WHICH IS THE RIGHT BROADBAND PATH: MUNICIPALIZATION OR PRIVATIZATION?

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Introduction

In 2001, there were sixty-one municipally-owned utilities offering Internet access.[1] As of September 10, 2006, there were at least 68 city or countywide wireless broadband networks in operation for public access across America, and another 135 networks are in the planning stage.[2] As of April 25, 2006, there were 27 municipally-operated fiber-to-the-home (FTTH) broadband networks.[3] Many have asked the question of whether municipalities should be building these networks themselves, or whether it should be left to commercial telecommunications providers.[4] This paper will explore this question using the history of municipal-owned electric utilities as a model. It is my assertion that there has been a market failure in small rural communities. Private providers today are unwilling to invest in broadband networks, just as electricity companies were unwilling to invest in electricity networks for rural farms in the 1920s. The benefits of broadband are too important to allow this market failure to persist, yet laws have been enacted that would prohibit municipalities from building their own broadband networks. This is a mistake.

What is Rural?

In its May 2006 report to Congress on broadband deployment, the General Accountability Office defined rural areas as areas outside metropolitan statistical areas (MSAs), urban areas as the central city of an MSA, and suburban areas as areas within an MSA other than

[1] Jeffrey A. Eisenach, *Does Government Belong in the Telecom Business?*, Progress on Point Release 8.1, The Progress & Freedom Foundation (Jan. 2001), available at http://www.pff.org/issues-pubs/pops/pop8.1govtintelecom.pdf (last visited Dec. 1, 2006).

[2] Muniwireless.com, *September 2006 update of wireless cities and counties in the US* (Sept. 10, 2006), http://muniwireless.com/municipal/1359 (last visited Nov. 30, 2006).

[3] Render, Vanderslice & Associates, *U.S. Optical Fiber Communities With Customers Served Today via Fiber-to-the-Home* (April 25, 2006), available at http://www.ftthcouncil.org/documents/959055.pdf (last visited Dec. 1, 2006).

[4] *See* Robert McChesney & John Podesta, *Let There Be Wi-Fi*, Washington Monthly (Jan. 1, 2006), http://freepress.net/news/print.php?id=13138 (last visited Nov. 30, 2006).

the central city.[5] MSAs are defined by the Office of Management and Budget.[6] MSAs have at least one urbanized area of 50,000 or more population (the urban area), plus adjacent territory that has a high degree of social and economic integration with the core as measured by commuting ties (the suburban area).[7] There are 361 MSAs, containing 83% of the U.S. population.[8] Thus 17% of the U.S. population (approximately 51 million people) live in rural areas.[9]

What is Broadband?

The term "broadband" is used to distinguish high-speed Internet access from dial-up Internet access. Broadband connections are faster than dial-up (usually in both directions) and provide a continuous, "always on" connection.[10] The FCC has also recognized the increasing importance of low latency (the ability to send and receive data with little or no delay) for interactive applications such as Voice over IP (VoIP), Internet gaming, and collaborative computing.[11]

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[5] U.S. Government Accountability Office, *Broadband Deployment Is Extensive throughout the United States, But It Is Difficult to Assess the Extent of Deployment Gaps in Rural Areas* 12 fn. 12, Report number GAO-06-426 (May 2006), available at http://www.gao.gov/new.items/d06426.pdf (last visited Nov. 28, 2006) [hereinafter GAO Study].

[6] Wikipedia, *United States metropolitan area*, http://en.wikipedia.org/wiki/Metropolitan_Statistical_Area (last visited Nov. 30, 2006).

[7] Office of Management and Budget, OMB Bulletin No. 05-02 Appendix 2 (Nov. 2004), available at http://www.whitehouse.gov/omb/bulletins/fy05/b05-02_appendix.pdf (last visited Nov. 28, 2006).

[8] *Id*.

[9] Population Division, U.S. and World Population Clocks – POPClocks, U.S. Census Bureau, available at http://www.census.gov/main/www/popclock.html (last visited Nov. 30, 2006).

[10] Angele A. Gilroy & Lennard G. Kruger, Broadband Internet Regulation and Access: Background and Issues, Congressional Research Service report IB10045 (June 14, 2006), available at http://www.opencrs.com/document/IB10045 (last visited Nov. 26, 2006).

[11] Federal Communications Commission, Availability of Advanced Telecommunications Capability in the United States 12 (Sept. 9, 2004), available at http://hraunfoss.fcc.gov/edocs_public/attachmatch/FCC-04-208A1.pdf (last visited Nov. 26, 2006).

The most important aspect of broadband is the speed, and there are varying definitions for the minimum speed that should warrant the "broadband" label. The FCC uses the term "high-speed" to describe connections that provide the subscriber with transmissions at a speed in excess of 200 kilobits per second (kbps or kbit/s) in at least one direction.[12] The FCC uses the term "advanced services" to describe connections with transmission speeds in excess of 200 kbps in both directions.[13] By comparison, the International Telecommunication Union (ITU) defines broadband as "being equal to, or greater than 256 kbit/s, as the sum of the capacity in both directions."[14] The Organisation for Economic Co-operation and Development (OECD) defines broadband as a connection with at least 256 kbps downstream and at least 64 kbps upstream.[15]

There are a variety of technologies that can provide broadband Internet access for the "last mile" connection between a subscriber's residence and their Internet Access Provider's (ISP) network. These technologies can be broadly divided into two categories: wireline and wireless. Wireline technologies use a physical wired connection for the entire distance between the household and the ISP. Wireless technologies use the radio spectrum to communicate over distances from a few hundred feet to thousands of miles. Two wireline technologies, Digital Subscriber Line (DSL) and cable modems, are the most common technologies used by

[12] Federal Communications Commission, High Speed Services for Internet Access: Status as of December 31, 2005 fn. 1 (July 2006), available at http://hraunfoss.fcc.gov/edocs_public/attachmatch/DOC-266596A1.pdf (last visited Nov. 25, 2006).

[13] *Id.*

[14] Market, Economics and Finance (MEF) Unit, Key indicators of the telecommunication/ICT sector (2005), International Telecommunication Union, available at http://www.itu.int/ITU-D/ict/material/IndDef_e_v2005.doc (last visited Nov. 26, 2006).

[15] Sherille Ismail & Irene Wu, "Broadband Internet Access in OECD Countries: A Comparative Analysis," Federal Communications Commission (Oct. 2003), available at http://hraunfoss.fcc.gov/edocs_public/attachmatch/DOC-239660A2.pdf (last visited Nov. 25, 2006).

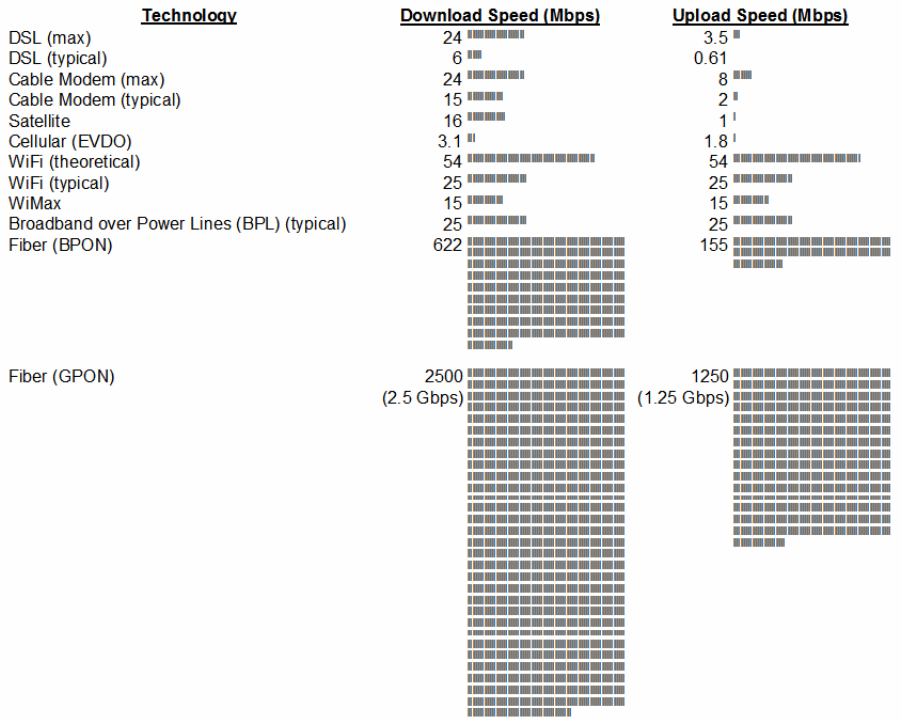
broadband subscribers, comprising 89.7% of the U.S. broadband market.[16] Other wireline broadband technologies are fiber-to-the-home (FTTH) and broadband over power lines (BPL). Wireless technologies include satellite, so-called "3G" cellular service, and Wi-Fi/WiMAX. Of all the various broadband technologies, fiber can support the highest speeds. Of the 50.2 million total high-speed lines in service at the end of 2005, 50.9% were cable modem, 38.8% were current-generation DSL, 1.7% were next-generation DSL or other technologies that use the phone network (e.g. ISDN), 6.2% were mobile wireless, 0.9% were fiber, and 0.8% were satellite.[17] The remaining 0.5% consisted of Broadband over Power Line (BPL) and fixed wireless technologies.[18]

[16] Federal Communications Commission, High Speed Services for Internet Access: Status as of December 31, 2005, at 6 chart 2 (July 2006), available at http://hraunfoss.fcc.gov/edocs_public/attachmatch/DOC-266596A1.pdf (last visited Nov. 25, 2006) [hereinafter FCC High Speed Services Status].

[17] *Id*. at 3.

[18] *Id*. at 6.

Figure 1 – Speeds of Various Broadband Technologies[19]



The majority of broadband lines in the U.S. are provided by the major telephone and cable companies. Three companies (AT&T, Verizon, and Bell South), provide service to over 80% of all DSL subscribers.[20] Five companies (Comcast, Time Warner, Charter, Adelphia, and Cablevision), provide service to 78% of all cable modem subscribers.[21] Verizon is responsible for about three-quarters of the homes passed with fiber.[22] Cable companies are responsible for about 1.5%.[23]

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[19] http://en.wikipedia.org/wiki/List_of_device_bandwidths, http://en.wikipedia.org/wiki/IEEE_802.11 (Wi-Fi speeds), http://www.wimaxforum.org/about/faq/ (WiMAX speeds), http://www.pmc-sierra.com/ftth-pon/ftth_overview.html (fiber speeds), http://www-03.ibm.com/industries/utilities/doc/content/bin/GE510-6151-00f_Exploit_Broadband_1.pdf (BPL speeds)

[20] Leichtman Research Group, Inc., Over 3 Million Add Broadband in the First Quarter of 2006 (May 15, 2006), available at http://www.leichtmanresearch.com/press/051506release.html (last visited Nov. 26, 2006).

[21] *Id.*

[22] Steven S. Ross, "Wow! 1 Million FTTH Customers," Broadband Properties 20 (Oct. 2006), available at http://www.broadbandproperties.com/2006issues/oct06issues/render_oct.pdf (last visited Nov. 25, 2006).

[23] *Id.*

A growing number of municipalities also provide broadband service. Of the 886 FTTH projects reported by RVA in 2006, thirty-seven (4%) are operated by municipalities, cooperatives, or public utility districts.[24] There are also at least 68 city or countywide wireless broadband networks in operation for public access, and another 135 networks in the planning stage.[25]

Do We Already Have Broadband?

In its December 2005 broadband status report, the FCC reported the presence of high-speed broadband service in all 50 states, the District of Columbia, American Samoa, Guam, Northern Mariana Islands, Puerto Rico, and the Virgin Islands, and in 99% of the zip codes in the United States.[26] But the FCC considers broadband to be present in a particular zip code if there is a single broadband subscriber.[27] And since the FCC includes satellite broadband providers, this mean that there could be 100% availability and yet no physical infrastructure on the ground other than at each customer's premises. Not surprisingly, the most widely reported technology was satellite (with customers in 88% of zip codes).[28] DSL and cable modem subscribers were reported in 87% of zip codes.[29]

[24] Render, Vanderslice & Associates, *supra* note 3 (NOTE – Although this document states that there are 936 communities, in analyzing the data this researcher found that there were only 886 communities listed).

[25] Muniwireless.com, *supra* note 2.

[26] FCC High Speed Services Status, *supra* note 16.

[27] *Id*. at 5.

[28] *Id.*

[29] *Id*.

The FCC's statistics and methodologies have been widely criticized.[30] As the Government Accountability Office (GAO) explained it,

> Because a company will report service in a zip code if it serves just one person or one institution in that zip code, stakeholders told us that this method may overstate deployment in the sense that it can be taken to imply that there is deployment throughout the zip code even if deployment is very localized. We were told this issue might particularly occur in rural areas where zip codes generally cover a large geographic area. Based on our own analysis, we found, for example, that in some zip codes more than one of the large established cable companies reported service. Because such providers rarely have overlapping service territories, this likely indicates that their deployment was not zip-code-wide and that the number of providers reported in the zip code overstates the level of competition to individual households.[31]

The GAO was able to compare the FCC's reported broadband availability to actual data for one state, Kentucky, where a state agency had done an extensive analysis of actual broadband deployment.[32] Whereas the FCC reported that broadband was available in 96% of households in the state, Kentucky determined that broadband was available in only 77% of households.[33] The GAO also attempted to determine the number of providers serving households which responded to a May 2005 survey. The FCC's data showed that the median number of providers was eight, and only 1% of respondents lived in zip codes for which no broadband providers reported serving at least one subscriber.[34] After adjustments, the GAO estimated the median number of

[30] See, e.g. TeleTruth Broadband Data Quality Act Complaint (July 26, 2005), available at http://www.newnetworks.com/TeletruthBroadbandDQAmartin.htm (last visited Nov. 25, 2006).

[31] GAO Study, *supra* note 5, at 16.

[32] *Id*. at 17.

[33] *Id*.

[34] *Id*. at 17-18.

providers for the respondents was actually two, and 9% of respondents likely had no providers of broadband at all.[35]

International

Although the United States has the most broadband subscribers of all OECD countries, in terms of broadband subscribers per 100 inhabitants, it fell from fourth place in 2001 to thirteenth place in 2005.[36] This is not because the population density of the United States is significantly lower than other countries—there are five countries ranked higher that have a lower population density.[37] It's also not because the United States has a lower Gross Domestic Product (GDP) than higher-ranked countries—only one OECD country has a higher GDP (Luxembourg) and it has a lower broadband penetration rate.[38] It is clear that the United States is loosing its lead in broadband deployment and it's not because of population density or GDP.

The United States is also falling behind in deployment of FTTH. In September 2006, there were more than 6 million homes passed by fiber, 5 million on which were being marketed by network providers.[39] Of those, only 1 million homes were subscribers to fiber broadband service.[40] In comparison, Japan reached 1 million FTTH subscribers in December of 2003.[41]

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[35] The GAO eliminated satellite providers, providers that served only businesses, non-facilities-based providers, telephone-based providers if the residence was further than 2.5 miles from the central office that served the respondent's home, multiple cable providers if more than one of the largest ten cable providers served the zip code, and all cable providers if the respondent said that cable does not pass their residence. *Id*.

[36] Organisation for Economic Co-operation and Development, OECD Broadband Statistics to June 2006, available at http://www.oecd.org/sti/ict/broadband (last visited Nov. 25, 2006).

[37] *Id*.

[38] *Id*.

[39] Ross, *supra* note **Error! Bookmark not defined.**, at 19.

[40] *Id*.

[41] Bob Whitman, *International FTTH Deployments: Lessons learned around the globe* (Feb. 11, 2004), available at http://www.corning.com/docs/opticalfiber/expocomm_2004.pdf (last visited Dec. 1, 2006).

Although North America accounts for 34% of the world's broadband subscribers, it accounts for only 7% of the world's FTTH subscribers.[42]

Demand

Once broadband is deployed, potential customers need to decide that it is worth the cost of subscribing. Broadband deployment is usually measured in terms of the percentage of households to which the service has been made available. Demand is measured using two terms: penetration and take rate.[43] "Penetration" describes the percentage of total U.S. households that subscribe to the service.[44] "Take rate" describes the percentage of households that take the service where it has actually been deployed.[45] Note that "subscribers" is not the same thing as individuals with broadband service, as multiple individuals can reside in a single household. Because wireline broadband service is provisioned on a household-by-household basis, "subscribers" are usually thought of as subscribing households, not subscribing individuals.

Take rates are the most useful indicator of broadband adoption. If take rates are low, private companies have little incentive to continue building broadband infrastructure because the revenues may not justify the cost. But there is little current publicly-available data on take rates. As previously mentioned, ISPs are not required to report the total number of broadband connections deployed to the FCC, only the number of subscribers. Without knowing the total

[42] *Id.*

[43] Office of Market Monitoring and Strategic Analysis, *Broadband Services in the United States: An Analysis of Availability and Demand*, Florida Public Service Commission 24 (Oct. 2002), available at http://www.fcc.gov/jointconference/services_study-oct2002.pdf (last visited Nov. 30, 2006) [hereinafter PSC Analysis].

[44] *Id.*

[45] *Id.*

number of homes capable of broadband service (excluding satellite and cellular), it is impossible to calculate the take rate.

Estimates of the number of households with broadband (also referred to as the number of broadband subscribers) vary wildly. The GAO estimated that 30 million households (28%) subscribed to broadband service in May 2005.[46] According to the ITU, of the world's top 20 economies, the United States ranks sixteenth in terms of broadband subscribers with an adoption rate of about 18% in December 2005.[47] Michael Render, who compiles statistics for the Fiber-to-the-Home Council, estimates that 43% of American homes had a broadband Internet connection by spring 2006.[48] The total number of broadband subscribers is expected to grow to 69.2 million by 2009.[49]

Do We Need Broadband?

> This country needs a national goal for…the spread of broadband technology. We ought to have…universal, affordable access for broadband technology by the year 2007, and then we ought to make sure as soon as possible thereafter, consumers have got plenty of choices when it comes to [their] broadband carrier. – President George W. Bush, March 26, 2004[50]

[46] GAO Study, *supra* note 5, at 10.

[47] Market, Economics and Finance (MEF) Unit, Economies by broadband penetration, 2005, International Telecommunication Union (2005), available at http://www.itu.int/ITU-D/ict/statistics/at_glance/top20_broad_2005.html (last visited Nov. 26, 2006).

[48] Ross, *supra* note **Error! Bookmark not defined.**, at 20-21.

[49] Telecommunications Industry Association, *U.S. Broadband Market Reaches 41.2 Million Subscribers in 2005; Expected to Grow to 69.2 Million Subscribers by 2009* (March 9, 2006), available at http://www.tiaonline.org/business/media/press_releases/2006/PR06-22.cfm (last visited Nov. 27, 2006).

[50] Available at http://www.whitehouse.gov/infocus/technology/economic_policy200404/chap4.html (last visited Nov. 25, 2006)

Economic Development

There is a proven high level of correlation between a state's per-capita income and the number of high-speed Internet lines per 1,000 residents.[51] Even after controlling for community-level factors known to influence broadband availability and economic activity, between 1998 and 2002, communities in which mass-market broadband was available by December 1999 experienced more rapid growth in (1) employment, (2) the number of businesses overall, and (3) businesses in IT-intensive sectors.[52] The effect of broadband availability in 1999 also resulted in higher residential property values (proxied by the average level of rent paid for housing) in broadband-enabled communities in 2000.[53]

Assuming national broadband adoption will reach 95% by 2021, the cumulative effect would be an estimated 140,000 new jobs sustained per year.[54] If broadband adoption were to occur more rapidly, it is possible that more than 1.2 million jobs could be created.[55] The cumulative increase in capital expenditures associated with the ubiquitous adoption of current-generation broadband technologies will result in a cumulative increase in gross domestic product (GDP) of $179.7 billion.[56] For California alone, a 2003 study estimated a $376-billion upside in

[51] New Millennium Research Council, *Not In The Public Interest – The Myth of Municipal Wi-Fi Networks* 24 (Feb. 2005), available at http://www.newmillenniumresearch.org/archive/wifireport2305.pdf (last visisted Nov. 25, 2006) (noting, however, that this correlation may pick up the affect of another relationship such as the prevalence of both high per-capita income and high-speed Internet lines in densely populated states).

[52] William H. Lehr et al., *Measuring Broadband's Economic Impact* 1 (Jan. 17, 2006), available at http://www.caltelassn.com/Reports06/Broadband/tprc.pdf (last visited Nov. 27, 2006).

[53] *Id*. at 12.

[54] Robert W. Crandall et al., *The Effect of Ubiquitous Broadband Adoption on Investment, Jobs, and the U.S. Economy* 1, Criterion Economics, L.L.C. (Sept. 2003), available at http://www.caltelassn.com/Reports06/Broadband/econbroad.pdf (last visited Nov. 27, 2006).

[55] *Id*.

[56] *Id*.

gross state product (GSP) and 2 million additional jobs if there was a one gigabit connection to every home and business in the state by 2010.[57]

Community Benefits

Because broadband deployment rates differ between communities, a community that deploys broadband before neighboring communities may be able to stimulate economic growth by attracting businesses looking to relocate and dissuading businesses that need broadband from leaving.[58] One study focusing on Lake County, Florida found that the county experienced a doubling of economic activity relative to comparable Florida counties since making its municipal broadband network generally available to businesses and municipal institutions in the county.[59]

The non-economic benefits of broadband are just as important as the economic benefits. A broadband network can be used to carry signals from traffic and security cameras, to monitor and manage the electricity and gas grid, for distance learning (helpful for students as well as rural teachers, who can use distance learning to further their own education), for telesurgery (especially important for rural communities), and to increase the accessibility of local government.[60] If substantial numbers of people telecommute, it will result in less impact on the environment and the transportation infrastructure. For rural communities, broadband can also

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[57] The Corporation for Education Network Initiatives in California (CENIC), *One Gigabit or Bust Initiative: A Broadband Vision for California Summary Report* 1 (May 2003), available at http://www.cenic.org/publications/archives/glossies/Gartner_Short.pdf (last visited Nov. 29, 2006).

[58] *See, e..g*, Doris J. Kelley, *A Study of the Economic and Community Benefits of Cedar Falls, Iowa's Municipal Telecommunications Network* (Oct. 2, 2003), available at http://www.iprovo.net/projectInfoDocs/economicAndCommunityBenefitsStudy.pdf (last visited Nov. 27, 2006).

[59] George S. Ford & Thomas M. Koutsky, *Broadband and Economic Development: A Municipal Case Study from Florida*, Applied Economic Studies (April 2005), available at http://www.aestudies.com/library/econdev.pdf (last visited Nov. 27, 2006).

[60] *See generally* The Corporation for Education Network Initiatives in California (CENIC), *Killer Apps—Proving the Need for One Gigabit* (Feb. 25, 2003), available at http://www.cenic.org/publications/archives/glossies/KillerApps.pdf (last visited Nov. 27, 2006).

decrease the "brain drain" as more local residents will be able to telecommute and/or operate online businesses from within the community.

Individual Benefits

Most households in the United States can receive broadband via satellite. One could thus argue that the only benefits of an on-the-ground broadband infrastructure such as DSL or cable modem service are more speed and lower costs. But that view is misleading.

As explained previously, satellite broadband connections, regardless of the speed, have a latency problem that makes interactive communications impossible. While the telephone may eliminate the need for VoIP service, many of the benefits of broadband are based on the ability to do videoconferencing. Latency may also make telecommuting impossible, if not more tedious. And if broadband is cost prohibitive (as satellite is), there will be a smaller user base and less incentive for local businesses, community organizations, and government entities to set up websites to provide their services. So while low-cost low-latency ubiquitous broadband benefits users, it also benefits the community.

Many broadband subscribers have their broadband subscription bundled together with phone and television service.[61] This so-called "triple play" means a single bill for consumers and more loyal customers for the provider.[62] FTTH allows the triple play to be provided by a single data network using VoIP and Internet Protocol television (IPTV).

The increased bandwidth of FTTH and IPTV technology can also support multiple streams of High Definition video. This allows an unlimited variety of channels (including local educational and public access channels) and video-on-demand. FTTH also enables

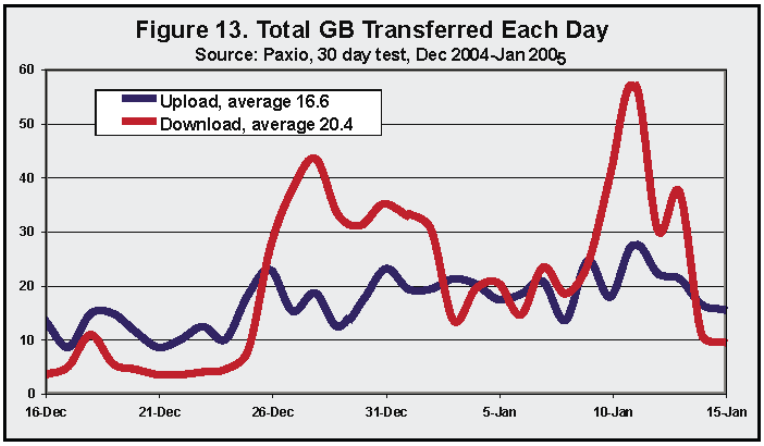
[61] Enid Burns, *Bundled Services Gain Momentum*, ClickZStats (April 25, 2006), available at http://www.clickz.com/showPage.html?page=3601531 (last visited Nov. 27, 2006).

[62] *Id.*

videoconferencing with television-studio quality. Applications like distance education, medical monitoring, and telecommuting that make use of videoconferencing are possible with DSL and cable modem broadband networks, but the quality is not acceptable to most people.

There is some evidence that with enough bandwidth, more people will telecommute. The number of days worked from home per month was only .3 for those without FTTH, but was 1.3 for those with fiber.[63] High-quality videoconferencing also makes it possible for deaf people to communicate via sign language, something the slow frame rates of current Internet-based videoconferencing systems make impossible. Finally, if there is a pandemic that requires people to stay home for an extended period of time, the ability to telecommute will be critically important.

How Much Bandwidth Do We Need?



For IPTV, most service providers believe that supporting two to three standard-definition television (SDTV) streams or a mix of two SDTV and up to two HDTV streams concurrently will be sufficient for the vast majority of households for at least a reasonable time period.[64] This would require a maximum downstream bandwidth of 20 Mbps.[65] A single stream of broadcast-quality video requires 1.5 Mbps.[66]

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[63] Render, Vanderslice & Associates, FTTH/FTTP Update (Oct. 2006), available at http://www.tiaonline.org/business/media/press_releases/2006/documents/RVAFTTHCChartsOct06A.ppt (last visited Nov. 27, 2006).

[64] Geoff Burke, *Accomodating Emerging IPTV Services*, Bandwidth Properties 49 (Sept. 2006), available at http://www.broadbandproperties.com/2006issues/sep06issues/iptv_sep.pdf (last visited Nov. 25, 2006).

But broadband users also need upstream bandwidth. Forty two percent of home broadband users—about 31 million people—have posted content to the Internet.[67] As just one example, over 65,000 videos are uploaded to YouTube every day.[68] If high-speed upstream bandwidth is available, it will be used.[69]

Based on an estimated 40% year-over-year performance increase expectation for "power" users, the upstream bandwidth demands would reach 65 Mbps by the year 2012.[70] Average users, with only a 20% year-over-year performance increase expectation, will need 20 Mbps of upstream bandwidth by 2012.[71] Current cable modem technology can support the bandwidth needs of power users until the year 2009 and can support average users beyond 2012, but only with 50 households served by each network node. Current cable systems typically have 250 households per node.[72] Next-generation cable modem technology can increase the bandwidth to 40 Mbps, but either approach would require a significant network upgrade.[73] DSL is similarly

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[65] *Id.*

[66] CENIC, *supra* note **Error! Bookmark not defined.**, at 2.

[67] John B. Horrigan, *Home Broadband Adoption 2006*, Pew Internet & American Life Project (May 28, 2006), available at http://www.pewinternet.org/pdfs/PIP_Broadband_trends2006.pdf (last visited Nov. 25, 2006) [hereinafter Pew Home Broadband Adoption].

[68] USA Today, *YouTube serves up 100 million videos a day online* (July 16, 2006), available at http://www.usatoday.com/tech/news/2006-07-16-youtube-views_x.htm (last visisted Nov. 25, 2006).

[69] David R. Kozischek, *Fiber, Coax or DSL? Meeting Customer Upstream Bandwidth Demand*, Broadband Properties 65 (Oct. 2006), available online at http://www.broadbandproperties.com/2006issues/oct06issues/corning_oct.pdf (last visited Nov. 25, 2006).

[70] *Id.*

[71] *Id.*

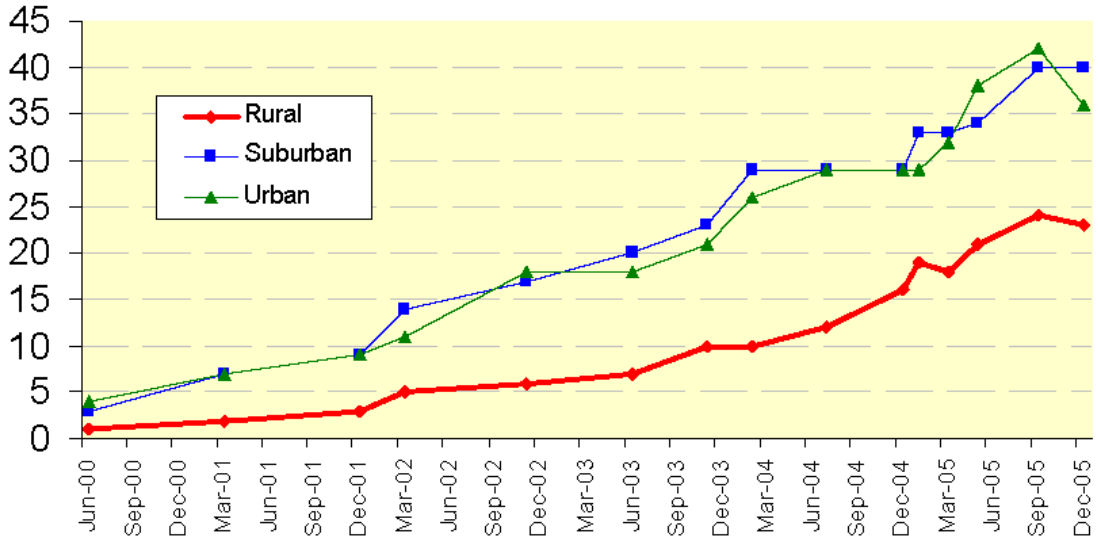
[72] Michael Bowers, *A Full House (FTTH) Beats HFC Every Time* 17 (March 2005), available at http://www.ftthcouncil.org/documents/923305.pdf (last visited Nov. 25, 2006).

[73] Kozischek, *supra* note 69, at 63.

limited, but it is constrained by the distance between the home and the central office.[74] Current DSL service will work up to a distance of 18,000 feet.[75] But the upstream bandwidth of DSL technology maxes out at 35 Mbps and requires a maximum distance of 500 feet.[76] DSL will be unable to support the bandwidth needs of power users beyond the year 2011.[77] DSL technology operating at a maximum range of 3,000 feet is technically challenged to support the average user today.[78] Fiber, on the other hand, has enough upstream bandwidth to support even power users beyond the year 2012.[79]

The Rural Broadband Problem

Figure 2 – Share of American adults with broadband at home, by community type[80]



[74] See HowStuffWorks.com, *How DSL Works*, available at http://www.howstuffworks.com/dsl.htm (last visited Nov. 25, 2006).

[75] *Id.*

[76] Kozischek, *supra* note 69, at 63 fig. 10.

[77] *Id.*

[78] *Id.* at 64.

[79] *Id.*

[80] John Horrigan, *Data Memo RE: Rural Broadband Internet Use* 8, Pew Internet & American Life Project (Feb. 2006), available at http://www.pewinternet.org/pdfs/PIP_Rural_Broadband.pdf (last visited Nov. 28, 2006) [hereinafter Pew Data Memo]

There is a clear gap in broadband adoption rates between rural and urban/suburban areas. According a survey conducted by the Pew Internet & American Life Project between February and April of 2006, while 44% of Americans living in urban areas had broadband at home and 46% of Americans living in suburban areas had broadband at home, only 25% of Americans in rural areas had broadband at home.[81] There is also less competition between broadband providers in rural areas. A December 2005 Pew survey asked respondents if they knew how many ISPs provided home broadband service in their area.[82] Twenty-four percent of non-rural respondents said there was only one broadband provider, compared to 35% of rural respondents.[83] The percentage of rural adults with dial-up service (29%) is higher than the corresponding percentage of urban and suburban adults (21%).[84] This suggests that there may be a pent-up demand for broadband in rural areas. The following graphs seem to support this hypothesis.

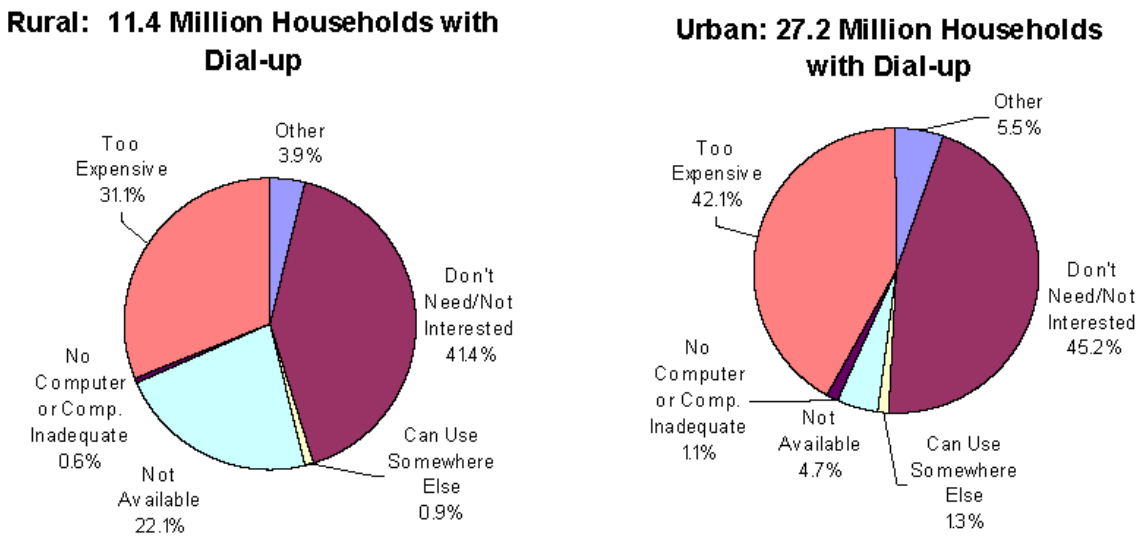
[81] *See* Pew Home Broadband Adoption, *supra* note 67, at 3.

[82] *Id*. at 8.

[83] *Id*.

[84] Pew Data Memo, *supra* note 80, at 2.

Figure 3 - Main Reasons for No High-Speed Internet Use at Home (2003)[85]



Unavailability was reported as the reason for not having broadband at home five times more often in rural areas, yet cost was reported as a reason less often.[86] More recent data suggests unavailability of broadband service is still a problem in rural areas. A February 2004 Pew survey found that across all geographical areas, 15% of dial-up users reported that broadband was not available where they live.[87] But among rural dial-up users, 27% reported that broadband was not available where they live.[88] The percentage of adults with wireless or satellite broadband service is roughly the same in rural (6%) and urban/suburban (5%) areas, which could suggest that cost alone was not the reason.[89] Although there are significant differences between the adoption rates of rural and non-rural users, there is no significant difference between rural

[85] U.S. Dep't of Commerce, Nat'l Telecommunications and Information Admin., *A Nation Online: Entering the Broadband Age* 14 (Sept. 2004), available at http://www.ntia.doc.gov/reports/anol/NationOnlineBroadband04.pdf (last visited Nov. 28, 2006).

[86] *Id.*

[87] Pew Data Memo, *supra* note 80, at 3.

[88] *Id.*

[89] *Id.* at 2.

and non-rural broadband users in terms of frequency and length and number of online activities.[90]

A Historical Analog: Electrification

> Then there is electricity, the demon, the angel, the mighty physical power, the all-pervading intelligence! … Is it a fact—or have I dreamt it—that, by means of electricity, the world of matter has become a great nerve, vibrating thousands of miles in a breathless point of time? Rather, the round globe is a vast head, a brain, instinct with intelligence! Or, shall we say, it is itself a thought, nothing but thought, and no longer the substance which we deemed it! – Nathaniel Hawthorne, *The House of the Seven Gables*[91]

The Edison Electric Light Company was founded in 1878.[92] By the late 1880s, nearly every city in the country had granted several general electric light franchises to competing electric companies.[93] Vicious in-fighting between electric companies erupted, resulting in increasing failures in service, higher costs, and gradual consolidation.[94] Fearing that the consolidation of the electricity industry would follow the path that led to corruption in the railroad industry, some municipalities began setting up their own electric utilities.[95] By 1888, there were fifty-three municipally-owned electric power plants.[96] These municipally-owned utilities charged about half as much for power as the privately-owned utilities.[97]

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[90] Id. at 5-6.

[91] Nathaniel Hawthorne, THE HOUSE OF THE SEVEN GABLES 230 (150th Annv ed., Signet Classics 2001) (1851).

[92] Richard Rudolph & Scott Ridley, POWER STRUGGLE 26 (1986).

[93] *Id*. at 31.

[94] *Id*.

[95] *Id*. at 32.

[96] *Id*.

[97] *Id*.

In 1898, the president of the National Electric Light Association proposed a solution. He suggested electricity was a natural monopoly and should be regulated by state agencies.[98] He believed state regulation would head off the growth of publicly-owned electric utilities by offering an alternative form of public control over the business.[99] The agencies would set rates and standards of service and ensure exclusive control of a territory for a single company.[100] The establishment of state regulation protected their monopolies, institutionalized their economic and political influence at the state level, and allowed the beginning of massive growth of their companies and systematic plundering of consumers.[101]

The first state regulatory agency was created in 1907 and by 1921 every state but Delaware had one. [102] The agencies were intentionally under-funded and understaffed.[103] Experts were unwilling to testify against the power companies, and power companies were willing to spend any amount litigating a case because they could pass the charges on to their captive customers.[104] The commissioners were also subject to political pressure from the utilities.[105] As a result of the enforced monopolies, the growth of public power utilities between 1907 and 1917 was half of what it had been during the preceding ten years.[106]

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[98] *Id*. at 38.

[99] *Id*. at 39.

[100] *Id*.

[101] *Id*.

[102] *Id*. at 40.

[103] *Id*.

[104] *Id*.

[105] *Id*.

[106] *Id*. at 41.

These regulatory shenanigans had a direct effect on the rate of electrification. In 1935 only 11% of American farms had electricity.[107] Internationally, electrification rates were over 95% in Holland, 85% in Denmark, and 90% in France and Germany.[108] Even New Zealand and Tasmania had higher levels than the United States.[109]

As bad as the U.S. national average was, rural electrification was even lower in some regions. Rural electrification was concentrated in the Northeast and Far West where there were relatively small farms packed close enough together to make them profitable customers for private utilities.[110] In the Middle West and South, the average farm was larger and most crops could be cultivated and stored without electricity.[111] As a result, only five to fifteen percent of the farms in these areas had electricity.[112] In the West and Southwest, farms were larger still and therefore more expensive to reach with electric lines.[113] Here less than 5% had electricity, most of which was self-generated.[114]

Because private utilities were unwilling to extend lines to rural areas, the federal government stepped in to cure this market failure. Congress established the Rural Electrification Agency in 1935.[115] The REA offered loans, engineering advice, and legal assistance in drawing

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[107] David E. Nye, ELECTRIFYING AMERICA 299 (1990).

[108] *Id*.

[109] *Id*.

[110] *Id*.

[111] *Id*.

[112] *Id*. at 300.

[113] *Id*.

[114] *Id*.

[115] Laurence J. Malone, *Rural Electrification Administration*, EH.Net Encyclopedia (Robert Whaples ed., Aug. 15, 2001), available at http://eh.net/encyclopedia/article/malone.electrification.administration.rural (last visited Nov. 28, 2006).

up cooperative bylaws to municipalities that wanted to set up their own electric utilities.[116] Interest rates were the same as the federal government's cost of obtaining money and were not subsidized by the federal government.[117] But they were better than municipalities could obtain from private lenders.[118] Government loans were necessary because during the Great Depression in the early 1930s, many state power authorities collapsed, which discouraged subsequent private investment.[119] Only two restrictions were placed on the formation of cooperatives: They could not compete directly with utility companies, and members could not live in areas served by utilities or within a municipality with a population of 1500 or more.[120] As the figure below illustrates, after the passage of the REA in 1935, the percentage of farms with electricity steadily increased and the price of electricity steadily decreased.

Figure 4 - Electrification, 1925-1969[121]

[116] *Id.*

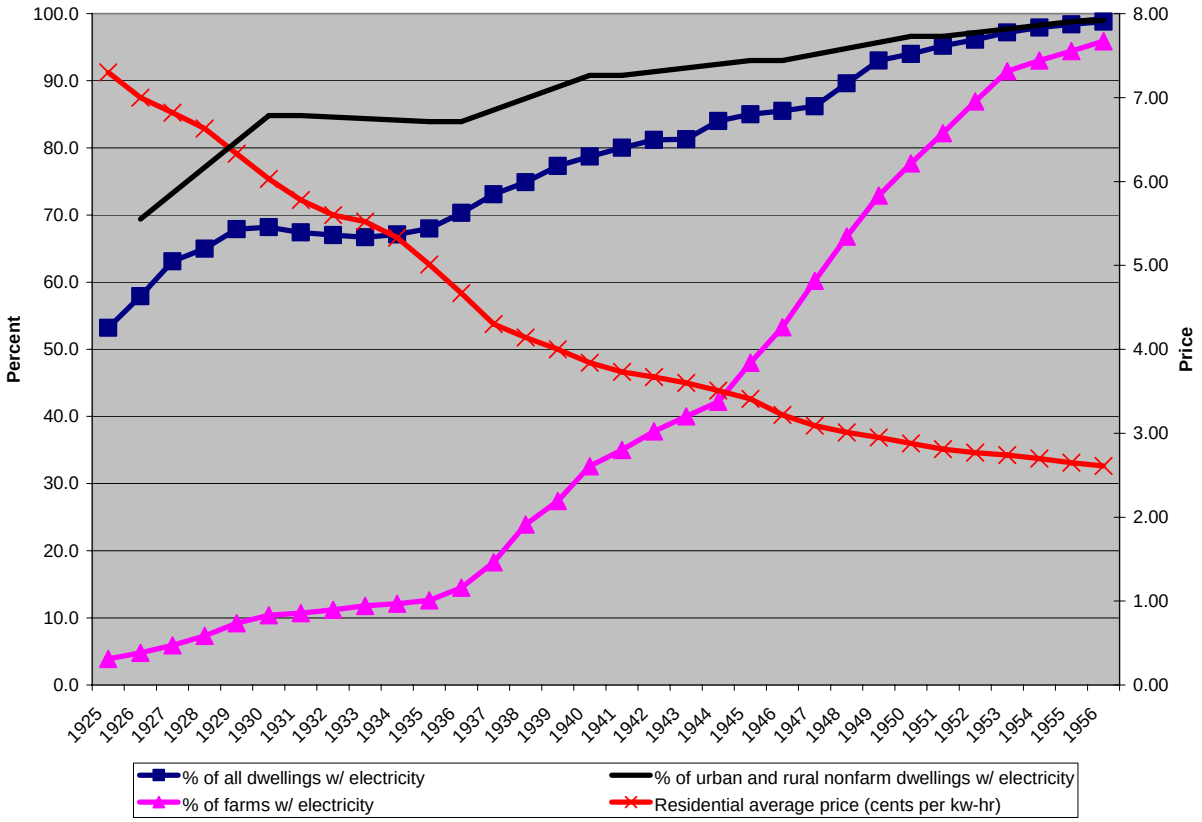
[117] *Id.*

[118] *Id.*

[119] *Id.*

[120] *Id.*

[121] U.S. Department of Commerce, *Historical Statistics of the United States, Colonial Times to 1970* (Bicentennial ed.), at 827, available at http://www.census.gov/compendia/statab/past_years.html (last visisted Dec. 1, 2006), Rural Electrification Administration, *A Brief History of the Rural Electric and Telephone Programs*, U.S. Department of Agriculture (April 19, 1982), available at http://www.rurdev.usda.gov/rd/70th/rea-history.pdf (last visited Dec. 1, 2006).



Private utilities initially opposed the creation of the REA, but they realized that they could profit from it by selling electricity wholesale to local cooperatives, as the government only helped to establish distribution networks and left most production to privately-run generating plants.[122] Another group that benefited from the REA was appliance manufacturers.[123] At first, farmers used electricity for lights, a radio, and a clothes iron.[124] But most also purchased a washing machine and/or refrigerator within the first year, financed through separate appliance

[122] Nye, *supra* note 107, at 314.

[123] *Id.* at 318-319.

[124] *Id.*

loans provided by the REA.[125] The average REA member spent $180 for appliances in the first eight months.[126]

The Case for Municipal Broadband

In many respects, the rural broadband problem is similar to the rural electrification problem. Proponents of municipal broadband projects have argued that incumbent cable and DSL providers have been slow to offer broadband in certain rural and low-income urban communities because the prospect of financial returns in these areas are not attractive enough to support the high costs of wireline deployment.[127] The cost of building a broadband infrastructure in areas where people live farther apart is much higher than building infrastructure to serve the same number of people in a more urban setting.[128] In interviews with the General Accountability Office, population density was the most frequently cited cost factor affecting broadband deployment.[129]

In response to this market failure and recognizing the benefits of broadband, many municipalities have built their own broadband networks. Municipalities that already operate cable television or telephone services are deploying cable or DSL modem service. Some municipalities that operate electricity utilities are deploying BPL. Some are deploying new Wi-Fi or fiber networks.

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[125] *Id*.

[126] *Id*. at 319.

[127] Maureen K. Ohlhausen et al., Municipal Provision of Wireless Internet, Federal Trade Commission staff report (Sept. 2006), available at http://www.ftc.gov/os/2006/10/V060021municipalprovwirelessinternet.pdf (last visited Nov. 28, 2006).

[128] GAO Study, *supra* note 5, at 19.

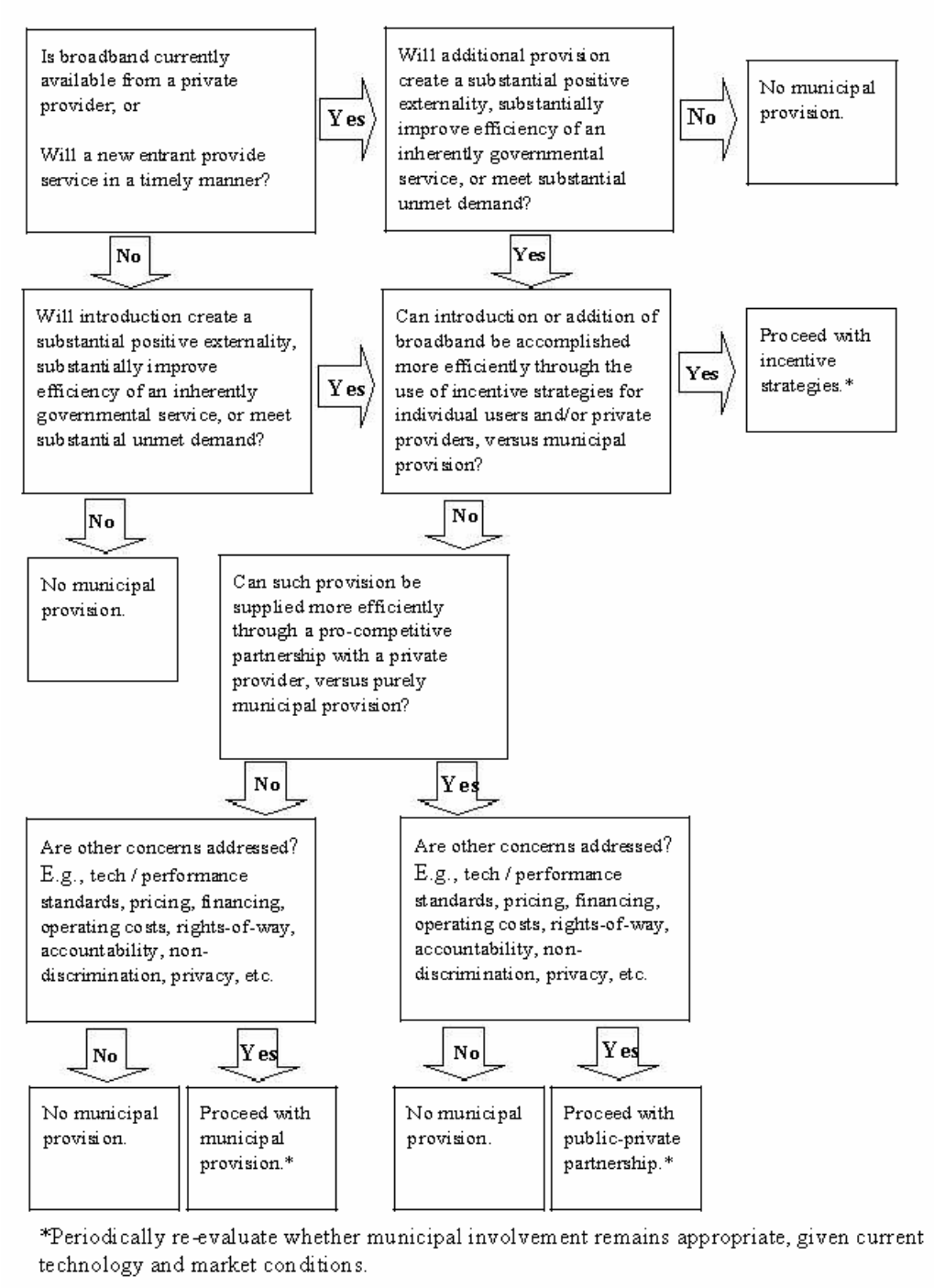
[129] *Id*.

Decision Trees

The decision whether and how a municipality should participate in the provision of broadband service should not be made lightly. The Federal Trade Commission has devised a decision-tree analysis of the question to assist municipalities with the analysis.[130] What this decision tree does not take into account is the differences between the various technologies used to provide broadband service. That may be due to the fact that it was designed for municipalities considering deploying a wireless network. But assuming that all broadband technologies are equivalent is just as incorrect as assuming that broadband and dial-up Internet access are equivalent.

[130] Ohlhausen et al., *supra* note 127, at 46-48.

Figure 5 - Decision Tree Analysis for Municipal Involvement in Provision of Broadband Internet Service[131]



[131] Ohlhausen et al., *supra* note 127, at 48.

All broadband technologies are not created equal. Besides the differences in speed, there are differences in latency, equipment costs for consumers, and (in the case of wireless technologies) issues of accessibility from inside buildings. Almost every single-family home in the US can obtain broadband Internet access via satellite, although the price is prohibitively expensive.[132] Additionally, satellite service requires a clear view of the southern sky (making it unavailable for many apartment-dwellers) and its high latency makes it ill-suited for VoIP, teleconferencing, and Internet gaming.[133] Cellular broadband networks do not have sufficient bandwidth for most applications. This leaves DSL, cable modem, Wi-Fi/WiMAX, and FTTH. There is no reason for a municipality to deploy a DSL or cable modem network of its own if there is already a telephone and cable television provider. This leaves essentially two choices: A municipality can incentivize the local telephone or cable provider to provide broadband service, or the municipality can build its own broadband network.

Business Models

Whether a municipality decides to build its own network or incentivize a private provider to add broadband service, it must decide how to allocate the following functions: design, funding, rights-of-way access, deployment, maintenance, and end-user sales. These variables can be combined into five basic models:[134]

[132] One satellite service costs $79.99 per month plus $399.98 up-front and is still only a quarter as fast as most DSL connections. http://go.gethughesnet.com/HUGHES/Rooms/DisplayPages/LayoutInitial?Container=com.webridge.entity.Entity%5BOID%5B71A9F5B422ABCE4886D9492F66B5B589%5D%5D. Additionally, satellite service is not available for many apartment dwellers because of the requirement to be facing a certain direction.

[133] GAO Study, *supra* note 5, at 23.

[134] Ohlhausen et al., *supra* note 127, at 13 (the sixth model listed in this report, the government loan-grant model is not discussed here because it seems to be simply a financing alternative, not a true operating model).

- Municipally-owned – In this model, the municipality owns and is primarily responsible for the network. Although contractors may help design, deploy, and maintain the network, the municipality controls funding, rights-of-way and sales.
- Contracted out – In this model, the municipality negotiates with a private provider to provide broadband services to an agreed-upon area and at agreed-upon rates. This is sometimes done as a franchise granted by the municipality.[135] After the provider is selected, the municipality's main role is to provide rights-of-way access for deployment of the network infrastructure and monitor the contractor to ensure it is meeting the terms of the agreement.[136]
- Infrastructure model – In this model, the municipality owns and operates the network but sells wholesale access to private companies who then resell access to end-users.[137] Separating the infrastructure from the services avoids the problems of forced infrastructure sharing and discriminatory access. Private contractors would likely help deploy and manage the network for the municipality.
- Non-profit – A non-profit organization volunteers to design, fund, deploy, and maintain the network, perhaps without charging users.[138] Funds may be raised from

[135] Although this model is similar to a franchise in function, that is only because the private provider willingly enters into a contract with the municipality. Municipalities are prohibited from requiring private entities to obtain a franchise to provide broadband service. "No State or local statute or regulation, or other State or local legal requirement, may prohibit or have the effect of prohibiting the ability of any entity to provide any interstate or intrastate telecommunications service." 47 U.S.C. § 253.

[136] *Id*. at 14 and 43.

[137] See Utah Telecommunication Open Infrastructure Agency (UTOPIA), *Utah's Public-Private Fiber-to-the-Premises Initiative* (Nov. 26, 2003), available at http://www.utopianet.org/docs/Utopia_White_Paper.pdf (last visited Nov. 29, 2006).

[138] *Id*. at 13.

charitable donations, grants, or loans from a private institution or municipality.[139] The non-profit contracts with the municipality for the necessary rights-of-way.[140]

- Cooperative – A cooperative is "an autonomous association of persons united voluntarily to meet their common economic, social, and cultural needs and aspirations through a jointly-owned and democratically-controlled enterprise."[141] Broadband cooperatives are similar to non-profits except profits are distributed to the members or prices are adjusted so no profit is realized.

Municipalities that already operate a telephone, power, or cable infrastructure that does not support broadband can choose between the first three models. They can also contract out or resell broadband to a non-profit or cooperative. The major problem with the contracting-out model is that it may require extensive price- and quality-monitoring by the municipality to ensure that the contractor is meeting the terms of the agreement.[142]

The Opposition to Municipal Broadband

There are many who oppose municipally-owned broadband networks. The largest and most vocal group is existing private broadband providers.[143] Their major arguments are that municipalities compete unfairly, that they are not sophisticated enough to manage cutting-edge telecommunications networks, that they drive competitors from the market, and that they needlessly risk public funds when private industry is already doing a good job meeting the

[139] *Id*.

[140] *Id*.

[141] International Co-operative Alliance, *Statement of the Co-operative Identity*, available at http://www.ica.coop/coop/principles.html (last updated Feb. 9, 2006).

[142] UTOPIA, *supra* note 137, at 43.

[143] See e.g. McChesney & Podesta, *supra* note 4.

demand for broadband.[144] They claim that municipalities compete unfairly with private operators because they enjoy regulatory and tax advantages, are able to issue tax-free debt, have access to public rights of way on terms not available to private companies, avoid franchise fees and other taxes private firms must pay, and they often receive interest free loans or public subsidies.[145] There is also an underlying belief that private provision of goods and services is more efficient and results in higher levels of customer satisfaction than public provision.[146] These arguments are all contested.[147] FTC staff have testified that "the mere existence of a government enterprise inevitably creates a concern in the marketplace that government will expand its role further, a concern that may deter private competitors from entering."[148] Proponents of municipally-owned broadband networks suggest the opposite—that municipal entry, or even its threat, may spur competition.[149]

Because of these concerns, those opposed to municipal broadband have pushed fourteen states to pass laws that either prohibit or limit municipalities from deploying telecommunications services.[150] There have also been a number of federal bills introduced that would limit

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[144] Jim Baller, *Deceptive Myths About Municipal Broadband*, Broadband Properties 14 (May 2005), available at http://www.baller.com/pdfs/Baller_BroadbandProperties_May05.pdf (last visited Nov. 20, 2006).

[145] *Id*.

[146] Joseph Bast, *Reply to James Baller's Criticism of Municipally Owned Broadband Networks: A Critical Evaluation (Revised Edition)* 7 (June 29, 2005), available at http://www.heartland.org/Article.cfm?artId=17383 (last visited Nov. 30, 2006).

[147] Baller, *supra* note 144, at 14.

[148] Olhausen, *supra* note 127, at 41 fn. 178, citing *Hearing on The Provision of Telecommunications and Information Services by the Federal Government in Competition with the Private Sector, Hearing Before the House Government Information and Individual Rights Subcommittee of the Committee on Government Operations*, 97th Cong. (1982) (testimony of Timothy J. Muris, Director, Bureau of Consumer Protection, Federal Trade Commission, on behalf of the FTC Bureaus of Consumer Protection and Economics).

[149] Olhausen, *supra* note 127, at 42.

[150] Joseph P. Savage, *Statement to the Senate Committee on Commerce, Science & Transportation, Hearing on State and Local Issues and Municipal Networks* (Feb. 14, 2006), available at http://www.ftthcouncil.org/documents/760872.pdf (last visited Nov. 30, 2006).

municipalities.[151] These laws all attempt to remedy the perceived unfair competition aspects of municipal broadband. They range from complete bars on municipal broadband networks and non-competes with existing services to delays and procedural hurdles. Although Section 253 of the Telecommunications Act of 1996 authorizes the FCC to preempt a state or locality from enacting a law or regulation that would bar "any entity" from providing telecommunications services, the FCC interpreted that phrase to not apply to municipalities. This decision was upheld by the Supreme Court in the 2004 case of Nixon v. Missouri Municipal League.[152]

Are Rural Americans Really Clamoring for Broadband?

The second step in the decision tree analysis for municipal involvement in provisioning broadband Internet service is determining whether introduction or additional provision will meet substantial unmet demand. Maybe the low level of rural broadband deployment is because most people in rural areas are content without broadband. There is some logic to this argument. Rural Americans are, on average, older, less educated, and have lower incomes than people living in urban and suburban areas—all factors associated with lower levels of Internet adoption.[153]

According to the U.S. Census Bureau's 2003 Current Population Survey, of the 38.5% of households that reported having dial-up service, 41.5% did not upgrade to broadband service because they were not interested and/or felt they did not need it.[154] Nearly as many, 39.4% did not upgrade because of the cost.[155] Another 11.8% did not upgrade because broadband was not

[151] http://www.freepress.net/communityinternet/=US

[152] National Conference of State Legislatures, available at http://www.ncsl.org/standcomm/sctech/bbnetworks.htm, Nixon v. Missouri Municipal League, 541 U.S. 125.

[153] Pew Data Memo, *supra* note 80, at 3.

[154] U.S. Census Bureau, *2003 Current Population Survey: Computer Ownership supplement*, http://www.bls.census.gov/cps/computer/computer.htm (last visited Nov. 26, 2006) (percentages are based on researchers own analysis of this data).

[155] *Id*.

available in their area.[156] Similar figures were reported among households with no Internet service: 35.1% reported they don't need it or were not interested, 27.1% reported cost as the reason, and 23.5% reported not having a computer or that their computer was inadequate.[157]

By 2005, the reasons had changed. A report based on a survey of 1,000 U.S. households found that among the 5% of households with a computer but no intention to subscribe to Internet service, 31% gave as their reason that they have Internet access at work.[158] Another 18% reported that they were not interested in anything on the Internet, and 8% reported that they were not sure how to use the Internet.[159] Almost no respondents listed cost as a factor.[160] For these reasons, the report estimated that total Internet adoption (including dial-up) will increase only 1% in 2006 from 63% to 64%.[161]

It is debatable whether Internet access from work is a substitute for home broadband access. First, personal Internet access at work may violate company policies and/or be monitored by one's employer, which would discourage use. Secondly, although 57% of non-rural workers have Internet access at work, only 46% of rural workers have access.[162] In terms of broadband Internet access at home or work, 49% of all adult Americans have access at either location, whereas only 35% of rural Americans have access at either location.[163]

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[156] *Id*.

[157] *Id*.

[158] Parks Associates, *Internet Finding Few Newcomers in 2006*, Press Release (Feb. 23, 2006), available at http://www.parksassociates.com/press/press_releases/2006/nat-scan_pr1.html (last visited Nov. 26, 2006).

[159] *Id*.

[160] *Id*.

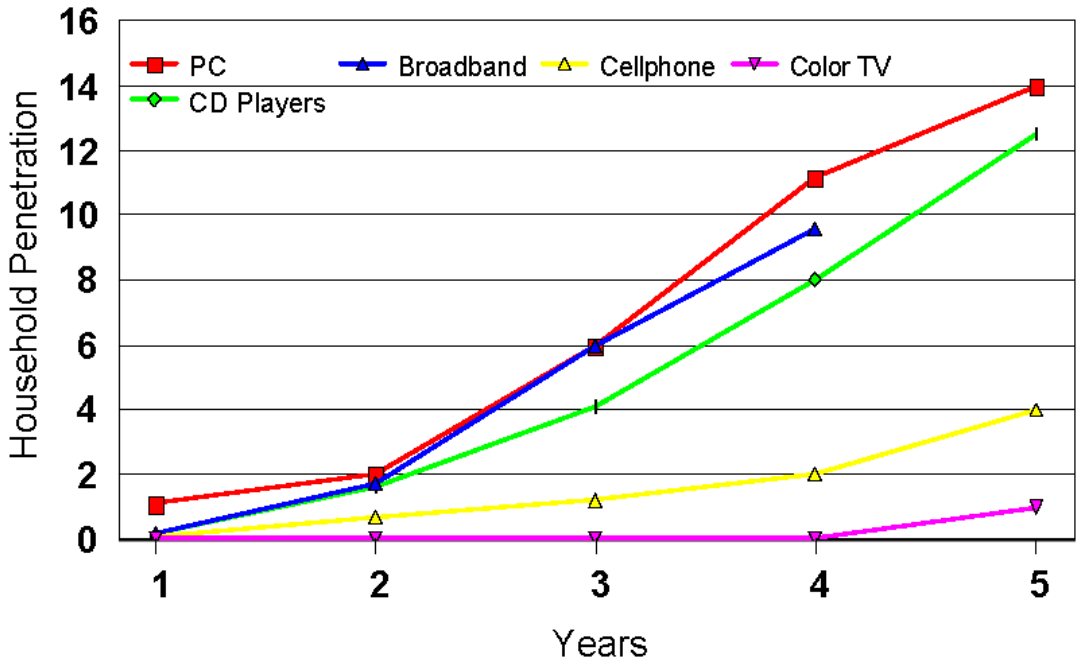
[161] *Id*.

[162] Pew Data Memo, *supra* note 80, at 3.

[163] *Id*. at 4.

Compared to previous technologies, demand for broadband is very strong.[164] Studies show that consumer adoption of new technologies tend to follow an established S-curve pattern.[165] Broadband appears to be on the fast track, but it is still at the beginning stage of the curve.[166] If broadband prices were lower, dial-up Internet access would be virtually eliminated. The Korean broadband penetration rate is now approaching its total online population of 50%, in part because broadband costs as much as dial-up service does in the U.S.[167]

Figure 6 - Consumer Technology Adoption[168]



Convergence and Conflict

As previously stated, broadband service of a sufficient speed allows providers to offer the "triple play" of bundled services: Internet access, telephone service, and television service. This

[164] PSC Analysis, *supra* note 43, at 5.

[165] *Id*. at 25.

[166] *Id*. at 27.

[167] *Id*. at 34.

[168] *Id*. fig.9.

convergence makes a municipal broadband network a direct competitor to both the local telephone company and the local cable television provider. Depending on the state in which they are located, current or pending legislation may prohibit municipalities from competing with existing private service providers.

Although municipalities do not have to offer television and telephone services over their broadband networks, they may be unable to gain the customers and/or revenue needed to be successful without doing so. It may also eliminate the option of deploying a FTTH network. The additional costs of deploying a FTTH network compared to a Wi-Fi/WiMAX network are unjustified if the massive available bandwidth of FTTH networks can't be used to offer telephone and television service. This makes as much sense as barring the connection of radios to electricity grids in the 1930s because of the unfair competition to the newspaper industry.

In the U.S., 43% of households subscribe to bundled services—approximately the same number of households that subscribe to broadband.[169] Consumers who subscribe to bundled services are less likely to switch to an alternate service provider.[170] This may be because there are very few communities in which there are multiple providers offering the triple play bundle. The triple play bundle has been suggested as a way to increase broadband subscriptions in parts of Europe.[171] If only private providers are able to offer the triple play bundle, it may prevent municipal networks from being deployed.

[169] Enid Burns, *Bundled Services Gain Momentum*, ClickZ Stats (April 25, 2006), available at http://www.clickz.com/showPage.html?page=3601531 (last visited Nov. 29, 2006).

[170] *Id.*

[171] *Id.*

Outlook

Those who oppose municipal broadband suggest that private companies could be encouraged to provide broadband services to rural communities if regulatory barriers were removed, taxes on telecommunications services were lowered, and municipalities agreed to serve as "anchor tenants" to ensure minimum revenues an justify the up-front costs.[172] But even with government loans, rural municipalities have been unable to devise sustainable business plans. In 2002, Congress passed the Farm Security and Rural Investment Act, which allocated $80 million over six years to be given as loans to communities with not more than 20 thousand residents to construct broadband networks.[173] But in 2004, only 28% of the $2.1 billion allocated for loans was awarded because applicants could not meet the requirement of showing that the business would be sufficiently successful such that the applicant would be able to repay the loan.[174] In 2005, of an allocation of just over $2 billion, only 5% was awarded.[175]

In communities where the municipality owns the telephone network and the cable television network or there is no cable television network, legislation prohibiting municipal broadband networks that would compete with private providers is probably not a problem. In communities with separate private telephone and cable television providers, the best plan for a municipality desiring broadband service may be to convince one of the private providers to offer service, possibly by offering to be an anchor tenant. But if a municipality is barred from providing service itself, its bargaining position is weakened. In communities where there is a private telephone provider and no cable television provider, the municipality has almost no

[172] *See generally* Olhausen, *supra* note 127.

[173] Farm Security and Rural Investment Act of 2002, H.R. 2646, 107th Cong. (2002) (codified at 7 U.S.C. § 950bb).

[174] GAO report p. 33

[175] GAO report p. 33

bargaining leverage. In communities where there is already broadband service offered by a private provider, municipalities may be unable to convince the provider to expand its service territory or upgrade its service. Although those opposed to municipal broadband suggest that by eliminating competition it may result in communities being stuck with outdated technology, prohibiting municipalities from competing with private providers may result in rural communities being left behind when bandwidth needs exceed what is currently possible with DSL and cable technologies.

Recommendations

Each community must decide for itself whether to participate in the provision of broadband service. Because of the uncertainty as to the level of pent-up demand for home broadband services, the first thing it should do is carefully evaluate the demand for broadband. In communities that already have some broadband infrastructure, that evaluation should include whether the speed and availability of the current broadband offering(s) are sufficient to meet the community's needs. The FCC can help with these initial determinations by revising its reporting requirements. Specifically, it should separate the "mobile wireless" category into cellular and Wi-Fi/WiMAX services and require wireline providers to report the number of households service has been deployed to as well as the number of subscribers.

Although laws prohibiting municipalities from directly competing with private service operators and/or eliminating any advantages municipalities have as service providers may result in more competition among private providers in larger communities, it will likely result in less municipal broadband deployment in smaller communities where private providers can't realize a return on their investment. Government assistance programs like the Rural Utilities Service's

Broadband Grand Program[176] could be expanded to fill the gap, but without nationwide statistics on availability and adoption rates, there is no way to determine how much assistance is necessary. If state laws prohibiting municipal broadband networks do not allow exceptions for these exceptions, the FCC should exercise its authority under Section 253 to preempt them.[177]

[176] See USDA Telecommunications Program, available at http://www.usda.gov/rus/telecom/broadband-initiatives.htm (last visited Dec. 1, 2006).

[177] 47 U.S.C. § 253.