

BELOMAR REGIONAL COUNCIL (REGION 10)

BROADBAND STRATEGIC PLAN

OCTOBER 31, 2013

SUBMITTED TO:

WEST VIRGINIA OFFICE OF GIS COORDINATION

FUNDED AND SUPPORTED BY



Table of Contents

1. Introduction.....	5
a. The Belomar Regional Council (Belomar).....	5
b. Purpose of the Broadband Project.....	6
c. Regional Overview	7
2. Needs Assessment.....	13
a. Residential Survey	13
b. Business Survey	16
c. Focused Discussions by Sector.....	17
d. Broadband Coverage and Gaps.....	19
3. Regional Strengths, Weaknesses, Challenges, and Opportunities (SWOC).....	25
4. Strategic Direction	27
a. Strategies to Boost Broadband Availability and Adoption.....	27
b. Regional Policies	31
c. Transferable Practices from Other Programs.....	31
5. Resource Considerations.....	34
a. Grant Opportunities	34
b. Organizational and Human Resource Issues.....	37
6. Benchmarks.....	39
a. Availability Goals	39
b. Adoption goals	39
c. Usage goals	39

Figures

1. Regional Planning and Development Councils in West Virginia.....	5
2. Private Sector Establishments in the EDD.....	9
3. West Virginia Broadband Mapping Program: Region 10 - No Broadband Coverage	21
4. Type 1,2, and 3 Areas with Type 2 Priority Areas Outside of Existing Wireline Broadband Coverage	22
5. West Virginia Broadband Mapping Program: Region 10 - Total Number of Providers	24
6. West Virginia Technical Assistance Grants—StratusWave Project Locations	37
7. Technology: xDSL, BPL, Other Copper.....	82
8. Technology: Cable and FTTP	83
9. Technology: Fixed Wireless	84
10. Technology: Mobile Wireless.....	85

Tables

1. Economic Development District Labor Force Statistics.....	7
2. Non-Farm Payroll Employment.....	8
3. Private Sector Business Establishments with Paid Employees.....	10
4. Paid Employees in Business Establishments in the Belomar EDD	11
5. Gas Production, in Millions of Cubic Feet	12

Attachments

Summary of Attachments	40
1. Belomar Regional Council Board Members, West Virginia	41
2. Broadband Project Participants	42
3. Residential Survey Results	44
4. Business Survey Results	67
5. Broadband Access Technologies	81
6. References and Web Links	86

b. Purpose of the Broadband Project

In 2012 and 2013, the Belomar Regional Council coordinated a broadband project in Ohio, Marshall, and Wetzel Counties. Belomar was one of eleven regional planning and development councils in the state that coordinated its efforts with the West Virginia Broadband Mapping Program, headed by the West Virginia State GIS Coordinator. The project's two objectives were to conduct a broadband needs assessment and to develop a broadband strategic plan for the region based on the assessment. The project was funded by the Office of GIS Coordination, West Virginia Geologic and Economic Survey, in the West Virginia Department of Commerce, through a grant from the National Telecommunications and Information Administration.

State and federal agencies have different measures for what constitutes adequate broadband coverage. The West Virginia Office of GIS Coordination uses the National Telecommunications and Information Administration's current definition of broadband as speeds that move data at a rate of 768 Kilobits per second (Kbps) download and 200 Kbps upload. For planning purposes, the GIS Office recommends the benchmark of 4 megabits per second as a goal for content download in residences by 2015. The broadband needs for businesses could be higher.

The Belomar Regional Council, together with local partners in several economic sectors, researched broadband (high speed internet) issues in Ohio, Marshall, and Wetzel Counties. The data and other findings provide a baseline for a plan to increase high-speed internet access and use in the region. The Belomar broadband project is part of a state-wide effort that the West Virginia Office of GIS Coordination has organized.

The Belomar broadband project identifies patterns of use and needs and issues in the region. The findings also expand on recent state and national reports (see Attachment 6) about internet coverage in West Virginia. Broadband access is important to both businesses and residents in Belomar communities. However in many rural areas broadband is uneven or not available at all.

Local partners in the project provided background data, participated on planning teams and in focus groups, and contributed to the development and promotion of surveys to obtain information from local businesses and residents. Partners included private and nonprofit sector representatives from internet services providers, healthcare organizations, educational institutions, and chambers of commerce. Public agencies from city and county government—including safety and emergency management, economic development, and tourism, as well as public libraries—also provided assistance.

As part of the project, Belomar invited local organizations to participate in developing a plan for the expansion of broadband in West Virginia. A list of organizations that participated in planning team or discussion group meetings, or that assisted with other activities, is provided in Attachment 2.

c. Regional Overview

1) Civilian Labor Force, Employment, and Unemployment

Based on data from the West Virginia Department of Commerce, total employment grew moderately in the EDD—from 37,470 in 2011 to 37,810 in 2012. This was the first annual increase since 2005. The Bureau of Business and Economic Research at West University expects continued but moderate employment growth for the Wheeling Metropolitan Statistical Area.

However, the size of the civilian labor force in the district has continued its historic decline from a total of 55,050 in 1980. The civilian labor force decreased from 42,320 in 2003 to 41,060 in 2012, a net loss of 1,260. (See Table.)

Table 1. Economic Development District Labor Force Statistics
Annual Averages, 2003 to 2012

AREA	CATEGORY	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
EDD	Civilian Labor Force	42,320	42,530	43,170	42,730	42,120	41,740	42,140	41,850	41,130	41,060
	Total Employment	39,720	40,010	40,750	40,520	40,180	39,730	38,560	37,720	37,470	37,810
	Total Unemployment	2,600	2,530	2,440	2,210	1,950	2,010	3,580	4,120	3,670	3,260
	Unemployment Rate	6.1	5.9	5.7	5.2	4.6	4.8	8.5	9.8	8.9	7.9
MARSHALL	Civilian Labor Force	14,960	15,030	15,270	15,150	14,810	14,640	14,770	14,720	14,350	14,250
	Total Employment	14,000	14,120	14,420	14,350	14,090	13,910	13,490	13,220	13,030	13,070
	Total Unemployment	960	910	850	800	730	730	1,280	1,500	1,330	1,190
	Unemployment Rate	6.4	6.0	5.5	5.2	4.9	5.0	8.7	10.2	9.2	8.3
OHIO	Civilian Labor Force	20,750	20,860	21,280	21,190	21,030	20,910	21,120	20,830	20,440	20,270
	Total Employment	19,640	19,820	20,300	20,260	20,210	20,060	19,540	19,010	18,820	18,880
	Total Unemployment	1,110	1,050	990	930	820	850	1,580	1,830	1,620	1,390
	Unemployment Rate	5.4	5.0	4.6	4.4	3.9	4.1	7.5	8.8	7.9	6.9
WETZEL	Civilian Labor Force	6,610	6,640	6,620	6,390	6,280	6,190	6,250	6,300	6,340	6,540
	Total Employment	6,080	6,070	6,030	5,910	5,880	5,760	5,530	5,490	5,620	5,860
	Total Unemployment	530	570	600	480	400	430	720	790	720	680
	Unemployment Rate	8.1	8.5	9.0	7.5	6.4	7.0	11.6	12.6	11.4	10.4

Benchmark 2012

Source: West Virginia Dept. of Commerce, Workforce West Virginia

In the last decade, the size of the civilian labor force in all three counties peaked in 2005 and has declined since, except for Wetzel County, where the labor force has steadily increased from 6,190 in 2008 to 6,540 in 2012. In 2010, the annual average unemployment rate in the district was at the highest it has been in the last decade—9.8 percent—reflecting continuing job loss due to the recession. By 2012, the overall unemployment rate decreased to 7.9 percent, although it is still well above pre-recession levels. The unemployment rates in each county followed a similar pattern. In August 2013, the county unemployment rates were 6.7 percent in Marshall, 5.8 percent in Ohio, and 8.8 percent in Wetzel. The August 2013 unemployment rate statewide was 6.1 percent.

2) Nonfarm Payroll Employment

Nonfarm payroll employment, as the *Bel-O-Mar Study* explains, is one of the most important indicators of economic performance available to analysts. It measures one key facet of a region’s ability to generate a competitive standard of living: the number of jobs. Jobs, in turn, are important for the income they generate.

The data presented in Table 2 show that the EDD nonfarm employment grew every year between 2003 and 2008, then decreased in 2009. However, from 2011 to 2012 total nonfarm employment grew to its highest total in over ten years, from 48,070 to 48,820. All three counties saw gains over 2011. In Ohio County, the entire increase occurred in the service providing sectors of the economy. In contrast, all gains in Marshall County were in the goods producing sectors, such as mining, which on average pay much higher wages than service jobs.

Table 2. Non-Farm Payroll Employment 2003 - 2012

AREA	CATEGORIES	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
EDD	Total Nonfarm Payroll Employment	45,920	46,610	47,710	47,860	47,870	48,550	48,040	48,270	48,070	48,820
	Goods Producing	6,590	6,570	6,860	6,720	6,220	6,030	5,690	5,790	**	**
	Service Providing	39,350	40,040	40,850	41,140	41,650	42,520	42,360	42,480	**	**
MARSHALL	Total Nonfarm Payroll Employment	11,310	11,340	11,870	11,900	11,650	11,560	11,510	11,790	11,900	12,080
	Goods Producing	3,390	3,420	3,530	3,240	3,060	3,000	2,900	3,180	3,240	3,420
	Service Providing	7,930	7,920	8,340	8,660	8,590	8,550	8,610	8,620	8,660	8,660
OHIO	Total Nonfarm Payroll Employment	29,210	29,810	30,420	30,720	31,030	31,880	31,590	31,450	31,030	31,330
	Goods Producing	2,680	2,690	2,820	2,960	2,610	2,530	2,410	2,280	2,390	2,390
	Service Providing	26,540	27,120	27,600	27,760	28,420	29,360	29,180	29,170	28,640	28,930
WETZEL	Total Nonfarm Payroll Employment	5,400	5,460	5,420	5,240	5,190	5,110	4,940	4,990	5,140	5,410
	Goods Producing	520	460	510	520	550	500	380	**	**	**
	Service Producing	4,880	5,000	4,910	4,720	4,640	4,610	4,570	**	**	**

**not available

Benchmark 2012; Source: West Virginia Dept. of Commerce, Workforce West Virginia

According to the West Virginia Department of Commerce, natural resources and mining jobs in Marshall County increased by nearly 250 between 2001 and 2012, from 1,757 to 2,005. Construction and manufacturing each had smaller declines—from 310 to 273 construction jobs and 1,217 to 1,196 in manufacturing. The most significant decline in the service sector in Marshall County was a drop from 1,048 to 996 jobs in professional and business services. Leisure and hospitality increased from 829 to 851 jobs. Most other sectors had little significant growth or loss.

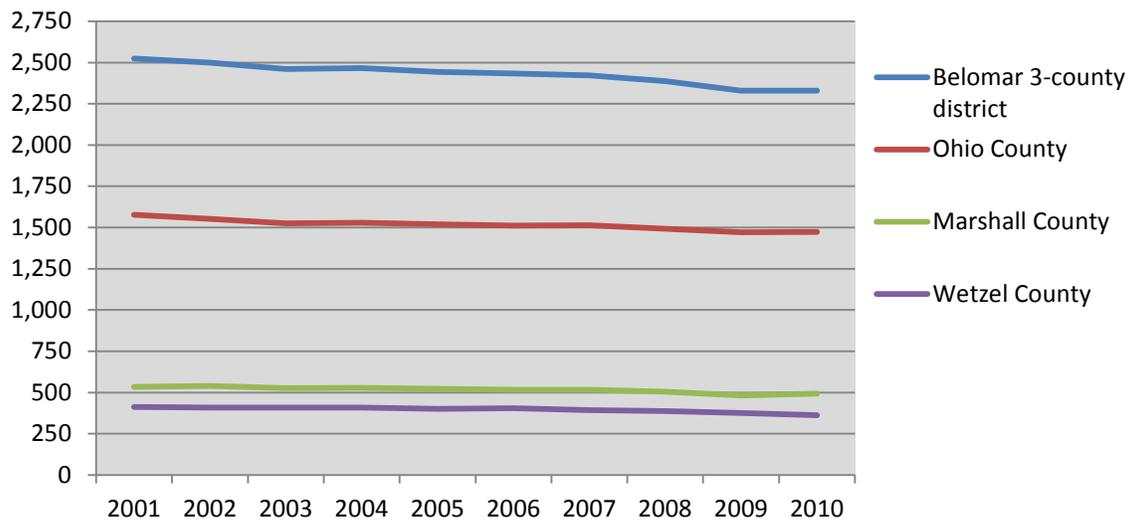
In Ohio County there was significant job growth from 2011 to 2012 in professional and business services (3,477 jobs to 3,687) and in education and health services (6,680 to 6,916). Service sectors that had noteworthy declines included transportation and utilities (5,752 to 5,675), financial activities (1,368 to 1,281), and leisure and hospitality (3,906 to 3,820).

Wetzel County experienced major job growth in several goods producing areas. Jobs in natural resources and mining increased from 44 in 2011 to 125 in 2012. Construction jobs increased from 318 to 432,

3) Business Establishments and Employment

The latest U.S. Census Bureau data (Figure 2) show that the number of businesses in the Belomar Economic Development District (EDD)—Ohio, Marshall, and Wetzel counties in West Virginia—has gradually declined since 2001, but began to increase in two counties in 2010.

Figure 2. Private Sector Establishments in the EDD, 2001-2010



Private sector businesses in the EDD with paid employees totaled 2,329 in 2010, a decrease of only one establishment from the previous year, compared to the loss of 57 establishments (2.4 percent) from 2008 to 2009. This marked the sixth consecutive year of decline for both the EDD and the State of West Virginia overall, according to information from *County Business Patterns*, a dataset the Census Bureau produces annually.

Table 3. Private Sector Business Establishments with Paid Employees in the United States, West Virginia, and Belomar Counties, 1999-2010

REGION	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
U.S. (millions)	7.1 M	7.2 M	7.26 M	7.4 M	7.5 M	7.6 M	7.71 M	7.6 M	7.43 M	7.4 M
West Virginia	40,439	40,488	40,376	40,837	40,735	40,566	40,492	39,641	38,990	38,676
Belomar EDD	2,525	2,500	2,460	2,466	2,444	2,433	2,423	2,387	2,330	2,329
Ohio County	1,578	1,552	1,526	1,529	1,520	1,512	1,513	1,493	1,472	1,473
Marshall County	534	539	526	528	523	516	516	506	482	493
Wetzel County	413	409	408	409	401	405	394	388	376	363

Among the three EDD counties, Marshall County had the largest increase from 2009 to 2010, a gain of 11 establishments (2.3 percent) compared to a decrease of 24 establishments (4.7 percent) the previous year. Ohio County gained one establishment in 2010, compared to a loss of 21 establishments (1.4 percent) in 2009. Wetzel County, which declined by 12 establishments (3.1 percent) in 2009, lost an additional 13 businesses (3.5 percent) in 2010. State-wide, the number of businesses with paid employees declined by 314 (0.8 percent), while nationally, the U.S. lost 36,837 business establishments.

The largest numerical and percentage decreases in the number of establishments in the EDD during this decade occurred in 2009. The data also show the business decline in Marshall, Ohio, and Wetzel counties (and in West Virginia overall) began before the recession years of 2008 and 2009. Nationally, the number of business establishments grew slowly each year from 2000 to 2007 and only began to decline in 2008. During that same period the EDD counties lost businesses in every year but one.

Despite the steady decline in the total number of establishments the number of people employed at those establishments increased by 3.6 percent from 2006 to 2010 (the latest data available from the Census Bureau's survey of County Business Patterns). While the number of paid employees has gone up and down from year to year, the total number of paid employees at Belomar EDD establishments increased from 38,481 in 2006 to 39,865 in 2010, as indicated in Table 4. Only Wetzel County's business establishments reported fewer paid employees in 2010 than in 2006, a loss of 8.5 percent (400 positions). Ohio County showed the largest gain, 6.4 percent, while Marshall County increased by 1.7 percent.

Table 4. Paid Employees in Business Establishments
in the Belomar EDD, 2006-2010

REGION	2006	2007	2008	2009	2010
Belomar EDD	38,481	38,950	40,993	39,855	39,865
Marshall County	8,019	7,831	8,241	7,849	8,157
Ohio County	25,757	26,462	28,032	27,574	27,403
Wetzel County	4,705	4,657	4,720	4,432	4,305

Source: U.S. Census Bureau, *County Business Patterns*

However, businesses in all three counties have fewer paid employees than in the peak year of 2008, when the recent recession began. Businesses in all counties reported a decline in the number of paid employees in 2009 and only Marshall County showed a gain in 2010.

4) *Effects of the Economic Recession*

Like the rest of the nation, the EDD has suffered the affects of a prolonged economic recession. Hard hit industries have included manufacturing and retail. Between 2000 and 2010, Marshall County gained significant jobs in mining and logging (75%), transportation and warehousing (22%), and professional services (35%), while losing significantly in manufacturing (-47%) and in information services (-63%). During that same period, Ohio County gained jobs in leisure and hospitality (45%) and also gained about 20% each in retail trade and professional services. However, significant losses occurred in transportation and warehousing (43%), information services (-49%), and construction (-20%). Wetzel County had significant job gains in only one industry, mining and logging (33%), while losing over 50% of the jobs in the construction and the transportation and warehousing industries. There was also significant job loss in manufacturing (-23%) and wholesale and retail trade (-20% and -25%).

Coal mining remains a critical industry in the region. Mining operations in the EDD include Consol Energy's Shoemaker and McElroy mines in Marshall County and the new Tunnel Ridge Mine in Ohio County by Alliance Coal.

Some residents of the EDD have obtained employment with one of the many natural gas companies that have begun actively drilling in the West Virginia Marcellus Shale. West Virginia produces and is a net exporter of fossil energy resources such as coal, crude oil, and natural gas. As in much of the state, the economic focus in the EDD has been on the development of the Marcellus Shale natural gas field. This economic activity has contributed to increases in natural gas production and employment; the Regional Economic Development Partnership estimates over 2,200 jobs.

5) *Effects of Natural Gas Exploration, Production, Processing, and Distribution*

West Virginia produces and is a net exporter of fossil energy resources such as coal, crude oil, and natural gas. As in much of the state, the economic focus in the EDD has been on the development of the Marcellus Shale natural gas field. This economic activity has contributed to

increases in natural gas production and employment; the Regional Economic Development Partnership estimates over 2,200 jobs.

The Bureau of Business and Economic Research at West Virginia University reports in *West Virginia Economic Outlook 2012* that from 2003 to 2009 statewide natural gas production increased by 41 percent and natural gas related employment rose by 32 percent. From 2007 to 2012, gas production has increased in each EDD county: from 62 million to 2.7 trillion cubic feet in Ohio County; from 416 billion to 48 trillion cubic feet in Marshall; and from 1.8 trillion to 63.7 trillion in Wetzel. For all three EDD counties, this is a total increase from 2.2 trillion cubic feet in 2007 to 114.9 trillion in 2012 (see Table 5).

Table 5. Gas Production, in Millions of Cubic Feet, by EDD County, 2007-2012

	2007	2008	2009	2010	2011	2012
Marshall County	416,381	2,759,869	4,483,548	12,113,507	31,135,163	48,475,905
Ohio County	62	62	84	144	84	2,726,440
Wetzel County	1,797,408	2,684,134	9,602,781	17,477,030	38,511,818	63,739,314
Total	2,215,858	5,446,073	14,088,422	29,592,691	69,649,076	114,943,671

Source: West Virginia Geological and Economic Survey

Based on data and maps from the West Virginia Geological and Economic Survey, there are over 1,300 producing gas and oil wells in EDD counties. In 2012, the majority—1,037 producing wells—were in Wetzel County, with 251 in Marshall County and 30 in Ohio County.

2. Needs Assessment

The Belomar Regional Council initiated a needs assessment to identify strengths, weaknesses, opportunities, and challenges in the region that impact broadband access and use. Belomar surveyed residents and businesses in the three-county region, facilitated meetings and focused discussions with public and private sector representatives in the region, and reviewed existing reports and other data.

Belomar and its partners developed a business survey and a residential survey to obtain information from local sources about broadband access, use, and needs. The surveys were modified from suggested items provided by the State GIS Office. Survey respondents could also test the upload and download speeds of computers at their home or work sites.

For individuals who did not have internet access at home, print copies of the residential survey were available at all public libraries in Ohio, Marshall, and Wetzel Counties, including the Cameron, McMechen, and Moundsville branches of the Marshall County Public Library; the Hundred Public Library; the New Martinsville Public Library, and the Pine Grove Public Library in Wetzel County; and the Ohio County Public Library. The public libraries also promoted and provided access to the Belomar broadband survey web site so patrons could complete the survey online.

The Chambers of Commerce in all three counties assisted by sending email alerts to their members or providing print copies at their offices and distributing information about linking to the survey web site. The Wetzel County Chamber of Commerce also distributed information about the survey at a county festival.

Print and digital copies of the business and residential surveys were also available through the Belomar office. Belomar informed local government officials and other public and sector organizations and individuals through Board meeting presentations, newsletter articles, and email and web site announcements.

Between June and October 2013, survey responses were received from 258 individuals and 12 business representatives in Ohio, Marshall, and Wetzel Counties. Key responses are summarized below and detailed responses are presented in Attachments 3 and 4.

a. Residential Survey

1) Summary of findings

The majority of respondents to the residential survey (91%) own a computer. Of those, 61% said they own a desktop computer and 80% said they own a laptop or other portable computer. Over one-fourth (28%) own more than two. Additionally, 92% own a cell phone.

Eighty-five percent of respondents have internet access at home and of those, 88% said they access the internet every day, while 67% of respondents said they send or receive email daily. Most respondents (72%) were connected to the internet at home by cable modem or Digital

Subscriber Line (DSL). Nationally, according to the Internet and American Life Project at the Pew Research Center, 70% of Americans have broadband connections at home.

For those who do not own a computer or subscribe to the internet, cost was cited in both instances as the most frequent reason (24% and 41% respectively). And 39% said they were *dissatisfied* or *very dissatisfied* with the cost of their internet service. In national survey by the Pew Research Center earlier this year, 19% of those who did not use the internet cited the cost of a computer or an internet connection as the reason.

Thirty-five percent of respondents were also *dissatisfied* or *very dissatisfied* with the number of internet service providers they had to choose from; 31% said they chose their connection service, because that was the only provider available.

2) *Key findings*

- 9 % of respondents did not own a computer.
- 24 % of those who selected a reason for not having a computer, cited cost as one of the reasons for not purchasing a computer.
- 15 % of respondents did not have internet access at home.
- 80 % of respondents own a laptop or other portable computer (including iPads, netbooks, and mini PCs). Of those, 93 % have wireless internet capability.
- 88 % of respondents who have internet access at home access the internet on a daily basis.
- Type of connections used at home to access the internet:

48 %	Cable Modem
24 %	DSL
5 %	Satellite Internet
5 %	Fixed Wireless
1 %	Dial-up
<1 %	Cellular Broadband (air card)
1 %	Other
14 %	Don't Know

- Reason for choosing connection type and service provider:
 - 31 % Only available service
 - 28 % Speed
 - 26 % Cost
 - 15 % Best reliability

- 41 % of respondents who indicated they did not have internet service cited cost as one of the reasons.

- Responses to questions about level of satisfaction with their internet service:
 - 79 % were *satisfied* or *very satisfied* with the ease of use
 - 77 % were *satisfied* or *very satisfied* with the speed of connection
 - 69 % were *satisfied* or *very satisfied* with the reliability of access
 - 68 % were *satisfied* or *very satisfied* with the customer service quality
 - 53 % were *satisfied* or *very satisfied* with the number of providers
 - 46 % were *satisfied* or *very satisfied* with the cost

- Responses to questions about internet use in other locations beside the home:
 - 63 % at a relative or friend's house
 - 62 % at work
 - 35 % at a retail shop with wireless Internet services
 - 33 % at the public library
 - 25 % at school

- 94 % of respondents have an email address. 67 % of respondents indicated they send or receive email *at least once a day*.

- 93 % of respondents indicated it was *important* or *very important* for all residents of West Virginia to have access to computers and the internet.

- Characteristics of broadband service that respondents indicated were *most important*:
 - 51 % Cost of service
 - 21 % Speed of service
 - 14 % Type of service (cable modem, DSL, wireless, etc.)
 - 14 % Providers

- Demographic questions:

74% own their home or apartment

40 % indicated they *live in a rural area*

b. Business Survey

1) Summary of findings

All of the respondents to the business survey said they had internet service at their business. Seventy-five percent had cable modem or DSL connections while 24% had T-1, fixed wireless, or Fiber-to-the-Premises connections. Only half were *satisfied* or *very satisfied* with connection speeds or the cost of service. The majority (67%) were *satisfied* or *very satisfied* with the customer service but only 42 % were *satisfied* or *very satisfied* with the technical support.

2) Key findings

- 100 % of respondents have internet service at their business
- Type of connections used to access the internet:

8 %	Fiber to the Premises
33 %	DSL
8 %	Fixed Wireless
42 %	Cable Modem
8 %	T-1
- Responses to questions about level of satisfaction with their internet service:
 - 75 % were *satisfied* or *very satisfied* with the Installation tech's ability and courtesy
 - 67 % were *satisfied* or *very satisfied* with the customer service
 - 50 % were *satisfied* or *very satisfied* with the cost
 - 50 % were *satisfied* or *very satisfied* with the speed of connection
 - 50 % were *satisfied* or *very satisfied* with the provider's billing practices
 - 42 % were *satisfied* or *very satisfied* with the technical support

75 % of respondents indicated that a robust broadband (high-speed internet access) connection is *important* or *very important* to the day to day operations of their business.

59 % of respondents indicated that there were *competitive* or *somewhat competitive* (at least two providers) broadband options when they sought broadband services for their business at their location.

c. Focused Discussions by Sector

1) Residential Households

Although the Belomar survey was a survey of convenience and was not statistically random, the survey and other reports document that an increasing number of West Virginians are relying on broadband to support access to education, training and professional development; healthcare information and services; financial services such as paying bills and managing investments; and a broad array of entertainment and communication opportunities.

2) General Business

While businesses may not always have their own web site, many businesses in the Belomar region are using broadband applications to support activities that are integral to their operations. These tasks may include paying employees, reporting taxes and other information, and communicating with customers and other stakeholders through email, listservs, conferencing, and other interactions.

Specific examples were provided by project discussion groups:

- Many organizations, for example, the West Virginia Infrastructure and Jobs Development Council, now have online application processes which engineers, accountants, and others must use.
- A local alumni council now uses an online meeting service to save travel costs.

3) Education and Library Services

Libraries and educational institutions use broadband technology extensively, in both internal operations and for students and their other patrons. Some of the specific applications for which libraries reported relying on internet access included:

- Catalog and circulation databases
- Ordering books and other materials
- Providing web access to the public
- Publicity for library events and programs
- Email contact with local media

- Provide access to local resources, e.g., historic photos
- Providing free classes to the public

In the Belomar survey, 33% of respondents said they use the public library to access the internet. Expectations that libraries will continue or increase the level of technology they provide to patrons are likely to increase in the future. The Pew Research Center reports that nationally, people age 16 to 29 are more likely than those 30 and older to visit a library, to use computers and access the internet while there, and to use a mobile device to access a library's resources.

School districts and institutions of higher education also cited many examples of internet use:

- Email communication among staff, faculty, and students
- Videoconferencing and other web-based meetings
- Budget, finance, and personnel recordkeeping
- Access to educational resources, e.g. web-based course offerings, standardized tests, electronic textbooks, and other educational materials
- Distance learning opportunities for students. At WJU, one entire degree program (health care leadership) can now be completed online.
- Voice telephony and video
- Webcasting school events
- Submitting grant applications
- Student registration
- Offsite data backup
- Downloading software
- Online course information and scheduling

Educational institutions sometimes provide the technology to their students. Starting in 2012, St. Vincent de Paul Parish School in Wheeling began providing students with an iPad. Local colleges and school districts have thousand of computers and other devices on campus and in their buildings. However, students increasingly bring their own devices to campus. Discussion group participants reported that in the area of information technology, security is one of the biggest concerns.

4) Service Providers

Just as cost is an issue for users of broadband services, internet service providers (ISPs) are also very aware of the need to balance costs and the objective of pushing out the availability of the broadband network. It is important for providers to increase their subscriber rates in turn for increased coverage in rural areas. Especially for small providers, that is often their primary or only source of revenue. ISPs reported that often it is not economically feasible to expand into low density areas or in regions where the terrain or other geographical factors may require more expensive equipment. As stated in the West Virginia Office of Technology *Strategic Plan* "A main challenge in the state's broadband deployment is terrain, which leaves a major part of the state's households with limited or no access to broadband. Private providers do not extend coverage due to the cost of deployment and population scarcity, resulting in the most challenging demographic and topographic areas of the state remaining under-served." One participant at a Belomar meeting also mentioned that the permitting process (for access to poles, rights of way, etc.)—because it may involve several levels of government—can also contribute to slow expansion.

5) Other Economic Sectors

West Virginia has used the majority of \$126.3 million federal grant to bring high-speed fiber to community anchor institutions.

Healthcare. Electronic medical records are used by health care providers to monitor patients and track data. Broadband is also being used to share that information with other authorized providers. Studies from around the country also document that people, especially caregivers, are using the internet to get health information and some are using broadband technology to track their own health data.

Tourism and Travel. All of the local tourism agencies in the Belomar region provide information about the area. Many hotels, restaurants, and destination stores also use the internet for promotion, marketing, and sales.

Public Safety. The state's emergency communication network also takes advantage of broadband connectivity. Various first response agencies, including 911 Centers, use West Virginia's system.

d. Broadband Coverage and Gaps

The WVGES, through the West Virginia Broadband Mapping Program and working with the West Virginia Broadband Deployment Council, broadband providers, contractors, and other stakeholders, has created several maps illustrating broadband availability in the Belomar region. The basic map (see Figure 3) shows the areas in the three-county region that did not have broadband coverage as of September 30, 2012.

For wireline coverage—transmission through a cable or wire rather than a wireless signal such as cellular or satellite—a more detailed map (see Figure 4) points out the areas of the region that did not have wireline coverage as of June 13, 2013. This map categorizes the areas without

coverage into different types that reflect the likelihood that deploying cable or wireline broadband is economically feasible. Areas were categorized based on the overall average of four weighted factors: population density, median family income, population age, and the distance from an existing broadband network:

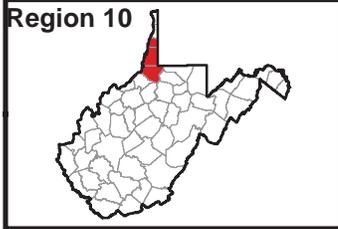
- Type 1 Areas—Deploying broadband using wireline technologies is economically feasible.
- Type 2 Areas—Deploying broadband using wireline technologies is economically feasible only if public funds are used to pay for some part of the cost.
- Type 2 Priority Areas—These are a subset of Type 2 Areas that have a higher average of weighting factors. The State of West Virginia has prioritized these areas for grant funding.
- Type 3 Areas—Deploying broadband using wireline technologies is currently not economically feasible. At this time, these areas would require wireless technologies to access broadband.

A 2012 FCC report found that while 46% of West Virginians did not access to fixed broadband (the highest of any state in the country), the disparity was greater in rural areas, where 60% of West Virginians lacked access.



Figure 3. West Virginia Broadband Mapping Program Region 10 - No Broadband Coverage

Data as of 9/30/2012



Publications Policy:

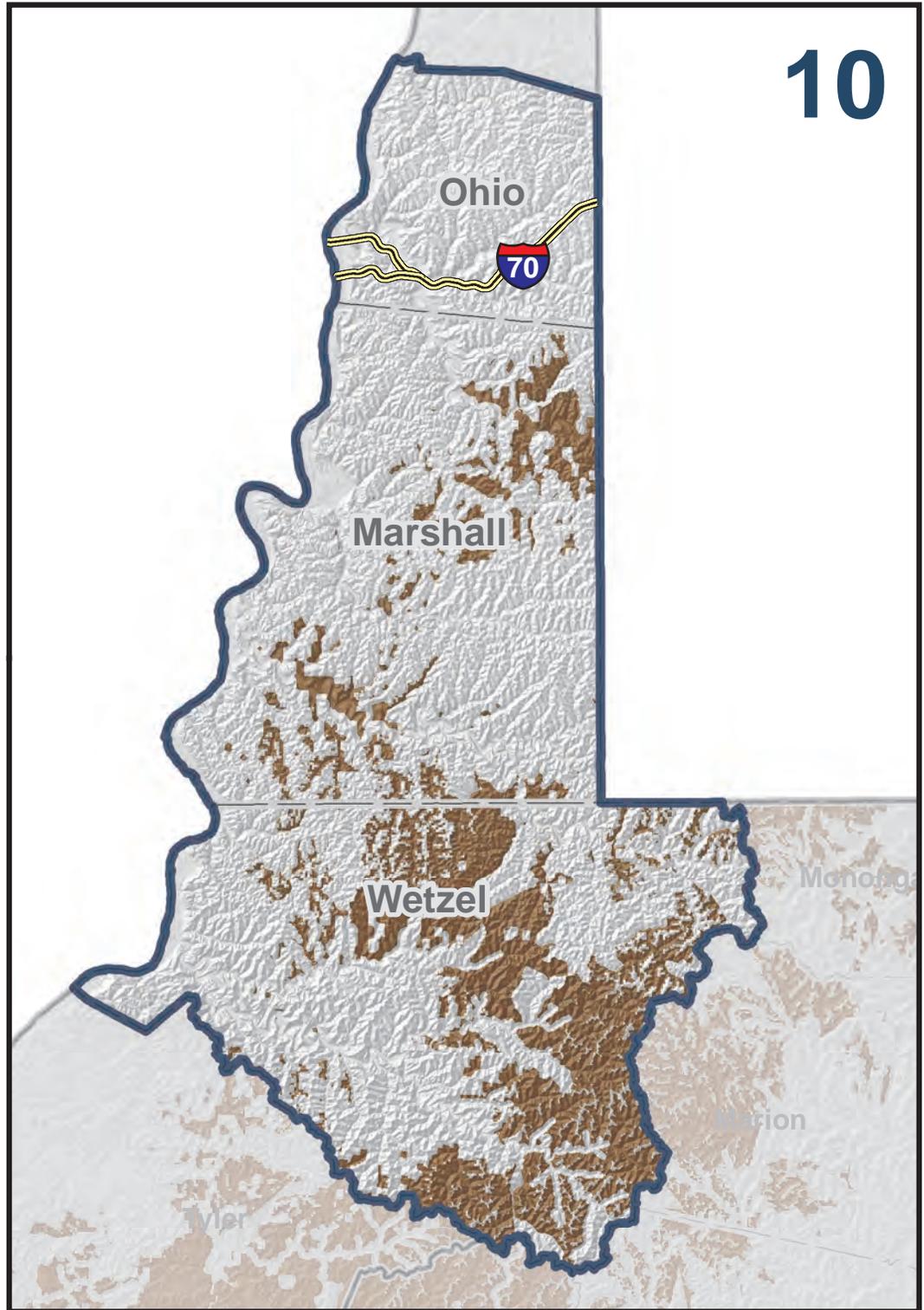
This publication represents interpretations of best available data made by professional geographers. As in all research work, professional interpretations may vary, and can change with advancements in both technology and data quality. This publication is offered as a service of the State of West Virginia; proper use of the information herein is the sole responsibility of the user.

Permission to reproduce this publication is granted if acknowledgement is given to the West Virginia Geological and Economic Survey and the West Virginia Broadband Mapping Program.

Map Date: November 30, 2012
 Projection: Transverse Mercator
 Horizontal Datum: NAD 83
 Coordinate System: UTMz17n
 Map scale for full 8.5" x 11" display: 1:450,000

Legend

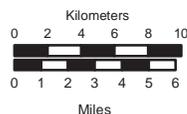
-  No Broadband Coverage
-  Commerce Planning & Development Regions
-  State Boundary
-  Counties
-  Interstate Highways



10



West Virginia Geological and Economic Survey
 Mont Chateau Research Center
 1 Mont Chateau Road
 Morgantown, WV 26508-8079
 Phone: (304) 594-2331
www.wvgs.wvnet.edu



www.wvbroadbandmap.org



Based on information from the FCC and the WVGES, the broadband providers operating in the Belomar region include:

- AT&T
- Citynet
- Comcast
- Frontier
- Lumos Networks
- Micrologic
- Sprint
- StratusWave
- Suddenlink
- Verizon

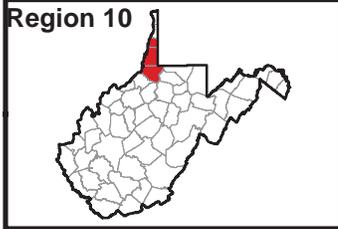
The map in Figure 5 shows the number of providers that are available to residents in different parts of the Belomar region.

Attachment 5 provide a series of maps of the Belomar region (Figures 7 to 10) that show the locations of various technologies being used to provide broadband access, including Digital Subscriber Line (DSL), Broadband over Power Line (BPL), and other copper technology; cable and Fiber to the Premises (FTTP) technology; fixed wireless technology; and mobile wireless technology.



Figure 5. West Virginia Broadband Mapping Program Region 10 - Total Number of Providers

Data as of 9/30/2012



Publications Policy:

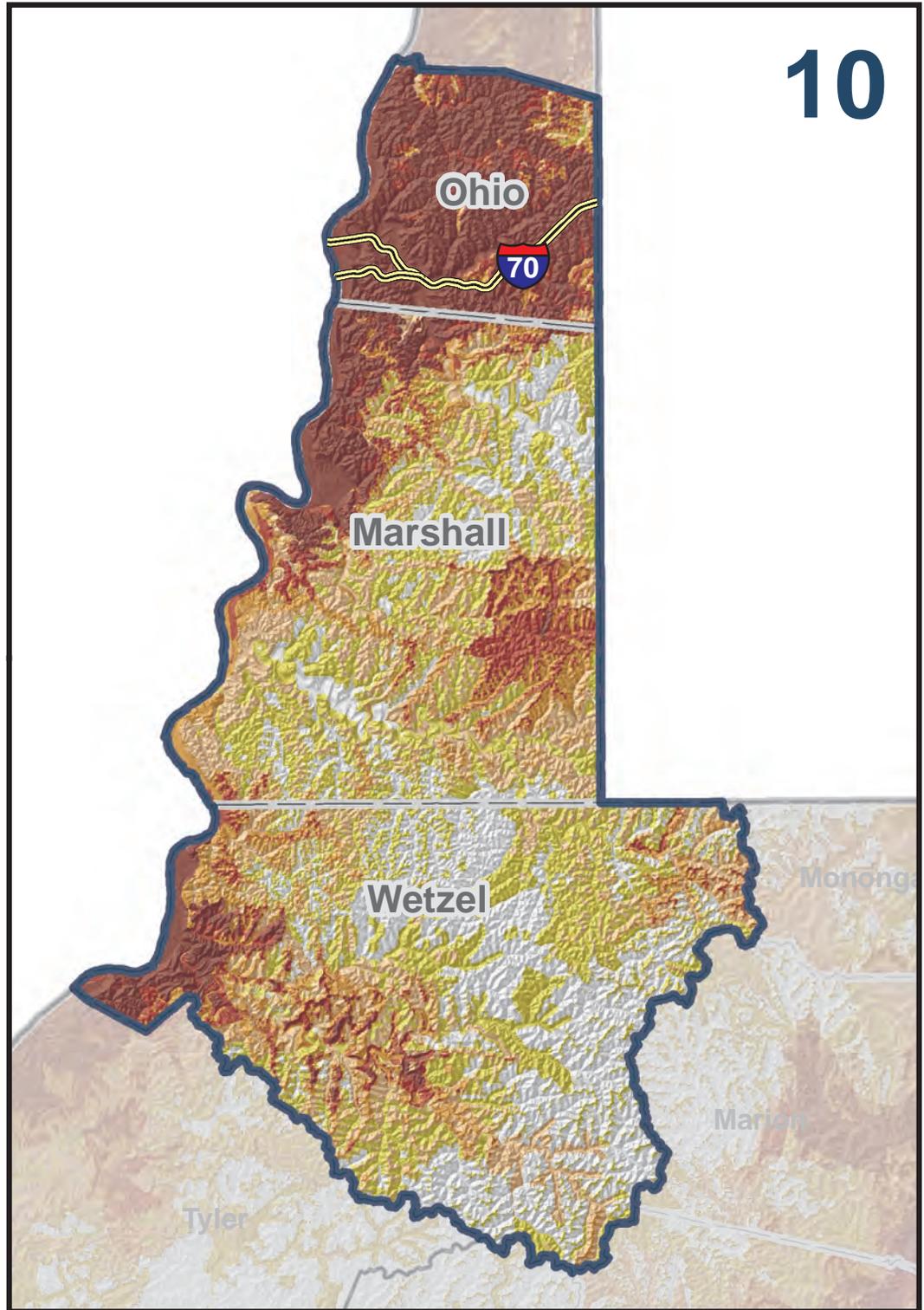
This publication represents interpretations of best available data made by professional geographers. As in all research work, professional interpretations may vary, and can change with advancements in both technology and data quality. This publication is offered as a service of the State of West Virginia; proper use of the information herein is the sole responsibility of the user.

Permission to reproduce this publication is granted if acknowledgement is given to the West Virginia Geological and Economic Survey and the West Virginia Broadband Mapping Program.

Map Date: November 30, 2012
 Projection: Transverse Mercator
 Horizontal Datum: NAD 83
 Coordinate System: UTMz17n
 Map scale for full 8.5" x 11" display: 1:450,000

Legend

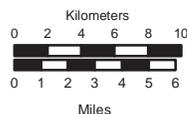
- 1 Provider
- 2 Providers
- 3 Providers
- 4 Providers
- 5 or More Providers
- Commerce Planning & Development Regions
- State Boundary
- Counties
- Interstate Highways



www.wvbroadbandmap.org



West Virginia Geological and Economic Survey
 Mont Chateau Research Center
 1 Mont Chateau Road
 Morgantown, WV 26508-8079
 Phone: (304) 594-2331
www.wvgs.wvnet.edu



3. Regional Strengths, Weaknesses, Challenges, and Opportunities (SWOC)

The SWOC findings presented in the diagram below draws on the needs assessment discussed in the previous section as a guide.

<p>Strengths of the region that relate to State broadband goals.</p> <ul style="list-style-type: none">• Educational institutions at all levels report a strong interest among students in using products that access broadband.• All schools, colleges, universities, and public libraries provide broadband access and public use computers for their students or for the general public.• State agencies and elected officials are providing strong support for local and regional access and availability efforts.• Residents support policies that promote expanded technology and internet access.	<p>Weaknesses of the region that challenge State broadband goals.</p> <ul style="list-style-type: none">• The low density and the terrain of several areas in the region, such as eastern parts of Marshall and Wetzel Counties, inhibit investment in infrastructure by internet service providers.• Some residents in the region lack the awareness or training to start using or to improve their use of products that access broadband.• Some local governments have limited broadband communication access.
<p>Opportunities that support State Broadband goals.</p> <ul style="list-style-type: none">• Some equipment costs for service providers are dropping because of increased competition among suppliers.• Regional planning efforts on other infrastructure projects, such as transportation and sewage and water, can provide a model for collaboration on broadband activities.• Businesses view a strong broadband connection as important to their day to day operations and want to see the broadband environment enhanced.	<p>Challenges that need to be addressed.</p> <ul style="list-style-type: none">• Cost is an important factor for residents who do not own a computer or do not have internet service in their homes and it is still a significant concern for those who do.• Security is a major concern, especially for educational institutions and libraries.• There are not enough competitive options for businesses or residents in choosing service providers.

In general, the Belomar region faces a problem of infrastructure shortfall; the demand for broadband is high. Private investment is impeded by the topography coupled with a small, dispersed population.

Participants at Belomar broadband project meetings suggested that broadband is becoming as important to the region as utilities such as electricity. A Rural Cellular Association study estimated that if 100% wireless broadband availability in West Virginia would create nearly 1,000 new jobs in the state, would save 4,800 jobs from being lost, and would increase the median income by 3.4%.

Section 4, Strategic Direction, will chart ways to take advantage of the opportunities and mechanisms to address the challenges summarized above.

4. Strategic Direction

In general, the strategic directions listed below seek to address the SWOC analysis and the major findings of other reports, such as an FCC study related to broadband adoption and use. Many findings from other studies were echoed by local residents during the Belomar study: The major issues related to increased broadband access, adoption, literacy, and use include understanding the value of broadband, the cost of technology and connections, and skill development needs. In addition, people with disabilities have needs which add further barriers. (The U.S. Department of Commerce reports that, in families where the head of household has a disability, only four of ten subscribe to broadband, compared to seven of ten where the head of household does not have a disability.)

This section lists two long-term goals related to access and use and four intermediate objectives related to the four issues discussed above. Each objective has several suggested tasks or activities. Several cross cutting activities are also suggested. These activities can be implemented by state, regional, or local governments in cooperation with other public agencies and in partnership with the private and nonprofit sectors.

This section outlines several strategies, approaches, and tasks to achieve the objectives. The strategies are integrally related, since availability, especially as it is provided by the private sector, will be achieved more rapidly as adoption and use increase. To facilitate implementation of new project ideas in Belomar communities, a brief discussion of programs from other areas is also presented.

a. Strategies to Boost Broadband Availability and Adoption

Opportunities to boost broadband availability and adoption are presented below as long-term (goals), medium-term (objectives), and short-term (activities.)

1. Availability

Goal 1: Residents and businesses have access to broadband service and to the appropriate technology to use it.

Objective

1.1 Broadband access is increased in underserved areas by addressing demographic and geographic gaps.

Activities

1.1.1 Support the expansion of the network of wireless, cable, fiber optic, satellite, and other broadband connections, especially to anchor institutions, commercial centers, industrial parks, and other critical areas.

- 1.1.2 Increase the number of public access wireless locations, especially at anchor institutions such as libraries and schools.
- 1.1.3 Increase the number of public access computers and other technology available at anchor institutions.
- 1.1.4 Support private and nonprofit sector efforts (for example, retail establishments, hospitals, and senior centers) to increase the availability to the public of open access broadband and related technology.
- 1.1.5 Support expansion efforts that facilitate access to state priority areas, including education, health care, e-government, libraries, law enforcement, employment opportunities, and economic development.
- 1.1.6 Develop a system for ongoing communication with providers and with economic sector representatives to track needs and challenges and to identify ways that resources in the community can be leveraged to promote broadband availability and access.
- 1.1.7 Support an ongoing public-private information exchange among internet service providers and local government regulators to facilitate the expansion of broadband services in the community.

2. Adoption, literacy, and usage

Goal 2: Residents and businesses are aware of broadband and use the full range of broadband technology options.

Objective

2.1 Residents and businesses understand the value of broadband services and are informed about provider options and other resources

Activities

- 2.1.1 Increase the understanding of the factors that affect residential and business use of broadband.
- 2.1.2 Expand use of broadband technology by small businesses.
- 2.1.3 Continue the regional assessment program and provide a more detailed analysis of findings.
- 2.1.4 Use various communication channels to promote the benefits of broadband use in obtaining local services.

Objective

2.2 Residents and businesses are proficient at using applications that require broadband technology.

Activities

2.2.1 Identify technical and "navigation" assistance and other training needs.

2.2.2 Identify local and regional nonprofit, business, and government partners who can provide free or inexpensive broadband literacy training and technical assistance, and encourage the development of these resources.

2.2.3 Use a variety of communication channels to promote the use of free or inexpensive broadband literacy resources available at national, state, and regional levels, e.g., DigitalLiteracy.gov or the National Service-Learning Clearinghouse.

2.2.4 Collaborate with local entities to provide training and technical assistance that addresses needs not filled by existing resources. Suggestions for training and technical assistance on specific information included:

- *searching for job opportunities
- *learning new skills that would help in finding a job or in career advancement
- *accessing health information
- *general learning and personal enrichment
- *using services provided by the government or by businesses
- *using the internet for various business functions
- *use of social media

Objective

2.3 Support underserved populations.

Activities

2.3.1 Identify needs and assistive technologies for vulnerable populations, e.g., people with disabilities.

2.3.2 Identify and provide information about opportunities for low-cost equipment and internet service or connections for low-income individuals.

- 2.3.3 Collaborate with local organizations to create further opportunities for low-cost equipment and internet service or connections to low-income and vulnerable individuals, for example, an equipment recycling or exchange clearinghouse.
- 2.3.3 Conduct a gap analysis to identify the unmet needs of underserved populations.
- 2.3.4 Support efforts by community anchor institutions (schools, libraries, public safety agencies, health facilities) to expand service to vulnerable populations.

3. Cross-cutting Activities

- 3.1.1 Create implementation teams to refine and apply strategies and activities that promote plan objectives.
- 3.1.2 Provide information to local organizations about grants and other funding opportunities—from government, corporations and businesses, or foundations—that may bring additional external resources to the region to implement the above strategies.
- 3.1.3 Support education and awareness activities when they target availability and use issues in a specific sector such as agriculture, healthcare, economic development, libraries, education, public safety, emergency services, public-private partnerships, energy and the environment, tourism and hospitality, and government services.

b. Regional Policies

There are existing policies in the region that support State policies for residential, business and anchor institutions and that encourage availability, adoption, literacy, and usage. (Anchor institutions are governmental and non-governmental agencies that provide public services, such as public safety agencies, universities and colleges, schools districts, libraries, healthcare facilities, and community support organizations.)

The Belomar Regional Council has a strong focus on infrastructure issues that support economic development and their membership includes many county and municipal governments. Several of Belomar's core programs assist governments in the region with public works improvements in the areas of transportation and sewage and water. Because of its position as a council of governments, Belomar can encourage county and municipal agencies to view broadband as a critical component of the local infrastructure and to address broadband needs and issues in their planning efforts. Belomar routinely collaborates with local governments and economic development agencies to pursuing grants and other funding opportunities and will continue to seek external funding to implement broadband strategies in the region. Belomar also has GIS and mapping capabilities that could be deployed in partnership with the State broadband program.

The policies and practices of other institutions in the region are also consistent with State policies that support broadband expansion. Local public libraries support the expansion of community access to broadband technology and related services. Organizations in the Belomar region can also draw on recommendations from a variety of organizations that have developed strategies for expanding broadband into rural areas.

c. Transferable Practices from Other Programs

There are examples of successful projects around the country—some of which can be viewed as model programs or that indicate best practices—which the Belomar region can draw on to help implement some of the strategies presented earlier in this section. For example, the following broadband projects were funded by the State of West Virginia in 2012:

- Ethernet Accessibility of Sensors and High Speed Internet for Water/Waste Water and Industrial Applications
- E-Reading to Succeed
- mapMercerCounty
- Mapping the West Virginia Local Food System
- Online Building Permit and Zoning Application Tool
- Fayette County 21st Century Electronic Government Access Project
- Greenbrier County Broadband Tax Payment System

- Assessor Online Web Development
- Regional 911 Centers and AVL Location Communications System
- Hancock County Online Tax Payment System
- Jefferson County Public Land Records Digitization and Archive
- Jefferson County Online Public Land Records Management System
- Advancing Economic Development with a 21st Century Advanced Manufacturing Interactive Network
- Assessor Online GIS Website
- Mineral County Online Public Access Project
- Economic Development Application and Web Site
- Sheriff Online Payment
- Online Tax Payment and Inquiry System
- Internet Property Tax Inquiry
- Develop County Website
- Sheriff's Tax Office Internet Tax Collection
- Strengthening Local Agriculture with Web Tools for Farmers and Teachers
- Logging Operations Notification, Inspection, and Enforcement System (LONIE) Broadband Deployment
- Broadband Simulcast Technician Training
- Statewide Leaf-Off Imagery Service
- Interagency Cooperation Tool
- Certificate for Online Teaching
- Online Education and Research Tool Upgrade

- Data Mapping: A Portal to Community Health
- Teach and Learn the Electronic Health Record
- WVU-P Virtual Training Center
- Extended Learning Virtual Advising
- Online Course Quality Improvement Project

One model program for providing low-cost technology to nonprofit organizations is TechSoup. TechSoup (<http://www.techsoup.org/>) connects nonprofits, including charitable organizations and public libraries, with technology products and services. They also provided resources to help make knowledgeable decisions about technology.

An example of a public-private partnership that promotes small business technology startups in areas including internet applications is the Advanced Technology Development Center (ATDC) at Georgia Tech. The U.S. Department of Commerce called ATDC a nationally recognized science and technology incubator that was created in the 1980s to help entrepreneurs start and grow successful companies.

Other noteworthy programs include:

- SeniorNet operates Learning Centers that offer computer classes designed for people over 50.
- Arbor Park Village in Cleveland manages a Technology and Information Literacy Initiative Learning Center computer and job skills training.
- Seattle's Community Technology Program works to provide residents and neighborhoods with the information technology capacity that promotes "civic and cultural participation, employment, lifelong learning, and access to essential services."

5. Resource Considerations

a. Grant Opportunities

There are a number of grantmakers that specifically fund technology and broadband-related programs. Some examples are provided below. Many other grant programs, although they do not specifically target broadband, certainly fund applications that incorporate the use, development, and expansion of broadband tools in the project design. There are also loan and other revenue programs that are not discussed in this report. For example, some higher education institutions have technology fees that are charged to students.

1) Federal

According to a Congressional Research Service (CRS) report published earlier this year, there are "two ongoing federal vehicles which direct federal money to fund broadband infrastructure":

- Federal Communications Commission (FCC), Universal Service Fund (USF)—programs include:
 - High-Cost program supports telephone service to high cost areas
 - Lifeline program assists low-income customers
 - Schools and Libraries (E-rate) program helps fund telecommunication services, internet access, and internal connections
 - Rural Health Care program supports telecommunications services for rural health care providers

Note: In 2011, the FCC announced a six-year transition plan to convert the USF to a new Connect America Fund.

- U.S. Department of Agriculture, Rural Utilities Service—broadband and telecommunications programs include:
 - Rural Broadband Access Loan and Loan Guarantee Program
 - Community Connect Grant Program
 - Rural Telephone Loan and Loan Guarantee Program (which requires DSL capability)
 - Distance Learning and Telemedicine Loans and Grants
 - Broadband Initiatives Program

The CRS report also identifies some federal assistance programs that "can be associated with broadband and telecommunications development... in three ways: programs exclusively devoted

to the deployment of broadband infrastructure; programs which have traditionally focused on deployment of telecommunications infrastructure generally (which typically can and does include broadband); and applications-specific programs which fund some aspect of broadband access or adoption." These include:

- Appalachian Regional Commission
 - Appalachian Area Development Program
- Delta Regional Authority
 - States' Economic Development Assistance Program
- Environmental Protection Agency
 - National Environmental Information Exchange Network Grant Program
- National Foundation on the Arts and the Humanities
 - Institute of Museum and Library Services
 - Library Services and Technology Act Grants to States
 - Native American Library Services
- U.S. Dept. of Commerce
 - Economic Development Administration
 - Investments for Public Works and Economic Development Facilities
 - National Telecommunications and Information Administration
 - Broadband Technology Opportunities Program
- U.S. Dept. of Education
 - Office of Special Education and Rehabilitative Services
 - Special Education—Technology and Media Services for Individuals with Disabilities

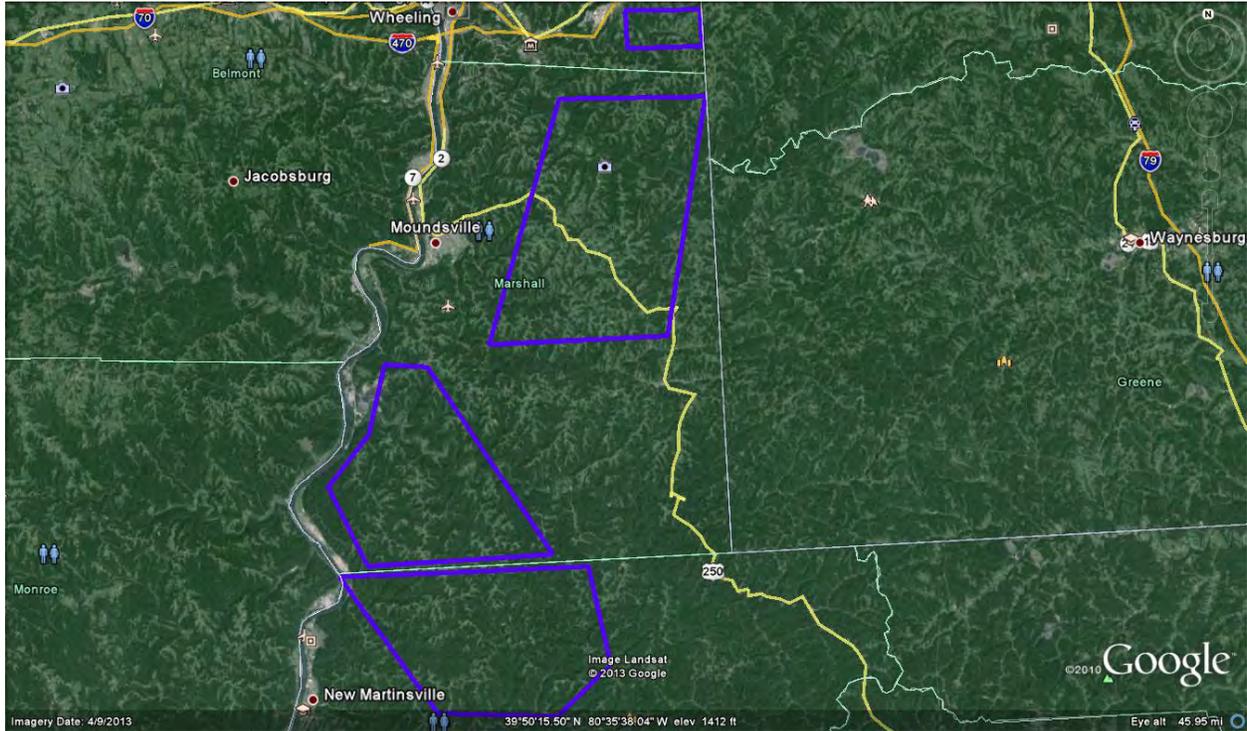
- U.S. Department of Health and Human Services
 - Health Resources and Services Administration
 - Licensure Portability Grant Program
 - Telehealth Network Grants
 - Telehealth Resource Center Grant Program
 - National Institutes of Health
 - National Library of Medicine Extramural Programs
- U.S. Dept. of Housing and Urban Development
 - Office of the Assistant Secretary for Public and Indian Housing and Office of Multifamily Housing Programs
 - Choice Neighborhood Implementation Grants

2) State

The West Virginia Geological and Economic Survey, in cooperation with the West Virginia Broadband Deployment Council, administers two grant programs to support broadband use and adoption. Regional Council Grants are dedicated to the eleven regional planning councils in West Virginia. Technical Assistance Grants are competitive grants that are open to a broad range of organizations including nonprofits, educational institutions, community organizations, planning and economic development groups, and state, local and municipal government agencies.

There are grants available from the State of West Virginia to broadband service providers. These grant funds can help offset the costs for expanding services into rural areas. As an example, the map in Figure 6 shows the locations of three broadband infrastructure projects for which the West Virginia Broadband Deployment Council awarded grants to StratusWave Communications in order to expand broadband service to underserved areas in the Belomar region.

Figure 6. West Virginia Technical Assistance Grants—StratusWave Project Locations



3) Other

The Foundation for Rural Education and Development's Technology Grants for Rural Schools program supports projects that address the need for innovative technology in the classroom.

b. Organizational and Human Resource Issues

Businesses that want to use broadband must address staffing issues in their central IT office or the cost of accessing external IT support; purchasing and replacing equipment; support and training of employees.

For internet service providers including those trying to expand into rural parts of eastern Marshall and Wetzel Counties, a 2009 Federal Communications Commission report summarized the cost issues they face in trying to expand into rural areas (many of which were reiterated by participants at Belomar project meetings):

As a general matter, the costs involved in deploying a broadband network are significant, requiring providers to purchase electronic equipment, obtain access to rights of way, interconnect with other networks, and construct the actual network. Yet, rural networks can often be even more expensive to deploy and potentially more expensive to maintain than networks in non-rural areas for a variety of reasons, which can serve as a formidable barrier to rural broadband deployment. Rural broadband networks typically serve far fewer customers per square mile than urban and suburban networks, and often cover larger land areas that may

include challenging terrain and climate conditions, making it extremely costly to provide broadband service to remote areas. For example, the terrain in such areas may limit the reach of wireless transmission facilities on individual towers, and, consequently, more towers may need to be built, thereby increasing the cost of wireless broadband deployment. Similarly, because radio signals using spectrum below 1 GHz generally penetrate environmental obstructions better than signals using higher bands, licensees with spectrum only in the higher frequency bands may need to deploy more infrastructure, including towers, to cover the same land area, which can also lead to higher deployment costs in rural areas.

6. Benchmarks

Belomar has identified the following benchmarks as relevant to measuring progress toward successfully implementing the proposed strategies and achieving the proposed objectives. Some potential variables have complications that need to be explored further before Belomar uses them as indicators. Cost, for example, was identified in the Belomar residential survey as the part of broadband service that respondents were least satisfied with. But their responses to questions about how much they paid for the service showed that factors such as bundled services and usage levels also affected the prices. Similarly, speed, customer satisfaction, and other measures may be affected by a range of conditions that may cause the result to change frequently.

a. Availability Goals

- Geographic coverage
- The number of households that can access broadband
- The number of public access wireless locations
- The number of public computers and other broadband technology available at libraries
- The number of internet access providers offering services in the region
- The number of classrooms that can access broadband
- Broadband upload and download speeds
- Total bandwidth available

b. Adoption goals

- The number of people who subscribe to broadband services
- The number of businesses that subscribe to broadband services
- Residential and business user satisfaction and perceived value

c. Usage goals

- Use of personal applications that require broadband technology
- The number of business functions using broadband technology
- Number of businesses with web sites
- Number of employees who use broadband technology as an integral part of their jobs

Summary of Attachments

1. Belomar Regional Council Board Membership
2. Broadband Project Participants
3. Residential Survey Results
4. Business Survey Results
5. Broadband Access Technologies
6. References and Web Links

Attachment 1
Belomar Regional Council Board Members, West Virginia

- Ed Kuca, Jr., Mayor, City of Benwood
- Garrett Daniel, Mayor, Village of Bethlehem
- Don Mason, Marshall County Commission
- Bernard P. Twigg*
- Todd Hayes*
- Eugene Saunders, Mayor, City of Moundsville
- Keith Nelsen, Mayor, City of New Martinsville
- Don Rigby, Executive Director, Regional Economic Development Partnership
- Will Turani*
- Tim McCormick, Ohio County Commission
- Michael A. Clemont*
- Bill Hendershot, Mayor, Town of Smithfield
- Don Mason, Commissioner, Wetzel County Commission
- Bob Herron, City Manager, City of Wheeling
- Andy McKenzie, Mayor, City of Wheeling

*Private sector representatives

Attachment 2 Broadband Project Participants

The organizations listed below provided planning assistance, review comments, technical advice, or other support to the Belomar broadband project.

- Belomar Regional Council
- Citynet
- Horizon Telcom
- Hundred Public Library
- Marshall County Emergency 911
- Marshall County Chamber of Commerce
- Marshall County Schools
- Moundsville-Marshall County Public Library
- New Martinsville Public Library
- Ohio County Public Library
- Pine Grove Public Library
- Regional Economic Development Partnership (RED)
- Reynolds Memorial Hospital
- StratusWave Communications
- West Liberty University
- West Virginia Department of Education/Regional Education Service Agency (RESA) Six
- West Virginia Northern Community College
- West Virginia Office of GIS Coordination
- Wetzel County Chamber of Commerce
- Wetzel County Convention & Visitors Bureau

- Wheeling Area Chamber of Commerce
- Wheeling-Ohio County Convention & Visitors Bureau
- Wheeling Economic and Community Development Department
- Wheeling Jesuit University

**Attachment 3
Residential Survey Results**

Belomar Regional Council
Residential Broadband Access and Use Survey

Topline Report
October 24, 2013

N = 258 respondents from Ohio, Marshall, and Wetzel Counties, West Virginia
Dates of Survey: June to October, 2013
Survey available in print and online (www.BelomarBroadband.com) formats in English

Web Site Home Page Introduction:

BELOMAR REGIONAL COUNCIL BROADBAND SURVEY

The Belomar Regional Council is conducting a survey to better understand the needs of...

our residents and local businesses for high-speed Internet and to develop a strategic plan to meet these needs. The information from residents and businesses will be compiled into a Regional Plan which will be incorporated into a West Virginia Statewide Plan for the development of projects to expand broadband to rural areas of the state. Please have a person in your household who is 18 years or older, complete the survey. **All questions on this survey are optional. Your responses will remain anonymous and will only be reported as part of a larger statistical analysis to determine where the state should use Federal grant funding to enhance Internet speed and availability.**

Welcome

West Virginia Broadband Surveys

Thank you for your interest in our West Virginia Broadband survey.
Please choose a survey option below to begin:

[Begin Residential Survey](#)

[Begin Business Survey](#)

West Virginia Broadband Speed Test

This tool will measure current throughput over your internet connection. Throughput represents how much information can be sent or received over your connection at any one time and is a measure of the quality of your internet connection.

Please note that your speeds may vary and typically will not match advertised speeds due to a variety of factors such as network congestion.

[Click here to test your Internet connection speed](#)

What is broadband?

The definition of broadband, or high-speed Internet access, is constantly changing and being challenged. The term is typically used to describe Internet service that is faster than traditional dial-up Internet access. The National Telecommunications and Information Administration (NTIA) currently defines broadband as speeds that move data at a rate of **768 Kilobits per second (Kbps) download and 200 Kbps upload**.

[View all FAQs](#)

About the Survey

The Belomar Regional Council is conducting a survey to better understand the needs of our residents and local businesses for high-speed Internet and to develop a strategic plan to meet these needs. The information from residents and businesses will be compiled into a Regional Plan which will be incorporated into a West Virginia Statewide Plan for the development of projects to expand broadband to rural areas of the state. Please have a person in your household who is 18 years or older, complete the survey. All questions on this survey are optional. Your responses will remain anonymous and will only be reported as part of a larger statistical analysis to determine where the state should use Federal grant funding to enhance internet speed and availability.

Contacts

The Belomar Regional Council: info@belomarbroadband.com

or

www.belomar.org or

call us at 304-242-1800

Broadband Mapping Program Office: wvbroadbandmap@geosrv.wvnet.edu or

call us at 304-558-5300

Menu

[Home](#)

[FAQ](#)

[Speed Test](#)

[Glossary](#)

Web Site Residential Survey Page Introduction:

Residential Broadband Survey

Your answers are anonymous and will only be used for statistical purposes. Please answer to the best of your ability. **This survey will only take approximately five minutes.**

Print Residential Survey Introduction (see Box on the following page):

INTERNET USE SURVEY

Please take a minute to complete the attached confidential survey about improving Internet access.

Note: If you can access the Internet at your home, you can take the survey online from your home computer or other device by going to the Belomar Broadband web site at:

<http://www.BelomarBroadband.com>

or you can take the survey online here at the library,

or you can complete the attached print survey and return it to the library staff.

About the Survey

- The [NAME OF LIBRARY INSERTED HERE] Library is cooperating with the Belomar Regional Council to conduct this survey.
- The purpose of the survey is to better understand the needs of our residents and local businesses for high-speed Internet and to develop a strategic plan to meet these needs.
- The information from residents and businesses will be compiled into a regional plan which will be incorporated into a West Virginia Statewide Plan for the development of projects to expand broadband to rural areas of the state.

Please have only one person in your household, who is 18 years or older, complete the survey.

- Response to all questions on this survey is voluntary.
- Your responses will remain anonymous and will only be reported as part of a larger statistical analysis to determine where the state should use federal grant funding to enhance internet speed and availability.

**When completed, please return the survey to the library staff at the circulation desk.
Thank you.**

For more information, please contact:

Belomar Regional Council
105 Bridge Street Plaza
P.O. Box 2086
Wheeling, WV 26003
Telephone: 304-242-1800
Email: info@belomarbroadband.com
<http://www.belomar.org>

or

West Virginia Broadband Mapping Program
Office
Telephone: 304-558-5300
Email: wvbroadbandmap@geosrv.wvnet.edu

Main Survey:

Q1. In what county do you live? *If you don't live in any of these counties, please DO NOT continue with this survey.

143	Marshall
23	Ohio
92	Wetzel

Q2. In which community do you live?

6	Benwood
2	Bethlehem
24	Cameron
3	Clearview
17	Glen Dale
10	Hundred
7	Littleton
9	McMechen
76	Moundsville
62	New Martinsville
4	Paden City
8	Pine Grave
0	Smithfield
1	Triadelphia
1	Valley Grave
0	West Liberty
27	Wheeling

Q3. What is your zip code?

33	26003
5	26031
21	26033
1	26036
17	26038
3	26039
8	26040
76	26041
8	26055
0	26059
1	26060
0	26074
56	26155
4	26159
0	26162
2	26167
0	26348
1	26377
5	26419
0	26437
0	26561
3	26562
6	26575
7	26581
1	26585

Q4. Do you own a computer in the home?

243	Yes
24	No

Q5. If yes, how many years have you had a computer in the home?

7	Less than 1yr
30	1-3 yrs
55	4-7 yrs
49	8-10 yrs
94	More than 10 yrs
4	Don't know

Q6. Do you own a desktop computer?

156	Yes
99	No

Q7. If yes, how many desktop computers do you own?

151	1-2
7	3-5
0	6-8
1	9+

Q8. Do you own a laptop or other portable computer (e.g. iPad, netbook, mini PC)?

204	Yes
50	No

Q9. If yes, how many laptops or other portable computers (e.g. iPad, netbook, mini PC) do you own?

147	1-2
52	3-5
6	6-8
1	9+

Q10. Does your laptop or other portable computer have wireless Internet capability?

204	Yes
16	No

Q11. Do you own a cell phone?

235	Yes
21	No

Q12. If you own a cell phone, did you use it in the last 7 days for: (Check all that apply)

1	Web browsing
1	E-mail
23	Text messaging
0	Listening to music
2	Camera
0	Video

Q13. I own another device(s) that I use to access the Internet.

94	Yes
151	No

Q14. If yes, identify the other device(s) that you use to access the Internet.

1	Apple
1	Blue Ray Player with Wi-Fi to access Netflix
8	cell phone
2	computer
3	desktop computer
1	Directv dvr
1	Galaxy
1	Galaxy tablet
30	iPad
6	iPod
2	iPhone
1	HP notebook
13	Kindle
6	laptop or notebook computer
1	Nexus
1	Nexus 7
1	Netflix
1	Nintendo 3ds, Nintendo dsi
3	Nook
1	Playstation
1	Roku
12	tablet
1	Toshiba tablet
7	TV, Internet TV, or Smart TV
3	Xbox
1	Verizon Internet Box
3	Wii

Q15. If you do not have a computer, please check all the reasons that apply for not purchasing a computer. (Check all that apply, then go to Question 27)

- 4 I don't have one now, but plan to purchase one within the year
- 4 Cost / too expensive
- 2 Other access to computers
- 1 Safety/Privacy/Security concerns
- 0 Don't know how to choose one
- 3 Don't need one
- 2 Don't know how to use computers
- 2 My cell phone is all I need
- 0 Don't have time to learn
- 0 Don't have time to use one
- 3 Other (specify below)

Q16. If other, please specify:

- We have no cell phone service here, so I have a Tracfone I use if I travel. Please get communication towers for Eastern Wetzel County!!!
- Not interested
- Retired on a fixed income. Overwhelmed by WV state taxes, property taxes, high rent, and utilities

Q17. Do you have Internet access at home? (If 'No' Go to Question 27)

- 216 Yes
- 38 No

Q18. If yes, how often do you access the internet at home?

- 195 daily
- 19 weekly
- 1 monthly
- 1 yearly
- 6 not at all

Q19. Who uses the computer or Internet at your house? (Check all that apply)

- 38 I do
- 5 Spouse/Partner
- 1 Children
- 0 Housemate or roommate
- 0 Other (specify below)

Q20. If other, please specify:

- visiting friends/family
- visiting grandchildren
- Grandchildren
- grandchild
- Guests, Clients.
- grandkids
- If we have guests they use the internet.
- Friends
- Kids friends
- Guests
- grandchildren visiting on weekends
- Grandchildren, nephews
- Friends
- Husband son
- Parental Guardians
- other kids
- a few friends
- kids friends
- friends
- friends kids

Q21. What type of connection do you use at home to access the Internet? (Check all that apply)

- 3 Dial-up (Go to question 24)
- 99 Cable Modem
- 10 Satellite Internet**
- 1 Cellular Broadband (air card)
- 48 DSL
- 11 Fixed Wireless
- 29 Don't Know
- 4 Other (specify below)

Q22. If other, please specify:

- 3G Through the cell phones
- Cell phone
- Cell
- Frontier
- at local library

Q23. How long have you had any type of broadband or high-speed Internet service in your home?

- 13 Less than 1 yr
- 47 1-3 yrs
- 71 4-7 yrs
- 60 8-10 yrs
- 18 More than 10 yrs
- 9 Don't Know
- 7 Not Applicable

Q24. Why did you choose this connection type and service provider?

- 47 Cost
- 49 Speed
- 56 Only available service
- 26 Best reliability

Q25. What company provides your Internet service?

1	AT&T
81	Comcast
1	Exede
55	Frontier
1	NetZero
26	Suddenlink
2	Verizon

Q26. How much do you pay per month for service?

Note: Many respondents gave the total cost of a bundled service package that included more than just Internet service.

10	\$25 or less
44	\$26 to \$50
21	\$51 to \$100
31	\$101 to \$200
4	above \$200

Q27. If you indicated you DO NOT have Internet service, please check all the reasons for not having Internet service. (Check all that apply, then go to Question 35)

- 6 I plan to establish Internet service within the next year
- 3 I don't own a computer
- 5 High-Speed Internet is not available
- 0 Nothing on the Internet I need
- 0 Don't know how to use internet
- 0 Don't know how to set it up
- 0 Problems with DSL access
- 0 Don't really know about the Internet
- 11 Cost / too expensive
- 1 Sufficient access elsewhere
- 0 Don't know how to choose a service
- 0 No time to learn the Internet
- 0 Can't get Internet access I want
- 0 Computer safety/security
- 0 Inappropriate content
- 1 Other (specify below)

Q28. If other, please specify:

- Other access at the local library

Q29. About your Internet service speed of connection, are you?

- 25 Very Satisfied
- 149 Satisfied
- 27 Dissatisfied
- 13 Very dissatisfied
- 12 Don't Know/NA

Q30. About your Internet service cost, are you?

7	Very Satisfied
98	Satisfied
65	Dissatisfied
23	Very dissatisfied
34	Don't Know/NA

Q31. About your Internet service ease of use, are you?

24	Very Satisfied
156	Satisfied
26	Dissatisfied
10	Very Dissatisfied
12	Don't Know/NA

Q32. About your Internet service reliability of access, are you?

23	Very Satisfied
132	Satisfied
44	Dissatisfied
17	Very Dissatisfied
9	Don't Know/NA

Q33. About your Internet service customer service quality, are you?

23	Very Satisfied
132	Satisfied
37	Dissatisfied
13	Very Dissatisfied
22	Don't Know/NA

Q34. About your Internet service number of providers, are you?

13	Very Satisfied
105	Satisfied
46	Dissatisfied
34	Very Dissatisfied
27	Don't Know/NA

Q35. Do you use the Internet anywhere else other than home?

190	Yes
50	No

Q36. Do you use the Internet at work?

144	Yes
89	No

Q37. Do you use the Internet at school?

54	Yes
161	No

Q38. Do you use the Internet at the public library?

75	Yes
155	No

Q39. Do you use the Internet at a relative or friend's house?

143	Yes
85	No

Q40. Do you use the Internet at a retail shop with wireless Internet services?

79	Yes
146	No

Q41. What other locations do you use to access the Internet?

- 2 Hospital or doctor's office
- 7 Hotels and other travel locations
- 10 Restaurants
- 3 Stores, malls, and shopping centers
- 6 Wi-fi spots
- 1 Work
- 9 Other

Q42. Do you have an e-mail address?

- 234 Yes
- 15 No

Q43. How often do you use e-mail?

- 161 At least once a day
- 57 Weekly or several times per week
- 24 Less than once a week

Q44. How important is it for all RESIDENTS of the State of West Virginia to have access to computers and the Internet?

- 178 Very important
- 54 Important
- 9 Somewhat Important
- 3 Not at all important
- 7 Don't Know

Q45. What choices are most important to you from the following characteristics of broadband service? (Check all that apply)

- 37 Cost of service
- 15 Speed of service
- 10 Type of service (cable modem, DSL, wireless, etc.)
- 10 Providers

Q46. Do you have any concerns about your region of the State working to improve broadband service in your community?

57 Yes

182 No

Q47. If yes, specify your concerns:

Note: Some information has been edited to preserve confidentiality.

- Need more choices, speed, reliability, not sure it is being addressed
- No support for public libraries.
- I hope to see prices go down and better service from broadband. Faster speed is a must these days so please address that matter also.
- We are in the middle of nowhere & it seems that many companies just don't care about us.
- not everyone can afford internet
- in the area i live in you cannot get wireless and it's ridiculas.
- not sure what is being done to expand service to other areas of the county.
- Rural areas need internet access
- lack of the ability to information that is public information
- For people that need internet and can't afford it to not have it because it is cost prohibitive. Especially for those that live in rural areas since it is more expensive.
- I would like competitive companies. I feel... has a monopoly on cable and internet.
- more selections to drive down cost
- Internet service should be better. It comes and goes.
- Really feel as if... has monopoly, reduced my service to save money and I was not able to get channel 33 anymore, in order to get it I am back up to 170.00 a month. Very frustrating!!!
- Don't seem to be working on it
- I'm not sure anyone is working to get internet service to any of the areas that don't have it.
- We now have... and have been without internet for 3 weeks. We have called 5 times and had three separate appointments set only for the tech to not show up. Very poor and understaffed business.
- We have no other choice but accept the high cost that . . . charges

- Convenience
- seems like we are behind times with technology...in the schools they would like to advance the technology, using books on disc or ipads, unfortunately it would be difficult, when not everyone has access to a computer or internet.
- We have only one choice, so they can charge what they want. The Internet is very SLOW and the signal is weak, but what else can we do?
- will it interrupt the service we have now
- timely manner
- I'm not convinced anything is being done.
- We have been paying for high speed internet service for several years and are only able to obtain dial up speeds at best. We are unable to access several features due to the slow speeds. It is sometimes necessary for me to work from home and it is difficult for me to access systems through our internet service. I have even gone so far as to file a complaint with the FCC, but nothing was done to resolve the issue. We are stuck with what we have or nothing at all, which in this digital age leaves us out.
- The cost, due to low income families in the area
- They need to work to improve it
- Would like a variety of options and CELL PHONE ACCESS
- many remote areas still don't have reliable internet
- There has been considerable amounts of \$ allocated across the country to build int. access to public. Where/how has that been used in WV? To build company's infrastructure only to provide to public for minimal access.
- Needs to be available to individuals not just libraries and schools.
- [Internet service provider] only available high speed they set a high price including handling techniques.
- It needs to be countywide
- Expanding to more rural areas
- [Internet service provider] is not planning on upgrading their equipment in my area.
- They need faster service without interruptions all the time and more cell phone towers. Hundred area in WV has no cell service at all.
- Best reception in acclimated weather
- It's not happening fast enough & not enough competition
- My things have been changes and pictures edited and email tapped with specific knowledge of this.

- Unless you live in town, you have NO access to decent internet. Homework for children is VERY DIFFICULT
- I am not aware of other locations that provide service for persons who cannot afford the cost of an internet device or access.
- Cost

Q48. If you are a physically disabled and/or challenged individual and need special services or equipment to access the Internet, please describe those items below.

- I am a deaf person who depends on e-mail to connect with family, friends, financial institutions, commercial establishments, medical services, and emergency services. For me access to a computer or a laptop is the only option.

Q49. If you are a caregiver for a physically disabled and/or challenged individual and need special services or equipment to access the Internet, please describe those items below.

No responses

Q50. Do you own or rent the place in which you live?

186	Own
66	Rent

Q51. How long have you lived in your community?

5	Less than 1 year
27	1 to 5 years
29	6 to 10 years
33	11 to 20 years
140	over 20 years

Q52. Do you live in a rural area?

100	Yes
151	No

Q53. How old were you on your last birthday?

16	19 to 25
54	26 to 35
56	36 to 45
51	46 to 55
46	56 to 65
23	over 65

Q54. Do you have children at home?

152	Yes
97	No

Q55. What is the highest grade that you completed?

2	Grade school up to 8th grade
18	Some High School (9th-12th)
59	High school graduate or GED
72	Some college
44	Associate degree
31	Bachelor degree
24	Masters degree
2	Doctoral degree

Q56. How much is your Estimated Annual Household Income? (Remember, your answers are confidential and used for statistical purposes only)

32	less than \$20,000
58	\$20,000 to \$49,000
54	\$50,000 to \$99,000
13	\$100,000 or above

Q57. What is your Race/Ethnicity?

- 241 White (Not Hispanic or Latino)
- 3 Black or African American (Not Hispanic or Latino)
- 0 Asian (Not Hispanic or Latino)
- 1 Native Hawaiian or Other Pacific Islander (Not Hispanic or Latino)
- 1 American Indian or Alaskan Native (Not Hispanic or Latino)
- 1 Hispanic or Latino
- 5 Two or More Races (not Hispanic or Latino)

Q58. What is your employment status?

- 142 Employed full time
- 28 Employed part time
- 21 Seeking employment
- 45 Retired
- 19 Unable to work

Q59. If you have any additional comments about broadband services in the State of West Virginia please include them here:

Note: Some information has been edited to preserve confidentiality.

- I was just employed on May 6th from an application that is filled out at my public library. After almost 2 months of unemployment.
- In public libraries, any information that is public information is blocked.
- I think the service for rural areas should really be improved
- As a professional educator who has seen a push for students to use the internet on a daily basis, it is important that every family have access to an internet hookup of some sort. Whether it be a grant for that service to be provided at home, a grant for libraries to set up additional internet services, or grants for nonprofit groups to set up and run internet rooms for those who cannot afford it, something needs to be done.
- Due to hills rural service needs improved
- We need more choices. Competition is the only way to bring prices down !!!! Same with Cable TV . We need COMPETITION !!!!
- We need more affordable options for high speed internet. I am fortunate to be able to pay for the... service but I wish it were less than \$50 a month for something that is basically "essential" at this time.

- FCC should inquire about the lack of service... Our elderly in-laws live in a rural "no signal" area and have been without service from... numerous times without fixing any problems.
- All areas in WV need reliable, high-speed internet service.
- Is it possible for the town to offer wifi to the citizens?
- Too many dead areas yet.
- I would just like to see the availability to choose from more than one service provider. Perhaps if there were a little competition in our area services would be better.
- We really need this, I drive an hour to work, and I can only call my family in case of an emergency from about half way... in the winter I have no service from... which is one half of my trip, if someone I know doesn't come along, I am up the creek without a paddle!!!
- Improvement would be great, now if only we had cell service!
- CELL service is high need
- Broadband makes it easier and faster to get on the computer to do homework for college classes.
- More towers to receive cell phone services
- Need free wi-fi in a community for daily access. Library should stop by have access and leave it open to everyone like all fast food restaurants.
- DSL or broadband will never be available where I live. Satellite service is totally unaffordable. Telephone service is very unreliable. Dial-up is a joke and for reasons unknown, doesn't work on my computer. Can anyone help me?
- Include cell phone service
- The Ohio County Public Library is the only option I am aware of. The demand is high in that location.

**Attachment 4
Business Survey Results**

Belomar Regional Council
Business Broadband Access and Use Survey

Topline Report
October 24, 2013

N = 12 respondents from Ohio, Marshall, and Wetzel Counties, West Virginia
Dates of Survey: June to October, 2013
Survey available in print and online (www.BelomarBroadband.com) formats in English

Web Site Home Page Introduction:

BELOMAR REGIONAL COUNCIL BROADBAND SURVEY

The Belomar Regional Council is conducting a survey to better understand the needs of...

our residents and local businesses for high-speed Internet and to develop a strategic plan to meet these needs. The information from residents and businesses will be compiled into a Regional Plan which will be incorporated into a West Virginia Statewide Plan for the development of projects to expand broadband to rural areas of the state. Please have a person in your household who is 18 years or older, complete the survey. **All questions on this survey are optional. Your responses will remain anonymous and will only be reported as part of a larger statistical analysis to determine where the state should use Federal grant funding to enhance Internet speed and availability.**

Welcome

West Virginia Broadband Surveys

Thank you for your interest in our West Virginia Broadband survey.
Please choose a survey option below to begin:

[Begin Residential Survey](#)

[Begin Business Survey](#)

West Virginia Broadband Speed Test

This tool will measure current throughput over your internet connection. Throughput represents how much information can be sent or received over your connection at any one time and is a measure of the quality of your internet connection.

Please note that your speeds may vary and typically will not match advertised speeds due to a variety of factors such as network congestion.

[Click here to test your Internet connection speed](#)

What is broadband?

The definition of broadband, or high-speed Internet access, is constantly changing and being challenged. The term is typically used to describe Internet service that is faster than traditional dial-up Internet access. The National Telecommunications and Information Administration (NTIA) currently defines broadband as speeds that move data at a rate of **768 Kilobits per second (Kbps) download and 200 Kbps upload**.

[View all FAQs](#)

About the Survey

The Belomar Regional Council is conducting a survey to better understand the needs of our residents and local businesses for high-speed Internet and to develop a strategic plan to meet these needs. The information from residents and businesses will be compiled into a Regional Plan which will be incorporated into a West Virginia Statewide Plan for the development of projects to expand broadband to rural areas of the state. Please have a person in your household who is 18 years or older, complete the survey. All questions on this survey are optional. Your responses will remain anonymous and will only be reported as part of a larger statistical analysis to determine where the state should use Federal grant funding to enhance internet speed and availability.

Contacts

The Belomar Regional Council: info@belomarbroadband.com

or

www.belomar.org or

call us at 304-242-1800

Broadband Mapping Program Office: wvbroadbandmap@geosrv.wvnet.edu or

call us at 304-558-5300

Menu

[Home](#)

[FAQ](#)

[Speed Test](#)

[Glossary](#)

Web Site Business Survey Page Introduction:

Business Broadband Survey

This survey will only take approximately five minutes.

Print Business Survey Introduction (see Box on the following page):

BUSINESS BROADBAND SURVEY

Please take a minute to complete the attached confidential survey about improving high-speed Internet access in the Belomar Regional Council's service area—Marshall, Ohio, and Wetzel Counties.

Note: If you can access the Internet at your business, you can take the survey online from your business computer or other device by going to the Belomar Broadband web site at:

<http://www.BelomarBroadband.com>

or you can take the survey online at your local library,

or you can complete the attached print survey and return it to the Chamber of Commerce or Belomar office.

About the Survey

- The [NAME OF CHAMBER OF COMMERCE INSERTED HERE] Chamber of Commerce is cooperating with the Belomar Regional Council to distribute this survey.
- The purpose of the survey is to better understand the needs of local businesses for high-speed Internet and to develop a strategic plan to meet these needs.
- The information from businesses will be compiled into a regional plan which will be incorporated into a West Virginia Statewide Plan for the development of projects to expand broadband throughout the state.

Please have only one person at each business establishment complete the survey.

- Response to all questions on this survey is voluntary.
- Your responses will remain confidential and will only be reported as part of a larger statistical analysis to determine where the state should use federal grant funding to enhance internet speed and availability.

When completed, please return the survey to the Marshall County Chamber of Commerce or to the Belomar Regional Council. Thank you.

For more information, please contact:

Belomar Regional Council
105 Bridge Street Plaza
P.O. Box 2086
Wheeling, WV 26003
Telephone: 304-242-1800
Email: info@belomarbroadband.com
<http://www.belomar.org>

or

West Virginia Broadband Mapping Program Office
Telephone: 304-558-5300
Email: wvbroadbandmap@geosrv.wvnet.edu

Main Survey:

Q1. Name of your business:

Note: Names have been withheld to preserve confidentiality.

Q2. In which department do you work?

- Management
- Surveying Department
- Office
- Administrative
- Main office.
- Director
- Administration
- Campus Dean
- Trustee
- Legal Advocate
- Owner
- Management services

Q3. Number of employees at your location:

- 4 1 to 4
- 6 5 to 25
- 1 26 to 100
- 1 101 to 500
- 0 501 to 750
- 0 751 or more

Q4. Please tell us where your business is located (address, city, state and zip code):

Note: Some information has been withheld to preserve confidentiality.

- 1 Hundred, WV 26575
- 3 Moundsville, WV 26041
- 4 New Martinsville WV 26155
- 1 New Martinsville, WV and Paden City, WV
- 3 Wheeling, WV 26003

Q5. In which West Virginia county is your business located?

- 2 Marshall
- 1 Marshall and Wetzel
- 3 Ohio
- 6 Wetzel

Q6. E-mail address:

Note: Email addresses have been withheld to preserve confidentiality.

- 12 [email address]

Q7. Your business website address:

Note: Web site addresses have been withheld to preserve confidentiality.

- 9 [website address]

Q8. Briefly describe what your business does:

Note: Some information has been withheld to preserve confidentiality.

- 1 Manufacturing
- 1 Certified Public Accountant
- 1 Community college
- 2 Consulting Engineers
- 1 Help victims of domestic violence
- 1 Multi-purpose senior center
- 1 Non-profit veterans organization
- 2 Water and wastewater services

Q9. Indicate what national business classification best describes your business:

- 2 Administrative and Support Services
- 1 Construction
- 1 Educational Services
- 2 Health Care and Social Assistance
- 4 Professional, Scientific and Technical
- 1 Utilities
- 1 Other

Q10. If other, please specify:

Q11. Is your business a satellite office?

- 3 Yes
- 10 No

Q12. If YES, where is your central office? (city and state)

- 1 New Martinsville, WV
- 2 Wheeling, WV

Q13. Does your business have satellite offices?

- 5 Yes
- 7 No

Q14. If YES, please indicate the number of locations for the business:

- 2 Two locations
- 1 Three locations

Q15. Do you have Internet service at your business? (If YES, go to question 20)

- 12 Yes
- 0 No

Q16. Please check all the reasons for not having Internet service at your business:

Not applicable

Q17. If other, please specify:

Not applicable

Q18. Do you plan to establish Internet service?

Not applicable

Q19. If YES, please specify when you will establish Internet service: (Businesses without Internet service please go to question 49)

Not applicable

Q20. Who currently provides your business's local data communications, Internet service and connections?

- 4 Comcast
- 2 Frontier
- 1 Lumos
- 1 Met Tel and Verizon
- 3 Suddenlink

Q21. What type(s) of Internet connection do you have?

- 5 Cable Modem
- 4 DSL
- 1 Fiber to the Premises
- 1 Fixed Wireless
- 1 T-1
- 0 Dial-up Line - 56 Kbps or Less
- 0 Frame Relay/Fractional T-1 (i.e., CIR)
- 0 Mobile Wireless (Cellular Aircard)
- 0 Satellite Broadband
- 0 Other

Q22. If other, please specify:

No responses

Q23. If you have Satellite Broadband, what is your connection speed?

No responses

Q24. If you have DSL, what is your connection speed?

- 54 mbps
- Supposed to be up to 3 mbps but closer to 570 kbps

Q25. If you have a Cable Modem, what is your connection speed?

- Using the mapping program speed test Download Speeds range 11.99 - 14.85 Mbps Upload Speeds range 4.19 - 4.75 Mbps
- 57.96 11.8 22ms

Q26. If you have a Frame Relay/Fractional T-1(i.e., CIR), what is your connection speed?

No responses

Q27. If you have another type of Internet Connection, please indicate the type and your connection speed:

No responses

Q28. If broadband is available to your business, in what year did you first establish broadband, or high-speed Internet service? (After responding, Businesses with broadband skip to question 32.)

No responses

Q29. Why haven't you adopted broadband, or high-speed Internet? (check all that apply).

Not applicable

Q30. Do you plan to adopt broadband (high-speed Internet) service?

Not applicable

Q31. If YES, when do you plan to adopt broadband (high-speed Internet) service?

Not applicable

Q32. About your Internet service cost, are you?

0	Very Satisfied
6	Satisfied
4	Dissatisfied
0	Very Dissatisfied
2	Don't Know/Not Applicable

Q33. About your Internet service connection speed, are you?

2	Very Satisfied
4	Satisfied
4	Dissatisfied
2	Very Dissatisfied
0	Don't Know/Not Applicable

Q34. About your Internet service provider's billing practices, are you?

0 Very Satisfied
6 Satisfied
5 Dissatisfied
0 Very Dissatisfied
1 Don't Know/Not Applicable

Q35. About your Internet service technical support, are you?

0 Very Satisfied
5 Satisfied
5 Dissatisfied
1 Very Dissatisfied
1 Don't Know/Not Applicable

Q36. About your Internet service customer service, are you?

0 Very Satisfied
8 Satisfied
1 Dissatisfied
1 Very Dissatisfied
2 Don't Know/Not Applicable

Q37. About your Internet service Installation tech's ability and courtesy, are you?

0 Very Satisfied
9 Satisfied
2 Dissatisfied
0 Very Dissatisfied
1 Don't Know/Not Applicable

Q38. In the last 30 days, indicate which applications your data communications/Internet Access connection has supported (check all that apply):

No responses

Q39. How important is a robust broadband (high-speed Internet access) connection to the day to day operations of your business (check one)?

- 7 Very Important
- 2 Important
- 3 Somewhat Important
- 0 Not at all important

Q40. Why is a broadband connection important to you at your location?

Note: Some information has been edited to preserve confidentiality.

- The old saying Time is Money and Prompt Customer Service is Good Business.
- We have several programs that require us to be on the internet to do them and slow connection speeds make it so much harder.
- It is how we do business. Communicate with corporate offices, on line record system, payroll system etc
- Without dependable service we cannot consistently offer high-quality classes
- [They use] the internet to connect their equipment to... Clarksburg
- We use the computer everyday for clients, victims, and work.
- Business to business communication is very critical

Q41. Would it be beneficial to you if the broadband environment in your area was enhanced?

- 9 Yes
- 2 No

Q42. If YES, why?

Note: Some information has been edited to preserve confidentiality.

- Any improvement to service is welcome.
- We have several programs that require us to be on the internet to do them and slow connection speeds make it so much harder.
- Better business efficiency
- It would be better for...
- So the computer would run faster and not keep knocking us off the internet.
- More ability for businesses to expand

Q43. Do you have any thoughts about how to go about enhancing broadband availability in your region?

- In urban areas upgrading the service distribution network and in rural areas more affordable satellite service.
- Lower cost to business owners

Q44. When you sought broadband services for your business at your location, how would you describe the availability of multiple, competing broadband options:

- 2 Competitive, several options
- 5 Somewhat Competitive, two providers
- 4 Not Competitive, only one provider
- 1 Suitable broadband is not available

Q45. Are there other broadband providers available at your location?

- 8 Yes
- 3 No

Q46. What do you currently pay each month for this service? (If you have indicated several services above, indicate your total expense for these services.)

- 1 Less than \$50
- 4 More than \$50 and less than \$100
- 2 Between \$100 and \$200
- 0 Between \$200 and \$300
- 0 More than \$300 per month
- 4 Don't know how much we pay
- 0 Other (please specify below)

Q47. If Other, please specify:

No responses

Q48. What is the term of your service contract(s)?

- 1 year
- 2 years
- Has expired so we are switching. usually one year
- Cancel any time

Q49. Do you have any other comments about broadband service availability in your region?

No responses

Q50. If your business provides services and products to customers who are physically disabled and/or challenged and need special services and/or accommodations to purchase services and products from your business, please describe below:

Note: Some information has been edited to preserve confidentiality.

➤ We help senior citizens...

Attachment 5 Broadband Access Technologies

Broadband access technology maps are provided on the following pages: for:

- xDSL, BPL, Other Copper Technology (Figure 7)
- Cable and FTTP Technology (Figure 8)
- Fixed Wireless Technology (Figure 9)
- Mobile Wireless Technology (Figure 10)

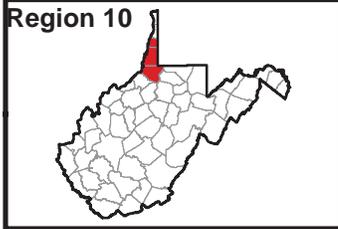


Figure 7. West Virginia

Broadband Mapping Program

Region 10 - Technology: xDSL, BPL, Other Copper

Data as of 9/30/2012



Publications Policy:

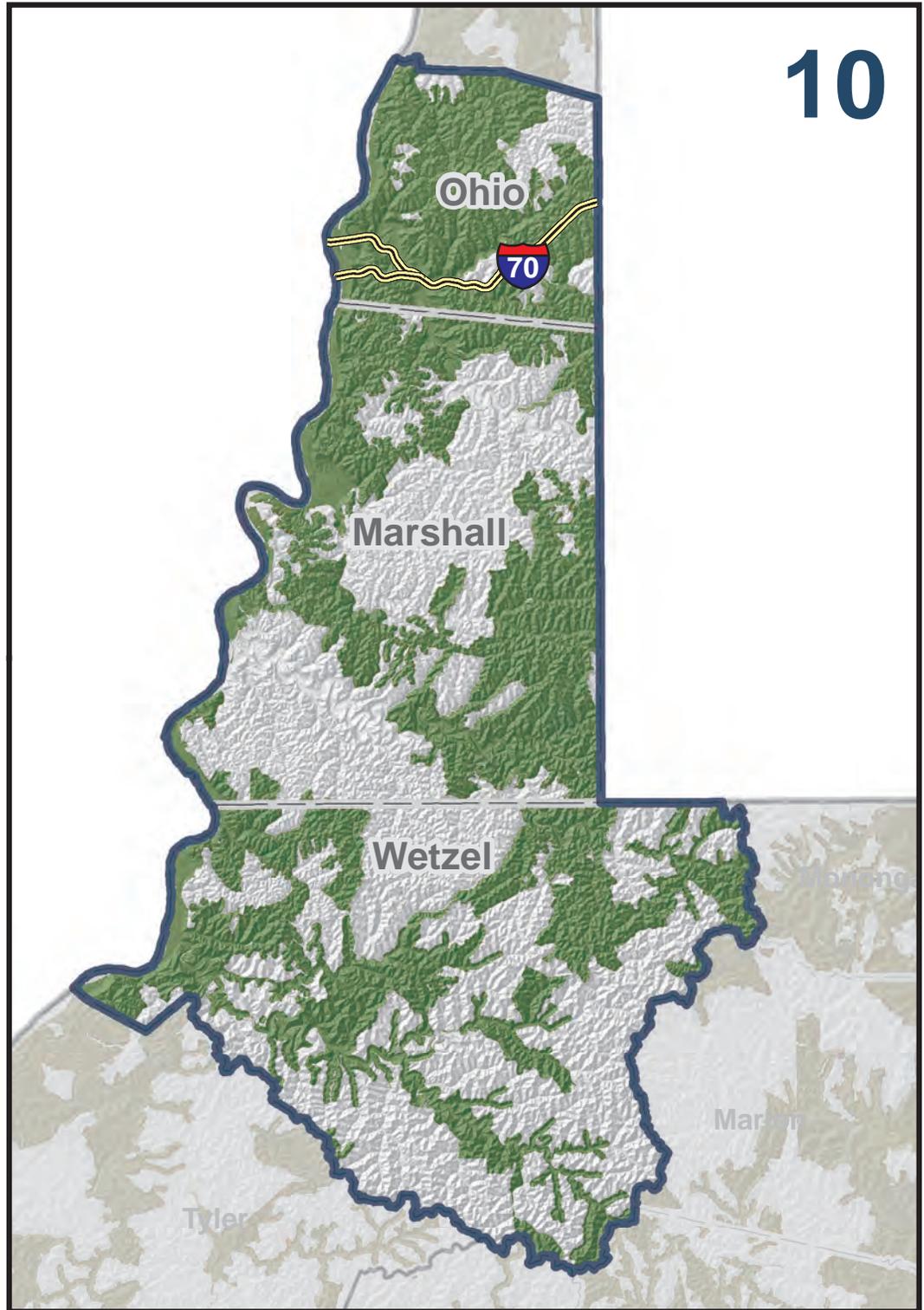
This publication represents interpretations of best available data made by professional geographers. As in all research work, professional interpretations may vary, and can change with advancements in both technology and data quality. This publication is offered as a service of the State of West Virginia; proper use of the information herein is the sole responsibility of the user.

Permission to reproduce this publication is granted if acknowledgement is given to the West Virginia Geological and Economic Survey and the West Virginia Broadband Mapping Program.

Map Date: November 30, 2012
Projection: Transverse Mercator
Horizontal Datum: NAD 83
Coordinate System: UTMz17n
Map scale for full 8.5" x 11" display: 1:450,000

Legend

-  xDSL, BPL, Other Copper
-  Commerce Planning & Development Regions
-  State Boundary
-  Counties
-  Interstate Highways



10

www.wvbroadbandmap.org



West Virginia Geological and Economic Survey
Mont Chateau Research Center
1 Mont Chateau Road
Morgantown, WV 26508-8079
Phone: (304) 594-2331
www.wvgs.wvnet.edu

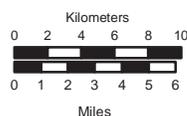




Figure 8. West Virginia Broadband Mapping Program Region 10 - Technology: Cable and FTTP

Data as of 9/30/2012



Publications Policy:

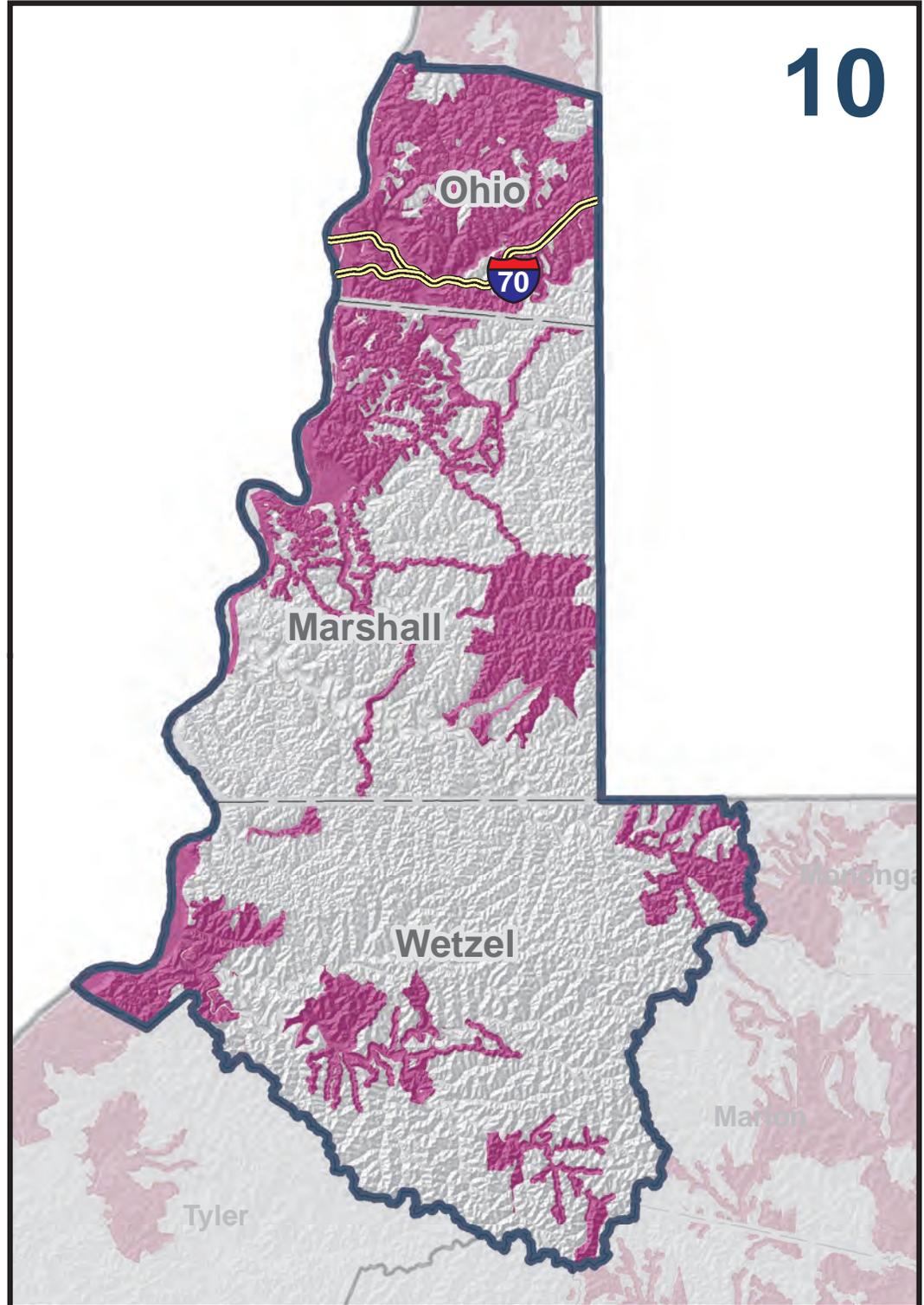
This publication represents interpretations of best available data made by professional geographers. As in all research work, professional interpretations may vary, and can change with advancements in both technology and data quality. This publication is offered as a service of the State of West Virginia; proper use of the information herein is the sole responsibility of the user.

Permission to reproduce this publication is granted if acknowledgement is given to the West Virginia Geological and Economic Survey and the West Virginia Broadband Mapping Program.

Map Date: November 30, 2012
 Projection: Transverse Mercator
 Horizontal Datum: NAD 83
 Coordinate System: UTMz17n
 Map scale for full 8.5" x 11" display: 1:450,000

Legend

-  Cable and Fiber to the Premises (FTTP)
-  Commerce Planning & Development Regions
-  State Boundary
-  Counties
-  Interstate Highways



10

www.wvbroadbandmap.org



West Virginia Geological and Economic Survey
 Mont Chateau Research Center
 1 Mont Chateau Road
 Morgantown, WV 26508-8079
 Phone: (304) 594-2331
www.wvgs.wvnet.edu

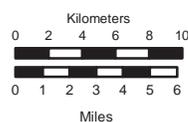
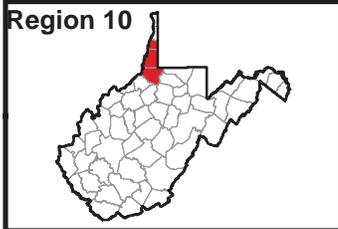




Figure 9. West Virginia Broadband Mapping Program Region 10 - Technology: Fixed Wireless

Data as of 9/30/2012



Publications Policy:

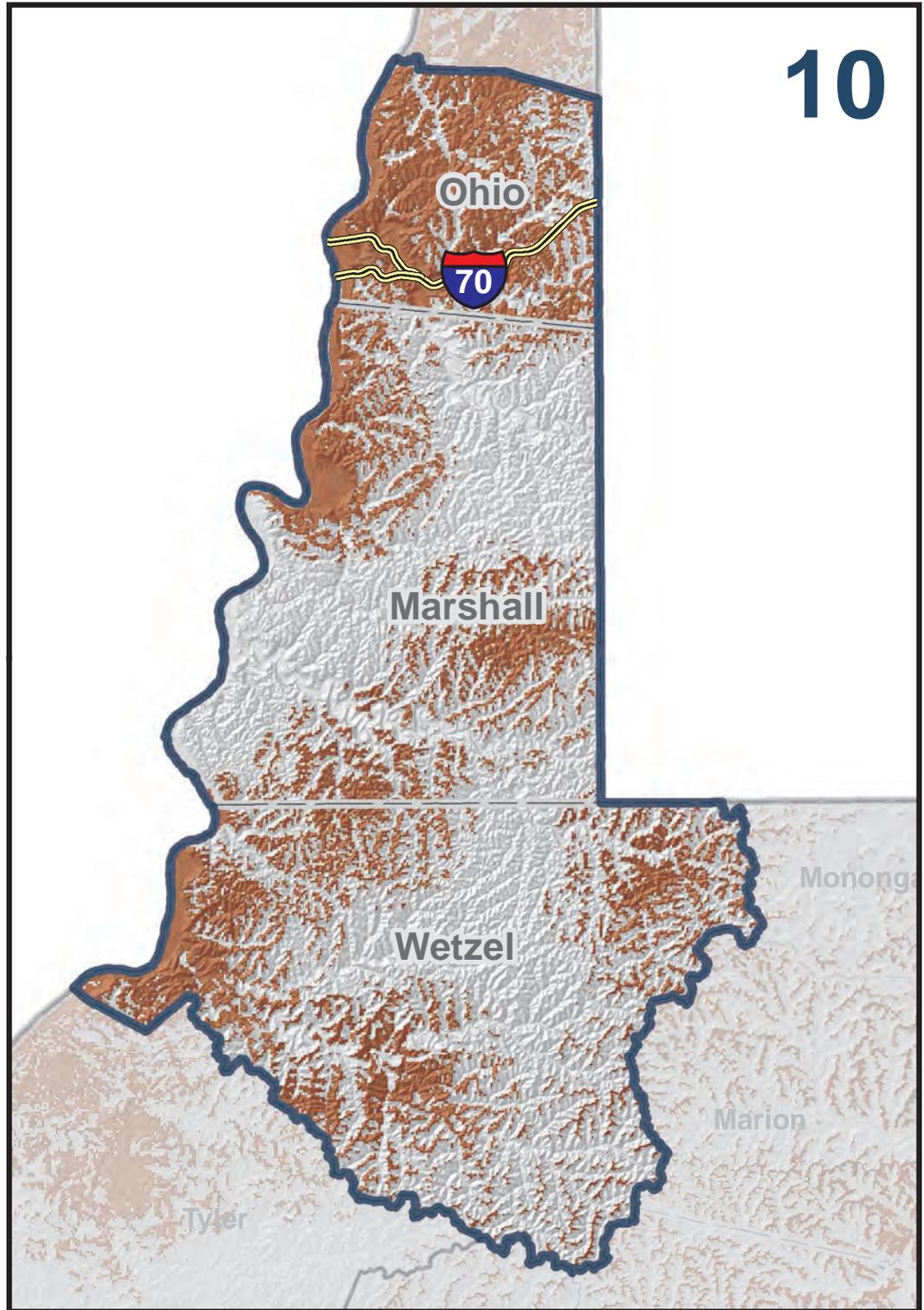
This publication represents interpretations of best available data made by professional geographers. As in all research work, professional interpretations may vary, and can change with advancements in both technology and data quality. This publication is offered as a service of the State of West Virginia; proper use of the information herein is the sole responsibility of the user.

Permission to reproduce this publication is granted if acknowledgement is given to the West Virginia Geological and Economic Survey and the West Virginia Broadband Mapping Program.

Map Date: November 30, 2012
 Projection: Transverse Mercator
 Horizontal Datum: NAD 83
 Coordinate System: UTMz17n
 Map scale for full 8.5" x 11" display: 1:450,000

Legend

- Fixed Wireless
- Commerce Planning & Development Regions
- State Boundary
- Counties



10

www.wvbroadbandmap.org



West Virginia Geological and Economic Survey
 Mont Chateau Research Center
 1 Mont Chateau Road
 Morgantown, WV 26508-8079
 Phone: (304) 594-2331
www.wvgs.wvnet.edu

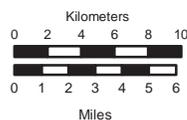


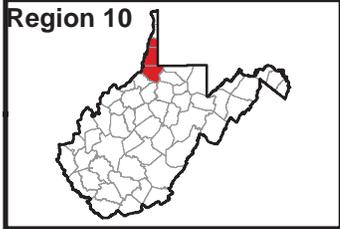


Figure 10. West Virginia

Broadband Mapping Program

Region 10 - Technology: Mobile Wireless

Data as of 9/30/2012



Publications Policy:

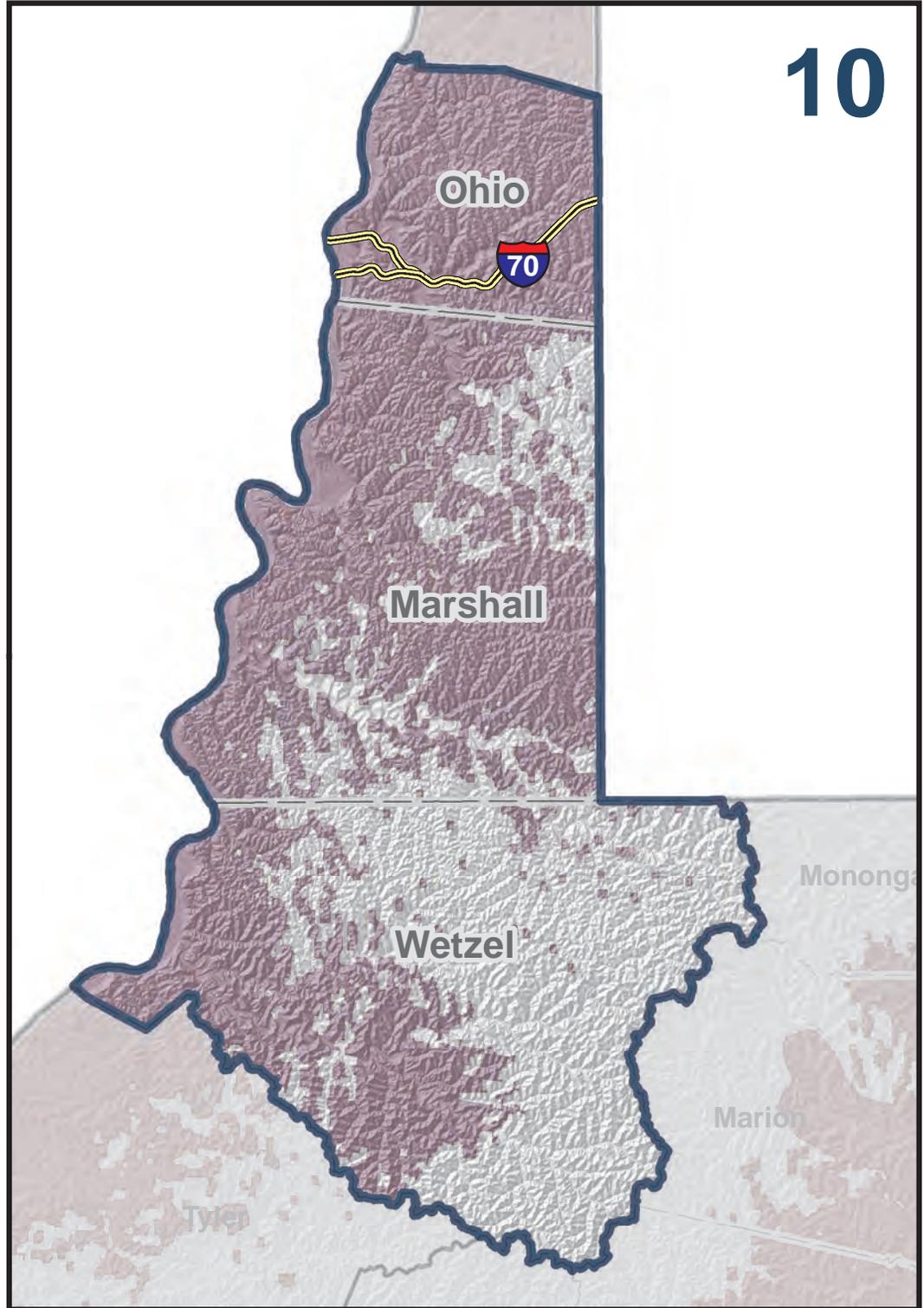
This publication represents interpretations of best available data made by professional geographers. As in all research work, professional interpretations may vary, and can change with advancements in both technology and data quality. This publication is offered as a service of the State of West Virginia; proper use of the information herein is the sole responsibility of the user.

Permission to reproduce this publication is granted if acknowledgement is given to the West Virginia Geological and Economic Survey and the West Virginia Broadband Mapping Program.

Map Date: November 30, 2012
Projection: Transverse Mercator
Horizontal Datum: NAD 83
Coordinate System: UTMz17n
Map scale for full 8.5" x 11" display: 1:450,000

Legend

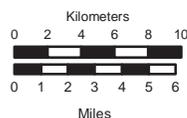
- Mobile Wireless
- Commerce Planning & Development Regions
- State Boundary
- Counties
- Interstate Highways



10



West Virginia Geological and Economic Survey
Mont Chateau Research Center
1 Mont Chateau Road
Morgantown, WV 26508-8079
Phone: (304) 594-2331
www.wvgs.wvnet.edu



www.wvbroadbandmap.org



Attachment 6 References and Web Links

Publications

Federal Communications Commission. *Bringing Broadband to Rural America: Report on a Rural Broadband Strategy*. May 22, 2009.

Federal Communications Commission. *Eighth Broadband Progress Report*. August 14, 2012.

Kruger, Lennard G. *Broadband Loan and Grant Programs in the USDA's Rural Utilities Service*. Congressional Research Service. July 12, 2013.

Kruger, Lennard G. and Gilroy, Angele A. *Broadband Internet Access and the Digital Divide: Federal Assistance Programs*. July 17, 2013.

L.R. Kimball. *State of West Virginia Broadband Field Testing Region 10*. (Prepared for the West Virginia Geological and Economic Survey and the Office of GIS Coordination.) September 2013.

L.R. Kimball. *West Virginia Broadband Type 1 2 3 Determination*. (Prepared for the West Virginia Broadband Deployment Council.) March 2012.

Princeton Survey Research Associates International. *Broadband Service Capability Survey*. (Prepared for the Federal Communications Commission.) December 3, 2009.

U.S. Department of Commerce. *Exploring the Digital Nation: Home Broadband Internet Adoption in the United States*. November 2010.

Zickuhr, Kathryn. *Who's Not Online and Why*. Pew Research Center. September 25, 2013.

Zickuhr, Kathryn; Rainie, Lee; and Purcell, Kristen. *Younger Americans' Library Habits and Expectations*. Pew Research Center. June 25, 2013.

Zickuhr, Kathryn and Smith, Aaron. *Home Broadband 2013*. Pew Research Center. August 26, 2013.

Web Sites

National Broadband Map
<http://broadbandmap.gov/>

National Broadband Plan
<http://www.broadband.gov/>

National Telecommunications and Information Administration
<http://www2.ntia.doc.gov/>

Pew Research Center, Internet and American Life Project
<http://www.pewinternet.org/>

West Virginia Broadband Deployment Council
<http://www.broadband.wv.gov/Pages/default.aspx>

West Virginia Broadband Mapping Program
<http://www.wvcommerce.org/business/wvbmp/default.aspx>

West Virginia Geological and Economic Survey (WVGES)
<http://www.wvgs.wvnet.edu/>

West Virginia Office of GIS Coordination
<http://www.gis.wv.gov/Pages/default.aspx>