MOUNT ROGERS
PLANNING DISTRICT COMMISSION

Mount Rogers District Telecommunications Master Plan

Technology Advisory Committee

Of the

Mount Rogers Planning District Commission

Funding provided by:

ARC
APPALACHIAN REGIONAL COMMISSION

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1 EXECUTIVE SUMMARY

The Mount Rogers Planning District is located in Southwest Virginia. The district is composed of six counties (Bland, Carroll, Grayson, Smyth, Washington, and Wythe) and two independent cities (Bristol and Galax). There are also 12 towns within the planning district: Abingdon, Chilhowie, Damascus, Fries, Glade Spring, Hillsville, Independence, Marion, Rural Retreat, Saltville, Troutdale, and Wytheville.

Competition in local, national, and global economies is increasingly dependent upon the internet and high-speed communications. Several telecommunications projects, including the LENOWISCO network, the Southside network, and the New River Valley Planning District network, are currently in development in the districts adjacent to the Mount Rogers Planning District. To ensure the Mount Rogers Planning District has the telecommunications capabilities necessary to complete economically, a regional telecommunications planning process was initiated in October 2004 upon approval of a planning grant from the Appalachian Regional Commission.

With assistance from the Mount Rogers Technology Advisory Committee, local governments, and citizens, Mount Rogers Planning District Commission staff completed a year-long planning process that included a regional telecommunications assessment. The telecommunications assessment was composed of four primary user groups: residential, business and industry, education, and local government. Four separate user group surveys were created and distributed through various methods throughout the district with varying rates of return. Results of the telecommunications assessment were used to generate regional telecommunications goals and recommendations for the Mount Rogers District. In additional to the goals and recommendations, the regional plan

includes a list of priority projects that serve as the action steps to reach the district's telecommunications goals.

2 INTRODUCTION

2.1 Purpose

The purpose of this planning effort is to develop a comprehensive district-wide telecommunications master plan. This plan, while regional in overall scope, will incorporate community needs assessments collected from the Mount Rogers Planning District localities participating in the planning process, which are Bland, Grayson, Smyth, Washington, and Wythe Counties and the Cities of Bristol and Galax. This plan also includes information collected in the 12 towns located in the Mount Rogers Planning District: Abingdon, Chilhowie, Damascus, Fries, Glade Spring, Hillsville, Independence, Marion, Rural Retreat, Saltville, Troutdale, and Wytheville.

The primary goal of this plan is to provide the framework to connect every business and industry, educational institution, health facility, local government, library, and residence to an affordable broadband network, with the first priority being business and industry. The planning process was initiated with the understanding that there are multiple fiber backbones already running through the district, so this plan focuses on the development of "last mile" infrastructure, education, and application development. The goals derived from this planning process encompass four major focus areas: 1. infrastructure and access, 2. education and training, 3. e-commerce, and 4. job retention and creation.

2.2 Planning Process

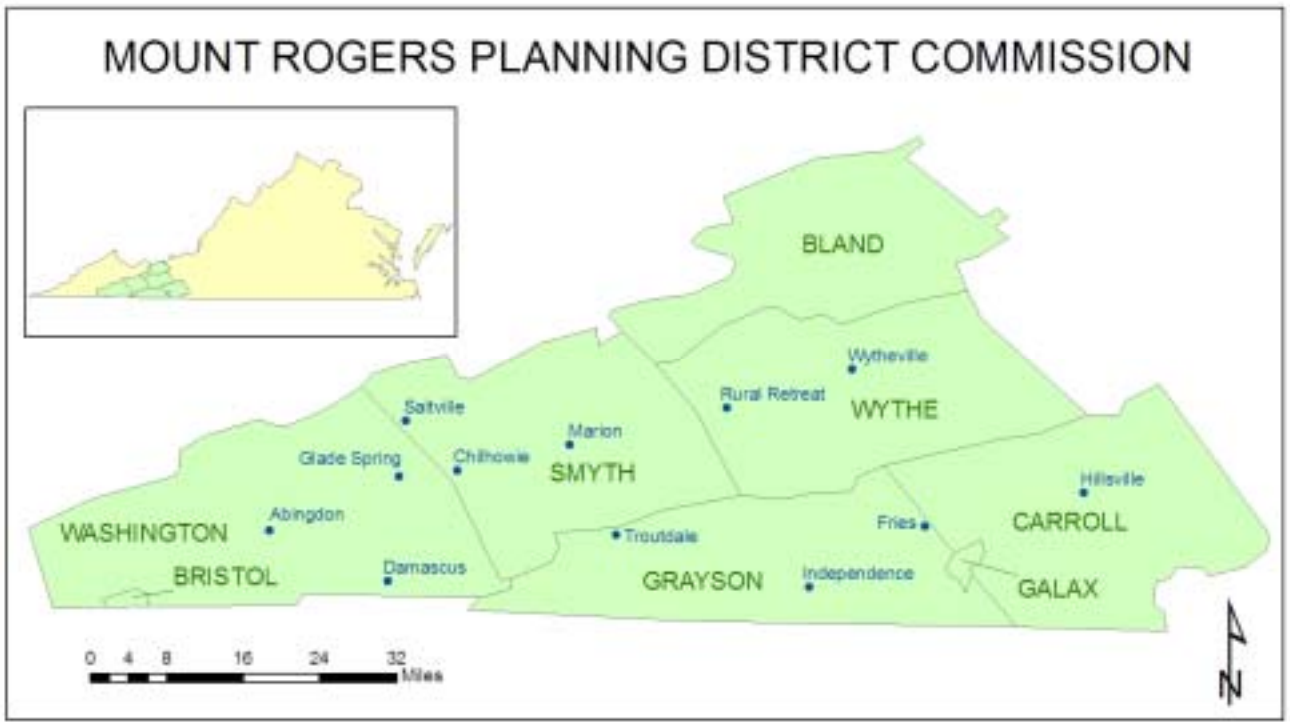
On May 6, 2004, the Executive Committee of the Mount Rogers Planning District Commission approved the submission of an application to the Appalachian Regional

Commission for telecommunications planning funds. The application was approved by the Appalachian Regional Commission, with matching funds coming from the Virginia's Center for Innovative Technology and the Mount Rogers Planning District Commission. The initial planning session was held by the Mount Rogers Technology Advisory Committee on December 8, 2004. The Technology Advisory Committee was composed of citizens, business leaders, local government officials, healthcare workers, and representatives from community colleges and public schools (see appendix). The committee made all efforts to meet on a monthly basis throughout the planning process. Each local government in the district was notified of the planning process and invited to attend all Technology Advisory Committee meetings.

A major goal of the Technology Advisory Committee was to develop surveys to assess the current state of telecommunications in the Mount Rogers Planning District. Four separate surveys were developed for businesses and industries, public schools and higher education, residential users, and local governments. Residential and business surveys were available on the Mount Rogers Planning District Commission website through an interactive survey application, while hardcopies of education and local government surveys were distributed by mail and in person by Mount Rogers Planning District Commission staff members. Press releases were sent to all local and regional newspapers on two separate occasions to advertise the residential and business surveys. The Technology Advisory Committee requested additional assistance to market the business surveys from the chambers of commerce, local economic developers, and Virginia's aCorridor.

2.3 About the Mount Rogers Planning District

The Mount Rogers Planning District is strategically located at the intersection of Interstates 81 and 77 in Southwest Virginia. The region includes both rural and urban areas, with much of the region's 2,782 square miles falling in two physiographic provinces, the Blue Ridge and the Ridge and Valley. The southern portion of the region borders both Tennessee and North Carolina, while the most northern portion of the district borders West Virginia. The regional economy is anchored by a strong manufacturing base with a current trend toward bolstering the region's tourism industry.



2.3.1 Population

The population of the Mount Rogers Planning District Commission is growing at a rate of approximately 0.5 percent per year. As can be seen in Table 1, the official 2000 Census population is higher than the estimated populations in 1999 and 2001. This is a result of an error in the officially reported population of Grayson County. The actual population of the district in 2000 was approximately 189,387.

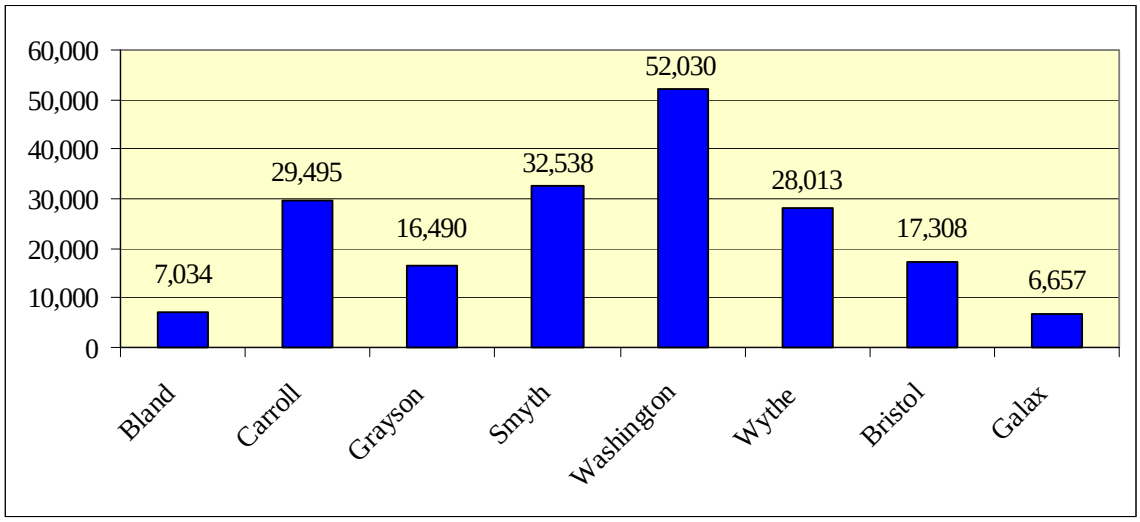
Table 1
Population
Mount Rogers Planning District Localities
1999 - 2004

Locality	1999	2000	2001	2002	2003	2004
Bland	6,900	6,871	6,944	6,906	6,975	7,034
Carroll	28,000	29,245	29,391	29,289	29,315	29,495
Grayson	16,600	17,917	16,687	16,694	16,571	16,490
Smyth	32,700	33,081	32,905	32,822	32,717	32,538
Washington	49,900	51,103	51,243	51,330	51,570	52,030
Wythe	26,600	27,599	27,677	27,834	27,967	28,013
Bristol	17,300	17,367	17,313	17,097	17,285	17,308
Galax	6,800	6,837	6,652	6,652	6,678	6,657
MRPD	184,800	190,020	188,812	188,624	189,078	189,565

Source: Weldon Cooper Center for Public Service, 2005.

The district's population is concentrated in the towns and cities with much of the rural land area only sparsely populated. Chart 1 shows that Washington County has the largest overall population with almost 20,000 more persons than the locality with the next highest population. As would be expected in a city, Bristol has the highest number of persons per square mile, with slightly more than 1,340 persons per square mile. Bland County has the lowest population of any county in the district and the lowest population per square mile with only 19.2 persons per square mile.

Chart 1
Population
Mount Rogers Planning District Localities
2004



Source: Weldon Cooper Center for Public Service, 2005.

The Virginia Employment Commission has projected continued growth of the population of the Mount Rogers Planning District. At a ten-year average rate of growth of almost 2.5 percent, the population of the district is projected to reach 204,600 by 2030. Improvements to telecommunications and related services and programs will be a key factor in the diversification of the region's economy, without which the population of the region may not grow at the projected rate.

Table 2
Population Projections
Mount Rogers Planning District
2000 - 2030

Year	Population	Percent Change
2000	190,020	--
2010	194,100	2.15%
2020	199,398	2.73%
2030	204,600	2.61%

Source: Virginia Employment Commission, 2005a.

2.3.2 Age of Population

As shown in Table 3, the Mount Rogers Planning District is suffering from an out-migration of the population in the 18 to 24 year age group. This decline may indicate that high school graduates are leaving the area for college and not returning due to lack of jobs. Overall, though the district does have a large number of persons in the working age groups (25 – 44 and 45 – 64).

Table 3
Age of Population
Mount Rogers Planning District Localities
2000
By Age Group

Age Group	Bland County	Carroll County	Grayson County	Smyth County	Washington County	Wythe County	City of Bristol	City of Galax	MRPD
Total	6,871	29,245	17,917	33,081	51,103	27,599	17,367	6,837	190,020
Under 5 years	308	1,642	856	1,769	2,592	1,507	929	439	10,042
5 to 17 years	1,026	4,523	2,641	5,378	8,013	4,523	2,601	1,133	29,838
18 to 24 years	522	2,120	1,354	2,639	4,466	2,101	1,489	542	15,233
25 to 44 years	2,105	8,179	5,340	9,298	14,463	7,966	4,551	1,803	53,705
45 to 64 years	1,917	7,808	4,691	8,593	13,735	7,139	4,230	1,610	49,723
65 and older	993	4,973	3,035	5,404	7,834	4,363	3,567	1,310	31,479

Source: U.S. Census Bureau, 2000a.

2.3.3 Educational Attainment

Approximately 34 percent of the population 18 years and older in the district have a high school diploma or equivalent, while slightly less than that, 30.4 percent, does not have a high school diploma. Additionally, only 13.8 percent of the population 18 years and older has completed some form of higher education, either a two or four year degree. A higher percentage of this population group, 18.4 percent, has obtained some college education, but has not earned a degree.

Table 4
Educational Attainment of Population 18 Years and Older
Mount Rogers Planning District Localities
2000
By Attainment Level

Attainment Level	Bland County	Carroll County	Grayson County	Smyth County	Washington County	Wythe County	City of Bristol	City of Galax	MRPD
Less than 9th grade	13.4%	16.1%	16.7%	13.6%	11.6%	13.0%	11.1%	19.5%	13.6%
9th to 12th grade, no diploma	14.6%	18.7%	18.8%	18.1%	15.2%	15.5%	15.9%	19.8%	16.8%
High school graduate	39.5%	34.8%	38.0%	35.7%	31.2%	33.7%	29.1%	28.7%	33.6%
Some college, no degree	18.4%	15.7%	14.4%	17.5%	20.9%	19.0%	21.6%	16.4%	18.4%
Associate degree	5.7%	5.9%	4.6%	5.2%	6.3%	7.4%	6.0%	5.1%	6.0%
Bachelor's degree	5.7%	5.3%	5.2%	7.0%	9.3%	7.9%	12.2%	7.3%	7.8%
Graduate or professional degree	2.8%	3.5%	2.3%	2.9%	5.5%	3.5%	4.0%	3.3%	3.8%

Source: U.S. Census Bureau, 2000b.

2.3.4 Income

Income levels in the region are lagging behind those in the state. Across the region, median income levels are fairly consistent with higher median incomes in the more industrialized counties of Washington and Wythe. The highest rates of poverty occur in the Cities of Bristol and Galax, where poverty rates are around three to five percent higher than other localities in the district.

Table 5
Income
Mount Rogers Planning District Localities
2000
By Income Type

Income Type	Bland County	Carroll County	Grayson County	Smyth County	Washington County	Wythe County	City of Bristol	City of Galax
Median Household Income	30,397	30,597	28,676	30,083	32,742	32,235	27,389	28,236
Median Family Income	35,765	36,755	35,076	36,392	40,162	40,188	34,266	36,832
Per Capita Income	17,744	16,475	16,768	16,105	18,350	17,639	17,311	17,447
Percentage of Population in Poverty	12.4%	12.5%	13.6%	13.3%	10.9%	11.0%	16.2%	18.6%

Source: U.S. Census Bureau, 2000b.

2.3.5 Workforce

The service industry dominates the district's economy as far as average employment and number of establishments, with a large focus on trade, transportation, education, and health. A closer look at individual industry sectors shows that the manufacturing sector employs the largest percentage of the labor force. Average weekly wages in the manufacturing sector are relatively high, with the average weekly wage in Bland County slightly exceeding that of the state.

Table 6
Employment and Wages
Mount Rogers Planning District
Fourth Quarter 2004
By NAICS Code

NAICS Code	Industry	Average Establishments	Average Employment	Average Weekly Wage
10	Total, all industries	4,529	77,412	$537
101	Goods-Producing Domain	823	23,237	$628
1011	Natural Resources and Mining	76	569	$580
1012	Construction	476	3,673	$564
1013	Manufacturing	271	18,996	$641
102	Service-Providing Domain	3,706	54,175	$499
1021	Trade, Transportation and Utilities	1,305	16,577	$497
1022	Information	***	***	***
1023	Financial Activities	397	2,055	$581
1024	Professional and Business Services	***	***	***
1025	Education and Health Services	455	16,027	$552
1026	Leisure and Hospitality	432	7,237	$244
1027	Other Services	379	1,694	$396
1028	Public Administration	206	3,521	$601

Source: Virginia Employment Commission, 2005b.

Unemployment in the district is low compared to other regions in Southwest Virginia. Smyth County continues to recover from a series of manufacturing plant closings and downsizings that occurred between 1998 and 2003. As shown in Table 8, much of the district's labor force must travel outside of the state for employment. Of

those persons that can find employment in Virginia, many are required to commute to counties outside their county of residence for work.

Table 7
Labor Force, Employment, and Unemployment
Mount Rogers Planning District Localities
2004

	Bland County	Carroll County	Grayson County	Smyth County	Washington County	Wythe County	City of Bristol	City of Galax
Civilian Labor Force	3,120	14,773	7,812	14,995	25,587	14,836	7,707	3,236
Employment	2,985	14,067	7,428	14,204	24,373	14,155	7,238	3,059
Unemployment	135	706	384	791	1,214	681	469	177
Unemployment Rate	4.3%	4.8%	4.9%	5.3%	4.7%	4.6%	6.1%	5.5%

Source: Virginia Employment Commission, 2005c.

Table 8
Place of Work
Mount Rogers Planning District Localities
2000

Place of Work	Bland County	Carroll County	Grayson County	Smyth County	Washington County	Wythe County	City of Bristol	City of Galax
Outside State of Residence	441	2,558	1,173	552	3,362	392	2,382	156
In State of Residence	2,189	10,889	6,532	14,129	20,133	12,646	4,580	2,857
In County of Residence	1,191	6,806	2,457	11,703	13,844	9,084	3,230	1,798
Outside County of Residence	998	4,083	4,075	2,426	6,289	3,562	1,350	1,059
Total Workforce	2,630	13,447	7,705	14,681	23,495	13,038	6,962	3,013

Source: U.S. Census Bureau, 2000b.

2.4 Definitions

The following is a list of definitions for commonly used telecommunications terms. Overall, these definitions were collected from the Federal Communications Commission and the eCorridors Program. The eCorridors Program is an economic development and outreach program at Virginia Polytechnic Institute and State University focused on the development of next generation networks and services.

Backbone - The part of a communications network that connects to the commodity internet and handles the major traffic. It employs the highest-speed transmission paths and typically covers the greatest distance for a regional network. Smaller networks are connected to the backbone via short-haul fiber lines and/or a variety of "last mile" technologies.

Bandwidth – The capacity of a telecom line to carry signals. The necessary bandwidth is the amount of spectrum required to transmit the signal without distortion or loss of information. High bandwidth networks are able to carry more types of data simultaneously than low bandwidth networks.

Broadband – Broadband is a descriptive term for evolving digital technologies that provide consumers a signal switched facility offering integrated access to voice, high-speed data service, video-demand services, and interactive delivery services.

Co-location - Placing equipment owned by a customer or competitor in an organization's own facility. Telephone companies often allow co-location in order to provide the best interconnection between devices.

Dark Fiber - Dark fiber refers to unused fiber-optic cable. Often, companies lay more lines than what's needed in order to curb costs of having to do it again and again. The dark strands can be leased to individuals or other companies who want to establish optical connections among their own locations. In this case, the fiber is neither controlled by nor connected to the phone company. Instead, the company or individual provides the necessary components to make it functional.

DSx - (Digital Signal) A classification of digital circuits. The DS technically refers to the rate and format of the signal, while the T designation refers to the equipment providing the signals. In practice, "DS" and "T" are used synonymously; for example, DS1 and T1, DS3 and T3.

Fiber optics - Communications systems that use optical fibers for transmission. Fiber-optic transmission became widely used in the 1980s when the long-distance carriers created nationwide systems for carrying voice conversations digitally over optical fibers. Eventually, all transmission systems may become fiber optic-based. Also, in time, the internals of computers may be partially or even fully made of light circuits rather than electrical circuits.

ISP - (Internet service provider) An organization that provides connectivity to the Internet. Many also offer related services such as web page hosting, on-call support, training, etc. Small internet service providers (ISPs) provide "dial-up" service via modem and ISDN while the larger ones also offer dedicated ethernet (ethernet service is offered with a wide range of transmission speeds and other added features depending on the level of sophistication of the ISP and the market demand)

Multimode Fiber - An optical fiber with a core diameter of from 50 to 100 microns. It is the most commonly-used optical fiber for short distances such as LANs. Light can enter the core at different angles, making it easier to connect the light source to broader light sources such as LEDs.

POP (Point of Presence) - The point at which a line from a long distance carrier (IXC) connects to the line of the local telephone company or to the user if the local company is not involved. For online services and Internet providers, the POP is the local exchange users dial into via modem.

Singlemode Fiber - An optical fiber with a core diameter of less than 10 microns. Used for high-speed transmission over long distances, it provides greater bandwidth than multimode, but its smaller core makes it more difficult to couple the light source. Increasingly, singlemode fiber is used for shorter distances.

T1 - A 1.544 Mbps point-to-point dedicated, digital circuit provided by the telephone companies. The monthly cost is typically based on distance. A T1 is the typical connection used in campus and office building networks. T1 carries both voice and data.

T3 - A 44.736 Mbps point-to-point dedicated line provided by the telephone companies. A T3 line provides 672 64-Kbps voice or data channels.

3. TELECOMMUNICATIONS ASSESSMENT

An assessment of the telecommunications services in the Mount Rogers Planning District was completed through a survey process. Four separate surveys were developed to collect specific information from residents, businesses and industries, local governments, and educational users. All residential surveys were completed online, so it is impossible to determine a rate of return for this user group. While many of the business and industry surveys were distributed by hand, several of these surveys were complete online which impacts the ability to determine the rate of returns.

Overall, 82 residential surveys and 22 business surveys were completed. Smyth County also submitted data from interviews with businesses and industries located in the county regarding telecommunications needs. Of the 20 local government surveys that were sent out, 14 were returned (70 percent). The rate of return for education surveys was slightly lower at 50 percent (6 surveys).

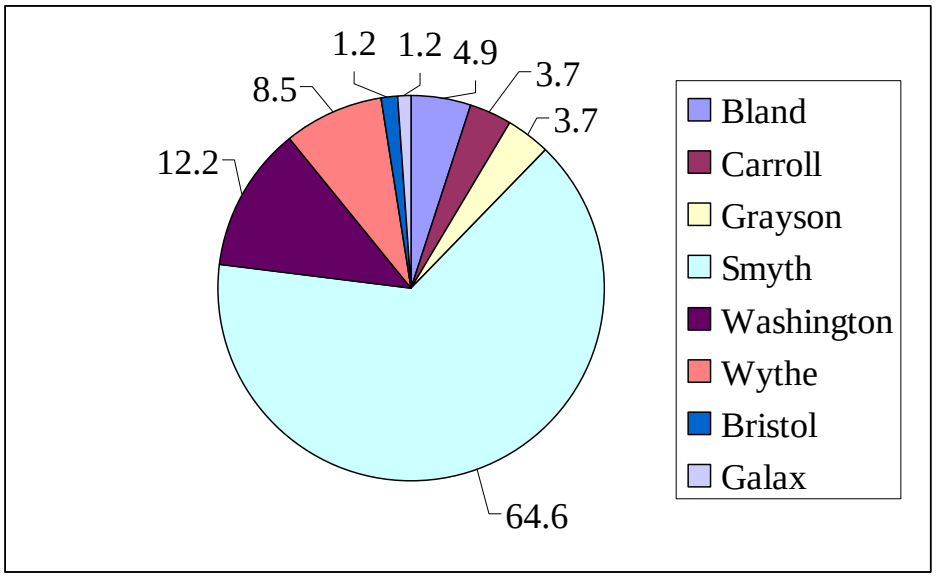
3.1 Residential

3.1.1 Location of Respondents

Residential users were surveyed to collect information about overall demand for various telecommunications services. Availability of residential customers is a key requirement for a partnership with internet service providers on an open-network. The residential survey was available through an interactive survey application on the Mount Rogers Planning District Commission website and was marketed through press releases and links on local government websites.

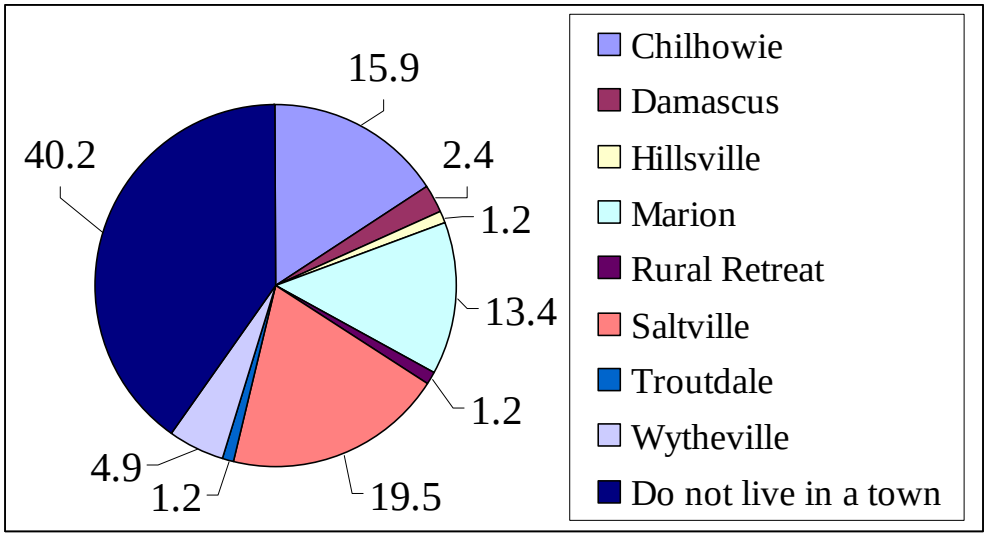
Residential surveys were completed in all of the counties and cities in the Mount Rogers Planning District; however, an overwhelming majority of the 82 surveys were completed by residents of Smyth County. Chart 2 provides a breakdown of the percentage of completed surveys by county and city. Residents were also asked if they reside in a town. Chart 3 further breaks down the percentage of surveys completed by residents living in a town.

Chart 2
Percentage of Residential Surveys Completed
Mount Rogers Planning District Localities
2005
By County and City



Source: Mount Rogers Planning District Commission

Chart 3
Percentage of Residential Surveys Completed
Mount Rogers Planning District Localities
2005
By Town



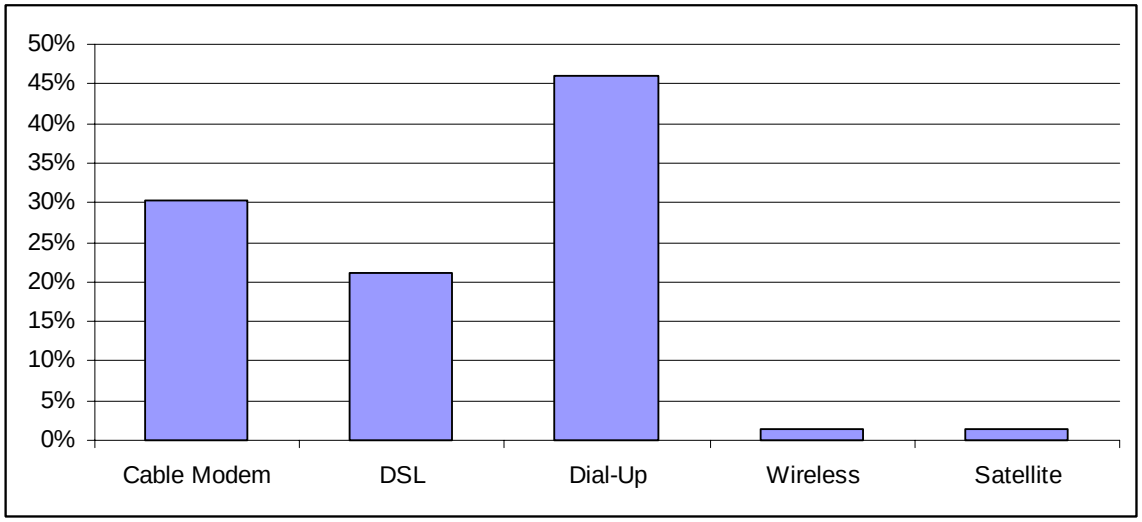
Source: Mount Rogers Planning District Commission

3.1.2 Home Computer and Internet Access

All of the residential respondents own a home computer, but only 93 percent have internet access at home. Of the six respondents that do not have internet access, two stated that they could not afford it and one stated that service was not available. Two respondents identified "speed of service" as the reason they do not have home internet access. One of the six did not identify why he or she does not have home internet access.

Seventy-six of those surveyed do have internet access at home. Of those, 46 percent still connect through a dial-up connection. Approximately 51 percent of the respondents connect through cable or DSL modems. Slightly over 68 percent of those with home internet access purchase service from a national provider, while only 19.7 percent are connected through a local internet service provider.

Chart 4
Percentage of Residential Internet Connections
Mount Rogers Planning District
2005
By Type

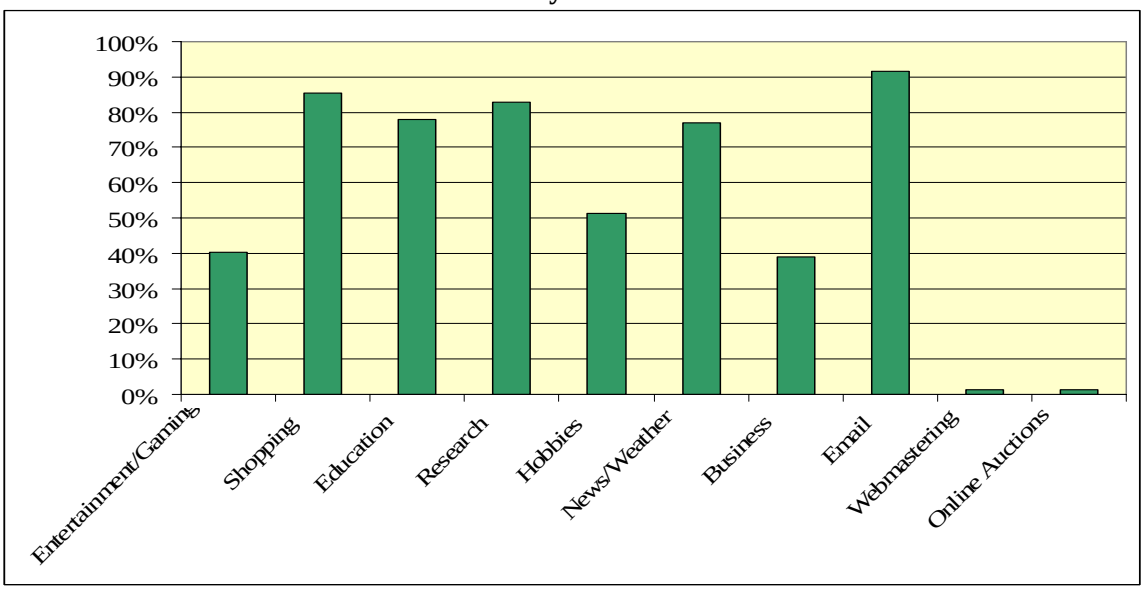


Source: Mount Rogers Planning District Commission

3.1.3 Residential Internet Uses

Approximately 70 percent of residential internet users surveyed in the Mount Rogers Planning District spend on average one or more hours online each day. Almost 20 percent of those surveyed stated they spent between one hour per day and one hour per week online while at home. Five percent of residential users spend less than one hour online each week and five percent of those surveyed spend no time online while at home.

Chart 5
Residential Internet Uses
Mount Rogers Planning District
2005
By Use



Source: Mount Rogers Planning District Commission

Email was the most common use among residential internet users, followed closely by shopping, research, education, and news/weather. Hobbies, entertainment/gaming, and business are also common internet uses among residents in the district. Two "other" uses, webmastering and online auctions, were written in by respondents. While these "other" responses were only identified by one respondent each, many of those surveyed my have considered these specific uses to fall under the business category. A majority of those surveyed indicated that they would use, if offered, advanced e-government and community websites that provides services such as meeting notices, tax records and GIS mapping, business listings, and the ability to pay local taxes, among others.

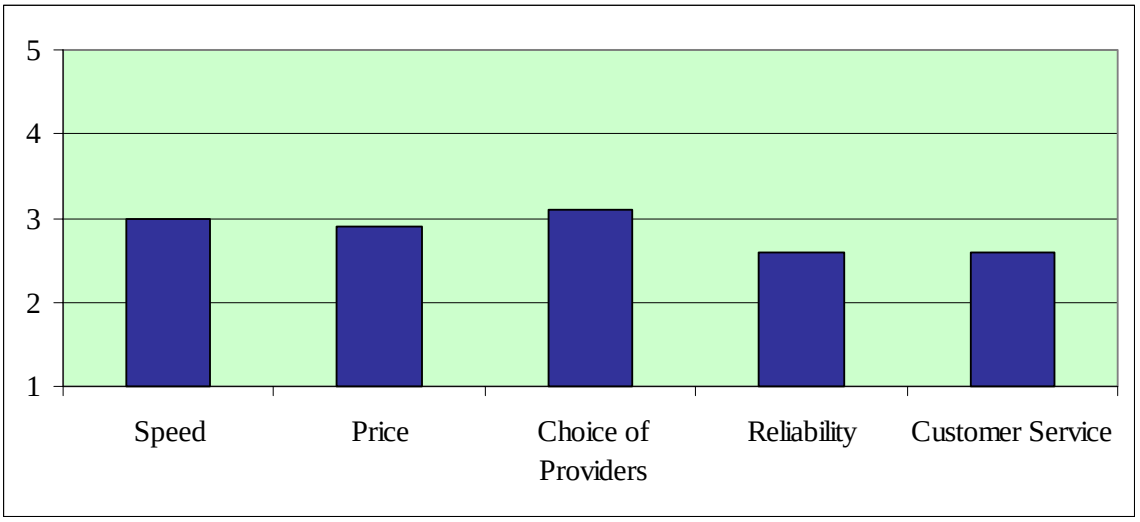
Of those surveyed, six respondents stated that they do plan to start an internet-based business in the next two to three years. Three respondents already run an internet-based

business. Even though six respondents only represent 7.3 percent of those surveyed, the response does indicate a need for web-based entrepreneurial education programs. This need will continue to grow as internet applications become more advanced and broadband increases in availability and affordability.

3.1.4 Quality of Service

Residential internet users were asked to rank the quality of five specific characteristics of their internet service on a scale of one to five where one was very satisfied and five was very dissatisfied. As can be seen in Chart 6, the average rankings all hovered around three or "somewhat satisfied." Those surveyed tended to feel slightly more dissatisfied with the overall choice of providers, while they tended to feel slightly more satisfied with reliability and customer service. When asked if affordable high-speed internet is available at the residence, only 42.7 percent of the respondents replied with a yes. The fact that 57.3 percent of the respondents do not feel that they have access to affordable high-speed internet indicates that telecommunications services for residential customers in the Mount Rogers Planning District need improvements.

Chart 6
Quality of Residential Internet Service
Mount Rogers Planning District
2005
By Characteristic



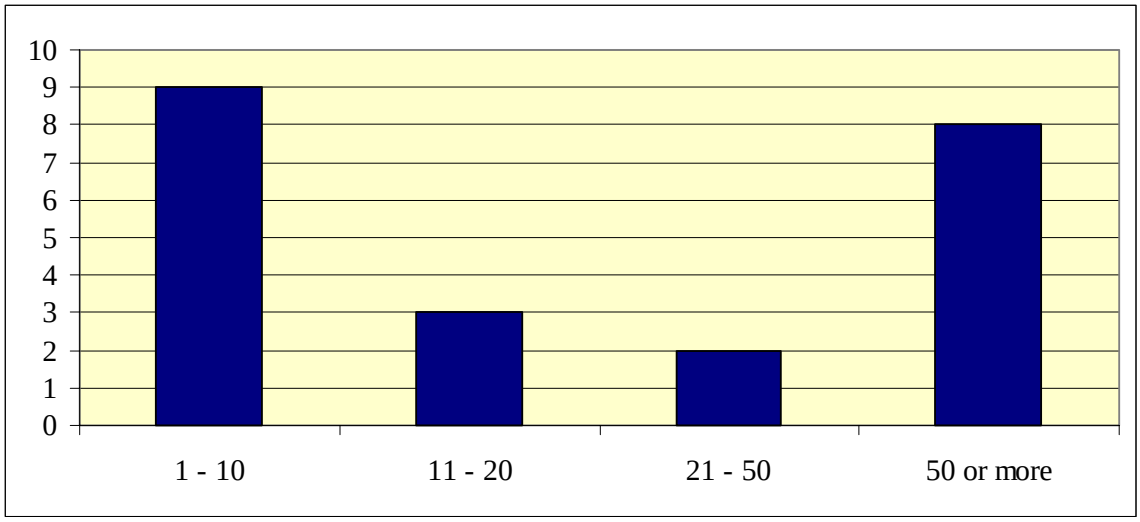
Source: Mount Rogers Planning District Commission

3.2 Business and Industry

Businesses and industries were surveyed using both a hardcopy survey and online survey. Hardcopy surveys were distributed to businesses in Smyth County during the fall of 2004. The rate of return on the hardcopy surveys was approximately 50 percent with 10 completed surveys. Twelve businesses completed the online survey for a total of 22 completed business and industry surveys.

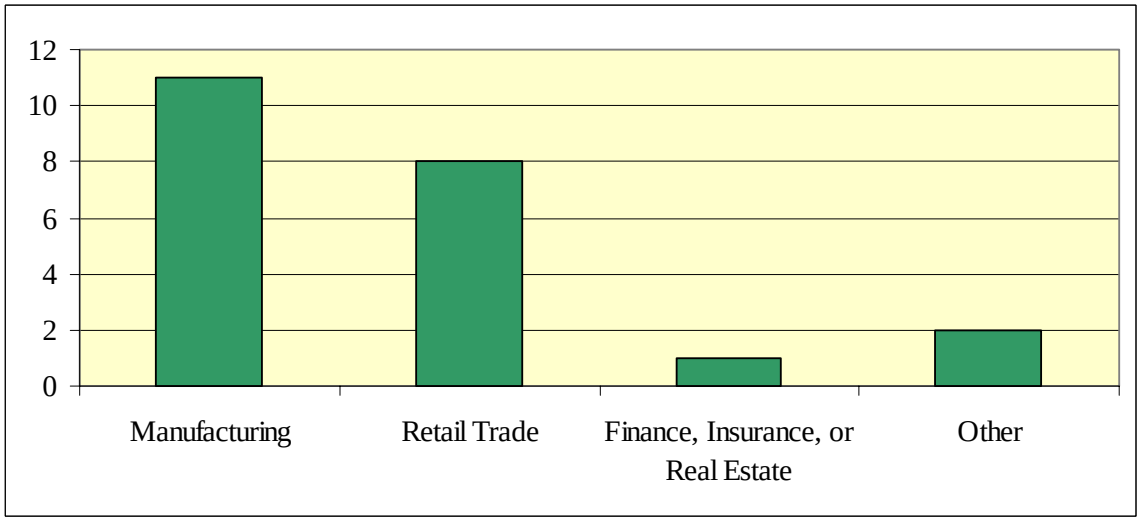
The type and size of the businesses and industries that participated in the survey process varied. As seen in Chart 7, the majority of the businesses can be categorized into one of two size groups, 1 to 10 employees or 50 or more employees. Chart 8 identifies the industry sectors of the participating businesses, with half of the 22 respondents being classified as manufacturing companies.

Chart 7
Number of Employees
Mount Rogers Planning District
2005
By Size Groups



Source: Mount Rogers Planning District Commission

Chart 8
Industry Classification
Mount Rogers Planning District
2005
By Type



Source: Mount Rogers Planning District Commission

3.2.1 Internet Connections

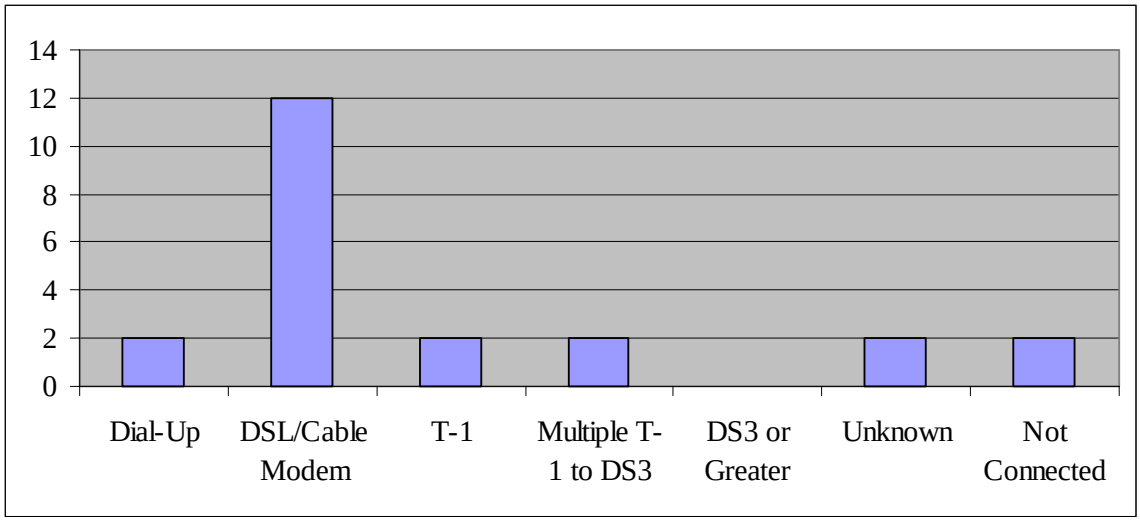
Approximately 82 percent of the businesses surveyed are capable of making telecommunications-related decisions locally. The remaining 18 percent are required to subscribe to the telecommunications providers approved by a non-local corporate headquarters. In addition, several businesses and industries replied that they could make the decision regarding telecommunications providers on the local level, but only with approval from a corporate headquarters.

Only two of the 22 businesses surveyed do not subscribe to internet service. Both of those businesses were small, privately-owned retail shops, a body shop and hunting supply store. All of the manufacturing firms that responded to the survey are connected to the internet.

Businesses and industries in the Mount Rogers Planning District are connected to the internet through a variety of providers, especially national providers that offer DSL or cable modem services. In fact, just over 50 percent of the businesses surveyed are connected to the internet through a DSL or cable modem connection. Overall, the connect types varied greatly among the business respondents, as shown in Chart 9.

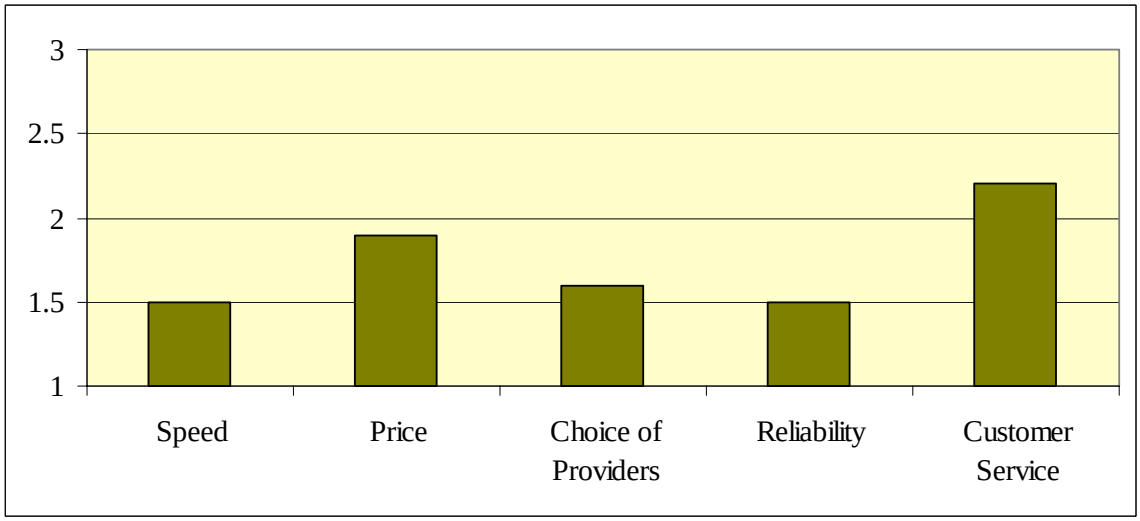
On average, the businesses and industries that participated in the survey process were satisfied with the available service. As seen in Chart 10, the businesses rated various characteristics of the current service on a scale of one (satisfied) to three (dissatisfied). Customer service was the one characteristic of the available service that received the lowest average satisfaction rating. Speed and reliability were the two characteristics that received the highest average satisfaction rating among the businesses surveyed.

Chart 9
Business Internet Connections
Mount Rogers Planning District
2005
By Type



Source: Mount Rogers Planning District Commission

Chart 10
Quality of Business Internet Service
Mount Rogers Planning District
2005
By Characteristic



Source: Mount Rogers Planning District Commission

3.2.2 Future Telecommunications Needs

While the majority of the businesses surveyed are generally satisfied with the current telecommunication services available, around 63 percent anticipate the need for additional telecommunications capacity in the future. The primary reason stated by the majority of those businesses anticipating the need for increased capacity was basic business growth. An increase in employees will require additional capacity. Nevertheless, several businesses and industries state other reasons for additional capacity.

When questioned about the need for video conferencing capabilities, 45 percent of the respondents indicated that their business would rarely use video conferencing facilities. However, 21 of the 22 businesses did state that they would have the need for video conferencing at some point. Several of the businesses stated that they would make use of a video conferencing facility located in the community.

In addition to video conferencing, approximately 41 percent of the businesses would allow employees to telecommute if affordable high-speed internet was available. Only 23 percent of the businesses would not allow telecommuting, while 23 percent already allow employees to telecommute.

Around 70 percent of the businesses surveyed already maintain at least one website for marketing and e-commerce. Almost 20 percent do plan to develop a website in the future, and 9 percent of the businesses are uncertain of the need for a website in the future. Only 5 percent do not currently maintain a website and do not plan to develop a website.

3.2.3 Future Service Providers

An overwhelming majority, 95.5 percent, of the businesses and industries that completed the telecommunications survey stated that access to high-speed broadband internet service at a competitive price would be beneficial. The surveyed businesses ranked on a scale of one (high) to three (low) the likelihood that they would subscribe to a new provider in different scenarios. As can be seen in Table 9, there is a relatively low likelihood that businesses will pay more for improved internet service; however, the likelihood is much higher that businesses would change providers if reliability and customer service can be improved at current cost.

Table 9
Likelihood that Businesses will Subscribe to a New Service Provider
(on a scale of one to three)
Mount Rogers Planning District
2005
By Scenario

The provider offered similar services at current cost, but improved reliability and customer service.	1.6
The provider offered higher speed service at 10 percent higher cost.	2.2
The provider offered higher speed service at 20 percent higher cost.	2.6
The provider packaged voice and high-speed internet for 10 to 15 percent higher than your current service for both.	2.3

Source: Mount Rogers Planning District Commission

3.3 Education

Education surveys were distributed to the public school districts in hardcopy form at a meeting of the technology specialists from each school district. Education surveys were also sent by mail and e-mail to the Southwest Virginia Higher Education Center,

Crossroad Institute, and the two community colleges in the Mount Rogers Planning District. Of the 12 surveys sent to education users, 6 were returned for a 50 percent rate of return. Two of the six completed surveys were completed by higher education institutions, Virginia Highlands Community College and the Southwest Virginia Higher Education Center. The remaining four surveys were completed by the public schools districts in Smyth and Washington Counties and the Cities of Bristol and Galax.

3.3.1 Internet Connections

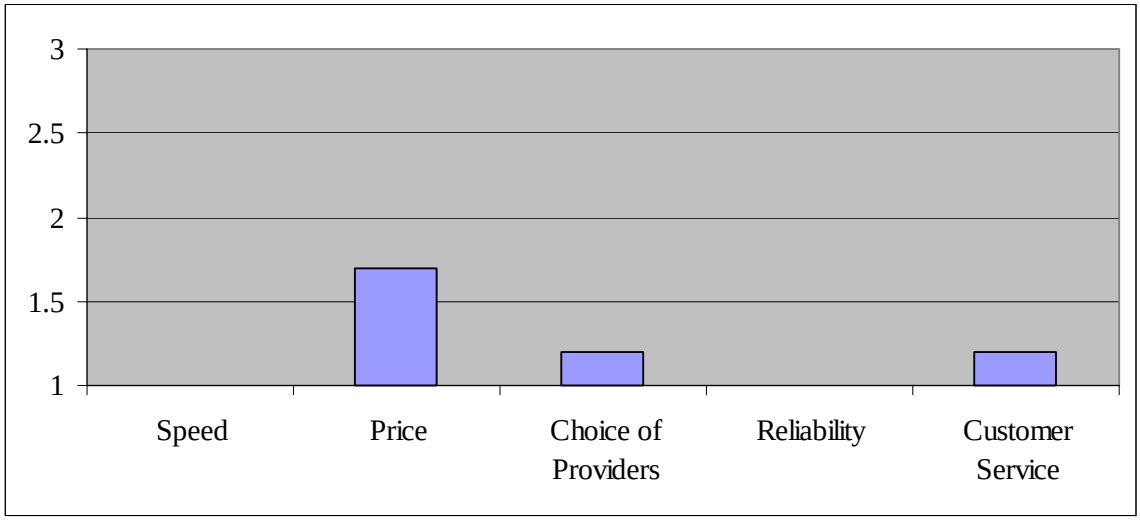
All six of the educational respondents are connected to the internet. All but one of the respondents, Bristol Virginia Public Schools, is connected through Network Virginia, a statewide broadband network that provides high-speed internet service to all Virginians. Each school district or higher education institution pays a slightly different cost based on the type and speed of service. Galax City Public Schools pays the lowest price for service at $1,800 for a T-1 connection, while Smyth County pays the highest at $7,227. Other than Galax, all of the respondents subscribe to a multiple T-1 to DS3 service. Smyth County, like many school districts, pays a high price for internet service, because multiple locations are connected to a central office through a high-speed wide area network and the central office is connected to the internet via a DS3 circuit. To offset the higher cost, Smyth County Public School System shares the cost of this service with the Town of Marion, Smyth County administrative offices, and Smyth-Bland Regional Library.

Bristol Virginia Public Schools are connected through Bristol Virginia Utilities, a municipally-owned system that provides electric, water, wastewater, and fiber-optic

utilities. Bristol Virginia Public Schools pays $8,497 per month for 10Mbps internet connections to six locations and a gigabit wide area network between each location. Of the public school districts that completed the telecommunications survey, Bristol Virginia Public Schools pays the highest price for internet service.

Each educational institution was asked to rate the quality of various characteristics of the current internet service on a scale of one (satisfied) to three (dissatisfied). On average, those surveyed are satisfied with the current service. Speed and reliability were the two characteristics that received the highest average rating, while price received the lowest rating. Chart 11 depicts the average rate of the quality of each characteristic.

Chart 11
Quality of Education Internet Service
Mount Rogers Planning District
2005
By Characteristic



Source: Mount Rogers Planning District Commission

3.3.2 Future Telecommunications Needs

Sixty-seven percent of the educational institutions surveyed expect a need for additional internet capacity in the future. The need for additional bandwidth stems from

the desire to provide advanced applications such as distance learning, streaming video, and other interactive educational applications. Based on survey responses, several of the public school districts and higher education institutions in the Mount Rogers Planning District already offer advanced internet applications to faculty, students, and parents. However, there are several applications that would be used by the planning district's educational institutions if enough bandwidth was available, especially the ability to deliver real-time access to instruction by students from their homes. Furthermore, each educational institution responded that the following applications would be frequently used by staff and students via the internet: library catalogs, electronic reference material, and video on specific topics. Finally, the educational institutions either currently provide or would like to make available to students and parents at their homes via the internet the following information: homework, grades, library resources, and school activities.

3.4 Local Government

Local government surveys were sent by mail to all 20 local governments in the Mount Rogers Planning District. Fourteen of the 20 surveys were completed and returned for a 70 percent rate of return. Several of the completed surveys also included a description of the computer hardware, software, networking, and internet access used by various local government offices. These descriptions are included in the appendix of this plan.

The local governments in the Mount Rogers Planning District vary greatly in the number of employees and number of computers used. Of the 14 local governments that responded to the telecommunications survey, 10 are towns that range from 80 employees

and 23 computers in the Town of Marion to zero employees and no computers in the Town of Troutdale. The four counties that participated in the survey process are Bland, Carroll, Smyth, and Washington Counties. Wythe and Grayson Counties did not respond to the survey. Likewise, the Towns of Abingdon and Wytheville and the Cities of Bristol and Galax did not participate in the survey process.

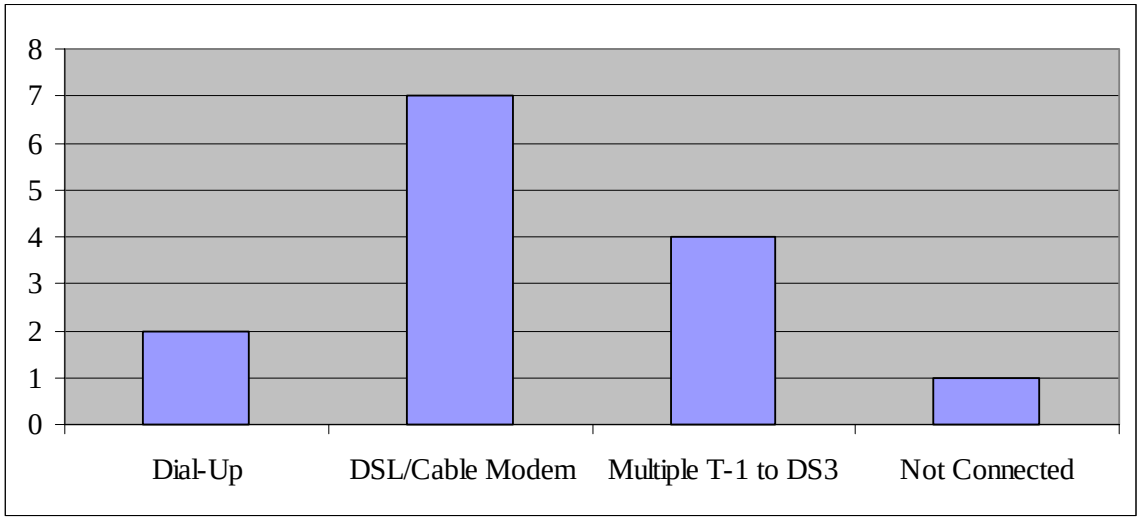
3.4.1 Internet Connections

The Town of Troutdale is the only local government that responded to the survey that is not connected to the internet. The remaining local governments in the Mount Rogers Planning District are subscribed to a variety of internet service providers at varying costs and speeds of service. Prices range from $19.95 per month for dial-up service to $800 dollars per month for high-speed internet service. Chart 12 provides a breakdown of the type of service used by the local governments that participated in the survey process. As with businesses and industries, the majority of the local governments are connected to the internet via a DSL or cable modem connection. Two of the planning district's local governments maintain a dial-up connection.

Only 28.6 percent of the local governments that participated in the survey process maintain a network connecting all of the governmental departments. Ten out of the 14 local governments have separate systems, software, and often, even internet connections within their various departments. Several of the participating local governments included a breakdown of the computer hardware and software used by department, which are included in the appendix of this plan.

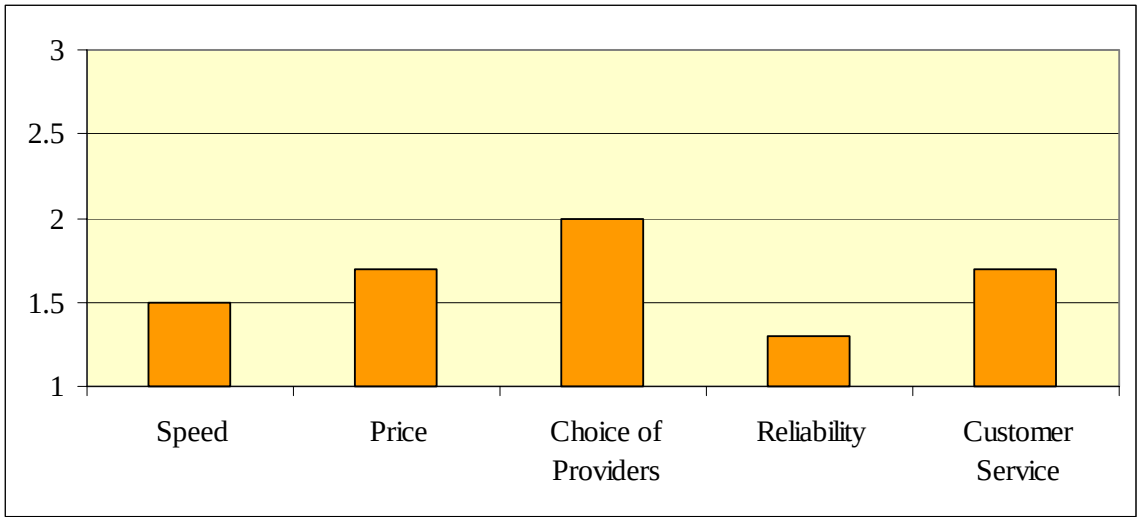
Local governments rated the quality of specific characteristics of existing internet service on a scale of one (satisfied) to three (dissatisfied). On average, local governments seem satisfied with the current internet service in the Mount Rogers Planning District. The choice of providers was the characteristic that received the lowest rating, meaning more local governments are dissatisfied with their options. Similar to educational institutions, local governments were the most satisfied with the speed and reliability of current service. When asked if affordable high-speed internet was available in their locality, 71 percent of the local governments replied with a "Yes."

Chart 12
Local Government Internet Connections
Mount Rogers Planning District
2005
By Type



Source: Mount Rogers Planning District Commission

Chart 13
Quality of Local Government Internet Service
Mount Rogers Planning District
2005
By Characteristic



Source: Mount Rogers Planning District Commission

3.4.2 Future Telecommunications Needs

Only 57 percent of the local governments that responded to the telecommunications survey are expecting a need for increased bandwidth in the future. Those governments are primarily expecting growth within the locality to be the basic factor creating a need for increased capacity. Therefore, this increase in broadband speed is an expected need for the entire community, not just the local government administration office.

The local governments in the Mount Rogers Planning District are not likely to have a strong need for video conferencing capabilities for meetings or online human resources applications; nevertheless, all 14 local governments stated that video conferencing facilities would be beneficial to operations on occasion. Eight of the 14 localities responded that there is a high likelihood that they would use education and training programs delivered via video conferencing or the internet. A majority of the participating

local governments stated that a one-room education/video conferencing facility or classroom would be efficient for their needs. Several of the local governments that responded to the telecommunications survey do not currently have the capability to participate in online training or video conferencing.

Table 10
Likelihood that Local Governments will Subscribe to a New Service Provider
(on a scale of one to three)
Mount Rogers Planning District
2005
By Scenario

The provider offered similar services at current cost, but improved reliability and customer service.	1.6
The provider offered higher speed service at 10 percent higher cost.	1.8
The provider offered higher speed service at 20 percent higher cost.	2.1
The provider packaged voice and high-speed internet for 10 to 15 percent higher than your current service for both.	1.7

Source: Mount Rogers Planning District Commission

The surveyed local governments ranked on a scale of one (high) to three (low) the likelihood that they would subscribe to a new provider in different scenarios. Table 10 shows that there is a possibility the local governments in the Mount Rogers Planning District will pay more for improved internet service. As with the survey businesses, local governments are more likely to switch providers if improved reliability and customer service can be offered at the current price.

3.5 Telecommunications Providers & Gaps

The planning process undertaken to develop this plan attempted to identify the internet service providers operating in the Mount Rogers Planning District, as well as, gaps in service and infrastructure in the district. Additional work is necessary to identify all of the internet service providers operating in the district, and this list should be revised and updated on an on-going basis. Furthermore, a more detail analysis of telecommunications service gaps should be undertaken to document and map broadband infrastructure.

3.5.1 Internet Service Providers

The Mount Rogers Planning District suffers from a lack of service providers that provide basic telephone service, as well as, broadband internet service. The three primary providers of high-speed internet service in the district are Sprint (DSL), Adelphia (cable modem), and Comcast (cable modem). Most of the district is also served by satellite internet service through Dish Network and DirecTV.

A number of local and regional internet service providers operate in the district. These local and regional companies typically provide only dial-up service with local and long distance access numbers. Some of these providers purchase backhaul services from the national providers, most commonly Sprint. The southwestern tip of the district, the City of Bristol and a portion of Washington County, are served by Bristol Virginia Utilities, which provides voice, television, dial-up, and high-speed internet.

Bristol Virginia Utilities is currently expanding service through the Mount Rogers Planning District, along Interstates 81 and 77. With several infrastructure development and expansion projects already underway, Bristol Virginia Utilities received six separate

grant awards from the Virginia Tobacco Indemnification and Revitalization Commission in August 2005. Five of these expansion projects are located in the Mount Rogers Planning District:

- Telecommunications infrastructure expansion to commercial and residential customers in Washington County;
- Expansion of service to businesses in the Town of Abingdon;
- Extension of fiber optic infrastructure from a leased fiber backbone to the Towns of Chilhowie and Saltville in Smyth County;
- Extension of fiber optic infrastructure from a leased fiber backbone to the Mountain Empire Industrial Park located in Smyth County; and
- Development of a fiber optic backbone to connect a leased fiber backbone in Rural Retreat to an existing fiber backbone in the Town of Bluefield, Virginia.

3.5.2 Telecommunications Infrastructure Gaps

While the Bristol Virginia Utilities expansion projects, along with the Town of Independence Fiber Project, will help to close some of the telecommunications infrastructure gaps in the Mount Rogers Planning District, there are several localities that continue to suffer from a lack of available high-speed internet and other advanced telecommunications services. A large portion of the rural areas in the district (primarily residential communities located away from the interstate and major highways) do not have an option for internet access outside of dial-up service. Furthermore, larger localities such as Bland County and the western portion of Grayson County do not have

high-speed telecommunications service, which impedes the recruitment of businesses and industries.

Current conditions in the Mount Rogers Planning District differ from surrounding regions. A number of fiber optic backbones transect the counties in the district, including the fiber backbone owned by American Electric Power and leased by Bristol Virginia Utilities through a grant from the Virginia Tobacco Indemnification and Revitalization Commission. These conditions support a plan that focuses on "last-mile" infrastructure and strong public-private partnerships for backhaul and network management. Local gaps include several towns currently developing Downtown Revitalization plans, such as Marion, Fries, and Hillsville. The Town of Independence Fiber Project will serve as a guide for the development of fiber optic, "last-mile" infrastructure in the smaller communities in the Mount Rogers Planning District.

4 PILOT PROJECT: INDEPENDENCE

The Town of Independence Fiber project serves as the pilot project in the Mount Rogers Planning District. The final network design approved by the town is recommended as a "starting point" for all other "last mile" telecommunications projects in the district. The following narrative describes the Town of Independence Fiber projects, as well as the two network options considered by the town

4.1 Project Description

The Town of Independence, along with a community advisory group, decided that the local economy needed a boost. So in July 2002, with the help of the Mount Rogers Planning District Commission, applications were submitted to the Appalachian Regional Commission and the Virginia Department of Housing and Community Development requesting funds for broadband telecommunications infrastructure within the town. The Independence Community Broadband Network Project, as it came to be named, was a pilot project funded by the Appalachian Regional Commission, the Virginia Department of Housing and Community Development, the Virginia Tobacco Indemnification and Community Revitalization Commission, and local funds. The project was the first in the United States to have both state and federal funding sources, with the total project budget (including all funding sources) totaling $383,472.

The funds made available to Independence were for the construction of a fiber optic infrastructure that would provide a fiber "last mile" backbone for approximately three miles along Main Street in the Town of Independence, including a connection to the Grayson County Industrial Park. The town would procure a contractor to install dark fiber and connect 50 town businesses. A co-location facility would also be built to house

networking hardware needed to maintain the system. Finally, the town would procure professional services to maintain and manage the final product. The completed network would be an open network, meaning bandwidth would be available to any internet service provider interested in serving the community with all forms of telecommunications. A breakdown of the project activities is as follows:

1. Installation of 16,000 linear feet of 48, 36, and 24 strand multi-mode fiber optic cable.
2. Construction of a 200 square foot co-location facility.
3. Installation of electrical equipment.
4. Connect 50 business users to the fiber optic network.

There were several options involved in the implementation of a “last mile” fiber backbone for the Independence project and the town had the fortunate experience of trying all of them. The options included: aerial fiber to be attached to existing AEP and Sprint utility poles; aerial fiber backbone partnered with several wireless radio antennas to provide services to businesses; underground conduit containing blown-in fiber; and finally underground fiber partnered with wireless services. There were also two ways the above options could be reached, procurement of an engineering firm to first design the project and then a second procurement of a contractor to install the fiber (much like a water/sewer project) or procurement of a design-build firm that could implement a turn-key solution to the project.

4.2 Option 1

In November 2002, the town entered into contract negotiations with the Appalachian Regional Commission and the Virginia Department of Housing and Community Development, at which time it was decided to procure a professional firm to design an aerial fiber optic network to include the connection of 50 businesses that would be approved by an advisory board and become the bid documents for professional contractors. The engineering firm would also provide all inspection, negotiate with the utility companies for pole attachments, and handle marketing and negotiations between the town and potential internet service providers. The general consensus of the town and the funding agencies was to treat the project like a water/sewer project, therefore relying on professionals to handle the logistics and construction process.

In January 2003, a request for qualifications was published and on January 24, 2003 the town received four engineering proposals. The proposals were scored and two firms were invited to make presentations to the town advisory board. After hearing presentations and seeing estimated contract amounts it was determined that hiring a design professional would not fit within the project budget.

In April 2003, Independence and the Virginia Department of Housing and Community Development decide a design-build approach would be a cheaper route and save time. On May 2, 2003 a request for proposals for design-build services was published and the town subsequently received seven requests for copies of the request for proposals. On June 6, the town received three bids, the lowest being $276,170.18 for a turn-key solution to construct an aerial fiber backbone with business connections (at the time of bid opening, the total project budget was $283,472). The town hosted a pre-

contract meeting with the contractor and invited representatives from utility companies and local internet service providers in July 2003. The contractor began field reviews and pole counts in July, while the contract negotiations continued. In November, a pre-engineering meeting was held in Independence between the contractor, town representatives, funding agencies, and utility companies. A determination was reached that additional funds were needed to cover the cost of the required 50 business connections. Additional funds were also needed to cover the make ready cost associated with attaching fiber to utility poles. The estimated total make ready cost was $8,500 to attach to 99 poles, while the actual cost presented by the utility companies was approximately $80,000 plus an annual attachment fee.

In January, the Independence Town Council and Mount Rogers Planning District Commission staff decided to submit an application to the Virginia Tobacco Indemnification and Community Revitalization Commission for the additional funding needed to complete the project. The town entered into new contract negotiations with the contractor and it was determined that the installation of new town-owned utility poles along with wireless deployment would be the cheapest method to connect all 50 businesses. A funding application was submitted to the Virginia Tobacco Commission on February 25, 2004; however, on May 17, 2004, the application was denied approval by the Technology Committee of Tobacco Commission. The town manager, along with Mount Rogers Planning District Commission staff, attended several meetings with local politicians and had several conversations with Virginia Tobacco Commission staff over the next four months to finally obtain the additional funds ($100,000) needed to install town-owned utility poles and deploy the wireless portion of the project.

In August 2004, the town, Mount Rogers Planning District Commission staff, and the contractor revised the original budget to include the additional $100,000 from the Virginia Tobacco Commission and develop a plan to begin construction on the wireless portion of the project. The prime contractor hired a subcontractor to begin engineering of the wireless deployment and to negotiate with property owners for tower placement, as well as space on existing towers to mount wireless radios. After receiving verbal approval from one property owner and installing a small tower and radio on the Grayson County courthouse, notification was received by the town that no space will be made available on the existing wireless tower and that one property owner has decided not to donate property to the town for the project. Unfortunately, this information put an abrupt stop to the wireless portion of the project, sending the town and contractor back to the negotiating table.

In October, the Independence town manager and Mount Rogers Planning District Commission staff took a tour of the fiber network under construction in the LENOWISCO Planning District and obtained information on constructing an underground fiber network. The option of underground deployment was then discussed with the prime contractor in Independence and new discussions and budgeting began for the project. In November 2004 it was determined that the existing contractor could not construct an underground network in Independence for the amount of funds currently in the project budget.

4.3 Option 2

In April 2005, the Town of Independence decided to start from scratch and re-advertise for a design-build firm to construct an underground fiber optic network that would run approximately 3.5 miles through the town. The project was to include a spur to the Grayson County industrial park, direct fiber connections to a minimum of 50 businesses, and all electronics and hardware required to run the system. The network was to consist of conduit with blown-in fiber and would use existing space in the Grayson County courthouse as a co-location facility rather than building a separate structure. While the town was waiting for proposals from professional firms, a letter was sent to all 80 businesses within the town limits asking if they were satisfied with the local internet services and if they would be willing to use the new network provided it would be affordable. The rate of response from the questionnaire was greater than 50 percent, which was an increase from the original application in 2002. Only one bid was submitted in response to the advertisement and the bid price was $330,000. The new bid put the project back within the original budget and back on track, as far as having all businesses connected to the network via fiber.

5 REGIONAL PLAN

Based on the information from the survey responses outlined in Section 3 of this plan and the discussion among the Mount Rogers Technology Advisory Committee, the Mount Rogers Planning District Commission has formulated the following regional plan. Goals and recommendations are organized into four primary categories: infrastructure and access, education and training, local government, and community development. A list of priority projects, also grouped into the four primary categories, will serve as the action steps to reach the district's goals.

This plan will be evaluated by staff of the Mount Rogers Planning District Commission on an annual basis. Each year following plan adoption, staff will review the list of projects to identify those that have been completed and readjust priorities. A review of the goals and objectives will take place every three years to ensure the district is up-to-date with changing telecommunications trends.

5.1 Goals and Recommendations

The following goals and recommendations are designed to guide the development of advanced telecommunications infrastructure and applications in the Mount Rogers Planning District on a regional scale. The Mount Rogers Planning District Commission promotes the development of open-access telecommunications networks and advocates the creation of public/private partnerships to ensure the maximum utilization of the telecommunications infrastructure already in place around the district. The Mount Rogers Planning District Commission urges all localities in the planning district to complete a detailed plan focused on network design, management, and marketing prior to

the implementation of last mile construction projects. Upon request, the Mount Rogers Planning District Commission is available to provide technical assistance in telecommunications projects in the region.

5.1.1 Infrastructure and Access

Goal 1: Affordable, high-speed internet is available to all residences, businesses and industries, educational institutions, and local governments in the Mount Rogers Planning District.

Recommendation 1.1: Document and map existing broadband telecommunications infrastructure in the Mount Rogers Planning District.

Recommendation 1.2: Maintain a database of existing internet service providers.

Recommendation 1.3: Support wireless infrastructure projects to expand high-speed internet availability into the rural communities in the district.

Recommendation 1.4: Develop public/private partnerships with local and national service providers to expand available services to all portions of the district.

Recommendation 1.5: Work with adjacent districts to ensure regional connectivity of fiber networks.

Recommendation 1.6: Support localized planning projects for "last mile" infrastructure geared toward affordable broadband accessibility in population and commercial centers.

Recommendation 1.7: Encourage localities in the planning district to incorporate telecommunications into regional and comprehensive planning.

Recommendation 1.8: Support the addition of telecommunications initiatives to Economic Restructuring projects in Downtown Districts.

Recommendation 1.9: Work with an advisory committee to develop a set of "model" guidelines related to telecommunications that can be incorporated into local plans and ordinances.

Recommendation 1.10: Support the adoption of an "open ditch" policy by localities in the Mount Rogers Planning District.

Goal 2: Every household in the Mount Rogers Planning District has access affordable broadband telecommunications services.

Recommendation 2.1: Implement computer purchasing/recycling program to benefit LMI households.

Recommendation 2.2: Create a district-wide standard for community computer labs to guide lab development in each locality.

Recommendation 2.3: Support efforts by BVU and other service providers in the district to create advance services for residential customers.

5.1.2 Education and Training

Goal 1: Citizens in the Mount Rogers Planning District have the understanding and knowledge to effectively use computer and telecommunications technology.

Recommendation 1.1: Support efforts by the public schools systems in the district to adopt technology education standards.

Recommendation 1.2: Encourage Virginia Highlands Community College and Wytheville Community College to support certification programs that will ensure the local workforce is prepared for high-tech job opportunities.

Recommendation 1.3: Work with educational institutions to develop a community-based basic technology course for adults and senior citizens.

Goal 2: Small businesses and entrepreneurs in the Mount Rogers District can operate successfully in the knowledge economy.

Recommendation 2.1: Support the work of organizations such as the Crossroads Institute that are designing programs to ensure entrepreneurs have the technology skills they need.

Recommendation 2.2: Encourage the development of regularly held "mini" courses that address innovative uses of technology to support small businesses.

5.1.3 Local Government

Goal 1: Each local government in the Mount Rogers Planning District provides comprehensive e-government services to citizens.

Recommendation 1.1: Provide technical assistance to local governments in the Mount Rogers Planning District Commission that do not currently have a website or would like to upgrade their current website.

Recommendation 1.2: Research opportunities for local governments in the district to provide online services to citizens.

Recommendation 1.3: Work with local governments to develop and maintain community web portals and online business directories.

Recommendation 1.4: Provide technical assistance to local governments in the planning district to develop user-friendly online GIS systems.

Goal 2: Local government officials have thorough knowledge of the benefits of broadband telecommunications.

Recommendation 2.1: Work with organizations that provide education for local government officials, such as Citizens Planning Education Association of Virginia, to develop a course on technology and to include telecommunications in current planning certification courses.

Recommendation 2.2: Continue to include telecommunications recommendations in local Comprehensive Plans.

5.1.4 Community Development

Goal 1: The Mount Rogers Planning District has an effective and up-to-date presence on the web.

Recommendation 1.1: Develop a regional festivals and events website to market the district as a prime destination for heritage and recreational tourists.

Recommendation 1.2: Provide technical assistance to organizations and clubs that desire a web presence.

Recommendation 1.3: Compile and maintain a district-wide online business directory.

Recommendation 1.4: Research methods to build telecommunications into the district's assets, such as providing free internet access for Appalachian Trail hikers.

Recommendation 1.5: Work with local service providers and artists to webcast concerts and other cultural events in the district, including concerts along The Crooked Road: Virginia's Heritage Music Trail.

5.2 Priority Projects

5.2.1 Planning

1. Carroll County Technology Plan
2. Saltville/Chilhowie Economic Feasibility Study and Business Plan

5.2.2 Infrastructure and Access

1. Town of Independence – Downtown Fiber Project
2. Bristol Virginia Utilities - Mountain Empire Industrial Park, Atkins
3. Bristol Virginia Utilities - Chilhowie and Saltville Fiber Optic Infrastructure Extension
4. Bristol Virginia Utilities – Fiber Optic Backbone Infrastructure from Rural Retreat to Bluefield
5. Bristol Virginia Utilities – Commercial and Residential Telecommunications Infrastructure Expansion in Washington County
6. Bristol Virginia Utilities – Town of Abingdon Commercial Connections
7. Town of Hillsville – Downtown Wireless Project
8. Town of Saltville – Downtown Fiber Project

9. Town of Chilhowie – Downtown Fiber Project
10. Emory & Henry College – Community-wide Wireless Project
11. Town of Marion - Downtown Fiber Project
12. Town of Fries - Downtown Fiber Project
13. Bland County – Countywide Wireless Project
14. Grayson County – Countywide Wireless Project
15. Carroll County – Countywide Wireless Project
16. Smyth County – Countywide Wireless Project
17. Washington County – Countywide Wireless Project
18. Wythe County - Countywide Wireless Project
19. City of Galax - Downtown Fiber Project
20. Existing infrastructure mapping program
21. Internet Service Provider Directory

5.2.3 Education and Training

1. Wythe/Grayson Public Library Business & Technology Program
2. Southwest Virginia Education and Training Network Networking Project
3. Crossroads Institute Entrepreneur Education Programs
4. Basic Computer Course for Adults (Free for LMI participants)
5. Smyth County & Washington County Workforce Development Program

5.2.5 Local Government

1. Technology Road Show-type Education Program for new officials
2. Local Government website program (free/low cost website maintenance)
3. E-government services plan

5.2.3 Community Development

1. Crooked Road Broadcasting
2. District-wide Online Business Directory
3. Mount Rogers District Festival Portal
4. Damascus: Hiker's Broadband

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APPENDIX

A-1. Mount Rogers Technology Advisory Committee Members

Mount Rogers Technical Advisory Committee

	Local Government	Downtown Programs	Education	Library	Healthcare	Industry	ISP
Bland County				Sharon Dempsey	Susan Griever	Charlie Sarver	
Carroll County	Jody Early		Gary Larrowe				
Grayson County	Kenneth Vaught Barbara McArthur		Gary Larrowe				John Ayers
Smyth County	Bill Rush	Ken Heath	Terry Hawthorne	Sharon Dempsey			
Washington County			Clark Fleming				
Wythe County	Alan Hawthorne		David Johnson				
City of Bristol							
City of Galax			Gary Larrowe				

A-2. Memorandum to Local Governments in the Mount Rogers Planning District

MEMORANDUM

To: County Administrators, City Managers, and Town Managers

From: Michael Armbrister, Economic Development Planner

Date: February 22, 2005

Subject: Mount Rogers PDC Regional Telecommunications Plan

In October 2004, the Mount Rogers Planning District Commission was awarded a Telecommunications Initiative grant from the Appalachian Regional Commission to develop a regional telecommunications plan. Through this planning process we hope to identify gaps in last mile infrastructure, education, and applications that prevent access to high-speed, broadband telecommunications. The outcome of this process will be a comprehensive regional telecommunications plan that will provide the foundation for telecommunications projects across the Mount Rogers district, as well as satisfy the requirements of federal and state funding agencies.

The Mount Rogers Technology Advisory Committee held its first meeting on December 8, 2004 to initiate this planning process. The next meeting of the Technology Advisory Committee will be held on **February 28, 2005** at **1:30 pm** at the MRPDC office. At this meeting we will be reviewing the telecommunications surveys that have been developed for this project. Each local government is encouraged to participate in this planning process through an open invitation to every Technology Advisory Committee meeting. Furthermore, we would appreciate the assistance of each local government in completing a local government telecommunications survey that will be sent out within the next few weeks.

Please contact Michael Armbrister or Brian Reed if you have any questions.

marmbrister@mrpdc.org
breed@mrpdc.org

A-3. Residential Telecommunications Survey

Telecommunications Needs Assessment

Residential Survey

1. In what county do you live? _____

2. In what town do you live? _____

3. Does your home have a computer? ☐ Yes ☐ No

4. If you checked NO to question 3, please identify reasons why.
   ☐ No need for a computer ☐ Don't know how to use one
   ☐ Can't afford one ☐ Can access one elsewhere

   ☐ Other: _____

5. Do you have internet access? ☐ Yes ☐ No

6. If you checked YES to question 5, who is your internet provider and how much do you pay per month?

   _____

7. If you checked NO to question 5, please identify reasons why.
   ☐ No need for the internet ☐ Don't know how to use it ☐ Lack of service
   ☐ Can't afford it ☐ Can access elsewhere

   ☐ Other: _____

8. On average, how much time do you spend on the internet at home?
   ☐ One hour or more each day
   ☐ Between one hour per day and one hour per week
   ☐ Less than one hour per week
   ☐ None

9. At home, how do you typically use the internet? Check all that apply.
   ☐ Entertainment/gaming ☐ Research ☐ Business
   ☐ Shopping ☐ Hobbies ☐ Email
   ☐ Education ☐ News/weather

   ☐ Other: _____

10. Indicate your level of satisfaction with the following characteristics of your internet service. (1 is very satisfied and 5 is very dissatisfied.)

	1	2	3	4	5
a. Speed of operation……	☐	☐	☐	☐	☐
b. Price of service…..…….……	☐	☐	☐	☐	☐
c. Choice of providers……	☐	☐	☐	☐	☐
d. Reliability……..……	☐	☐	☐	☐	☐
e. Customer service……	☐	☐	☐	☐	☐

11. If the following information from your town, county, or other sources were provided electronically over the internet, which ones would you be likely to access? Check all that apply.
   ☐ Meeting notices, agendas, minutes
   ☐ Community library catalogs and electronic library resources
   ☐ Property tax records
   ☐ Maps (GIS, land use, or directions)
   ☐ Business listings in the community
   ☐ Job opportunities in the community
   ☐ Rules, regulations, and ordinances
   ☐ Weather and road conditions

   ☐ Other: _____

12. Do you plan to start an internet-based business in the next two to three years?
   ☐ Yes
   ☐ No
   ☐ Already have an internet-based business

13. Is affordable high-speed internet available at your house? ☐ Yes ☐ No

A-4. Business Telecommunications Survey

Telecommunications Needs Assessment

Business Survey

Background information:

1. What is the name of your business?

   _____

2. Please list a contact person for your business.

   _____

3. Contact person's phone number?

   _____

4. Contact person's email address?

   _____

5. Select the type of organization that best fits your business.

☐ Agriculture, forestry, fishing, or mining	☐ Public utility	☐ Finance, insurance, or real estate
☐ Construction	☐ Wholesale Trade	☐ Education
☐ Non-profit	☐ Retail Trade	☐ Healthcare
☐ Manufacturing	☐ Telemarketing	

   ☐ Other: _____

6. How many employees work at your location? _____

7. How many computers are used at your location? _____

8. Is your organization connected to the internet? ☐ Yes ☐ No

9. If you checked YES to question 8, who is your internet provider and how much do you pay per month?

   _____

10. Where are telecommunications decisions made in this organization?

☐ Local
☐ Non-local

Current Telecommunications Services:

11. What type of service provider do you have for the following services?

	Telephone Company	Satellite Provider	Cable Company	Internet Service Provider	Not Applicable
a. Basic telephone service	☐	☐	☐	☐	☐
b. Multiple-line phone system	☐	☐	☐	☐	☐
c. TV programming	☐	☐	☐	☐	☐
d. Dial-up internet	☐	☐	☐	☐	☐
e. Cable modem internet	☐	☐	☐	☐	☐
f. DSL	☐	☐	☐	☐	☐

12. What is your current telecommunications capacity?
☐ Dial-up connection
☐ DSL / Cable Modem
☐ T-1
☐ Multiple T-1 to DS3
☐ Greater than DS3
☐ Don't know
☐ Not connected to internet service

13. How satisfied are you with the following characteristics of your current telecommunications service?

	Satisfied	Neutral	Dissatisfied	Not Applicable
a. Speed of operation	☐	☐	☐	☐
b. Price of services	☐	☐	☐	☐
c. Customer service	☐	☐	☐	☐
d. Reliability	☐	☐	☐	☐
e. Choice of providers	☐	☐	☐	☐

14. Is affordable high-speed internet available at your location? ☐ Yes ☐ No

15. Do you expect you will need additional capacity in the future? ☐ Yes ☐ No

16. If you checked YES to question 14, why will your organization require additional capacity?

_____

Business Applications:

17. If high-speed connections were available, how likely is it that you would use the following applications?

	High	Neutral	Low	Currently Use
a. Video conferencing for meetings with other offices of your company	☐	☐	☐	☐
b. Video conferencing for meetings with your customers and suppliers	☐	☐	☐	☐
c. Education and training delivered via video conferencing or the web	☐	☐	☐	☐

18. If video conferencing facilities (e.g., room, equipment, connections) were available for your use, how often would you use them?
☐ Frequently ☐ Sometimes ☐ Rarely ☐ Never

19. If high-speed connections were available to employees from home, would your organization allow telecommuting?
☐ Yes ☐ No ☐ Already allow ☐ Uncertain

20. Do you plan to have a website over the next two years?
☐ Yes ☐ No ☐ Currently have a website ☐ Uncertain

21. What is the likelihood that your business will use the internet in the following ways in the next two years?

	High	Neutral	Low	Currently Use
a. Create/maintain a website to provide information about products and services	☐	☐	☐	☐
b. Access information (suppliers, competitors, other)	☐	☐	☐	☐
c. Engage in business-to-business electronic commerce	☐	☐	☐	☐
d. Engage in retail electronic commerce to consumers	☐	☐	☐	☐
e. Develop and market new products exclusively via the internet	☐	☐	☐	☐
f. Recruit employees	☐	☐	☐	☐
g. Provide technical support and service to customers	☐	☐	☐	☐

22. If another service provider were to offer telecommunications services (voice, video, data) to your organization, what is the likelihood that you would subscribe with the new provider if…

	High	Neutral	Low
a. The provider offered similar service at current cost, but improved reliability and customer service	☐	☐	☐
b. The provider offered higher speed service at 10 percent higher cost	☐	☐	☐
c. The provider offered higher speed service at 20 percent higher cost	☐	☐	☐
d. The provider packaged voice and high-speed internet service for 10 to 15 percent higher than your current cost for both	☐	☐	☐

23. If you had access to high-speed, broadband internet service at a competitive price, would it be useful in your business?
☐ Yes ☐ No

A-5. Example of the Press Releases used to Market Residential and Businesses Surveys

NEWS RELEASE

DATE: March 22, 2005
FROM: Brian Reed, Public Administration Specialist/Planner
TO: Local news editors

SUBJECT: Mount Rogers District Telecommunications Survey

If you are concerned about the cost of high-speed internet, then you are invited to participate in the Mount Rogers District Telecommunications Survey! The Mount Rogers Planning District Commission is collecting information about telecommunication needs in our district, which includes the Counties of Bland, Carroll, Grayson, Smyth, Washington, and Wythe and the Cities of Galax and Bristol. Results of the survey will be incorporated into a regional community telecommunications plan that will guide the development of broadband telecommunications across the district.

Surveys will be accepted through **MAY 31, 2005** and can be accessed through a link on the home page of the Mount Rogers Planning District Commission website (www.mrpdc.org). Paper copies of the survey can be requested at the Mount Rogers Planning District Commission office or by calling 276-783-5103.

Every resident and business owner in the Mount Rogers district is encouraged to participate!

A-6. Education Telecommunications Survey

Telecommunications Needs Assessment

Education Survey

Background information:

1. Name of organization: _____
2. Contact person's name: _____
3. Phone number: _____
4. Email address: _____
5. Type of organization:
   ☐ School District ☐ Higher Education ☐ Private School

   ☐ Other: _____
6. How many employees work at this location? _____
7. How many computers are used at this location? _____
8. Is your organization connected to the internet? ☐ Yes ☐ No
9. If you checked YES to question 8, who is your internet provider and how much do you pay per month?

   _____

Current Telecommunications Services:

10. What type of service provider do you have for the following services?

	Telephone Company	Satellite Provider	Cable Company	Internet Service Provider	Not Applicable
a. Basic telephone service	☐	☐	☐	☐	☐
b. Multiple-line phone system	☐	☐	☐	☐	☐
c. TV programming	☐	☐	☐	☐	☐
d. Dial-up internet	☐	☐	☐	☐	☐
e. Cable modem internet	☐	☐	☐	☐	☐
f. DSL	☐	☐	☐	☐	☐

g. Other:_____

11. What is your current telecommunications capacity?
    - ☐ Dial-up connection
    - ☐ DSL / Cable Modem
    - ☐ T-1
    - ☐ Multiple T-1 to DS3
    - ☐ Greater than DS3
    - ☐ Don't know
    - ☐ Not connected to internet service

12. How satisfied are you with the following characteristics of your current telecommunications service?

	Satisfied	Neutral	Dissatisfied	Not Applicable
a. Speed of operation	☐	☐	☐	☐
b. Price of services	☐	☐	☐	☐
c. Customer service	☐	☐	☐	☐
d. Reliability	☐	☐	☐	☐
e. Choice of providers	☐	☐	☐	☐

13. Is affordable high-speed internet available at your location? ☐ Yes ☐ No

14. Do you expect you will need additional capacity in the future? ☐ Yes ☐ No

15. If you checked YES to question 14, why will your organization require additional capacity?

    _____

Educational Applications:

16. What is the likelihood that you would use the following applications, if they were available?

	High	Neutral	Low	Currently Use
a. Delivering or receiving real-time classroom instruction to other buildings within the district	☐	☐	☐	☐
b. Delivering or receiving real-time classroom instruction from outside this district	☐	☐	☐	☐
c. Allowing real-time access to instruction by students from their homes	☐	☐	☐	☐
d. Allowing remote instruction using video (i.e., video on demand)	☐	☐	☐	☐
e. Delivering educational information via the internet	☐	☐	☐	☐

Other applications:_____

17. If you were to provide or receive remote instruction applications, about how many classrooms (or other rooms) would be in use at the same time?
☐ None ☐ One ☐ Two to five ☐ Six or more

18. How often might your staff and students use these resources from their buildings?

	Frequently	Sometimes	Rarely	Never
a. The library catalog	☐	☐	☐	☐
b. Electronic reference material	☐	☐	☐	☐
c. Video on specific topics	☐	☐	☐	☐
d. Community bulletin board	☐	☐	☐	☐

h. Other:_____

19. Which of the following information would you like to make available to parents and students at their home via the internet?

	Yes	Uncertain	No	Currently Use
a. Homework	☐	☐	☐	☐
b. Grades	☐	☐	☐	☐
c. School work	☐	☐	☐	☐
d. Library resources	☐	☐	☐	☐
e. School activities	☐	☐	☐	☐

h. Other:_____

20. For higher education institutions, please identify all technical programs, courses, and/or certifications currently offered or in development.

21. Are there any additional technical or telecommunications issues that your organization struggles to overcome?

A-7. Local Government Telecommunications Survey

Telecommunications Needs Assessment

Government Survey

Background information:

1. Name of locality: _____
2. Contact person's name: _____
3. Phone number: _____
4. Email address: _____
5. How many employees work at this locality? _____
6. How many computers are used at this locality? _____
7. Is your organization connected to the internet? ☐ Yes ☐ No
8. If you checked YES to question 7, who is your internet provider and how much do you pay per month?

   _____

Current Telecommunications Services:

9. What type of service provider do you have for the following services?

	Telephone Company	Satellite Provider	Cable Company	Internet Service Provider	Not Applicable
a. Basic telephone service	☐	☐	☐	☐	☐
b. Multiple-line phone system	☐	☐	☐	☐	☐
c. TV programming	☐	☐	☐	☐	☐
d. Dial-up internet	☐	☐	☐	☐	☐
e. Cable modem internet	☐	☐	☐	☐	☐
f. DSL	☐	☐	☐	☐	☐

g. Other:_____

10. What is your current telecommunications capacity?
    - ☐ Dial-up connection
    - ☐ DSL / Cable Modem
    - ☐ T-1
    - ☐ Multiple T-1 to DS3
    - ☐ Greater than DS3
    - ☐ Don't know
    - ☐ Not connected to internet service

11. How satisfied are you with the following characteristics of your current telecommunications service?

	Satisfied	Neutral	Dissatisfied	Not Applicable
a. Speed of operation	☐	☐	☐	☐
b. Price of services	☐	☐	☐	☐
c. Customer service	☐	☐	☐	☐
d. Reliability	☐	☐	☐	☐
e. Choice of providers	☐	☐	☐	☐

12. Is affordable high-speed internet available at your location? ☐ Yes ☐ No

13. Do you expect you will need additional capacity in the future? ☐ Yes ☐ No

14. If you checked YES to question 14, why will your organization require additional capacity?

    _____

Local Government Applications:

15. If high-speed connections were available between city, county, education, and other government agencies, what is the likelihood that you would use the following applications?

	High	Neutral	Low	Currently Use
a. Video conferencing for meetings and hearing	☐	☐	☐	☐
b. Human resources applications	☐	☐	☐	☐
c. Education and training delivered via video conferencing or the internet	☐	☐	☐	☐

    d. Other applications:_____

16. If you were to provide or receive remote instruction applications, about how many classrooms (or other rooms) would be in use at the same time?
    ☐ None ☐ One ☐ Two to five ☐ Six or more

17. If video conferencing facilities (e.g., room, equipment, connections) were available for your use, how often would you use them if the facility is …

	Frequently	Sometimes	Rarely	Never
a. on your premises	☐	☐	☐	☐
b. within the community	☐	☐	☐	☐

18. If another service provider were to offer telecommunications services (voice, video, data) to your locality, what is the likelihood that you would subscribe with the new provider if…

	High	Neutral	Low
a. the provider offered similar services at current cost, but improved reliability and customer service	☐	☐	☐
b. the provider offered higher speed service at 10 percent higher cost	☐	☐	☐
c. the provider offered higher speed service at 20 percent higher cost	☐	☐	☐
d. the provider packaged voice and high-speed internet service for 10 to 15 percent higher cost	☐	☐	☐

e. Other:_____

19. Are all governmental departments in your locality networked?
☐ Yes ☐ No

20. Please provide a detailed breakdown of computer hardware and software used in each governmental department. An example from the "Technology and Telecommunications Master Plan for Tazewell County, Virginia" has been attached.

A-8. Memorandum for Local Government Telecommunications Survey

MEMORANDUM

To: County Administrators, City Managers, and Town Managers
From: Brian Reed, Public Administration Specialist/Planner
Date: March 22, 2005

Subject: Mount Rogers District Telecommunications Plan – Local Government Surveys

The Mount Rogers Planning District Commission is collecting information about telecommunication needs in our district, which includes the Counties of Bland, Carroll, Grayson, Smyth, Washington, and Wythe and the Cities of Galax and Bristol. Results of the survey will be incorporated into a regional community telecommunications plan that will guide the implementation of advanced communications infrastructure and applications across the district. The community telecommunications plan will also be submitted to various funding agencies as a requirement for grant funding.

A significant piece of the plan will be an evaluation of the telecommunications needs and capabilities of our local governments. Your participation is critical for the success of our planning process! Without your support and assistance, we will not be able to adequately represent your locality in the regional plan. Without adequate representation, your locality will not be eligible to apply for telecommunications grant funds from several funding agencies.

The deadline for survey completion is **MAY 31, 2005**. If you have questions about the survey or this planning process please contact Brian Reed (breed@mrpdc.org) or Michael Armbrister (marmbrister@mrpdc.org).

A-9. Local Government Computer Assessments

Bland County:

- Social Services – Six to eight workstations working on an isolated network that is connected to VITA for internet access and access to state systems.

- Sheriff's Office – Two to three workstations that utilize dial-up for internet access. This office is not connected to the main network.

- Courthouse Building – Approximately six workstations connected to the administration building via fiber.

- Administration Building – AS/400 Server with tape backup and battery backup, Cisco 2600 Router (56k leased line to VITA), SonicWall Pro 100 firewall, eight workstations with a variety of operating systems, and several local printers.

Carroll County:

- County Administrator's Office – The Carroll County Administrator's Office has five computer workstations, between one and three years of age, by various manufacturers, all running Windows XP for an operating system. Most of the county administrator's office computers are networked into the local area network and use high-speed internet access through a private internet service provider.

- Assessor's Office – The Carroll County Assessor's Office has five computer workstations, by various manufacturers, all using Windows XP for their operating system, and a server using Windows 2000. The server and two of the computers are two years old, and three other computers are one, three, and five years old. The assessor's office computers are networked into the local area network and are also wirelessly networked. The assessor's office uses high-speed internet access through a private internet service provider.

- Building Inspector's Office – The Carroll County Building Inspector's Office has three computer workstations of varying age, capability, and manufacturer. Two computers use Windows 98 and are six to seven years old, and one computer uses Windows XP and is three years old. The building inspector's office is not networked and uses high-speed internet access through a private internet service provider.

- Clerk of the Circuit Court – The Clerk of the Circuit Court has nine computer workstations, of varying ages and manufacturers, using Windows 98 and Windows 2000. Their specialty hardware and software is maintained by the

Supreme Court of Virginia. The Clerk of the Circuit Court also uses high-speed internet access through a private internet service provider.

- Commissioner of Revenue – The Office of the Commissioner of Revenue for Carroll County has eight computer workstations, six of which are under a year old and run Windows XP. The other two computers are approximately six to seven years old and run Windows 98. The commissioner's office computers are networked into the local area network and use high-speed internet access through a private internet service provider.

- Emergency Medical Services – The Carroll County Emergency Medical Services' primary office is located off-site (not within the Carroll County Governmental Complex) and has three computer workstations, with ages between one and three years, by various manufacturers. Two of these computers use Windows XP and one uses Windows 98 for their operating system. This office uses a dial-up internet service provider.

- Mountain View Youth & Family Services – Mountain View Youth & Family Services, the Carroll County Office on Youth, is located off-site and has three computer workstations, with ages between one and three years, by various manufacturer, all of which use Windows XP and are networked. This office uses DSL provided by the telephone company for internet access.

- Public Service Authority – The Public Service Authority has two office locations, one within Carroll County Governmental Complex and one off-site. Within the Carroll County Governmental Complex, the Public Service Authority has three computer workstations two years old, with are networked. Some of these computers use high-speed internet access through a private internet service provider while one uses a dial-up internet service provider.

  The Public Service Authority has an additional five computer workstations of approximately ten years in age by various manufacturers at their office locations. Three of these computers use Windows 98 and two use Windows XP for their operating system. This office uses a dial-up internet service provider.

- Sheriff's Office – The Carroll County Sheriff's Office has 17 computer workstations and a server, manufactured by a variety of vendors, mostly under three years of age. Fifteen of the computers run Windows XP and two run Windows 98. Software applications include a computer aided dispatch, and proprietary VCI/NCIC and Dapro. The Sheriff's Office maintains a VCI/NCIC server on a fiber connection. The Sheriff's Office uses DSL provided by a telephone company for internet access.

- Southwest Virginia Farmers' Market – The office for the Southwest Virginia Farmers' Market is located off-site, near I-77 and US 58, and has two computers,

two years in age running Windows XP, one with XP Home Edition and one with XP Professional Edition. The Southwest Virginia Farmers' Market uses a wireless high-speed internet access through a private internet service provider.

- Treasurer – The Carroll County Treasurer's Office has six computer workstations approximately three to four years in age by various manufacturers, all using Windows XP for their operating system. Their software includes a proprietary accounting application. The treasurer's office computers are networked into the local area network and use high-speed internet access through a private internet service provider.

- Other County Offices – Other county offices include Carroll County Animal Control, Carroll County Office of Tourism, Carroll County Resource Development Office, and the Carroll County Victim Witness Program. These offices have computers varying in age, capability, and manufacturer.

  Carroll County Animal Control has one six year old computer running Windows ME and high-speed internet access through a private internet service provider.

  The Carroll County Office of Tourism is located off-site, has a one year old HP computer running Windows XP, using DSL provided by the telephone company for internet access.

  The Carroll County Resource Development Office has a one and a half year old HP computer running Windows XP, wirelessly networked, using DSL provided by a private internet service provider.

  The Carroll County Victim Witness Program also has a one year old computer running Windows XP and using DSL provided by a private internet service provider.

Smyth County:

- Information Systems – The Information Systems Department is located at the Smyth County Office building on the ground floor. There are three workstations in this office running Window 2000 and higher. All workstations are networked through a Local Area Network. We have three servers for internet, email, GIS, and backup. Our main frame is an IBM AS/400. Our Wide Area Network consists of encrypted wireless communications between our Smyth County Office Building and the Smyth County Courthouse and Sheriff's Department. We have several encrypted wireless connections at the Sheriff's Department for mobile laptops in vehicles. We also share a DS3 line with the School Board for internet access and a T1 line to VITA to connect with the state. We are linked with all three towns using VPN connections and also with our Solid Waste Department

using a standard dial-up connection. We use a CISCO PIX for security, Symantec Antivirus, and GFI Mail Essentials for SPAM. This department has internet and email access. Information about this department can be accessed from the county's website. This department is responsible for all technical support throughout the county.

- Board of Supervisors – The Board of Supervisors meets monthly at the Smyth County Office Building. Since fall of 2000, the Smyth County Board of Supervisors has used laptop computers for board meetings and other public meetings as needed. Our board room has a wireless connection which provides network, internet, and email services. However, we are currently looking to upgrade from dial-up use from home to a DSL connection with a local cable company. Our board room also has been equipped with one laptop and two projectors for board meetings and presentations. The application used for recording meetings is FTR Gold. Other applications are Microsoft Office. The county's Information Systems Department handles all technical support.

- County Administration – The Administrative Department is located at the Smyth County Office Building on the ground floor. There are five workstations in this office running Windows 2000 or higher. All workstations are networked through our Local Area Network and also a T1 connection with VITA for the State Compensation Board. The applications used are from our IBM AS/400 which has the Bright & Associates package and Carolina Software for Solid Waste billing. Other applications are from Microsoft Office and Adobe. This office has internet and email access. Information about this office and forms for employment can be obtained from our county website. The county's Information Systems Department handles all technical support.

- 911 Department – The 911 Department is located at the Smyth County Office Building on the ground floor. There is one workstation running Windows 2000. This workstation is networked through our Local Area Network and also through our Wide Area Network through wireless communications to our Dispatch Office located at the Courthouse on the ground floor. This office does daily maintenance on the GIS maps for the county. This office sends highly sensitive encrypted information on a daily basis to our 911 dispatchers. This includes police, fire, and rescue. The applications used are ESRI ArcView and Microsoft Office. This office has internet email access. Information about this office can be access from our county website. The county's Information Systems Department handles all technical support.

- Water/Sewer Department – The Water/Sewer Department is located at the Smyth County Office Building on the ground floor. There are four workstations in this office running Windows 2000 or higher. All workstations are networked through our Local Area Network. The applications used are from our IBM AS/400 which has the Bright & Associates package. This office is linked with our Planning/GIS

Department for sharing map information using ESRI ArcReader. Other applications are from Microsoft Office. This office has internet and email access. Information about this department can be accessed from the county's website. The county's Information Systems Department handles all technical support.

- Building Inspection – The Building Inspection Department is located at the Smyth County Office Building on the ground floor. There are four workstations in the office running Windows 2000. All workstations are networked through our Local Area Network. The applications were designed in-house for permits and reports. This department works very closely with the Zoning Department and it is linked with our Planning/GIS Department for sharing map information using ESRI ArcView. Other applications are from Microsoft Office. This office has internet and email access. Information about this department can be accessed from the county's website. The county's Information Systems Department handles all technical support.

- Zoning Department – The Zoning Department is located at the Smyth County Office Building on the ground floor. There are two workstations in the office running Windows 2000 and higher. All workstations are networked through our Local Area Network. The applications were designed in-house for permits. This department works very closely with the Building Inspection Department and it is linked with our Planning/GIS Department for sharing map information using ESRI ArcView. Other applications are from Microsoft Office. This office has internet and email access. Information about this department can be accessed from the county's website. The county's Information Systems Department handles all technical support.

- Planning/GIS Department - The Planning/GIS Department is located at the Smyth County Office Building on the 4th floor. There are three workstations in the office running Windows 2000 and higher. All workstations are networked through our Local Area Network. The applications are Microsoft Office and ESRI ArcView. This department is linked with most of our other departments to share map information. This office also creates and does daily maintenance on the GIS maps. This office has internet and email access. Information about this department can be accessed from the county's website. The county's Information Systems Department handles all technical support.

- Engineering Department – The Engineering Department is located at the Smyth County Office Building on the 4th floor. There are two workstations and one laptop in the office running Windows 2000 and higher. All workstations and laptops are networked through our Local Area Network. The applications are Microsoft Office and ESRI ArcReader. This office has internet and email access. Information about this department can be accessed from our county website. The county's Information System Department handles all technical support.

- CSA Office - The CSA Office is located at the Smyth County Office Building on the 4th floor. There is one workstations in the office running Windows 2000. This workstation is networked through our Local Area Network. The applications are Microsoft Office. This office has internet and email access. Information about this department can be accessed from our county website. The county's Information System Department handles all technical support.

- Registrar's Office - The Registrar's Office is located at the Smyth County Office Building on the ground floor. There are two workstations in the office running Windows 2000. All workstations and laptops are networked through our Local Area Network. They are also routed through VITA to connect with the State Board of Elections. The applications are Microsoft Office. This office has internet and email access. Information about this department can be accessed from our county website. The county's Information System Department handles all technical support.

- Treasurer's Department - The Treasurer's Department is located at the Smyth County Courthouse on the 1st floor. There are five workstations in the office running Windows 2000 and higher and six dumb terminals. All workstations and dumb terminals are networked through our Wide Area Network connection and also our T1 connection to VITA for the State Compensation Board. The applications used are from our IBM AS/400 which has the Bright & Associates package. This office has internet and email access. Information about this department can be accessed from our county website. The county's Information System Department handles all technical support.

- Commissioner of Revenue - The Commissioner of Revenue's Office is located at the Smyth County Courthouse on the 2nd floor. There are six workstations in the office running Windows 2000 and higher. All workstations are networked through our Wide Area Network connection and also our T1 connection to VITA for the State Compensation Board and Department of Motor Vehicles. The applications used are from our IBM AS/400 which has the Bright & Associates package that's used for personal property. The real estate system was designed in-house and is housed on our AS/400. Other applications are Microsoft Office. This office works very closely with the Clerk of the Circuit Court and is linked to their network. This office also works very closely with the Treasurer's Department and is linked using the Bright & Associates package. This office has internet and email access. Information about this department can be accessed from our county website. The county's Information System Department handles all technical support.

- Commonwealth Attorney/Victim Witness Office - The Commonwealth Attorney's Office and Victim Witness Office is located at the Smyth County Courthouse on the 1st floor. There are eight workstations in the office running Windows 2000 and higher. All workstations and dumb terminals are networked through our

Wide Area Network connection and also our T1 connection to VITA for the State Compensation Board. The Virginia State Police also have a T1 line for connection and they connect to the Supreme Court via internet. This office works very closely with the Sheriff's Department and is also networked to them to access the Southern Software package. The applications used are Microsoft Office and CaseFinder. This office has internet and email access. Information about this department can be accessed from our county website. The county's Information System Department handles all technical support.

- Sheriff's Department – The Sheriff's Department is located directly behind the Smyth County Courthouse. This department also has their 911 Dispatch Center located on the ground floor of the Smyth County Courthouse. Currenlty the numbers of workstations vary due to the newly instated Regional Jail. We have a domain controller, backup server, and a voice recorder server. All workstations are networked through our Wide Area Network connection. There are 17 laptops for mobile use in vehicles which connected through various encrypted wireless connections. The applications used are the Southern Software package, ArcView, Microsoft Office, VISIO, Swanson Cobra Banker Software, and Exegetics. Applications used through the State Compensation Board are LIDS and SNIPS/COIN. Applications used through the Virginia State Police are LiveScan, SNIPS, and GEOlynx. Applications used through the Mountain Empire Criminal Justice Information Network (MECJIN) database is SmartPass. Information about this department can be accessed from our county website. The county's Information System Department handles all technical support.

- Animal Shelter – The Smyth County Animal Shelter is located in Seven Mile Ford. Currently, there are four workstations in the office running Windows 98 & Windows NT. We are in the process of replacing these units with new machines running Windows XP. This office uses dial-up in order to have internet and email access. The applications used are Microsoft Office. Information about this department can be accessed from our county website. The county's Information System Department handles all technical support.

- Solid Waste Department – The Solid Waste Department is located off Highway 107 in Chilhowie. Currently, there is only one workstation in this office running Windows 2000. This office uses dial-up in order to have internet and email access. Also, this department is linked to our County Administrator's office through PC Anywhere. The applications used are Carolina Software WasteWorks and Microsoft Office. Information about this department can be accessed from our county website. The county's Information System Department handles all technical support.

Washington County:

- County-wide Standards – All offices use the Microsoft Office Suite for desktop applications. Outlook Web Access is available for email access away from the desk. All the computers are running Microsoft Windows 2000.

  Most of our desktop hardware is on a three to four year replacement schedule. As machines are purchased with the latest enhancements, they are placed on power user's desks. The less powerful machines are then filtered down through the system. This strategy allows us to better utilize the county's technology resources by allowing the faster, larger computers to always be where they are needed the most.

  The IS department is responsible for the administration and support of the entire county network.

- Board of Supervisors – Each supervisor uses a laptop for desktop and internet access to their county email. They receive their meeting and agenda packets on CD for preview. While in their meeting room, they connect to the local area network and use the latest, revised version of the agenda and meeting materials.

  Local area network connections are available at each supervisor's station, the press table, podium and executive meeting room. A 60 inch plasma panel is available for display of presentations and can be controlled from the staff section of the board platform.

  Meetings are recorded with a digital video recorder attached to the local area network. Recordings can be accessed with proper security clearance from any networked station in the administration building.

- County Administrator & County Attorney – These offices are located in the Administration Building at 205 Academy Drive. Each county executive is equipped with a laptop computer. These laptop connects to the local area network via a docking station at their desk or direct connection to any jack in the network. Their support staffs have either desktop or laptop systems depending on their need to work at multiple locations in the building.

  This office uses the county website to update announcements, maintain the master calendar and add relevant downloadable forms documents. They also maintain the searchable meetings agendas and minutes archives.

  Their suite contains a laser color copier with scan capabilities as well as ink jet and laser printers to meet their publishing needs.

- Assistant county Administrator/Economic Development – This office is located in the Administration Building at 205 Academy Drive. The executive is equipped with the laptop configuration described earlier. When out of the office, the

manager uses a Blackberry communication device with a stand-alone interface to redirect emails.

Both manager and staff have access to specialized Geographic Information System software for printing and publishing custom maps for economic development. They also have access to a large format color plotter for presentation mapping.

- Accounting/Purchasing/Personnel – These offices are located in the Administration Building at 205 Academy Drive. The main financial software package used by the county is Bright & Associates, Inc. Municipal Software Package. All workstations have the ability to connect to the county's IBM i5 midrange computer located downtown in the Treasurer/Commissioner Building. A T1 communication line connected to the CISCO switch network provides connection redundancy to the main i5 in the event the fiber link through Abingdon would be offline.

- Recycling and Special Projects – This department is located in the Administration Building at 205 Academy Drive and uses the standard desktop configuration.

- Planning – This office is located in the Administration Building and uses the standard desktop configuration as well as special GIS software for producing maps and analyzing development plans.

- Building Inspection and Zoning Administration – This office is located in the Administration Building at 205 Academy Drive. Zoning manager uses the laptop configuration described in prior departments. Staff uses the standard desktop configuration as well as connection to the i5 computer for the Bright building inspection software. The department also uses special GIS software for permit analysis.

  The field personnel use Global Positioning Systems to map footprints of new construction, new driveways, and E911 address generation data.

- Emergency Services – The department is located in the Administration Building at 205 Academy Drive and uses standard desktop configuration as well as special GIS software to aid in servicing taxpayer inquires concerning street names, E911 addressing, etc.

- General Services – This department's manager is located in the Administration Building at 205 Academy Drive and uses standard desktop configuration.

- Recreation – This department's manager is located in the Valley Street Building and uses standard desktop configuration.

- Solid Waste – A transfer station is located in the Bristol/Washington County Industrial Park. Solid Waste personnel use standard desktop configuration and attach to the internet via a dial-up interface for email retrieval with Outlook Web Access. The main transfer station uses a software system connected to the main truck scales for transaction recording and ticket generation. Daily and monthly reports are generated from this system. The information is passed to the accounting department for solid waste billing procedures once a month.

- Information Systems – The department is located in the Administration Building. IS includes both GIS and regular computer system management of personnel and support tasks. IS provides support and services for all county administration, treasurer, and commissioner hardware and software. Supplemental support is also provided to the public safety, library, and school board IS departments upon request. IS provides technical consulting to all administrative departments and most constitutional offices. IS serves as either the project manager or a member of the project team of all hardware and software system projects.

  IS connects to the local area network as well as the total wide area network for system implementation and support. Connection to local and remote Microsoft servers is available with Microsoft terminal services. All firewalls are maintained using remote access software plug-in with Microsoft Management Console. The remote Linux servers are maintained with secure shell terminal services software.

  The department maintains equipment including projector, laptops, plasma panels, wireless cards and hardware for "check-out" availability to all county departments. IS also maintains software/hardware inventory and license tracking.

  IS maintains network rooms in the Administration Building, Treasurer/Commissioner Building, Valley Street Building, and the Courthouse. The Administration Building houses three servers. Treasurer/Commissioner Building houses four servers and the IBM i5 computer. The Valley Street Building houses one file server.

  The GIS maps are used in almost every department and agency in the county. The GIS side of IS provides development, support, training, and vision for new and innovative ways for the county to maximize its investment in GIS technology.

- Treasurer and Commissioner of Revenue – Located in the Main Street Building, these constitutional offices use the IBM i5, Bright software for most of the software application needs. Desktop configurations are standard. They use laser check printing software and printers to publish all checks written within the county.

  They are both connected to the Department of Taxation and Department of Motor Vehicles via a Frame Relay connection to Richmond.

The real estate transfer office of the Commissioner uses specialized GIS software for analysis purposes. Information Systems supplies and support two public access terminals for using the specialized GIS software in the transfer office.

- Public Safety – The Washington County Sheriff's main office is located on Park Street. Central Dispatch is located in the Valley Street Building. Animal Control is located out of Abingdon and connects via a dial-up line. The Sheriff has an Information Technology department that works closely wit the county's IS staff on major purchases, cost justifications, and system implementations.

  The Sheriff is connected to the county's wide area network via a VPN for safety security. The department has the following applications in place:

  - Records management system (SQL-based server in the Park Street Building)
  - Imaging system
  - CAD system tied to the county's GIS mapping
  - CISCO VoIP Call Manager System in main campus area
  - Interact E911 switch in the Valley Street Building
  - Computerized touch screen phones in Dispatch
  - VCIN connection over leased lines to Richmond

- Courthouse – The court systems (juvenile, district, and circuit) and the Commonwealth Attorney reside in this building. Most of these offices are connected to the internet via the Commonwealth Supreme Court network connections. Most of their applications are also provided by the state. The county's IS department provides minimal support to these offices; however, the county does maintain an internet hub in the building to provide services to those offices not on the state system.

  Juvenile Court has been using a video conferencing system for the past several years. The system is connected via three ISDN lines. The regional jail recently worked with the county and the Supreme Court to install a video courtroom with equipment and communication lines.

  The Courthouse and Courthouse Annex have multiple network rooms for the various courts and agencies in those buildings.

Town of Chilhowie:

- Town Administration – Connected through a local area network using Southern Software (municipal version).

- Fire Department/Police Department – Standalone Windows-based systems.

- Public Works – Standalone Windows-based systems.

Town of Damascus:

- Town Hall – Three computers running Windows XP. Computers were purchased in July 2004. These computers are not networked.

- Sewage Treatment Plant – One computer running Windows XP purchased in July 2004. This computer is not networked.

Town of Fries:

- Fries Town Hall – Town Hall has two workstations. One is a Gateway with a Pentium 4 processor. Its operating system is Windows XP. This workstation also uses Peachtree, Word, Excel, Publisher, and Norton Antivirus software. This internet connection is DSL through Sprint. This computer is two years old

  The other workstation has a Celeron processor and uses Windows 98 for its operating system. This computer is used mainly for water billing and is not connected to the internet. For water billing a DOS program called FoxPro 25 is used. Excel is also used on this computer.

- Fries Police Department – The Fries Police Department has two workstations. The first is a Dell with a Pentium 4 processor. Its operating system is Windows XP. This workstation is mainly for the National Center for Missing and Exploited Children Child Finder software. It is currently connected to the internet by a dial-up provider, but will soon be switched to DSL. It also has Microsoft Word, Excel, and Publisher, as well as virus protection.

  The other workstation has a Pentium 3 processor and uses Windows 2000 Professional. It is mostly used for police reporting. It has Microsoft Works and Police Pak software. It is also connected to the internet by a dial-up provider, but will soon be switched to DSL.

- Fries Wastewater Treatment Plant - The WWTP has only one workstation. This computer is a Dell with a Pentium 4 processor. The operating system is Windows XP. It is equipped with Office Basic Software, which includes Excel and Word, as well as Norton Antivirus. This computer is used mainly for creating reports for DEQ and for ordering equipment and parts. It has a DSL internet connection. This computer is one year old.

Town of Hillsville:

- The Town of Hillsville utilizes approximately fourteen computer workstations as follows:
  Town Hall – seven workstations connected to a local area network
  Police Department – six workstations with VCIN
  Wastewater – one workstation

  The stations vary widely in age, but primarily consist of HP hard drives and Windows operating systems. Billing for water and sewer and tax software are provided by Southern Software of Southern Pines, North Carolina. Most workstations have internet access.

Town of Independence:

- The Town of Independence uses eight computer workstations running Microsoft XP Professional. Several of the workstations are connected as follows:
  Town Hall – four workstations using City Pak software
  Police Department – two workstation using City Pak Police software
  Town Manager – one workstation

Town of Rural Retreat:

- The town's computer equipment consists of six desktops ranging from one to five years old. The Town Manager, Treasurer, Billing Clerk, Police Chief, and the main server operate from Windows 2000 and Windows XP. The Treasurer's and Billing Clerk's computers operate American Fundware 7.15 and American Fundware Classic, in addition to Windows. The Police Chief uses the state VCIN system.