



CENTER *for* RURAL POLICY *and* DEVELOPMENT

April 2004

Broadband Access in Rural Minnesota

2003 Rural Minnesota Internet survey of
telecommunications providers

Introduction

Concern over the accessibility to and affordability of broadband Internet technology throughout rural Minnesota is far from a new issue. In fact, beginning in 1999 the Center for Rural Policy and Development began conducting research on this issue and has annually monitored both the adoption and deployment of the technology throughout rural Minnesota ever since.

Because rural broadband technology has become a significant infrastructure component of economic development, distance education, e-commerce, telemedicine and e-government functions, it has now emerged as both a national and international development initiative. Today it is difficult to attend a single rural development conference without seeing the issue of access to broadband on the agenda. And to confirm its importance, even the trusted PEW Foundation-sponsored *Internet and the American Life Project* for the first time issued a report focusing on “Rural Areas and the Internet” this February (2004).

From the beginning of our research efforts regarding Internet access and broadband deployment in rural Minnesota, it was evident that rural areas were lagging urban areas in both deployment and adoption, and that prices were somewhat higher on average as well. Seeing this disparity (often called the digital divide), policy makers in Minnesota have both explored and attempted to advance policies that encourage providers to deploy broadband technology, while ensuring that broadband access to rural schools does not become overly cost-prohibitive.

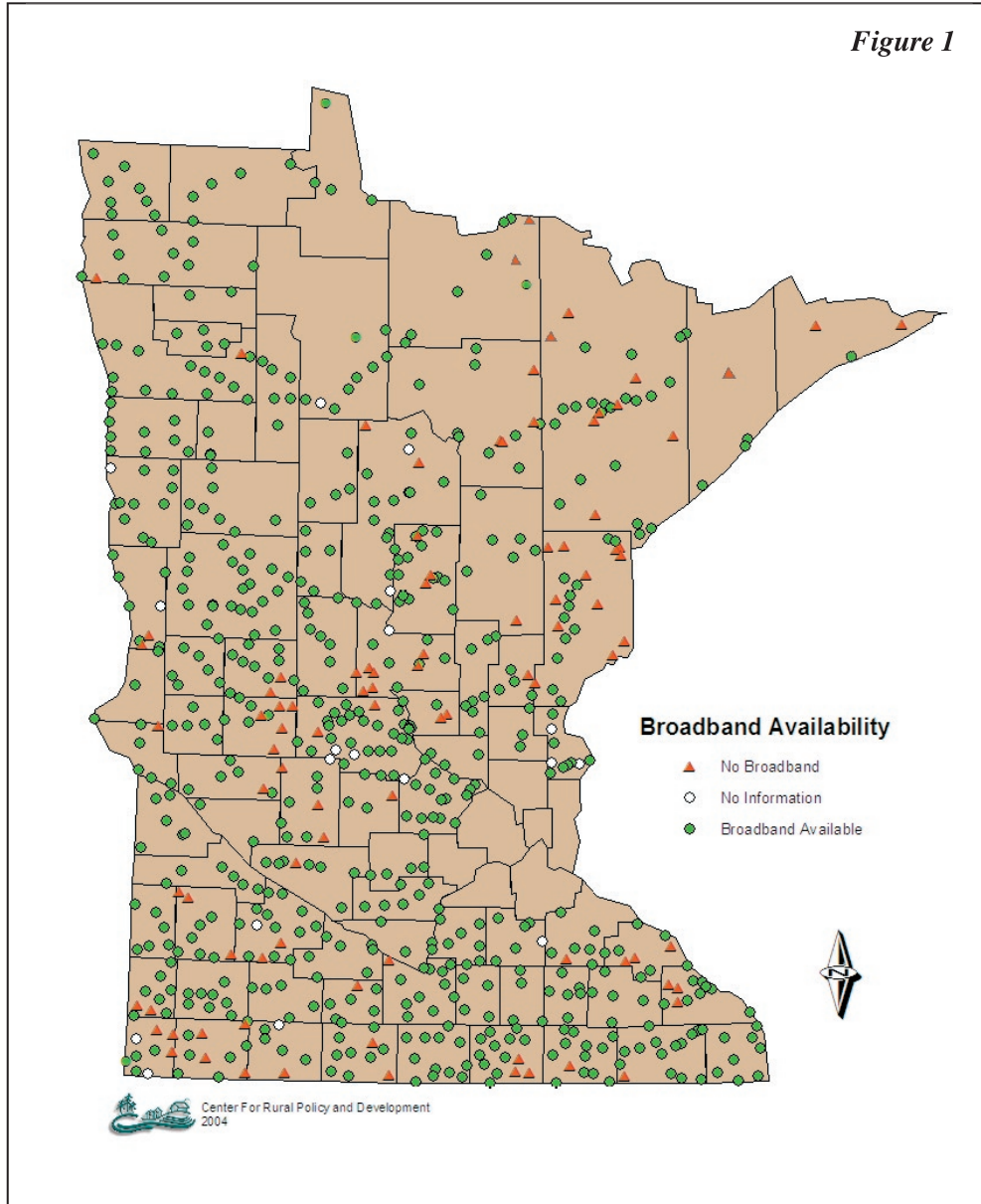
Fortunately, while policy makers and industry lobbyists debated which was the most appropriate regulatory approach to resolving the “last mile” issue, the industry was itself steadily and methodically deploying broadband technology throughout the state. Local and regional telephone carriers started with digital subscriber line (DSL) technology, which was followed shortly by cable communication providers, and most recently by fixed wireless broadband providers.

A PDF of this report can be downloaded from the Center's web site at www.ruralmn.org.

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The Center for Rural Policy and Development, based in St. Peter, Minn., is a private, not-for-profit policy research organization dedicated to benefiting Minnesota by providing its policy makers with an unbiased evaluation of issues from a rural perspective.

Figure 1



The purpose of this study is to assess the extent and success of this deployment of broadband technology throughout rural Minnesota. To do this we received voluntary data from broadband providers throughout the state, as well as from local governments. With this data we can display and define where the technology has been deployed and where it has not; assess the demand for the technology throughout rural Minnesota; and examine the costs of broadband to the residential consumer.

It is not our intent, however, to try to determine, editorialize or answer the question, “How much is enough?” Whether a glass is half full or half empty

is for the reader, policy maker, regulator or industry representative to determine. This study is designed to simply insert objective numbers into what will likely be an ongoing policy discussion regarding this important technological development.

Study methodology

As mentioned above, the three primary broadband technologies examined in this study are DSL, offered by both incumbent and competitive telephone exchange carriers; cable modem, offered primarily by private and public cable video providers; and fixed wireless broadband, which uses both licensed and unlicensed

spectrum and is offered by the widest variety of businesses, including cellular providers, local and regional cooperatives, and numerous entrepreneurs.

Our first step was to identify all of the broadband carriers that conducted business throughout rural Minnesota. Using public information from the Minnesota Department of Commerce, along with assistance from trade groups such as the Minnesota Association for Rural Telecommunications and the Minnesota Cable Communications Association, we were able to identify the overwhelming majority of DSL and cable providers in rural Minnesota.

For the next step, each provider was mailed a survey with the request that it be returned via fax. Non-respondents received follow-up telephone calls, as well as encouragement from their respective trade associations. This methodology yielded an overall response rate from both telephone and cable providers of 70.2 percent. Finally, in those communities or exchanges served by persistent non-respondents, we contacted knowledgeable municipal employees to provide information on whether the community had access to broadband technology; if so, using which technologies; and from which providers.

Assessing the state of wireless broadband technology in rural Minnesota was not nearly as straightforward. As wireless broadband providers are not regulated as other providers are, and given that there is currently no statewide trade group that represents the wide variety of wireless broadband carriers, simply identifying the providers doing

business in rural Minnesota was a challenge. To accomplish this, we conducted both telephone interviews with municipal employees about their access to broadband and conducted a thorough search of provider web sites. Using this technique we identified more than 25 wireless broadband providers serving over 140 rural Minnesota communities. However, due to the challenges mentioned above, while we believe that we have identified the large majority of wireless broadband providers in rural Minnesota, we cannot definitively state that we have enumerated all of them.

Access to broadband

The map on page 2 displays the overall findings of the study. The green circles represent places being served by at least one broadband provider. Red triangles represent places that to our knowledge are not currently being served; and white circles represent places where we were unable to obtain adequate information to make a determination.

Two clarifications about the map are also noteworthy. First, the unit of analysis is a “place.” By that we mean that each circle or triangle represents a very specific geography in Minnesota, in most cases the boundaries of a city or, in a few cases, a township. However, that is not necessarily true in all cases. For example, in a few areas of northern Minnesota there are telephone exchanges that do not contain within them an organized city or township. In these cases the icon may simply be a point representing that telephone exchange.

Survey findings at a glance			
Out of 780 rural places:		n	Percent
With broadband:		644	85.1%
One provider:		418	55.2%
Multiple providers		226	29.9%
No broadband provider:		113	14.9%
No information:		23	n/a
Growth rates in broadband and dial-up:			
	2001-02	2002-03	
DSL:	143.6%	77.4%	
Dial-up:	26.5%	5.5%	
Cable:	n/a	77.0%	
Percent of telephone company Internet subscribers choosing:		2002	2003
DSL:		15%	34%
Dial-up:		85%	66%
Median prices:		2002	2003
DSL:		\$49.92	\$38.95
Cable:		n/a	\$39.95
Wireless:		n/a	\$50.00
Number of communities served by wireless alone:			41

Second, in an attempt to ensure a degree of provider confidentiality, we did not use the map to locate specific technology deployment or the areas where there are single or competitive providers. While we do present some of this information in aggregate later in this report, it was not our desire to point out where in the state any specific technology investment was made (i.e., where specifically DSL or cable modem technology has been deployed), or where competition does or does not exist. Rather, our primary goal was to represent geographically the accessibility of broadband technology throughout rural Minnesota.

Survey results

Of the 780 places shown on the map, 644 are being served by at least one broadband provider, 113 are not being served by a broadband provider, and 23 have insufficient information to make a determination. Removing the 23 places from the sample to calculate valid percentages, we find 85.1 percent of rural places currently have access to broadband technology and 14.9 percent do not. Of the 757 places where we have adequate information, 55.2 percent are being served by a single broadband provider, while 22.9 percent have competitive broadband service.

Probably one of the most fascinating aspects of the study has been the emergence of fixed wireless broadband providers throughout the state. Just two years ago wireless broadband was in its infancy in Minnesota. Today we have identified more than 25 separate wireless broadband providers, serving 141 communities in rural Minnesota. And of those 141 communities, 41 have wireless broadband as their only technology option.

Growth in demand for Internet services

In 2002, we calculated the annual growth in demand for dial-up Internet service at 26.5 percent and the annual growth in the demand for broadband (DSL in this case) at 143.6 percent. Using 2003 data we now find that the annual growth in demand for dial-up service has plummeted to 5.5 percent, while growth in demand for DSL is still quite strong at 77.4 percent. In fact, subscriber share continues to increase as well: in the 2003 survey DSL providers reported that one-third (33.9%) of their Internet customers are choosing broadband service instead of a dial-up service, compared to 15 percent in 2002. Annual growth in the

demand for broadband service among cable providers appears to be equal to that of DSL providers, with a calculated annual growth rate of 77.0 percent. Cable providers also reported that 28.8 percent of their customers purchased cable modem service in 2003 (cable companies do not offer dial-up services).

The cost of rural broadband

Given that broadband providers typically price their service based upon the speed of the connection, we examined the cost of broadband service at the residential level by asking providers to tell us their monthly rates for their slowest broadband service. In most cases this was a 256 kbps connection, but in a few cases the slowest speed was somewhat faster than 256 kbps.

Prices appear to be coming down in rural Minnesota, with a few providers offering residential 256 kbps service beginning at \$29.95. Such pricing is quite competitive with many urban providers, but while becoming more affordable, prices in rural Minnesota still appear to be high compared to generally advertised rates in urban markets of around \$29.95. The reported median residential price for 256 kbps DSL service in rural Minnesota was \$38.95, while the reported median residential price of cable modem broadband service at the same speed was a comparable \$39.95. Meanwhile, the median residential price for fixed wireless broadband at 256 kbps was considerably higher, at \$50 per month. In addition, it should be noted that installation fees for wireless service appear to be considerable, even with a one-year contract. While these installation fees ranged from \$50 to hundreds of dollars, the median installation fee was \$150.

Approaching the last mile?

As noted in the introduction, the purpose of this study is to attempt to assess the extent of broadband deployment throughout rural Minnesota. The data suggests that broadband providers have come a long way in their deployment plans, to the point where today 85.1 percent of the rural places examined in this study reported having at least one broadband provider. Of the 113, or 14.9 percent, of the rural places examined that report still not having broadband service, U.S. Census data shows those 113 places to contain 39,714 rural residents, for an average population of 351 per place.

Today, however, approximately 896,000

rural Minnesotans, or 17.9 percent of the state's population, live outside the municipal boundaries of our incorporated cities, large and small. We must emphasize that this study as designed was limited in its ability to provide any valid estimates of accessibility to broadband for those living outside of city boundaries, but the nature and limitations of broadband technology suggests that availability and accessibility issues would be somewhat more prevalent there.

Therefore, while we strongly suspect that a significant percentage of those rural Minnesotans that live in the countryside have some degree of access to broadband technology, we cannot quantify that at this time. However, data collected from broadband providers clearly suggests that many independent telephone carriers are increasingly extending the reach of broadband DSL further and further out into the countryside. At the same time, the accelerated emergence of wireless broadband providers suggests that they view these country dwellers as a viable market as well. Consequently, such data might suggest that research and policy should begin to focus more seriously on broadband access for rural residents who do not reside in one of these 780 places: in other words, Minnesotans who live in the open countryside.

Summary

Overall, it is hard not to be impressed with the progress that providers have made in deploying broadband technology throughout the state. Just a few short years ago, in the midst of an economic downturn in the telecommunications industry, it would have been difficult to imagine the degree of progress and investment that have been made in the deployment of rural broadband services since then. Today, approximately 85 percent of rural communities have access to at least one broadband provider and approximately one-third of rural communities now even have competitive service.

The apparent consequence of this deployment strategy has been both Internet and broadband adoption rates in rural Minnesota that significantly exceed comparable rates in other parts of rural America. A brief comparison with national data recently released by the Pew Foundation's *Internet and American Life Project* reveals that while in 2003 52 percent of rural Americans had a home Internet connection, the comparable percentage in rural Minnesota was 57.5

percent (Center for Rural Policy and Development, 2003). Similarly, the Pew study reported 2003 broadband adoption rates in rural America of 19 percent, while the comparable percentage for rural Minnesota disseminated by the Center in September 2003 was 27 percent.

With that being said, there are several points to consider.

First, as noted earlier, almost 18 percent of rural Minnesotans (896,000) live outside the municipal boundaries of our cities and therefore fall outside the parameters of our study. Accordingly, we do not have adequate data to determine the degree of their access to broadband services, and therefore, any suggestion that broadband service is ubiquitous throughout greater Minnesota is somewhat premature. This population's access to broadband, therefore, warrants (and deserves) further attention and study.

Second, fixed wireless broadband access, once thought of as a futuristic technology, has clearly arrived, with over 25 such providers serving more than 140 rural Minnesota communities. In at least three dozen communities, it was the only source of broadband identified.

And lastly, let's not confuse accessibility with affordability. While median monthly rates in rural Minnesota are typically around \$40 per month, these median rates are just that — a median. There are still quite a number of rural providers pricing their broadband service at \$50 per month or more. Demographic factors such as age and income have been consistently recognized as significant adoption barriers and are difficult to change. Given that average household incomes throughout rural Minnesota are generally 20 percent lower than in the Twin Cities metro area, one can't help but see how such pricing is a barrier to technology adoption.

It's obvious that, in just the three years this survey has been conducted, great strides have been made in extending broadband service to all of Minnesota. It has been said by some that the day all Minnesotans have affordable access to high-speed broadband technology, it will be equivalent to the state having a sign that reads, "Minnesota is open for business!" For education, health care, economic and community development, this year's report again offers hope that that day is moving ever closer.

References

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Center for Rural Policy and Development (2003), 2003 Rural Minnesota Internet Study: Tracking the rise of broadband use in Greater Minnesota households. St. Peter, Minn. August 2003. <http://www.ruralmn.org>.

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