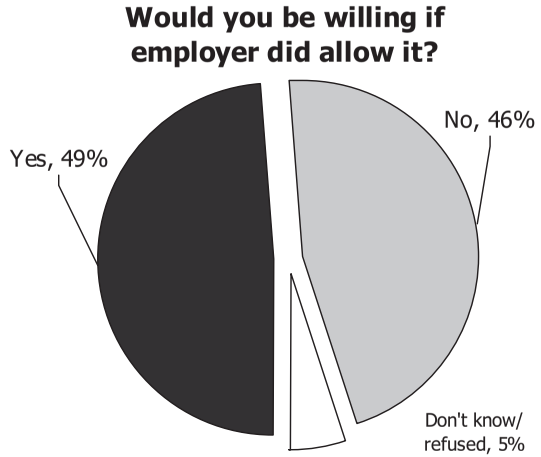
- Fifteen percent of all employed adults say their employer allows them to telecommute from home, rising to 19% of employees who use the Internet at work and 25% of employees already set up at home with a broadband connection at home.
- These data suggest that 112,000 workers in the state have both the permission and capability to work at home on a regular basis through a broadband Internet connection.
- Nearly half of those employees not allowed to telecommute would be willing to do so, rising to 64% of employees with a home broadband connection. The latter converts to 216,000 workers who have the means and willingness to telecommute, but lack permission.



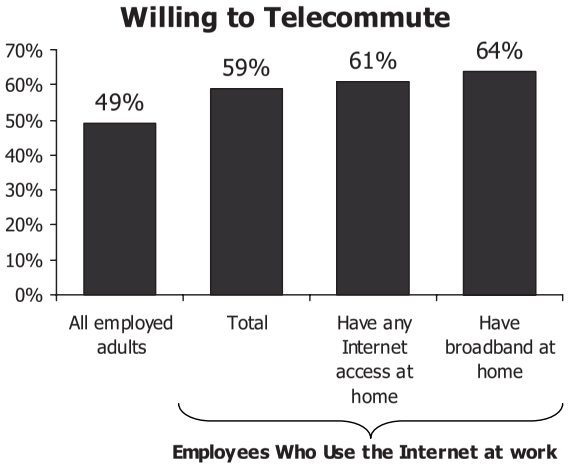
Source: 2005 ConnectKY Technology Assessment Study, n=5,808 employed adults.



Source: 2005 ConnectKY Technology Assessment Study



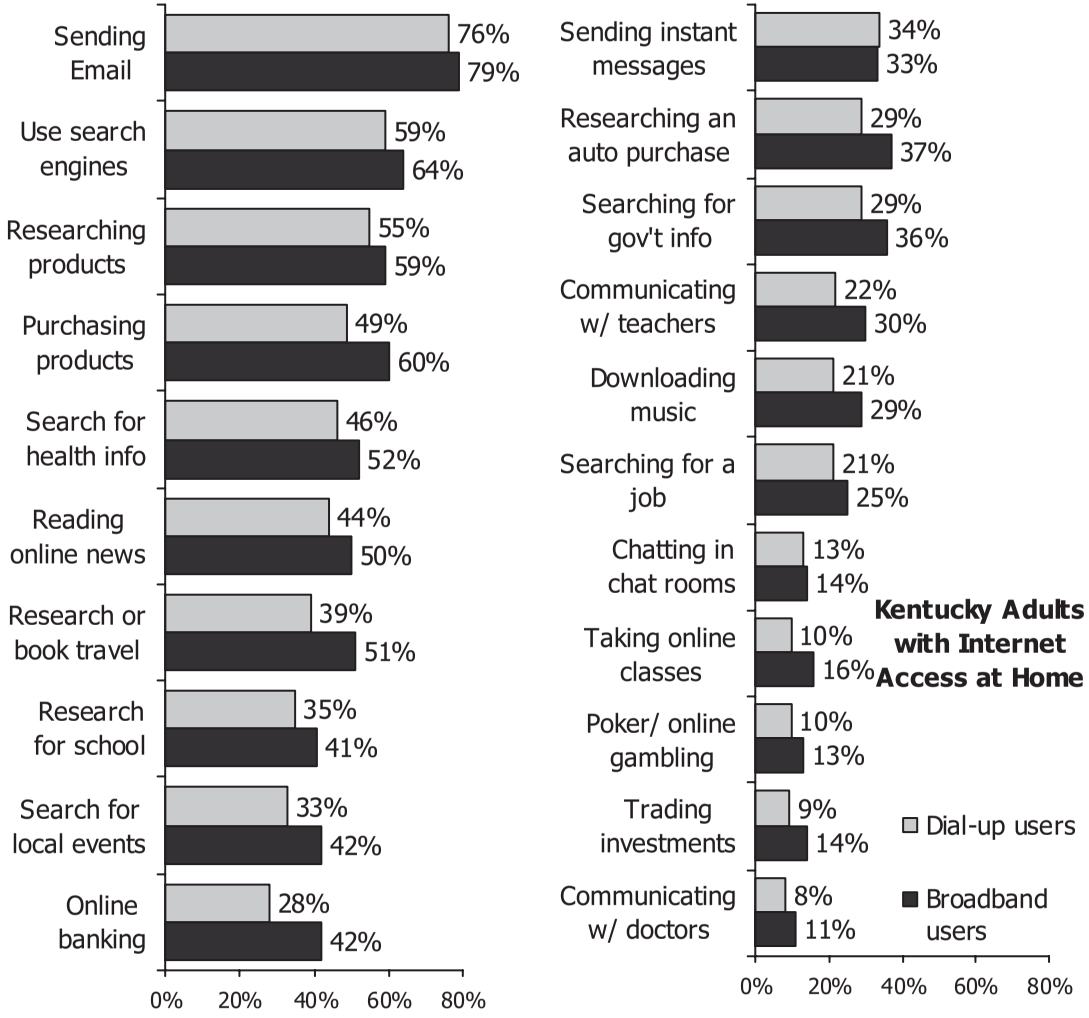
Source: 2005 ConnectKY Technology Assessment Study, n=5,001 employed adults who are not allowed to telecommute.



Source: 2005 ConnectKY Technology Assessment Study

Key Broadband Statistics:
Applications Used

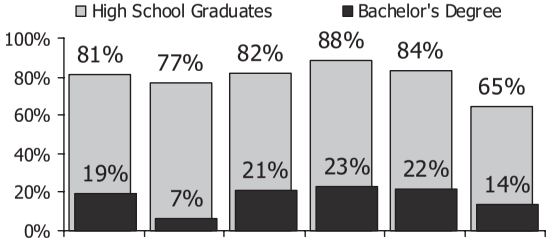
- Most Internet activities rise in popularity among those residents with home broadband access, those under age 55, and those in more affluent households (income of $75,000 or more).
- Home broadband is a significant factor in most activities except for:
  - Sending email
  - Instant messaging
  - Accessing chat rooms
- Men are more likely than women to engage in:
  - Online gambling
  - Researching an automobile purchase
  - Searching for government info
  - Downloading music
  - Accessing chat rooms
  - Buying and selling investments
- Women are more likely than men to search for health information online.
- Those over 55 tend to use the Internet the least of all age groups. Those 18-34 are more likely than older Internet users to go online for:
  - Research for schoolwork
  - Downloading music
  - Searching for jobs
  - Online gambling
- Those 35-54 tend to use the Internet more for:
  - Searching for health information
  - Finding government information.



Key Technology Statistics: by Educational Attainment

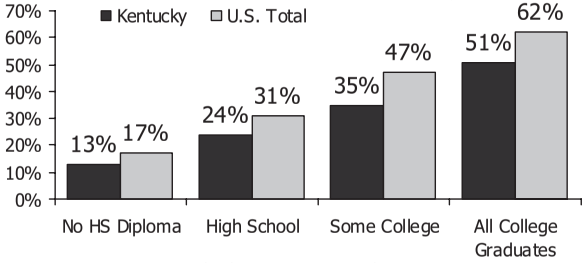
- Educational attainment levels in Kentucky have risen significantly in the last 30 years and peak among adults in the 25 to 44 age bracket, where 88% of adults have graduated from high school and 23% have a bachelor's degree.
- Educational attainment is directly related to computer and internet usage, as well as broadband adoption.
- The attainment of a high school diploma is correlated with a significant increase in computer ownership and internet and broadband use.
- Kentucky lags behind national averages in terms of residential broadband use, even among the most educated people.
- In general, the incidence of college graduates in a given area correlates well with incidence of broadband, as shown in the map at right.
- Education level is also a significant factor in how the Internet is used:
  - Those with college degrees use it more for research, commerce, and banking.
  - Those with some college use it more for entertainment: downloading music and instant messaging.
  - Those with lower levels of education are more likely to report using it for chat rooms and gambling.

Educational Attainment by Age



Source: U.S. Census, 2004 Current Population Survey

Home Broadband Usage

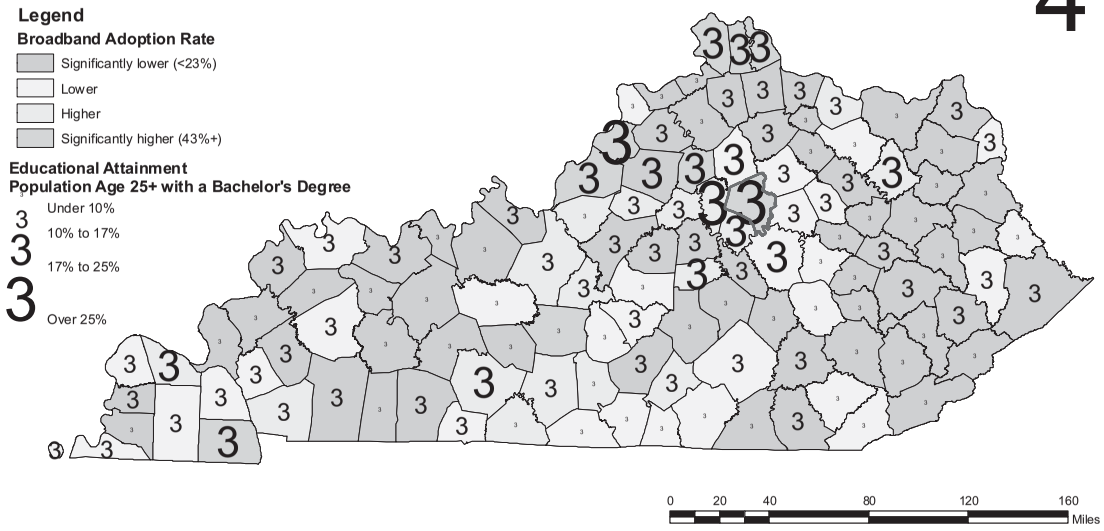


Source: 2005 ConnectKY Technology Assessment Study, Pew Internet "Who's Online" 2006, www.pewinternet.org

Residential Broadband Adoption by County

Statewide: 32% adult residents have broadband Internet access at home
17% of adults age 25+ have a college education (bachelor's degree or higher)

4

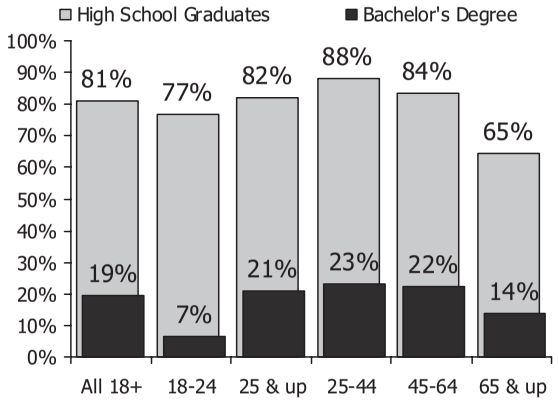


Source: ConnectKentucky County Level Technology Assessment Survey (n=10,842 statewide)
U.S. Census Bureau, 2000 Census

Key Technology Statistics: by Age

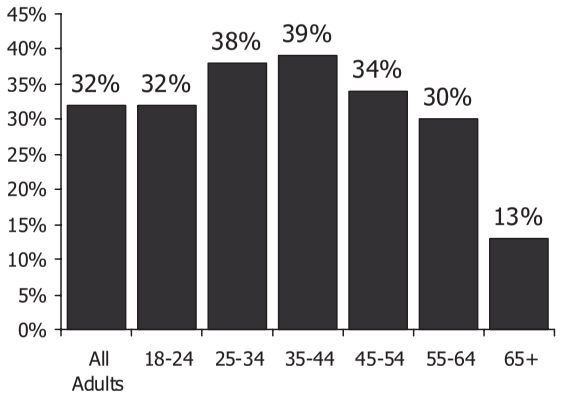
- Kentucky residents in the 65+ age bracket have a much lower proportion of high school graduates. This is important because the attainment of a high school diploma is correlated with a significant increase in computer ownership as well as Internet and broadband use.
- Age is directly related to computer and Internet usage, as well as broadband adoption. Broadband and Internet usage both peak in the 35-44 age range and are lowest in the 65+ age bracket.
- Kentucky lags behind national averages for Internet and broadband use overall, except among seniors age 65+, where broadband adoption is the same as the national average (13%).
- For those in the 65+ age bracket, the biggest barriers to Internet access are not owning a computer and a perceived lack of need. Perceived lack of need is also the largest barrier to getting seniors with dial-up service to obtain broadband.
- Age is also a significant factor in how the Internet is used. Generally,
  - The youngest residents (18-24) are more likely to use the Internet for schoolwork and entertainment.
  - Those 65 and older are less likely to use nearly all of the applications tested than younger Internet users.

Educational Attainment by Age



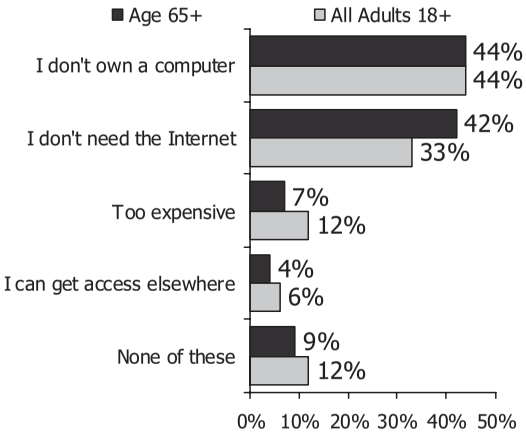
Source: U.S. Census, 2004 Current Population Survey

Broadband Usage in KY by Age



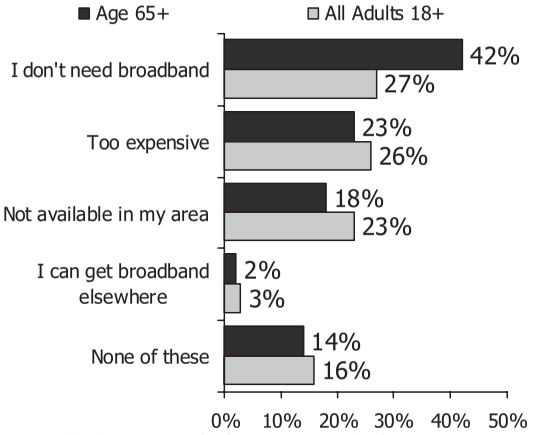
Source: 2005 ConnectKY Technology Assessment Study

Barriers to Internet Access



Source: 2005 ConnectKY Technology Assessment Study

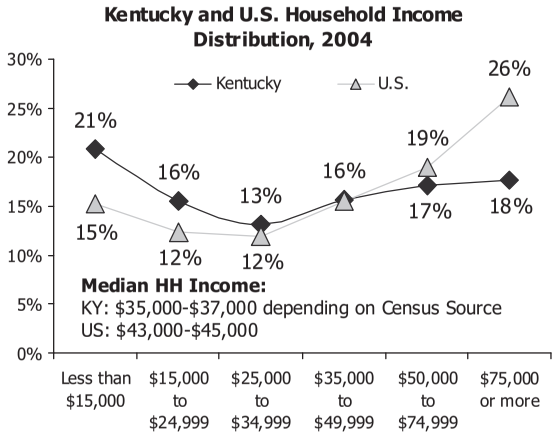
Barriers to Broadband



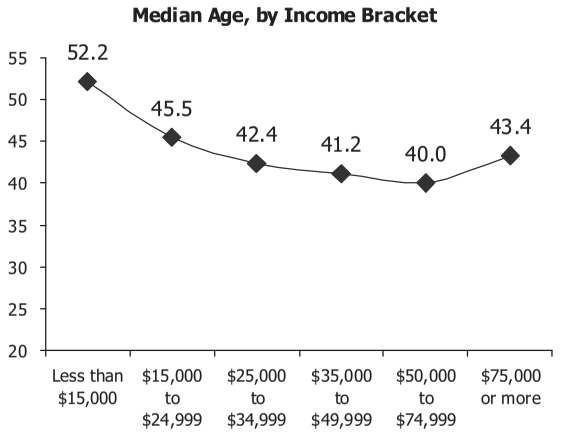
Source: 2005 ConnectKY Technology Assessment Study

Key Technology Statistics: by Household Income

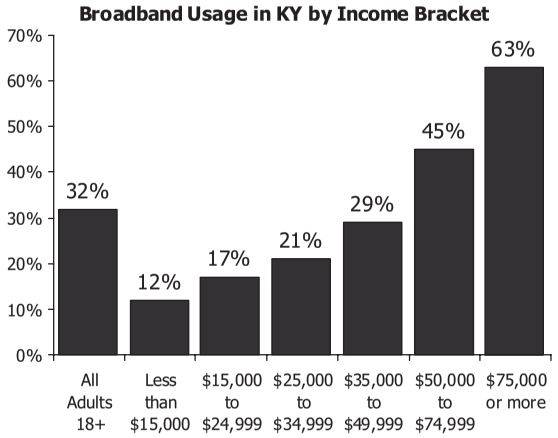
- Kentucky has a larger share of households earning under $35,000 per year and a much smaller share earning at least $75,000 per year, compared to the U.S. as a whole.
- Median income in Kentucky is about $8,000 below the national average.
- In Kentucky, the lowest income bracket (under $15,000 per year) includes a much larger proportion of senior citizens.
- In Kentucky, the most affluent households are more than five times as likely to have broadband at home as the lowest income households.
- Unlike computer presence and general Internet access, broadband access rates do not rise above the statewide average until income rises above $50,000.
- Kentucky trails most significantly behind the national average rates of broadband adoption in the middle income bracket ($35,000-$49,999).
- Among current dial-up users, expense is the primary concern for low income households, but availability is the key issue for high income households.
- Income is also a significant factor in how the Internet is used with the highest earners ($75,000 and above) use the Internet for the widest variety of uses.



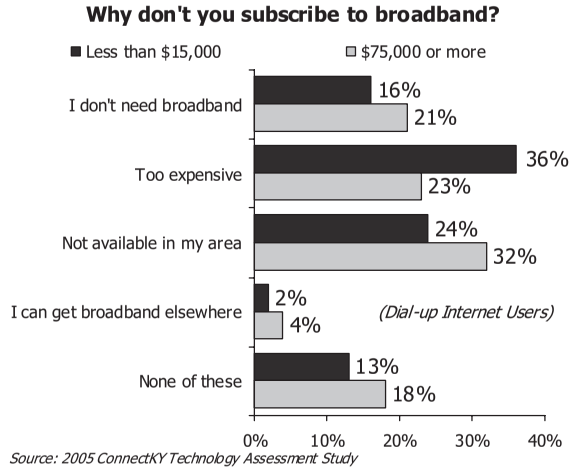
Source: U.S. Census Bureau, 2004 American Community Survey



Source: ConnectKentucky, 2005 Technology Assessment Study.



Source: 2005 ConnectKY Technology Assessment Study

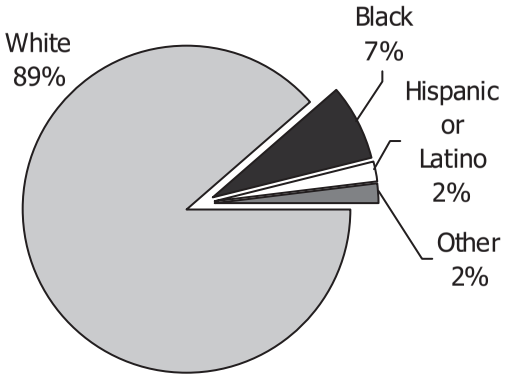


Source: 2005 ConnectKY Technology Assessment Study

Key Technology Statistics: by Race and Ethnic Origin

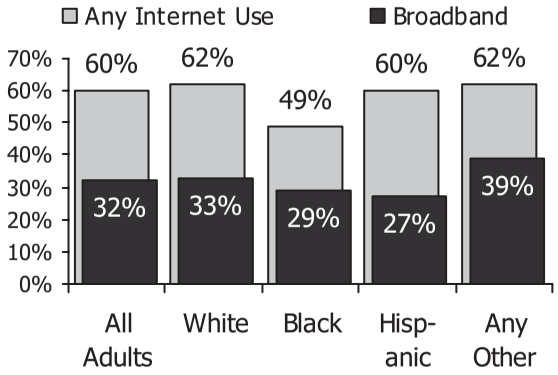
- Kentucky has fewer ethnic minorities (89% white) compared to the U.S. as a whole (68% white). However, there are over three times as many Blacks (7%) as there are those of Hispanic or Latino origin (2%).
- Fewer than half of adult African Americans in Kentucky have home Internet access, while 60% of Hispanics can access the Internet at home.
- However, there is much less disparity in current broadband adoption rates between the major ethnic groups in the state, in part because African Americans are disproportionately found in counties with greater broadband infrastructure and adoption rates.
- Still, a high proportion (49%) of African Americans on dial-up believe they do not need broadband. For Hispanic households, expense is the main concern (32%).
- More than three out of four Hispanics report having access from any location, thanks in part to higher than average access through libraries and community centers.
- White Internet users in Kentucky use the Internet for the greatest variety of commercial purposes, while African Americans are more likely than whites to use the Internet for schoolwork and job searches.

Kentucky's Ethnic Breakdown



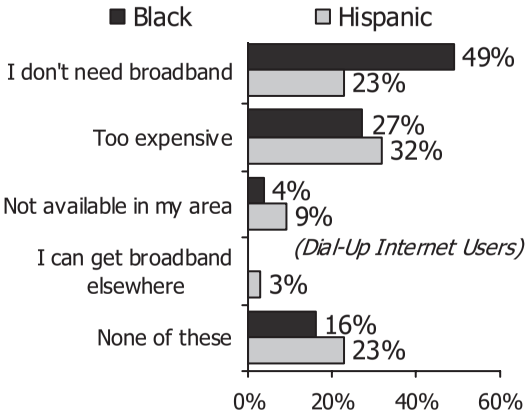
Source: U.S. Census Bureau, 2004 American Community Survey

Residential Internet Use



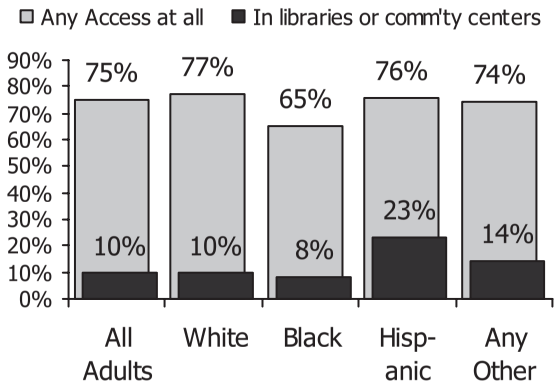
Source: 2005 ConnectKY Technology Assessment Study

Why don't you have broadband?



Source: 2005 ConnectKY Technology Assessment Study

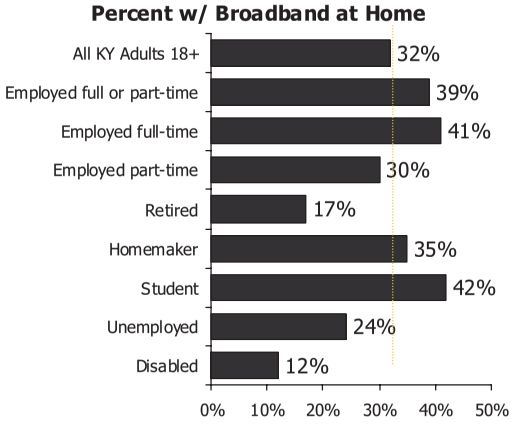
Internet Access Locations



Source: 2005 ConnectKY Technology Assessment Study

Key Technology Statistics: by Employment Status

- 57% of Kentucky's adults are employed either full or part-time.
- The disabled, retirees, and the unemployed have the lowest percentage of computers at home as well as the lowest percentage of home Internet access.
- Students and full time workers have the highest home broadband access (42% and 41% respectively.)
- Not having a computer is the main barrier to using the Internet at home among retirees, the unemployed and the disabled. For retirees, this is closely followed by a perceived lack of need.
- Cost is the main barrier to broadband use for homemakers and students with dialup access, while lack of perceived need is the main barrier for retirees.
- There is a significant inverse relationship between broadband adoption and unemployment rates. Counties with high levels of broadband adoption also have low unemployment rates.
- Uses for the Internet vary between each group, with the retired, unemployed and disabled using it significantly less overall.
- However, over a third (36%) of unemployed Internet users report that they look for jobs online.



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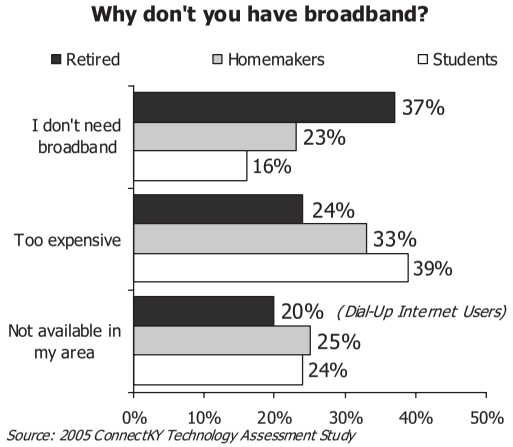
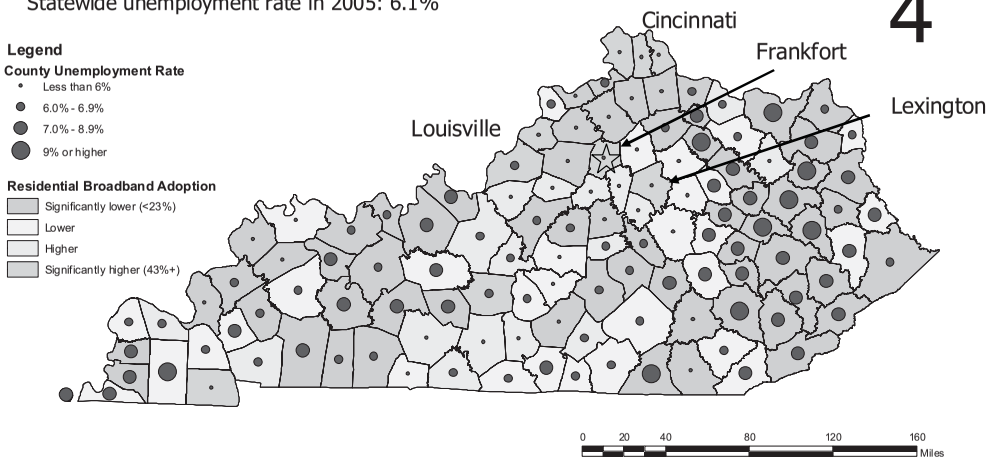


Source: 2005 ConnectKY Technology Assessment Study

Residential Broadband Adoption by County

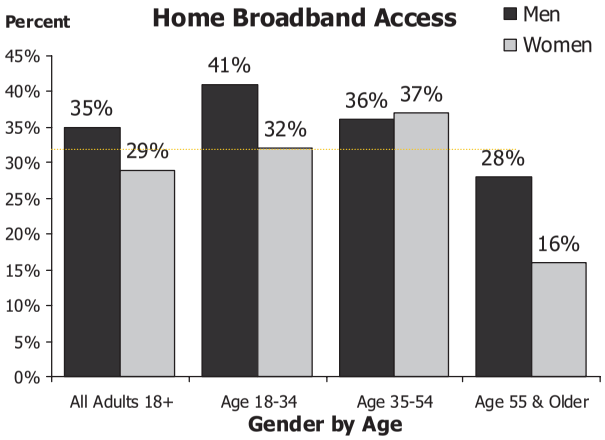
Statewide: 32% adult residents have broadband Internet access at home
Statewide unemployment rate in 2005: 6.1%



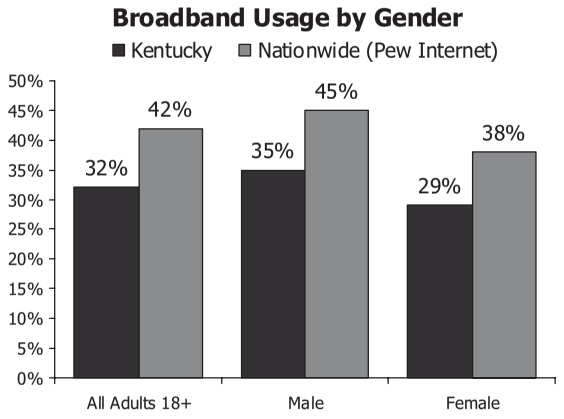
Source: ConnectKentucky County Level Technology Assessment Survey (n=10,842 statewide)
U.S. Bureau of Labor Statistics, 2005 Local Area Unemployment Estimates

Key Technology Statistics: by Gender

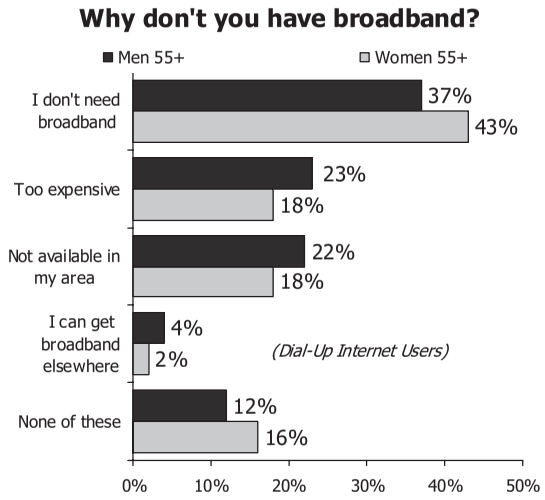
- Overall, men are significantly more likely to have broadband access at home than women, but this is driven by the gender gap among young adults 18-34 and those age 55 or higher. Broadband access for women peaks in the 35-54 age bracket, while for men broadband access continually declines with increasing age.
- Although Kentucky lags behind the national rates of residential broadband access reported by Pew Internet, the gender pattern is similar, with men more likely than women to have broadband access at home.
- For older women, lack of a computer is the primary reason for not accessing the Internet, while for men, it is a perceived lack of need.
- For both sexes, the main barrier to broadband adoption among those using dial-up Internet services is a perceived lack of need.
- Women (especially those age 35+) are significantly more likely than men to search for health and medical information online.
- In the younger age ranges, men are significantly more likely than women to use the Internet for entertainment related applications, such as music, chat and gambling.



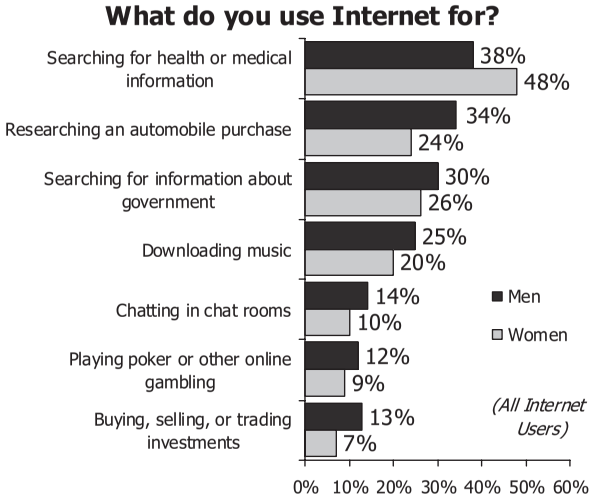
Source: 2005 ConnectKY Technology Assessment Study



Source: 2005 ConnectKY Technology Assessment Study and "Home Broadband Adoption" www.pewinternet.org



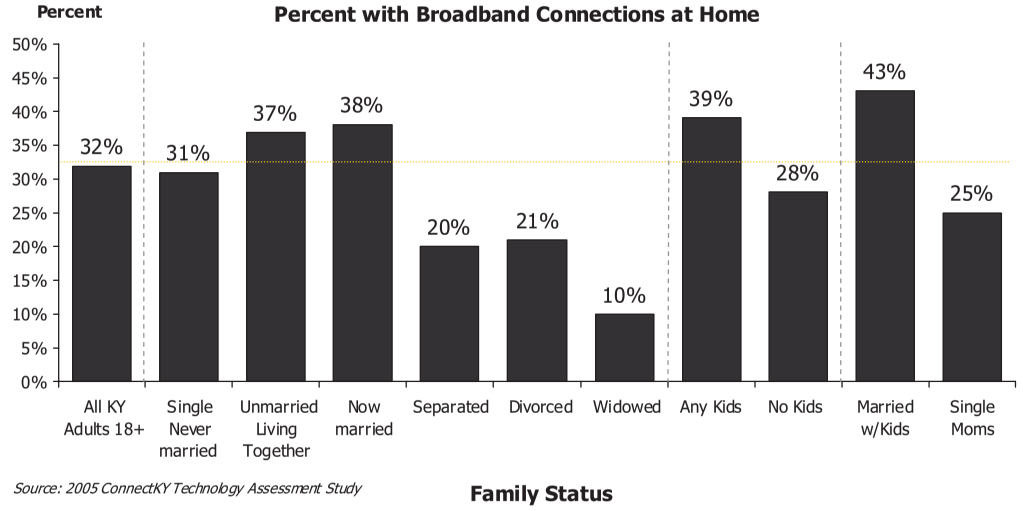
Source: 2005 ConnectKY Technology Assessment Study



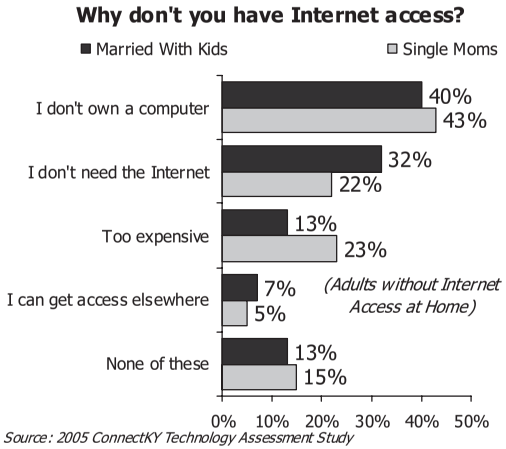
Source: 2005 ConnectKY Technology Assessment Study

Key Technology Statistics: by Marital & Family Status

- Family status and presence of children is highly predictive of all key household technology adoption indicators: presence of computers, Internet access, and broadband Internet access to the home.
- These indicators rise significantly among couples living together (whether married or unmarried) and adults with children under age 18 living in the home.
- However, just one quarter of single mothers surveyed have broadband, compared to 43% of married adults with children.
- While lack of a computer is the main barrier to having Internet access at home for both married couples with children and single mothers, a significantly higher share of single mothers say the Internet is too expensive.
- Expense is also the leading barrier to greater broadband adoption for both married couples with children and single mothers. However, availability is a stronger barrier among married couples with children, suggesting that rural families who could otherwise afford broadband services are not being served with the present broadband infrastructure.
- Single mothers are significantly more likely than married couples to rely on access outside the home, especially public access through libraries or community centers, the homes of others and school.
- Presence of children is correlated with significantly higher use of nearly all Internet applications, although single moms tend to use the Internet more for chatting, instant messaging, downloading music and searching for jobs.



Source: 2005 ConnectKY Technology Assessment Study



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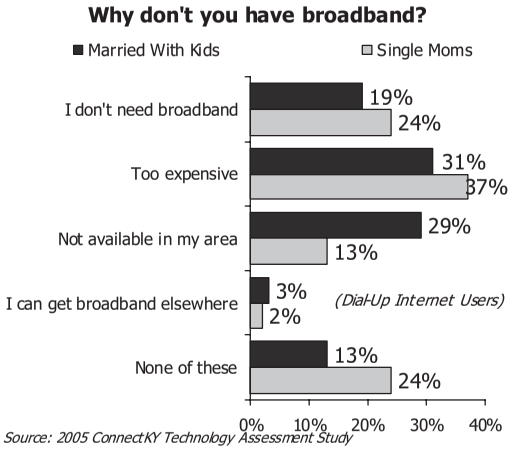

Source: 2005 ConnectKY Technology Assessment Study

Methodology

- Data were collected by telephone, through live computer assisted interviews from a statewide random digit dial (RDD) sample. 10,842 households were contacted between October 12 and December 2, 2005.
  - This research was designed to measure consumer technology indicators at the county level for all 120 counties in the state. Approximately 90 interviews were completed in each county.
- The questionnaire screened to include only adults age 18 or older, with quotas set by gender and age to ensure adequate representation of all adults in each county in the state.
- Weights were applied to each county's survey sample to match the most recent population Census estimates by age and gender.
  - Additional weights applied to set each county's representation in proportion to the share of the state's adult population living there.
- Sampling error:
  - Each county (n=~90): $\pm$10.4% at the 95% level of confidence.
  - Statewide, full sample (n=10,842): $\pm$0.9% at the 95% level of confidence.
  - Statewide control sample (n=400): $\pm$4.9% at the 95% level of confidence.

State Sample Profile (n=10,842)

Gender:		**Employment Status:**	
Male	48%	Employed full or part time	57%
Female	52%	Retired	18%
Age:		Homemaker not employed outside home	7%
18 to 24	10%	Student not working for wages	2%
25 to 34	21%	Unemployed, disability, other	13%
35 to 44	18%	No answer/refused	3%
45 to 54	21%	**Educational Attainment:**	
55 to 64	14%	Less than high school	14%
65 or older	16%	High school graduate	32%
Mean age (years)	46.2	Some college	24%
Median age (years)	45.3	College graduate or higher	26%
Region of the State:		No answer /refused	4%
North Central	44%	**Household Income:**	
Eastern KY	27%	Under $25,000	23%
South Central KY	17%	$25,000 to $49,999	24%
Western KY	12%	$50,000 to $74,999	14%
Marital Status:		$75,000 or higher	16%
Single, never married	15%	No answer/ refused	23%
Married or living in partnership	62%	**Race:**	
Separated or divorced	13%	White	85%
Widowed	8%	Black	7%
Refused to say	2%	Any other	3%
Any children under age 18 in household	38%	Refused	5%
Average household size (# of persons)	2.9	**Of Hispanic origin or descent**	3%

Attribution

The County Level Technology Assessment Project is funded by ConnectKentucky - an alliance of technology-minded businesses, government entities, universities and economic development organizations working together to accelerate technology in the Commonwealth.

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Kentucky Broadband Task Force
2005 Interim Report

Duties and Activities of the Task Force in 2005

Under 04 HB 627, the Kentucky Broadband Task Force was created to "examine the deployment of broadband in the Commonwealth including, but not limited to, the following aspects of provisioning broadband service: regulation, cost, access to facilities, and market competition." House Bill 267 (2005 Regular Session) required that the task force provide an interim report no later than November 15, 2005, and a final report no later than November 15, 2006. Broadband is defined in 04 HB 627 and codified at KRS 278.5461(1) as "any service that is used to deliver video or to provide access to the Internet and that consists of the offering of the capability to transmit information at a rate that is generally not less than two hundred (200) kilobits per second in at least one direction; or any service that combines computer processing, information storage, and protocol conversion to enable users to access Internet content and services." Broadband is often referred to as "high speed Internet access."

The task force met three times during the interim, twice in Frankfort and once in Lexington, in conjunction with the 9th Annual Rural Telecon Conference. The following persons testified before the task force: Beth O'Donnell, Executive Director, Kentucky Public Service Commission; William Kehoe, Senior Counsel, Wireline Competition Bureau, Federal Communications Commission; Brian Mefford, CEO, ConnectKentucky; and Laura Taylor, Director of Research and Government Affairs, ConnectKentucky.

It should be noted that, in this report, when statements of members representing various segments of the broadband industry are reported, the person making the statement will be denoted by the entity that he or she represents, e.g., as "an incumbent local exchange carrier," "a cable provider," or "an Internet Service Provider." The types of broadband-providing entities are briefly defined in the text. Fuller definitions, along with definitions of key technical terms, may be found in the glossary immediately preceding this report.

Findings and Discussion of Issues

Status of Broadband Deployment in Kentucky

Findings. At its first meeting, June 7, 2005, the task force requested that ConnectKentucky, the public/private entity charged by Governor Ernie Fletcher to achieve his goal of 100 percent broadband accessibility by 2007, provide the baseline and trend data that 04 HB 627 had required of the Office of New Economy. The task force found ConnectKentucky to be a valuable resource in assisting the Task Force in this and other aspects of its duties.

At the June 7 meeting, ConnectKentucky reported that, as of mid-2005, about 75 percent of Kentucky households were able to subscribe to broadband service. This compared to

about 60 percent two years earlier. The 25 percent that did not have access to broadband service are largely located in the more rural areas of the Commonwealth. In Kentucky, 25 percent of all households have subscribed to broadband service. This compares to 30 percent nationwide and ranks Kentucky 43rd among the states.

At the third meeting of the task force, on October 11, ConnectKentucky reported that 77 percent of households are able to subscribe to broadband and that expected new investment in broadband should increase that number to 90 percent by the end of 2006. ConnectKentucky is working with elected officials and leaders in business, civic groups, education, health care, agriculture, and other areas to assess and increase the awareness of the benefits of broadband service and, consequently, increase the demand for broadband service. The Federal Communications Commission (FCC) has reported that Kentucky in the past year had one of the highest rates of growth in adoption of all the states.

Factors Affecting Broadband Deployment and Adoption

Regulation

Findings. The task force found that, at both the state and federal levels, regulation is being greatly reduced or terminated, with the stated intent of fostering competition and investment in broadband service. In Kentucky, 04 HB 627 provided that "(T)he provision of broadband shall be market-based and not subject to state administrative regulation…with respect to…(a) the availability of facilities or equipment used to provide broadband services; or (b) the rates, terms or conditions for, or entry into, the provision of broadband service."

Two major events in 2005 greatly reduced federal regulation of broadband. On June 27, 2005, the United States Supreme Court, in the so-called Brand X case, deferred to a 2002 ruling of the FCC that cable modem service is an information service and, as such, is not required to provide access to the Internet to competitors. (National Cable and Telecommunications Assn. v. Brand X Internet Services, 545 U.S. ___ 2005). On August 5, 2005, the FCC extended the Brand X ruling to wireline, or Digital Subscriber Line (DSL), broadband service. The FCC ruled that, after a one-year transition period, telephone companies would no longer be required to provide access to the Internet for competitors at discounted tariffed rates. (Report and Order and Notice of Proposed Rulemaking, FCC 05-150) The FCC stated that its intention was to develop a consistent regulatory framework across broadband platforms and to remove regulation that it considered detrimental to broadband deployment.

Access to Facilities

Findings. The task force found that competitive local exchange carriers (CLECs) and independent Internet Service Providers (ISPs) represented on the task force are concerned about access to broadband facilities of incumbent local exchange carriers (ILECs), or traditional telephone companies.

Discussion. An ILEC stated that, in its August 5, 2005, DSL decision, the FCC ordered that access to telephone companies' broadband facilities is to continue for a one-year transition period, and that at this time, it is not clear how the FCC order will be implemented relating to continued access to broadband facilities.

A CLEC that provides Internet access service and an ISP expressed concern that the regulatory changes mean that competitors who wish to offer Internet access over the leased facilities of telephone companies and cable service providers will increasingly have to gain access to such facilities at negotiated prices that are likely to be substantially higher than current tariffed rates or will have to reach potential customers via alternate technologies such as broadband over satellite. An ILEC stated that the growth in use of alternate technologies is an outcome that the FCC anticipated in its movement toward less regulation.

A CLEC that provides Internet access service stated that, if competitors do not have access to the facilities of the telephone companies and cable companies, they will have to spread their capital thinner in order to build their own facilities in areas where customers have asked for service. CLECs and ISPs often have leased access to the ILECs' facilities in order to provide Internet access to their customers and to aid in financing future build-outs of their facilities, DSL or wireless, to unserved areas. Inability to lease facilities will deny service to many who would have gotten it otherwise, via leased facilities, in areas in which no other company wants to invest.

An ILEC stated that it is too early to know what the effects of the regulatory changes will be. The ILEC stated that ILECs and their competitors may be able to work out mutually beneficial agreements for leasing DSL or cable. And, incentives may enable all to provide service in areas not attractive for investment.

Market Competition

Findings. The task force found that there are several technologies for providing broadband service and several types of entities offering service. Traditional telephone companies offer DSL over their wirelines. Cable companies offer broadband service over their coaxial cable systems. CLECs offer broadband service either through facilities leased from the telephone companies or via their own DSL or wireless facilities. ISPs offer Internet service via facilities leased from telephone or cable companies or over wireless technologies. Municipal electric power systems offer broadband in a number of small and medium-sized cities in Kentucky.

The task force found divergent views among its members concerning the extent to which competition currently exists and how best to ensure competition.

Discussion. A CLEC that provides Internet access service expressed concern that, although there is competition at the national or regional levels and in the metropolitan areas of Kentucky, there appears to be little competition at the local level, especially in the rural areas. Rural markets are less likely to have the facilities competition provided by cable companies, ISPs, and multiple CLEC competitors and are more likely to be limited

to the ILEC and cable. The CLEC stated, prior to the August 5 FCC DSL decision, that telephone companies should continue to be required to provide access to facilities. An ISP agreed that continued access is necessary, stating that the 10 years since the enactment of the Telecommunications Act of 1996, which required telecommunications companies to provide access to transportation facilities, have been insufficient for competition to develop and that competition is essentially between cable and telephone company DSL. An ILEC stated that competition for broadband service in Kentucky comes from many providers and over various technologies.

Cost

Findings. The task force found that cost is a major factor in deployment and adoption of broadband, both in terms of the consumer's cost of acquiring broadband service and in terms of a provider's business plan for extending service into an area. Task force members expressed a number of viewpoints concerning the effects of cost on consumers and providers and also concerning policies that might support deployment and adoption of broadband.

At the October 11 meeting, ConnectKentucky outlined to the task force financial and other incentives to encourage companies to provide service, especially in areas that otherwise would not be considered economical to serve, and to create demand for broadband service. These were:

A. Financial incentives for any willing provider to decrease the cost of investment in unserved areas;
   - Tax incentives based on Mississippi and South Carolina provision of income tax or sales tax incentives;
   - Revolving loan pool through the Kentucky Infrastructure Authority (KIA);

B. A fund, similar to the KIA structure, to offset cost of satellite service installation;

C. Opening rights of way for infrastructure expansion;

D. Deregulation of the telecommunications industry (coupled with contract stability in rural areas).

ConnectKentucky reported that its survey data indicate that no set price can be cited as being a barrier; adoption of broadband is closely related to the value that people and businesses place on having it.

Discussion. A CLEC stated that emphasis should be on creating demand for broadband in areas in which there is no service or in which broadband has been only recently become available. A rural cooperative ILEC stated that since many rural areas served by cooperatives have 100 percent availability due to capital invested by the cooperatives, it is important to not limit incentives only to unserved areas. The problem in these areas is

the typically low rate of adoption. Incentives should focus on increasing the adoption of broadband in rural areas, even those that currently have broadband service.

A CLEC stated that, in the very rural areas, the cost of installing DSL or cable would be prohibitively expensive and that Wi-Max (broadband over radio frequencies) or satellite will be the technologies that have to be employed; these technologies also can overcome the problems of mountainous terrain. A CLEC stated that, although satellite will be required in some remote areas, the CLEC with the cooperation of the ILECs in terms of leasing facilities has been installing DSL in rural areas beyond the technical distance limitations of DSL and at reasonable cost. ConnectKentucky stated that infrastructure such as cell towers and water towers can be a part of helping improve the business case for an investment. ConnectKentucky also stated that satellite may be the most effective way to extend access into the final ten percent not having access and that an incentive for satellite service might be for the state to provide an incentive to the satellite service provider of half of the $400 - $800 cost of installation with the company matching the other half of the cost, eliminating all of the installation cost to the consumer.

A CLEC that provides broadband over its own facilities stated that deployment into rural areas might be increased if companies that are now upgrading their DSL facilities over the coming 10 years or so could be given incentive or simply asked to use the spare equipment to expand into the rural areas at reduced investment cost, rather than storing the equipment, disposing of it, or writing it off.

An ILEC stated that a relationship between deregulation and deployment is in the fact that there inherently are substantial costs due to regulation, and the question is whether the money is an expense or whether it is allowed to be capital to be invested elsewhere. A provider of broadband via cable modem stated that deregulation, as in the Brand X case, will be an incentive to increased investment in and deployment of broadband. An ILEC stated that any tax or financial incentive that would help improve the business plan relating to an area would help get investment in the area and that a decision to invest is a function of population and interest among the population.

Other Factors. A representative of municipal utilities expressed concern that the definition of broadband in 04 HB 627, which is consistent with the FCC definition, may set too low a goal. Other countries are deploying broadband having much higher speed than 200 kilobits per second, and 200 kilobits may not be adequate for the triple play of voice, data, and video.

FUTURE DIRECTIONS

The task force, noting that perhaps the major factor affecting the deployment of broadband in Kentucky is the change underway in regulation of broadband at the federal level, will continue its work of assisting the General Assembly in keeping up with developments in broadband technologies and deployment in a measured and careful way, always being aware of the impacts of its actions.

The task force found the ongoing work by ConnectKentucky to be important for the work of the task force. This organization, charged with increasing broadband deployment in Kentucky, has proved itself a knowledgeable resource for the task force, and its recommendations are important in considering future broadband deployment and use across Kentucky.