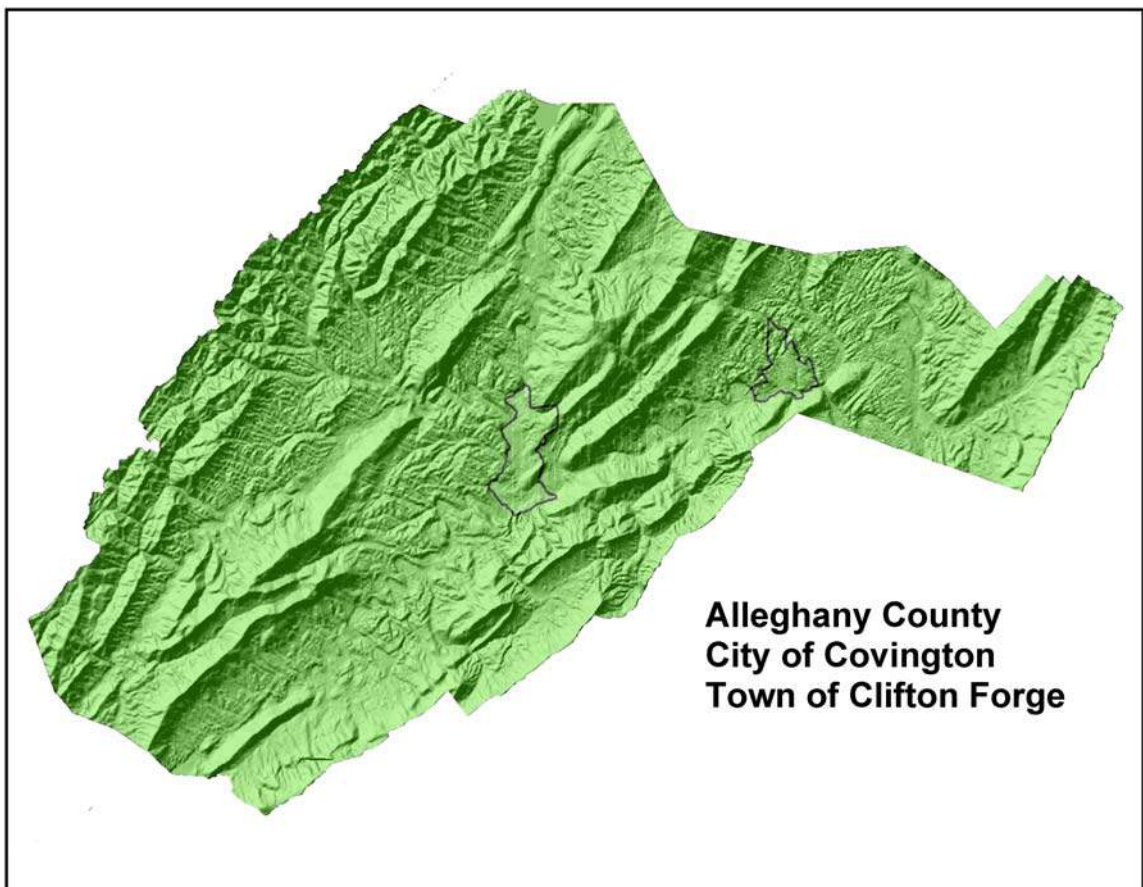


# **Allegheny Highlands Regional Telecommunications Plan**



**September 2004**

## **Acknowledgements**

The study was funded and supported by the Appalachian Regional Commission (ARC), Virginia Center for Innovative Technology (CIT), Roanoke Valley Alleghany Regional Commission, Alleghany County, City of Covington, and the Town of Clifton Forge.

Special thanks to the Alleghany Highlands Telecommunications Committee, representing Alleghany County, Covington, Clifton Forge, Dabney S. Lancaster Community College, CIT, Mead-Westvaco, Alleghany Highlands Public Schools, Jackson River Technical Center, Alleghany Highlands Chamber of Commerce, and the Alleghany Highlands Economic Development Corporation.

Additional input was appreciated from B2X Online, NTELOS, and Rapid Communications.

Design Nine Inc. and Computer Network Professionals (ARGroup) also provided valuable expertise for this study.

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## **Project Background**

The Roanoke Valley-Alleghany Regional Commission received a grant from the Appalachian Regional Commission and Virginia Department of Housing and Community Development (DHCD) to conduct an Information Technology Infrastructure Needs Assessment to help the Alleghany Highlands understand their current telecommunications infrastructure for economic development and job creation. The study looks at regional linkages in infrastructure to determine how Alleghany County, the City of Covington, and the Town of Clifton Forge can take advantage of broadband access in their rural localities.

Technology staff of the Regional Commission identified existing infrastructure and mapped local and regional access using a Geographic Information System. This inventory of infrastructure and usage was developed with the cooperation of three jurisdictions and local providers of broadband and telecommunications services. Working with Alleghany County, the City of Covington, the Town of Clifton Forge, Alleghany Highlands Public Schools, the library system, local businesses, economic developers and planners, and Dabney Lancaster Community College, future use was identified by volume and geographic location.

Taking into account regional linkages, future demand, and implementation costs, staff worked with stakeholders to identify existing economic development initiatives and projects and that could benefit by broadband access to a facility, site, or community. Potential partnerships with existing organizations or other local governments, as well as the private sector, were explored.

With the receipt of the grant, the DHCD provided an outline for the planning study. Staff attempted to follow this outline whenever possible and feels that most of the elements have been addressed. The outline supplied by DHCD (Figure 1.1) assumes a natural progression from getting stakeholders together to designing, funding, and implementing a physical project. The focus of this project was to develop a comprehensive plan that looks at both physical and non-physical needs and creates a dynamic plan for the future. The planning process was not limited to designing and implementing a physical project.

**Table 1 Project Tasks as Specified by DHCD and Timeline**

A. Identifying Status Quo/Aggregating Players (January 2004) With assistance from Virginia's Center for Innovative Technology (CIT) and the local broadband committee, a survey will be used to target several groups to understand the current services and needs. Telephone interviews will also be conducted with government entities to better understand the current infrastructure. The Alleghany Highlands Telecommunication Committee has decided that the primary target groups will be government and business. The Chamber of Commerce will assist in distributing the survey.

B. Relationship to Regional Planning and Networks (February 2004) The geographic scope of the services and needs are to be addressed by the CIT surveys and telephone interviews conducted in January. The results will be summarized and reviewed by the Alleghany Highlands Telecommunication Committee.

C. Lining Up the Experts (Ongoing 2003-2004) A committee was formed and met once. This committee is currently comprised of representatives of local government IT departments, local government administration, CIT and the Roanoke Valley-Alleghany Regional Commission. Other stakeholders will be added to the committee from the private sector and Community College to assist with the project. Representatives from private broadband providers will also be invited to participate at appropriate junctures.

D. Application Identification and Training (March-April 2004)

Virginia's Center for Innovative Technology has agreed to conduct focus groups and training, if requested. The focus groups/training will help the technology committee identify both physical project needs and any gaps in training that exist in the Alleghany Highlands. The business survey conducted in January should help identify training needs.

E. Operation Management System Design (May 2004)-if physical infrastructure is proposed

F. Physical System Design (May 2004)-if physical infrastructure is proposed

G. Hardware Funding Strategy (May 2004)-if physical infrastructure is proposed

H. Operation/Tech & Management Support (May 2004)-if physical infrastructure is proposed  
The technology committee, with assistance from the staff of the Roanoke Valley-Alleghany Regional Commission, will fully assess the technology and broadband needs of the Alleghany-Highlands. At the conclusion of this "needs assessment," the committee may identify specific projects to enhance broadband services or training. As listed in items E-H, projects will be identified, scoped out, and documented to stakeholders. Funding for specific proposed projects are not considered to be a part of this grant; however, the technology committee will be encouraged to pursue the projects through other grants or methods in the future.

Final Report Complete (June 2004)

## Population and Housing

Map 1 shows of the Alleghany Highlands, consisting of Alleghany County, the town of Clifton Forge and the City of Covington. According to the 2000 Census (Figure 1.3), the region has 23,518 people and 11,076 housing units. The population in Alleghany County has remained about the same since 1970; however a large drop in population in Clifton Forge and Covington has decreased the region's population by 16% over the past 30 years. The median household income is about \$10,000-\$20,000 less than the state median. The 2000 poverty rate in the Alleghany Highlands is 10.6%. The high school graduate rate is about slightly less than the state average, but the rate of those holding a college degree in Virginia is three times higher than the Alleghany Highlands. The Census reported 238 homes without telephone service, which is only slightly higher than the state average.

The composition of the population is changing when compared to national trends. From 1990 to 2000 the number of 18-24 year olds remained about the same nationally, but decreased 30 percent in Alleghany County and Covington. Likewise, the 24-44 year olds increased 5.6 percent nationally, but decreased 11 percent in the Alleghany Highlands. The older age groups also dropped or grew at much slower rates than the national average, especially in Clifton Forge and Covington. Overall, these rates reflect the fact that the region is losing population. However, the 18-24 year olds are decreasing at a high rate, and probably leaving the region for better job or education opportunities.

**Table 2 2000 Census Data**

	Total Population	Housing Units	Median Income*	Age 25 and Older		Homes Without Telephone Service	
				High Sch. School Graduates	4 year College Degree*	Number	Percent
Alleghany County	12926	5812	\$ 38,545	77.5%	13.6%	101	2.0%
City of Covington	6303	3195	\$ 30,325	71.4%	6.4%	92	3.2%
Town of Clifton Forge	4289	2069	\$ 26,090	75.0%	9.6%	45	2.4%
Virginia			\$ 46,677	81.5%	29.5%		2.1%

Source: US Bureau of the Census

\*Note: median household income, bachelor's degree or higher

**Table 3 Percent Population Change by Age 1990-2000**

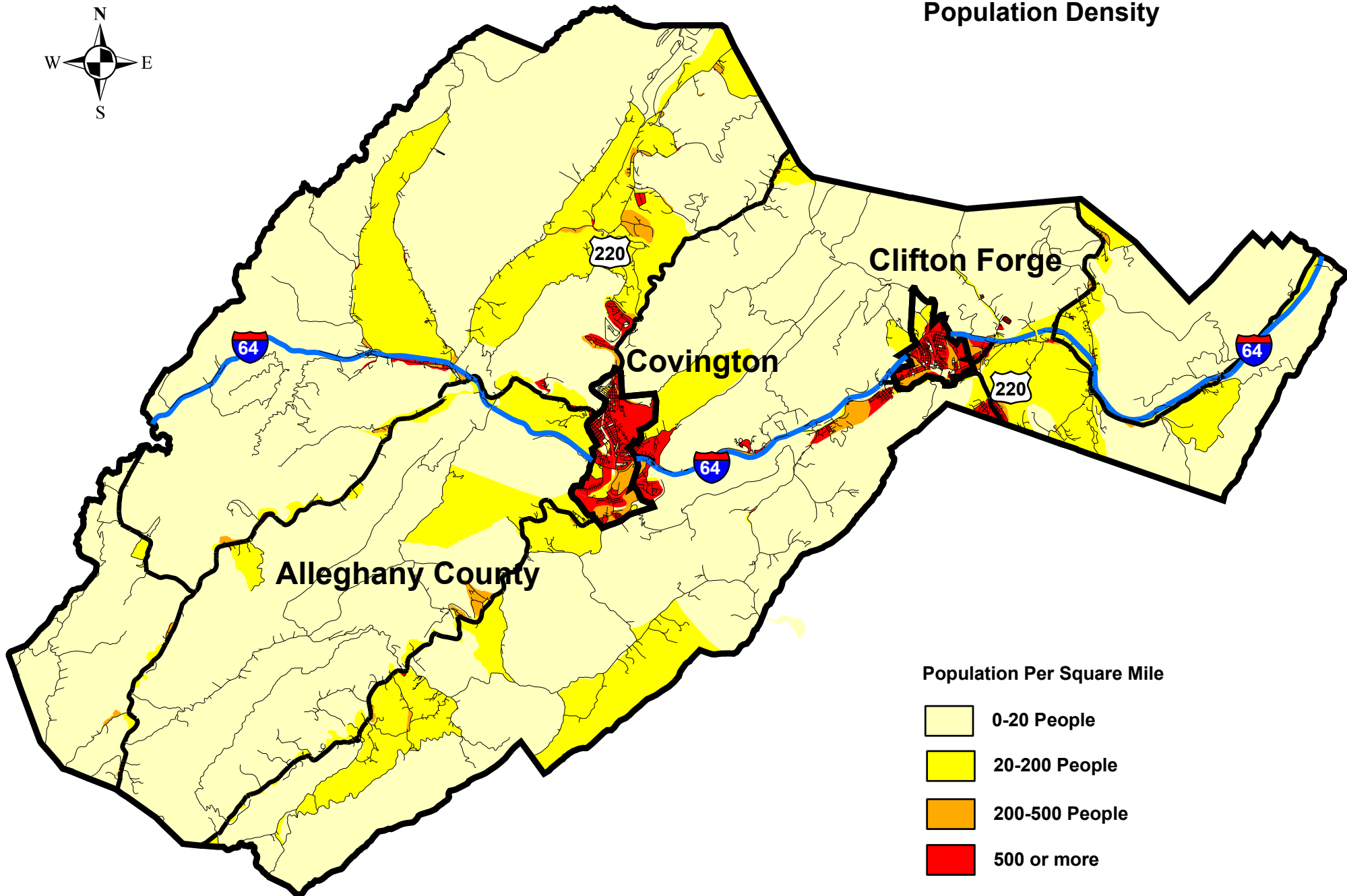
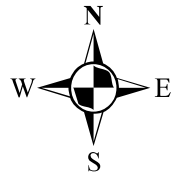
Locality	Total	under 5	5 to 17	18 to 24	25 to 44	45 to 64	65 to 84	85 and over	65 and over
Alleghany	-1.9%	-6.1%	-6.6%	-30.4%	-11.5%	16.6%	8.1%	80.0%	12.8%
Clifton Forge	-8.3%	-1.3%	-15.6%	-5.6%	-10.4%	1.0%	-10.7%	-13.8%	-11.3%
Covington	-9.8%	-2.7%	-4.4%	-29.4%	-11.4%	4.7%	-22.8%	33.1%	-17.6%

Source: US Bureau of the Census

School dropout rates in the Alleghany Highlands are comparable to the Virginia average for the period 1996/97 to 1999/2000. The Alleghany County Division

# Allegheny Highlands

## Population Density



experienced an increase in the dropout rate from 2.9 to 3.8. City of Covington schools experienced a decrease in the dropout rate from 2.6 to 2.4.

In the Alleghany Highlands, 28.4% of homes were constructed in 1939 or earlier and 38.3% were constructed from 1940 to 1969. Based on 1990 Census data, 29.2% of households in the Alleghany Highlands are not connected to a public water system and 31.7% are not connected to public sewer.

## **Economy**

There are approximately 600 businesses in the region. Half of these businesses (305) employ less than 5 people. There are 13 businesses or government entities that employ over 100 people. Wages are typically 20% less than the state average. Major employment sectors in the Alleghany Highlands, according to the 2000 Census, are manufacturing at 27.9%, retail trade at 12.4%, and health and education services at 17.1 percent. Historically, unemployment rates are higher than the state and national average. In 2003, unemployment in the region was less than the national average of 6%.

The Alleghany Highlands experienced a 11.2% decrease in the number of business establishments from 1990 to 2000 compared to a statewide increase of 4.6% according to the Virginia Department of Taxation. Taxable sales for the same time period in the Alleghany Highlands only increased 24.7% compared to a 63.5% increase in Virginia.

Data from the Department of Commerce Regional Economic Information System for the period 1990 to 2000 indicates that the Alleghany Highlands economy lags behind that of Virginia. Personal income in Alleghany Highlands increased 51.3% compared to an increase of 51.4% for the state. Non-farm earnings in the Alleghany Highlands increased 38.8% compared to a Virginia increase of 75.6 percent.

Changes in earnings by industry sector in the Alleghany Highlands fall short of the state increases. Wholesale trade earnings rose 95.3% in Alleghany Highlands compared to 84.4% for the state. Retail trade earnings increased only 24.2% in the Alleghany Highlands, yet rose by 61.3% statewide. Manufacturing earnings, strongly influenced by a few industries (MeadWestvaco, Alleghany Regional Hospital) in the Alleghany Highlands, increased by 37.8% compared to a state increase of 27.4% from 1990 to 2000. From 1990 to 2000 the average earnings per job increased by 31.4%, while the state figure rose 47.2 percent. Wage and salary employment increased by only 5.5% in the Alleghany Highlands and 18.0% in Virginia. Non-farm employment increased by 5.8% in the Alleghany Highlands and 19.3% in the state.

## **Geography**

Slopes in the County range from 0 to 80 percent. Slopes are often over 25 percent due to mountainous terrain. Elevations range from 1,025 feet above sea level at the Town of Iron Gate to 4,072 feet at Big Knob on Warm Springs Mountain in the northern section of the County. The County's total land area is 444.5 square miles. State and Federal lands



comprise approximately 223 square miles of the County. The valleys are relatively level, attracting development such as the concentration of population along the valley of the Jackson River.

## **Barriers to Economic Development**

Recent work on an Enterprise Zone in the Alleghany Highlands identified several barriers to economic development. These are all closely related to the deployment and use of telecommunications and broadband technologies. These barriers include:

### **Inadequate Public Facilities**

Inadequate or nonexistent public water and sewer services limit the amount of residential and industrial development that can take place within the localities and at planned industrial sites. As public water and sewer lines are deployed, fiber connectivity can be installed at a significant cost savings. Listed below are some examples of needed improvements at industrial sites located in the Alleghany Highlands.

The proposed Innovation Park site will require infrastructure including access road, water and sewer facilities. Water is currently available to the site, however sewer is not. In order to serve the site, Alleghany County plans to construct a new regional wastewater treatment plant near the Town of Iron Gate.

The Callaghan area water system was completed in 2001. The Callaghan area does not have a public wastewater treatment system.

The Alleghany Regional Commerce Center is tied into the Low Moor wastewater systems and the Clifton Forge water system. The Low Moor wastewater treatment plant was upgraded from 200,000 gpd to 500,000 gpd in 2000 to serve the Alleghany Highlands Commerce Center and surrounding area. The Irvine property west of Clifton Forge would require a connection to the Clifton Forge or Low Moor wastewater system if developed.

The jurisdictions of Alleghany County and Clifton Forge have limited resources available at this time to address water and sewer facility improvements at industrial sites and residential neighborhoods due to requirements of a Department of Environmental Quality Consent Order issued in 1999. The Consent Order requires the County to build a new wastewater treatment plant near Iron Gate.

### **Transportation Access**

Access is always a consideration for industrial development. While the proposed Enterprise Zone is located along a main line of the CSX Railroad and the Interstate 64 Corridor, access from these corridors to planned and existing industrial sites is needed. Many of the sites proposed for inclusion in the Enterprise Zone are adjacent to I-64 and its interchanges; however, access to the sites must be provided off of Virginia Primary or

Secondary Routes. This requires the locality or industry to construct an access road to the site in addition to any necessary internal roads. Consideration to fiber deployment should be made as any new roads and sites are developed.

### **Availability of Industrial Sites**

A major obstacle facing the Allegheny Highlands is the limited amount of land suitable for commercial or industrial development. The localities of Allegheny County, Clifton Forge and Covington face three obstacles to creation of new industrial sites: 1) obsolete buildings or sites; 2) topographical limitations, and 3) inadequate housing stock.

#### **1) Obsolete buildings or sites**

There is a need in the Allegheny Highlands to redevelop obsolete buildings and/or sites. Many existing buildings that have been vacated by former industrial occupants are aging or unsuitable for modern industries. The localities need to focus part of their economic development efforts on revitalization of former industrial sites, especially those that are currently served by public water and sewer systems. This need is particularly important in the Town of Clifton Forge and City of Covington where the amount of land available is limited. Opportunities to bring broadband access to these sites may increase their marketability.

#### **2) Topographical Limitations**

The valley and ridge topography, in combination with the route of the Jackson River and its tributaries, limit the amount of land available for residential, commercial and industrial development. In response to this limitation, the localities must carefully utilize the land that is available and concentrate their development efforts on prime sites that will be marketable. Allegheny County has identified primary and secondary growth areas along the Interstate 64 corridor that encompass developable sites. Clifton Forge and Covington are facing the same topographical limitations as Allegheny County, in addition to each locality's inability to expand its boundaries. Covington has only one large vacant site suitable for industrial development and possibly redevelopment of the former AET/Hercules site. Clifton Forge has a portion of the Industrial Park (14 ac.) remaining vacant for future development and plans to redevelop the former CSX Railyard site. Both localities are limited to difficult and expensive redevelopment of existing or abandoned industrial sites.

#### **3) Inadequate Housing Stock**

The jurisdictions in the Allegheny Highlands contain aging residential structures in need of rehabilitation. In many cases, owners cannot afford to maintain the property or make emergency repairs. A need for indoor plumbing, upgraded kitchen facilities and general rehabilitation work exists within the Enterprise Zone area and the region as a whole. Allegheny County began to address housing needs in September 2000 with the implementation of a CDBG Planning Grant to develop target areas and priorities for housing rehabilitation. Allegheny county,

the City of Covington, and towns of Clifton Forge and Iron Gate are all utilizing CDBG funds – either planning grant or construction grant – to address housing needs in 2002. As many homes are upgraded through such rehabilitation, they should also be wired for broadband access when feasible.

### **Limited ability to generate additional tax income**

The inability of local governments to raise additional funds for public improvements, education, and economic development efforts severely limits the progress of the jurisdictions. As stated in this application, the localities have high fiscal stress index ratings. The 1999/00 Composite Fiscal Stress Index Scores for the localities is as follows: Alleghany County index of 170.70, an above-average stress rank of 50; Clifton Forge index of 181.18, a high stress rank of 8; and Covington index of 185.44, with a high stress rank of 6.

### **Educational Attainment**

In order to attract quality industries to an area, the jurisdictions must have an educated and trained labor pool. Currently training opportunities exist through Dabney Lancaster Community College, the Jackson River Technical Center, and the Virginia Employment Commission. Dabney Lancaster Community College also offers some Bachelors and Masters programs through Old Dominion University's Teletechnet program.

### **Low Income**

In many cases, low-income residents cannot afford to make property repairs or construct new dwellings. There is a need for rehabilitation, emergency repair, and indoor plumbing programs in the Alleghany Highlands. A similar situation exists for low-income business owners that are unable to afford property improvements and maintenance; unable to invest in expansion or purchase new property. Increased access to capital for property improvement, maintenance, and expansion is needed.

### **Organizational Barriers**

The localities in the Alleghany Highlands need to work on economic development, public facilities, and housing issues on a regional basis. Likewise, telecommunication and broadband issues should be addressed regionally. This would prevent duplication of efforts, reduce costs, and eliminate competition among the localities. Current organizational cooperative efforts involving the localities include the Alleghany Highlands Chamber of Commerce and the Alleghany Highlands Economic Development Commission, and the Roanoke Valley-Alleghany Regional Commission, this study, and housing and transportation committees.

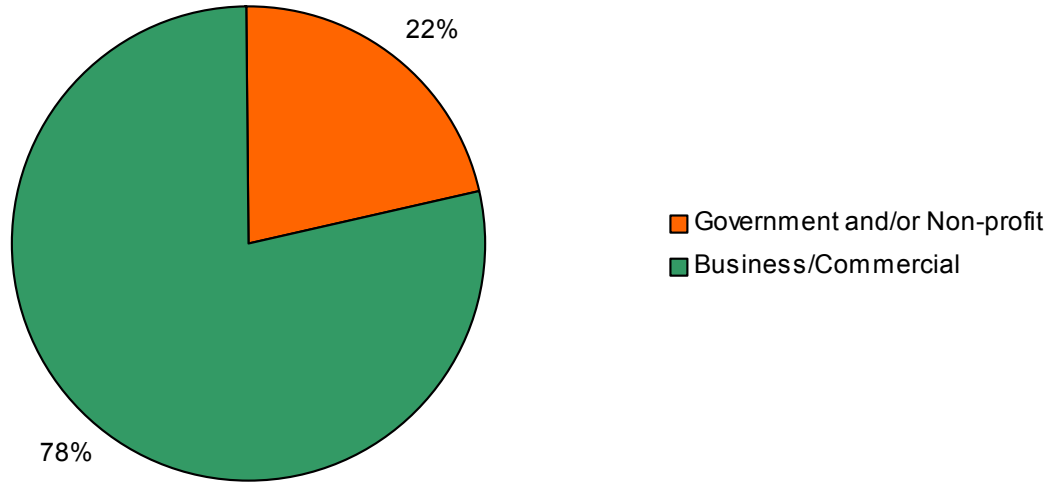
## **Business Survey**

The Alleghany-Highlands Telecommunications Plan Committee met in the winter of 2003 and determined that part of the process to assess existing infrastructure and needs would be to conduct a survey of internet users. With no good way to target residential users, it was decided to conduct a survey of businesses in the region. Virginia's Center for Innovative Technology (CIT) supplied sample surveys and the committee designed the survey attached in Appendix A.

Two hundred surveys were mailed to members of the Alleghany Highlands Chamber of Commerce, local governments, and non-profit organizations, and 80 were returned. A press release was issued about the survey, and *The Virginian Review*, the main paper in the Alleghany Highlands, published an article on the survey. The survey was also available online and was distributed by hand to businesses in downtown Clifton Forge. The region has approximately 600 businesses, and about 200 are members of the Chamber of Commerce.

The results were analyzed and are presented as follows:

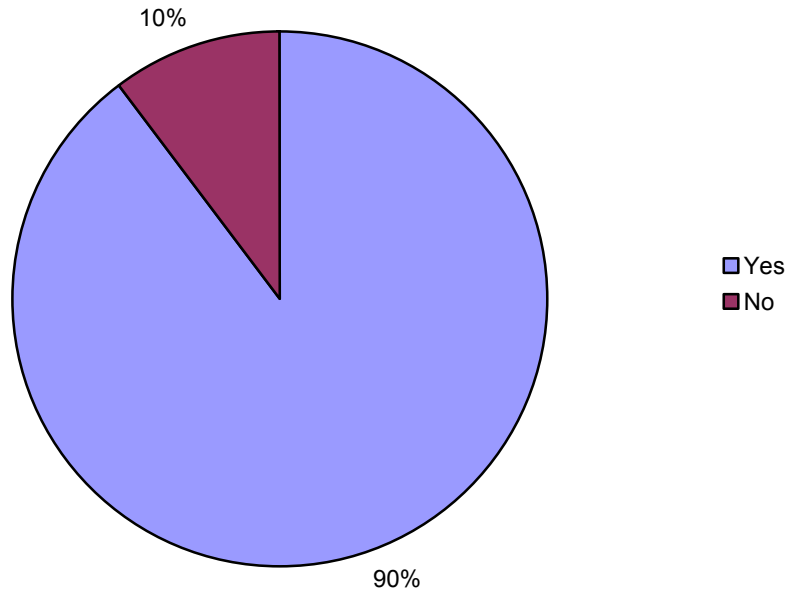
### Respondent Characteristics: Government or Business



**Figure 1- Respondent Characteristics**

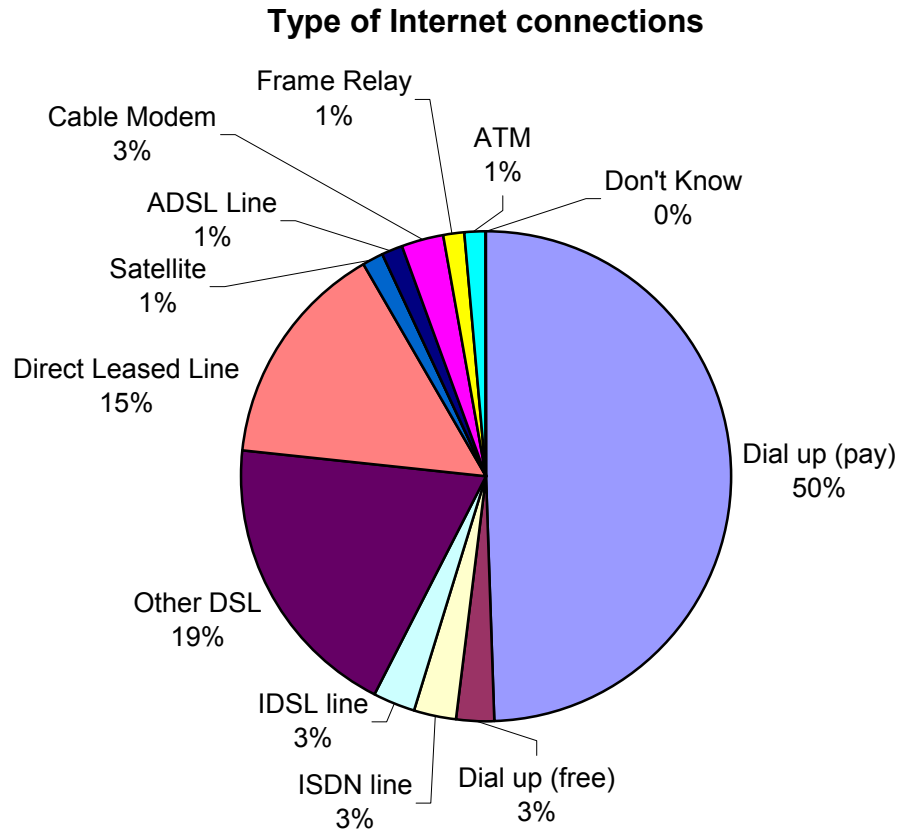
Of 200 surveys mailed to members of the Alleghany Highlands Chamber of Commerce, local governments and non-profit organizations, 80 were returned: Fifty-five from businesses and 15 from local governments, or non-profit organizations.

### Do you have an internet connection?



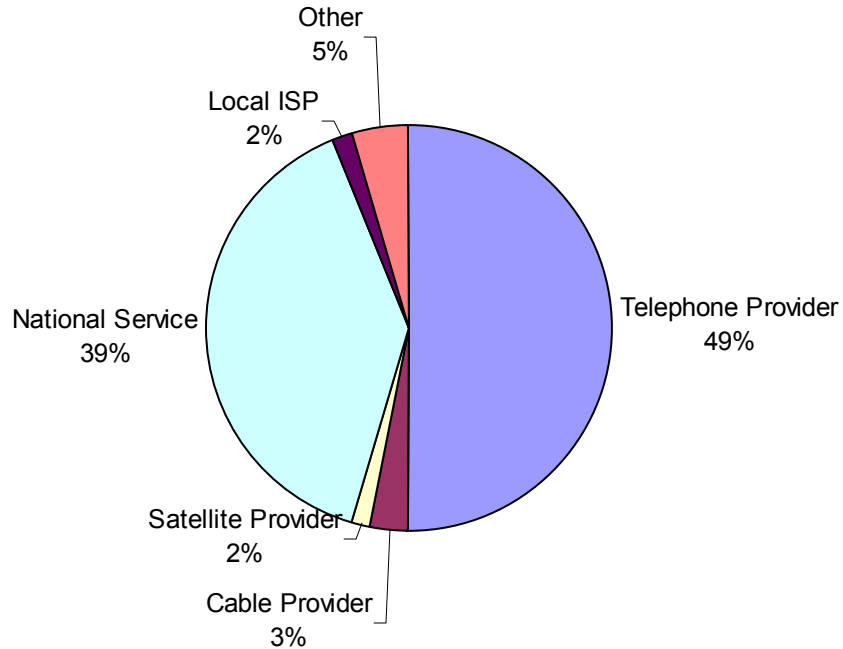
**Figure 2-Internet Connections**

Of the 80 returned surveys, seven indicated that they did not have an Internet connection. Sixty-three (90%) of the respondents did have an Internet connection. It is unlikely that many businesses without an Internet connection would have returned the survey, thus not many conclusions can be drawn from this question.



**Figure 3-Types of Internet Connections**

### Who is your Internet Service Provider?

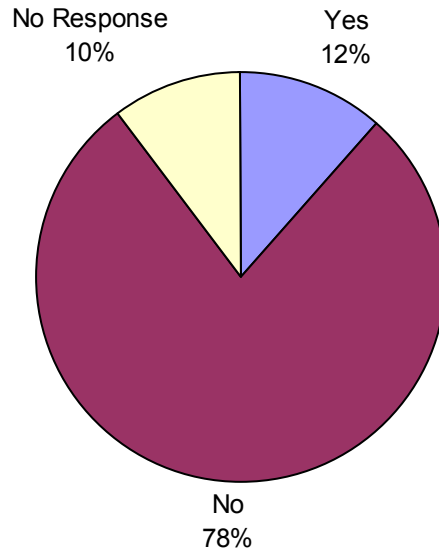


**Figure 4-Type of Internet Service Providers**

About 39% of the users in the survey use a national dial-up provider such as Earthlink or America Online. The local telephone provider provides DSL service to about 19 percent of users. Three percent of users use cable modems. The high response from government users accounts for the high percentage of direct leased line usage. Nationally, the usage percentages are similar for dial-up service, local phone service, and cable service. About 65% of users use a national dial-up service according to a recent government study. It is likely that among home users in the Alleghany Highlands, this is higher since other types of service may not be available in more rural areas.



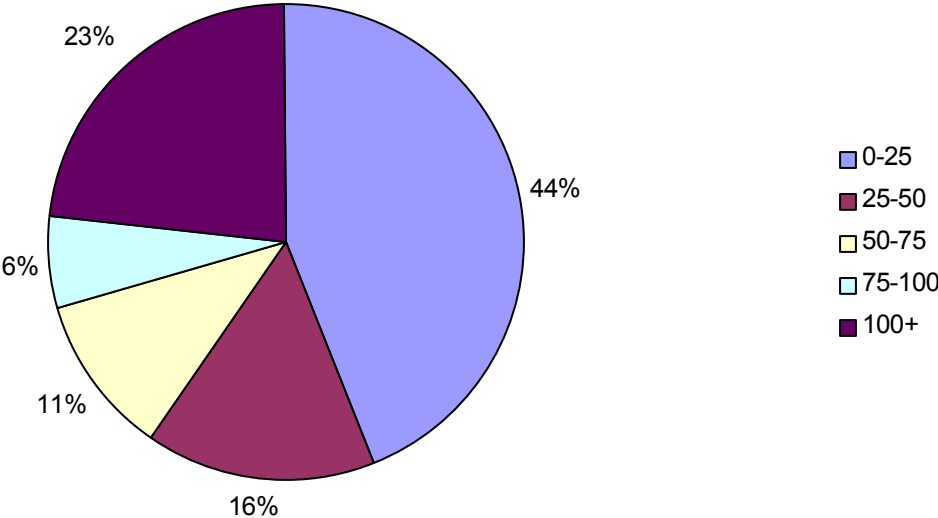
**Do you have to make long distance phone calls to reach your provider?**



**Figure 5-Long Distance Calls**

Surprisingly, 12% (8 people) indicated they had to make a long distance call for dial-up Internet access. Some national providers may not supply local or toll free numbers for some of their rural customers. A home health business responded that they use a long distance dialup set up by their Medicare intermediary and they cannot change the service. This issue indicates a lack of alternatives or poor user knowledge about access. No business or resident should have to make a long distance call for Internet access.

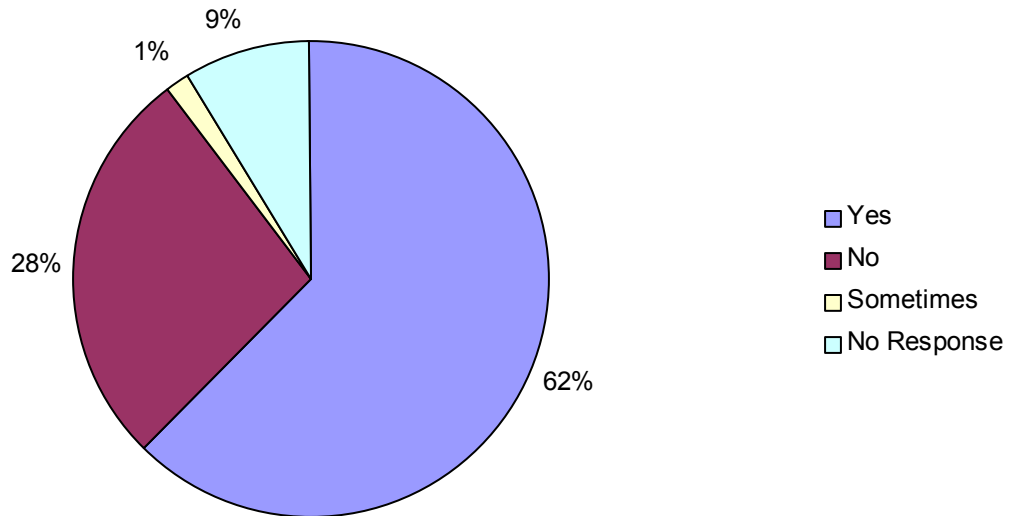
**How much do you spend on connectivity per month?**



**Figure 6-Connectivity**

As expected, many users pay under \$25 dollars a month, typical for dial-up service. The high percentage of \$100 or more per month can be attributed to the government users in the survey.

### Are you satisfied with your current level of Service?

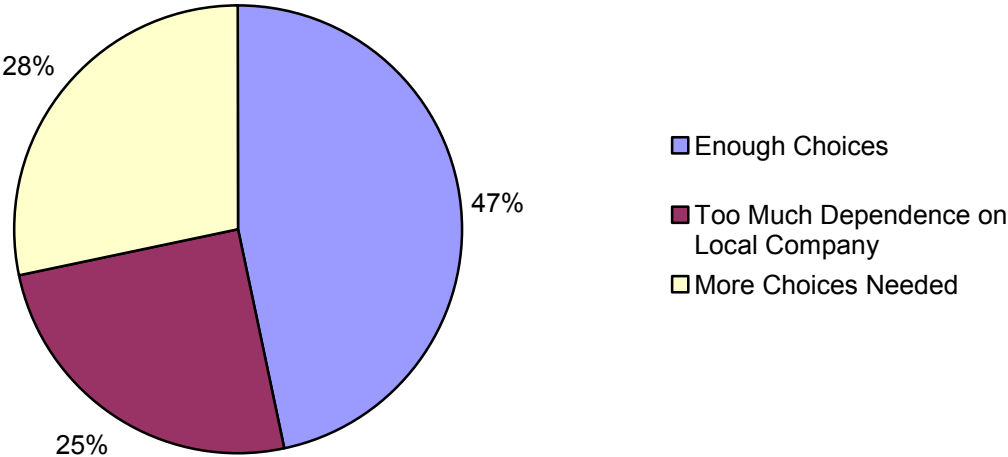


**Figure 7- Service Satisfaction**

Thirteen (36%) of the 36 dial-up users are not satisfied with their service. Three (21%) of 14 DSL users are not satisfied with their service. Eleven (34%) of 32 telephone company customers are not satisfied, and nine (35%) of 26 national service customers are not satisfied.

Twenty users are not satisfied with their current service. Five would pay \$0-\$25, eleven would pay \$25-\$50 and four would pay more than \$50 per month for better service. Three of those users would like to pay less than current rates. Eight would like rates to be about the same, but they would like to have better service and nine are willing to pay more for better service.

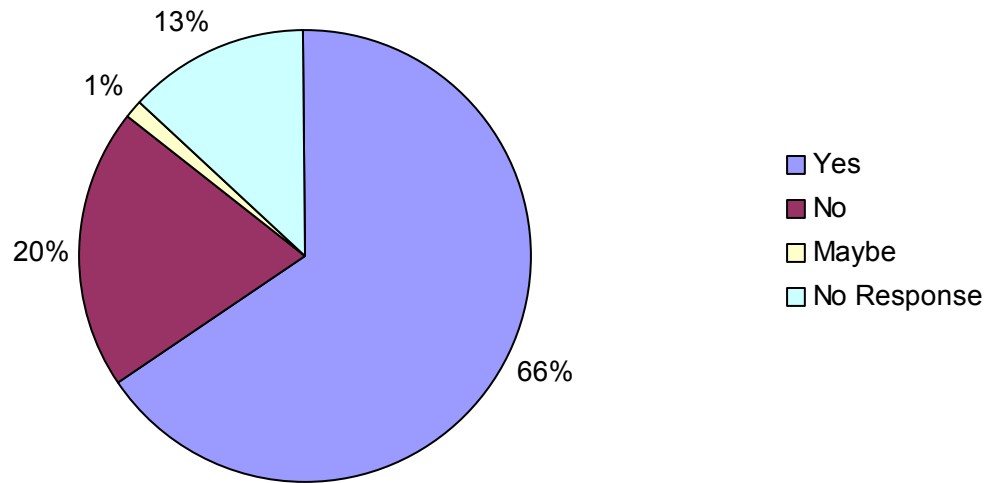
**Please indicate how you feel about the choices you have for obtaining telecommunication service?**



**Figure 8-Telecommunication Choices**

Forty-seven percent of respondents believe that they have enough choices. Twenty-five percent feel that they depend too much on the local provider. The survey question could have been worded differently since it is possible to feel dependent on the local company while needing more choices. However, it is accurate to say that over 50% of people are not happy with their current choices.

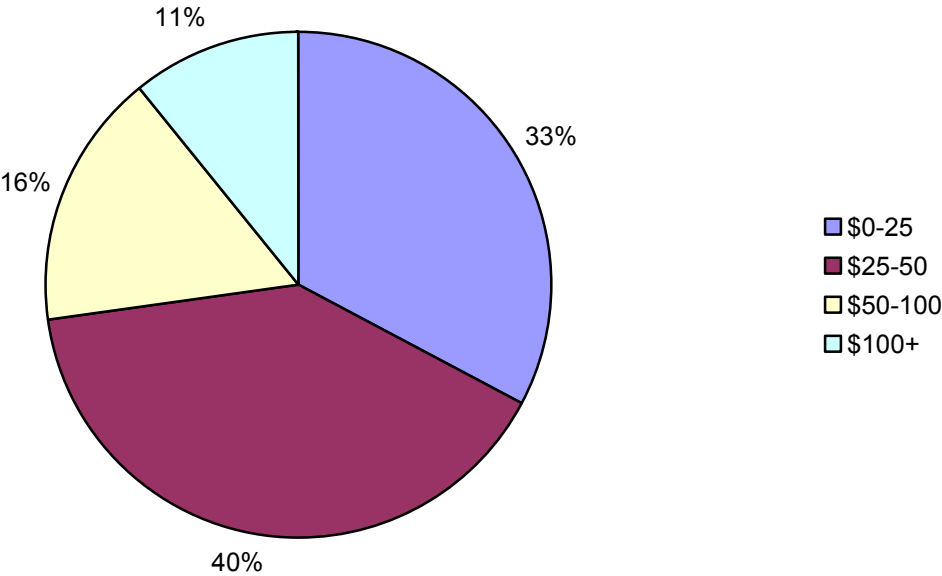
**Would you be interested in purchasing a much faster Internet service at a very moderate cost?**



**Figure 9-Faster connection for moderate cost.**

Since moderate cost was not defined, we can only assume that most respondents are willing to pay a little bit more for faster Internet Service. Fifteen respondents would not be willing to pay a moderate cost for faster Internet service. Nine of those fifteen are using dialup service. In general, 66 percent are willing to pay more for faster service.

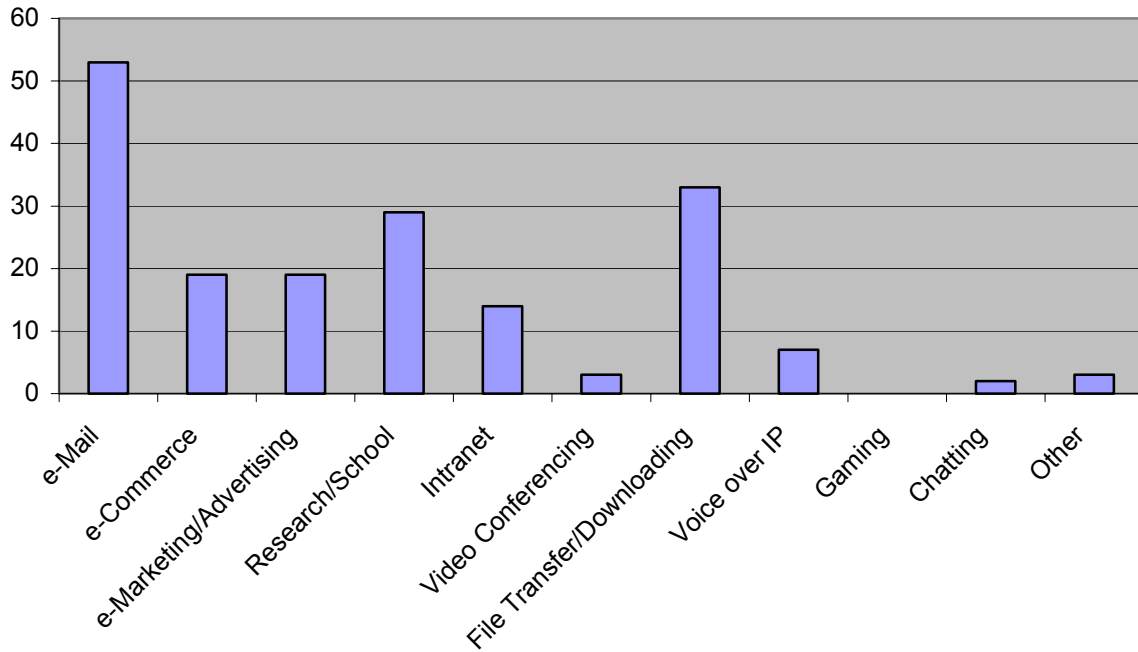
**How much would you be willing to pay (per month) for a faster Internet connection?**



**Figure 10- Cost for Faster Connection.**

Forty percent (22 people) of respondents would pay between \$25-\$50 for a faster connection. Of the twenty users who are not satisfied with their current service, five would pay \$0-\$25, eleven would pay \$25-\$50, and four would pay more than \$50 per month for better service. Three of those unsatisfied people would like to pay less than current rates. Eight would like rates to be about the same, but they would like to have better service and nine are willing to pay more for better service.

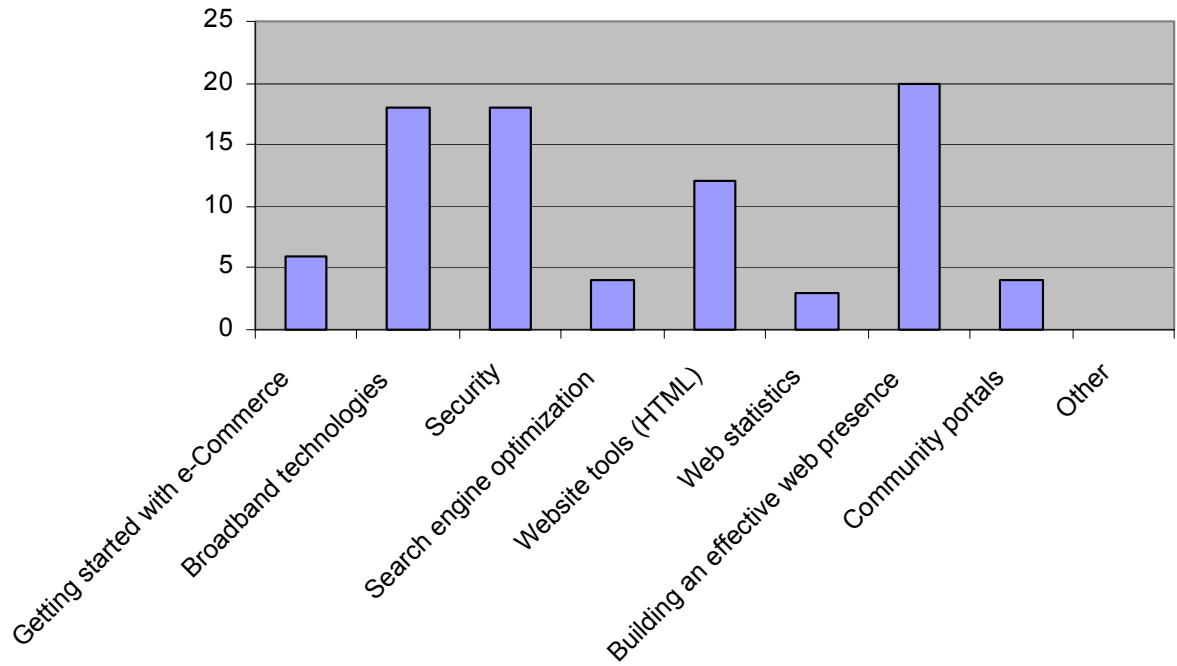
### What are your primary uses of the Internet?



**Figure 11- Internet Uses**

Of the 80 responses, a majority uses the Internet primarily for email communications. About 33 people use the Internet for file transfers and downloading while 29 people use it for research. Fewer than 20 respondents use it for commerce, advertising and marketing. Only a couple of people have been successful with video conferencing and voice over IP. Surprisingly, the video conferencing and voice over IP users are small private companies, not government or public agencies. The exception would be Dabney Lancaster Community College, which utilizes most available uses.

### Which of the following topics would be interested in?

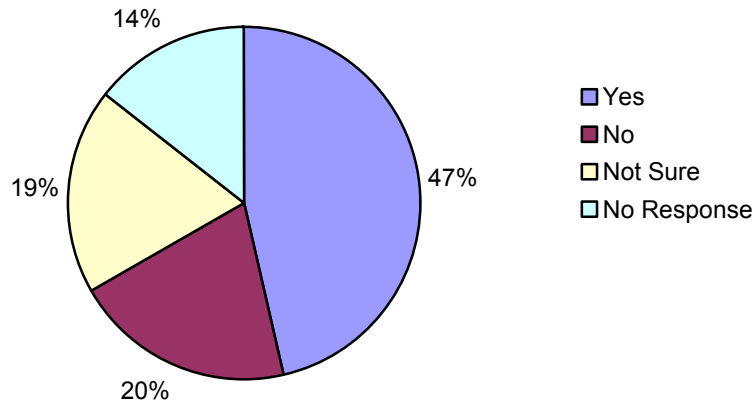


**Figure 12-Topics of Interest**

This question was asked to identify topics of interest for possible training workshops. People would like to know more about broadband technologies, Internet security, and ways to build an effective web presence. These topics are ideally suited for business workshops and should be provided to the community in the future.



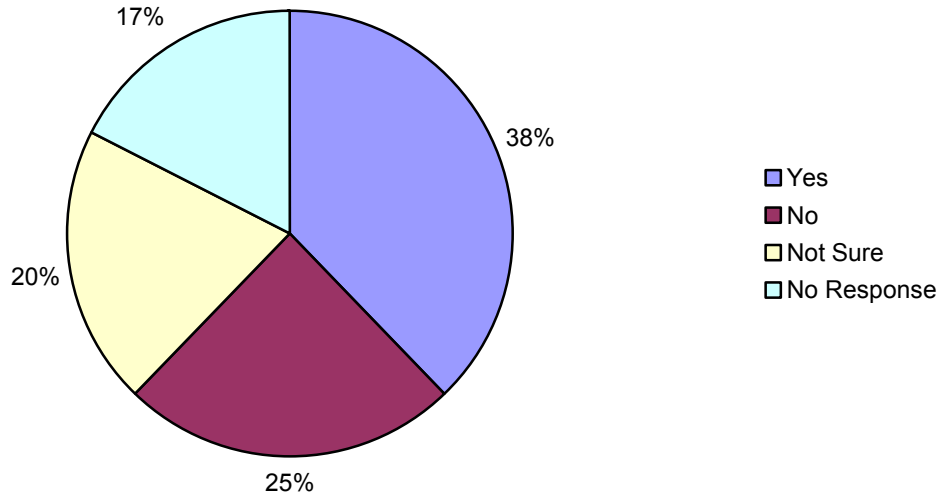
**Do you believe your organization will benefit from a broadband or faster Internet connection?**



**Figure 13- Benefit from a faster connection?**

Forty-seven percent of respondents believe that their company or organization could benefit from a faster connection. Nineteen percent are not sure and twenty percent feel that a faster internet connection could bring no benefit. Fourteen percent did not respond, perhaps from a lack of knowledge about the issues. These results indicate that most people (about 66%) understand there could be a benefit. Twenty percent believe that a faster access would provide no benefit.

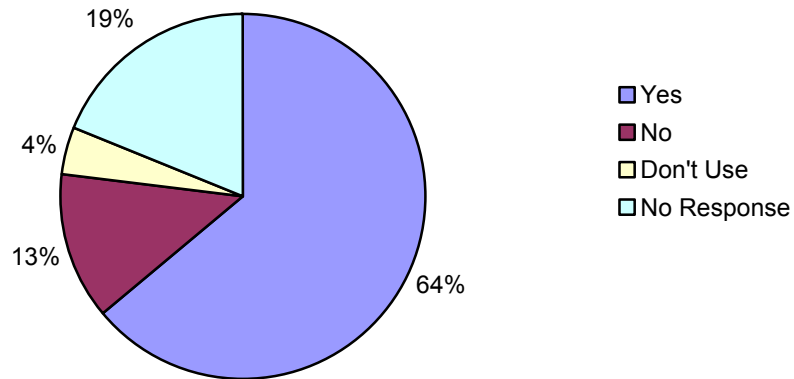
### Would a faster connection improve/increase business?



**Figure 14- Would a faster connection help business?**

Like the previous question, a large segment (38%) believes that a faster Internet connection would improve their business. Of course that depends on how the faster connection is utilized by the company. However, forty-five percent are not sure or do not think that a faster connection would improve their business. It would appear that some education of what can be accomplished with faster connections and how businesses can use the technology in the future would be of some benefit. Of course, there are some traditional businesses that may not have a strong need for high bandwidth access.

**Would a faster connection be a better tool for you or your family at home?**



**Figure 15-Connection at home?**

This question was asked of the business community to better understand what was needed for residential access. By the sixty-four percent favorable response, it would appear that better residential access is desired in the region. As with most rural communities, it is likely that the residential market is underserved.

## **Additional Survey Comments**

Finally, written comments were provided on 16 returned surveys. They are summarized below:

1. Would like to see some competition so broadband costs may come down. T1 costs over \$700 per month.
2. Alleghany Regional Hospital-Physicians offices do not have affordable access to T1 line which would benefit them greatly
3. U.S. Forest Service-As a federal agency our agreements and contracts are not made at the local level. We have excellent service
4. Motel Owner- I have a doctors office and a few other small businesses that would benefit
5. Radio Station- We send a lot of audio files from station to station. DSL is quick and were very happy with it.
6. Dentist-Faster connections may allow services that are not practical currently.
7. Alleghany County-Broadband would enhance the opportunities for residential connection to a higher speed internet.
8. Those who are ignorant of economic development history are doomed to repeat its failures: instead of drawing those people who need the most service, why not develop them in place and bring in their new economic worth to the urban centers?
9. We currently have a DSL high speed internet with networking capabilities at our facility This service is offered thru our local ntelos company.
10. Publishing Company- My company is too small to benefit from the internet. I surf the web more for personal than business reasons. I do have a laptop with a wireless connection.
11. Already have DSL at work and at home but would be interested in faster or cheaper connection.
12. We are a Verizon agent and use our network over the internet for access to activate phones, research records and other functions. We must have broadband.
13. Home Health Company-We use dialup set up by our Medicare intermediary and it cannot be change by us. (dialup is long distance call)
14. Warm Springs, VA-I recently moved here from Washington D.C where we were accustomed to fast connections everywhere and we miss it so much.
15. Do not have internet at business, Use at home only (AOL only choice).
16. I was shocked to learn of the high cost of DSL for my small business-Twice what it would be for residential.

## **Summary of Survey**

According to Design Nine, Inc., there are few surprises in the survey data. Most of the respondents use the Internet, and most want more and better choices, but service needs to be affordable.

The difficulty with these kinds of surveys is that users who are unfamiliar with broadband on a day-to-day basis have trouble answering some of the questions appropriately. Hence, 15% to 19% “No response” and the almost 20% “Not sure” responses. Taken together, almost 40% of respondents may not really have enough experience to make an accurate assessment of the value of broadband to their public or private enterprise.

The Pew Foundation, in a recent nationwide study of Internet use, found many dial-up users (49% in the Alleghany Highlands) classified themselves as “satisfied” with current dial-up access. However, if you survey broadband users and ask them if they would willingly go back to dial up, you are going to find that virtually no one would say, “Gee, my dial-up was just fine,” according to Andrew Cohill, of Design Nine.

## **Existing Private Sector Infrastructure**

### **NTELOS**

NTELOS is the primary telecommunications provider for Alleghany County. Based on information from the company, 80% of its base is enabled for DSL in Covington, Clifton Forge, and Alleghany County. Of approximately 11,200 qualified potential broadband customers (lines), only 500 customers have opted to purchase DSL service for a “take rate,” of only 4.4%. Basic DSL service from NTELOS currently costs \$39.95 per month for residential use and \$59.95 for business service. NTELOS has no plans to enable their remaining 2800 lines for DSL, as the cost far exceeds the potential gain. NTELOS has a wireless service in other areas of Virginia that delivers up to 1.5Mbps download and 550Kbps upload for \$49.95 per month, but does not have plans to deploy it in the Alleghany Highlands. Dial-up service from NTELOS costs \$14.95 per month. NTELOS estimates that America Online (AOL) has approximately a 75% market share of dial-up accounts in the region.

NTELOS services offered in the market include: DSL, Dial-up, ATM, Frame Relay, Dedicated Internet (T1, T3, OC3) as well as web hosting services. The ability to provide Voice over IP and Metro Ethernet also exists. Two attempts were made to have NTELOS participate in the planning process.

### **Rapid Cable**

Cable Modem is available wherever Cable TV services are provisioned (currently Selma, Low Moor, Clifton Forge, Covington). Rates vary by speed from \$24.95 per month (256kbs) to \$49.95 per month (1Mbps). Rates for non-TV subscribers are \$10 more. There is a \$50 installation fee that is usually waived through promotions. Rapid Cable is based in Colorado, and has no administrative presence in the Alleghany Highlands. A representative said they typically expand service in areas with 20-30 homes per cable mile (see Map 1). They reassess growth areas periodically by reviewing electric line deployment maps. Cables are placed in public rights of way, typically on telephone poles (shared use). The representative did mention that their research showed low computer usage in the region limits growth of broadband.

### **Dial-up**

There are several companies that offer dialup service in the region. Corlink ([www.corlink.com](http://www.corlink.com)) costs \$14.95 per month and has some local access numbers, but parts of Alleghany County are long distance. America Online ([www.aol.com](http://www.aol.com)) costs \$23.90 per month. Compuserve ([www.compuserve.com](http://www.compuserve.com)) costs \$19.95 per month, but does not have local numbers. Likewise, Earthlink ([www.earthlink.com](http://www.earthlink.com)) does not seem to have local numbers in the region. There are many other companies like Netzero and Juno that offer basic dialup service, but probably do not have toll free access.

## **Satellite**

Satellite may be an option for some home and business users. Direct TV (DirecWay) indicates that the upfront cost of hardware is \$600 and the monthly fee is \$60. Starband has similar pricing at \$600 for hardware and \$50 per month. There are several satellite users in the Alleghany Highlands, but currently satellite is not a viable option for most users.

## **Related Services**

### ***Central Ridge Web Services***

Primary Services: Web Design/Development, Web application/database programming, Office systems set-up/Networking. Secondary Services: Tech support; Hardware consultation, installation and repair; Wi-fi Hot Spot set-up/support; Digital Photography, Photo reproduction, and eBay Brokerage.

### ***Mountain Electronics***

Two-way radio for public safety and business. The company owns tower sites and repeater systems, both traditional and trunked, and also serves as an agent for Verizon Wireless and Highland Paging.

### ***Highland Computers***

Computer sales and service.

## **Existing Public Infrastructure**

Local governments were asked to compile information on their telecommunications infrastructure. The information is listed in Table 4. Public facilities use a variety of access types and may be managed by different departments within each local government. It would be useful to have a better understanding of the funds spent on telephone and voice access in Alleghany County, Clifton Forge, and other facilities in the I-64 corridor. Map 2 shows the location of most public facilities in the region.

Public right-of-way information is managed by local governments and the Virginia Department of Transportation. This study did not examine the accessibility of such data. It would be useful to find out how permitting and tracking takes place at the local and state level. Public right-of-way management is an important aspect of broadband deployment.



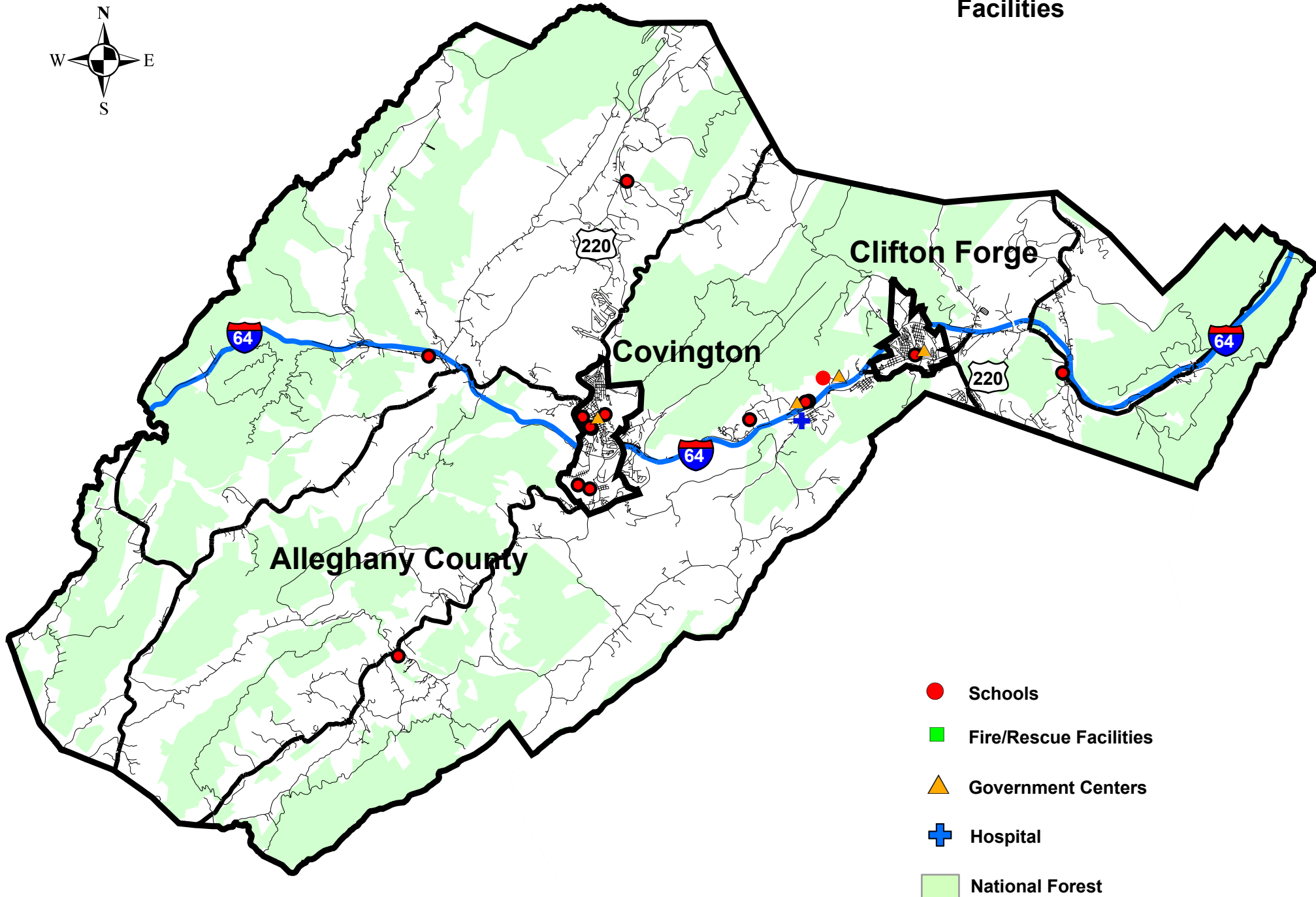
**Table 4 Existing Public Sector Infrastructure**

Physical Locations	Internet Access				Telephone or Voice Access		Other Wired Communications	
	Type of Access	Speed of Access	Number of Users	Monthly Cost	Number of lines	Monthly Cost	Type	Monthly Cost
<b>City of Covington-333 W. Locust</b>	T1	1.5MB	37	\$714.58	108	\$2,050.00		
<b>City of Covington-Lease Lines</b>								\$793.07
<b>City of Covington-150 S. Maple</b>	DSL	384k	3	\$69.95	8	\$150.00		
City of Covington Public Schools								
Edgemont Elementary	T1	1.5MB	280	\$437.62	3	\$203.75		
Jeter-Watson Intermediate School	T1	1.5MB	284	\$437.62	3	\$203.75		
Covington High School	T1	1.5MB	375	\$436.62	10	\$203.75		
School Board Office	T1	1.5MB	11	\$436.62	8	\$203.75		
Charles P. Jones Public Library	DSL	2.5m/512k	20	\$199.95	3	\$190.00		
Fire Station #1	DSL	384k	1	\$69.96	4	\$63.45		
Fire Station #2	na				1	\$14.40		
Covington Sheriff								
Covington Court House								
<b>Alleghany County-9212 Winterberry</b>	T1	1.5MB	50	\$1,466.60				
Alleghany Highlands Public Schools								
Administrative Office	T1	1.5MB	*	**				
Boiling Spring Elementary School	Frame Relay	512K	*	**				
Callaghan Elementary School	Frame Relay	512K	*	**				
Falling Spring Elementary	Frame Relay	512K	*	**				
Alleghany High School	T-1	1.5MB	*	**				
Sharon Elementary School	Frame Relay	512K	*	**				
Mt View Middle School	T-1	1.5MB	*	**				
Mt View Elementary School	T-1	1.5MB	*	**				
Central Elementary School	Frame Relay	512K	*	**				
Jackson River Technical Center	T1	1.5MB	*	**				
Emergency Services								
Boiling Springs Fire and Rescue	Dial up	56K	1	\$23.95				
Dunlap Fire and Rescue	Dial up	56K	1	\$23.95				
Falling Spring Fire and Rescue	Dial up	56K	1	\$23.95				
Sharon Fire and Rescue	DSL	768/256	1	\$59.95				
Selma Fire Department	Dial up	56K	1	\$23.95				
Alleghany County Sheriff	DSL	512K	13	\$179.95				
Alleghany County Court House	T-1	1.5MB	18	State Funded				
Commonwealth Attorney	DSL	768/256	3	\$59.95				
<b>Town of Clifton Forge</b>	DSL	512K	7	***				
Clifton Forge Fire	Dial up	56K	1	\$23.95				
Clifton Forge Rescue	Dial up	56K	1	\$23.95				
Police Department	DSL	512K	3	***				
Public Works	Dial up	56K	1	\$23.95				
Clifton Forge Library								
MeadWestvaco	T-1	1.5MB						
MeadWestvaco Fire								
MeadWestvaco Rescue								
Alleghany Regional Hospital	T-1 (4 lines)	1.5MB						
Dabney Lancaster Community College	DS3	45MB		\$3,500.00				
Virginia Department of Health	DSL	512K	20	\$199.99				
U.S. Forest Service-James River District	T-1	1.5MB	17	****				
Virginia National Guard	*****							
Virginia Department of Transportation								

\* Total Number of users is approx. 3,800

# Allegheny Highlands

## Facilities



## Technologies

There are a wide variety of technologies used to deliver voice and data services at high speeds. Wireless technologies work well in flat, urban areas, while fiber cable may be easy to deploy in sub-urban areas with good right-of-way access. The rural portions of the Alleghany Highlands are faced with low population density and mountainous terrain, making broadband deployment to all residents a challenge. This section discusses some current technologies that could be utilized in the region.

### Wireless Broadband Considerations from Design Nine Inc.

One way of summarizing the kinds of wireless infrastructure and equipment options that exist is this way:

- WiFi—the inexpensive, widely available wireless service typically used to provide Internet access to laptops and other computers. It uses unlicensed spectrum, requires direct line of sight, and has a typical range of 50-100 yards. Much longer distances are possible (several miles) if fixed point to point antennas are used. Bandwidth is shared among all users, and it can suffer from interference, which reduces available bandwidth. The most popular variants are the mature 802.11b (11 megabits/sec) and the increasingly common 802.11g (54 megabits/sec). Actual throughput is often much lower, and can be highly variable, based on distance, interference, and number of users. WiFi is frequently used as a “first mile (last mile)” solution because of low cost and wide availability of equipment. WiFi base stations for in home use are now as little as \$50-75.
- Everything else—there are numerous other wireless technologies and protocols available. There are many proprietary systems that use licensed spectrum and have higher bandwidth capacity than typical WiFi systems. Licensed spectrum suffers less from interference problems. Most solutions require direct line of sight, but some systems offer point-to-point capabilities of 10-30 miles; these are not always “first mile (last mile)” solutions because of higher costs.

Wireless broadband has always suffered from a plethora of vendor-proprietary solutions that limit interoperability. In other words, once you start using one vendor’s equipment, you are often committed to it. The rapid growth of 802.11 (WiFi) is due largely to the fact that the equipment is supplied by many vendors and the common standard makes it easy to mix and match equipment. The primary problems with WiFi are limited range and limited bandwidth due to interference. As more unmanaged “hotspots” proliferate, service can degrade substantially.

There are two new systems beginning to emerge. WiMax (also designated as 802.16) provides higher bandwidth capacity (up to 75 megabits/sec) and offers much longer distances (4-6 miles for point-to-multipoint end user services and as much as 30 miles for point to point backhaul and backbone applications). WiMax equipment will be available from multiple vendors and will likely follow the price curve of 802.11 equipment—it will get less expensive relatively quickly. The first WiMax equipment will enter the marketplace in the second half of 2004.

A bit further out, but potentially very interesting, is the likelihood that the FCC will release unused channels in the economics of wireless broadband dramatically, especially in rural areas where population density is low. Broadcast TV frequencies will travel 40-60 miles and do not require direct line of site.

Investments in wireless should be made with caution. Some rules of thumb would include:

- Identify appropriate sites for towers and antennas. Even as technologies and systems change, good tower sites will still be valuable. Countywide and regional site surveys of viewsheds and population centers are very useful and may be helpful in attracting service providers (who would otherwise have to pay for this work themselves).
- Community-owned towers, carefully located, could become self-funded over time as service providers pay to lease space. This approach reduces costs to service providers and potentially offers better service to more users because of optimum siting.
- Investments in equipment should be cautious, and should track carefully to identified uses and users. In other words, do not buy equipment that cannot be put into service immediately with revenue-producing customers. Because equipment and protocols are changing constantly and prices generally are trending downward, equipment should be purchased incrementally as paying customers become available.
- Build out systems incrementally to gauge use and demand. Try a few hotspot experiments to gauge take up rates for services before building out an entire system.
- Wireless and fiber or not “either/or” technologies. Wireless access points usually (but not always) require wired access back to the ISP. Wireless and wired plans should be made jointly to reduce costs and to ensure that businesses and residents will have a variety of broadband choices.
- Contracts with wireless providers that are subsidized with community funds have the potential of creating a de facto monopoly; other providers may be less inclined to enter the local marketplace because local government has “blessed” a winner. Conversely, underwriting a single provider may create a fairness issue that obligates local government to underwrite every provider that wants to enter the marketplace.
- If community investments are made, the best results are likely by building common infrastructure that can be used equally by any and all providers (e.g. tower sites, towers, telecom duct, dark fiber.)

## **Fiber Optic Cable**

The predominate fiber used in local and regional cable installations is manufactured by Corning and is known as SMF-28e. Various cable manufactures bundle the Corning (or similar brand) fiber into different types of cable configurations. The fiber strands can be bundled in groups to form small or large volume cables to fit specific applications from major “backbones” to local neighborhood deployments. Properly engineered networks

have extra groups of fiber for redundancy. Cable deployments can be made in three basic ways; overhead, direct buried, and buried conduit.

Overhead installations are made on utility poles like traditional telephone and electric lines. This type of installation is often easy, but permission and leases may need to be arranged for co-location. Existing lines may need to be moved and poles may need strengthened or replaced. The LENOWISCO Planning District in southwest Virginia estimates overhead installation costs at \$15,000 to \$25,000 per mile. Great savings can be achieved if free access is gained to poles and rights of way, because a Virginia Tech study (*Strategic Technology Infrastructure for Regional Competitiveness in the Network Economy*) estimates average pole use rates at \$13 per pole per year.

Direct buried cable is buried below the surface without being encased in a pipe or conduit for protection. It can be buried using a variety of methods and would last longer than exposed overhead deployments. The Virginia Tech study estimates the cost of deployment for direct buried cable to be about \$24,000 per mile.

Buried conduit is typically the most expensive, but longest lasting method of deployment. The cable is protected inside the plastic conduit. The conduit allows for replacement or addition of cable at a later date. Empty conduit can be installed with other utilities, such as water lines, and fiber can be installed at a later date. Costs for buried conduit and cable vary from \$25,000 to \$40,000 per mile for new, stand-alone installations. Empty conduit installed with existing public works projects would be substantially lower at \$6,000-\$10,000 per mile.

Engineering work is required to design the network deployment for fiber. Demand, fiber counts, access nodes, and rights-of-way acquisition. Typically, a combination of overhead and buried cable is used depending on the conditions. Some of the largest cost considerations are related to engineering, right-of-way acquisition, and physical barriers. Stream, road, and railroad crossings often increase the cost of deployment, especially for buried applications. For more information on fiber deployment and fiber engineering issues, refer to Virginia Tech's eCorridor Plan "*Strategic Technology Infrastructure for Regional Competitiveness in the Network Economy*" ([www.ecorridors.vt.edu](http://www.ecorridors.vt.edu)).

## **Voice Over IP**

Internet Voice, also known as Voice over Internet Protocol (VoIP), is a technology that allows you to make telephone calls using a broadband Internet connection instead of a regular (or analog) phone line. VoIP converts the voice signal from your telephone into a digital signal that travels over the Internet then converts it back at the other end so you can speak to anyone with a regular phone number. When placing a VoIP call using a phone with an adapter, you hear a dial tone and dial just as you always have. VoIP may also allow you to make a call directly from a computer using a conventional telephone or a microphone. Because Internet voice is digital, it may offer features and services that are not available with a traditional phone. If you have a broadband Internet connection, you need not maintain and pay the additional cost for a line just to make telephone calls.

With many Internet voice plans you can talk for as long as you want with any person in the world (the requirement is that the other person has an Internet connection). You can also talk with many people at the same time without any additional cost. Some Internet voice services do not work during power outages and the service provider may not offer backup power. It may be difficult for some Internet Voice services to seamlessly connect with the 911 dispatch center or identify the location of Internet Voice 911 callers. There are also some security concerns with VoIP.

### **Other Technologies**

The delivery of broadband relies on rapidly changing technologies. Different wireless frequencies are being tested and deployed, and broadband over power lines (BPL) offers many advantages, if some interference issues can be resolved. This technology is currently being tested in the City of Salem. Craig County has also applied for a federal grant to deploy BPL technology. BPL has only been widely deployed in one area of the country at rates from \$30-\$40 per month. The FCC is still evaluating interference issues of BPL with licensed radio frequencies. It is important for the region to stay abreast of new technologies and implement dynamic broadband solutions.

## **Alleghany Highlands Wireless Broadband Study**

The Virginia Center for Innovative Technology (CIT) funded a wireless feasibility study for the Alleghany Highlands. Computer Network Professionals (ARGroup) completed the study in August 2004. The study focused on serving the majority of the population in the region, primarily in the Clifton Forge and Covington areas. They did not attempt to study service in rural areas of Alleghany County due to low population density and mountainous terrain. Their system does appear scalable, but tower locations and potential customers/service areas would need further study. See Appendix B for the complete study.

## **Recommendations and Potential Projects**

### **General Infrastructure Considerations from Design Nine, Inc.**

Community infrastructure is more like roads than municipal water or a municipal electric utility. Water and electric are public monopolies. Roads are shared transport systems with open access for private sector business use (unlike water and electric).

There are four kinds of appropriate community investment that helps create a (digital) transport system that can be used by the private sector to sell access, services, and content.

- Duct and antenna sites are the lowest level of investment and reduce the cost of obtaining easements and right-of-way permits. Community duct systems and antenna locations result in less crowding in rights of way and potentially fewer towers with better wireless coverage.
- Antenna towers and dark fiber further reduce private investment in infrastructure and make it easier for more local and regional service providers to enter the marketplace.
- Co-location facilities provide places to locate private sector network electronics that are needed to provide access and to deliver services and content. Public facilities open to private use also reduce the cost of entering the marketplace.
- MSAP's (Multimedia Service Access Points) and RNAP's (Regional Network Access Points) are shared data switches that improve network efficiency and lower the cost of providing service. These are relatively inexpensive network boxes that would be placed in the community collocation facility.

Any facilities or infrastructure furnished by the community could be leased out on a reasonably priced cost plus basis to private sector firms that wanted to use it. Cost would be determined by the expense of amortizing the initial investment, the cost of maintenance, and some modest set aside for future expansion. In this way, community-managed telecommunications infrastructure would not require tax revenue to support it.

### **General Strategies Recommended by Design Nine, Inc.**

- Talk to service providers—Ask them what barriers prevent them from offering service in the region or from expanding existing services. Low density may be one barrier. Ask providers if they would be willing to use shared infrastructure that has modes and fair fees. If yes, what do they need?
- Many respondents to the business survey indicated a desire for more training—Training on Web business and enterprise strategies do not require broadband infrastructure. Existing businesses, even those on dial-up, can benefit from increased training and educational opportunities.
- A well-designed community portal with rich content tends to increase use. In Blacksburg, the Blacksburg Electronic Village (BEV) focused



primarily on the development of an excellent community portal, wide community and civic participation in the development of content, and training opportunities. The most popular part of the BEV Web site was and still is the online local business directory.

- Do not rely on design advice from vendors—Vendors tend to recommend what products or services they have for sale. Identify community needs first, then use competitive bidding to identify optimal solutions at the best cost.
- City and county planners should be looking at incentives to build broadband cabling and access “from the ground up” in new construction for both residential and commercial buildings.
- Right-of-way management is critical as more providers enter the area to offer services. Right-of-way is a scarce community resource. A first-come, first-serve model for easements may cause difficulties later before all residents and businesses are passed by with the right services.

## Proposed Projects/Goals

1. Encourage local governments to develop internal telecommunications plans, including schools, law enforcement, and emergency services.
2. Work with local governments to develop a *Fiber Infrastructure Deployment Map*; including schools, law enforcement, and emergency services. Map existing government-owned public utilities and rights-of-way. Map population densities and future growth areas, paying special attention to commercial growth areas. Identify corridors for possible fiber or duct deployment as new public utilities are upgraded or expanded. Coordinate the plan regionally and obtain relevant engineering services for any system design.
3. Use a consultant to provide training on broadband issues for businesses and local leaders. Furthermore, local leaders, planners, and developers could benefit from workshops on the future of broadband in community, subdivision design, and local economies. One workshop could be designed specifically for elected officials and community leaders and another workshop could be targeted to planners, planning commissions, and private developers. Topics could include:
  - a. What is broadband (speeds and how it can be used)?
  - b. Why is it important to my community?
  - c. What will broadband mean in the future?
  - d. What should my community be doing now to prepare?
4. Develop a cost savings plan for existing infrastructure. The study would focus on the I-64 corridor between Covington and Clifton Forge. Dabney Lancaster Community College, the National Guard, Alleghany Regional Hospital, Alleghany Regional Commerce Center, industrial parks, US Forest Service, and selected schools could all benefit by a single shared resource that combined voice, data, and video.
5. Work with Dabney Lancaster Community College to have ongoing and long-term training available to local businesses on Internet and broadband issues. The business survey found a need for workshops on broadband, security, and building an effective web presence. Workshops could include:
  - a. Building an Effective Web Presence-Covering how to set up a web site, how to have people find your website and how to sell things through the website, including customer service issues.
  - b. Basics of Broadband-How to connect, speeds, technology, benefits, future, etc.
  - c. Internet Security-How to protect your server, company, and clients.
5. Encourage private sector investment in unlicensed wireless technology to serve the region, especially areas not already served.
6. Establish better relationships with NTELOS, Rapid Cable, and other ISP's in the region to encourage development of their networks at low rates; encourage expansion of existing cable and DSL service areas; enhance relationships to develop innovative partnerships to expand service.
7. Establish improved tracking, mapping, and permitting of public rights-of-way.
8. Continue to pursue the deployment of licensed microwave wireless technology in the region by seeking grants and federal support, (ie: Third Rail)

9. Work with doctors, the hospital and other medical professionals in the region to identify cost saving opportunities.
10. Establish a wireless hot spot in downtown Clifton Forge that provides access to stopped Amtrak trains, if feasible. Research business models to determine capital and operational costs versus user and local benefit. Seek funding from local businesses, restaurants, and Amtrak.
11. Expand broadband service in downtown Covington through existing fiber or a new wireless service.
12. Establish a wireless Hot Spot at Exit 16 on Interstate 64. Funding could be provided by area motels and advertised to travelers. McDonalds has established wireless service in some of their larger restaurants and may be interested in a joint venture. Find a way to promote the service to travelers on I-64 to get them off the interstate and into the local community. Research business models to determine capital and operational costs versus user and local benefit.
13. Continue to work with local businesses and economic developers to determine their needs for broadband infrastructure and training.
14. Continue to convene meetings of the Alleghany Highlands Telecommunications Committee, who should:
  - a. reach out to existing telecom providers
  - b. identify specific infrastructure projects that are viable to pursue
  - c. identify larger grant sources for improving infrastructure.
  - d. Discuss right-of-way, planning, and development issues.
  - e. Complete internal government inventory of infrastructure
  - f. Update plan as required with new materials

## Funding Opportunities and Implementation

### Grants

Economic Development Administration-Grants for Public Works and Economic Development Facilities-Investments in facilities such as water and sewer system improvements, industrial access roads, industrial and business parks, port facilities, railroad sidings, distance learning facilities, skill-training facilities, business incubator facilities, redevelopment of brownfields, eco-industrial facilities, and telecommunications infrastructure improvements needed for business retention and expansion. Eligible activities include the acquisition, rehabilitation, design and engineering, or improvement of public land or publicly-owned and operated development facilities, including machinery and equipment. Projects may also include infrastructure for broadband deployment and other types of telecommunications-enabling projects and other kinds of technology infrastructure. Eligible projects must fulfill a pressing need of the area and must: 1) improve the opportunities for the successful establishment or expansion of industrial or commercial plants or facilities; 2) assist in the creation of additional long-term employment opportunities; or 3) benefit the unemployed/underemployed residents of the area or members of low-income families. In addition, all proposed investments must be consistent with the currently approved Comprehensive Economic Development Strategy for the area in which the project will be located, and the applicant must have the required local share of funds committed and available. Matching funds of up to 50% are required.

Department of Agriculture- Rural Development- Rural Utilities Service Community Connect Grant Program-The provision of broadband transmission service is vital to the economic development, education, health, and safety of rural Americans. The purpose of the Community Connect Grant Program is to provide financial assistance in the form of grants to eligible applicants that will provide broadband transmission service that fosters economic growth and delivers enhanced educational, health care, and public safety services. RUS will give priority to rural areas that it believes have the greatest need for broadband transmission services, based on the criteria contained herein. Grant authority will be used for the deployment of broadband transmission service to extremely rural, lower-income communities. The concept will stimulate practical, everyday uses and applications of broadband by cultivating the deployment of new broadband transmission services that improve economic development and provide enhanced educational and health care opportunities in rural areas. Such an approach will also give rural communities the opportunity to benefit from the advanced technologies that are necessary to achieve these goals. Matching funds of at least 15% are required. Nine million dollars are available for 2004 and there are no maximum or minimum requests.

Appalachian Regional Commission (ARC) through the Virginia Department of Housing and Community Development-Appalachian Telecommunications Initiative. About \$200,000 will be made available to projects targeting Planning, System Development, Technical Support, and Implementation of telecommunications projects. A Community

Telecommunications Plan must be in place before implementation grants are awarded. Grant applications are typically due in March and a 50% match is required for most localities.

US Department of Commerce- Technology Opportunities Program (TOP) promotes the widespread availability and use of digital network technologies in the public and non-profit sectors. As part of the Department's National Telecommunications and Information Administration (NTIA), TOP gives grants for model projects demonstrating innovative uses of network technologies. Typically \$12 million dollars is available each year through this very competitive grant program.

There are numerous other federal, state and private sector grants available, especially for smaller projects that relate to improving telecommunication capabilities at schools and hospitals. Some homeland security grants are targeted to telecommunication issues relating to federal communications and national security. Collaboration with the private sector and multiple entities increases the chance of success by pooling the resources of technology, capabilities and capital. Additional funding can come from local sources if local governments are willing to budget amounts each year for broadband projects.

### **Implementation**

Many of the recommendations and proposed projects are easily accomplished with little investment. Deployment of broadband infrastructure generally requires a large investment based on a customer base. Local governments can implement practices that create a better climate to encourage private sector investments. Broadband alone will not give the region a competitive advantage, but will allow it to keep pace with other communities with better telecommunication infrastructure. It will be important for stakeholders to continue to meet regularly as a regional group and update the regional telecommunications plan as needs and technology change.

**Appendix A**  
**Business Survey**



## The Regional Commission

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**February 2, 2004**

**Dear Survey Participant:**

The enclosed survey is part of *Alleghany Highlands Information Technology Infrastructure Needs Assessment Study*, which is being conducted by the Roanoke Valley Alleghany Regional Commission, in cooperation with the Appalachian Regional Commission, Alleghany County, City of Covington and Town of Clifton Forge. We hope that businesses in the Alleghany Highlands will fill out the enclosed "broadband" Internet usage survey. The goal of the study is to help the Alleghany Highlands better understand their current telecommunications infrastructure for economic development and job creation. The first step of the study is the survey, which will help assess infrastructure to eventually determine how the region can advantage of improved broadband services.

Later in the spring, Regional Commission staff will work with stakeholders to identify existing economic development initiatives and projects that could benefit by better broadband access or training. Potential partnerships with existing organizations, local governments and the private sector will also be explored.

Broadband typically means high-speed Internet connections that are always active such as cable, DSL or other special lines. Some broadband services are already available in the region, but may not be utilized fully by the business community because of cost or other barriers.

**We hope you can complete the survey and return it in the enclosed envelope by February 23.** If you have any questions about the survey, please contact Matt Miller at the Regional Commission at 540-343-4417 or [mmiller@rvarc.org](mailto:mmiller@rvarc.org). The survey is also online at [www.rvarc.org](http://www.rvarc.org).

Sincerely,

Wayne G. Strickland  
Executive Director

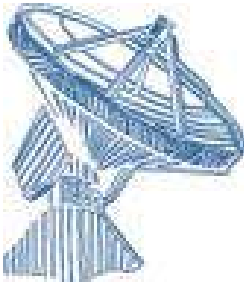
Enclosure



# Alleghany Highlands Telecommunications Plan



## Broadband User Survey



**Directions:** Place check marks in the boxes next to the appropriate response or write answers out in the blanks provided. Please answer as completely as possible. The data obtained from this form will be compiled and published only in aggregate form.

*Thank you for your time and cooperation!*

**Name:** \_\_\_\_\_ **Address:** \_\_\_\_\_

**Company:** \_\_\_\_\_

**1. Do you have an Internet Connection?**  Yes  No

**If "yes", what type:**

- |  |  |                                      |                                    |
|--|--|--------------------------------------|------------------------------------|
| <input type="checkbox"/> Dial-up (pay) | <input type="checkbox"/> Dial-up (free)              | <input type="checkbox"/> ISDN Line   | <input type="checkbox"/> IDSL Line |
| <input type="checkbox"/> Other DSL     | <input type="checkbox"/> Direct Leased Line (T1+)    | <input type="checkbox"/> Satellite   | <input type="checkbox"/> Wireless  |
| <input type="checkbox"/> ADSL Line     | <input type="checkbox"/> Cable Modem                 | <input type="checkbox"/> Frame Relay |                                    |
| <input type="checkbox"/> ATM           | <input type="checkbox"/> Other, please specify _____ | <input type="checkbox"/> Don't Know  |                                    |

**2. Do you have to make a long distance phone call to reach your provider?**  Yes  No

**3. Who is your Internet Service Provider?**

- Telephone Company
- Cable Provider
- Satellite Provider
- National Service (AOL, Earthlink, etc.)
- Local Internet Service Provider (ISP)
- Other: \_\_\_\_\_

**4. How much do you spend on connectivity per month?**

- \$0.00—\$25.00
- \$25.00—\$50.00
- \$50.00—\$75.00
- \$75.00—\$100.00
- More than \$100.00



5. Are you satisfied with your current level of Service?  Yes  No

6. Please indicate how you feel about the choices you have for obtaining the telecommunication services you need.

Enough Choices  Too much dependence on local company

More Choices needed, for instance \_\_\_\_\_

7. Would you be interested in purchasing a much faster Internet service at a very moderate cost?

Yes  No

8. How much would you be willing to pay (per month) for a faster Internet connection?

\$0—\$25.00  \$25.00—\$50.00  \$50.00—\$100.00  More than \$100.00

9. What are your primary uses of the Internet? (Please mark no more than 3 responses).

e-Mail  e-Commerce  e-Marketing/Advertising  Research/School

Intranet  Video Conferencing  File Transfer/Downloads  Voice over IP

Gaming  Chatting  Other \_\_\_\_\_

10. Please indicate which of the following topics you would be interested in obtaining further information or training on:

Getting started with e-Commerce  Broadband Technologies  Security

Search Engine Optimization  Website Tools (HTML)  Web Statistics

Building an Effective Web Presence  Community Portals  Other: \_\_\_\_\_

11. Do you believe your organization would benefit from a broadband\* or faster Internet connection?

Yes  No  Not sure: we would like to know more about the benefits.

12. If not too costly, would a faster connection improve/increase your business?

Yes  No  Not sure: we would like to know about the benefits of faster connections

13. If not too costly, would a faster connection be a better tool for you or your family at home?

Yes  No  Don't use internet at home

Additional comments? \_\_\_\_\_

Please return completed survey using the envelope provided. **THANK YOU**

Roanoke Valley-Alleghany Regional Commission  
PO Box 2569 ♦ Roanoke, VA ♦ 24010  
Phone: 540.343.4417 ♦ Email: rvarc@rvarc.org

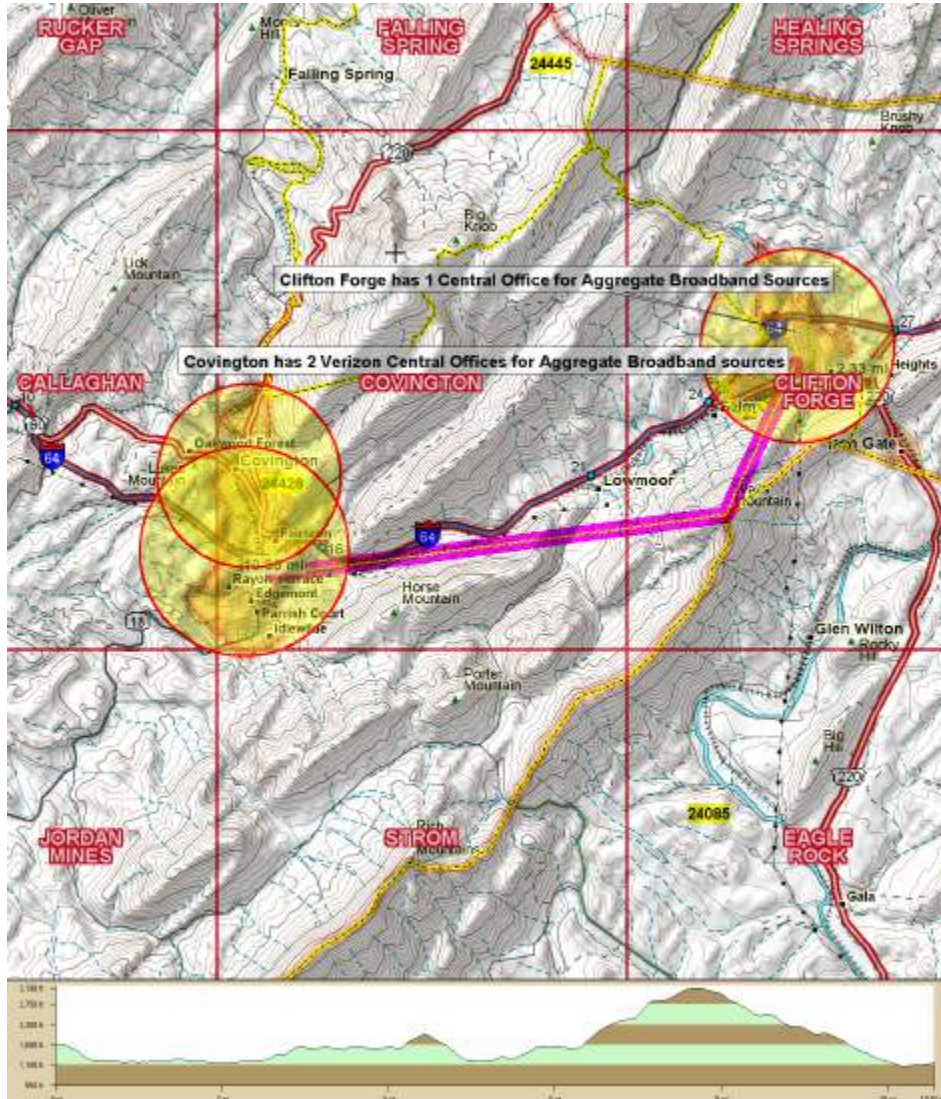
\*Broadband refers to an always on (no dial-up), large capacity (bandwidth) high speed internet connection.

**Appendix B**  
**Allegheny Highlands Wireless Feasibility Study**



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## Wireless Feasibility Study Alleghany County Virginia *Covington – Clifton Forge*





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## Executive Summary of Proposed Broadband Distribution Solution

### Introduction

This intent of this feasibility study is an initial investigation of the possibility of a wireless Internet service in Alleghany County VA, specifically focusing on the cities of Covington and Clifton Forge.

### Findings

The majority of the household population and business community in Alleghany County VA are located in Covington and Clifton Forge. Both locations have adequate infrastructures and towers available to implement service coverage areas that would be able to service a majority of the population and business community within the corporate limits of the cities. The two main cities can be bridged together to utilize the best-cost variables of an aggregate purchasing plan.

## Goals for a Successful Feasibility Study

This feasibility study focuses on the wireless distribution of broadband service to the rural household population and business communities of Covington and Clifton Forge.

In order to conclude that wireless is feasible in Alleghany County, we have assumed that the following objectives must be met:

### Coverage

- The Internet service for households should be available to 80% of the residences in the areas specified.
- Hot spot coverage should be available for historic specific areas for commercial use and public access.
- Existing community facilities could be used in order to minimize new infrastructure investment. Examples of this would be access to municipal buildings, existing towers, emergency broadcast towers, schools, libraries, etc.

### Throughput

- The speed must be fast enough to compete with T-1 class service from the telephone company and service resellers. Ideally the system should provide speeds greater than those available through landline solutions at a lower price.
- Initial residential service should be capable of a minimum of 256Kb bi-directional.

### Scalability

- The areas specified should be easily scalable to provide coverage to their entire town boundaries and the surrounding communities with point-to-point bridge extensions of the system.



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- Expanding the system beyond the areas specified will require the use of mountaintop communication towers to expand beyond the main two cities.



## Background Information

### Residential Demographics

The total population of the County is 12,926 with a third of the population located in Clifton forge and half located in Covington. A total of eighty two percent of the county population resides in these two concentrated areas.

The following table identifies general demographics for residential for the entire county:

	Alleghany County, Virginia	Clifton Forge City, Virginia	Covington City, Virginia
Total Population:	12,926	4,289	6,303
Housing Units:	5,149	1,841	2,835
Total:	3,868	1,147	1,742
Married-couple family:	3,255	799	1,272
With own children under 18 years:	1,219	295	444
Under 6 years only	264	68	119
Under 6 years and 6 to 17 years	252	55	89
6 to 17 years only	703	172	236
No own children under 18 years	2,036	504	828
Other family:	613	348	470
Male householder, no wife present:	194	74	115
With own children under 18 years:	109	36	58
Under 6 years only	22	11	20
Under 6 years and 6 to 17 years	14	3	8
6 to 17 years only	73	22	30
No own children under 18 years	85	38	57
Female householder, no husband present:	419	274	355
With own children under 18 years:	214	150	169
Under 6 years only	44	37	42
Under 6 years and 6 to 17 years	36	19	30
6 to 17 years only	134	94	97
No own children under 18 years	205	124	186

Source: US Census American FactFinder (2000)

### Business Demographics

Business demographics were developed from the 1997 economic census and are used to establish a total number of potential business class subscribers to the system if implemented. Successful broadband implementations should consider the business community as the initial focus of it's subscriber base as businesses will have the most immediate benefit from lower cost bandwidth.

#### Clifton Forge

NAICS Industry Code	Industry Description	Establishments	Number of Employees	Annual Payroll (\$1,000)	Shpmts/Sales/Recpts (\$1,000)
---------------------	----------------------	----------------	---------------------	--------------------------	-------------------------------

#### NAICS INDUSTRIES

42	Wholesale trade	2	b	D	D
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NAICS Industry Code	Industry Description	Establishments	Number of Employees	Annual Payroll (\$1,000)	Shpmts/Sales/Recpts (\$1,000)
44-45	Retail trade	34	321	4,586	47,429
53	Real estate & rental & leasing	4	7	75	584
54	Professional, scientific, & technical services	6	23	134	535
56	Administrative & support & waste management	2	a	D	D
61	Educational services	1	a	D	D
62	Health care & social assistance	11	216	4,848	9,552
71	Arts, entertainment, & recreation	1	a	D	D
72	Accommodation & foodservices	12	c	D	D
81	Other services (except public administration)	14	49	698	2,263
<b>MERCHANT WHOLESALERS</b>					
42	Wholesale trade	1	a	D	D
<b>MANUFACTURERS' SALES BRANCHES AND SALES OFFICES</b>					
42	Wholesale trade	1	b	D	D

D = Withheld to avoid disclosure; N = Not available  
Source: 1997 Economic Census

Clifton Forge Economic Overview  
TOTAL Business Establishments **89**

### Covington

NAICS Industry Code	Industry Description	Number of Establishments	Number of Employees	Annual Payroll (\$1,000)	Shpmts/Sales/Recpts (\$1,000)
<b>NAICS INDUSTRIES</b>					
31-33	Manufacturing	11	2,615	113,429	1,004,852
42	Wholesale trade	9	44	1,121	15,315
44-45	Retail trade	61*	539	7,863	90,426
53	Real estate & rental & leasing	13	27	346	1,722
54	Professional, scientific, & technical services	13	39	889	2,780
56	Administrative & support & waste management	7	110	1,464	2,450
61	Educational services	1	a	D	D
62	Health care & social assistance	12	63	1,731	3,449
72	Accommodation & foodservices	16	209	1,758	6,739
81	Other services (except public administration)	15	59	1,144	5,567
<b>MERCHANT WHOLESALERS</b>					
42	Wholesale trade	9	44	1,121	15,315

D = Withheld to avoid disclosure; N = Not available  
Source: 1997 Economic Census

TOTAL Business Establishments- Both Locations **167**

**25% market acceptance = 41 Business Class Clients**  
**50% market acceptance = 82 Business Class Clients**

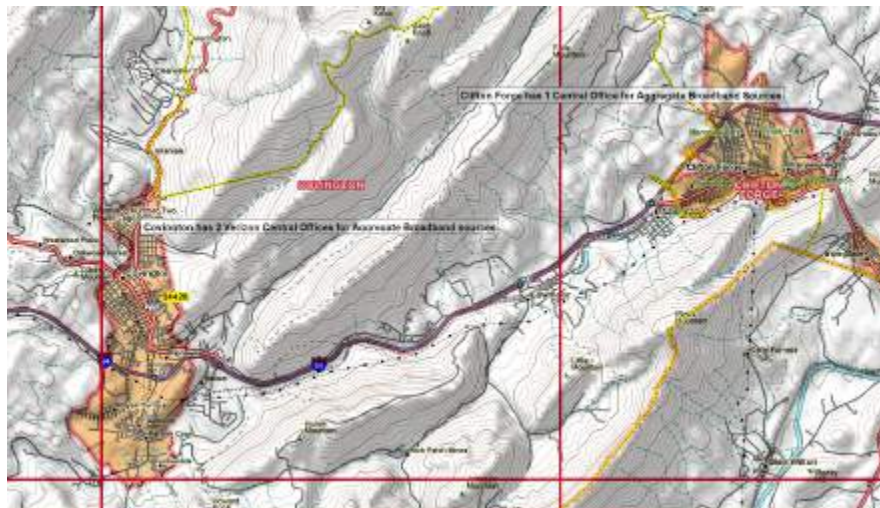




## Geographic-Regional

Alleghany County comprises approximately 452 square miles of which nearly 50% is in the national forest with high density forest coverage exceeding 95% of the land mass. The county elevation ranges from 1000ft above sea level to 4000ft above sea level, and with no major plain or plateau areas should be considered mountain terrain throughout. The County has 2 major cities – Covington and Clifton Forge, both are located in valleys adjacent to the railway system and the Jackson River. Both cities are river valleys and are very good locations for distribution systems and could be linked together from a tower on Waits Mountain (there is a tower on this mountain peak) to fully optimize aggregate purchasing for the lowest possible end user pricing.

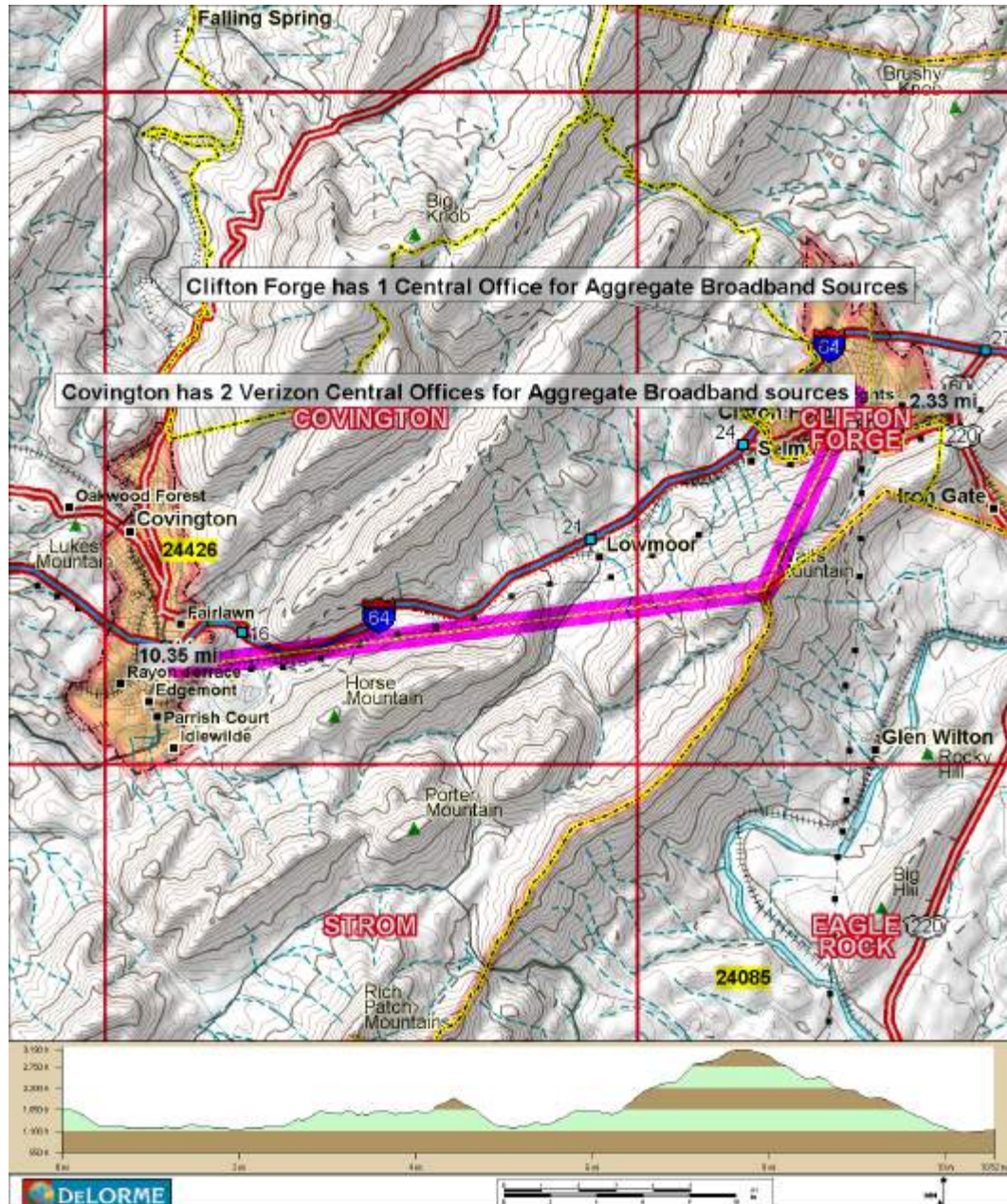
## Broadband Sources



Alleghany County has three Verizon central offices that appear to be the only available commercial broadband sources in the county. Covington (2) and Clifton Ridge (1) have Verizon central offices that are not (at the time of this report) DSL capable. Both locations have the ability to provide high-speed aggregate capability from these central offices to establish broadband distribution.

The primary cost objective of a project of this type is the ability to purchase aggregate bandwidth at significant discount so the lowest possible cost is delivered to the end users. This location in Virginia is part of the Network Virginia system, which enables discounted bandwidth through Verizon and Sprint.

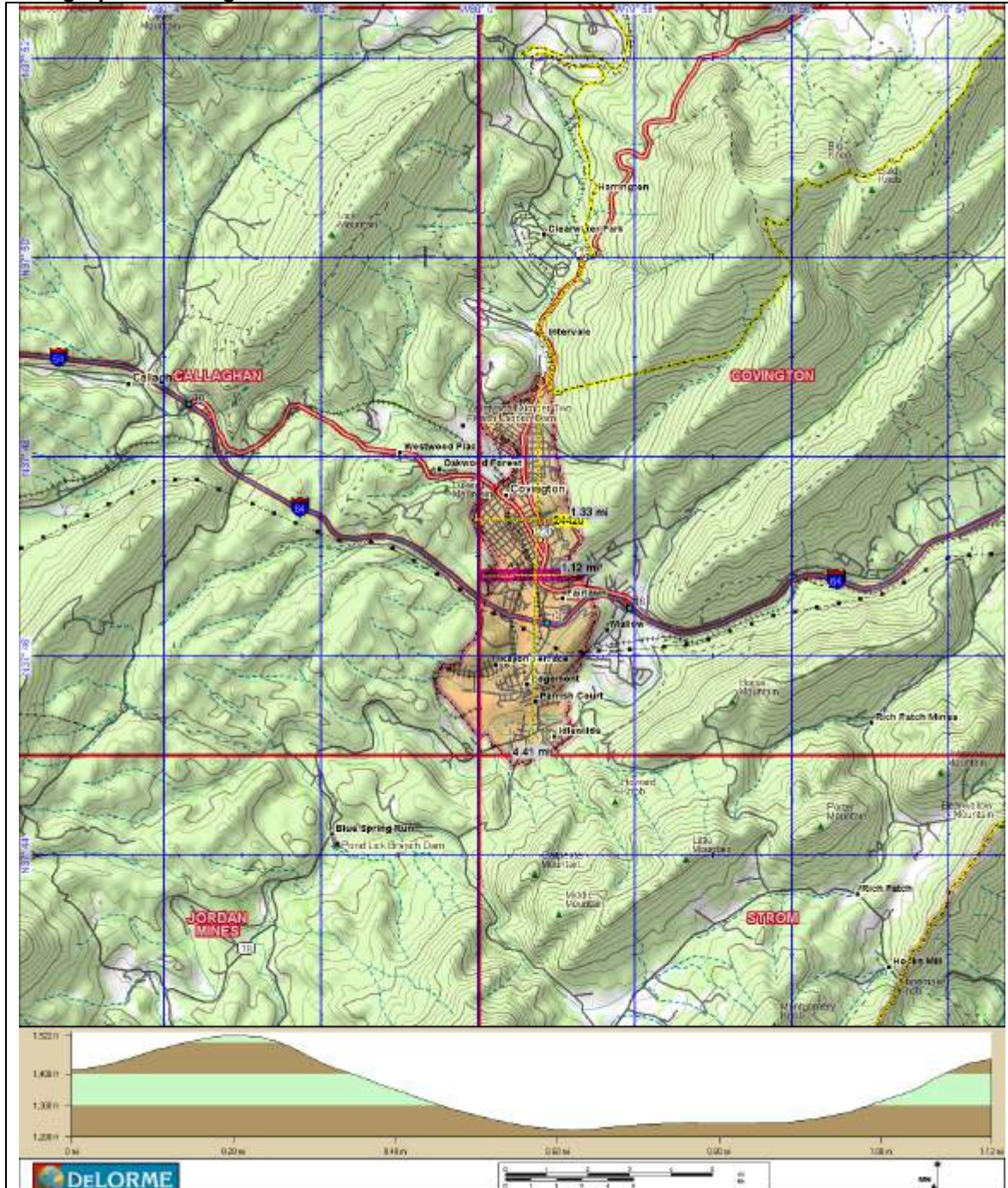
The wireless distribution models that will suit this region should have a primary central office for aggregate source bandwidth and a failover connection from a secondary central office so that the systems are still connected to the Internet in the event of a failure at a single CO.



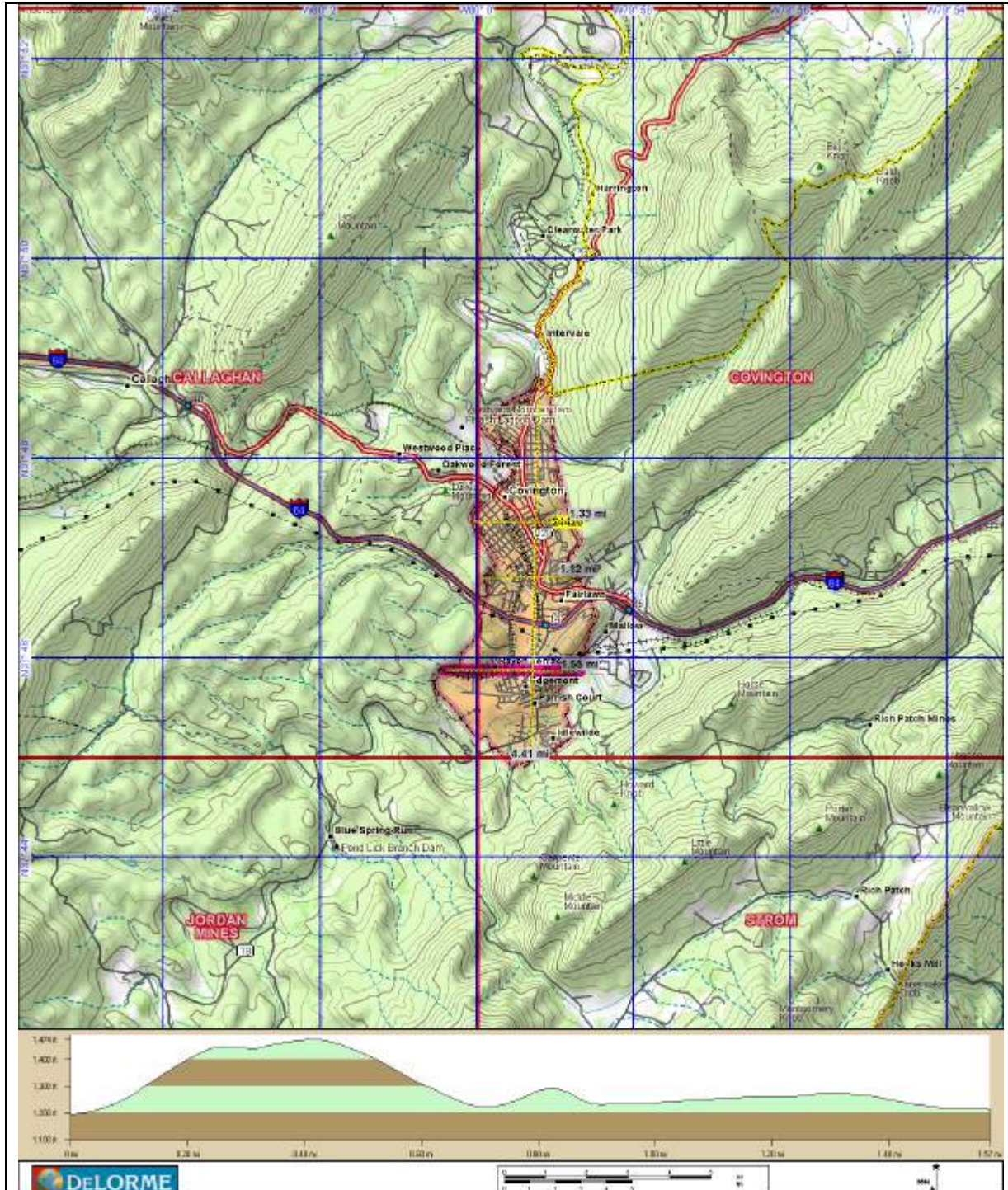
The map and profile above shows the capability of linking wireless systems between the two cities together is entirely possible with low cost line of sight equipment.



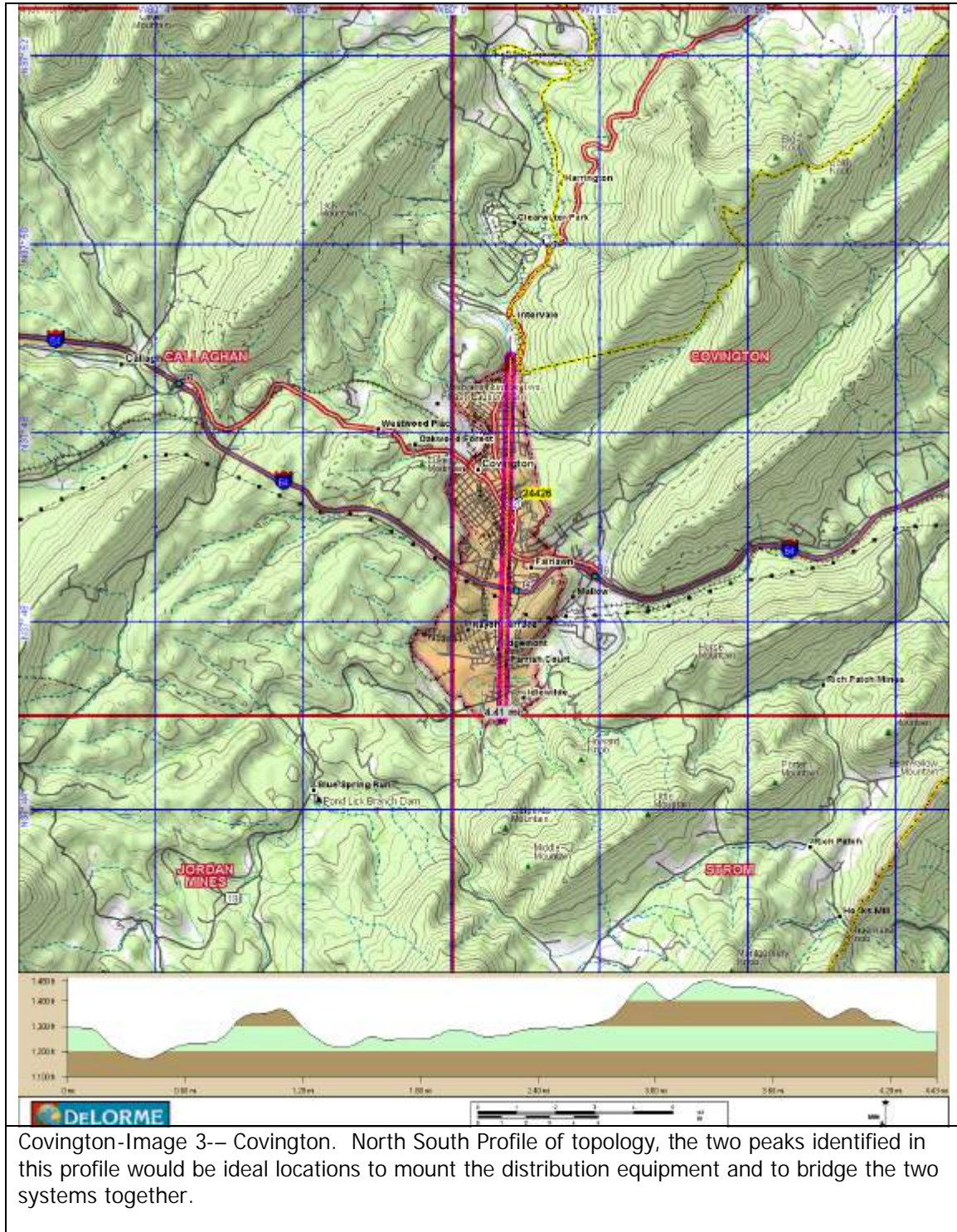
### Geographic-Covington



Covington- Image 1 is the profile of an east-west profile of the valley the city is located in directly through the center of town.



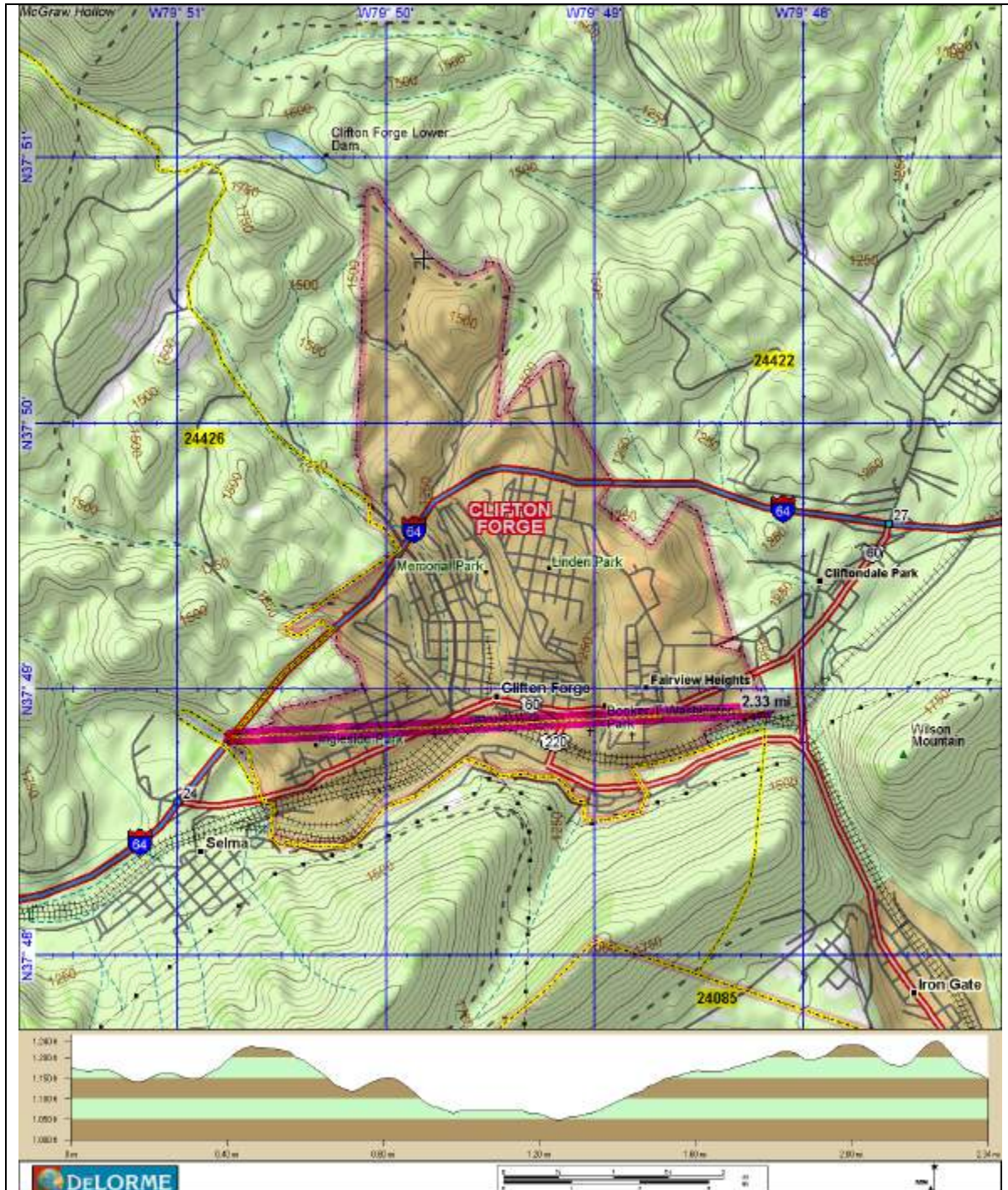
Covington- Image 2 is the east-west profile through the southern section of town.



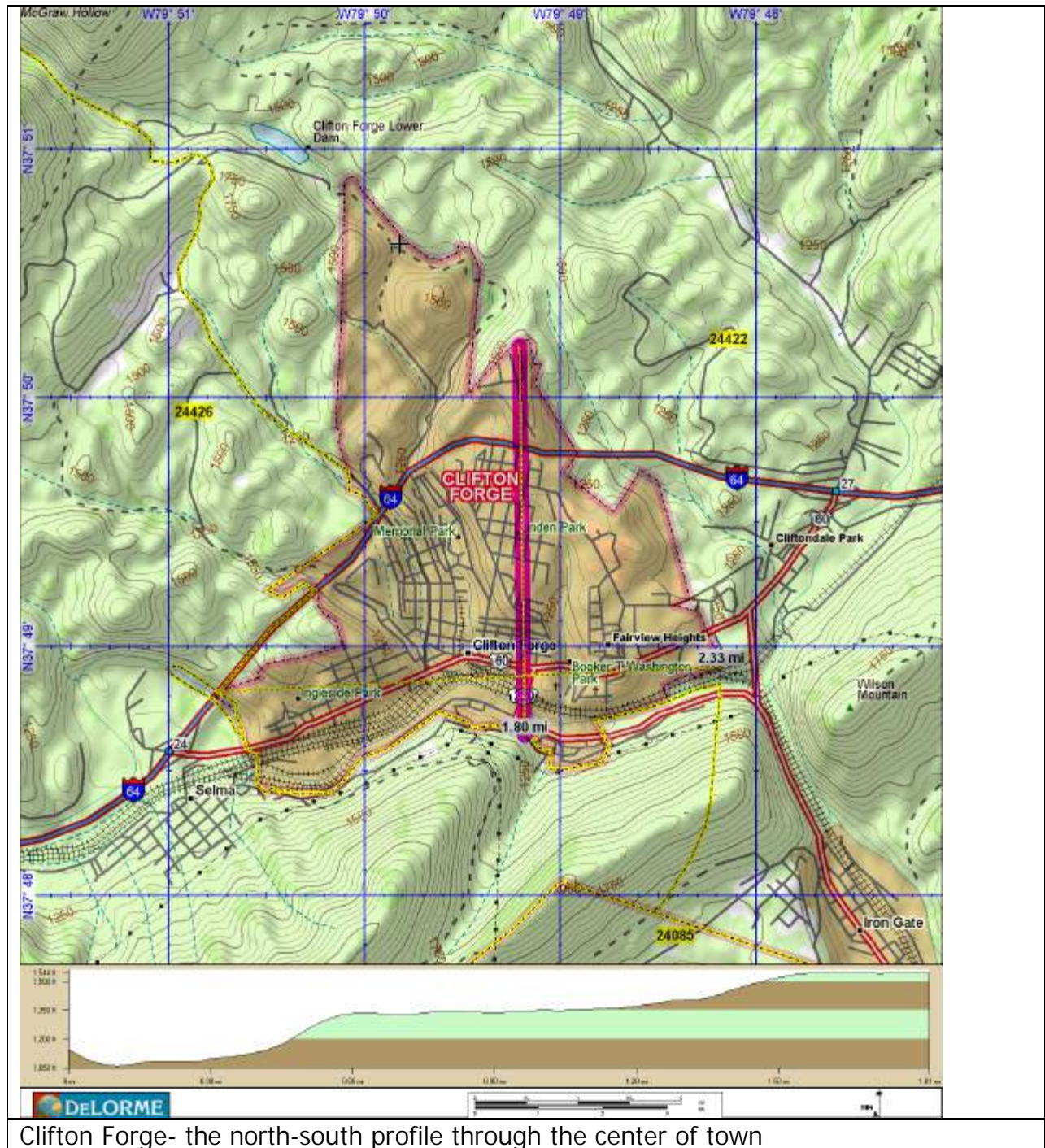
These profiles show the majority of the city lies in the valley; this situation is ideal for concentrated wireless distribution wherein distribution points at the raised points in the valley can easily service all areas below.



### Geographic-Clifton Forge



Clifton Forge- Image 4 is the profile of an east-west profile of the valley the city is located in directly through the center of the city (along railroad track).

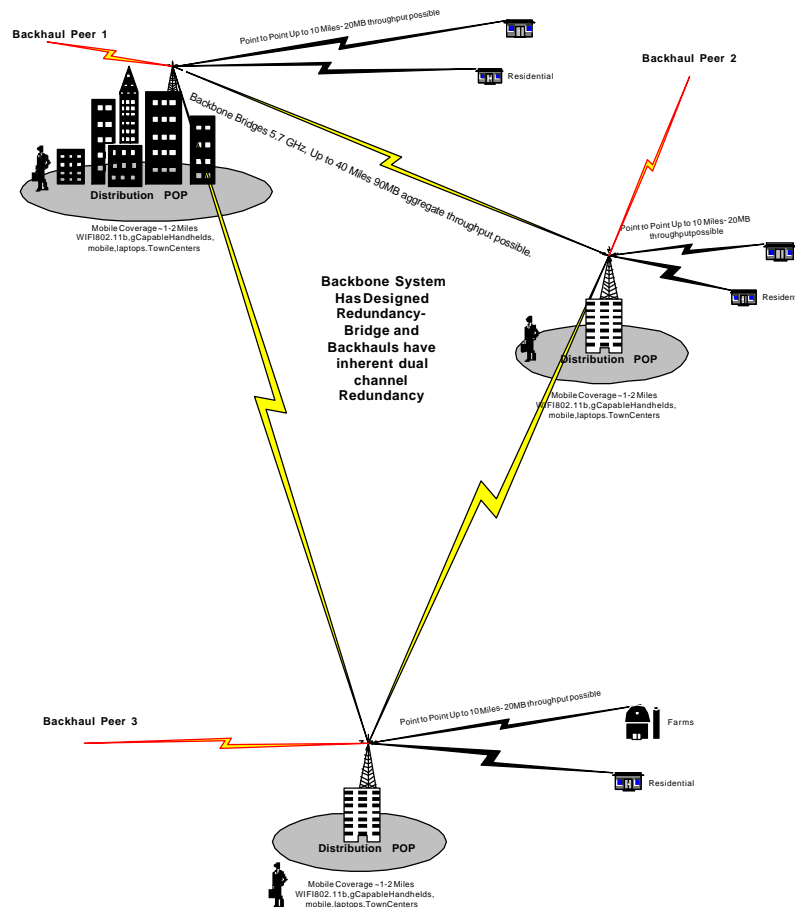


These profiles show the majority of the city lies in the valley; this situation is ideal for concentrated wireless distribution wherein distribution points at the raised points in the valley can easily service all areas below.



## Technology Overview

The following diagram illustrates the method of wireless broadband distribution:



### Distribution Locations Infrastructure

The primary distribution antennas are 2.4 GHz License free amplified sectional antennas that will be configured to provide the 4-mile radius of point-to-point residential household and business broadband services.

Clifton Forge- a single distribution site could cover the majority of the area with services.

Covington- at least 2 distribution points would be required to provide services to the majority of the area with services.

### Hotspot Locations Infrastructure

The (hot spot) is FCC approved 2.4 GHz License free antennas that will be configured to provide 512Kb to mobile devices inside of the distribution locations immediate areas.

Usually these distribution antennas are installed in coordination with point-to-point services in locations that provide the best point of coverage for the targeted hot spot areas. For example in Clifton Forge antennas mounted on the theater roof pointed up





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and down the downtown district would provide hot spot services to the immediate downtown business district.

### **End Point Installations**

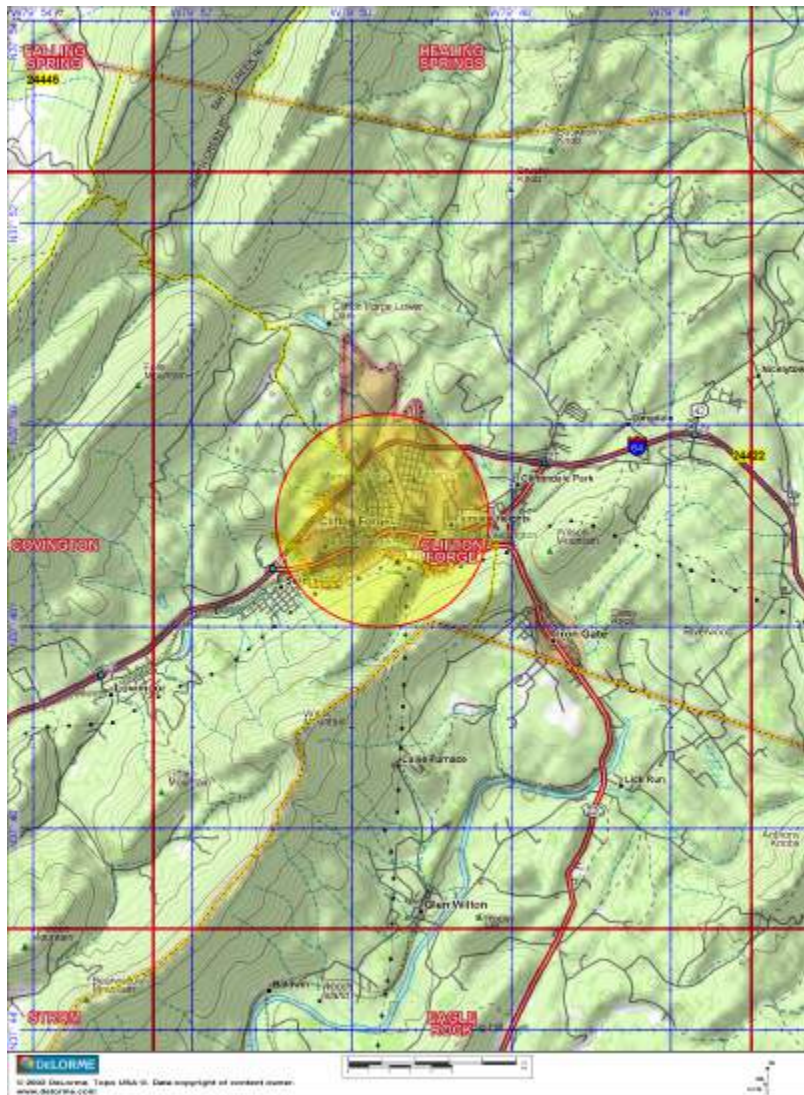
The end point systems can handle a single home, single business, and multi business locations. The units vary in size and cost and are manageable from remote services so once an end client is configured.



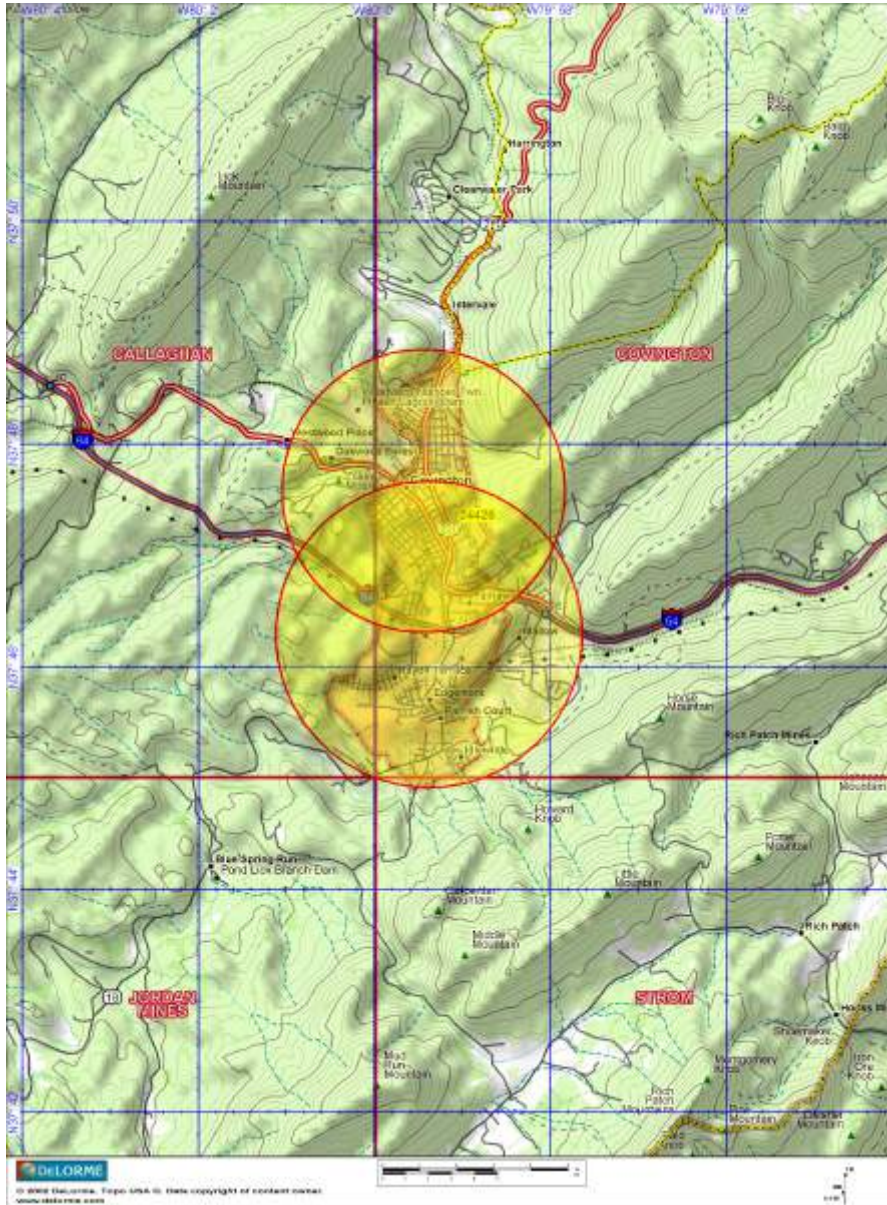
## Conclusions

### Distribution and coverage in the two cities

The following maps show possible distribution sites and coverages:



This map indicates the coverage that would be obtained with a single distribution system set up in the center of Clifton Forge.



This map indicates the coverage that would be obtained with two centrally located distribution system set up in the center of Covington.



## **Meeting the goals of this study**

### **Coverage**

With the majority of households within the city limits 80% coverage is easily obtainable with the three distribution points outlined above.

Hot spot coverage should be available for historic specific areas for commercial use and public access.

Existing buildings could be used for distribution points; the establishment of a wireless link between cities would require access of existing towers.

### **Throughput**

Assuming the availability of a discounted source bandwidth provider such as Network Virginia, the wireless network could deliver T-1 speeds at competitive prices.

Throughput of 256Kb is easily obtainable for residential clients using inexpensive roof top units.

### **Scalability**

Additional distribution zones can be added to the system with point to point bridges. Only limit in additional distribution zones is line of site.

Extensions of the system to other locations than Covington and Clifton Forge would be wholly contingent on tower implementations.

**Appendix C**  
**Handouts from Design Nine, Inc.**

# NETWORK INFRASTRUCTURE

## A BRIEF OVERVIEW

*Roads, water systems, and sewer systems were usually privately maintained before communities began management of them for the common good.*

### **Goals**

- CREATE A COMPETITIVE MARKETPLACE
- ENCOURAGE PRIVATE INVESTMENT
- REDUCE DATA AND TELECOM COSTS FOR ALL
- REDUCE OVERBUILDING AND REDUNDANT FACILITIES
- CREATE LOCAL MARKETS FOR NEW SERVICES

### **COLLOCATION FACILITIES**

*Collocation facilities provide a place for service providers to place equipment. Shared facilities can dramatically reduce costs for public and private access and attracts entrepreneurial startups.*

### **RIGHTS OF WAY/EASEMENTS**

*Careful management of scarce resources like rights of way and easements ensures a level playing field to attract private sector investment throughout the community*

### **DUCT AND ANTENNA SITES**

*Community investment in duct and antenna sites allows small and regional entrepreneurial telecom companies to compete with "old" monopoly service providers. It also reduces costly overbuilding.*

### **DARK FIBER/ANTENNA TOWERS**

*Dark fiber may be provided by either the community or the service provider. All present and future voice, video, and data services can be delivered to homes on a single fiber pair. Community antennas reduce visual clutter and improve access.*

### **DATA EXCHANGE POINTS (MSAPS)**

*MSAPs, or Multimedia Service Access points, keep local voice, video, and Internet data traffic within the community, which reduces costs for all in the community.*



**DESIGN NINE**  
*Information architecture in practice*

[www.designnine.org](http://www.designnine.org) [info@designnine.org](mailto:info@designnine.org)  
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# Getting Everyone Connected

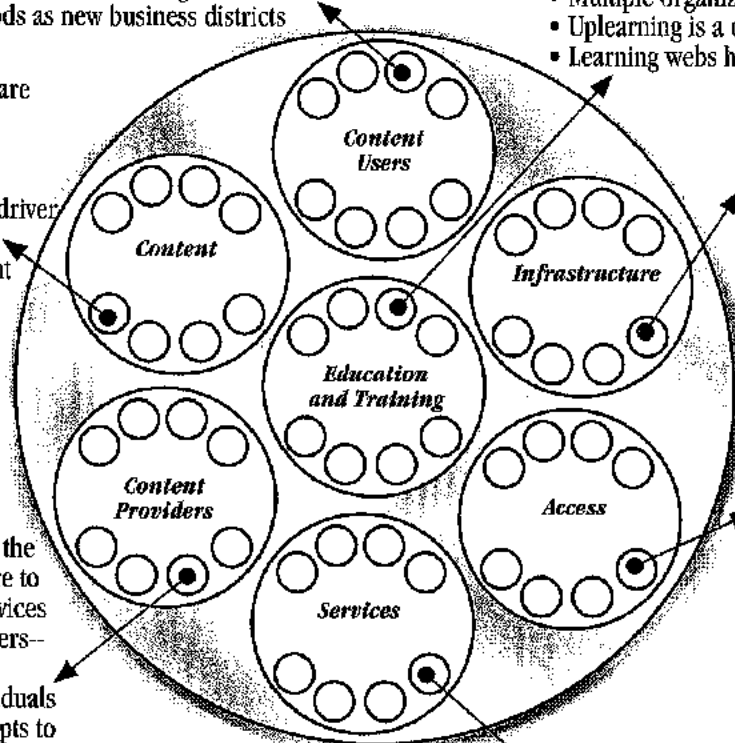
## Key concepts

- You have to give people and businesses a reason to use broadband services
- Infrastructure is only one part of a community technology plan
- Education and training are crucial

- Affordable access is essential for increased use
- Inexpensive or free wireless access spurs use and creates demand for higher capacity fiber systems
- Users "get connected" when training is available
- View neighborhoods as new business districts

- Users have to have the skills to use the system
- Multiple organizations play roles
- Uplearning is a critical capacity
- Learning webs help create uplearning

- Tools to create content are finally maturing
- Education and training play key roles
- Rich local content is a driver of demand for access and commercial content and services



- Infrastructure is the transport system
- Necessary precondition but not sufficient
- Should not be owned by any single public or private entity
- Includes both fiber and wireless
- Open access transport spurs competitive pricing for access

- Content providers use the transport infrastructure to deliver content via services
- Wide variety of providers—government, business, community, and individuals
- Access provider attempts to limit content providers (walled gardens) is counterproductive
- Everyone should have the option of creating and distributing content

- Access providers give content users and providers an on-ramp to the infrastructure
- Ideally, most access is provided by the private sector
- Private network access deals create pockets of have-nots
- Identify opportunities to aggregate demand and reduce costs

- Services deliver content (e.g. email, the Web, mailing lists, etc.)
- Ease of use still a problem—little incentive for industry to improve services because most services are not "owned"
- Industry attempts to create "owned" services limit competition and choice
- Users need to take more control and provide direction

## The role of community networks

- Community networks (CNs) create a community commons in cyberspace for communities of place (and place matters)
- CNs provide access to education and training resources to increase use, especially creation of local content
- CNs are advocates for open access infrastructure and competitive access and services
- CNs help increase demand for commercial products and services, especially local products and services
- CNs act as brokers for access by aggregating demand and encouraging public/private partnerships
- CNs provide community portals to organize and to improve access to content (especially local content)
- CNs provide business incubator services and training to entrepreneurs and microbusinesses
- CNs create a "connected" community with services to youth groups, churches, sports clubs, and civic/nonprofit groups
- CNs provide a safe and secure place for online youth activities and a neutral environment to discuss community issues



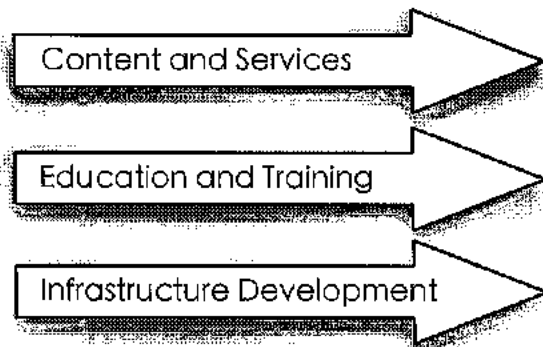
# Content and Services: Creating Demand for Broadband

## Key concepts

- You have to give people and businesses a reason to buy broadband services
- Infrastructure does not have to come first in a community technology plan
- Don't worry about the "right" content

## Parallel Process Planning

- Each activity has its own timeline, plan, and budget
- Minimize dependencies between activities to keep things moving
- It is a mistake to put too much focus on infrastructure
- Goal is to create a marketplace that attracts private investment



## Typical community services

- Community Web site with a daily news focus
- Affordable Web hosting for community groups
- Mailing lists
- Email accounts
- Community directory, especially of businesses
- Online calendars
- Discussion forums
- Small group collaboration tools

## Case Study: Blacksburg

- The Blacksburg Electronic Village (BEV) project had no funding for infrastructure development
- By 1999, Blacksburg was widely hailed as the "most wired community in the world"
- Private sector investment wired Blacksburg, not government grants
- A focus on the development of rich local content created a reason for people to get online
- Education goes hand in hand with content—teach people to create content of interest to them
- The BEV trained people to create and maintain their own Web sites
- Civic sites, youth groups, churches, sports clubs, and special interest groups created a "connected" community
- Ordinary citizens became savvy users of the Internet, and were ready for broadband as it became available

The Association For Community Networking (AFCN) provides information on Open Source tools  
[www.afcn.org/opensource/](http://www.afcn.org/opensource/)

## The Best Software is Free

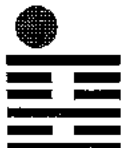
- Open Source software is mature and robust
- It is less expensive to install, administer, and maintain than commercial software
- Upgrades and new features are typically released more often
- The software works on a wide variety of operating systems and hardware
- There is a rich variety of products

## Selecting Open Source

- Get help identifying a few good packages
- Check how long product has been out and how many times it has been downloaded
- Products with a large feature set are not always "best," as they may require more administration and support

## The LAMP Platform

- Linux, Apache, MySQL, PHP
- Linux operating system (BSD and Mac OS X are also good Unix platforms)
- Apache Web server is the most widely used in the world
- MySQL database is fast and easy to install
- PHP programming language was designed specifically for Web applications



**DESIGN NINE**  
*information architecture in practice*

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# Broadband Projects

## Planning for Success

### What is broadband

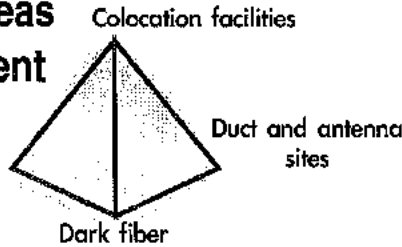
Future needs (looking out 4-5 years) are now widely projected to be 25 to 40 megabits/second (sustained) with burst needs of 3x (75 to 120 megabits). All voice, TV, data, video, music, and radio will migrate to the Internet. Existing DSL and cable modem technologies offer 1-2 megabits/second at best.

### Goals of telecom master planning

- Take control of the economic future of the community
- Create jobs and attract increased private investment
- Aggregate bandwidth, which reduces tax expenditures and saves money for businesses and consumers
- Reduce overbuilding; we don't have four sewer systems or three electric lines to our homes and businesses. Communities build roads; businesses use the roads to deliver goods and services. Modest community telecom investments create opportunities for local and regional businesses.

### Four key areas of investment

Connection points:  
MSAPs, NSAPs,  
and RNAPs



• Colocation facilities are a place for service providers to locate equipment. Adequate AC power (with UPS backup), air conditioning, and 24/7 physical access is required. Operated on a break even basis.

- Telecom duct and antenna sites are leased out to private sector providers. Fiber and wireless will both be needed; invest in both.
- Dark fiber is leased out to public and private sector customers.

• MSAP (Multimedia Services Access Point) creates a communitywide high performance intranet. Operated on a break even basis. Requires only a small amount of equipment in the community colocation facility.

• NSAP (Neighborhood Services Access Point) are small plots of land in neighborhoods where AC power is available and equipment cabinets are located. Require developers to set land aside for them.

• RNAPs (Regional Network Access Points) connect MSAPs in multiple communities to create regional "super networks." Especially attractive to businesses because of built in redundancy.

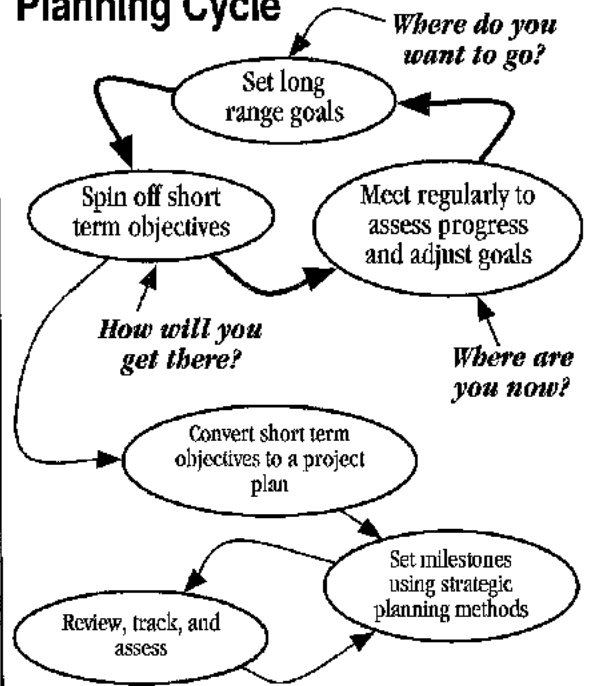
### Planning tips

- Do not rely on "free" planning from vendors. Get an experienced, independent third party to assist with planning.
- Complexity and interconnectedness of the global economy makes it difficult to succeed without constant review of the plan
- Remember to aggregate demand--goal is to create a marketplace where sellers can deliver services to savvy buyers
- Mismatch between *what is wanted* and *what is possible* is the biggest source of problems

### What you can do NOW

- Appoint a community technology task force with the authority and funding to both plan and implement projects.
- Convene a half day assessment meeting to identify where you are and where you want to go.
- Publish the results of the meeting widely as a regional vision for technology.
- Follow up with a comprehensive telecommunications master plan that is integrated with economic development and community comprehensive plans.
- Identify three modest projects that can be funded and completed this year. Execute!
- Work with builders to get structured wiring in all new construction. Provide builder incentives and work to amend building codes.
- Reallocate 5% of the existing road maintenance budget to begin installing telecom duct, antenna sites, and/or dark fiber.
- Coordinate all regional economic development investments to ensure that telecommunications is being included.
- Review all right of way and easement management processes.
- Require developers in business parks and subdivisions to install telecom duct (just like water and sewer).
- Create incentives for TND (Traditional Neighborhood Design) with live/work home plans--neighborhoods are business districts of the future.

### Planning Cycle



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# Ten Simple Things Your Community Can Do

## Key concepts

- There is always something you can do
- Funding issues should never be an obstacle to making progress
- Many low cost or no cost activities can have impressive results

1

**Book Club** - Form a study group to read a futures-oriented book relevant to community or economic development each month. Meet once a month, and use a mailing list or discussion forum to encourage discussion.

6

**Lunch** - Instead of complaining that elected leaders don't understand the importance of technology and telecommunications to the community, start a lunch program. Have a group take a different elected leader to lunch weekly.

2

**Community portal** - Use one of the easy to manage Open Source products like Drupal to create a lively community portal Web site. Note: traffic at all other Web sites in the community will go up!

7

**Breakfast** - Start a monthly "Futures Breakfast" group that meets to hear short presentations on emerging trends and concepts relevant to business and economic development interests in the community.

3

**Small business seminar** - Help small businesses in your region by bringing in a knowledgeable speaker to provide solid, practical advice on making the Web work for small businesses. Hint: Don't use local Web design firms; they have a built in conflict of interest.

8

**WiFi public hotspot** - Get people downtown by providing free high speed wireless Internet access. Communities doing this report more people, especially younger people, returning to downtown areas. Put the hotspot near restaurants and gathering places.

4

**Civic groups online** - Help community and civic groups make better use of the Web by holding a seminar that demos some of the new Web site management tools. Hint: When civic groups use the Web, meeting attendance goes up.

9

**Work with builders** - Don't allow another home or office building built in your region without being wired for broadband. Help builders see the value of adding this in (it is very inexpensive) and market your region's plans to be "Internet ready."

5

**B2B Fair** - Hold a business to business technology fair to help small businesses learn about new products and services from businesses already in the community.

10

**Free email for everyone** - This is easy and inexpensive to do. The library can be a great partner, as people who do not have access at home can visit the library to check their email. Shouldn't everyone have an address in cyberspace?

## Tips for success

- Do small things. Many projects are "too big" for the resources available, and inevitably fail.
- Do small things well. Small successes inspire confidence and over time, produce "big" results.
- Do several small things. Some projects will work, some won't. The ones that do work well will preserve momentum.

