



**ICON BROADBAND TECHNOLOGIES**

*A Division of Icon Engineering, Inc.*  
6745 Bells Ferry Road  
Woodstock, Georgia 30189

In Association With:



# The Northern Neck and Middle Peninsula Regions Community Broadband Telecommunication Planning Project



## Northern Neck PLANNING DISTRICT COMMISSION

Serving Virginia's Lancaster, Northumberland,  
Richmond, and Westmoreland Counties



**For the Counties of:**

- Essex
- King and Queen
- King William
- Lancaster
- Mathews
- Middlesex
- Northumberland
- Richmond
- Westmoreland

Phase I Final Report  
February 29, 2008

Needs Assessment and Broadband Education



Phase I Telecommunications Planning Study  
Community Needs Assessment  
Broadband Education and Training  
For  
**Northern Neck and Middle Peninsula  
Planning District Commissions**

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*Transmittal Letter*

January 11, 2008

Mr. Jerry Davis, Director  
Northern Neck Planning District Commission  
PO Box 1600  
Warsaw, VA 22572

Re: Northern Neck and Middle Peninsula Planning District Commissions  
Community Broadband Planning Study  
Phase I Report - Needs Assessment and Broadband Education Development Strategies

Dear Mr. Davis:

Icon Broadband Technologies (IBT) is pleased to submit this report of the Phase I Needs Assessment and Broadband Education Strategies for the Community Broadband Planning Study for the Northern Neck and Middle Peninsula Planning District Commissions. This Phase I report will be integrated into the final comprehensive telecommunications plan as the project progresses through Phase II.

Select survey data was mapped that included type and location of survey responses, type of Internet connection, level of satisfaction, inadequate Internet speed, and use of the Internet from home for work, school and job training. The selected points of interest address the scope of work in identifying the gap analysis, level of satisfaction, use, and locations where improvements are needed.

The County representatives and Economic Development department personnel are to be commended in pursuing this regional initiative to research and analyze business, education, health care and residential demand for broadband communications services. Creating a comprehensive telecommunications plan to enhance usage and encourage broadband service expansion is a critical first step to achieving a state-of-the-art communication asset for economic development growth. We look forward to continuing to work with the management team in developing the community broadband plan.

Sincerely,  
ICON BROADBAND TECHNOLOGIES

Judy Bentley  
Vice President  
Icon Broadband Technologies



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## Executive Summary

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With the assistance of the Virginia General Assembly and the Virginia Department of Housing and Community Development (DHCD), the Northern Neck and Middle Peninsula Planning District Commissions have undertaken a comprehensive telecommunications planning effort to identify and develop all elements of a successful community broadband network. Undertaken as part of the Virginia Rural Broadband Planning Initiative (VRBPI), the project is designed to create competitive communities and ensure community sustainability by building and utilizing telecommunications infrastructure.

The VRBPI has laid out a series of tasks which are designed to reach the project goals, consisting of:

1. Needs Assessment and Asset Inventory
2. Broadband Education Development Strategies and End User Application Identification
3. Last Mile Connectivity Options
4. Preliminary Design and Cost Estimates
5. Organization and Network Operation Options, and
6. Funding Strategies for Future Implementation Projects

The DHCD grants are very specific, emphasizing infrastructure investment for businesses, education and healthcare providers. Residential inclusion in the study is primarily focused on determining the availability of infrastructure as it relates to education and job training use, and opportunities for small, home based business creation.

Partial or complete funding for the projects from DHCD grants divided the tasks into Phase I and Phase II with the first Phase consisting of the first two tasks. Phase I is primarily a documentation and development phase which consists of research and discussions with interested parties and community stakeholders, a mailed survey to residents and businesses, and GIS mapping of results. Phase I has now been completed. Primary findings from the first phase are:

- Phase I findings clearly identify there is a need for high speed connectivity options and competition in both the Northern Neck and Middle Peninsula regions
- While a vast majority of residents and businesses have computers and Internet access, the Region lags far behind the nation in the numbers who have higher than dial-up Internet speeds
- Internet use for school and job training is significant throughout both the Northern Neck and Middle Peninsula regions, but dissatisfaction with inadequate speed is common



- The lack of high speed access options in these rural counties are barriers to successful implementation of Virginia's telework and telehealth initiatives
- Schools and health care facilities are aware of the benefits that broadband communications bring to their tasks, but both segments are limited in their approach because of the high costs of fully utilizing broadband services
- Most residents and businesses are aware of the value of higher speed access to the Internet, but a lack of high speed access hampers use of applications that provide social and economic benefits
- A lack of technology dependent businesses within the Region has resulted in the local technology-skilled workforce seeking work outside the area, and young adults not returning after earning technology degrees
- The bulk of small business development and workforce assistance is centered in Warsaw, serving all of the Region's counties
- Only one higher education facility is supporting the transition from high school to college, and adult continuing education for the nine counties covering a large commuting distance for students
- Video streaming - a unique, distance learning tool for teachers and higher education students - requires high speed access to work efficiently and cannot be utilized in the majority of these rural counties
- There are a number of local resources and partnerships in the Region working to promote economic development, enable training and promote the educational use of technology, and assist with connecting users to training and funding for new businesses.

Looking individually at the phase I tasks, the Needs Assessment and Asset Inventory task examined the communication technologies currently available in the study area and the extent of demand for broadband by all users. On the residential side broadband availability other than satellite consists of DSL cable modem service, and wireless in limited areas all at pricing in the \$20 to \$50 range per month. Few business users have T1 access (1.5 Mbps) available at approximately \$1,000 per month; wireless and DSL are available at somewhat higher prices than for residential service and in the same areas. There are limited areas served by more than one provider, and overall pricing is higher in the Region than in other areas of Virginia where competition among providers has resulted in lower prices for services.

While broadband service availability is limited, the majority of homes have computers and some form of Internet service, primarily dial-up. Based on their experience a majority find their level of Internet speed inadequate. A significant percent of residents are using the Internet to work from home and the vast majority of families with children at home depend on the Internet to complete school work. Teleworking



is hampered by the limited availability of high-speed access options that enable secure connections to employers utilizing virtual private networks (VPNs) for remote access. Residential use covers a wide range of purposes with majorities of residents using the Internet to obtain news, plan travel, seeking medical information and to make purchases. A great number of residents are accessing news online and visiting government websites for information.

Although a majority of businesses use the Internet, many are dissatisfied with inadequate bandwidth but only a few are deterred from broadband adoption because of excessive price. The primary business uses are e-mail, purchasing, communication between offices, research and customer service. Significant numbers of businesses anticipate future use of the Internet to expand their business presence through advertising and hosting a web site, and increasing productivity with access to training, distance learning, and video conferencing. Over one-quarter of businesses indicate access to higher speed services would enable them to expand their business.

The Region's public school systems have made significant investments in technology, using high bandwidth (minimum 1.5 Mbps) services in a combination of wired and wireless communications between schools to assist in presentation and instruction. Similarly medical facilities utilize higher bandwidth with T1 connections to outside hospitals and DSL service where available. Overall, information from outside of the area could be better utilized if higher bandwidth connections were economically available.

Summarizing the bandwidth needs of the various market segments, education and health care facilities have the greatest unmet bandwidth needs. External learning resources are not being fully utilized because of limited budgets to purchase higher bandwidth connections through NetworkVirginia or NovaNet. Libraries have limited bandwidth capacity to expand access wirelessly to additional patrons and in many cases insufficient facilities to provide training. Access to library computers for free Internet access is important to a number of citizens that do not have access at home, and critical for displaced workers using the Internet for job search and students to complete school assignments and access higher education resources. The County government offices have minimal connectivity limiting the ability to offer or expand e-government services, to communicate optimally between all facilities, and to incorporate remote access services for personnel or outlying facilities.

The second task within Phase I examined Broadband education within the Region. The State of Virginia has made computer technology a core portion of public education including early training into the use of



computers and distance learning opportunities for older students. The Region's public school systems continue to implement instructional technology into the every day lives of teachers and students, and are the technology leaders in each County. The Rappahannock Community College is the only higher education partner located within the Northern Neck and Middle Peninsula Region. RCC partners with the high schools to provide access to higher education opportunities, and has made available several means for accessing courses through distance-learning. Students located outside of Richmond County or the Middlesex-Gloucester area must either commute the distance to Warsaw or Glens for classes or leave the Region entirely to attend college fulltime. Distance-learning provides an important tool for keeping the educated young in their communities. While web-based online instruction does not require high speed (i.e. 1.5 Mbps or higher) access to the Internet, completing a rigorous degree program using dial-up access discourages consideration of this rich resource. One-Stop workforce centers located in Warsaw and Shackelfords provide assistance with job search and coordinate training. Resources for small and medium businesses seeking assistance with managing operations and access to financing are primarily located in Warsaw, with smaller initiatives and partnerships within some counties. Similarly, entrepreneurs seeking information on new business planning are limited in the local resources available to them.

For reasons due primarily to availability, virtually no segment of the community is using broadband communications to a high degree. Few county governments are providing eGovernment services such as accepting online payments for fees, online permit processing, or access to government information beyond downloading of standard forms. Residents and businesses are limited in the applications that are feasible using dial-up or satellite access. Since the majority of residents and businesses are using the Internet, higher speed access would encourage additional uses that influence social and economical change. Broadband education includes making residents aware of the benefits and convenience of online learning and job search. Businesses should be educated on the value of using the Internet for voice calling, secure network access, and marketing their business online. Education on potential uses for the Internet and the currently available services is equally as important as purchasing more bandwidth. As the education level of users increases, increasing usage and demand will follow.

There is strong demand among both residents and businesses within the Region for higher speed access. Both segments of the community provided comments during the market assessment that encourage the Planning Districts to continue to pursue options to expand high-speed availability on their behalf. Businesses report responses from Verizon regarding requests for expanding DSL access indicating this provider is focusing financial resources on fiber deployments to areas outside of the Northern Neck and



Middle Peninsula regions, with no future plans for increasing access locally. The extent of VA Enterprise Zones, Industrial Site Boundaries, Corridor Enhancement Districts and Business and Employment Districts highlight the need for high speed connectivity to create and sustain business economic development in these areas.

The second phase of study will look more specifically at how to improve bandwidth availability and examine the interest of service providers in expanding services to unserved areas. The results of the Phase I data collection indicate specific focus areas within all nine (9) counties. Areas of some counties were identified as a priority only because of the proximity to a logical Mid-Atlantic Broadband Cooperative network route. Tappahannock and Warsaw could potentially be two (2) datacenter locations in a bandwidth aggregation model linking the Middle Peninsula and Northern Neck regions. Fiber connectivity across the I-360 bridge would be critical for such a model, as would fiber connectivity out of the Middle Peninsula region presumably through Gloucester, and out of the Northern Neck region for connectivity to the POP in King George County. Additionally, a significant number of towers are located throughout the study area that can be pursued for serving the more rural areas with a wireless solution.

Phase II study efforts will further define priority areas, and options for investments and partnerships to encourage broadband service expansion will be explored. Costs will be developed and the feasibility of municipal investment examined to determine options for enabling broadband deployment throughout the Region. The Phase II study will need to balance cost with short term and long term needs. Conceptually, Phase I findings point to a near term basic distribution network through areas that will be attractive to service providers looking to recover investments in the short term. Additional build-out by MBC of the main network (the catalyst) for backhaul through the study areas will be vital to implementing the community networks. Wireless technology will probably serve as a significant last-mile solution for the next several years as provider investments are recovered in the more attractive service areas, prior to pursuing alternatives or supplemental technology solutions to wireless in the more rural areas. A regional approach, coordinated lobbying efforts for funding and promoting the MBC fiber network in the region will be key to implementing a solution for the Region.



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## **1.0 Community Needs Assessment and Asset Inventory**

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### **1.1 Background**

One objective of the Community Broadband Planning Study is to document the availability of communication technologies throughout the study area and to assess the amount of demand by residential and business end-users. Communication technologies include any form of Internet access, pay TV, and telephone delivered by any medium.

The use of a mailed survey allowed for a greater percentage of the population to be polled, including those that would potentially be reluctant to respond to telephone solicitations for surveying. The overwhelming popularity of the national Do Not Call list and the increasing use of caller ID to screen out unwanted calls substantiate use of a written survey as the preferred means to obtain community input from the largest number of respondents.

In addition to validating service availability by geographic area, end users provided valuable input to calculate demand for advanced technologies such as higher speed and wireless Internet access and phone service that uses the Internet as a transmission medium. This information is valuable to service providers contemplating the deployment of new services or to areas not presently served. Government leaders can use this knowledge as a tool for measuring how their community compares to others in relation to technology adoption by citizens, and for developing broadband education strategies.

Comments were solicited as to what changes or improvements to the current communication technology in the region would best meet citizens' needs. Local leaders can use this knowledge to expand the reach of government services and prioritize implementation efforts. Through the survey process, citizens have been recruited as stakeholders in their community's future.

### **1.2 Area Assets**

In preparation for a market survey to assess needs, base maps were developed for use throughout the study. Economic development and County personnel provided input on future growth areas. Local provider input and independent research was used to develop a telecommunication infrastructure map, and census data was applied to display population density throughout the County. Maps are displayed on the following pages and separately by planning district.



**Figure 1: Economic Development Features - NORTHERN NECK**

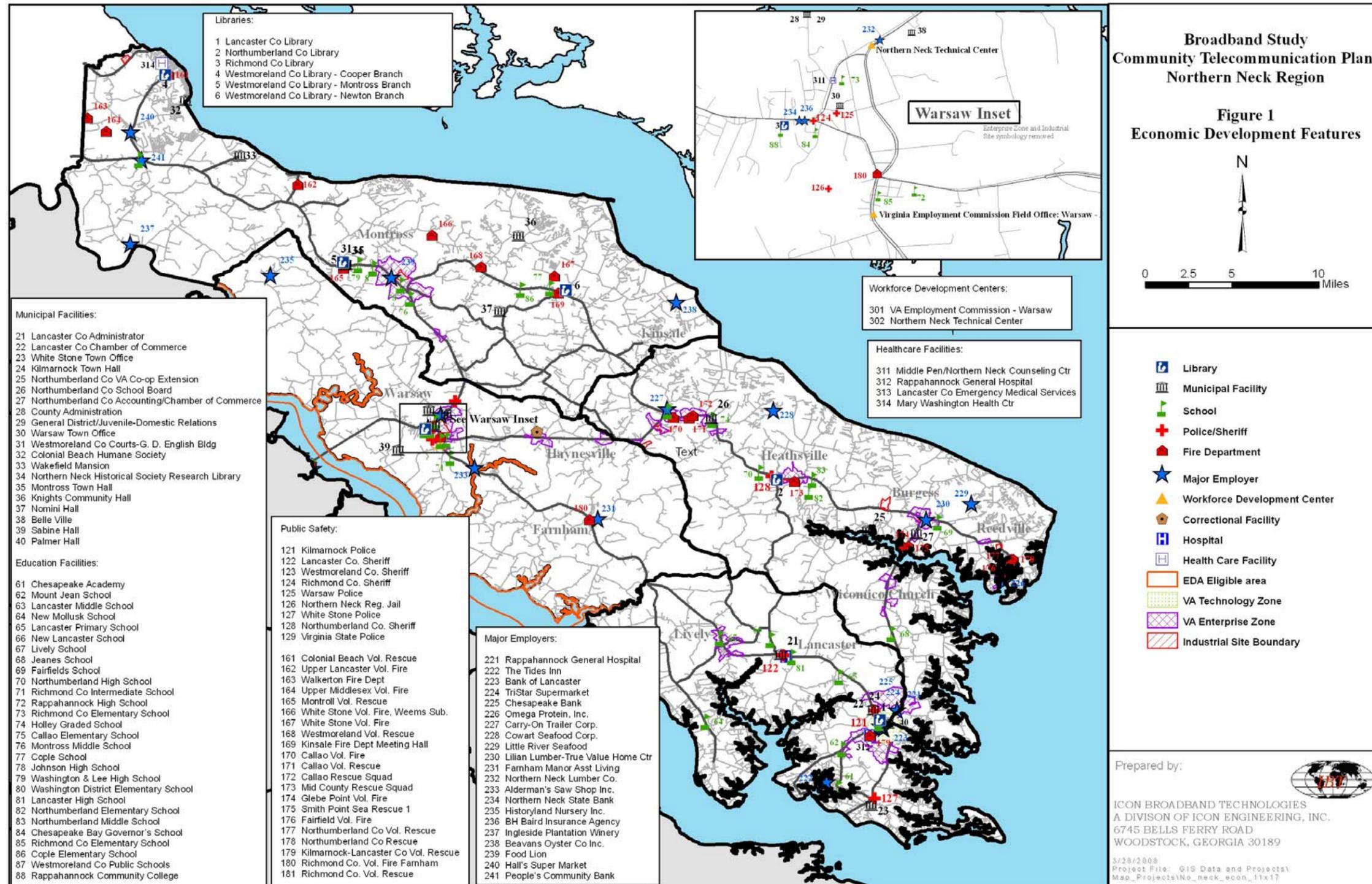
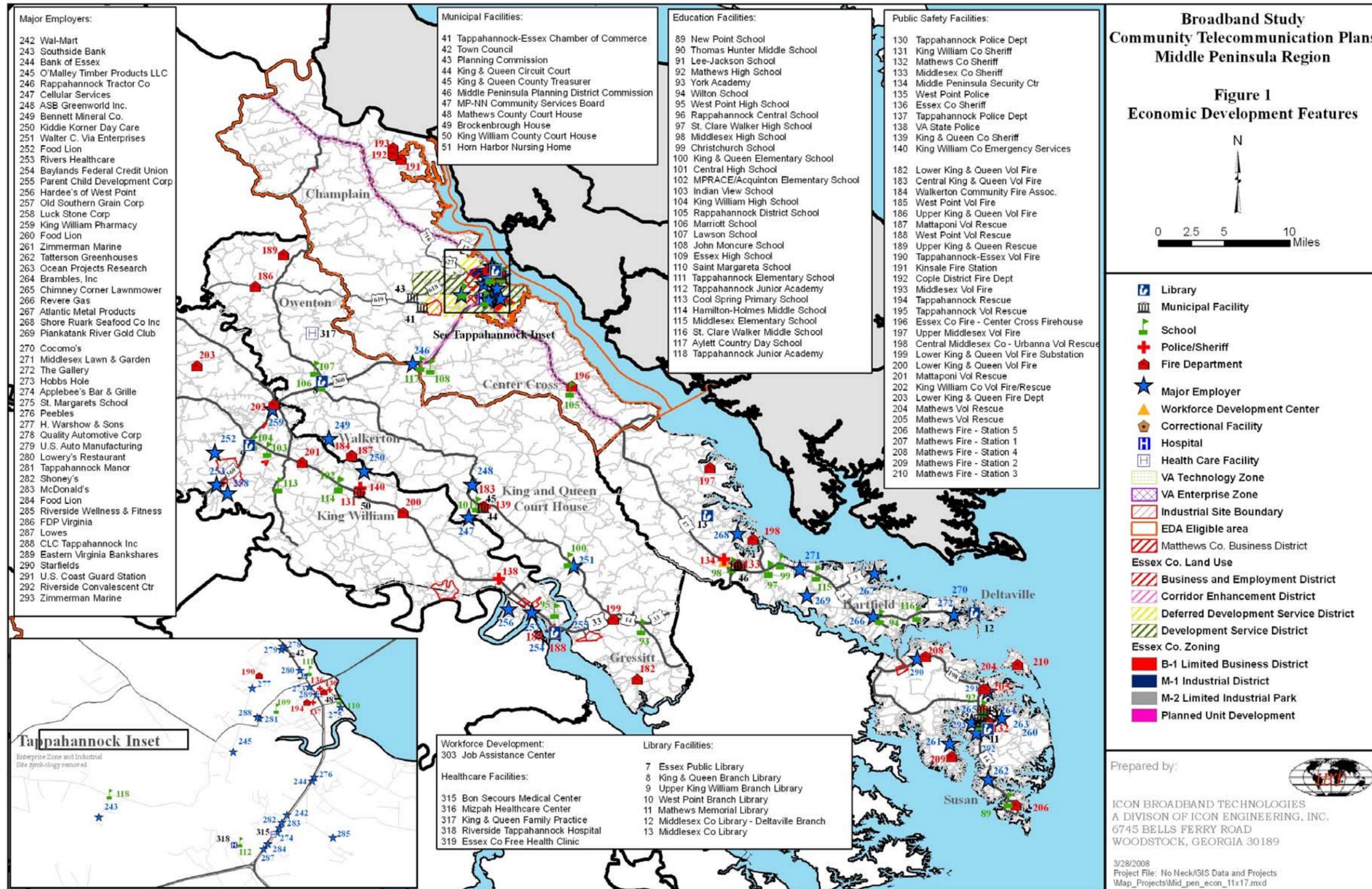


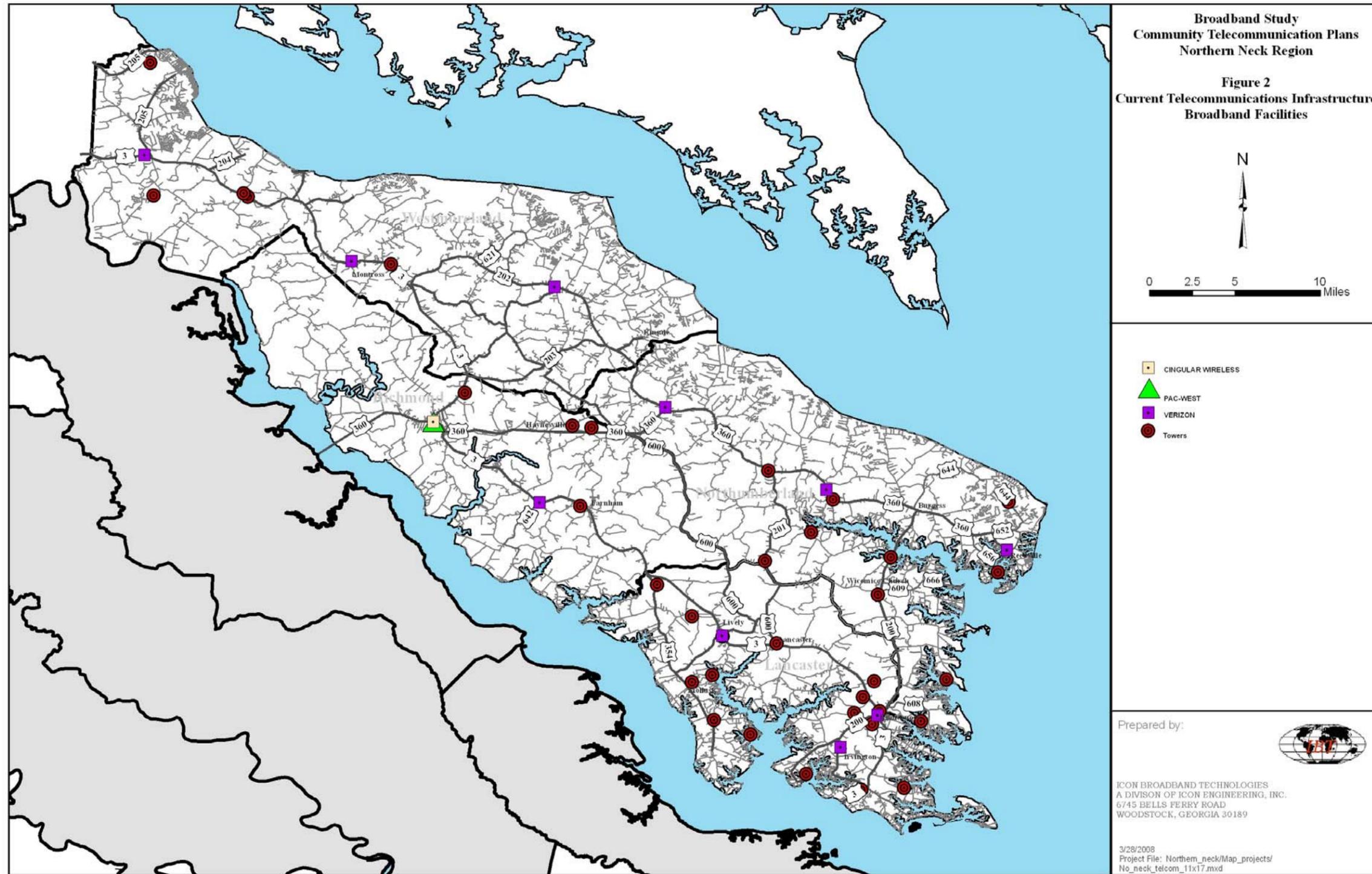


Figure 1: Economic Development Features - MIDDLE PENINSULA





**Figure 2: Current Telecommunication Infrastructure - NORTHERN NECK**





**Figure 2: Current Telecommunication Infrastructure - MIDDLE PENINSULA**

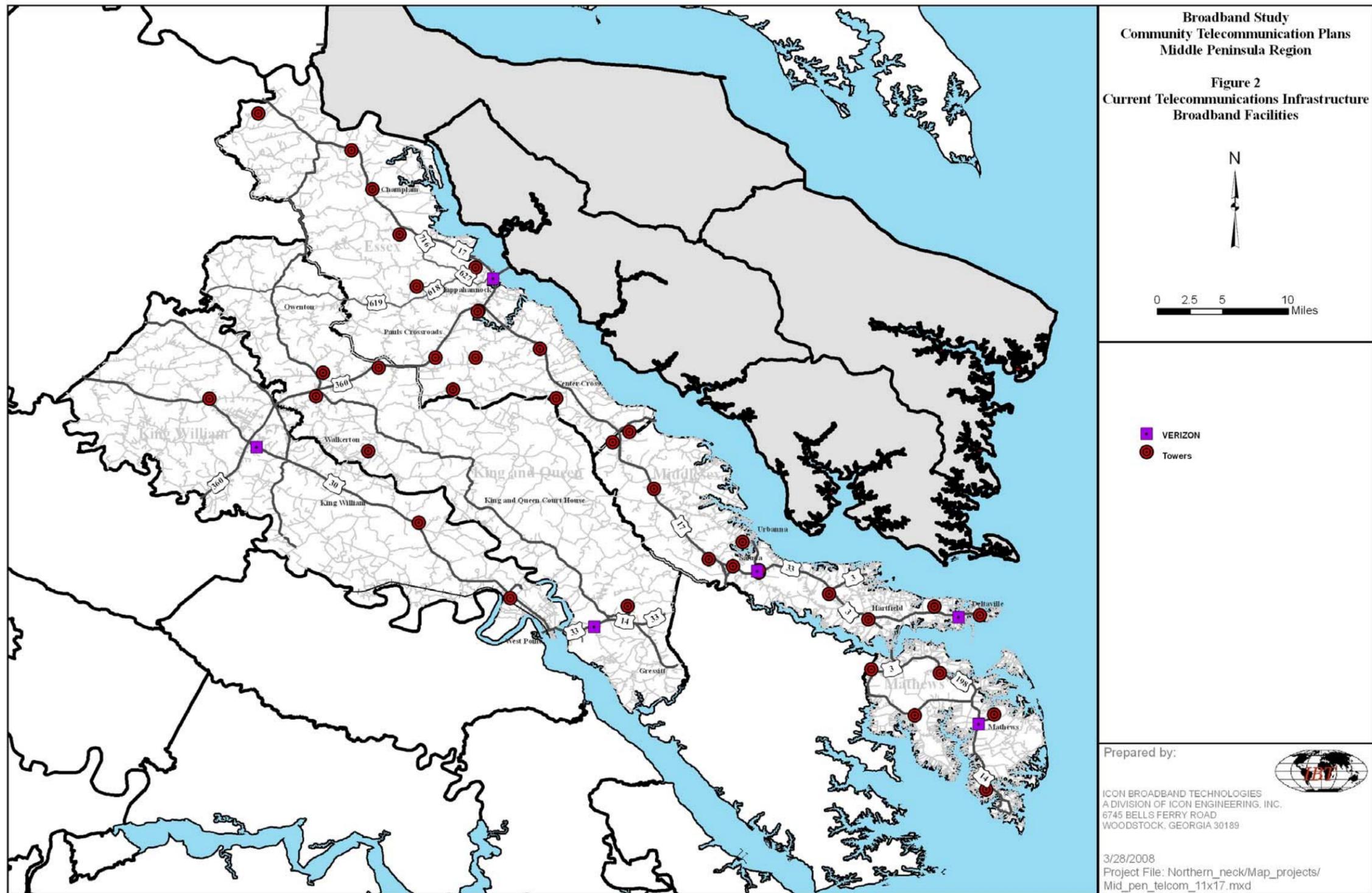




Figure 3: Population Density- NORTHERN NECK





Figure 3: Population Density- MIDDLE PENINSULA

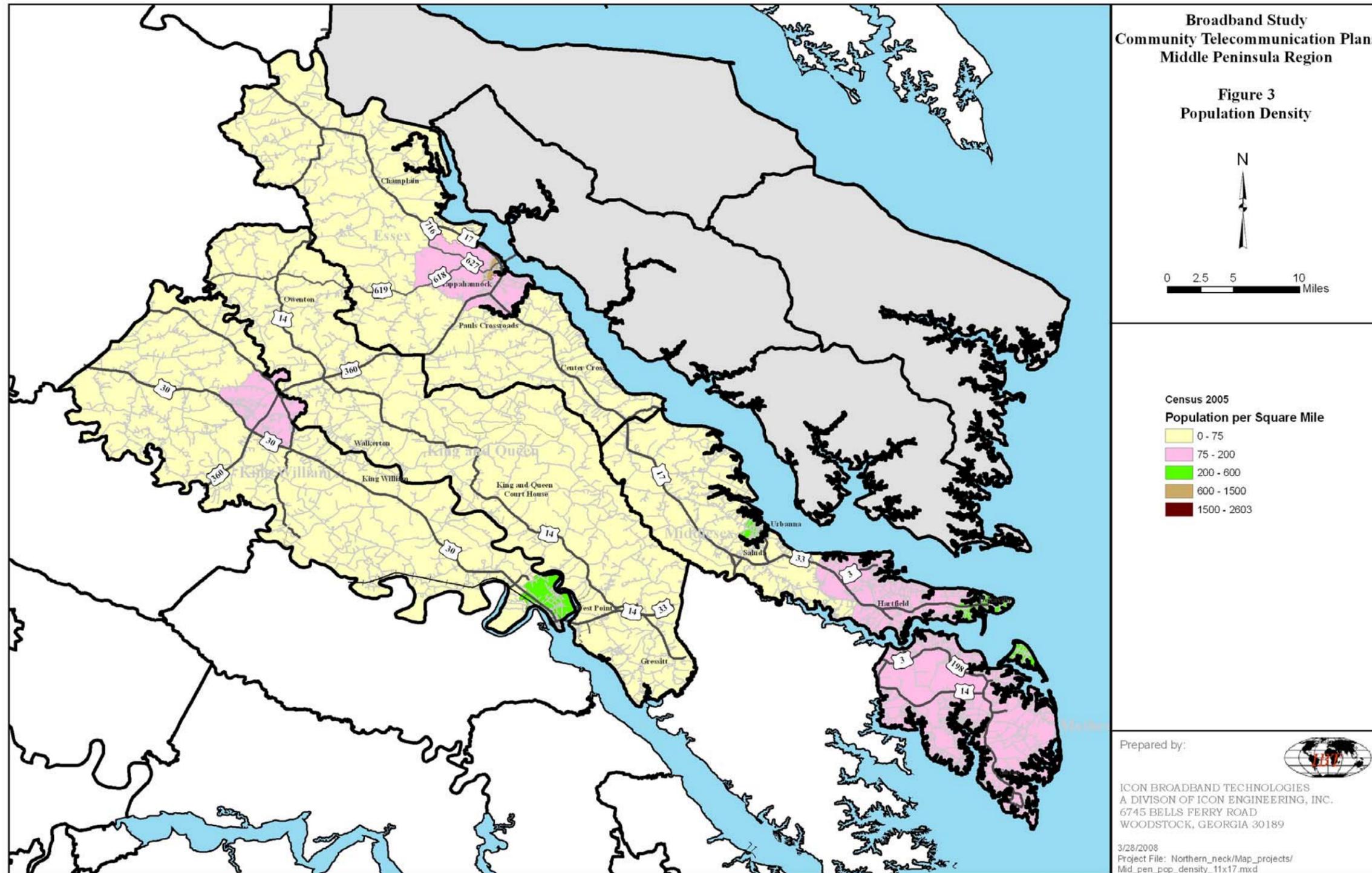




Figure 4: Housing Density- NORTHERN NECK

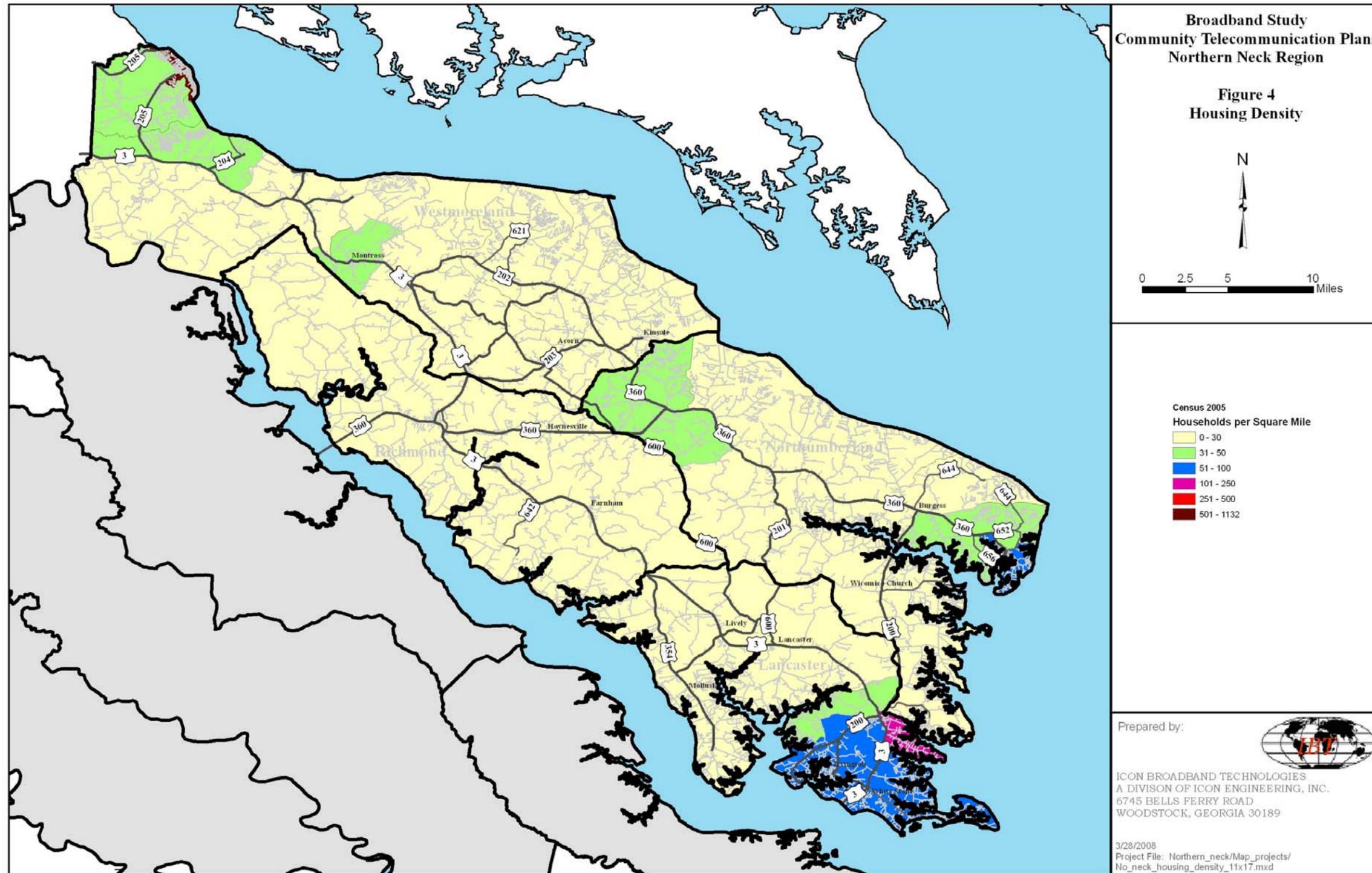
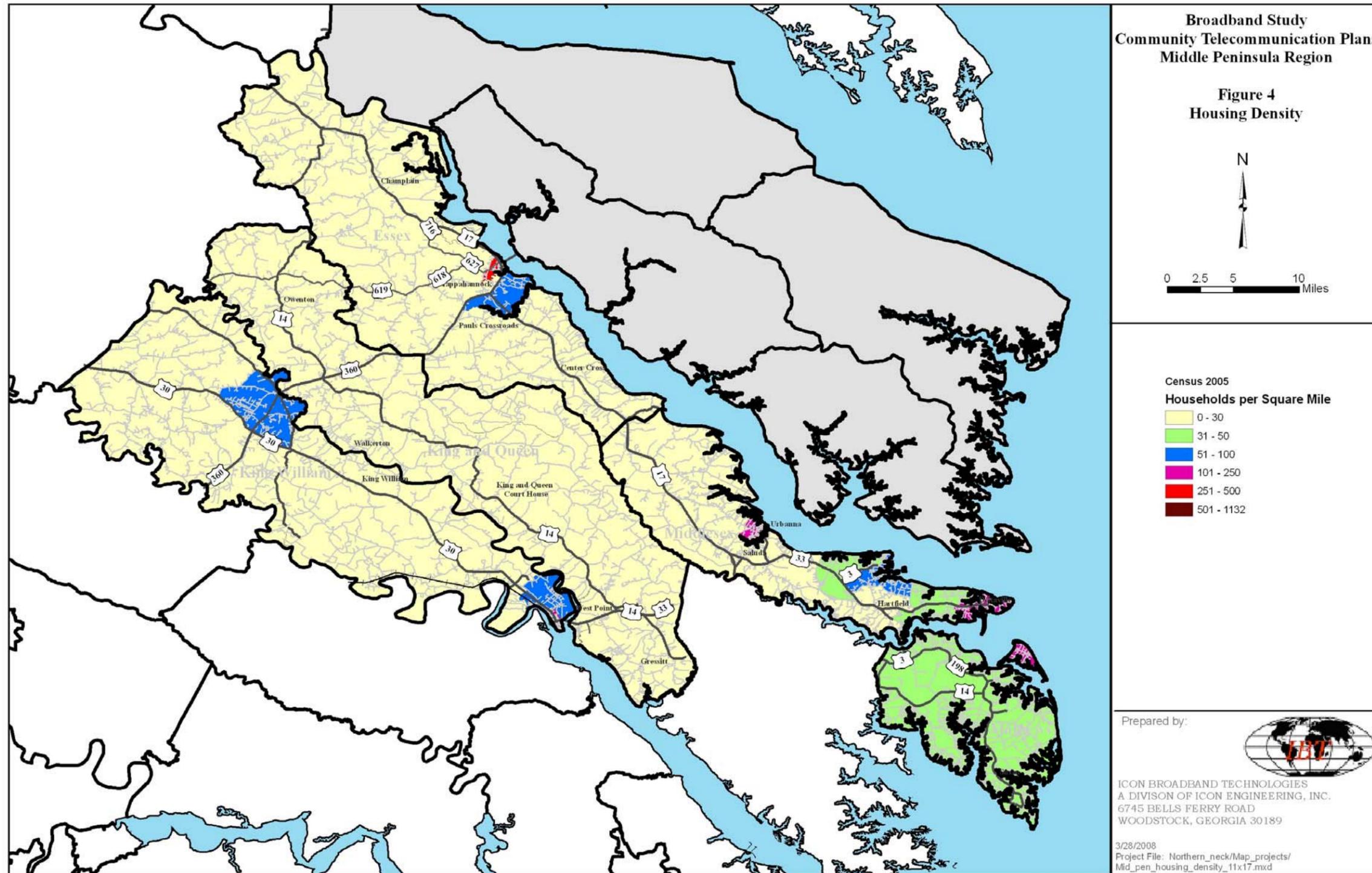




Figure 4: Housing Density- MIDDLE PENINSULA





### 1.3 Survey Methodology

A total of 9,000 residential surveys were distributed from residential lists procured by IBT personnel. Mailing address lists for businesses were provided for each county by either the local Chamber of Commerce or the Commissioner of Revenue and a total of 1,500 business surveys were distributed. Surveys were distributed based on the percentage of each county's portion of total households in the region. Public school district officials and higher education personnel were contacted for more detailed responses. Residential and business input was provided from both mailed and on-line surveys. A two-page survey (see Appendix A, Section 7.0) polled basic demographic data, Internet usage habits, method of access (e.g. dial-up, DSL, cable modem), satisfaction with current providers, and monthly cost of access to the Internet. The survey could be completed and returned postage-paid with a minimum of user effort. The mailed survey was augmented by an online survey version. The domain name [www.VAruralbroadband.com](http://www.VAruralbroadband.com) was purchased and used to make an exact replica of the mailed survey available for easy online entry. The results of the online survey are combined with the mailed survey results.

A targeted survey response rate of 10% was anticipated, returning a statistically valid sample size at a 95% confidence level. Response from the region was much higher however, resulting in return rates of 17% (1,559) residential and 15% (225) business. The higher response rates are attributed to the efforts of the project management team in marketing the online survey. This effort ensured that all County citizens and businesses were afforded the opportunity to provide input for the market assessment. Each county's portion of the combined nine-county region, and the percentages of surveys returned are as follows:

County	Number of Households*	% of Region	% of Survey Responses	
			Residential	Business
Essex	4,926	9%	7%	8%
King and Queen	3,010	6%	7%	<1%
King William	5,189	10%	5%	4%
Lancaster	6,498	12%	12%	21%
Mathews	5,333	10%	20%	26%
Middlesex	6,362	12%	9%	9%
Northumberland	8,057	15%	20%	16%
Richmond	3,512	7%	7%	8%
Westmoreland	<u>9,286</u>	18%	13%	8%
	<b>52,173</b>			

\*Total housing units based on U.S. Census 2000



## 1.4 Residential Use and Unmet Demand

### Internet Access

Residential survey respondents ranged in age from 20 to over 65 years old. Response from citizens aged 60 and above was slightly higher than census demographic characteristics for those age groups. Responses from families with children at home represented 25% of the survey group. The ages of children living at home are represented as follows:

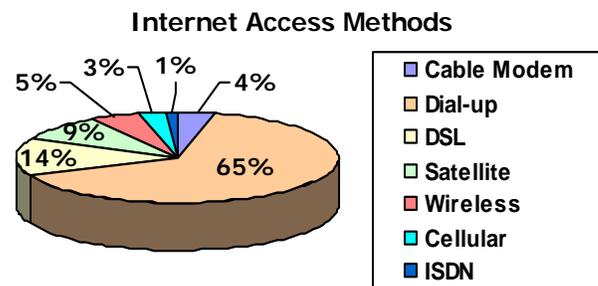
<u>Under 5</u>	<u>5 – 17</u>	<u>18 or older</u>
18%	61%	35%

Computers are in the homes of 90% of survey respondents, and 86% of the total survey group subscribes to an Internet access service. These overall percentages are on par with national estimates, and a comparison by age group indicates typical disparity between young adults and older generations as is common in rural areas.

<b>Disparities in Computer Ownership and Internet Access By Age Group</b>		
<b>Age Group</b>	<b>No Computer in the Home</b>	<b>No Internet Access</b>
20 - 24	11%*	22%*
25 - 34	7%	11%
35 - 44	7%	10%
45 - 54	4%	10%
55 - 59	5%	10%
60 - 64	5%	8%
65 or Older	19%	22%
Families with Children at Home	5%	10%

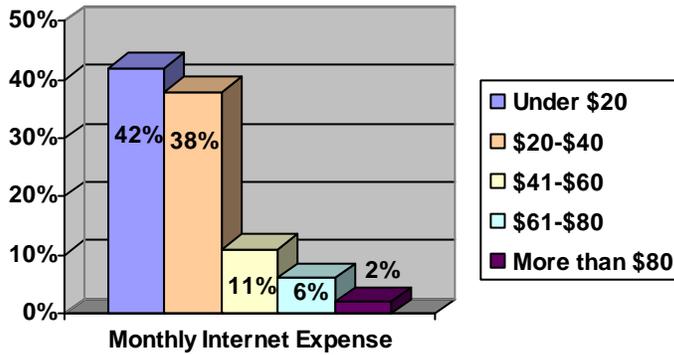
\*Not statistically relevant; low number of responses for this age group by comparison.

The majority of Internet users (65%) are subscribing to a dial-up Internet service. This is in sharp contrast to national estimates of between 72%<sup>1</sup> and 78% of active home Internet users going online via a broadband connection<sup>2</sup>.



<sup>1</sup> Source: *Over Half of U.S. Households Subscribe to Broadband Internet*; Leichtman Research Group, Inc. (LRG), Press Release 7 June 2007, <http://www.leichtmanresearch.com/press/060707release.html>

<sup>2</sup> Source: *Over Three-Fourths of U.S. Active Internet Users Connect Via Broadband at Home in November*; Nielsen/NetRatings, 12 December 2006, [http://www.netratings.com/pr/pr\\_061212.pdf](http://www.netratings.com/pr/pr_061212.pdf)



A majority of dial-up subscribers are interested in moving to a faster-speed service, yet 61% state services are not available to them. Cost is somewhat a limiting factor, as 19% state higher speed services that are available (such as satellite) are too expensive. Dial-up subscribers are currently paying below or slightly above \$20 per month for service.

Internet access in the home is important to the overwhelming majority of residents; 71% rate access as Very Important and another 19% describe it as Somewhat Important. This importance is quantified as a majority of residents use the Internet to work from home and/or to complete school or job training course work.

<b>Using the Internet for Work or School</b>	
	<b>% of Internet Users</b>
Use the Internet to Work From Home:	38%
Internet Access Required to Complete Coursework for School or Job Training:	40%
Using at least once per Week	56%
Using at least once per Month	44%
	<b>% of Families with Children at Home</b>
Using the Internet to complete school work:	76%

Internet security is a top priority of businesses today. In particular, businesses that allow remote access to the company's network must constantly guard critical company information from attack by unauthorized users. In addition to a firewall, businesses are commonly utilizing a virtual private network (VPN) to grant access and encrypt data. The extra layers of encryption and authentication increase the bandwidth required to pass information to and from the company's server. Remote employees using a dial-up Internet service have a particularly difficult time maintaining a constant connection and experience significant delay in exchanging large data files. As such, dial-up users experience a greater level of frustration than broadband users when trying to work from home. Of all survey respondents, 38% use the Internet to work from home and 21% of their employers require access to the company through a VPN. Dial-up users account for 37% of remote workers using a VPN, and the vast majority state higher speed



services are not available to them. Teleworking is a top goal of states as a way to reduce traffic congestion and pollution, and holds the promise of increasing quality of life for workers desiring to live in a rural setting. An always-on, high-speed connection to the Internet for rural workers is necessary to enable productivity and an efficient use of time.

The many activities that residents are performing online underscore the high value placed on access, and validate the demand for higher-speed access methods. Email has long been the most frequently used Internet application by citizens of all ages. In more recent years activities such as obtaining directions, making travel reservations, researching purchases, and performing financial transactions have increased in popularity. Activities that influence social and economic change such as online learning, job search, access to health and medical information and selling products or services online are steadily gaining in popularity as more Americans are exploring the Internet’s vast reach. Large majorities of residents are turning to the Internet for access to news and community information.

<b>Residential Online Activities in the Past 6 Months</b>	
<b>Internet Activity</b>	<b>% of All Residents</b>
Purchased products or services	75%
Searched for travel related info	74%
Visited a news website	68%
Searched for health or medical info	68%
Visited a state or local government website	63%
Researched a major purchase	55%
Performed a financial transaction	55%
Searched for info related to school work	26%
Downloaded or watched video online	22%
Searched for a job	14%
Communicated with a teacher	14%
Took an online course	13%
Sold products or services	9%

Locally, residents are actively using a wide variety of Internet applications that increase productivity and provide social and economic benefits. The availability of online courses to improve job skills is one area where public education is needed to make residents aware of the benefits and how to access this training option. An additional application that is of *interest* to many but needs some basic education and encouragement to stimulate use is selling products or services online. Given the region’s lack of high-density commercial areas, e-commerce is critical for enabling rural entrepreneurs to compete with urban businesses.



Wireless Internet access is becoming more widespread, increasing consumer awareness of the service. Where once wireless service could be found only in retail locations such as coffee shops, hotels, airports, and some libraries, wireless wide area networks are becoming more common today. Additionally many new computers (both desktop and laptop) are equipped with standard wireless network cards, enabling ease of use. A large number of consumers have adopted the use of wireless home networks as an alternative method to reach computer work stations, and for using portable devices anywhere in the home. Residents were questioned as to their likelihood of subscribing to an affordable wireless high-speed Internet service if it was available to them, and the response was overwhelmingly positive. While not specifying type of wireless technology or price of services, this question is intended to test residents' initial perception of wireless as an access option.

<b>Residents' Interest in Affordable Wireless Internet Access</b>	
Very Likely to Subscribe	79%
Somewhat Likely to Subscribe	15%
Not Likely to Subscribe	13%

### **Pay TV Services**

Nationally, approximately 85% of households subscribe to a pay TV service. Cable's market share as of December, 2006 is estimated at 58.8% according to the National Cable and Telecommunications Association industry statistics<sup>3</sup>. Subscribers located in areas with population densities of 25 homes per mile or less are typically not served by cable systems and therefore are more likely to subscribe to satellite services such as DirecTV. Only 11% do not subscribe to a pay TV service - presumably a portion of these residents are receiving local channels via off-air antennas; the upcoming transition to all-digital signal transmission by television stations by early 2009 will require additional equipment to receive the digital signals or subscription to a pay TV service.

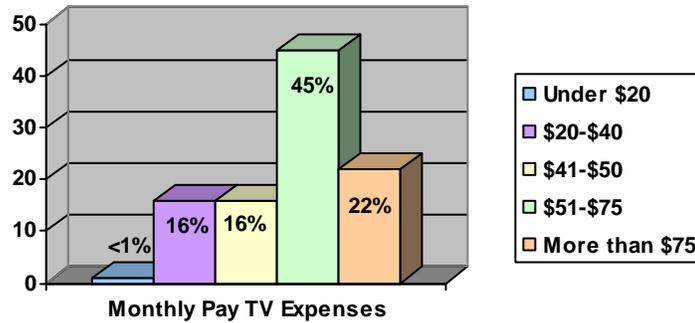
<b>Pay TV Subscribers</b>	
<b>Pay TV Method of Access</b>	<b>% of Responses</b>
Cable	22%
Satellite	67%

The majority of pay TV subscribers currently receive expanded programming consisting of local off-air channels and analog cable programming. Minimum basic programming consists typically of local off-air channels; public, education and government channels; and shopping networks with perhaps a cable

<sup>3</sup> Source: *National Cable and Telecommunications Association*; Cable Industry Statistics, as of December 2006; [www.ncta.com](http://www.ncta.com)



channel such as The Weather Channel. Monthly expenses for Pay TV service are much higher than for Internet access; the majority of subscribers are spending more than \$50 per month for service.



### Voice Services

Voice communication services include regular wired service (also known as ‘plain old telephone service’ or POTS), cellular, and the newer voice service using the Internet (Voice over Internet Protocol or VoIP) as the transport medium. Nationally, more Americans are dropping regular wired service in favor of one or both of the other services presumably as a way to reduce monthly expenditures. The adoption of VoIP services is an important issue, as currently Universal Service Fees and fees for e911 are not always collected on calls made over the Internet depending upon the provider used. Residential subscriber percentages and monthly rates for voice services are reported as follows:

Voice Communication Methods and Spending						
Voice Service	% With Service	% Without Service	Monthly Expenditure			
			No Charge	Under \$35	\$35 to \$75	More Than \$75
Regular (Wired) (5% unknown)	93%	2%	-	22%	66%	12%
Cellular	83%	17%	-	17%	52%	31%
Voice over Internet	2%	98%	58%	38%	4%	-

Industry estimates of VoIP penetration vary widely, but analysts do agree that this form of voice communication is expected to increase in popularity at a rapid rate. One of the more aggressive estimates is the prediction that VoIP will be used in 62% of broadband households by 2010<sup>4</sup>. Because of the availability of access at no charge using the Internet only (calls do not ever touch the telephone network)

<sup>4</sup> IDC, subsidiary of International Data Group; *IDC Anticipates 34 Million More Residential VoIP Subscribers in 2010*; Press Release 13 June 2006; <http://www.idc.com/getdoc.jsp?containerId=prUS20211306>



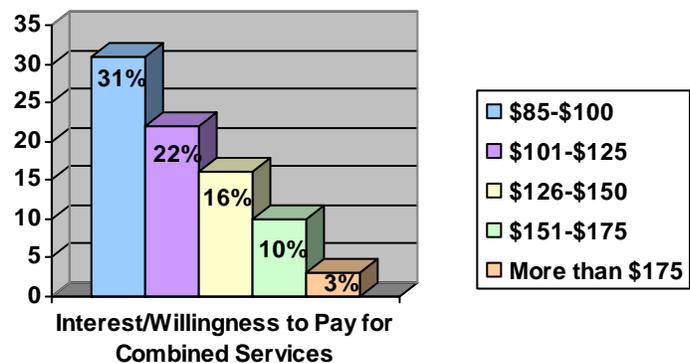
the exact numbers of nation-wide subscribers are not known. Hybrid varieties of VoIP that pass calls using the Internet and then connect to the switched telephone network are becoming more widely adopted as cable and telephone companies roll out new packages of fixed price service for unlimited local and long distance calls. Verizon offers a VoIP residential service called VoiceWing, whereby residents with a broadband connection (either DSL or cable) can choose between a package of 500 outbound minutes for \$19.95 or unlimited local and long distance calling for only \$24.95 per month - significantly lower than standard wired telephone costs.

### 1.5 Overall Residential Satisfaction

Overall, residents in the region are satisfied with their current voice service, but express high levels of dissatisfaction with the video and Internet services available to them. More than one-half of residents are unhappy with the few options available for Internet access; numerous comments echoed frustration with not having a choice of providers for any of the communication technologies – voice, video or broadband Internet.

	Satisfaction with Current Providers		
	Internet	Video	Telephone
<b>Satisfied</b>	<b>25%</b>	<b>41%</b>	<b>65%</b>
<b>Not Satisfied</b>	<b>59%</b>	<b>29%</b>	<b>23%</b>
<b>No Opinion</b>	<b>16%</b>	<b>30%</b>	<b>12%</b>

Resident expectation of pricing for services and willingness to pay for improved services from a new provider in the form of a combination package was tested. Less than one-third of residents would find a package price of \$85-\$100 per month for voice, video and Internet service attractive to them. Nationally, cable and municipal providers have



successfully deployed voice services by promoting a combined voice, video and Internet package for approximately \$100 per month. Verizon’s fiber optic services (marketed as FiOS and available in urban areas) also offer savings for combining three services into one ‘triple-play’ package, priced in the



neighborhood of \$100 per month. Only 18% of residents show no initial interest in combining services from one provider.

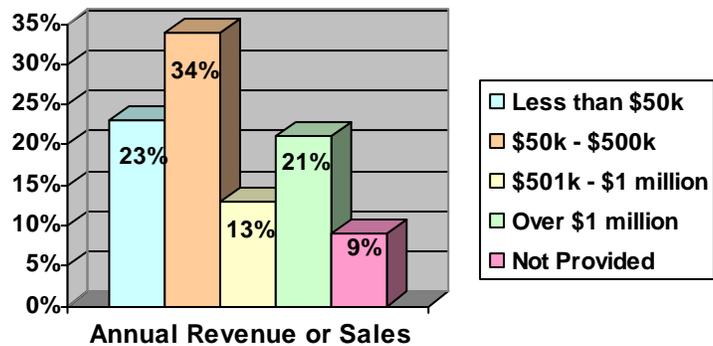
In response to the last survey question “**What changes or improvements to communication technology in your community would best meet your needs?**” 54% of the survey participants offered comments. A complete list of the comments is included in the Appendix section of this report. In general, the majority of comments addressed the following issues:

- Desire for high-speed Internet access
- Poor cell phone reception
- Poor off-air TV reception
- High cost of all services
- Desire for bundled service offerings (telephone, Internet, TV, and cell for one price)
- Frustration with limited choice for services and providers

## 1.6 Business Use and Unmet Demand

### Internet Access

Respondents to the business survey are primarily small businesses, employing four or fewer persons with annual revenue or sales of less than \$500,000 per year. An important segment of the business community is owner/operator businesses reporting no employees (10%). The numbers of businesses reporting annual



revenue in excess of \$500,000 is significant given the rural characteristics of the counties in the region. The size and type of responding businesses are represented in [Table 1.6-A](#) on the following page.



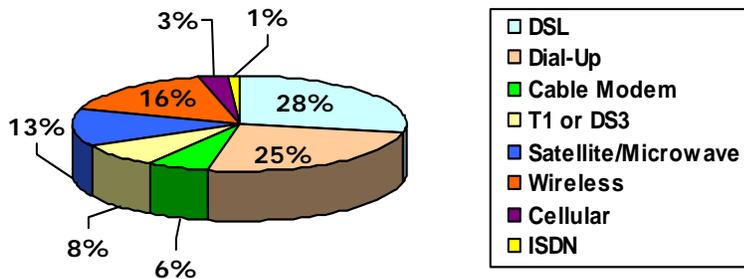
**Table 1.6-A: Businesses by Type and Number of Employees**

% of Response	Business Type	Number of Employees							250 or more	Total
		None	1-4	5-9	10-19	20-49	50-99	100-249		
4.5%	Accounting/Architectural/Engineering		5	3	1		1			10
4.5%	Agricultural/Forestry/Mining	3	2	1	1	1	1	1		10
14%	Business and Personal Services	2	18	6	3	2				31
3%	Communication/Technology		5	1	1					7
5%	Contractor or Construction	4	5	1	1	1				12
7%	Education	3	3		1		5	3	1	16
1%	Entertainment		1			1				2
14%	Finance/Insurance/Real Estate/Legal	1	16	8	3	2	1	1		32
10%	Government/Non-Profit		7	4	3	2	5			21
6%	Healthcare		5	3	2	1		2	1	14
4.5%	Home-based Business	2	8							10
2%	Lodging	1	2		1	1				5
3%	Marine/Marina		3	2	1					6
3%	Non-classified	1	4				1			6
14%	Retail Trade	4	14	8	3	2	1			32
<1%	Transportation/Logistics			1						1
3%	Travel/Tourism	2	4				1			7
1%	Wholesale Trade		1	1					1	3
<b>Total:</b>		23	103	39	21	13	16	7	3	225
		<b>10%</b>	<b>46%</b>	<b>17%</b>	<b>9.5%</b>	<b>6%</b>	<b>7%</b>	<b>3%</b>	<b>1.5%</b>	



The Internet is in use by 96% of all businesses. The vast majority (71%) report 1 to 5 workstations with access to the Internet. Only one-quarter of businesses are using dial-up as an Internet access method. Dial-up access does not meet the needs of 83% of the businesses using this method of access.

### Business Method of Internet Access



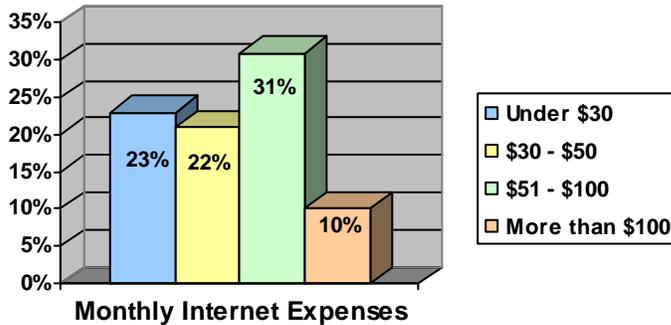
Connections are too slow and do not provide enough bandwidth. The number one reason reported for not subscribing to higher speed access is that higher speed services are not available. The higher speed services that are available are too expensive for just 10% of businesses. Satellite users report unreliable service and slow

connections in addition to high costs of service. DSL and cable modem services are meeting the needs of the majority of businesses using those methods, and nearly all subscribers to T1 and DS3 services report adequate bandwidth for their needs. Pricing for a full T1 (1.5 Mbps) is approximately \$1000 per month; higher bandwidth dedicated circuits cost in excess of \$1500 per month.

Access to the Internet is considered Very Important or Critical by 79% of businesses. Business end-users are generally unsure as to what speeds or amount of bandwidth they are subscribing to. Only 9% report subscribing to service at speeds at or above 1.5 Mbps. A majority of businesses overall state their current method of Internet access is adequate to meet their needs (62%). Over one-quarter of businesses are very satisfied with their current provider and service. Business dissatisfaction appears to be most generally with the quality of service and support they are receiving from providers.

Satisfaction with Current Providers	
	% of All Internet Users
Very Satisfied	26%
Somewhat Satisfied	53%
Somewhat Dissatisfied	12%
Very Dissatisfied	9%

Dissatisfaction with Current Providers	
	% of All Internet Users
<b>Poor connection speed, not enough bandwidth</b>	<b>41%</b>
Poor customer service	32%
Service is unreliable	29%
Price too high	23%
Problems with Email	17%
Lack of technical support	14%



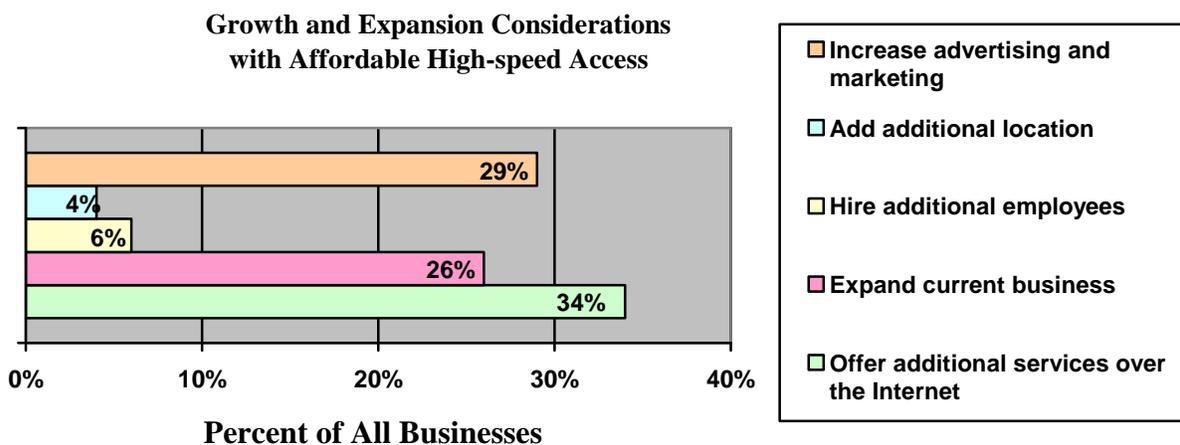
Current monthly expenses for Internet access do not exceed \$100 per month for the majority (76%) of businesses. Only 10% of all businesses report Internet expenses in excess of \$100 per month.

Although nearly all businesses currently have Internet access and consider access important, it appears many businesses are not taking full advantage of all the Internet has to offer. 46% or more of all businesses are currently using the Internet for advertising, but only 26% of businesses are conducting online sales. Applications that eliminate rural barriers such as distance learning, online training and video-conferencing are not being fully utilized. Some businesses have incorporated the Internet into the daily operation of the business beyond just communicating with employees and customers through email - tasks such as accounting and banking that can be conducted via online access save the business time and creates efficiency. These efficiencies contribute to the importance of cost-effective and dependable Internet access. Video conferencing and the use of VPNs will utilize more bandwidth than dial-up will support, and the shortage of high-speed options in the region undoubtedly hinders business adoption of these types of applications, ultimately impacting the ability of residents to telework. The table that follows illustrates how businesses in the region are using the Internet – currently and expected future use. The applications targeted for future use and the percentage of businesses that anticipate incorporating these additional uses into their operations are indicators of the incremental speed and bandwidth that will be required in the near future should higher speed options become available.



How Businesses Are Using the Internet Current and Future Interest		
Internet Use	Current Use %	Additional Anticipated Future Use %
E-Mail	87%	4%
Purchasing materials or services	69%	7%
Research	67%	6%
Customer service	55%	12%
Communication between offices	51%	7%
Accounting/Banking	51%	11%
Transferring data files	48%	12%
Advertising	46%	15%
Hosting your web site	40%	<b>21%</b>
Training	32%	15%
Distance Learning	31%	15%
On-line sales	26%	19%
Video-conferencing	<b>11%</b>	<b>26%</b>
VPN connections	<b>7%</b>	15%
Voice service	<b>6%</b>	<b>24%</b>
Telemedicine	<b>5%</b>	4%

In contrast to lower-than-expected Internet application usage, 56% of all business survey respondents identified one or more growth opportunities their business would consider if an affordable high-speed Internet service were available to them. The high percentage of businesses that would consider offering services over the Internet indicates future growth in e-commerce in the region. Additionally, it appears a strong percentage of businesses understand the value of Internet marketing. Growth and expansion opportunities identified are as follows:





Additional opportunities for growth offered by businesses include:

- More insurance claims filed electronically
- Increase productivity
- Combining our 5 stores into one service provider
- Increase use
- Use search engines
- Offer Internet service to residents of assisted living center
- High speed for credit card processing
- Enjoy a fast connection!
- Expand services to our clients

Wireless Internet access has been a rapidly evolving technology with new standards released well ahead of consumer adoption. Until recently, uncertainty existed among consumers as to the security of using this technology to transmit sensitive data. Businesses are beginning to view wireless access as a cost-effective means of connecting facilities and accessing the Internet. A majority of all business survey respondents (85%) indicate they are very to somewhat likely to use wireless high-speed Internet access service if it was available to them. Of businesses that state current Internet speeds and bandwidth is inadequate, nearly all are interested in high-speed wireless as an option to meet their bandwidth needs. While not specifying type of wireless technology or price of services, this question is intended to test the initial perception of wireless as an access option for business use.

### Voice Services

Businesses were surveyed as to the phone services they are using and their monthly expenditure for each. While most businesses maintain regular telephone lines, the majority are spending in excess of \$100 per month for service, indicating a high amount of long distance usage.

<b>Business Voice Communication Methods and Spending</b>					
<b>Voice Service</b>	<b>% With Service</b>	<b>% Without Service</b>	<b>Monthly Expenditure</b>		
			<b>Under \$100</b>	<b>\$100 to \$300</b>	<b>More Than \$300</b>
Regular (Wired) (8% unknown-no response)	90%	2%	42%	37%	21%
Cellular	75%	25%	47%	40%	13%



Business cell phone use is not as high in the region as in suburban communities where typically 80% or more subscribe to service, but expenditures are high with just over one-half spending more than \$100 per month. End-user comments expressed frustration with poor cellular coverage throughout the counties.

The greatest advancement in the use of technology for businesses to date is voice over the Internet (VoIP) phone service. Voice traffic is digitized and transported along with data, greatly reducing per call spending. Incumbent telephone providers realize savings as well, and service is available to businesses from local and national providers. Few businesses in the region are taking advantage of VoIP today.

<b>Business Voice Communication Methods and Spending</b>							
<b>Voice Service</b>	<b>% of Internet Subscribers with Service</b>	<b>% Without Service</b>	<b>Monthly Expenditure</b>				
			<b>No Charge</b>	<b>Under \$35</b>	<b>\$35 to \$45</b>	<b>\$46 - \$100</b>	<b>Over \$100</b>
Voice over Internet (VoIP)	6% of Internet subscribers	94%	54%	8%	15%	15%	8%

Like residential VoIP, service is available in a variety of ways. Service for voice calling using only the Internet and never entering the public switched telephone network (PSTN) is available from national providers such as Skype. High speed service is necessary to maintain a clear and consistent connection. Businesses nationwide are under increasing pressure to reduce monthly spending on voice communication as most are subscribing to mobile (cellular) service in addition to fixed service at the business’s physical location. Business adoption of VoIP nationwide is expected to increase exponentially as a method of reducing high communication costs. Service is increasingly becoming available from facilities-based providers offering higher levels of security and support businesses demand. Businesses lacking high speed access in the region have no opportunity to utilize new technology to reduce voice expenses.

Interest in purchasing voice and data services from one provider for one ‘bundled’ package price was tested at various price points. 47% of all businesses indicated they would be willing to spend \$125 or less per month for two services. By comparison, nearly the same numbers of businesses indicate they currently spend less than \$50 for Internet access (44%) and less than \$100 for regular telephone service per month (42%).

In response to the last survey question **“What changes or improvements to communication technology in your community would best meet your needs?”** 41% of the business survey group offered



comments. A complete list of the comments is included in the Appendix section of this report. In general, the majority of comments addressed the following issues:

- Desire for increased Internet access speeds, more bandwidth needed
- “Broadband” access specifically requested
- Wireless access specifically requested
- Affordable access options
- DSL service area expansion needed
- Better cell phone coverage throughout each county

## **1.7 Education and Healthcare Use and Unmet Demand**

When taking steps to make your community attractive to businesses considering relocation options, family quality of life issues will typically weigh-in equally as important as having the right business climate. In addition to recreation and cultural entertainment attractions, two other major considerations are a community’s quality of health care and education.

### **Education**

K-12 schools and higher education institutions are eligible to obtain Internet access through Network Virginia at state-negotiated rates with local service providers, but may also purchase from local providers. eRate funding levels (based on percentage of free and reduced meals) are major determinates in the schools’ ability to purchase higher increments of bandwidth. The majority of school systems are limited to T1s (1.5 Mbps) from Network Virginia through incumbent telephone provider Verizon. The exception to this is in Essex County; the school system purchases a DS3 (45 Mbps) of Internet access through Network Virginia, and uses high speed wireless to connect schools and distribute bandwidth. In most cases, the Internet connection is made at the high school or school board office then distributed through a wireline or wireless wide area network to connect all schools. The bandwidth is shared between schools, and typically allocated on a first come, first served basis. Internal network connections are wired in most schools, with wireless in use for mobile computer labs. Computers are located in nearly all classrooms and teachers are actively utilizing technology.



Virginia School Districts have been actively investing in and implementing technology over the past few years. A significant technology investment has been made to equip teachers with tools for presentation and instruction for all grades. Instructional technology equipment in use today includes Smartboards, presentation stations and video. For schools with adequate bandwidth, video resources are available for teacher use to expand course offerings. Students have access to computer stations and labs in the classroom. Students attending the Northern Neck and Middle Peninsula schools today are tomorrow's tech-savvy adults.

Videoconferencing is an optimum use of technology to more adequately allocate teaching time, but uses a greater amount of network bandwidth. Distance learning video programs are available for teachers to use in the classroom, but increased use of these powerful learning tools threaten the availability of precious bandwidth – school technology directors work constantly to conserve bandwidth shared between all schools. Teachers are ready to utilize additional technology resources for educating students should the bandwidth become available to them. All schools in the Region could greatly leverage learning opportunities through technology with an increase in bandwidth at affordable rates.

Survey response from the Education sector of the business community represented 7% of the survey group. Most were large entities providing education services with more than fifty (50) employees; the majority are using either DSL or T1 for Internet access. One-fourth indicated current bandwidth was adequate, but 80% are dissatisfied with their current providers primarily due to reliability. Stating that access to the Internet was critical to their business, most are interested in using wireless as a higher speed access option if it were available.

### **Healthcare**

Healthcare providers represented 6% of the business survey group with more than one-half employing less than 9 employees. Over 20% use dial-up for access, with a greater number subscribing to DSL services. Providers using dial-up, cable and satellite state current Internet services are not adequately meeting their needs (43%). An additional high speed gap exists in that doctors do not have universal access from their homes as high-speed service is not available in all areas.

Advanced applications in telemedicine, the ability to view higher resolution radiology images and the adoption of new technology and applications by the medical center and local health providers will require



higher bandwidth access to the region. Rural health services provided by mobile workers would be enhanced by wireless access for mobile terminals on site.

## **1.8 Gap Analysis**

DSL services are not available in King and Queen County. DSL is in use by 27% of all businesses and only 12% of all residents (including those without any access).

Cable modem service is not available in Essex, Richmond or Northumberland counties. Cable modem is in use by only 6% of all businesses and 3% of all residents (including those without any access).

Wireless is not available in King and Queen or King William counties. Wireless is in use by 15.5% of all businesses and only 4% of all residents (including those without any access).

Price will be a limiting factor in decisions to purchase higher speed services. Nearly all users of dial-up services are dissatisfied with slow speeds, but most spend at or below \$20 per month for service. While most state higher speed services are not available to them, 21% stated what high-speed options are available are too expensive. For dial-up users outside of the reach of DSL or cable modem, the options available include satellite, perhaps cellular, or T1 - all options that range in cost from as low as \$50 to in excess of \$1000 per month. Of those businesses that are dissatisfied with current providers and service, 23% cite price as a reason. Of those businesses citing price dissatisfaction, 76% are currently paying less than \$100 per month for service. This indicates significant pressure for new broadband access methods at pricing below current service expenditures.

Schools exhibit the greatest bandwidth needs, primarily to access and distribute distance learning resources among individual schools. Current Internet connections are sufficient at this time for Internet access, but currently bandwidth is being conserved. There are distance learning resources available to the schools that can not be utilized without an increase in bandwidth, but current budgets limit increased spending for higher speeds.



## 1.9 Response mapping

Most respondents to the residential and business surveys provided their physical address for mapping purposes. Addresses were geocoded and using GIS techniques, responses to various survey questions were overlaid onto each County base map. Mapping has been provided for each planning district separately.

**Figure 5** (pages 34 and 35) identifies the physical location of all residential survey respondents that provided address information, and their type of Internet connection.

**Figure 6** (pages 36 and 37) identifies the location of business respondents and methods of access. The large numbers of dial-up subscribers are easily identified by the red dots. DSL subscribers (yellow dots) are concentrated within the 2-3 mile areas surrounding the telephone central offices near the center of each town.

**Figure 7** (pages 38 and 39) identifies residents using the Internet for school or job training (green squares) or to work from home (gray squares). All residents and businesses that are dissatisfied with the speed of their current service are represented by black dots.

**Figure 8** (pages 40 and 41) depicts the interest in high-speed wireless service by residents and businesses indicating dissatisfaction with current Internet speeds and overall dissatisfaction with the options currently available. Residents and businesses in all parts of the Region indicate they are very to somewhat likely to subscribe if service were available.



Figure 5: Residential Internet Connections and Survey Responses - NORTHERN NECK

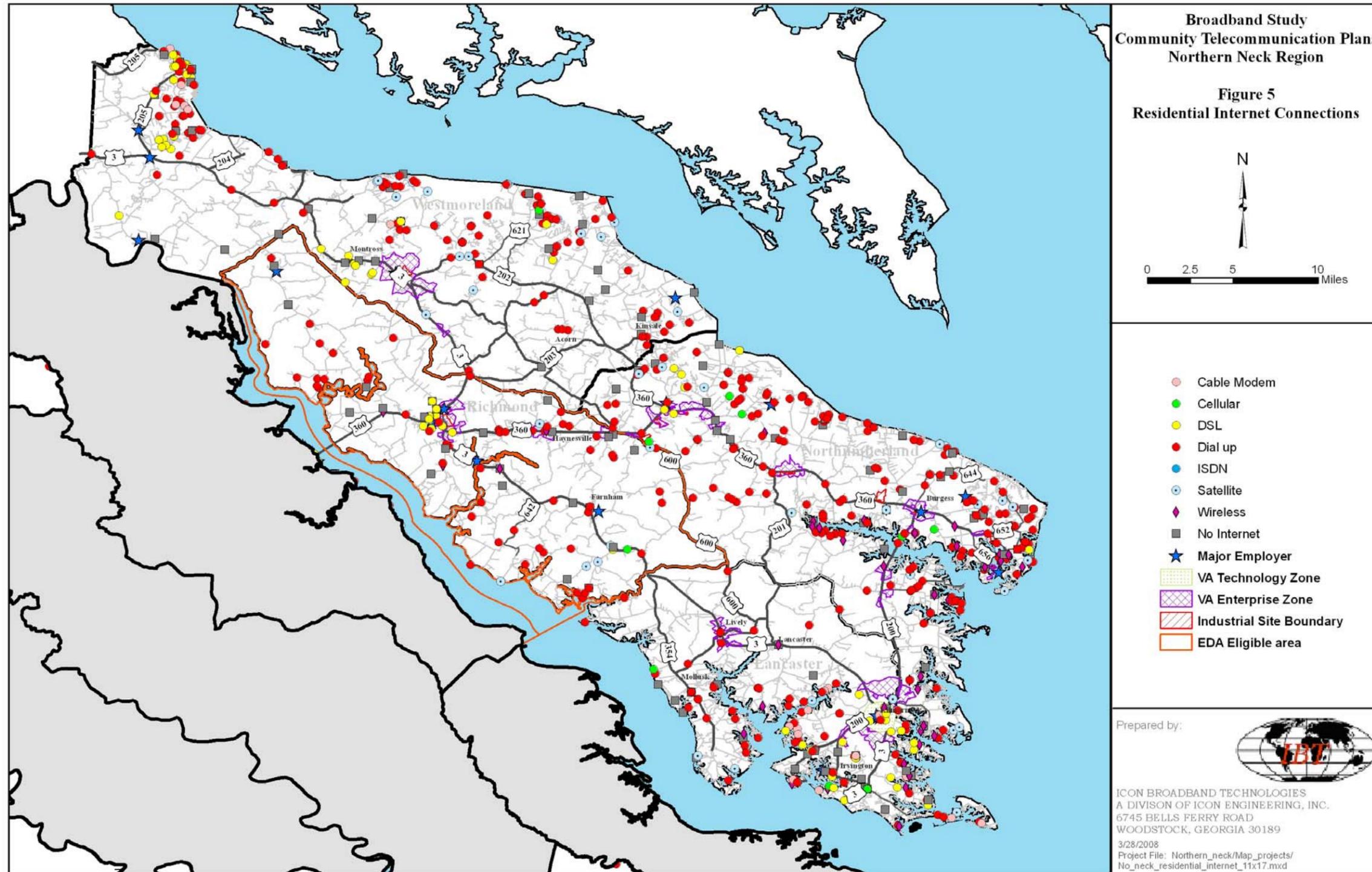




Figure 5: Residential Internet Connections and Survey Responses - MIDDLE PENINSULA

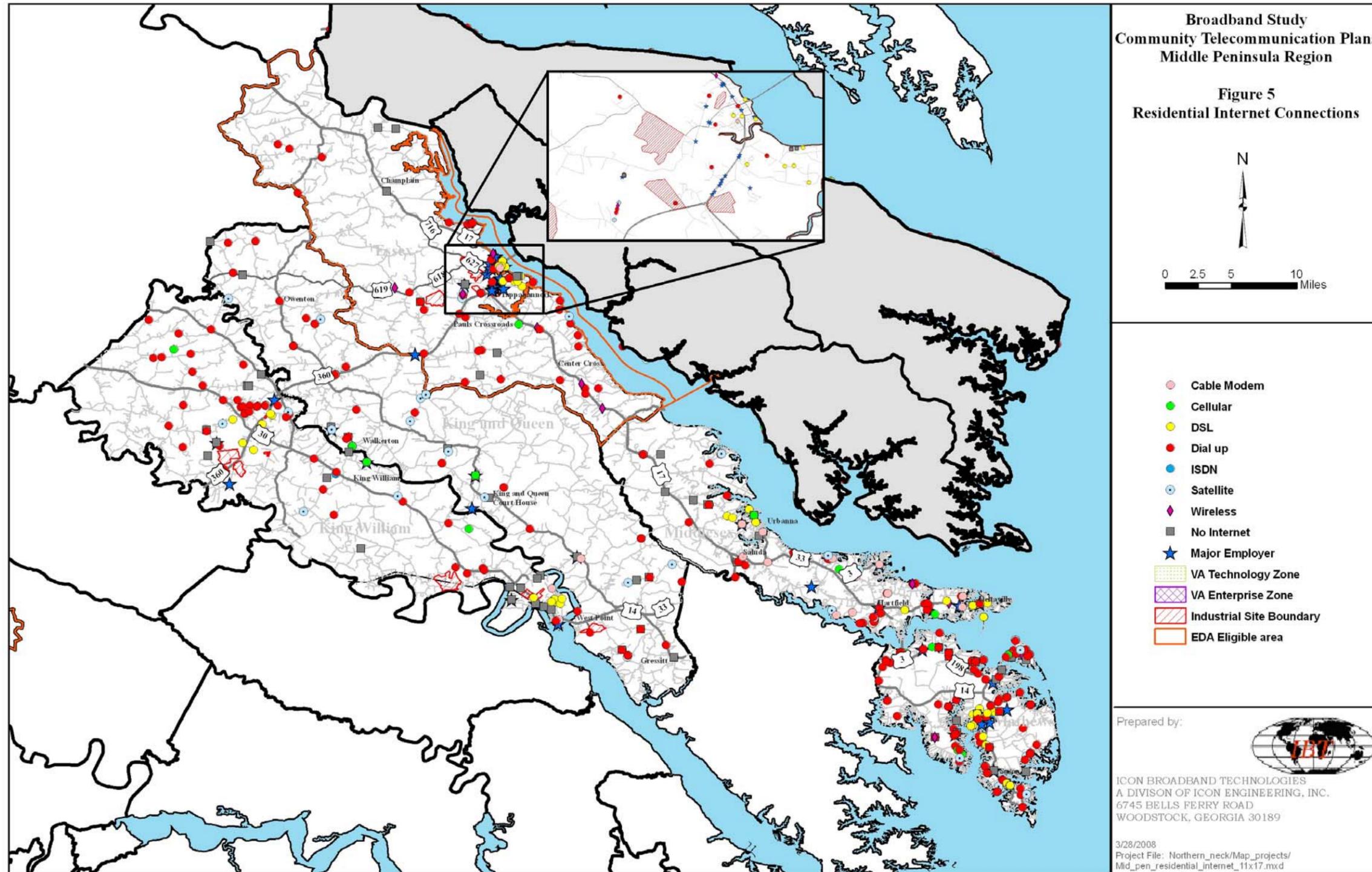




Figure 6: Business Internet Connections and Survey Responses - NORTHERN NECK

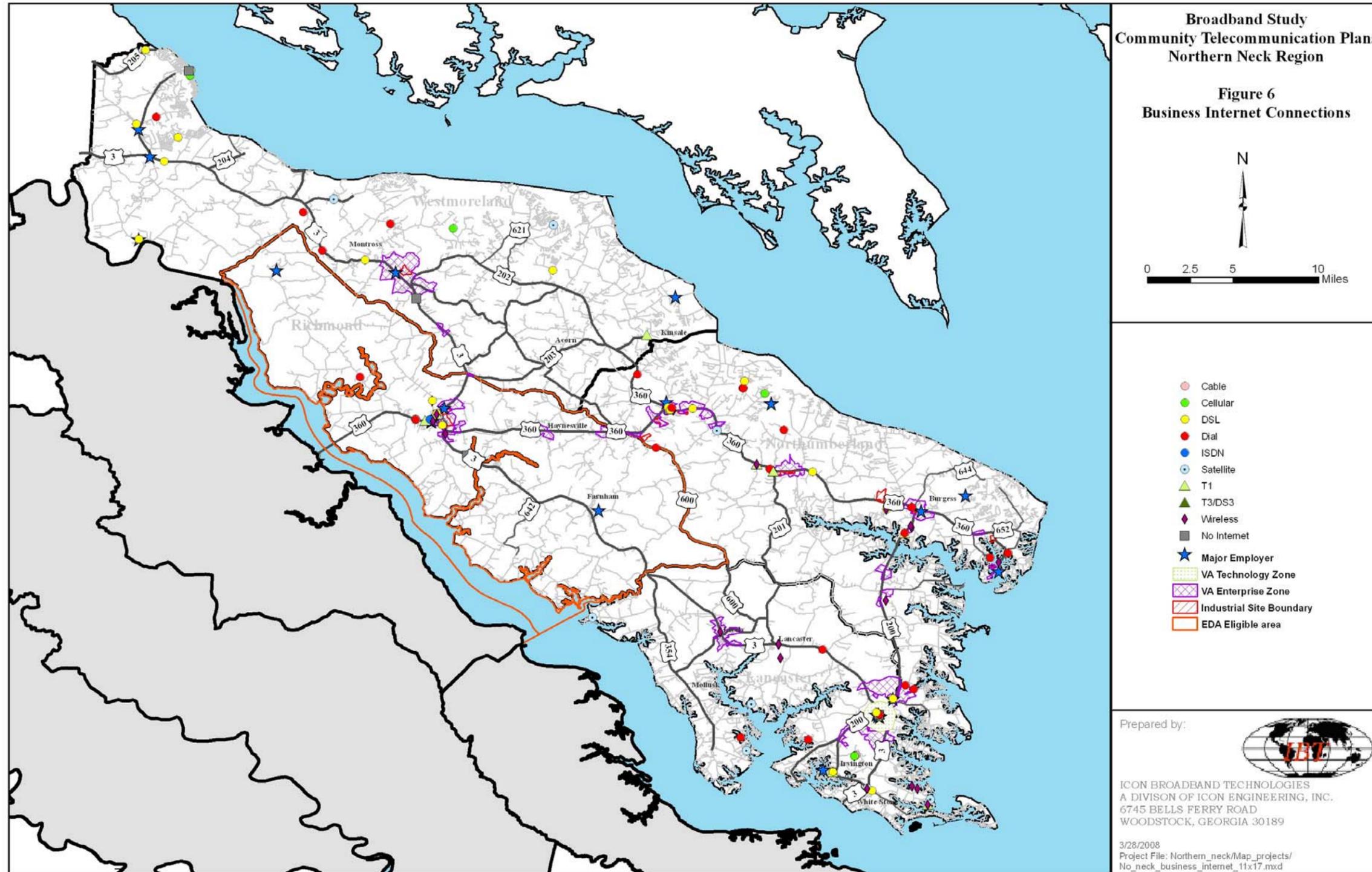




Figure 6: Business Internet Connections and Survey Responses - MIDDLE PENINSULA

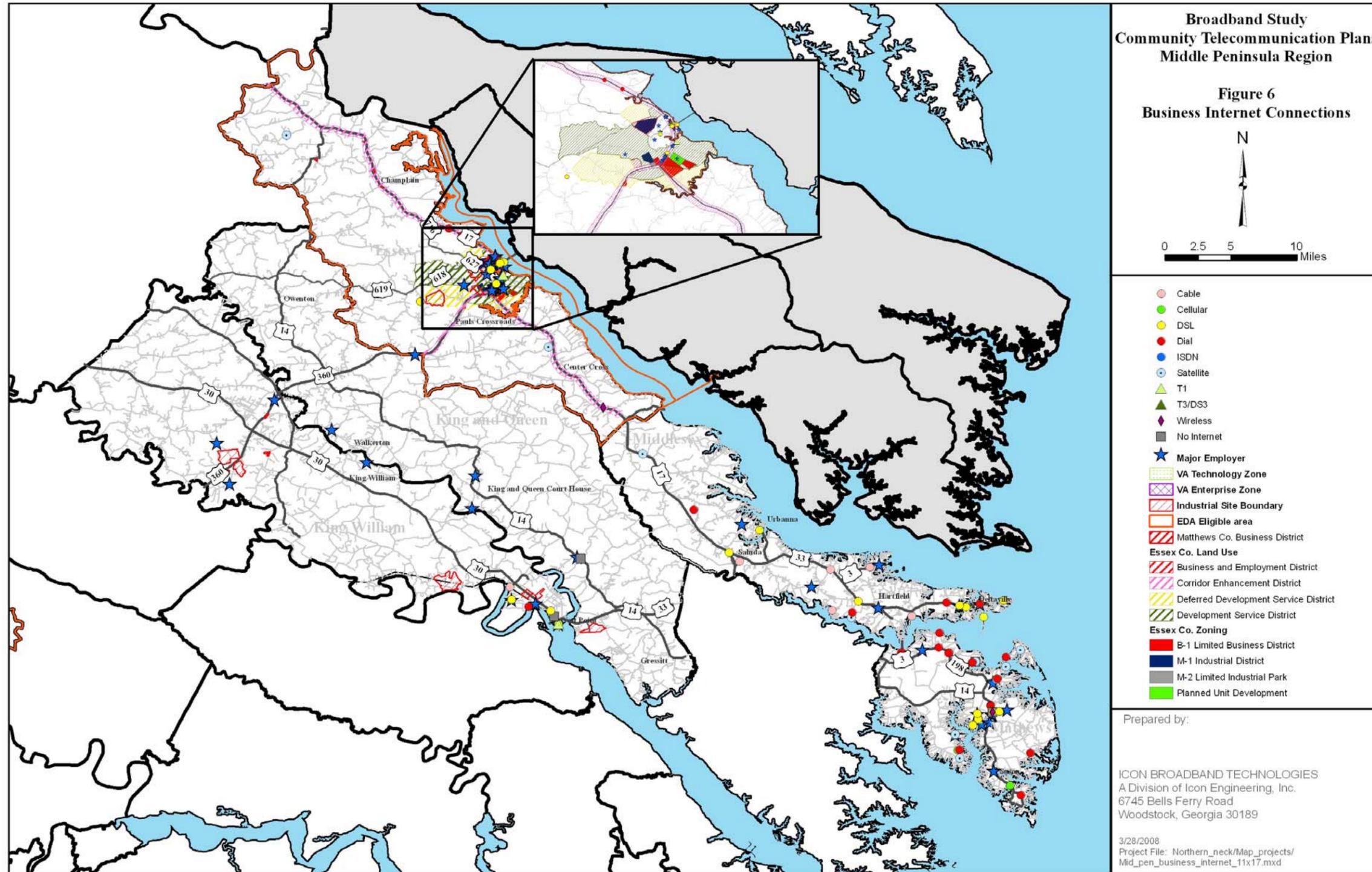




Figure 7: Internet Use and Satisfaction - NORTHERN NECK

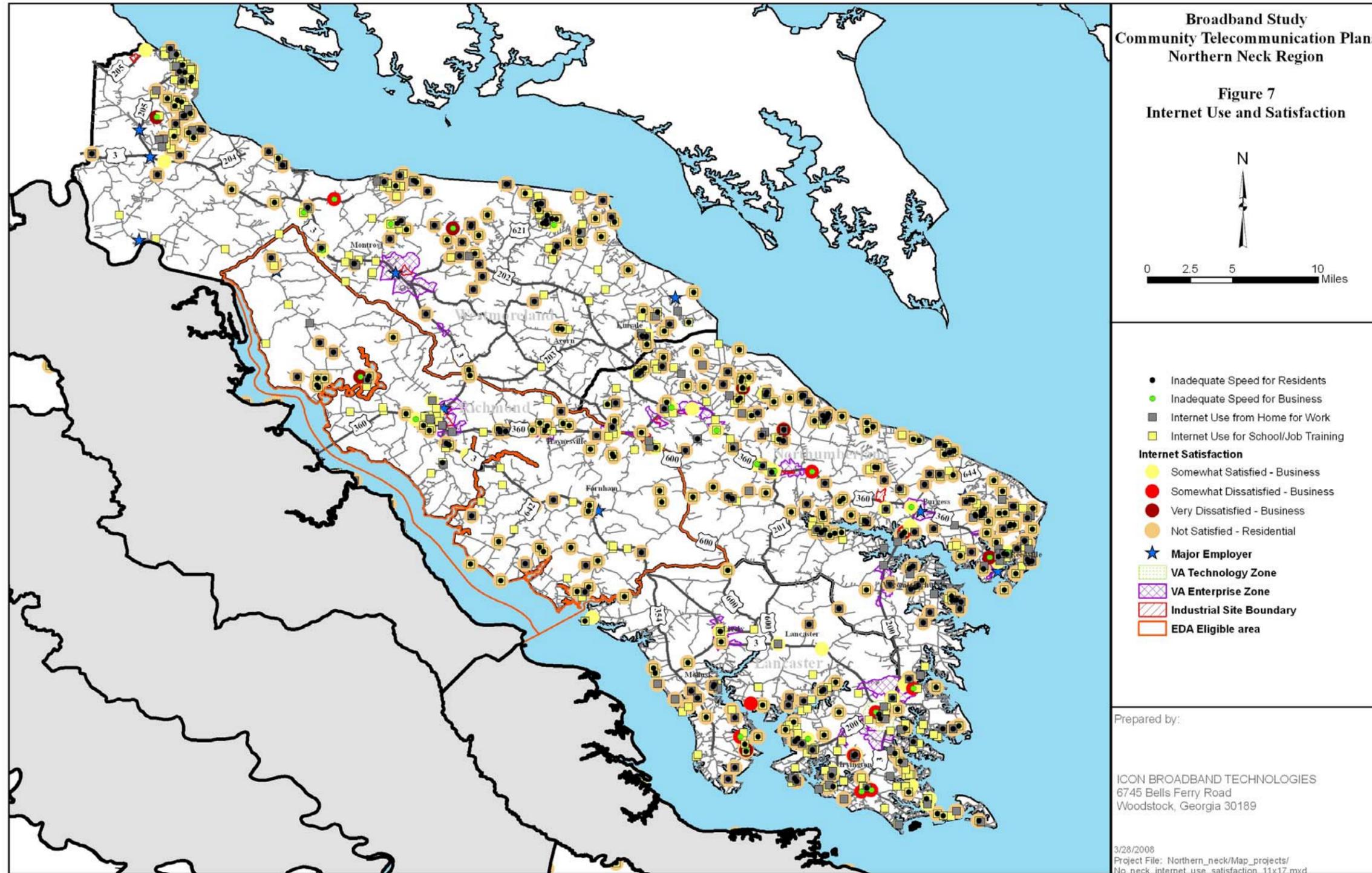




Figure 7: Internet Use and Satisfaction - MIDDLE PENINSULA

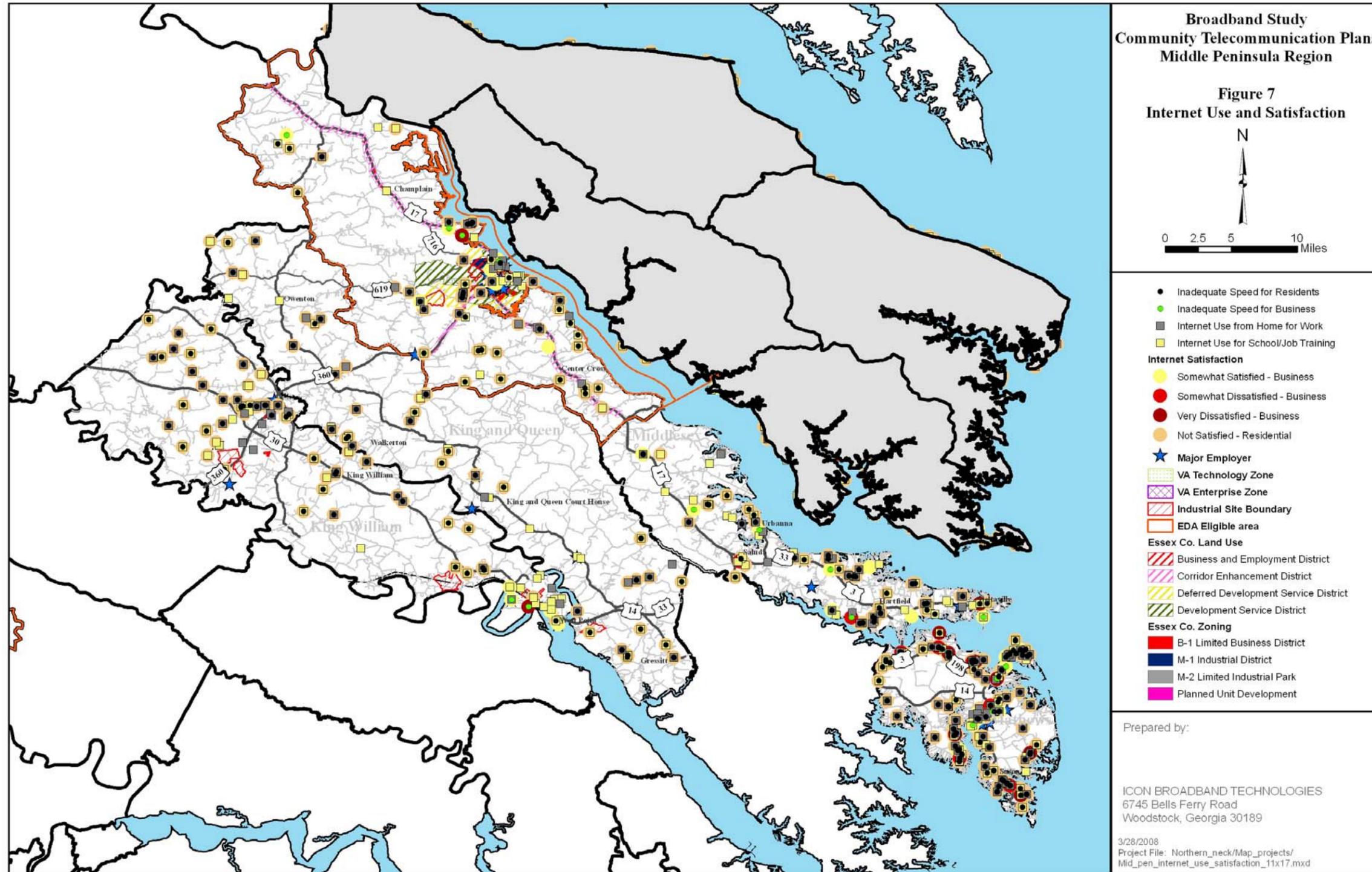




Figure 8: Wireless Interest - NORTHERN NECK

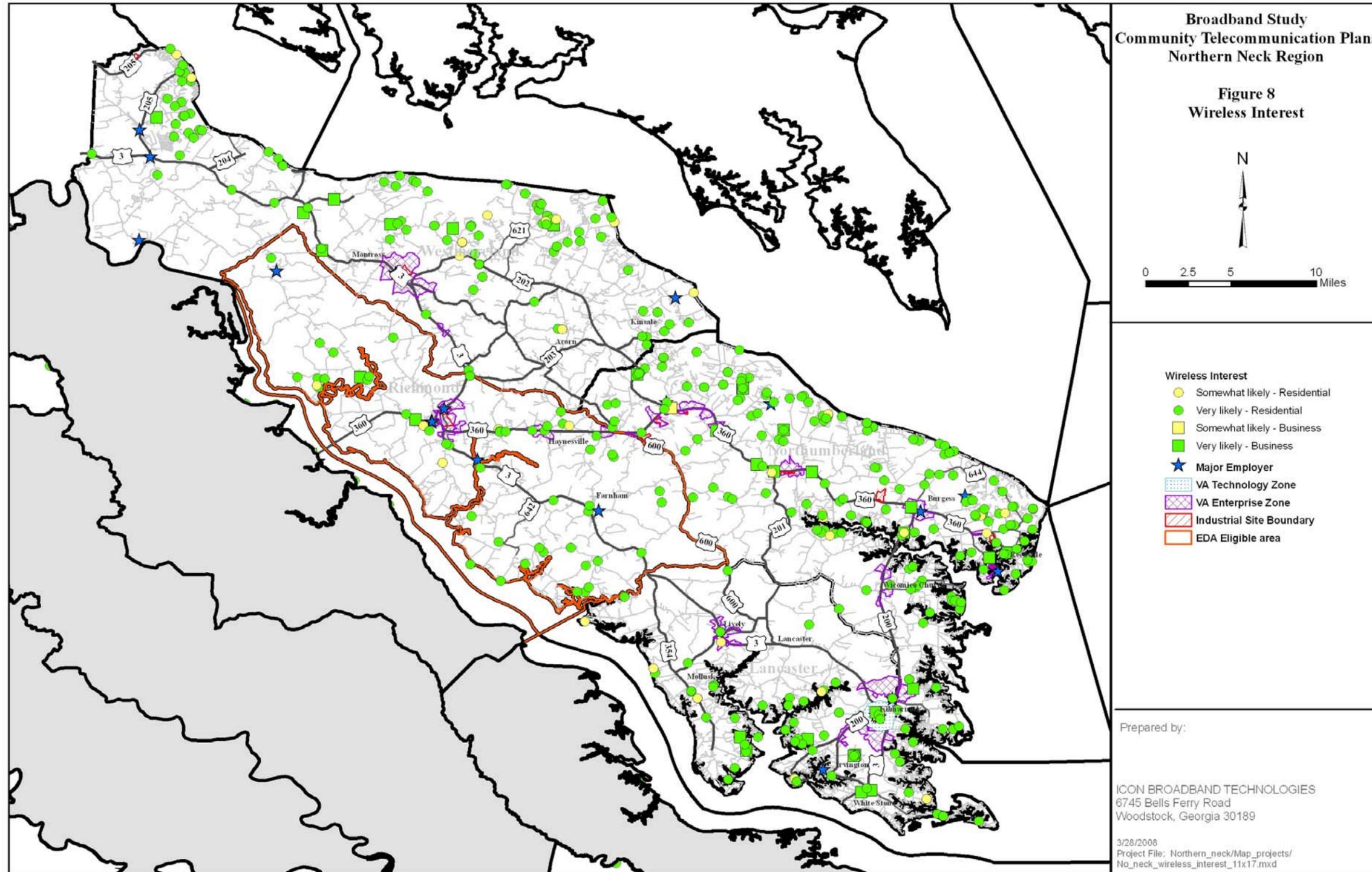
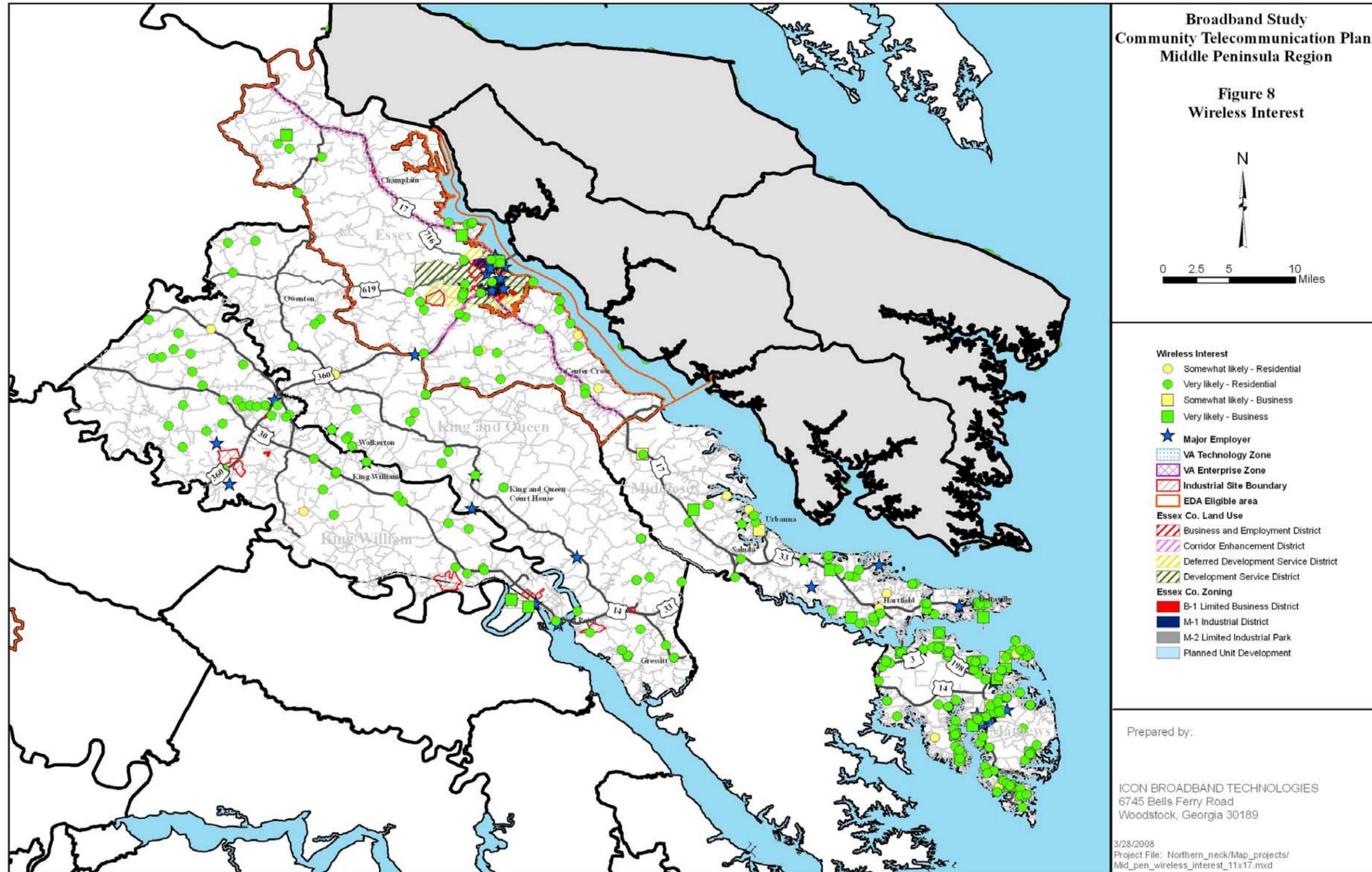




Figure 8: Wireless Interest - MIDDLE PENINSULA





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## **2.0 PLT - Attractiveness Index™ and Report of Findings**

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PLT's complete report has been provided under separate cover to the Northern Neck Planning District Commission. This work was performed in its entirety by PLT and provided to IBT for inclusion in the Community Broadband Planning study report.



**Attractiveness Index for the 9-County  
Northern Neck and Middle Peninsula Region  
Prepared by PLT  
For  
The Northern Neck Planning  
District Commission**



**December 18<sup>th</sup>, 2007**



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## Scope of Engagement

Using its Lean Build Attractiveness Index™ tool, PLT forecast both the total rate and pace of Internet participation for businesses and households in the 26 census tracts (CTs) that comprise the 9 counties covered by the Northern Neck and Middle Peninsula (NNMPVA) region, commonly referred to as Virginia's River country. The result was then analyzed to rank the relative attractiveness of each census tract for deployment based on the commercial interests of the ISP. For the purposes of this report, the information was analyzed assuming the ISP's focus is on facilitating access to the Internet for all Health Care (HC) & Educational (ED) establishments, as well as enabling the economic development effect of Internet access for commercial enterprise whilst minimizing the need for public funding. While it is not the focus of this ISP's Attractiveness Index™, the benefit of building the necessary Broadband infrastructure to the targeted industries is that residents and households will also get access to high speed Internet or a second Broadband provider in some instances.

## Deployment Recommendation

The Commonwealth's Broadband availability objective led PLT to recommend that the 26 census tracts in the 9-county region be addressed in three phases (Table 1). The first phase covers only four census tracts, but serves over 50% of all educational institutions and health care facilities, 32% of business and government prospects but only 15% of resident households with Internet access. The eight phase II census tracts have a more even distribution, with 31% of the education and healthcare establishments, 38% of all businesses and 39% of the households. Coverage in the last 14 census tracts tends to emphasize residential coverage. Phase III contain 46% of all households, 30% of the business establishments and the remaining 18% of the education and healthcare institutions. Map 1 below depicts the three-phase deployment for the region.



**Table 1 - Broadband Deployment Recommendation**

Deployment Phase	# of Census Tracts	HC and ED Establishments Covered	Businesses Covered	Households Covered
Phase 1	4	51%	32%	15%
Phase 2	8	31%	38%	26%
Phase 3	14	18%	30%	46%

However, deploying, in effect, a commercial ISP would do little to make Broadband universally available to the Virginia’s River Country until late in the deployment (Table 2).

**Table 2 - Progress Towards Universal Access**

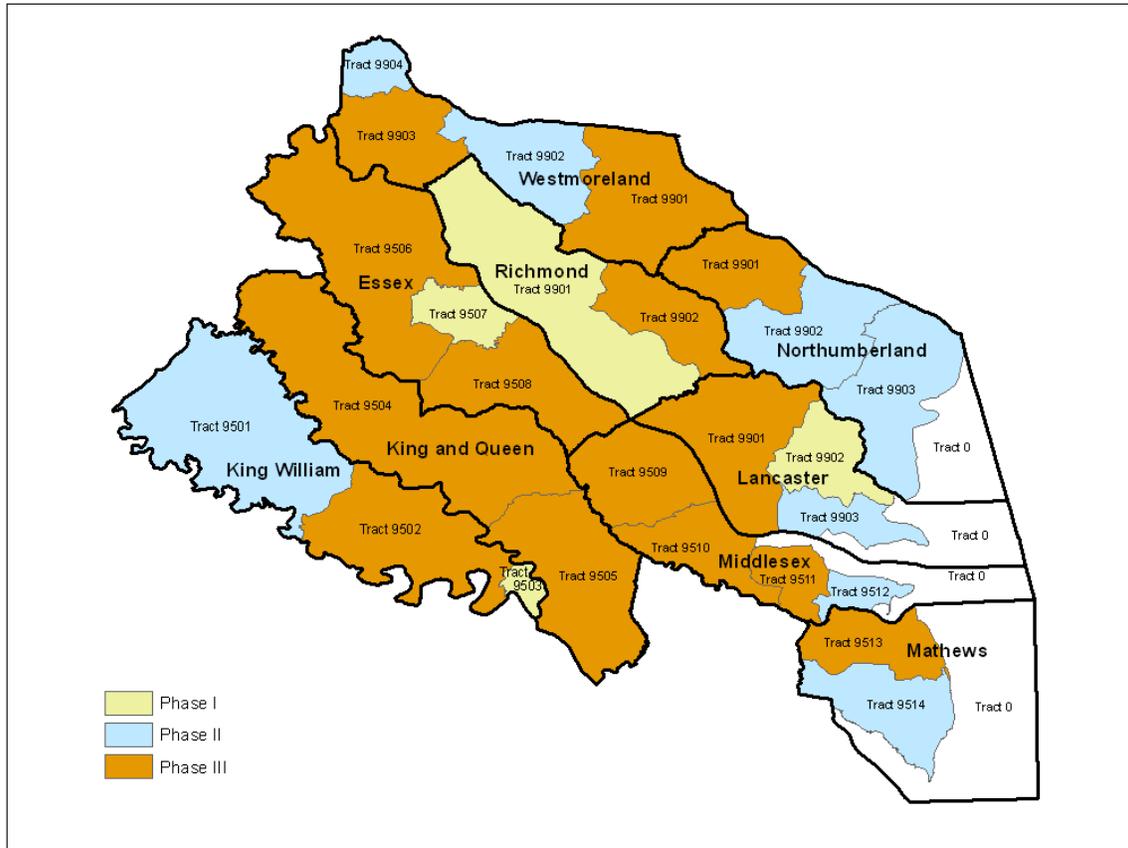
Phase	# of CTs	Business Coverage	Population Coverage
P1	4	29%	12%
P2	8	30% (59%)	26% (36%)
P3	14	41% (100%)	62% (100%)

## Findings Development Methodology

PLT used multiple public and private resources to develop NNMPVA’s Attractiveness Index™. For businesses, because the index forecasts the propensity of businesses, by industrial sector, to employ various types of Internet access, such as dialup, DSL and T-1 lines and then determines Broadband adoption in the categories of Early Adopter, Majority Adopter, and Late Adopter, it integrates information about industrial sectors, employment by establishment, usage of e-commerce and telecommunication spending. For the residential Attractiveness Index™, PLT uses demographics such as the number of households, ages and income of households, location of population in rural and urban areas and total population.



**Map 1 - Three Phase Deployment by Census Tract**



**Strategic Goal for Broadband**

The Commonwealth of Virginia has embarked on a plan to bring Broadband connectivity to all businesses in the state by 2010. This Broadband initiative emphasizes investing the Commonwealth’s money on connecting hospitals and health care facilities, educational institutions and major employers to high speed Internet. The purpose of this study is to ascertain how a rural Internet Service Provider (ISP) that is charged with the strategic goal of universal Broadband access for business would view the Northern Neck and Middle Peninsula (NNMPVA) region.

**Overview of the Region**

Two major hospitals are located in this region, Riverside Tappahannock Hospital in Tappahannock, Essex County and Rappahannock General Hospital in Kilmarnock, Lancaster



County. Rappahannock Community College has a campus in Warsaw, Richmond County and in Glens, Gloucester, which is not included in this report.

Some of the major employers in the region include the hospitals named above plus Smurfit Stone in King William County, the Tides Inn Inc., a resort in Lancaster County, Verizon Communications in Richmond County, Bevans Oyster Company in Westmoreland County, and Omega Protein Inc. in Northumberland County.

This region of Virginia, also called Virginia’s River Country, is composed of nine counties:

Essex	Lancaster	Northumberland
King & Queen	Mathews	Richmond
King William	Middlesex	Westmoreland

## **Behavior of a Rational Broadband Internet Service Provider**

To comport with the Commonwealth’s desire to provide Broadband services to hospitals and other health care facilities, educational institutions and major employers, a Broadband Internet Service Provider would deploy in three phases. The focus will be on facilitating access to the Internet for the targeted establishments. Phase I would include the census tracts with 20 or more educational institutions (ED) and health care facilities (HC). Phase II will be those census tracts with less than 20 ED and HC entities but more than 10. Phase III includes those census tracts that have fewer than 10 ED and HC entities. Within each phase, census tracts will be deployed according to the highest number of commercial and government prospects that will minimize the need for public funding.

## **Using This Report**

PLT presents its regional conclusions in the section titled “Conclusions”. It then provides its findings for each phase of deployment in two parts, “Progress Towards Target Coverage” considers what proportion of healthcare, education and commercial entities are covered. Then what proportion of those thought to be without Broadband now could get service is presented for each phase under the heading “Progress Towards Universal Broadband”. Finally, PLT describes how it derived its findings in the section titled “Methodology”.



## Conclusions

Over 500 health care facilities and educational institutions exist in the NNMPVA region. The Attractiveness Index™ forecasts that 406 of these entities would be Internet prospects representing 81% of the total number of institutions. About 30% of these entities it is forecast would use dialup. Of the nearly 5,000 business establishments in the region, nearly 3,000 are prospective users of Broadband. Of these 3,000 businesses, 42% are not served by DSL.

The three phase deployment scenario selected to meet the telecom planning requirement would result in these commercial, educational and healthcare institutions in the 26 census tracts being covered as follows:

1. Phase one would cover only four census tracts which would then cover over 50% of all educational institutions and health care facilities, 32% of business and government prospects but only 15% of resident households with Internet access.
2. Phase two would add 31% of all educational institutions and health care facilities, 38% of business and government prospects and 39% of resident households with Internet access.
3. Finally, phase three would close out the deployment, emphasizing coverage of the residential market. It would add coverage to 14 census tracts, which contain 18% of all educational institutions and health care facilities, 30% of business and government prospects and 46% of resident households with Internet access.

Deploying, in effect, a commercial ISP would do little to make Broadband universally available to the Virginia's River Country until late in the deployment. PLT found that:

1. Covering the four census tracts in phase one gave 29% of businesses that are not now covered by DSL but only added 12% of households without DSL.
2. Phase two's eight CT's added 30% of businesses and 39% of households who are without DSL.
3. Finally, phase three's fourteen census tracts would enable 41% of businesses that are not now covered by DSL and add 62% of the households without DSL.



## Findings Development

The analysis of these counties was conducted at the census tract<sup>5</sup> level. A total of 26 census tracts exist in the nine counties analyzed. The methodology employed is described in the section of the report titled “Methodology”.

Illustrating the wide range of communities found in the nine county region, Table 3 shows the totals for the region plus average, maximum and minimum by census tract for various measurements.

**Table 3 - Nine County Profile**

	<b>NNMPVA Totals</b>	<b>Census Tract Average</b>	<b>Census Tract Maximum Size</b>	<b>Census Tract Minimum Size</b>
Residents	98,257	3,779	8,322	1,586
Households	39,998	1,538	3,023	660
Average Household Size	Not available	2.5	3.8	2.1
Business Establishments	4,936	190	615	1
Population Density per Square Mile	54.2	92	398	18
Business & Government Prospect Count	2,958	114	328	3
Business & Government Early Adopter Prospect Count	1,547	60	172	2
Business & Government Majority Adopter Prospect Count	946	36	111	1
Business & Government Late Adopter Prospect Count	465	18	44	0
Residential Internet Household Count	19,227	739	1,834	297
Percentage with DSL Access	59.7	66	100	25
Population Not Served by DSL	32,179	1,238	4,161	0

<sup>5</sup> A census tract is a geographically defined area containing between 1,000 – 8,000 residents.



Residential Early Adopter Prospect Count	3,719	143	305	55
Residential Majority Adopter Prospect Count	6,422	247	533	96
Residential Late Adopter Prospect Count	4,827	186	303	74
Residential Remaining on Dial-up	4,259	164	694	47
Residential Market Dial-Up Percentage	55	22	38	7
Residential Non Internet Users Percentage	52	52	59	39

## Phase I

### ***Progress Towards Target Coverage***

The first four census tracts with the largest number of healthcare and education facilities are listed below on Table 4 and shown on Map 2. Also included in Table 4 is the total number of business and government Broadband prospects plus the number of potential resident households that could be served along with the businesses.

Both major hospitals, Riverside Tappahannock Hospital (Essex County) and Rappahannock General Hospital (Lancaster County), and the Rappahannock Community College (Richmond County) are located within the Phase I area. Another major employer in this area is Smurfit-Stone Container Corporation, a paperboard manufacturing company, located in King William County. The most residential households to potentially gain access to affordable Broadband would be Richmond County's census tract 9901, the area in and around Warsaw.

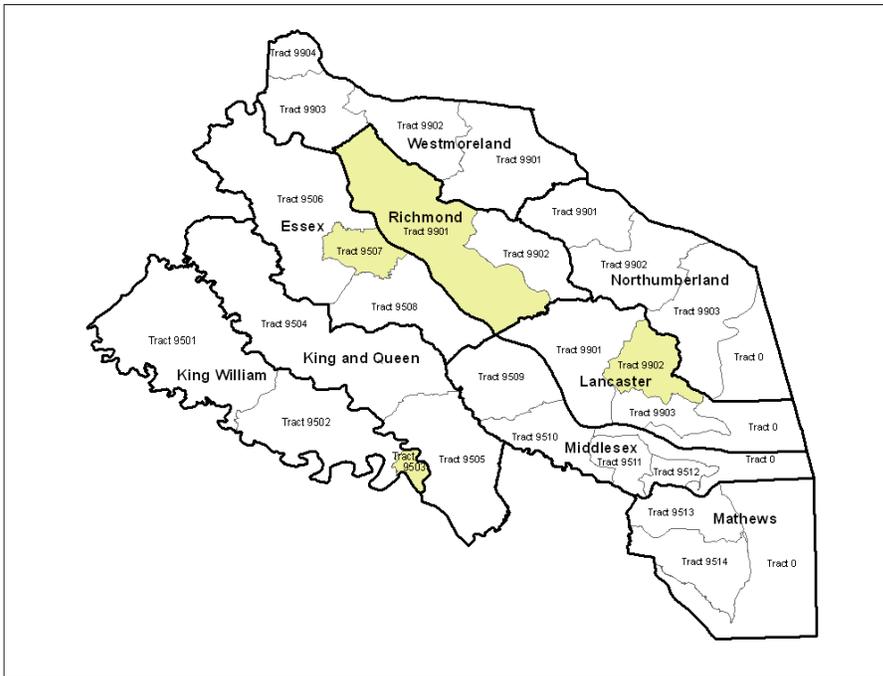
**Table 4 – Phase I Count of Prospects**

County	Census Tract	ED + HC	Business & Government Prospect Count	Residential Internet Household Count	Deploy
Lancaster	CT 9902 Kilmarnock	82	328	717	1
Essex	CT 9507 Tappahannock	68	263	692	2
Richmond	CT 9901 Warsaw	37	219	902	3
King William	CT 9503 West Point	21	143	594	4
TOTAL		208	953	2,905	



These four census tracts contain 51.2% of all educational institutions (ED) and health care (HC) facilities, 32.2% of business and government prospects but only 15.1% of resident households with Internet access.

**Map 2 – Phase I Deployment**



**Progress Towards Universal Broadband**

Table 5 depicts the number of businesses and residential households that are not currently served by DSL. The Warsaw census track in Richmond County has the largest residential households not served by DSL while the West Point census tract in King William County is completely covered by DSL for both businesses and households. These four census tracts represent 29.7% of businesses that are not covered by DSL and 11.8% of households without DSL.

**Table 5 – Phase I: No DSL Service**

Census Tract	County	Business Not Served by DSL	Population Not Served by DSL
CT 9902 Kilmarnock	Lancaster	102	634



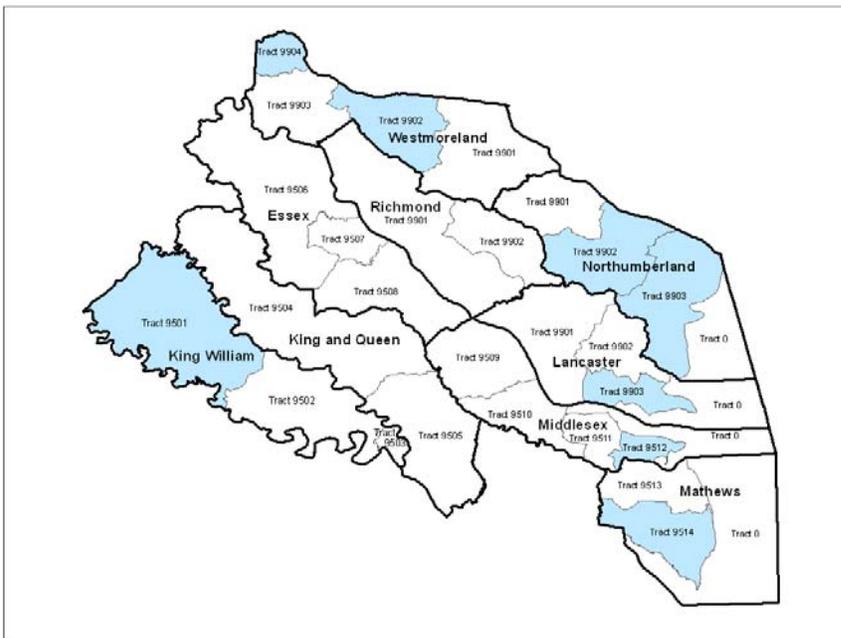
CT 9507 Tappahannock	Essex	85	580
CT 9901 Warsaw	Richmond	185	2,570
CT 9503 West Point	King William	0	0
TOTAL		372	3,784

## Phase II

### *Progress Towards Target Coverage*

The next eight census tracts with the largest number of targeted facilities are listed on Map 3 and in Table 6.

**Map 3 – Phase II Deployment**



Also included in the table is the total number of business and government Broadband prospects plus the number of potential resident households that could be served along with the businesses. These eight census tracts contain 31.2% of all educational institutions and health care facilities, 38.2% of business and government prospects and 26.3% of resident households with Internet access. Major employers located in this area include the Ingleside Plantation, a winery, (Westmoreland CT 9904), The Tides Inn, a resort, (Lancaster CT9903) and Omega Protein, a fish oil, meal and solubles manufacturing facility in Northumberland,



CT 9903.

In phase two, the provider could also offer service to a substantial number of households. For example, over 1,800 residential households could have affordable access to Broadband in King William County while 1,146 households in and around Reedville would gain access. Finally slightly over 1,000 residents in and around Colonial Beach would also gain access.

**Table 6 – Phase II Count of Prospects**

Census Tract	County	ED + HC	Business & Government Prospect Count	Residential Internet Household Count	Deploy
Westmoreland	CT 9902 Montross	19	178	633	1
Mathews	CT 9514 Mathews	18	167	979	2
Westmoreland	CT 9904 Colonial Beach	16	157	1,003	3
Lancaster	CT 9903 Whitestone	14	151	841	4
Northumberland	CT 9902 Heathsville	13	132	600	5
Middlesex	CT 9512 Deltaville	13	117	501	6
Northumberland	CT 9903 Reedville	17	116	1,146	7
King William	CT 9501 No. King William	17	111	1,834	8
Total		127	1,129	7,537	

***Progress Towards Universal Broadband***

As Table 7 shows, only three census tracts are fully covered with DSL. These eight census tracts represent 29.8% of businesses that are not covered by DSL and 26.3% of households without DSL. The most poorly served are the over 4,000 residents in North King William County who are currently without DSL coverage.

**Table 7 – Phase II: No DSL Service**

Census Tract	County	Business Not Served by DSL	Population Not Served by DSL
Westmoreland	CT 9902 Montross	93	1,086
Mathews	CT 9514 Mathews	48	796



<b>Census Tract</b>	<b>County</b>	<b>Business Not Served by DSL</b>	<b>Population Not Served by DSL</b>
Westmoreland	CT 9904 Colonial Beach	0	0
Lancaster	CT 9903 Whitestone	0	0
Northumberland	CT 9902 Heathsville	95	1,513
Middlesex	CT 9512 Deltaville	0	0
Northumberland	CT 9903 Reedville	35	920
King William	CT 9501 No. King William	103	4,161
<b>TOTAL</b>		<b>374</b>	<b>8,476</b>

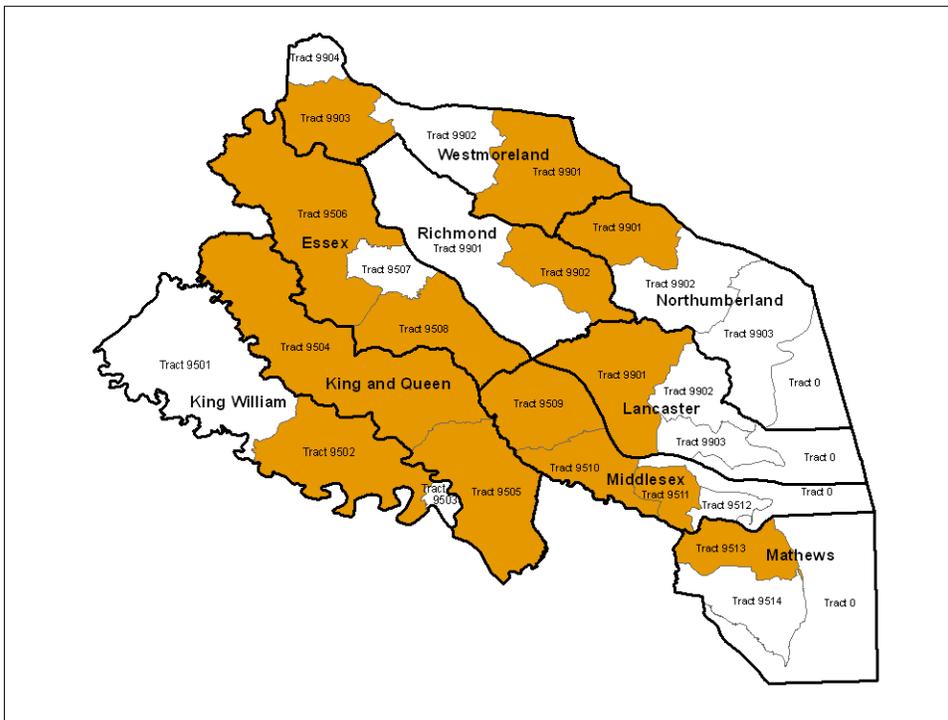


## Phase III

### ***Progress Towards Target Coverage***

The last 14 counties to receive Broadband access shown on Map 4 are listed in Table 8. These fourteen census tracts contain 17.5% of all educational institutions and health care facilities, 29.6% of business and government prospects and 45.7% of resident households with Internet access.

**Map 4 – Phase III Deployment**



As the following table shows, four census tracts have neither an educational institution nor a health care facility. Ball Lumber Company is located in King and Queen County, census tract 9504. E & P Embroidery, another major employer in the region, is located in Mathews County, census tract 9513. Lastly, Bennett Mineral is located in census tract 9508 in Middlesex County.



**Table 8 – Phase III Count of Prospects**

County	Census Tract	E D + H C	Business & Government Prospect Count	Residential Internet Household Count	Deploy
King William	CT 9502 King William	9	128	385	1
Middlesex	CT 9511 Saluda/Topping	10	97	504	2
Northumberland	CT 9901 Callao	9	96	734	3
Middlesex	CT 9510 Urbanna	9	91	702	4
King and Queen	CT 9504 No. King & Queen	6	80	731	5
Westmoreland	CT 9901 So. Westmoreland	6	68	1,023	6
Mathews	CT 9513 No. Mathews	3	67	969	7
King and Queen	CT 9505 So. King & Queen	7	64	561	8
Richmond	CT 9902 So. Richmond	6	58	448	9
Middlesex	CT 9509 No. Middlesex	6	47	297	10
Essex	CT 9508 So. Essex	0	41	566	11
Essex	CT 9506 No. Essex	0	19	684	12
Lancaster	CT 9901 NE Lancaster	0	17	669	13
Westmoreland	CT 9903 NE Westmoreland	0	3	513	14
<b>TOTAL</b>		<b>71</b>	<b>876</b>	<b>8,786</b>	

***Progress Towards Universal Broadband***

PLT found that by emphasizing coverage for Healthcare and education providers and then targeting commercial Broadband consumers would leave fourteen census tracts representing 40.5% of all of the businesses that are not covered by DSL and 61.9% of households without DSL to the final phase of deployment.



As the Table 9 shows, one census tract has only one business. Over 19,900 residents in this region cannot receive DSL service.

**Table 9 – Phase III No DSL Service**

<b>County</b>	<b>Census Tract</b>	<b>Business Not Served by DSL</b>	<b>Population Not Served by DSL</b>
King William	CT 9502 King William	130	1,410
Middlesex	CT 9511 Saluda/Topping	25	416
Northumberland	CT 9901 Callao	60	1,230
Middlesex	CT 9510 Urbanna	23	584
King and Queen	CT 9504 No. King & Queen	63	2,841
Westmoreland	CT 9901 So. Westmoreland	35	1,780
Mathews	CT 9513 No. Mathews	17	732
King and Queen	CT 9505 So. King & Queen	50	1,660
Richmond	CT 9902 So. Richmond	25	1,222
Middlesex	CT 9509 No. Middlesex	30	926
Essex	CT 9508 So. Essex	29	1,461
Essex	CT 9506 No. Essex	13	2,385
Lancaster	CT 9901 NE Lancaster	7	1,802
Westmoreland	CT 9903 NE Westmoreland	1	1,470
<b>Total</b>		<b>508</b>	<b>19,919</b>



## **Purpose of the Attractiveness Index™**

The purpose of this report and the associated workbook (NNMPVA AI Workbook (Final)) from which findings have been drawn is to provide those with the responsibility and the means to help an incoming ISP, understand how that ISP will view the NNMPVA region. And, how the relative distribution of demand would influence the sequence in which a Broadband Internet Service Provider would rollout service.

## ***Summary Methodology Description***

The NNMPVA index was developed from an analysis of the businesses operating in the region, the population and the probable geographical coverage of DSL. Data provided by the US Census Bureau and other business resources<sup>6</sup> on population and business was collected at the census tract<sup>7</sup> level. This demographic information was compared to a matrix of purchase behavior derived from a wide range of recently published studies of rural residents (worksheet titled Residential Analysis) and business (worksheet titled Business Analysis) Internet usage behavior.

PLT used multiple public and private resources to develop NNMPVA's index. For the residential index, PLT uses demographics such as the number of households, ages and income of households, location of population in rural and urban areas and total population. For businesses, because the Attractiveness Index™ forecasts the propensity of businesses, by industrial sector, to employ various types of Internet access, such as dialup, DSL and T-1 lines and then determines Broadband adoption in the categories of Early Adopter, Majority Adopter, and Late Adopter, the Attractiveness Index™ integrates information about industrial sectors, employment by establishment, usage of e-commerce and telecommunication spending.

The probable DSL footprint (worksheet titled DSL coverage Analysis) was developed with the application of commonly applied DSL performance parameters and data about DSL penetration in rural Virginia.

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<sup>6</sup> Resources used include Decision Data Resources and county economic development reports

<sup>7</sup> Census tracts generally contain between 1,000 and 8,000 people. Census tract boundaries are delineated with the intention of being stable over several years, so they generally follow relatively permanent visible features, such as rivers, mountains, valleys, etc. The U.S. Census Bureau works with local people to establish the boundaries. Block groups are statistical subdivisions of census tract. To complete the analysis it was necessary to supplement Census data with various business resources.



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## **3.0 Comparative Analysis of Findings**

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### **3.1 Analysis of Findings from the Perspective of Service Provider and End-Users**

In an effort to concentrate resources on the most feasible communities and corridors that meet the criteria of the VDHCD funding program, the Needs Assessment Milestone for the communities of the Northern Neck and Middle Peninsula Region Telecommunications Project is unique from other Virginia Broadband Planning studies. Two (2) methodologies were used; an analysis that uses publicly available data to forecast both the total rate and pace of Internet participation for businesses and households in the analyzed communities and where it is probably offered now, called the ISP's Attractiveness Index™ (AI) and an on-the-ground needs assessment survey from the perspective of the customer. The AI result ranks the relative attractiveness of each census tract for deployment by the ISP, starting with those census tracts that most strongly map to the commercial interest of the Internet service provider. The on-the-ground needs assessment survey approaches need from the end-use customer's input provided to both a residential and business survey. Responses were geocoded for exact identification of input location and mapped.

It would be helpful to think of the two studies in this way. The AI framed the picture, and the Needs Assessment Surveys helped bring the picture into focus. The Needs Assessment is focused on capturing the expressed needs of the end-use customer rather than the AI which predicts the customers' desires based on demographic profiling. Since the successful deployment of an open access network will largely depend on how attractive the location of the network is in relation to demand, the results of both of these methodologies are provided independently within the report. The results of the two methodologies were analyzed together by overlaying the findings to identify patterns of strong correlation (compliment of service provider's deployment attractiveness interest and end-user's need interest) and differences in findings (conflict between service provider interest and end-user need). As can be seen from the following table, the findings of the two methodologies complimented each other in more cases than conflicted with each other.

When analyzing the Survey Needs Assessment for agreement or disagreement with the Attractiveness Index deployment ranking, the most feasible network build-out scenario was conceptualized taking into consideration factors such as the likely Mid Atlantic Broadband Fiber Network build out (Main Network), likely route of a community's network (Distribution Network), and the technical capabilities of the likely network serving the customer (Access Network).



The areas where deployment priorities are in disagreement is not an indication of two contrasting results, but rather consideration of other factors that one methodology takes into consideration, but not the other. For instance, the AI does not consider the capital cost of deployment. The AI also does not take into consideration on-going economic development efforts, such as Corridor Enhancement Districts and VA Enterprise Zones. The Needs Assessment Survey does not attempt to sequence deployment, but rather focuses on where the need exists. While priority reasoning is provided in the following table under the Needs Assessment Survey, these priorities are only based on a first look conceptual network. Actual priority areas will be determined as part of the Phase II study when looking at population and housing density data for premises passed, field work for extent of make ready required, penetration rates to expect based on business modeling, cost of building the infrastructure, and of course interest by the service providers and communities, and much more.

While the following analysis and correlation of the data helps filter where broadband planning should continue in the large rural study area, the information will play a much larger role and have multiple applications when combined with discussions and input from service providers and additional field data. While census tracts were the geographical area used in arriving at the AI, census tracts cross municipal and other geographic boundaries and are somewhat ambiguous. The continued focus in Phase II of the study will shift more towards on-the-ground obstacles and merit of getting from point A to point B to point C and so on. One benefit of the AI was to help identify what general regions and points to include.



**Table 3.1 Comparative Analysis of Findings**

Area Identification		PLT Attractiveness Index		Needs Assessment Survey		
County	Census Tract	Deployment Sequence	Deployment Phase	Priority	Priority Reason	Map Data
Lancaster	CT 9902 Kilmarnock	1	1	Primary	Believed to be a high priority community distribution fiber build need	VA Enterprise Zone
Essex	CT 9507 Tappahannock	2	1	Primary	Believed to be a logical MBC main fiber build through Essex CT 9507	Dev. Service Dist.; Business & Employ. Dist.
Richmond	CT 9901 Warsaw	3	1	Primary	Believed to be a logical MBC Main fiber build through Richmond CT 9901	VA Enterprise Zone
King William	CT 9503 West Point	4	1	Primary	Believed to be a high priority community distribution fiber build need	Corridor Enhancement Dist.
Westmoreland	CT 9902 Montross	5	2	Primary	Believed to be a logical MBC main fiber build through Westmoreland CT 9902	VA Enterprise Zone
Mathews	CT 9514 Mathews	6	2	Secondary	Will likely need to be served coming off MBC fiber in Gloucester County	
Westmoreland	CT 9904 Colonial Beach	7	2	Primary	Believed to be a logical MBC main fiber build through Westmoreland CT 9904	
Lancaster	CT 9903 Whitestone	8	2	Primary	Believed to be a high priority community distribution fiber build Need	VA Enterprise Zone
Northumberland	CT 9902 Heathsville	9	2	Primary	Believed to be a high priority community distribution fiber build Need	VA Enterprise Zone
Middlesex	CT 9512 Deltaville	10	2	Tertiary	No fiber anticipated; Probable wireless solution only	
Northumberland	CT 9903 Reedville	11	2	Primary	Believed to be a high priority community distribution fiber build need	VA Enterprise Zone
King William	CT 9501 No. King William	12	2	Tertiary	Low priority community fiber may come through King William CT 9501 to serve South End of King William CT 9501 and for redundancy ring out of King William CT 9503	South End of County Corridor Enhancement District
King William	CT 9502 King William	13	3	Tertiary	Low Priority Community Fiber may come through King William CT 9502 for redundancy ring out of King William CT 9503	
Middlesex	CT 9511 Saluda/Topping	14	3	Tertiary	No fiber anticipated; Probable wireless solution only	
Northumberland	CT 9901 Callao	15	3	Tertiary	No fiber anticipated; Probable wireless solution only	
Middlesex	CT 9510 Urbanna	16	3	Primary	Believed to be a logical MBC main fiber build through Middlesex CT 9510	
King and Queen	CT 9504 No. King & Queen	17	3	Tertiary	Low priority community fiber may come through King & Queen CT 9504 to serve King William CT 9501 and redundancy ring out of King William CT 9503	
Westmoreland	CT 9901 So. Westmoreland	18	3	Tertiary	No fiber anticipated; Probable wireless solution only	
Mathews	CT 9513 No. Mathews	19	3	Tertiary	No fiber anticipated; Probable wireless solution only	
King and Queen	CT 9505 So. King & Queen	20	3	Secondary	King William CT 9503 may be dependent on fiber coming through King & Queen CT 9505	Corridor Enhancement District
Richmond	CT 9902 So. Richmond	21	3	Primary	Northumberland CT 9902 and CT9903 may be dependent on fiber coming through Richmond CT 9902	VA Enterprise Zone
Middlesex	CT 9509 No. Middlesex	22	3	Primary	Believed to be a logical MBC main fiber build through Middlesex CT 9509	
Essex	CT 9508 So. Essex	23	3	Primary	Believed to be a logical MBC main fiber build through Essex CT 9508	Corridor Enhancement District
Essex	CT 9506 No. Essex	24	3	Secondary	Medium priority community distribution fiber build (Corridor Enhancement District)	Corridor Enhancement District
Lancaster	CT 9901 NE Lancaster	25	3	Secondary	Medium priority community distribution fiber build for redundancy ring out of Lancaster CT 9903	Corridor Enhancement District
Westmoreland	CT 9903 NE Westmoreland	26	3	Primary	Primary only because Logical MBC main fiber build through Westmoreland CT 9903	



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## **4.0 Broadband Education and Training**

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Broadband education and training programs seek to increase the use of technology by individuals to achieve the following outcomes:

- Development of a skilled workforce
- Creation of new businesses
- Create social and economic change for citizens

Community stakeholders are partners in the education process. Many stakeholders in the Region are working concurrently on programs to reach all segments of the population, with a consortium approach to pooling resources in a rural environment.

### **4.1 Local Technology Training and Resources**

The State of Virginia recognizes the value of reliable, cost-effective high speed communication technology and the resulting impact on economic development and quality of life for Virginia residents. Technology is a focus in all areas of State oversight, and opportunities abound for incorporating technology into the daily lives of citizens. Aside from setting standards for technology use within government, technology training standards are a core education requirement in Virginia public schools. Adults seeking to become proficient in using computers and technology applications have many choices for learning, with flexible programs aimed to reduce potential barriers such as distance, time, and cost.

#### **K-12 Public Schools**

All County schools have and continue to implement requirements for Virginia Standards of Learning (SOL) for technology as a core subject. Each school system has submitted a Technology Plan for meeting requirements with measurable goals and actions. The Web-based Standards of Learning (SOL) Technology Initiative's goal is to have school divisions use Web-based systems to improve the SOL instructional, remedial, and testing capabilities of schools beginning with high schools and continuing into middle schools and then elementary schools. The four objectives of the initiative are as follows<sup>8</sup>:

1. Provide student access to computers at a ratio of one computer for every five students;
2. Create Internet-ready local area network capability in every school;

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<sup>8</sup> Virginia Department of Education, State-wide Web-based SOL Initiative; [www.virginia.doe.gov/VDOE/Technology/soltech](http://www.virginia.doe.gov/VDOE/Technology/soltech)



3. Assure adequate high-speed, high-bandwidth capability for instructional, remedial, and testing needs; and
4. Establish a statewide Web-based SOL test delivery system.

Online SOL testing has been achieved at some schools but not all grade levels and is a key focus of school technology directors. Virginia Department of Education provides recommendations for the bandwidth needed to perform online testing; the bandwidth needed depends on the number of computers that are concurrently accessing the Internet for testing, but must also take into account Internet use by non-testers. Schools that are sharing a T1 (1.5 Mbps) connection are limited in the numbers of students that can complete testing online, making it difficult for school systems to meet timetables for system-wide compliance with State requirements. Computers and mobile labs are in use in all schools and students at all grade levels are actively using technology within the classrooms. Teacher use of instructional technology is ongoing; increased training for teachers and acquisition of presentation equipment and materials is available as time and budgets permit. High speed access has been achieved at a minimum of 1.5 Mbps per school system, with bandwidth distributed and shared between individual schools. Funding is the primary barrier to accessing higher bandwidth services to increase use of technology, access online resources for instruction, and meet Department of Education goals.

Dual-enrollment opportunities are available to each County high school through the Region's higher education partner Rappahannock Community College (RCC). In most cases, college-level courses are taught on the high school campus by qualified high school staff. Students also have access to credit courses online through RCC. Teachers have access to online courses at home and through the school systems providing instruction on implementing technology into classroom learning. Some school systems are actively using video-conferencing for instructional workshops for teachers.

### **Instructional Technology in Education**

The Four Rivers Technology in Education Consortium is the regional resource working to foster the integration of technology resources within the education community. The Consortium includes all regional County schools, the Governor's School, the Northern Neck Technical Center, and Rappahannock Community College. Local stakeholders tailor resources to meet the specific training needs of the region's educators and school technology personnel, and assists with coordination of efforts and access to funding. The Virginia Department of Education will offer instructional training for educators via video conferencing in the near future. School systems that have access to sufficient bandwidth can utilize video conferencing to bring instructional technology training seminars to teachers at their workplace.



School systems that are currently experiencing bandwidth limitations during the school day must schedule training for after hours. For teachers without high speed access at home and constrained by time, video conferencing to the schools is a critical resource for teacher training to meet Virginia's requirements for increasing the use of technology in the classroom.

### **Chesapeake Bay Governor's School**

The Governor's School is a resource for select students to be exposed to advanced curriculum on math, science and technology with a focus on marine and environmental sciences. Northern Neck and Middle Peninsula counties are served through the following three (3) locations:

Bowling Green:	King William
Glenns:	King and Queen, Mathews, Middlesex
Warsaw (RCC):	Essex, Lancaster, Northumberland, Richmond, Westmoreland

### **Northern Neck Technical Center**

The Technical Center located in Warsaw provides Career and Tech Prep opportunities to middle and high school students located in the following counties: Essex, Lancaster, Northumberland, Richmond, and Westmoreland. Courses are designed to meet the needs of local employers; classes and certification in CAD/drafting and Computer Systems Technology will prepare students for entry-level technology jobs locally.

### **Adult Education**

The Race to GED is a workforce initiative of the Office of Adult Education, Virginia Department of Education. The Northern Neck and Middle Peninsula region is served primarily through the Mid Pen RACE Consortium of public schools, the Northern Neck Adult Education Program, the Essex County Schools and the Family Development Center in Warsaw. Classes, materials and pre-testing are free to any adult that has not graduated from high school. Online classes and streaming video is available for those unable to attend traditional classes. The PBS LiteracyLink website<sup>9</sup> offers interactive lessons and activities as part of their Pre-GED and GED Connection program. Through eLearn Virginia, the Virginia Adult Learning Resource Center is an online option for adults who wish to work towards GED completion, enhance job skills, or earning a Career Readiness Certificate<sup>10</sup>. Governor Kaine recently

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<sup>9</sup> <http://litlink.ket.org/wesged.aspl>

<sup>10</sup> Program details available online at [www.crc.virginia.gov](http://www.crc.virginia.gov)



announces a state public/private partnership with cable providers Comcast and Cox to offer GED instructional video through local On- Demand cable channels. While this provides one more opportunity to reach potential GED students, it is available only to digital cable subscribers thereby reaching a smaller percentage of cable subscribers.

### **Higher Education**

Education institutions not only design their academic/vocational programs to meet state and industry wide mandates and certifications, but also many higher institutions offer some degree of customized curriculum and internships or apprenticeships to meet local employer needs. One objective of such initiatives is to prevent “brain drain” - the migration of young people from the area to pursue careers elsewhere. High quality education is a factor along with other quality of life issues influenced by bandwidth availability, considered by young professionals and craftsman when making a decision on where to live and work. Higher education partners nearest to the Northern Neck and Middle Peninsula region include:

- Rappahannock Community College - Warsaw (Richmond Co) and Glenss (Gloucester Co)
- College of William and Mary, Old Dominion University - Norfolk City
- Christopher Newport University - Newport News
- ECPI College of Technology - Newport News/Virginia Beach area
- University of Richmond - Richmond City
- Virginia Commonwealth University - Richmond

The Rappahannock Community College (RCC) serves the Region’s immediate higher education, workforce preparation and business development needs. Specialized training and certification programs and public/private partnerships for workforce development training through outreach sites are targeted towards industries currently doing business in the Region, or identified as target industries for economic development.

RCC is a member of the Four Rivers Technology in Education Consortium, and partners directly with the County school systems to provide higher education opportunities for students and continuing education for teachers. Counties that have a higher education facility located in the community report an increase in the numbers of students transitioning from tech and career prep programs to college, and from two-year to four-year degree programs. Students participating in dual enrollment scenarios are graduating high



school with a year or more of college completed. Not only does the student gain the advantage of earning a degree at a faster rate, but overall college tuition expenses are reduced as well. Partnering with the RCC, County high schools can offer dual-enrollment courses to facilitate the transition from high school to higher education institutions. Courses are offered in both academic and technical degree programs. Instruction is offered at two campus locations - the main campus in Warsaw and the Glens campus in Gloucester County. , RCC's high speed Internet connection allows the college greater access to courses not offered through the campus currently. Students are provided access to additional courses required for their program of study without leaving their community. RCC offers several flexible learning methods to meet the needs of students and working adults by utilizing technology to deliver instruction.

- **Online Courses** - Uses the Internet to access course materials, research, and collaborate with faculty and other students. Students must have Internet access, be proficient in using the Internet for research and Email for communication.
- **Hybrid Courses** - Combines face-to-face classroom instruction with online coursework. Students must have Internet access, will meet with instructor occasionally and will complete the majority of work online.
- **Interactive Video Courses** - Students and faculty interact over a high speed network connection and TVs. High speed Internet access is required and students attend classes on the RCC campus.

Distance learning is critically important for allowing students to complete degree programs, while remaining close to family and work. When students are forced to leave their communities to pursue higher education, many do not return to apply their knowledge locally. The out-migration of young adults reduces a community's ability to maintain a skilled, 'technology-literate' workforce and attract new businesses to the area. The access to advanced learning opportunities provided by the community higher education partners enable students to get the training and certification they need, while keeping them close to home and saving on education expenses. RCC offers access to online courses through the following RCC resources:

- **Ed2Go** - 6 week courses, complete through independent study. Can be completed with a dial-up Internet connection, but requires additional time to communicate and complete research.
- **Gatlin Education Services** - Web-based learning with limited courses offered. Does include Computer and Internet sciences and professional/technical/design specialties. Also offers preparatory courses for VA Real Estate License exam. High speed not required but preferred.



- **VCCS Online** - Extensive resource for completing degree programs. Web-based and require independent study, excellent for working adults. Requires access to the Internet, faster than dial-up preferred.

Taking classes online requires basic technology skills such as an understanding of computer fundamentals, web browsing, email use, and use of a word processing application. The Region's Public School graduates should already possess the technology proficiency necessary for online course completion.

Old Dominion University (ODU) offers an innovative means for rural students to attend classes in their communities. Through ODU's TELETECHNET program, live classes are broadcast via satellite and students can attend classes through their computers. This 'online' method requires a high speed Internet connection since the information transmitted is bandwidth-intense video that cannot be interrupted so the student does not miss part of the class. Students that reside within the reach of DSL or are served by a cable provider that offers cable modem service could use this method of attending classes. RCC recognizes the limited high speed Internet availability within the Region it serves; to mitigate this barrier, select classes accessed through ODU's program are made available to students on campus. Another satellite center closest to the Middle Peninsula area is the Peninsula Higher Education Center in Hampton.

Additional higher education facilities in the region include the College of William and Mary in Norfolk, Christopher Newport University in Newport News, ECPI College of Technology in the Newport News/Virginia Beach area, and the University of Richmond. Each of these facilities offer unique, distance learning programs to accommodate citizens in rural areas and working adults, both credit and non-credit courses for improving job skills and completing degrees. Virginia Commonwealth University in Richmond utilizes online learning in instruction to students, but does not offer distance-learning courses for off-campus learning.

### **Workforce Training and Continuing Education**

There are several opportunities for workforce training assistance through a coordination of efforts among the Virginia Department of Labor, the Virginia Employment Commission, the Virginia Community College System, and the Region's school systems. Programs are designed to support adults seeking to improve skills, displaced workers, and at-risk youth while meeting the workforce needs of local employers. The Virginia Employment Commission and the Bay Consortium Workforce Investment Board provide program support to local employment offices.



On the job training and apprenticeship opportunities are coordinated through the workforce support partners. Apprenticeship related instruction is designed to train and place skilled labor directly into the workforce. Instruction is based on specific trade areas and the courses are developed in cooperation with industry leaders. Specialized curriculums are designed to meet specific needs within the trade as well as meet local employer needs. Apprenticeship related instruction is tailored by working directly with sponsoring employers to develop the appropriate academic, technical and core course work for the apprentices<sup>11</sup>.

### **VEC Workforce Center/Northern Neck One-Stop Center**

Located in Warsaw, the Center serves the Northern Neck and Middle Peninsula region. Serving both job seekers and local employers, the Center's services include:

- Matching applicant skills to job openings
- Resume and application assistance
- Assistance with job search
- Assess training needs, coordinate WorkKeys assessments and skills training with RCC
- Resource Center - computers, software and Internet access available to job seekers

Job Center staff provides assistance with basic computer and Internet use, but does not provide technology training classes. A satellite one-stop center is the Job Assistance Center in Shacklefords (King and Queen County) providing services to the job seekers closest to the Center.

### **Rappahannock Community College - Workforce Development**

RCC is the community partner in workforce training and continuing education. Services include:

- Specialized business training
- Computer and office application skill enhancement
- WorkKeys assessments and job profiling
- Seminars and workshops
- Professional development and career enhancement online
- Command Spanish for communicating effectively with the Hispanic community

One example of community stakeholders working together is a new pilot program to implement Virginia's Career Readiness Certificate (CRC) program<sup>12</sup>. Virginia's Career Readiness Certificate helps

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<sup>11</sup> Workforce Development Service; see <http://system.vccs.edu/workforce/ari/index.htm>

<sup>12</sup> Program details available online at [www.crc.virginia.gov](http://www.crc.virginia.gov)



employers by certifying that a recipient possesses core skills in applied math, reading for information, and locating information — skills that are required by at least 85% of all jobs profiled by ACT Workkeys® in the country. This skill assessment will assist individuals in defining what types of jobs they are qualified to apply for, and what additional training is needed to reach higher levels of certification. The Workkeys assessment is recognized by thousands of companies in the U.S. and by state and federal agencies. Upon completion of each level of assessment, the job seeker receives a certificate that assures potential employers of his/her qualifications. Additionally, a Skills Bank is available for employers to search for certificate holders in a given zip code or region.

### **VECTEC**

The State of Virginia has numerous resources available to businesses for growing and competing digitally. Small/medium businesses and individuals have access to many online resources for e-commerce education and financial assistance through the Virginia Electronic Commerce Technology Center (VECTEC). Another example of Virginia’s pro-business focus is the Virginia Department of Business Assistance (VDBA). This department’s goal is to connect businesses with the resources they need to meet challenges and realize market opportunities. “Since almost 99% of Virginia businesses are defined as small and they create the majority of new jobs, there is a special emphasis on building the capacity of these bold entrepreneurs.”<sup>13</sup> The State maintains a resource directory for businesses at [business.virginia.gov](http://business.virginia.gov). Additional resources for technology education and implementation are available from the Virginia Center for Innovative Technology (CIT). CIT’s mission is to accelerate Virginia’s next generation of technology and technology companies.

### **Rappahannock Region Small Business Development Center**

The SBDC office serving the Northern Neck and Middle Peninsula region is located in Warsaw. The exception to this is Mathews County, served by the Small Business Development Center located in Williamsburg. The centers offer free counseling services, business planning, seminars and training events, and provides information and other services to new and existing small and medium-sized businesses. The RRSBDC is the best resource for aspiring entrepreneurs to gain knowledge on the requirements for going into business, financial management issues, marketing issues and techniques, business plan development and implementation, and the qualifications for obtaining start-up funds. The

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<sup>13</sup> Louisa M. Strayhorn, Director, Virginia Department of Business Assistance, *Connecting Businesses with Resources*; <http://www.dba.state.va.us/about/default.asp>



center also serves the experienced owner who wants to expand a business, solve business problems, do strategic planning, develop new ideas, enter new markets, or access expansion capital. Services include:

- Resources for new and existing businesses
- Business planning workshops
- Assistance with home-based businesses, and working from home
- Resource library
- Free consulting services

### **SCORE**

The service corps of retired executives (SCORE) is a non-profit association that aims to mentor to aspiring entrepreneurs and foster the growth of new businesses. Retired executive volunteers present low-cost seminars and free business consulting as a resource partner with the Small Business Administration. A new program of peer advisory groups recently launched by SCORE is called “Business Advantage Circles”. Working groups of non-competing business owners will meet monthly to discuss and resolve issues confronting the business owners. A similar network uniting the Region’s business owners would provide opportunities for experienced business people to mentor to new and existing businesses within the County. The SCORE offices closest to the Region are in Williamsburg and Richmond.

### **Middle Peninsula Business Development Partnership**

This non-profit, grant-funded micro-enterprise program serves very small businesses (less than 5 employees) in the Middle Peninsula counties. To qualify, the business owner must hold permanent residence or the business must be located within one of the Middle Peninsula counties. Services are focused on assisting entrepreneurs with business planning, access to training, and funding and delivered either free of charge or for a nominal fee. This innovative program presents workshops at the Saluda Professional Center that are also open to businesses in the Northern Neck. The current business development series includes marketing for businesses.

### **Public Libraries**

Citizens without computers or home Internet access and visitors to the County have access to computers and the Internet in each of the County libraries. Station access is being used for many functions; these include leisure activities such as surfing the Internet and email, to more critical job-search related



functions such as working on resumes, researching job opportunities, and applying for jobs advertised by national databases such as Monster.com. It is a common practice for companies to require job application submittal only through an online process. Additionally, many students without computers or the Internet at home are relying on the library for access.

The Internet access connection is shared between public users and staff access to the library circulation systems. The speed and quality of access within the library is subject to several factors: 1) the numbers of users accessing a single Internet connection, 2) the types of applications using the Internet bandwidth, and 3) slow processing capabilities of aging computers. Most of the libraries are distributing the Internet access wirelessly, which accommodates students and travelers with laptop computers. Due to the limited number of computer stations each library can afford and make available in limited spaces, wireless access extends the services to potentially many more users. Bandwidth is further constrained however, as additional users vie with station users and staff for access to a limited amount of bandwidth.

In general, hours of operation are such to accommodate working individuals as most of the libraries offer extended evening hours at least two nights per week and a minimum of half-day on Saturday. Most of the libraries are closed on Sunday. Local library personnel are the best sources for polling patrons to see if hours are meeting their access needs.

## **4.2 Current and Future Education/Resource Gaps**

### **Training Classes**

There are limited opportunities within each County for easy access to computer and application training. The libraries report continuing interest expressed by citizens for training on basic computer use, troubleshooting, learning to sell over the Internet, and Microsoft Office applications to improve job skills.

### **Computer Access**

Currently, free access to computers and the Internet is available at the libraries and to job seekers through the Job Centers. Each location has a limited number of computer stations available, and limited bandwidth shared among users.



### **Help Desk Support**

Residents and small businesses that consider themselves computer literate and are using the Internet are less inclined to seek training on specific applications, knowing enough to 'get by'. A significant number of both residents and businesses express frustration with service provider customer service. There is a need for local help desk support to provide immediate support for issues that may not require action on the part of service providers. Basic computer troubleshooting and how to determine whether a problem is with software or hardware seem to be the most common questions that need support by more experienced personnel.

### **Computer Equipment**

Income levels vary, and some residents simply cannot afford to purchase computers. Results of the residential market survey 5% of families with children do not have a computer in the home, and the libraries report a great number of students come to their facilities to use computers. For these students, free Internet access at a local library or community center is critical. Dial-up Internet access can be obtained for as little as \$9.95 per month if the household receives local telephone service, but the up-front cost of acquiring a computer is prohibitive for many low-income families.

### **Funding**

All local sources contacted for input into this study exhibit an understanding of the necessity of affordable training options and the importance of marketing those options to the community. Nearly all are confined by a lack of available funding resources, but have been successful in leveraging funding for current programs that are meeting identified goals. State and federal grants for technology and workforce development training are currently flowing through higher education and employment assistance partners. The libraries are limited in funding to increase space, purchase new computers, and increase bandwidth purchased but acknowledges these are high priorities considered during budget preparations.

## **4.3 Broadband Education Development Strategies**

### **Higher Education Learning Opportunities**

Communities that have local facilities for higher education and adult continuing education classes typically have a higher percentage of young adults transitioning to college. Community Colleges are critical partners with local schools to provide opportunities, and are eligible for grant funding to assist the community. The Rappahannock Community College is serving the needs of a large area requiring



significant commuting times for students located farthest from the campuses. Moreover, flexible learning opportunities are needed to reach working adults. Online learning is a critical tool for removing geographical barriers, and numerous opportunities for online learning are offered through RCC. The most advanced of these is video conferencing to attend live classes. High speed access is required however, limiting this type of long distance learning to those within reach of DSL, cable modem or wireless services. Satellite locations with high speed access and space to accommodate students placed deeper within the residential communities would allow a greater number of students to continue learning while keeping them in their communities.

In other communities where the local community college has established a satellite location, the County and incorporated towns have contributed to meet funding needs. The goal of these communities is to provide the skilled labor for businesses that are located there currently or are considering locating to their County. A local facility can focus directly on meeting the training needs of local businesses, keeping more skilled workers and college-educated youth in the community.

### **Computer Refurbishing and Redistribution**

The majority of residents and businesses participating in the end-user surveying process has computers and are using the Internet to some extent. Efforts to develop a technology-literate community should begin very early in the public school system - results of the needs assessment show 5% of families with children do not have a computer at home. Computer donation programs that supply refurbished computers to students should be explored, particularly to reach those with younger school aged children for early intervention. Federal computer donation programs should be reviewed<sup>14</sup>, and local drives to encourage large employers to donate computers are suggested. Technical students and retired technology professionals are excellent resources for refurbishing donated computers. Microsoft is a partner in computer refurbishing and redistribution, providing license transfer of Windows software and support. Many computer vendors such as Dell encourage equipment recycling and provide support for redistribution to low-income families and non-profit groups. The States of Maine, Maryland and California have legislatively recouped funds from computer manufacturers to support recycling programs, keeping dangerous elements out of landfills while putting usable computers into the hands of those that can use them.

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<sup>14</sup> Computers for Learning, EO 12999; <http://www.computers.fed.gov/public/aboutProg.asp>



One such example in the region is Computer Recyclers of Tappahannock. Working with schools and non-profits, they seek to place computers where they are most needed. Computer sales to individuals and businesses fund the donation portion of the business. This is a significant resource within the Northern Neck region that can assist efforts to get computers into the hands of at-risk youth and other targeted efforts.

### **Computer Purchase Program**

The City of Quincy, Florida was proactive in assisting families with children to purchase computers. The County School District cited telecommunications as a necessary tool for increasing student scores on State mandated competency tests. Working with the Dell Corporation and a local credit union, the City offered a program whereby families could purchase computers and dial-up Internet access. The NetQuincy purchase program and a Homework Helpline established with the School District enabled parents and students to utilize technology in their own homes. Subsequent Florida Comprehensive Assessment Tests (FCAT) required for graduation, resulted in high pass rates for students who participated in the City's Homework computer lab, proof that the program was achieving its objective. The City of Quincy is currently implementing a fiber optic network throughout the city limits as technology adoption by residents and businesses has resulted in a need for access at broadband speeds.

### **Community Intranet**

In small communities information is commonly communicated by word-of-mouth, followed by radio and newspaper. While this is typical for small towns in years past, it is insufficient for reaching the masses today. A cohesive means of instilling a sense of community and creating a 'connected community' is the use of a community intranet, or portal whereby residents can easily access community information.

An excellent example is the current Connect Rappahannock community network ([www.connectnetwork.org](http://www.connectnetwork.org)). Access is free to all and represents Essex, Lancaster, Middlesex, Northumberland, Richmond and Westmoreland. King William, King and Queen and Mathews counties are not represented. All County websites should feature a link to this network. Citizens should be encouraged to utilize the Community Portal as their start page, where they can get instant news and information. Opportunities for training, seminars and workshops should be prominently featured along with upcoming community events. Key to any Community Portal's success are links to the school districts, community health providers, online learning sites, and local businesses, enticing users to explore and frequent the site. Connect Rappahannock is providing these links, and appears to be updated



frequently with few broken links. This site should serve as the entrance to Economic Development information vital to those considering the County for a new business location.

Each of the counties have a web presence, at various levels of sophistication ranging from simply providing contact names and phone numbers to accepting online payments of taxes and utilities and online search for property records. At a minimum, each County site should feature links to local economic development partners, tourism councils, job assistance centers, and training providers. Community newsletters and newspapers should be used to encourage citizen access to local resources.

### **e-Government**

A large number of residents are turning to the Internet for news; in the past six months, 68% have visited a news website and 63% a state or local government site. These percentages are not as high as seen in other Virginia communities, and represents an opportunity to promote e-government services to citizens, saving time and increasing productivity. Counties should explore the feasibility of expanding government services online by providing access to forms, online payments when possible, council meeting minutes, and contact information. Additionally, the most popular feature on most city and county websites is the ability to view property and tax information and mapping.

### **e-Commerce**

While the Chesapeake Bay area is a popular tourist destination, the majority of the region is located considerable distances from the Interstates, resulting in a low flow of commerce from those 'passing through'. It is critical for businesses to be proactive in marketing their products and services, and the Internet offers a tremendous opportunity to reach those who may never happen upon their business. A community portal would provide a starting point for businesses to begin advertising online, with additional effort aimed at educating businesses on the value of having their own website with a link from the community portal. Home-based businesses should also be included in the business listings on community portals. In this manner, the portals themselves operate as a business incubator. The Northern Neck Workforce Center and the Middle Peninsula Business Development Partnership are excellent resources for those considering a home-based business - efforts to promote these startups should include workshops to help these businesses establish an online presence.

### **Training on Internet Use**



The majority of residents and businesses are using the Internet, but not currently realizing the full advantages the Internet offers. There is sufficient interest among both residents and businesses to support training classes on selling goods and services on the Internet. Training should include hands-on workshops whereby students actually place an item for sale on an online auction such as eBay. Additional training should be aimed at businesses on where and how to market their business online.

Entry level training should be low to no-cost to encourage as many as possible to participate, and to reach as many segments of the population as possible. A critical need is to identify and market Internet resources for online training and job search. In preparation of participating in the Career Readiness Certificate program, residents can complete training online prior to taking assessment tests at the Job Center. The availability of resources to advance skills and to find employment should be marketed to County citizens.

### **Lead by Example**

Local businesses that have established websites, are conducting commerce via the Internet, and have embraced technology are the perfect spokespersons for educating others on the advantages of technology. Opportunities for business leaders to assist can be organized by the Chambers of Commerce and promoted through economic development workshops and marketed through Community Portals. Local networking groups provide support for business success, and additional groups should be encouraged throughout the County. Networking groups are becoming popular in many large cities, especially among young business people who have become accustomed to social networking. SCORE is an excellent resource for reaching out to the business community and forming networking opportunities. The formation of a SCORE office in the Northern Neck - Middle Peninsula region would be a rich asset for new and existing businesses.

### **Business Investment in Workforce Training**

Local businesses that will take an active role in workforce training are eligible for funding assistance from the Virginia Department of Business Assistance through the Worker Retraining Tax Credit program<sup>15</sup>. The Worker Retraining Tax Credit may be claimed by employers who provide qualifying retraining for their employees through noncredit classes approved by the Virginia Department of Business Assistance (VBDA) or through an apprenticeship agreement approved by the Virginia Apprenticeship Council. For

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<sup>15</sup> Source: <http://system.vccs.edu/workforce/WDS/taxcredit.htm> All questions related to the Workforce Retraining Credit should be directed to the Department of Business Assistance [wfs@dba.state.va.us](mailto:wfs@dba.state.va.us) or by calling 804-371-8120



qualified employees who attend Virginia community colleges the employer can claim 30% of all training costs. For those employees who attend private schools, the employer may claim the actual costs up to \$100 per qualified employee. Qualifying apprenticeship programs may include credit and noncredit classes. Businesses qualify for assistance when the retraining of an employee will promote economic development bringing new income into Virginia, stimulates additional employment, improves existing processes, products or services or is the basis for further economic growth.

Current efforts by public school, higher education workforce training partners and job assistance centers to engage local businesses in offering apprenticeship opportunities should include marketing the economic development benefits of employee training, and the financial benefits available to employers.

### **The Broadband Experience**

Those who are subscribing to a broadband method of Internet access such as DSL could not imagine going back to slow dial-up. Many residents were first introduced to the Internet at the workplace, and adopted Internet access at home primarily for email communication with family and friends. Many moved beyond simple applications such as email, to transferring digital pictures, and now video. As the applications continue to evolve and more information becomes easily accessible, a greater value is placed on the speed of the connection. As the technology leaders in the communities, the local schools provide an excellent showplace to demonstrate the power and value of the Internet. Parents should see that their children are using technology daily and learn the value of continuing technology use at home and beyond.

Municipalities who have led the way by building fiber optic networks in their communities have made kiosks available for their citizens to see, feel and experience 'broadband'. Community venues include city halls, local shopping mall exhibits, chamber of commerce events, and public works buildings. An additional resource for broadband education is available through Virginia's Center for Innovative Technology (CIT). CIT presents a 'Broadband 101 -Untangling the Wires' seminar aimed at educating businesses on the broadband basics, introducing the efficiencies and applications of broadband, and the basics of security and networking. Similar seminars or exhibitions aimed at residents and home-based businesses would be beneficial in providing examples of the power of the Internet.

### **Encourage Local Provider Service Marketing**

Too many businesses do not understand the value of Internet applications beyond email and research. Overall, 58% are spending in excess of \$100 per month for regular phone service, and presumably long-



distance accounts for a large portion of that expense. Many commented that phone service is too expensive, yet Voice over Internet service offers an affordable alternative and only 6% of businesses with Internet access are taking advantage of this service today. Conversely, 24% indicated interest in using the Internet for voice service in the future. Too many businesses are unaware of the security feature of using VPN (virtual private network) for remote access to their networks and sensitive information; only 7% are currently using this, and only 15% indicate interest in future use. A larger percentage of businesses (26%) are interested in video conferencing, an application that functions optimally with a broadband connection. All of these applications are available for use today, and Internet providers offer services to support their use. Service providers should tailor marketing of these products towards local businesses, with emphasis on the value these applications can potentially provide to the business.

Many small businesses also use POTS lines for authorizing credit card transactions. At various times there is a long delay waiting for approval. To the extent that this could be done over a broadband connection, they could save the cost of a phone line while adding a high speed connection usable for other purposes as well as authenticating credit card transactions. Too often the benefit of a service is not realized until it is actually seen. During peak business times, the delays caused waiting for approvals reduce the total business flow. Doubtless other possibilities exist which would increase business productivity and profit at minimal cost. Education is a key to increasing demand.



## 5.0 Appendices

### Appendix A: End-User Surveys

#### Residential End-User Survey

Your local government desires to be forward-thinking on behalf of residents, businesses, and those considering a move to our communities. Our goal is to lead in developing economic assets for future growth in the Northern Neck and Middle Peninsula regions of Virginia.

A critical component of economic development is state-of-the-art communication technology. High-speed (broadband) Internet access, digital television programming, and affordable options for telephone service are available today in *some* areas of our communities. The Northern Neck Planning District Commission is assisting with a study to determine what services are available in our communities and most importantly, what services citizens desire. This study will be used to develop strategies for bringing those services to our communities.

You have been selected to participate in this study. Icon Broadband Technologies (IBT), a private consulting firm, is conducting this survey as part of the communications study. They will collect these questionnaires and compile the data. Your answers are confidential and will be used in a report only as summaries in which no individual's answers can be identified. Only your street address will be used for geographical planning purposes. Your privacy will be respected. The survey should be completed by a head of the household, 18 years of age or older.

Please lend us *your voice* and take part in this study. We realize your time is valuable and sincerely appreciate your assistance. Please take a few minutes to complete this questionnaire. When finished simply drop it in any mailbox. No return postage is necessary. **Time is of the essence and we ask that you return this survey right away.** Your opinion DOES matter – improving our communities is everyone's business. Thank you for your support.

Questions? Please call the Northern Neck Planning District Commission office at (804) 333-1900

Please encourage your neighbors, co-workers and local businesses to get involved!  
This survey is available online at [www.VAruralbroadband.com](http://www.VAruralbroadband.com)

**Residential demographic data** is collected for documenting statistics of the survey pool and to comply with state and federal grant guidelines. Your individual responses will not be shared.

1. Please indicate the county in which you reside:  
 Essex     King & Queen     King William  
 Lancaster     Mathews     Middlesex  
 Northumberland     Richmond     Westmoreland

Please provide your street address for geographical planning purposes only:  
**House Number and Street** \_\_\_\_\_ **Zip Code** \_\_\_\_\_

2. What is your age?  
 Under 20     20-24     25-34     35-44  
 45-54     55-59     60-64     65 or Over

3. Do you have children living at home?  
 Yes     No *If yes, please indicate age groups:*  
**3a)**  Under 5     5-17     18 or Over

4. Does your household have a personal computer?  
 Yes     No

5. Which of the following best describe the type of Internet service you subscribe to at home?  
 No Internet at home     DSL  
 Dial up on telephone line     Satellite  
 Broadband over Powerline     Cellular  
 Cable Modem     ISDN  
 Wireless (from service provider, not home network)

6. What is the name of the company that provides your Internet connection?  
 Not Sure     No Internet Access

7. Please rate your current Internet service on the following two items:  
**7a)** Speed of connection (bandwidth)?  
 Adequate –meets all my needs  
 Inadequate –does not meet my needs  
**7b)** Service and support?  
 Adequate –meets all my needs  
 Inadequate –does not meet my needs

8. To the best of your knowledge, how much are you currently paying per month just for Internet access?  
 No Internet access     \$41-\$60  
 Under \$20     \$61-\$80  
 \$20-\$40     More than \$80

9. How important is Internet access to you or your household?  
 Very Important     Somewhat Important  
 Not Important     No Opinion

10. If you do not subscribe to a high-speed (faster than dial-up) or any Internet service, why not?  
 Not available in my area  
 Too expensive  
 Not interested in this service  
 Using high-speed elsewhere  
 Lack of Internet service set-up support.  
 Lack of computer set-up and use support

11. Does anyone in your household use the Internet to work from home?     Yes     No  
*If yes, please answer the following:*  
**11a)** Does your employer utilize a virtual private network (VPN) for your access from home?  
 Yes     No     Don't Know

12. Does anyone in your household use the Internet to complete school assignments or job training course work?  
 Yes, at least once per week  
 Yes, at least once or twice per month  
 No

13. In the past 6 months, which of the following activities have you performed online?  
 Searched for travel related info  
 Searched for health or medical info  
 Purchased products or services  
 Sold products or services  
 Visited a news website  
 Visited a state or local government website  
 Searched for info related to school work  
 Researched a major purchase  
 Performed a financial transaction with a bank  
 Communicated with a teacher  
 Searched for a job  
 Took an online course  
 Downloaded or watched video online

14. If affordable **wireless** high-speed Internet access was available in your community, how likely would you be to subscribe to this method of Internet access?  
 Very likely     Somewhat likely     Not likely

15. Do you subscribe to a pay TV service?  
 Yes, cable     Yes, satellite  
 No

16. To the best of your knowledge, how much are you currently paying for cable or satellite TV each month? *Do not include Internet access fees.*  
 Under \$20     \$20-\$40     \$41-50  
 \$51-\$75     More than \$75     No Pay TV

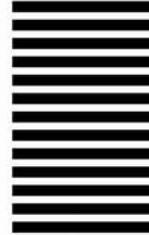


Northern Neck and Middle Peninsula



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**WOODSTOCK GA 30189-9905**



**17.** Please indicate the phone service(s) you subscribe to and your total monthly expenses for each:

**a)** Regular telephone service (wired):  Yes  No  
 Under \$35  \$35-\$75  More than \$75

**b)** Cell phone service:  Yes  No  
 Under \$35  \$35-\$75  More than \$75

**c)** Voice over Internet (VoIP) service:  Yes  No  
 No Charge  Under \$35  \$35 or More

**18.** Thinking about your current communication expenses, how much would you be willing to pay per month for a combination package of high-speed Internet, telephone and pay TV services?

\$85-\$100  \$151-\$175  
 \$101-\$125  More than \$175  
 \$126-\$150  Not Interested

**19.** Are you satisfied with the current voice, video and Internet services available to you?

Internet:  Satisfied  Not Satisfied  
Video:  Satisfied  Not Satisfied  
Telephone:  Satisfied  Not Satisfied

**Comments—Suggestions**

**20.** What changes or improvements to communication technology in your community would best meet your needs?

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Your opinion is very valuable—thank you for your time and support. Individual responses to survey questions are confidential.

**TO RETURN SURVEY: Simply fold the survey flap to display the return address, tape, and drop it in the mail today. Thank you!**

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Northern Neck Planning District Commission  
Communication Assessment Survey  
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Woodstock, GA 30189



## Business End-User Survey

Your local government desires to be forward-thinking on behalf of residents, businesses, and those considering a move to our communities. Our goal is to lead in developing economic assets for future growth in the Northern Neck and Middle Peninsula regions of Virginia.

We know that as a business owner and operator you understand the value and necessity of cost-effective communication options. To ensure the economic health and vitality of our business community, municipal leaders are working to ensure that the services you need are available and competitively priced. The Northern Neck Planning District Commission is assisting with a study to determine what services are available in our communities and most importantly, what services our businesses need. This study will be used to develop strategies for bringing those services to our communities.

We believe it is important to know what communication services your firm requires to grow and prosper. That is why we are asking for **your** assistance in a survey of the communication needs of our business community. Your business has been selected to participate in this survey. Icon Broadband Technologies (IBT), a private consulting firm, is conducting this communications survey. IBT will collect these questionnaires and compile the data. Your answers are confidential. No information will be published by name without your permission and the privacy of your firm will be respected. The survey should be completed by the business owner or the person responsible for purchasing communication services for your business. Only your business address will be used for geographical planning purposes.

Please lend us *your voice* and take part in this business survey. We realize your time is valuable, and sincerely appreciate your assistance. Please take a few minutes to complete this questionnaire. When finished simply drop it in any mailbox. No return postage is necessary. **Time is of the essence, and we ask that you complete and return this survey right away.** Your opinion DOES matter – improving our communities is everyone's business. Thank you for your support.

Questions? Contact the Northern Neck Planning District Commission office at (804) 333-1900

Please encourage your neighbors, co-workers and local businesses to get involved!

This survey is available online at [www.VAruralbroadband.com](http://www.VAruralbroadband.com)

**Business Demographic Data:** This data is collected for documenting statistics of the survey pool and to comply with state and federal grant guidelines. Individual responses will not be shared.

1. Please indicate the county in which this business is located:

- |   |                                       |                                       |
|---|---------------------------------------|---------------------------------------|
| <input type="checkbox"/> Essex          | <input type="checkbox"/> King & Queen | <input type="checkbox"/> King William |
| <input type="checkbox"/> Lancaster      | <input type="checkbox"/> Mathews      | <input type="checkbox"/> Middlesex    |
| <input type="checkbox"/> Northumberland | <input type="checkbox"/> Richmond     | <input type="checkbox"/> Westmoreland |

Please provide your physical address for geographical planning purposes only:

**Bldg Number & Street** \_\_\_\_\_ **Zip Code** \_\_\_\_\_

2. How many employees work at this location?  
 None  1-4  5-9  10-19  
 20-49  50-99  100-249  250 or more

3. Which of the following best describes the type of business conducted at this location? *Check one.*

- |   |  |
|---|--|
| <input type="checkbox"/> Accounting/Architectural/Engineering | <input type="checkbox"/> Government      |
| <input type="checkbox"/> Agricultural/Forestry/Mining         | <input type="checkbox"/> Healthcare      |
| <input type="checkbox"/> Business or Personal Services        | <input type="checkbox"/> Retail Trade    |
| <input type="checkbox"/> Communication/Technology             | <input type="checkbox"/> Wholesale Trade |
| <input type="checkbox"/> Contractor or Construction           | <input type="checkbox"/> Non-classified: |
| <input type="checkbox"/> Education                            |  |
| <input type="checkbox"/> Finance/Insurance/Real Estate        |  |

4. What is this location's annual revenue/sales?  
 Less than \$50k  \$50k-\$500k  
 \$501k+-\$1 million  Over \$1 million

5. How many computers at this location have Internet access?  
 None  1-5  6-10  
 11-19  20-50  51-100  Over 100

6. How does this location connect to the Internet?  
 No connection  Satellite or microwave  
 Dial-up  T1 line  
 DSL  T3/DS3 line  
 Cable modem  Broadband over Powerline  
 ISDN line  Wireless (from service provider)

7. What is the name of the company that provides your Internet/bandwidth connection?

Not Sure  No Internet Access

8. If you do not subscribe to an Internet service or a higher speed Internet service, why not?

- |   |   |
|---|---|
| <input type="checkbox"/> Not available          | <input type="checkbox"/> Too expensive  |
| <input type="checkbox"/> Not reliable or secure | <input type="checkbox"/> Not interested |

9. How important is Internet/bandwidth access to your business?

- |   |   |
|---|---|
| <input type="checkbox"/> Very Important or Critical | <input type="checkbox"/> Somewhat Important |
| <input type="checkbox"/> Not Important              |   |

10. To the best of your knowledge, how much are you currently paying per month for Internet access?

- |  |                                      |                                       |
|--|--------------------------------------|---------------------------------------|
| <input type="checkbox"/> Under \$30    | <input type="checkbox"/> \$30-\$50   | <input type="checkbox"/> \$51-\$100   |
| <input type="checkbox"/> \$101-\$300   | <input type="checkbox"/> \$301-\$500 | <input type="checkbox"/> \$501-\$1000 |
| <input type="checkbox"/> \$1001-\$1500 | <input type="checkbox"/> Over \$1500 | <input type="checkbox"/> Don't Know   |

11. What is your current Internet bandwidth or connection speed?

- |  |   |
|--|---|
| <input type="checkbox"/> Less than 200Kbps   | <input type="checkbox"/> 200Kbps to 512Kbps |
| <input type="checkbox"/> 512+Kbps to 1.5Mbps | <input type="checkbox"/> 1.5+Mbps to 3Mbps  |
| <input type="checkbox"/> 3+Mbps to 5Mbps     | <input type="checkbox"/> 5+Mbps to 10Mbps   |
| <input type="checkbox"/> Greater than 10Mbps | <input type="checkbox"/> Not Sure           |

12. Please rate your current Internet service on the following two items:

- a) Speed of Connection (bandwidth)?
- |   |
|---|
| <input type="checkbox"/> Adequate—meets all our needs       |
| <input type="checkbox"/> Inadequate—does not meet our needs |
- b) Customer Service and Support?
- |   |
|---|
| <input type="checkbox"/> Adequate—meets all our needs       |
| <input type="checkbox"/> Inadequate—does not meet our needs |

13. How would you describe your overall satisfaction with your current Internet service?

- |   |  |
|---|--|
| <input type="checkbox"/> Very Satisfied     | <input type="checkbox"/> Somewhat Dissatisfied |
| <input type="checkbox"/> Somewhat Satisfied | <input type="checkbox"/> Very Dissatisfied     |

14. What are your reasons for any dissatisfaction with your current Internet service?

- |  |   |
|--|---|
| <input type="checkbox"/> Price too high            | <input type="checkbox"/> Problems with Email                      |
| <input type="checkbox"/> Service is unreliable     | <input type="checkbox"/> Poor customer service                    |
| <input type="checkbox"/> Lack of technical support | <input type="checkbox"/> Connection too slow/not enough bandwidth |

15. If an affordable wireless high-speed Internet service were available to you, how likely would you be to utilize this access method for your business needs?

- |                                      |  |                                     |
|--------------------------------------|--|-------------------------------------|
| <input type="checkbox"/> Very likely | <input type="checkbox"/> Somewhat Likely | <input type="checkbox"/> Not Likely |
|--------------------------------------|--|-------------------------------------|

16. If an affordable high-speed Internet service were available to you, which of the following growth and expansion opportunities would your business most likely consider?

- |   |
|---|
| <input type="checkbox"/> Offer additional services via the Internet |
| <input type="checkbox"/> Expand current business                    |
| <input type="checkbox"/> Hire additional employees                  |
| <input type="checkbox"/> Add additional location                    |
| <input type="checkbox"/> Increase advertising/marketing efforts     |
| <input type="checkbox"/> Other: _____                               |

17. Thinking of your current communication expenses, how much would you be willing to pay per month for a combination package of high-speed Internet and telephone services?

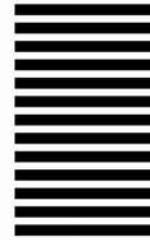
- |  |   |                                      |
|--|---|--------------------------------------|
| <input type="checkbox"/> \$100 or less | <input type="checkbox"/> \$101-\$125    | <input type="checkbox"/> \$126-\$150 |
| <input type="checkbox"/> \$151-\$175   | <input type="checkbox"/> \$176-\$200    | <input type="checkbox"/> \$200-\$299 |
| <input type="checkbox"/> \$300 or more | <input type="checkbox"/> Not Interested |                                      |



Northern Neck and Middle Peninsula



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**18.** For what purpose(s) does this location currently utilize or plan to utilize an Internet connection? *Check all that apply.*

Purpose	Current Use	Future Use	No Interest
Accounting and Banking	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Advertising/Marketing	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Communication with other offices	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Customer service	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Distance Learning	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
E-Mail	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Hosting your web site	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Online sales	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Purchasing materials or services	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Research	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Telemedicine	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Training	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Transferring data files	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Video-conferencing	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Voice service	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
VPN connections	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

**19.** Please indicate the phone service(s) used at this location and your total monthly expenses for each:

- a)** Regular telephone service (wired):  Yes  No  
 Under \$100  \$100-\$300  More than \$300
- b)** Cell phone service:  Yes  No  
 Under \$100  \$100-\$300  More than \$300
- c)** Voice over Internet (VoIP) service:  Yes  No  
 No charge  Under \$35  \$35-\$45  
 \$46-\$100  \$101-\$300  Over \$300

**20.** What changes or improvements to communication technology in your community would best meet your needs?

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Thank you for your time and support! Please complete and return this survey right away.

**TO RETURN SURVEY: Simply fold the survey flap to display the return address, tape and drop it in the mail today. Thank you!**

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Northern Neck Planning District Commission  
Communication Assessment Survey  
6745 Bells Ferry Road  
Woodstock, GA 30189



## Appendix B: End-User Survey Comments

### Residential

#### Response to Survey Question 20 – Comments/Suggestions

**“What changes or improvements to communication technology in your community would best meet your needs?”**

1. Total satisfaction with Verizon both regular & cell & dial-up! Just want DSL!
2. Dial-up is all that's available. We need High speed!
3. Every time it rains or the wind blows I loose my dish TV reception
4. Another Bridge from White stone to Grey's Point
5. High Speed Internet
6. Better Cell phone service, system that would not go out when there is a storm or heavy rain - TV and computer
7. Fiber Optic computer service or some wireless service
8. Higher Speed access, Lower Prices, More choices
9. I am about 1.5 miles beyond range from DSL service and would like to have high speed internet access
10. High Speed Internet- Yeah, been waiting on it.....
11. High speed at reasonable prices
12. Would like to have high speed internet access
13. If Broadband internet was available here there is 100% chance we would enroll
14. The installation of what I have was VERY Expensive. Start up costs are too high!
15. I am not interested in IT changes or improvements. Have no computer and not likely to ever get one
16. Cannot access messages out of my home- Internet slow
17. Unbundled wireless high speed internet is the top priority
18. Local cable costs are getting out of control
19. Affordable dependable Internet and cell services.
20. Cell service is weak in our area. Wireless internet is non-existent. We need better coverage for both
21. Need High Speed internet
22. Wireless internet connectivity
23. High speed
24. Wireless service
25. DSL or High Speed Access, anything but dial-up PLEASE!!!!
26. Equipment and Use
27. High Speed internet that's affordable, Bundled Services
28. I want High Speed Internet. Dial up is so BAD
29. A DSL Connection, Not just Satellite
30. High speed Internet
31. Fast Connection
32. We need reliable broadband access!
33. We need a cooperative type of internet service provider, like electric cooperative for profit. Current servers seem too greedy and not interested in servicing the needs of the consumers
34. Would like to have a package deal that would lower costs
35. We need cable or DSL & would gladly pay for it! Hurry we need HELP!!!!



36. Improved communication w/Phone co. Better cell phone reception
37. Affordable high speed internet, more cell phone company options (service area doesn't cover us usually) Digital cable; cable service to our area
38. DSL Services are available 3 miles down the road but not available in our general vicinity
39. Higher Speed Internet, TV without picture interruption, Better Cell signal
40. High Speed internet and digital TV
41. Broadband would be great
42. Make DSL available at reasonable prices. Improve cable TV services to include more channels and be more responsive to subscribers
43. DSL or High Speed Internet- Voice Mail - Caller ID - Call Waiting - Our County desperately needs telephone services such as VM - Caller ID with call waiting and High Speed internet so people can work from home
44. Faster - More Bandwidth
45. More local options - Verizon long distance, satisfied
46. We need cable & High speed. I work from home for a large company and desperately need high speed. Satellite is very unreliable. High Speed is available at the end of my street but Cablevision refuses to continue running the service for another mile. We have 18 houses on my street that cannot get cable or high speed internet unless it is satellite. This is not fair!!!!
47. An affordable package deal would be just right for us. Please notify us immediately when your service becomes available to us. Thank You
48. Get better connection for internet
49. Put in High Speed internet service - Cable for TV - and get rid of the robbers called Verizon
50. Quieter lines in storms, Faster connect, Real unlimited ISP, not proprietary
51. Some channels drop off the air for a time. Short to longer time channel 3 and 10
52. New resident lack of awareness
53. High Speed Internet
54. I have had many difficulties with Verizon getting my account information confused and not being able to get DSL access. Too many different Verizon people not communicating within Verizon's company system. I want a company that knows what they are doing, and that a phone call can correct a problem
55. High speed internet & cable TV server that would allow customer input into channels available
56. Better quality TV shows. There are many channels but most carry inferior shows. I rarely watch TV because of that
57. High speed Internet
58. Affordable Plans
59. Satisfied with service not price, need True High Speed internet access. All services from one provider - one bill
60. High speed internet @ affordable prices. Package Options
61. Need Broadband
62. Speed is the biggest issue
63. Cannot access messages out of my home- Internet slow
64. Need Cable, DSL. Stronger Cell Phone signal currently weak @ 2 bars
65. Digital cable TV, DSL, Cheaper Land line rates
66. At my house the cell phone says no service. We need a tower in the community
67. Wired phone access very costly
68. Cell phones w/no roaming charges. Telephone lines are OLD! Constant noise & dropping calls on land lines after heavy rain. Slow support from Verizon. Costs CONSTANTLY increasing w/no increase in service!
69. FIOS
70. High speed internet and broader cell phone coverage in this county



71. Low cable and telephone options
72. Internet - Unsat.. Cell Unsat.. TV - OK Wire Phone - ok Nothing is Good
73. Broadband as fast as Japan's service combined with TV and Telephone & which also blocks spam all for \$50.00 / mo. which everyone could afford
74. DSL availability
75. Treat us like a city
76. Cell Phone service NOT available at home
77. Verizon has a good deal for \$99.99, why can't we get it?
78. Poor cell phone coverage can't use cell phone from home.
79. VPN internet, internet wireless - Broadband internet - More towers for telephone cell phones.
80. High speed internet HD delivery for all local channels
81. Fiber optic service
82. Would prefer not to have satellite - goes down in bad weather. And current cost of TV & internet is too high. Broadband or something wired. Dial up is worthless - have had in past.
83. Additional cell phone tower. High speed or better yet DSL available to Gwynn's Island!!
84. High speed connection
85. Better quality land-lines
86. High speed Internet!
87. High speed internet (Broadband) Service, choice of telephone other than Verizon & pay TV services @ reasonable cost (\$85 too high)
88. Like to see affordable high speed internet
89. An inexpensive combination
90. I do not own a computer. Therefore I am of no interest to you.
91. Availability of the Verizon "Triple Freedom" pkg. Which includes telephone hi speed internet & DirecTV for \$100/mo.
92. High speed internet
93. High speed internet would be good. Our household doesn't use TV much.
94. High speed internet, Cable
95. Move us out of the Stone Age!
96. High speed internet at a reasonable price, preferably Verizon.
97. Combined broadband and wireless (cellphone). Verizon cell service is awful at residence!
98. Cable for DSL connectivity
99. Being able to get a computer.
100. Competition to lower rates and provide better cable TV service particularly.
101. Better Cell phone service.
102. Being able to have hi speed internet to be able to get rid of land line payment.
103. Cable service would be better because satellite TV service goes out so easy.
104. Cable TV and internet
105. A pkg of services would likely be more economical for consumers & build relationships for providers.
106. Cable TV - DSL Internet
107. The state of the art should be available to all people everywhere. The singularity is fast approaching.
108. High speed internet
109. Reasonable high speed internet needed
110. Would like TV/Telephone and internet as comb package w/1 monthly bill for all 3 at affordable rates for low income people.
111. Cell phone service needs to be better and internet needs to be available.
112. Hi speed dependable internet service bundled with reliable telephone and/or digital TV service.
113. Just hurry and get high speed internet service, for this area. It would really help!



114. High speed internet & better cellular. There is only Verizon cell service that works here so you're stuck with the high dollar amount.
115. More HDTV choice w/local channels. Higher speed internet. Lower prices.
116. Hi-speed internet
117. Wireless just becoming available - checking it out. ISP excellent, speed terrible. Wires & proximity to telephone sub station is problem.
118. Need high speed internet service
119. DSL internet service is only available to a very small area in Mathews County. Most businesses & residents only have dial up for connection to the internet.
120. We need more services! Even the satellite is poor in bad weather.
121. This area has a lot of people on fixed incomes - retired. We need a smaller satellite package or discounts for those over 65.
122. Do not have internet or computer. At this age not interested.
123. Competition among providers
124. High speed internet
125. Better cell phone service
126. Need faster internet service and wireless and better quality cable TV than just Suddenlink or Metrocast.
127. Cheaper rate for dish network
128. Better Cell Phone reception, Better internet service
129. I would like to have the option to purchase cable TV service in lieu of satellite dish which I've been told is close by to my cul-de-sac, but not serving my road
130. High speed internet
131. Real high speed
132. I have Comcast TV and reception is very poor on many occasions
133. Better selection / price, video faster internet service
134. More reliable, faster, cost effective
135. Cell Phone service "Everywhere". We currently have very spotty service - does not work at my house
136. Burgess phone lines crackle very badly w/static. Repair for Verizon says it's the external phone lines cause they are so old
137. All in one and personable
138. I'd rather go without changes so as not to disturb the area- That is why we live here- We don't mind the inconveniences.
139. High speed internet
140. This area badly needs some sort of internet connection. Satellite service is too expensive per household. Help!!!
141. Broadband - Highspeed - Dependable internet service
142. I am satisfied with what is available
143. Affordable Broadband
144. Low cost high speed internet. Both Verizon phone lines are poor and their service is deplorable.
145. Low price
146. Wireless internet connectivity
147. Cheapest I can get on fix income- We need something here
148. Need to get rid of this dial up service. Need service like DSL so that you can receive phone calls and be on the internet at the same time
149. Affordable high speed internet service should be available to everyone. We need improvements soon
150. We need high speed internet as soon as possible or faster



151. In this fast paced world we need a more simple technology and cheaper. We are senior citizens
152. High speed capability
153. High-speed internet, more cell towers
154. To have Cox Cable w/ both TV & internet service or any provider w/ high speed. Cannot afford satellite installation & monthly charges for high speed
155. Cheaper installation & monthly rate for broadband
156. High Speed Internet Access
157. High speed internet!!
158. Choice of service for better prices
159. Highspeed internet services- Currently wireless & cell service is thru spouse's company I would not pay these rates for home use only. They are too expensive for what we get. Underground cable vs overhead- We loose connection often
160. High speed internet is top priority - We would like to take online courses & download music & right now this is impossible with dial-up
161. High speed internet availability would be nice
162. High Speed internet is very important to us
163. High speed internet. Needed for school work... advanced student in home can't complete homework assignments
164. Would like Verizon High Speed
165. DSL or high speed service
166. Need high speed internet - DSL but not available in our area
167. Unless a service could equal my comm. Costs of Verizon phone and DSL total of \$50.00 Sprint at \$5.00 I would not be interested
168. A faster internet w/low monthly fees.
169. More vendor choices for better pricing - Combo PK would be great
170. The housing opportunities are the problem not the technology
171. I plan to get a computer & digital TV soon. I'd like to roll all of my TV/Tele/computer into one monthly bill. Also good support for tech problems.
172. Would like to have digital high speed internet
173. Faster Internet
174. DSL/Cable high-speed internet, Better cable
175. We need high speed internet!!!!
176. We would like faster internet
177. At a minimum, some high speed internet access
178. One vendor to provide all at an affordable price.
179. Cheaper phone service, Computers being able a cheap monthly payment with reasonable internet hook-up
180. Optical Fiber would be ideal: wireless is a good alternative. We need reliable high speed!
181. High Speed Internet DSL
182. Cable Broadband
183. Lower phone rates. Lower internet price.
184. high speed internet over dial up
185. Wireless service is desperately needed in Mathews. Dial-up is too slow.
186. Would like cable TV instead of satellite.
187. More cell phone services from other companies besides Verizon - Area needed from Richmond to King William County area!
188. We do not have a computer. Have no interest in the internet.
189. Lower costs
190. High speed wireless internet
191. Dependable affordable high speed internet.



192. Cheaper, consistent cable service.
193. Would like better reception on cell phone.
194. Better telephone service.
195. Need DSL and more options for TV, and phone services.
196. Get a Broadband service at a price competitive with that in large cities.
197. Need high speed internet badly.
198. More tech people to support the service.
199. Either have Verizon put in DSL or have Va. Broadband.
200. DSL - Voice over internet not available in our area of Mathews County. HughesNet download & upload speed very erratic & too expensive for the performance.
201. DSL
202. Better Verizon cell phone coverage. Better Comcast service. High speed internet!!!
203. They could lower prices for their packages.
204. High speed internet
205. If low cost wireless internet services were available we would subscribe.
206. Faster
207. DSL availability
208. Broadband availability
209. A combined telephone, cable TV and internet service. One bill to pay
210. High speed internet
211. DSL or cable internet access
212. It's hard to say when you don't have it but the new houses 1/2 mile away do
213. High speed internet access
214. Verizon high speed internet
215. high speed downloads
216. Affordable high speed internet
217. Need high speed internet!
218. Prepaid unlimited use cell phone service that is inexpensive and works in the area
219. Fiber optic cable to provide all three
220. Faster connections for internet
221. High speed internet is essential. We have had several dial up providers and service was horrible. We have had to obtain satellite service but it's unavailable. It is critical for my ability to work at home.
222. Cable TV should be available to the entire county, not just part of it.
223. Availability high speed internet @ low cost
224. Access to broadband -No. 1 - Competition among telephone providers (We only have one company, Verizon, to choose from- so, no choice
225. I have called Verizon several times to find out when their services would be available here.
226. I would just like to see high speed internet in my area
227. DSL
228. Would like to have high speed internet service in my area
229. We need high speed internet access available at a reasonable cost & more wireless hotspots. The only one that is available is at the public library. I view this as an essential infrastructure like electricity
230. High speed internet. Great if Verizon would offer
231. High speed internet connection
232. Would like to see a low price internet service. Have a cell tower in White Stone & Weems for better connection
233. High speed internet
234. To have a choice and reasonable rates. I opted for TV - Phone - PC @ 99.95 with Verizon. The price went up within months due to taxes



235. We need reliable high speed internet service now!!
236. Our region does not have a cell phone tower
237. Telephone conversations interrupted & terminated + highly disrupted service- This could be (possibly) due to underground wiring on my closely knit neighborhood.
238. Would like to see cell phone coverage and high speed internet
239. Bringing DSL from Zacata Road into Nomini Bay Farms
240. More cell towers, cell signal strength is terrible!!
241. High speed internet
242. Localized service may be less expensive
243. Need internet DSL for Northern Neck
244. Combination / package services wireless internet
245. Get broadband into Mathews soon
246. Complete and knowledgeable service personnel.
247. We can not even get voice mail box from Verizon yet we pay for one
248. DSL
249. Ten more cell phone towers - reception here is almost non-existent being so rural- cell phones are needed in case of emergency out in the fields. Better internet connection!
250. Wireless or DSL PLEASE!!!!
251. Need high speed access
252. Cell phone in Irvington does not work
253. Update to the 21st Century Infrastructure
254. Faster speed internet access with affordable combination packages
255. I would like to see either high-speed cable (Comcast or Cox etc.) or Verizon FIOS in our area and accessible by those of us on rural routes
256. More towers for cell phone access
257. Comcast needs to upgrade their equipment to provide improved reception
258. Having affordable low priced alternatives to Verizon Products. Several choices & networks. Would be reasonable.
259. High speed internet
260. An organization that provides multiple consistent and affordable services to our area
261. Cheaper package
262. DSL!
263. Cost
264. Cell phone reception is weak. Need more towers. Need DSL
265. Better high speed internet available throughout the entire Northern Neck
266. I would like to have access to one package of high speed internet telephone and pay TV service
267. We need high speed internet service that is affordable
268. Problem with satellite is interruption of service by severe weather (Also TV service)
269. DSL at a reasonable price
270. I'd prefer cable to satellite but the channel selections and service is lacking
271. High speed internet
272. Affordable satellite services (video and internet) and telephone services
273. One provider for all services phone, internet, TV
274. Affordable high speed
275. Faster connection would be awesome, to be able to combine 3 bills would be helpful as well
276. A good product for a great price
277. Need high speed internet and better cell phone coverage & forget the package deals; need choices
278. A combination package- phone, internet and satellite that would be more affordable
279. Broadband



280. Lower cost- Only one cell phone provider has good service in West Point 2 miles away from I-64
281. High speed internet
282. Provide wireless capabilities throughout county not just local to Montross (town)
283. Bring in appropriate technology for hi-speed DSL or broadband
284. High speed access to allow more tech industries to move to the area and provide more jobs
285. Combination of high speed internet with other services
286. High speed internet
287. High speed internet
288. A service that will not break a fixed income pocketbook
289. Better reception for cell phone or more reasonable rates for wired phone regarding L.D., including international calls
290. A faster internet service
291. Access to high speed internet via wireless, cable or DSL. Must be "affordable"
292. High speed internet service and TV
293. High speed internet
294. Faster access to internet at reasonable prices
295. All OK - Wish Govt. would stop upping and adding stupid taxes each month. I'm on a below poverty income.
296. Availability of high speed internet service
297. Reliable service with reasonable rates for retired educator
298. Need computer
299. Better internet service
300. So far I haven't a problem. The future is up for grabs
301. An internet service that would come up anytime you wanted it to come up instead of stalling
302. Bundled services on fiber optic cables
303. Cell phone reception is bad in area- Good to have high speed internet service- I would subscribe
304. Cell phone service in my area is completely unreliable. I travel alone at night and need reliable access.
305. We have poor cell phone coverage and no phone or cable high speed internet- we need both of the above. We live in a 22 unit condo- all residents agree with our answers.
306. More cell phone and more broadband internet coverage
307. Availability of high speed internet service. Better Prices. Better Cell Phone reception
308. DSL wireless- we need a tower. Cable TV has arrived in our neighborhood but internet only would be 70.00 per month
309. Access to broadband - phone service when it rains
310. We need high speed & wireless
311. High speed internet
312. DSL & cable TV
313. Better cell phone signal
314. Cost availability of options -other companies
315. Faster internet service speed. Too time consuming now to research & etc
316. Underground services - so we don't loose signal every time there is bad weather.
317. If there was a fast way to get on-line would be fine. I understand we do not have a fast hook up in our vicinity
318. Hate Verizon - No Customer Service
319. High speed internet access is very important to me. I loose many hours a month waiting for dial up connection
320. DSL availability as an option
321. Verizon FIOS



322. I had DSL by Verizon, it had problems and their employee was unable to fix it
323. High speed internet
324. Cable, high speed internet
325. Any service must be secure
326. Would consider a Verizon service that carries cable, internet & phone
327. Better regular TV reception
328. Robust, consistent network
329. High speed internet service would be wonderful!!!!
330. Get us high speed internet PLEASE!!!!
331. We need more competition ie., more providers - to drive down prices and improve / maintain quality
332. Rainy weather affects service. Dial up is near impossible to use so I canceled it. Can't get high speed
333. Package cost is the key!!!
334. Underground cable lines and more than one company for competitive pricing
335. There is a cell phone dead spot at residence. Would consider cell phone if it worked here.
336. High speed internet bundled with phone (land and/or cellular) and TV at a reasonable rate. It would be even better.
337. High Speed internet that is affordable. A combination communication package would be great.
338. I would love DSL or some sort of High speed internet
339. We need more service provider choices. Wireless internet and better T.V. options
340. Want some form of broadband. Want better cable or satellite
341. Just received VABB - Before we had dial up. Would like less expensive options like DSL (not in my area)
342. We need a total package offering wireless services, but must save user \$ over current services
343. Affordable high speed internet service soon
344. Better Customer service faster internet access
345. Better reception on my cell phone - My home seems to be a dead area.
346. Would like high speed with Verizon
347. Speed up dial up
348. High Speed Wireless essential
349. Verizon offers hi-speed but it still is not available yet in this area, this would be a big improvement. \$60 a month is too expensive through Direct TV as I don't use the computer daily
350. Better/affordable broadband and or better rural phone lines for dish service at affordable prices. We are behind in technology in Northern Neck.
351. Inexpensive broadband high speed internet
352. High speed internet - because a lot of companies are now catering to that from dial up as far as their services and dial up will not work
353. It would be nice to improve technology in our community
354. High speed is needed
355. High speed (768 kb or better) for \$20 per month
356. No internet, no computer, no telephone and not interested.
357. High speed internet
358. More cell towers- do not get Verizon cell service at home. Faster internet service.
359. Fiber optic cable in all of the county
360. High speed internet at an affordable price
361. To be able to get affordable high speed internet. Many people in this area agree & want it also.
362. Cable with broadband but open to more options



363. Just getting high speed internet service
364. High speed DSL
365. Do away with community board or directory or modify board. Actions (and community actions) to bring them in line with development covenants.
366. DSL or cable available in all areas of county without having to bundle with TV services
367. High speed internet accessibility
368. We currently connect with ISP at 35 to 40 KBS. It is way too slow and does not meet our needs. Also our land line telephone has too much static on it.
369. The cable service is horrible. Comcast in Richmond provides much better higher quality service.
370. Less tax and service charges. Hard to get service personal - can't reach a live person - hate talking to foreign personnel.
371. Not able to get DSL for internet, can only get satellite service for TV pay too much for Direct TV, internet slow and wish I could have faster internet service at a reasonable price
372. Everything is okay as it is
373. Repair techs I can understand. Intermittent static on house phones - no explanation for it. Two house jacks don't work - repaired twice- still don't work - better repair service needed.
374. Provide truly high speed internet that is reliable. Get Verizon to tell their plans locally for wireless high speed internet instead of providing canned, vague, unresponsive answers.
375. High speed internet access would like to have DSL or more of a selection loaded into dial up (dead lock) (1) company - All 3 Services
376. High speed internet at affordable cost.
377. A good, clear cell phone connection, area wide would be very helpful.
378. High speed internet availability. Verizon voice mail availability. A better cable TV system.
379. I would like to be afforded the opportunity to select unbundled services that suit my personal needs at a reasonable price.
380. Actual service or repairs Verizon can not be made to do service. Their voice mail system runs you in a circle then dumps you.
381. Affordable fiber optic cable.
382. To have high speed internet available in our area.
383. I had internet svc. once. I had to pay internet plus billed to my phone bill. I could not afford both bills.
384. DSL be brought to this area.
385. Desperately need high speed internet connection.
386. Faster Internet.
387. High speed internet service with security features allowing for financial transactions.
388. Fiber optics plus new feeder phone lines. Too many patches in current feeder line.
389. Everyone in this area needs a low-cost, high speed internet connection - wireless or wired through Verizon or cable TV. Thank you!!
390. High speed internet service & cable TV.
391. Cable Access
392. Faster internet. Problems with Direct TV Satellite.
393. High speed internet - definite
394. Actually a local service of own acclimated to this community would be nice. There is still too much money going out of the county.
395. State of the art TV, service, high speed internet, and telephone package, along with wireless service for all state-wide.
396. Reliable availability, Hi speed upload/download >1M. Access to all areas of county regardless of population density.
397. Be able to get internet without hard line phone.
398. Very little cell phone service on Gwynn's Island.



399. Wireless access.
400. Currently very poor cell service at house location.
401. High speed internet
402. Desperately need high speed internet for business & personal use.
403. ISP open M-F, 8-5 only doesn't cut it! Verizon probably least favorite telecom. VOIP will get better, but requires backup power for computer. Day may come that phone will go away!
404. Provide cable service & high speed internet that is truly high speed.
405. Topping needs wireless service and DSL service. \$19.99/month for wireless in other areas.
406. Cell phone availability at home and being brought into the 21st century by Verizon. Poor service by Verizon.
407. I am not interested in other services because of my age. This is for young people. My daughter in-law uses the internet.
408. Better cable reception. Comcast has the monopoly on cable for those of us who can't retrieve a satellite signal. Many problems by Comcast cutting out & snowy picture. It would be great to have affordable quality cable!
409. Better TV and internet reception.
410. Good customer service people. Cable TV. Something low income elderly can afford on a fixed income.
411. Using telephone w/o internet faster speed for internet able to reach internet provider, kids able to do homework on the internet in a reasonable time.
412. DSL
413. To have better pricing plans.
414. The internet service that I currently have I have no other choice but to be satisfied there's nothing else available. High speed in our area would be "great".
415. New lines! DSL available.
416. High speed internet.
417. Telephone lines are so old they make internet use slow. No cable service available.
418. Faster internet & more telephone services like call waiting, caller I.D.
419. We would be interested in fiber optic & complete digital package.
420. FiOS or other Fiber-to-the-curb.
421. More towers - More choices than Verizon - Don't like.
422. Board of Supervisor meetings and local weather available. Local (Northern Neck) news.
423. Better cell phone service.
424. High speed internet capability.
425. Reliable internet.
426. Faster internet service.
427. Would like more than one reliable provider. Might bring prices down some.
428. Integrated internet/phone/TV-a-la-carte affordable to seniors (or, discountable to seniors).  
TV: a la carte, or availability of basic channels plus some selectability.
429. Hard wire everything.
430. Fast internet so you can access video downloads.
431. High speed internet/email access. HD TV capabilities for ABC, CBS, NBC.
432. I use internet at work. I have Peoplepc.com
433. Need DSL - High speed!!
434. We need 8-10Mbps service - At a minimum!
435. Affordable reliable home network friendly HS internet with reasonable fair access policy!
436. One service that offered every service I need on one bill!
437. Broadband or satellite at a reasonable rate & low or no start up cost.
438. Verizon wireless needs new tower in Reedville.
439. Availability of cable TV, highspeed internet, and full range of phone services.
440. I don't have a computer because I can't afford one.



441. My needs are met, but I'd certainly like the children of the area to have access to internet capability - the latest technology.
442. High speed internet combo package - bundle.
443. DSL
444. As I don't have a computer at this time (but hope to) and haven't investigated internet providers, I don't know what is/isn't available.
445. Combination package.
446. Would like to have fiber optic available in my area.
447. Do away with all internet & stop calling at home.
448. Fewer Outages
449. Cheaper.
450. Highspeed internet
451. Hi speed Internet
452. I would like to see high speed internet access available in my area.
453. Lower costs #1
454. If video is satellite it is too expensive for what offers. Ex: showing same programs continuously. Too many shopping channels - medical program repeatedly.
455. High speed internet
456. To be able to have one bill to pay for phone, cell, internet and satellite.
457. Mathews needs DSL or cable internet desperately. Before we moved here we lived in the Mountains in N.Y. and we had cable internet. Please help!!
458. Need better cellular signal.
459. Desperately need real high speed service!!
460. Need availability of Broadband or DSL.
461. High speed internet
462. Wireless Internet
463. Too many little changes every month. Some of the same changes.
464. Telephone voice mail!! More reliable internet service, we are always.
465. We have nothing now!! Anything you could offer would be an improvement. Thank you
466. Less expensive high speed internet service.
467. More high-speed access choices.
468. Cingular/AT&T does not have cell services at this location at present time.
469. Faster speed and increased reliability at high-speed internet access
470. Better quality telephone service & faster internet!
471. Either a DSL line or Broadband.
472. "Affordable" services. Faster internet. More affordable phone service. Many people are going with calls only. Want a cell phone for safety on the road but worry about not being able to call people during an emergency due to roaming or high call volume. Also minutes can add up to be costly.
473. High speed DSL! I would like to be able to use my cell phone in my home. If possible all services with one company @ a reasonable rate.
474. Underground wiring, my phone, home computer, and direct TV go down during rainstorms and wind.
475. Better internet service that's affordable.
476. DSL - needed badly!
477. Available cable service
478. Wireless high speed w/cheap phone service - I'm paying \$258 for phone, \$125 TV - OUCH!
479. Competitive services that would allow high quality at lower costs.
480. Would like to see high-speed internet available so we don't have to tie up our phone line.
481. To have faster internet available.



482. Improved cell phone. Implement high speed internet. Improved cable TV. Combine cell/land line, internet & TV in one bundle with low prices.
483. High speed internet services.
484. High speed internet, fiber optic cable, more competition for telephone.
485. Fiber
486. Faster internet
487. High speed internet. Cell phone signal.
488. High speed internet & more than 44 channels on cable.
489. Fiber to the home.
490. Telephone & broadband other than Verizon as service provider.
491. Faster/more reliable service, and cheaper telephone rates.
492. Service so cell phone can be used at home!
493. DSL immediately!
494. More affordable options.
495. Faster internet
496. Wireless internet would be great. Currently we drive to the library and use the wireless connection in the parking lot.
497. We need better high speed internet coverage from CATV or land line phone. Hughes.net or wireless is not reliable at all.
498. Reliable service.
499. Options needed to purchase bundled services - more cost effective - more competition needed.
500. See work from home website at [www.vacationlanegrp.com](http://www.vacationlanegrp.com)
501. Highspeed internet. Hi Def Comcast cable.
502. Need Access! This 2nd home still must have internet.
503. Cheaper
504. High speed internet package w/phone.
505. High Speed internet service to all areas of community.
506. High speed internet - combination internet, telephone & pay TV service!
507. Hi speed land line telephone internet or wireless internet service, one provider.
508. DSL
509. Having cheaper & faster internet service or more dial up #'s available.
510. High speed internet
511. To have all three services's for one payment.
512. Faster internet access
513. Faster!
514. High speed internet & cell phone reception.
515. We need DSL or high speed internet.
516. We need wireless internet every where. Verizon need to update.
517. Better cellular service. We have a lot of dropped calls and bad cell areas.
518. Any improvement would be welcome. There is no technology in this area at this time.
519. Better cell phone coverage.
520. Lower Cost on video service.
521. Better internet
522. Access to high-speed internet
523. A combination package that is reasonably priced.
524. A DSL connection would be great!! Cable TV would be nice for local news. All on 1 bill would also be nice. Hope you all can help us.
525. Would like something in video & internet that is more affordable, with the same quality available in more populated areas.
526. High speed internet (wireless)



527. It would be nice if cable and telephone service was cheaper. Have basic cable pay around 44.00 a month. Very disappointed in programming selection. Don't want to pay more for more channels.
528. Availability of a DSL service
529. Our options are limited; therefore, competition is virtually non-existent.
530. We need DSL lines Verizon and broadband through cable - comcast. What we have is pre-historic and the companies have shown zero interest in improving.
531. More available services communication for King Wms area.
532. High speed internet that's affordable.
533. We need more options available when it comes to what high speed internet services are available to us in this area. NOT enough choices currently!
534. A package deal would be awesome.
535. I have family & friends in my area that have internet they would like something other than dial-up. For me I have no computer.
536. Please run fiber to Berton Point 1.3 miles north of Tappahannock. Secondly, a combination package makes sense and will likely save me \$.
537. No signal at our location. Cell phone service (Verizon) in comp like coverage.
538. Get DSL for internet use.
539. Better internet service. Better cell phone service.
540. Faster high speed internet at lower costs!
541. Verizon could not fulfill our needs - we have Kaballero/wireless. Many residents do not have access to broadband.
542. Availability of high speed internet that doesn't cost a fortune.
543. High speed (DSL) internet less than \$40/month. Better cell phone service King & Queen.
544. Fiber to curb - FIOS
545. It would be nice to have just one bill with internet, telephone and TV services. Then you could pay just 1 total fee instead of 3 different bills with interest added. It would be a good idea.
546. We need more options for internet, TV and telephone. Current option (note only 1) is less than desirable.
547. The ability to subscribe to DSL. A package with this included would be great.
548. Affordable, reliable, faster internet connection speeds (DSL or broadband)
549. DSL or wireless internet, and satellite or cable with access to local Richmond channels. Paying for HD reception & only picking up less than 1/2 channels & no local.
550. Inexpensive hi-speed internet! Don't care about packages of service available yesterday.
551. More options
552. Safe, affordable, reliable, quick, professional safe repairs.
553. High-speed internet, TV & phone package under \$100.
554. I would love one bill from one company that provides phone, internet & TV or at least internet & TV. Biggest improvement would be availability of faster internet.
555. Better access.
556. Affordable high speed internet is necessary!!!
557. Cell phone reception is totally inadequate. We're at the end of the line, but should have the same amenities that the rest of the county has.
558. A wireless internet access facility.
559. To have affordable broadband service or better package internet/phone services.
560. My phone line (wired) goes out all the time.
561. All in "1" billing, call waiting, caller ID
562. High speed internet
563. Need affordable broadband access at speeds higher than 3mbps.
564. Affordable high speed internet



565. Affordable high speed internet
566. Better reception for cell phones!
567. Low cost, good service
568. Affordable internet - not packaged w/other services.
569. High-speed internet that's reasonably priced (not \$150/mo.)
570. Access to high speed internet. Truly affordable "packages" of telephone-TV (Direct) and internet services - high speed preferably.
571. Equal to all - or government subsidized.
572. Faster internet connection
573. I would love to be able to get high speed. Not sure why I can't, friends in my area already have but it's not available to me.
574. Digital cable with DVR
575. Cable TV & internet
576. Faster internet, cheaper phone service. Better cell phone reception.
577. More affordable options. More available options.
578. High speed internet/email
579. Fiber optic
580. Affordable wireless internet access
581. Am very interested in high speed broadband access. Satellite TV is ok but prefer broadband cable. Would love to see fiber optic installed.
582. Need more cell phone towers. The reception is very poor in my neighborhood.
583. High speed internet
584. High speed internet, phone & satellite package.
585. No telemarketers
586. High speed internet
587. DSL
588. Mathews County is a fast growing year round residential area. Faster services would certainly appeal to a younger crowd.
589. More speed for PC operations. Eliminate chintzy dishonest fraudulent add-on fees & charges on phone bill.
590. Cheaper internet/cable service. A bundled package would be good.
591. Cheaper & faster internet
592. Satellite service for everything or broadband internet service. Get another phone company Verizon is unbelievable.
593. Wireless broadband
594. High speed internet access
595. Faster internet and more choices, we are limited to when it comes to telephone features.
596. Much better cable services
597. More cell towers in the Irvington, Weems & White Stone area.
598. A combination of all 3 together
599. High speed internet service
600. Beat Verizon. Put them to the curb.
601. Please, please, please get cable - modem - internet!!
602. High speed internet
603. Adding DSL to my road
604. Somebody buy Verizon & make them accountable. Wi-Fi availability.
605. High speed internet
606. Cable service is outdated. Comcast needs to upgrade. We currently have only 44 channels of basic service in comparison to 100-200+ channels for basic service in other counties.
607. DSL - high speed
608. All the extra fees added on and the increase with nothing gained.



609. Faster to get onto computer
610. Broad band or fiber connectivity.
611. A cable package for TV, Internet & phone for \$100.
612. I'm a teacher. I can affirm that our students are quickly dividing into the haves & have nots. Internet access is now part of all textbooks, homework, gradebooks for parents to see grades, etc. People who make min. wage can't afford access to the internet. We need to improve this!
613. Have nothing now!
614. Comcast does not provide good cable. Would love high speed connection
615. DSL line or good satellite communication for internet
616. DSL/Cable not available, only satellite & too expensive for the speed.
617. Get high speed internet
618. High speed internet, Cable
619. High speed internet service and cable.
620. Faster internet service.
621. If high-speed internet were available, I would move my business and its jobs to King & Queen Co.
622. Lower cost
623. Verizon should offer DSL but does not.
624. PLEASE give us high speed internet & better TV services. There are a number of us on Montague Is. Rd. that want it!
625. High speed internet
626. We are satisfied with our services, but the cost is high. A bundled package that provides everything (without a lot of extra charges) would be wonderful.
627. A direct cable connection for internet. I use Wildblue satellite now & am not satisfied w/speed.
628. I would like to be able to speak to people who speak English when I need help.
629. Higher speed internet
630. Spend less on advertisements and more on installations!
631. Want wireless internet. Want better cell signal than Verizon.
632. High speed
633. High speed available
634. Another primary phone company other than just Verizon.
635. Hi-speed internet!!
636. Would like to see digital lines, cable & internet through cable.
637. We need high speed internet connections & reliable service/troubleshooting.
638. Letter provided, forwarded to Bill Pennell
639. faster speeds, more bandwidth
640. Availability and reasonable monthly fees.
641. Faster internet service!!!!!!
642. To have high speed would be nice.
643. Better reception for cell and TV; Different options at better prices; Better customer service
644. DSL
645. Access to high speed internet without installing cable.
646. Wi-Fi
647. reliable cell phone service with strong signal; available full-coverage wireless internet access EVERYWHERE in the county
648. We have just gotten wireless cellular internet and are very happy with it.
649. High speed internet; Cell phone connectivity in basins
650. High speed internet
651. speed of the connection
652. Desperately need affordable high speed internet service.



653. High speed internet, wired TV service so weather does not interfere with reception, improve wireless service. Currently we are almost unable to use our wireless phones in our house and get very poor service even outside anywhere on our 10+ acre property.
654. We need high speed internet in all area of the county. I have it at work and no longer use the internet at home. I do not want to combine TV, telephone and internet. I would only be interested in high speed internet and plan on connecting as soon as it becomes available
655. Broad and fast internet service; more protection from unwanted messages; capability to capture new services that I don't even know about now.
656. Reliable, affordable combination packages
657. high speed cable; better cell phone tower signal
658. High speed internet and local phone options to reach a greater area
659. Higher speed at less cost.
660. Obviously it would be great to have a single source for cable, phone and internet and it would be really great if it weren't Verizon who doesn't care about services in rural communities where "demand isn't aggregated" - same story they used with E911. I would also like to quit driving to Richmond for meetings and medical consultations. This requires that the state invest in widespread access to teleconferencing services and in lowering the connectivity cost of telemedicine.
661. Cheaper!
662. High-speed broadband Internet service
663. Single source, full service provider with a reliable pipeline that offers bi-directional, high-speed, large bandwidth capability across all functionality.
664. Some type of high speed internet for the home
665. High speed internet; national broadcast channels (PBS is essential. Be able to watch webcast or video clips, or even just sound bites on computer.
666. wireless broadband made available at a reasonable price
667. Better call service to many no service areas
668. High speed internet service
669. Wireless broadband access to a local ISP
670. Broadband internet service, cable television
671. Whatever is offered or proposed I will certainly entertain it. Thanks
672. replacement of old telephone lines
673. Presently have DISH TV. Very dissatisfied with reception, service, billing practices.
674. DSL wired
675. I would like a bundled package of internet, TV, and phone through a single company for a reasonable price with good service.
676. I would be happy to get anything broadband because satellite is the pits but I must have something to work from home. I am also considering starting up my own WISP for my community to help out and make some cash! I am very interested in helping any way I can to get high speed internet out to my area!!!
677. WOULD LIKE TO GET HIGH SPEED FOR INTERNET AND PHONE.
678. Broadband (wireless)Internet with super high speed
679. Wireless communications which include phone, internet and TV
680. Prices are just too high for the service. You should be able to get hi-speed internet, unlimited phone service and HD TV for under \$50 and add unlimited cell for \$30.
681. High speed internet availability in my area.
682. We need someone to light up the fiber that Verizon has run throughout the county. FIOS would be the best option for services at this point in time.
683. Ability to get on line. The system frequently does not connect. It is not fast enough
684. Affordable high-speed internet would be great. I would love to subscribe to a bundle package of telephone, TV, & internet.



685. Satisfied, Happy with what I have.
686. Need high-speed internet at a very affordable price. Would spend more time on the internet if it did not take so long to download and/or upload info. Would love to pay one bill for telephone, TV and internet. Because we have satellite TV we have to keep a landline; otherwise we'd be glad to do away with a phone landline.
687. If Verizon would finally offer our area high speed internet! Or if we could get affordable high speed or wireless without changing our TV or phone service provider!
688. High speed internet
689. Better cell service and high speed internet
690. We need to bring in high speed internet.
691. Broad band service
692. Availability of high speed internet
693. DSL service
694. I need high speed internet!!!
695. a combination package of high-speed Internet, telephone and pay TV services
696. reliable high speed connection
697. Broadband access
698. Speed of internet and e-mail activity
699. Broadband would be nice
700. High speed internet/broadband
701. High speed affordable internet
702. High speed Internet and cheap cable
703. ALL OF THE ABOVE SERVICES
704. Reliability - broadband wireless as currently available is not reliable. When it works it is fast and satisfactory but it has periods when it just doesn't work at all
705. Hi speed internet
706. Broadband access
707. More reliable service from Kaballero and improved cell phone coverage in Reedville
708. Have dial-up at home - DO NOT USE - too slow. Have own business in Deltaville, 4 miles from home w/ Verizon DSL wireless - Have to go to business to use internet- DIAL-UP is VIRTUALLY USELESS. I have been on a list for 2 years to get Verizon wireless in my home. ALL TASKS LISTED IN Question #13 are completed on almost daily basis...but not in my home. Would subscribe to DSL or BROADBAND as soon as available. Need is critical.
709. Hi-speed I-net with customer support. Non-satellite wireless services.
710. More affordability for high-speed Internet service
711. COMPETITION, TO INCLUDE VOIP
712. Fiber optic cable TV/internet access
713. more than one cable company to choose from, affordable high speed internet
714. Reliable phone, television, internet, and cell systems not so interrupted by weather, or clouds, or whatever.
715. Deployment in Northumberland County (Harbour Pointe) area of wireless Internet.
716. High speed internet, better wireless phone service--more options for all phone services-- Verizon should not have a monopoly
717. We need access to high speed internet connections, so that we (adults and especially children) can keep up with the changes being made with technology. As it is now, we can not do anything new and innovative with our computers because the connections are too slow. It takes several minutes just to dial up to the internet and then more to download information. We can not view any videos or work on anything involving multimedia because it is too slow.
718. High speed internet!
719. more offers of high speed internet along with TV and phone but not tied into phone lines



720. High speed internet at a reasonable price
721. High speed wireless
722. High speed internet service
723. High speed internet at home. And cell service at my house.
724. Availability of Wireless Internet Connection
725. Inexpensive non wireless internet
726. I'd like something faster so I don't have to wait eternally for a page to load.
727. Telephone and "high speed" internet service not more than \$75 per month, including all those add-ons they call taxes.
728. Access to wireless/broadband that is cost effective and competitive with those in the surrounding areas.
729. Improve the equipment at the local telephone switching station to enable faster DSL service.
730. High speed DSL at a lower cost
731. Expansion of Verizon DSL or similar. Dial up on a 56k modem results in access at 28k at best. Even though we are retired we access our retirement IRAs, do online banking, etc. daily. The internet is critical to our daily activities and we are like a third-world nation from the standpoint of internet usage. Thanks for your interest and support.
732. Very unhappy with service and availability (or lack thereof) in our neighborhood. Please make high speed DSL available throughout this county - not just to selected areas. Cable is not available in this area of county. Only one cable company providing service to this area (a monopoly, which is not good). Satellite highspeed internet is too expensive, adversely impacted by weather, and slow on uploads (only high speed on downloads, but not as speedy as DSL). Verizon has monopoly on telephone service here, which is bad. They are constantly making small increases to our bill, but increased revenue not being used for fiber optic lines here, but rather in the Hampton area. Cell phone reception poor here despite the fact that Sprint and Verizon are not supposed to have any holes in their coverage anywhere east of the Miss. River.
733. An internet, telephone and TV package that is less expensive than what I currently must pay for those services.
734. High speed internet
735. HIGH speed access preferably not subject to weather conditions
736. Wireless, broad-band service that offers speeds of at least 1 MbS.
737. Add broadband by wireless. It may be available in my area but I have not yet requested it. If it is, it may have satisfactory speed.
738. DSL availability in the Hartfield area.
739. Just to have high speed internet and no more dial up connection would be wonderful
740. Availability of reliable broadband at a decent cost would help. Satellite is a step up over dialup, but not yet very reliable.
741. My income does not allow me to spend even \$85-100 on these services. I want real affordable broadband.
742. would like to have cable TV accessible as well as a high speed internet
743. Reliable high-speed internet.
744. high speed internet service
745. More choices for cable and faster internet service.
746. Make it faster and more affordable.
747. Hi speed internet.
748. Higher Speed for internet; opportunities to bundle services
749. Make high speed internet service available in our area!!!
750. Access to high speed internet
751. High Speed DSL
752. At minimum DSL service.



753. An all in one internet, TV, and phone system.
754. Wireless accessibility or high speed through the phone line would probably best suit our need. The cable connection in our area (at least at our home) is poor to non-existent and the provider was unable to provide better connection; therefore, I do not think cable would be a viable solution. We were told we lived too far from the connection box, even though we paid the same amount as those who lived beside the box.
755. Highspeed internet
756. Telephone - cell reception is poor. Video - very expensive for few desirable channels. Internet - current wireless is far superior to dial-up, but reception is subject to weather interference; some websites do not work on wireless connection; wireless speed is not as fast as expected (e.g., cable speeds apparently are double).
757. High speed internet
758. DSL FOR INTERNET AND BETTER RECEPTION ON MY CELL PHONE (VERIZON)
759. Highspeed internet
760. I would like to have DSL
761. faster internet
762. I would love to see a complete package for phone, internet & satellite service. I would make life much easier in many ways.
763. Hi speed would be great! Satellite is OK, but it's very expensive and not as fast as you'd think, for the price.
764. Fiber optics
765. More reliable cell service. More competition
766. I am a medical transcriptionist and in order to work from home I need high speed internet. Otherwise, I have to drive 100 miles to work five days a week and go to the library to use the internet. I NEED HIGH SPEED INTERNET, PLEASE
767. An internet service faster than dial up
768. High speed internet
769. High speed Internet access, more cellular towers for better cell phone service, voice mail
770. DSL or similar
771. Faster internet service that is inexpensive
772. Speed, reliability (in inclement weather)
773. HI SPEED INTERNET!!!
774. DSL Stops close to Rt 30/360 Intersection. I am only 5.5 miles away toward West Point. I would prefer at least DSL to my ISDN selection that was only available due to my business situation.
775. Really want DSL
776. Broadband service that would let us use the internet effectively, receive calls while on the computer and have reasonable prices on wireless phone service. A bundle of these services would be ideal.
777. High Speed Internet Service is needed. A better option would be a combination deal with a more competitive telephone service.
778. Accessibility to high speed internet service. Better reception for TV service without cable. Don't watch that much TV
779. DSL or broadband if reasonably priced.
780. High speed internet service and high definition TV reception service.
781. High speed internet offered locally
782. High speed internet access -- wireless preferably
783. DSL THRUOUT THE COUNTY OR IMPROVED SATELLITE BROADBAND. HUGHESNET IS TOO EXPENSIVE AND TOO SLOW IN THE PM HOURS. IT APPROACHES DIALUP MODEM SPEEDS IN THE PM.
784. Reliable HIGH SPEED internet



785. High speed internet
786. High speed internet access needs to be made available to the entire county, not just the court-house area
787. High speed internet with phone service included
788. High speed internet
789. Make them available!!!
790. addition of high speed internet
791. Cox Communication is the best. I had their combined TV, telephone, & Internet service in Newport News, and it was excellent (reliable & reasonable with good service). I would love to see Cox come to Mathews!!
792. High speed internet.
793. I like my Sprint broadband wireless service which I got only a couple of months ago. Before that dial-up (very slow in Mathews) was my only choice.
794. We need high speed internet service for our residence and our business.
795. Need the internet to be faster.
796. Better cell phone coverage, less gov't regulation on private wireless internet antenna installations. Currently, you have to get a special exception permit in certain cases where the antenna is mounted on a utility pole and not attached to the house, even if the antenna is designed to only serve one residence.
797. I hate that my satellite TV is out when the weather is bad. Sometimes my DSL is slow. I intend to start using internet phone service to communicate with my daughter who lives overseas.
798. County wide broad band
799. Real cheap prices less than \$100.00 per mo.
800. Need better internet connectivity to work remotely - we could use our home here more often with faster AFFORDABLE connection since we are part time residents.
801. Would like High-speed internet
802. I wish we had DSL and fast internet services. Verizon says they plan on never giving it to us.
803. Faster internet service
804. Would like broadband, but not at greater expense.
805. Hi Speed internet!
806. Access to affordable High speed Internet.
807. I would like to have Verizon FiOS available in my communicate
808. Faster, more reliable service
809. Availability of reliable, effective hi-speed internet connection.
810. Faster connectivity for internet
811. To have affordable wireless high-speed Internet access for all.....
812. The speed of the network is important and as far as phone services; mine are terrible, the connection is not acceptable
813. I want high speed internet!! I cannot meet my needs with dial-up!
814. High speed internet
815. Cheaper and faster, consistent speed
816. Ability to be connected to high speed service, and preferably one billing for all
817. Higher Internet data transfer speeds. Our wireless Internet service is good, but not nearly as fast as DSL, which is not available where we live.
818. High-speed internet connection is critical; I would be able to work from home, swapping my gas/fuel costs for broadband connection fees. We are not very interested in pay-TV (157 channels and nothing on!). We would consider packaging our phone service with high-speed internet access.
819. Better accessibility in all areas of the county



820. "Verizon needs to re-wire Mathews County" is what I hear on the grapevine from technicians. In addition, Comcast Cable has no competition and its service is unacceptably unreliable. Cable companies should be required to supply "a la carte" menus and not force customers to accept many channels that they do not want. If companies are going to bundle services, honest competition is absolutely necessary. Verizon's dismal service record should not be rewarded with a monopoly.
821. Need high speed broadband
822. High speed internet
823. Either fiber optic cable or an exceptional wireless network
824. Broadband
825. DSL
826. Avoiding interference from outside sources to cable reception; avoiding rebooting when new downloads occur
827. High speed internet access
828. High Speed Internet
829. We desperately need high speed internet.
830. We need DSL to be available to our whole community and the surrounding ones.
831. You offer no County venue for comments so I'll use this survey. Until July, when I learned about Sprint's cellular broadband wireless, I had only dial-up. It was terrible, never better than 36kpbs. The Sprint is good, but its coverage is spotty.
832. Service not to go offline so often. More competent people to give you information.
833. Hi speed internet
834. Better cell availability at home
835. We would appreciate high definition TV services, wireless internet and a package with competitive pricing.
836. high speed internet
837. Broadband Internet or even DSL.
838. Verizon phone ser. is expensive and has the worst service of any utility ever! DirecTV is also very expensive. Affordable high speed internet needed.
839. Reasonably priced high speed internet or fiber optics should be made available to rural areas. Thought this was what was to happen with earnings from the dismantled telephone monopolies
840. Faster Internet service and Video Service with high quality picture/sound and HD capability.
841. A solid high speed connection
842. While I do not use the internet a great deal, when I do use it I would like faster service. Sometimes the time involved discourages my use of the service. Ideally, one bill/connection for all three services would be great with the wireless phone service to cover the entire US. I am currently very happy with our wireless phone service when we are traveling. And I enjoy wireless computer connection everywhere...and we are finding this service becoming more common in campgrounds and marinas alike. It is mainly my home service for the internet that is frustrating.
843. The maximum amount that I would be willing to pay for high-speed internet and telephone would be \$75 per month. Our philosophy is that we live within our income. We are retired on a fixed income and are unwilling to designate a larger portion of our income to this category.
844. We need an affordable high-speed internet service with rates that will not continually creep up to an unreasonable rate. We cancelled our dial-up internet service because it was just too slow.
845. Better availability of high speed internet. Better cell phone service.



## **Business**

### **Response to Survey Question 20 – Comments/Suggestions**

#### **“What changes or improvements to communication technology in your community would best meet your needs?”**

1. Additional access for all county residents
2. An affordable DSL connection
3. Affordable service that completely ends slow dial up connections.
4. High speed access to business location + home
5. Our internet service is very slow & using dial up. Our cell phones will not work at our homes.
6. Less expensive internet access & higher speeds
7. Reliable high speed internet for guest needs
8. Reliable DSL or better. Region-wide would facilitate economic growth & job opportunities.
9. High speed internet
10. Higher speed
11. Hi speed internet
12. Either DSL or wireless! Please!!!
13. Consistent full area service
14. Faster email reception
15. Availability of packaged telephone, long distance, internet service.
16. Need the ability to have 5 stores within a radius of 75 miles on same service.
17. Reliable broadband connection would really help. Our current broadband wireless is good but there are short periods and days when it won't connect.
18. Affordable broadband via wireless in areas other than (in addition to) the courthouse. Faster and cheaper than the Sprint/Verizon cellular modems.
19. More technical help. The best thing govt can do is nothing!! Too much govt.
20. County wide coverage!
21. Wireless throughout the county.
22. Wireless and DSL access Verizon is non-responsive to community needs.
23. High speed internet; only thing available is dial-up or satellite (weather sensitive)
24. Reliability - current phone/internet service goes down far too often.
25. DSL
26. High speed access - critical need!! Reliability, easy access to customer service
27. Multiple providers, better cellular service
28. Improved cellular service. Non-existent in our area. A significant drawback!
29. We are lucky to be at a location w/DSL. When it goes down we are dead. Redundancy has real value to law firm.
30. Give us a consistent cell phone signal so we don't have to walk around in circles trying to find one.
31. Better service & technical help
32. Easy access for residents who rent apartments. Forty apartments.
33. High speed internet
34. Fiber optic to the residence is best solution, but impossible because of location. High speed wireless is best alternative.
35. Affordable fiber connections
36. High speed, Hi bandwidth internet access, without delay! Reliability issues with satellite.
37. The entire N. Neck should have access to high speed internet (DSL) and better cell service.
38. Wireless internet connection for the entire county.
39. Being able to have cable TV, phone & internet all in one co.



40. More cell phone service only Verizon works, sometimes
41. Faster service
42. High speed/wireless
43. Affordable DSL. We are a home-based internet sales company.
44. Reliable & technical support
45. Satisfied with what is available
46. High speed wireless
47. Better cell phone reception. I live in Richmond County and would like high speed for my office at home.
48. More economical options - cheaper cost for combined services.
49. High speed internet
50. Higher speed connection to internet
51. I'd like wireless to work at home!
52. Verizon originally stated that this business would have high-speed - but in fact it doesn't plan to include this area for service.
53. We need a stronger signal on our cell phones - better reception for these phones is a top priority for us.
54. Need high speed to communicate with vendors and credit card processing
55. Town-wide DSL/fiber access. Wireless antennae town-wide to permit various providers for general internet access and radio communications.
56. We want to receive DSL
57. More high speed or DSL availability
58. Broadband or DSL needed county-wide, especially for home office use and child use.
59. Reliable speed and bandwidth needed, affordable for non-profit organizations.
60. T1 access, network groups, speed, reliability.
61. Greater bandwidth/faster speeds
62. Lower price for more bandwidth--currently price is too high to afford what we really need
63. We would prefer wireless, but there are no towers close enough with the trees to reach us
64. Less expensive, faster broadband service
65. Simple reliable speed
66. Availability, reasonable cost, simple and reliable
67. Cost and reliability
68. My phone service is provided by Va. Broadband
69. Need high speed internet desperately
70. High speed internet to send data.
71. A WAN connected to a T3
72. Increase speed of internet would allow placing pictures for sale on internet, sales/taking orders over the internet, quick updating of a web site and probably more that I can't think of right now.
73. More available high speed internet service and more phone towers
74. High Speed internet, so that I can access websites quicker
75. A combination package of high-speed Internet, telephone and pay TV services!
76. Fiber Optic Cable, Wireless Broadband
77. Competitive wireless internet access
78. County-wide high-speed internet infrastructure
79. High speed internet
80. More competition for high-speed Internet services that can provide static IP addresses for hosting an internal mail servers and/or web servers
81. Wide area internet access - wireless preferred
82. Kaballaro has been great. I have had them for a little over a year.



83. More bandwidth. I went with DSL because the current cable slows to a crawl during parts of the day.
84. Hi speed availability for all of county, not just a tiny area.
85. Availability of high speed internet which is reliable, combination of VOIP and phone would a benefit also.
86. High speed internet....any form.
87. More reliable Internet connection.
88. Much faster connection and better tech help. On line training videos are barely adequate. Email service to internal network users has been impossible to achieve.
89. Faster (true high speed) internet service, both upload and download. The ability to stream voice and video, more reliable / non-weather dependent service
90. High speed internet with additional band width
91. A reliable and fast internet connection will enable expanded service to our clients.
92. High speed internet connection
93. Having DSL available to everyone who wanted it in Middlesex County.