Wyoming County

Land Use Master Plan 2013

OCCD

Office of Coalfield Community Development
WV Division of Energy

Golf course at Twin Falls Resort State Park Wyoming County, West Virginia
(Photo by Brian M. Powell)

Executive Summary

This Land Use Master Plan (LUMP) conveys information on Wyoming County's current demographic and geographic status. This plan will be used to evaluate the potential of post-mine sites for development, and evaluate Wyoming County's investment position.

Senate Bill (SB) 603 mandates the development of a LUMP by counties with surface mining operations. The LUMP will be an effective tool towards achieving Wyoming County's development goals. The Nick J. Rahall Appalachian Transportation Institute (RTI) will coordinate with the Office of Coalfield Community Development to provide this essential information. To the knowledge of the researchers Wyoming County has not undertaken serious post-mine development. This plan will help Wyoming take advantage of its post-mine sites.

Wyoming County had a serious and persistent loss in population after 1980. The county is projected to continue losing residents. Wyoming County's median age and age distribution indicate a population capable of productivity in the labor force.

Employment consists mainly of government services; trade, transportation, and utilities; education and healthcare and natural resources and mining. Natural Resources and Mining is both the largest employer and the largest wage contributor, followed by Government. Even as Wyoming County total wages have been on the rise over the past six years, there is a significant lack of labor force participation in the county, indicating an increased apathy towards the labor force. Of particular note is the amount of income, as opposed to wages, derived from government transfers. Thirty-four percent of Wyoming County income is from government transfers. Alas, Wyoming County is not alone in this situation, as West Virginia finds many of its counties deriving almost a third of their incomes from government transfers.

Wyoming County's total enrollment dropped precipitously until 2006, after which it began a very slow rise. Wyoming County's dropout rate is low, but still high relative to other counties. Wyoming County's residents have average education achievement overall, with just over a quarter of residents not having a high school education or equivalent.

Utility prices are varied throughout the county, and this plan provides municipal and private rates for electricity, sewer, and water. Broadband, an increasingly important utility in the age of globalization, is highlighted to show the necessity for improvement and access, and showcase the developable properties of this utility.

Transportation is an important issue in any development strategy. Wyoming County has various transportation options, including state routes and a small airport, Kee Field, but no interstate.

Wyoming County also has four historic sites in the National Register and several pieces of historic architecture designated by the state. Historic preservation can be a basis for

tourism, cultural identity, and community cohesion.

This plan also reviews energy and environmental issues in Wyoming County. The environment of the county should be considered in an overall development strategy. Wyoming County is heavily forested and contains a state park and a large portion of a wildlife management area. Wyoming County is also not on the list of air pollution non-attainment areas, which is positive. Wyoming County has a significant network of gas pipes to take advantage of Marcellus Shale developments, but renewable energy options are either underused or lacking altogether.

This information is as critical as the site information for several reasons. One is that development is not a process that can occur in a vacuum. Without understanding the resources available in the county, and the demand for more investment, money will end up wasted. Another is that investment requires active partners who will need information on each of the county's essential demographic topics to determine their level of risk. Without this, investors will not be persuaded to enter the county. Finally, this information can help policy makers target their land use strategies to any of these topics, as long as they understand the situation.

Site analysis is integral to this report. Researchers identified all the post mine sites given certain criteria for Wyoming County. The researchers created a distance analysis using a scoring system based on distance to certain essential utilities and features, summed the scores, and plotted each score for each mine site. A workforce analysis was conducted to determine available labor within certain radii for each site, and a retail analysis was conducted to determine which areas had the most retail activity.

The top five mine sites were then identified, and are displayed individually. Map A contains the sites available in a view of the county.

The tables below are comprehensive comparisons of the five post-mine sites. In Tables A and B, distances and total scores are compared between sites, providing an idea of the more suitable sites under a considered criterion. For example, if we want to look for a site which is located closest to water lines, the answer is site ranking #4, permit ID S401298. However, if we wanted the site closer to solid waste treatment facilities, the best site is site ranking #1, permit ID S011977.

Table C explains how each criterion contributes to the final total score and importance of the weights. Because of the assumption that one criterion may be more important than others (different weights), the site with higher absolute and relative scores is still able to receive a smaller total score than others. Site ranking #1 scores poorly in the many parts of the distance analysis, but has high scores in important criteria such as power lines and broadband.

Table A: Distances comparison between top five sites for potential development

Suitability Ranking	1	2	3	4	5	Weight
Existing Highway	1.10	1.66	10.18	0.10	4.69	8
Proposed Highway	17.09	19.66	16.22	22.95	3.95	9
Intermodal Terminal Facilities	60.98	57.34	63.66	66.84	77.56	6
Interstate	60.00	56.36	53.29	65.85	68.12	8
National Waterway Network Ports	96.86	95.73	109.83	88.98	115.59	5
Sewer Treatment Facilities	1.08	1.55	0.89	3.64	3.31	7
Solid Waste Treatment Facilities	2.05	6.30	4.72	2.66	5.09	8
Tri-state Airport	103.84	103.31	117.41	95.95	122.58	3
Yeager Airport	71.49	67.85	74.16	77.34	88.07	3
Broadband	0.10	0.15	0.04	0.08	0.63	9
Gas Pipes	0.73	0.56	0.78	2.66	1.65	6
National Waterway Network	16.11	16.84	22.28	17.38	7.12	4
Power Lines	0.18	0.03	0.57	0.76	0.36	10
Oil Pipes	0.22	0.01	0.26	0.37	1.68	6
Railroad	1.14	1.34	2.07	2.45	1.59	5
Sewer Lines	1.08	1.55	0.89	3.64	3.31	8
Water Lines	1.05	1.11	0.92	0.10	2.91	10

Table B: Total score comparison between top five sites for potential development

Suitability Ranking	1	2	3	4	5	Weight
Existing Highway	60	60	10	80	40	8
Proposed Highway	20.25	13.5	20.25	4.5	90	9
Intermodal Terminal Facilities	6	6	6	4.5	3	6
Interstate	8	8	8	6	6	8
National Waterway Network Ports	3.75	3.75	2.5	5	1.25	5
Sewer Treatment Facilities	70	70	70	35	52.5	7
Solid Waste Treatment Facilities	80	28	60	80	42	8
Tri-state Airport	2.25	2.25	1.5	3	0.75	3
Yeager Airport	3	3	3	2.25	1.5	3
Broadband	90	90	90	90	67.5	9
Gas Pipes	45	60	45	30	30	6
National Waterway Network	6	6	1	3	28	4
Power Lines	100	100	75	75	75	10
Oil Pipes	60	60	45	45	15	6
Railroad	50	37.5	25	12.5	37.5	5
Sewer Lines	80	80	80	40	60	8
Water Lines	75	75	75	100	25	10
Total Score	759.25	703	617.25	615.75	575	

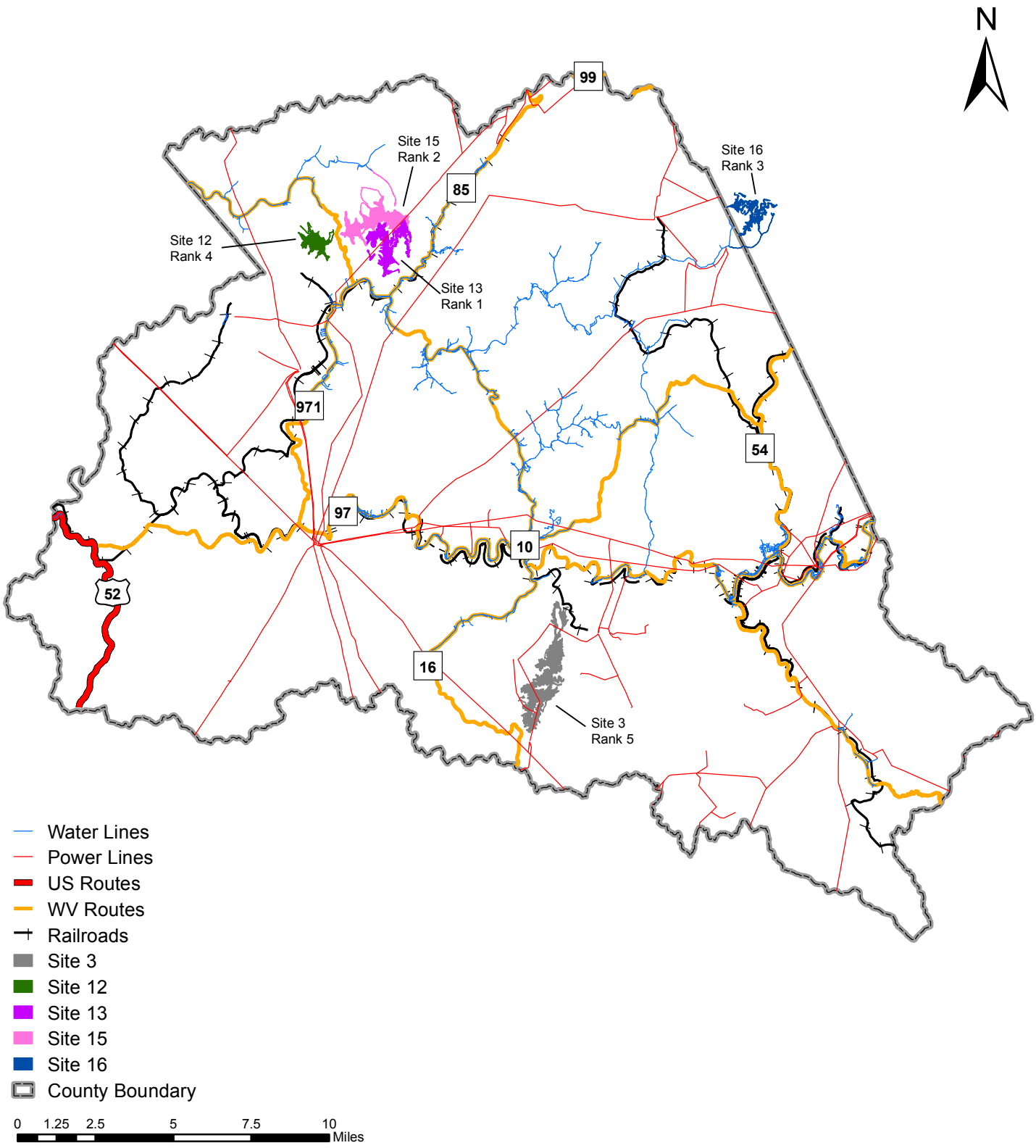
Table C: Absolute/relative score comparison between top five sites for potential development

Suitability Ranking	1	2	3	4	5	Weight
Existing Highway	10	10	5	10	10	8
Proposed Highway	3	3	3	1	10	9
Intermodal Terminal Facilities	1	1	1	1	1	6
Interstate	1	1	1	1	1	8
National Waterway Network Ports	1	1	1	1	1	5
Sewer Treatment Facilities	10	10	10	10	10	7
Solid Waste Treatment Facilities	10	7	10	10	7	8
Tri-state Airport	1	1	1	1	1	3
Yeager Airport	1	1	1	1	1	3
Broadband	10	10	10	10	10	9
Gas Pipes	10	10	10	10	10	6
National Waterway Network	3	3	1	3	7	4
Power Lines	10	10	10	10	10	10
Oil Pipes	10	10	10	10	10	6
Railroad	10	10	10	10	10	5
Sewer Lines	10	10	10	10	10	8
Water Lines	10	10	10	10	10	10
Total Absolute Score	111	108	104	109	119	
Suitability Ranking	**1**	**2**	**3**	**4**	**5**	**Weight**
Existing Highway	7.5	7.5	2.5	10	5	8
Proposed Highway	7.5	5	7.5	5	10	9
Intermodal Terminal Facilities	10	10	10	7.5	5	6
Interstate	10	10	10	7.5	7.5	8
National Waterway Network Ports	7.5	7.5	5	10	2.5	5
Sewer Treatment Facilities	10	10	10	5	7.5	7
Solid Waste Treatment Facilities	10	5	7.5	10	7.5	8
Tri-state Airport	7.5	7.5	5	10	2.5	3
Yeager Airport	10	10	10	7.5	5	3
Broadband	10	10	10	10	7.5	9
Gas Pipes	7.5	10	7.5	5	5	6
National Waterway Network	5	5	2.5	2.5	10	4
Power Lines	10	10	7.5	7.5	7.5	10
Oil Pipes	10	10	7.5	7.5	2.5	6
Railroad	10	7.5	5	2.5	7.5	5
Sewer Lines	10	10	10	5	7.5	8
Water Lines	7.5	7.5	7.5	10	2.5	10
Total Relative Score	150	142.5	125	122.5	102.5	

Map A

Top Five Sites for Potential Development

Wyoming County



Source: Rahall Transportation Institute Analysis 2013

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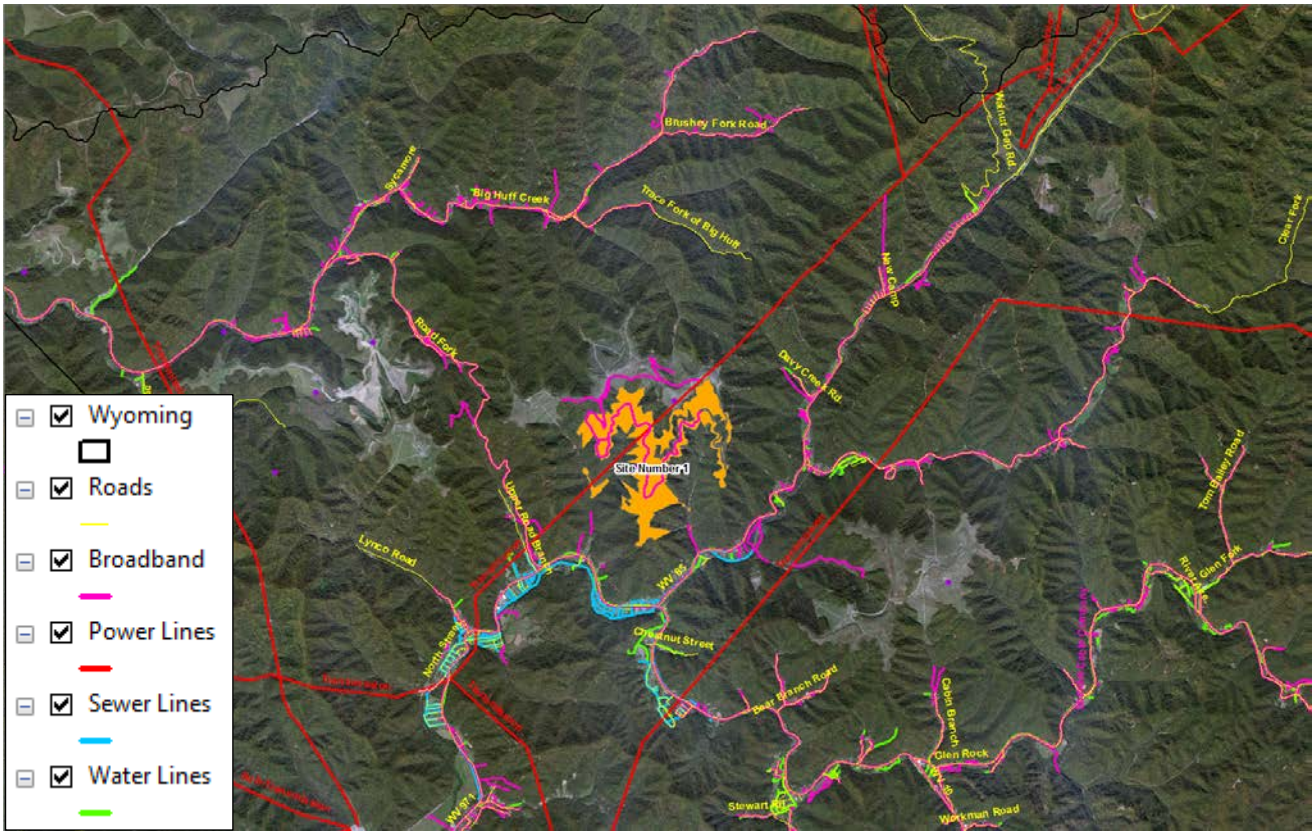
Site's General Info

Permittee	Pioneer Fuel Corporation
Facility Name	Unknown
Permit ID	S011977
Issue Date	8/12/1977
Expiration Date	1/6/2013
Current Acres	582.36
Lat	37° 42' 45.0000"
Long	81° 37' 41.0000"
Nearest Post Office	Oceana

Site Number	**13**
Suitability Ranking	**1**
Total Score	**759.25**

Distance Analysis Results

Existing Highway	1.10
Proposed Highway	17.09
Intermodal Terminal Facilities	60.98
Interstate	60.00
National Waterway Network Ports	96.86
Sewer Treatment Facilities	1.08
Solid Waste Treatment Facilities	2.05
Tri-state Airport	103.84
Yeager Airport	71.49
Broadband	0.10
Gas Pipes	0.73
National Waterway Network	16.11
Power Lines	0.18
Oil Pipes	0.22
Railroads	1.14
Sewer Lines	1.08
Water Lines	1.05



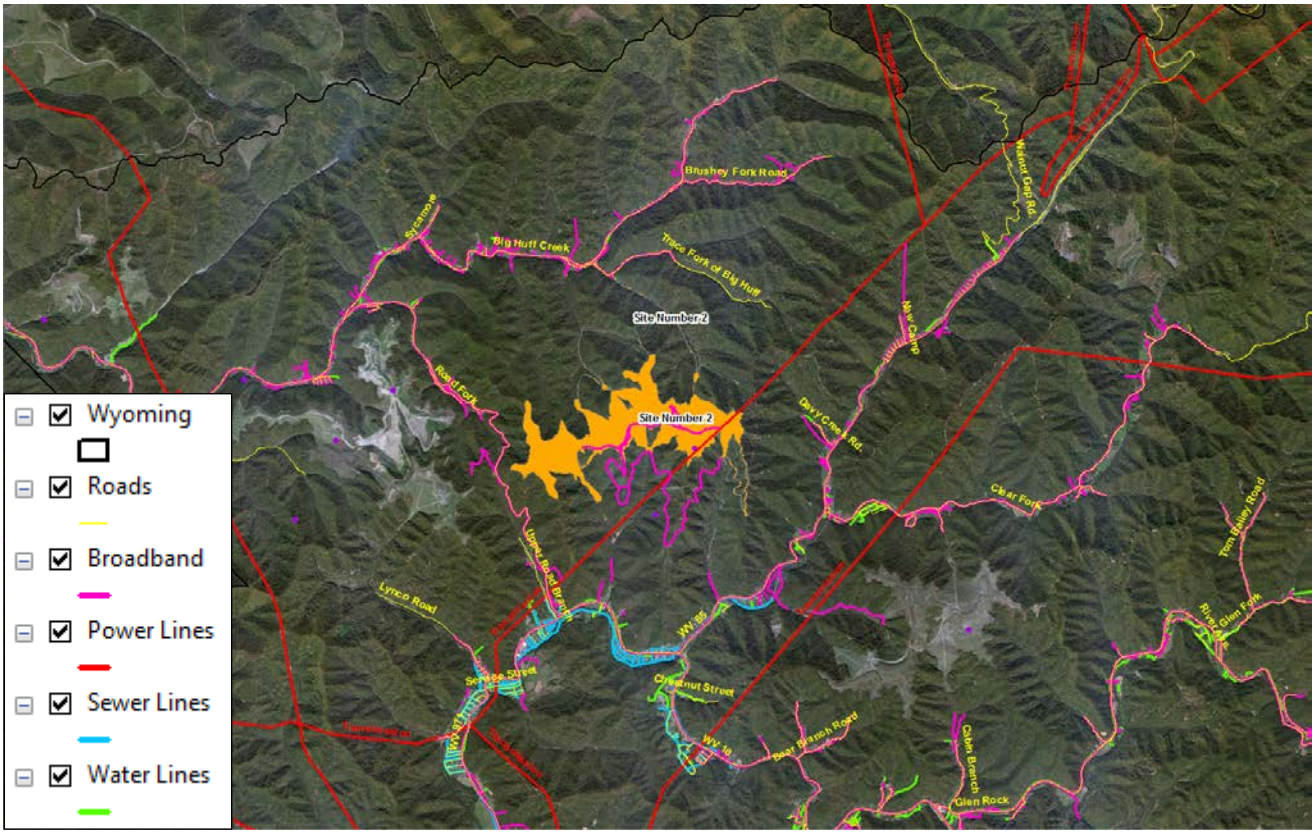
Site's General Info

Permittee	Pioneer Fuel Corporation
Facility Name	Winifrede No. 2 Mountaintop Remove
Permit ID	S401595
Issue Date	9/20/1995
Expiration Date	9/20/2015
Current Acres	733.3
Lat	37° 43' 20.0000"
Long	81° 37' 16.0000"
Nearest Post Office	Oceana

Site Number	**15**
Suitability Ranking	**2**
Total Score	**703**

Distance Analysis Results

Existing Highway	1.66
Proposed Highway	19.66
Intermodal Terminal Facilities	57.34
Interstate	56.36
National Waterway Network Ports	95.73
Sewer Treatment Facilities	1.55
Solid Waste Treatment Facilities	6.30
Tri-state Airport	103.31
Yeager Airport	67.85
Broadband	0.15
Gas Pipes	0.56
National Waterway Network	16.84
Power Lines	0.03
Oil Pipes	0.01
Railroads	1.34
Sewer Lines	1.55
Water Lines	1.11



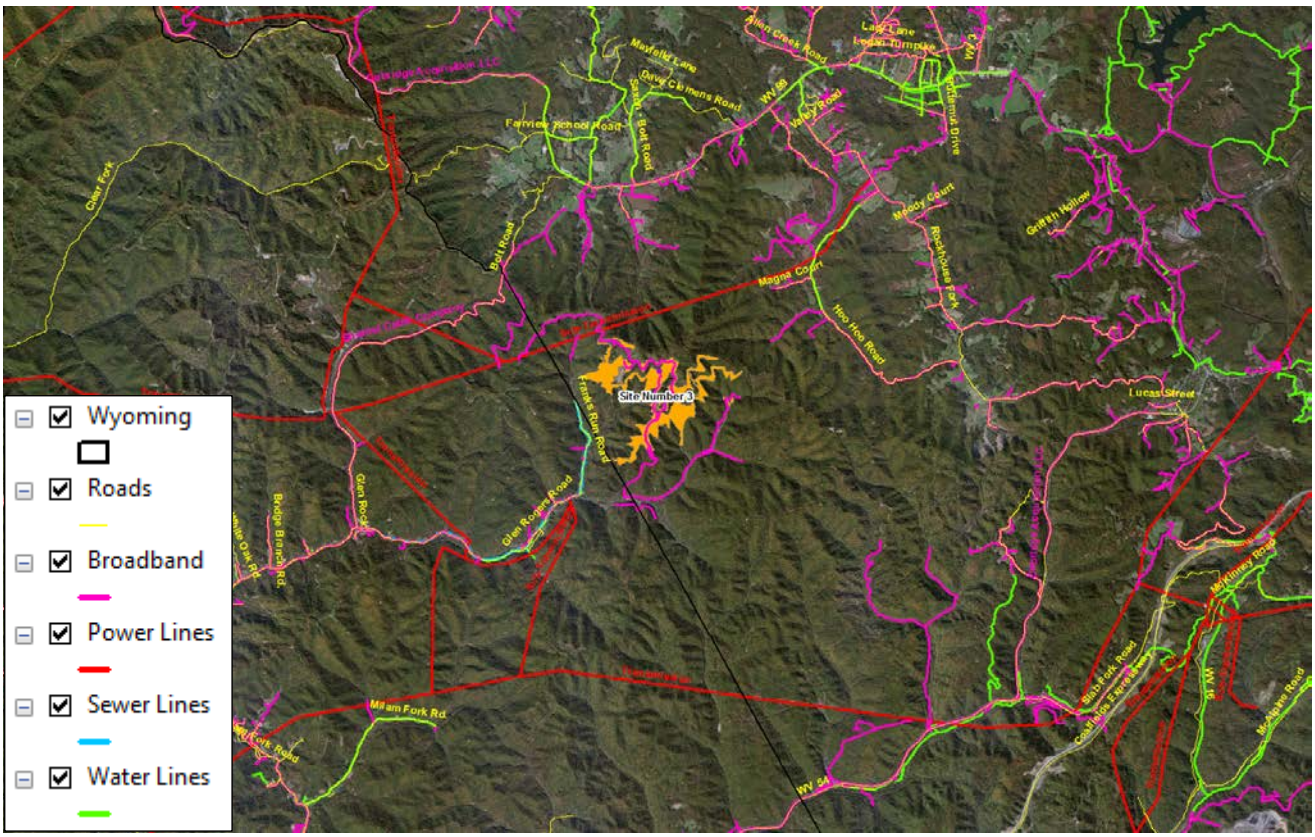
Site's General Info

Permittee	Rhino Eastern Llc
Facility Name	Skinned Poplar Strip
Permit ID	S401396
Issue Date	11/8/1996
Expiration Date	11/8/2001
Current Acres	278.62
Lat	37° 44' 06.0000"
Long	81° 23' 57.0000"
Nearest Post Office	Glen Rogers

Site Number	**16**
Suitability Ranking	**3**
Total Score	**617.25**

Distance Analysis Results

Existing Highway	10.18
Proposed Highway	16.22
Intermodal Terminal Facilities	63.66
Interstate	53.29
National Waterway Network Ports	109.83
Sewer Treatment Facilities	0.89
Solid Waste Treatment Facilities	4.72
Tri-state Airport	117.41
Yeager Airport	74.16
Broadband	0.04
Gas Pipes	0.78
National Waterway Network	22.28
Power Lines	0.57
Oil Pipes	0.26
Railroads	2.07
Sewer Lines	0.89
Water Lines	0.92



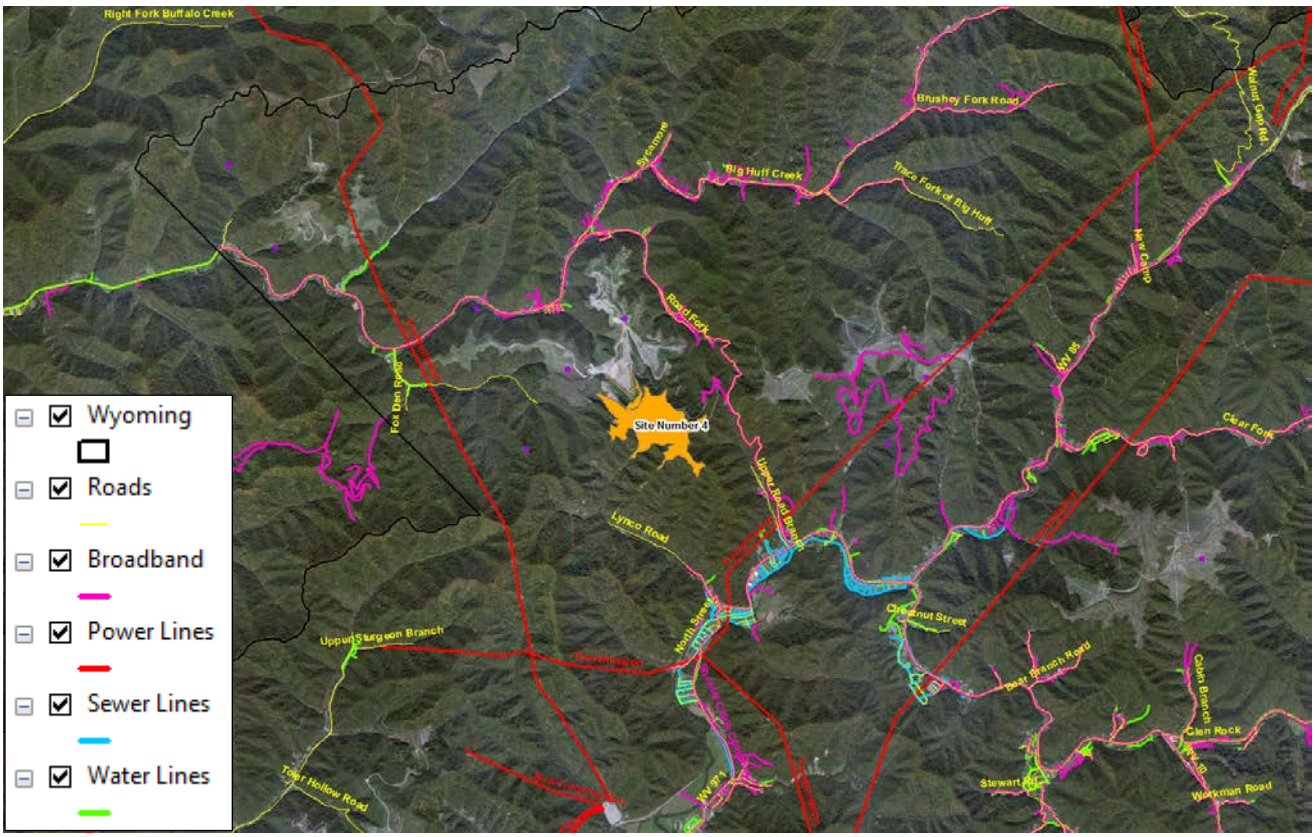
Site's General Info

Permittee	Paynter Branch Mining Inc
Facility Name	A. Z. Litz Surface Mine
Permit ID	S401298
Issue Date	7/30/1999
Expiration Date	7/30/2014
Current Acres	262.57
Lat	37° 43' 55.0000"
Long	81° 42' 10.0000"
Nearest Post Office	Lynco

Site Number	**12**
Suitability Ranking	**4**
Total Score	**615.75**

Distance Analysis Results

Existing Highway	0.10
Proposed Highway	22.95
Intermodal Terminal Facilities	66.84
Interstate	65.85
National Waterway Network Ports	88.98
Sewer Treatment Facilities	3.64
Solid Waste Treatment Facilities	2.66
Tri-state Airport	95.95
Yeager Airport	77.34
Broadband	0.08
Gas Pipes	2.66
National Waterway Network	17.38
Power Lines	0.76
Oil Pipes	0.37
Railroads	2.45
Sewer Lines	3.64
Water Lines	0.10



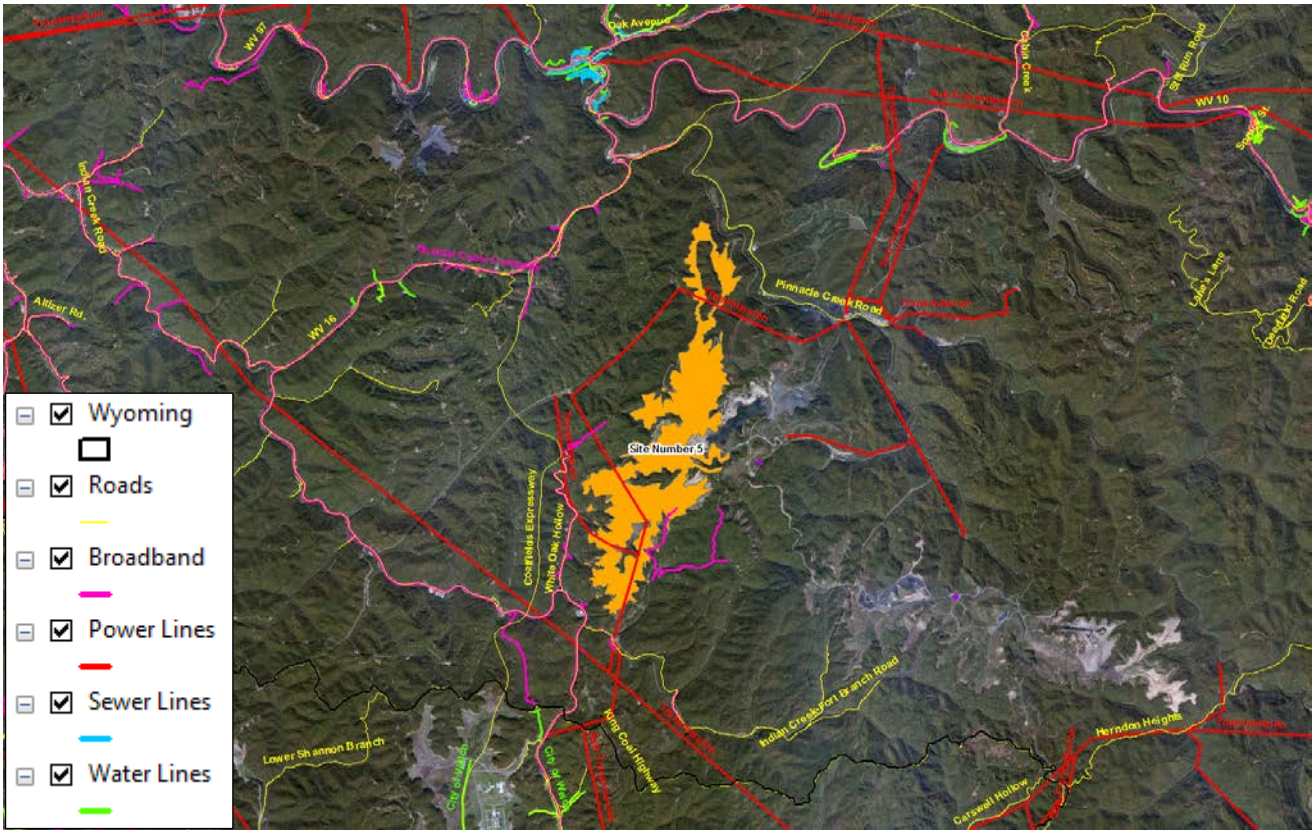
Site's General Info

Permittee	Bluestone Coal Corporation
Facility Name	Sewell Seam Surface Mine No. 2
Permit ID	S400900
Issue Date	5/23/2001
Expiration Date	5/23/2016
Current Acres	915
Lat	37° 31' 27.0000"
Long	81° 30' 22.0000"
Nearest Post Office	New Richmond

Site Number	**3**
Suitability Ranking	**5**
Total Score	**575**

Distance Analysis Results

Existing Highway	4.69
Proposed Highway	3.95
Intermodal Terminal Facilities	77.56
Interstate	68.12
National Waterway Network Ports	115.59
Sewer Treatment Facilities	3.31
Solid Waste Treatment Facilities	5.09
Tri-state Airport	122.58
Yeager Airport	88.07
Broadband	0.63
Gas Pipes	1.65
National Waterway Network	7.12
Power Lines	0.36
Oil Pipes	1.68
Railroads	1.59
Sewer Lines	3.31
Water Lines	2.91



I. Introduction

Senate Bill (SB) 603, passed in the 2001 Legislative Session, mandates the development of a Land Use Master Plan (LUMP) by counties with surface mining operations. The creation of a LUMP would facilitate the development of economic or community assets, secure developable land and infrastructure, and ensure that post-mining land use proposed in any reclamation plan is in compliance with the specified land use in the approved LUMP. In order to promote acceptable principles of smart growth within the desired community it has become evident that a sustainable land use plan is needed to determine development needs within a community. The detailed document addresses the physical development needs of properties within the coalfield counties and provides guidelines, strategies, and a framework for future decisions relating to land use and projected community needs.

The 1977 Surface Mining Control and Reclamation Act established a program for the regulation of surface mining activities and the reclamation of coal-mined lands. The Act requires that coal operators minimize the disturbance and adverse impact on the environment and community in addition to restoring the mined property to its approximate original contour. Special provisions are granted for operators who offer development plans for post-mining land use, in which the coal operators (private sector) make capital investments towards land development that would benefit the community (public sector) affected by the mining operations. This unique opportunity, also known as Public-Private Partnership (P3), has far-reaching consequences on those communities with coal mining operations. The operators utilize the LUMP, created by the county officials with post-mine land use in mind, to gain insight into the land and infrastructure needs of the local community and then materialize the development opportunities described in the LUMP. The LUMP leverages private investment to facilitate public development, which is critical to the sustainability of counties and communities. Community sustainability requires a transition from poorly managed land to land-use planning practices that create and maintain efficient infrastructure, ensure close-knit neighborhoods and sense of community, and preserve our natural systems.

RTI, a nationally recognized center of excellence for rural transportation research, was established through the Transportation Equity Act for the 21st Century passed by Congress in 1998 and is funded through a grant from the Research and Innovative Technology Administration (RITA) of the US Department of Transportation. As a University Transportation Center, RTI has cultivated relationships with private industry and public agencies to leverage resources, technology and strategic thinking to improve mobility and to stimulate economic development. RTI has taken the lead in conducting site-specific research, supporting multimodal planning and analysis to improve mobility and global connectivity for rural regions. The Office of Coalfield Community Development (OCCD) was created by the 1999 Legislative Session to assist communities affected by surface mining activity throughout the State. With the passage of SB 603 in 2001, the responsibilities of the OCCD changed to include working with local economic development agencies to develop land use master plans and include the

recommendations of local economic redevelopment authorities in the reclamation plans of surface mine permits. The OCCD established criteria to consider development of these sites, provided for certain land uses as post-mining land uses and stipulated that master plans must comport to environmental reclamation requirements. The office allows existing and future surface mining permits to include master plan criteria and reclamation standards.

This plan provides information and analysis specifically for Wyoming County. Wyoming County's economy is dominated by government services, but the general revival in the coal industry has led to support services becoming a major player in the economy. The resulting combination has led to a constant increase in total wages. However, this has not translated to a complete revival in the county, as the population continues to decrease, age, and lack varied job opportunities. This plan will put focus on these issues, encouraging an analysis of the range of options available to policymakers.

II. Planning Area

Wyoming County was formed in 1850, thirteen years before West Virginia became a state. It was formed from parts of Logan County. As with many of the coalfield counties, the boom from natural resource extraction brought people and money to the area, but through the Great Depression and the withdrawal of many natural resource industries, Wyoming began to slip. Some indications show a recovery in the natural resources sector, but most signs show a county in distress. Wyoming County can use its post mine sites to generate an economic and social recovery.[1]

[1] Kirk, Brandon Ray, "Wyoming County," *The West Virginia Encyclopedia,* Accessed June 5, 2013, www.wvencyclopedia.org/articles/1381.

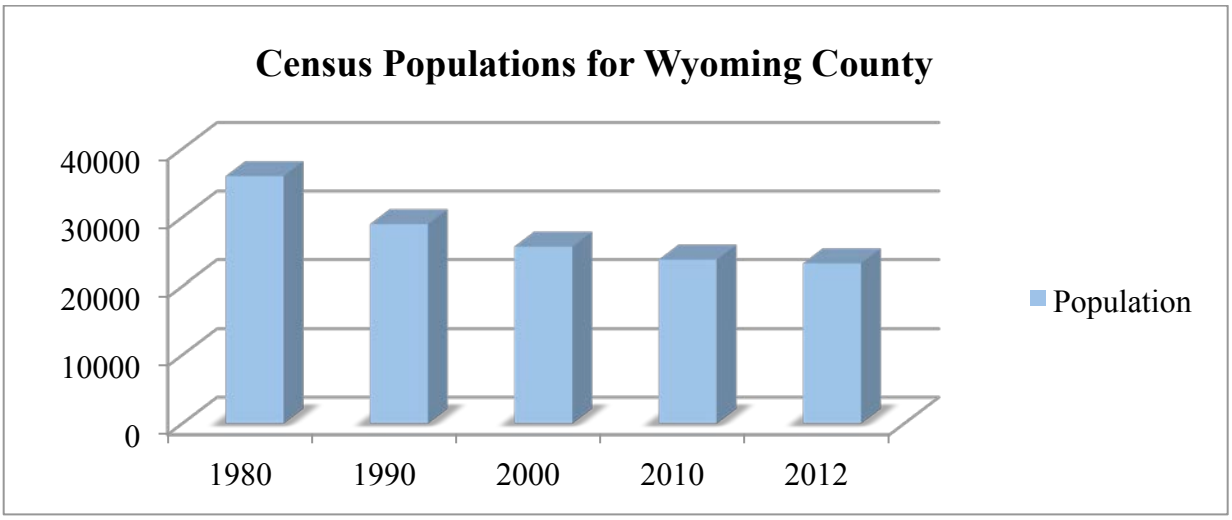
III. Existing Conditions

This information will provide a background understanding of the demographic trends in the county. This base information is meant to provide overall detail on Wyoming County's status as it stands. Part IV will deal with possible future site development information, to be considered with the demographic data to target strategies for investment.

Population

The population of Wyoming County in 2011 was 23,796 according to the 2011 American Community Survey (ACS) 5-year estimates, ranking it 30th in county population among the 55 counties in West Virginia.[2] The decennial censuses show that Wyoming County had a dramatic drop in population between 1980 and 1990, and has continued its decrease in subsequent decades. Population decrease is a signal of a struggling economy and a struggling county. Efforts should be made to attract people and businesses to the area.

Figure 1



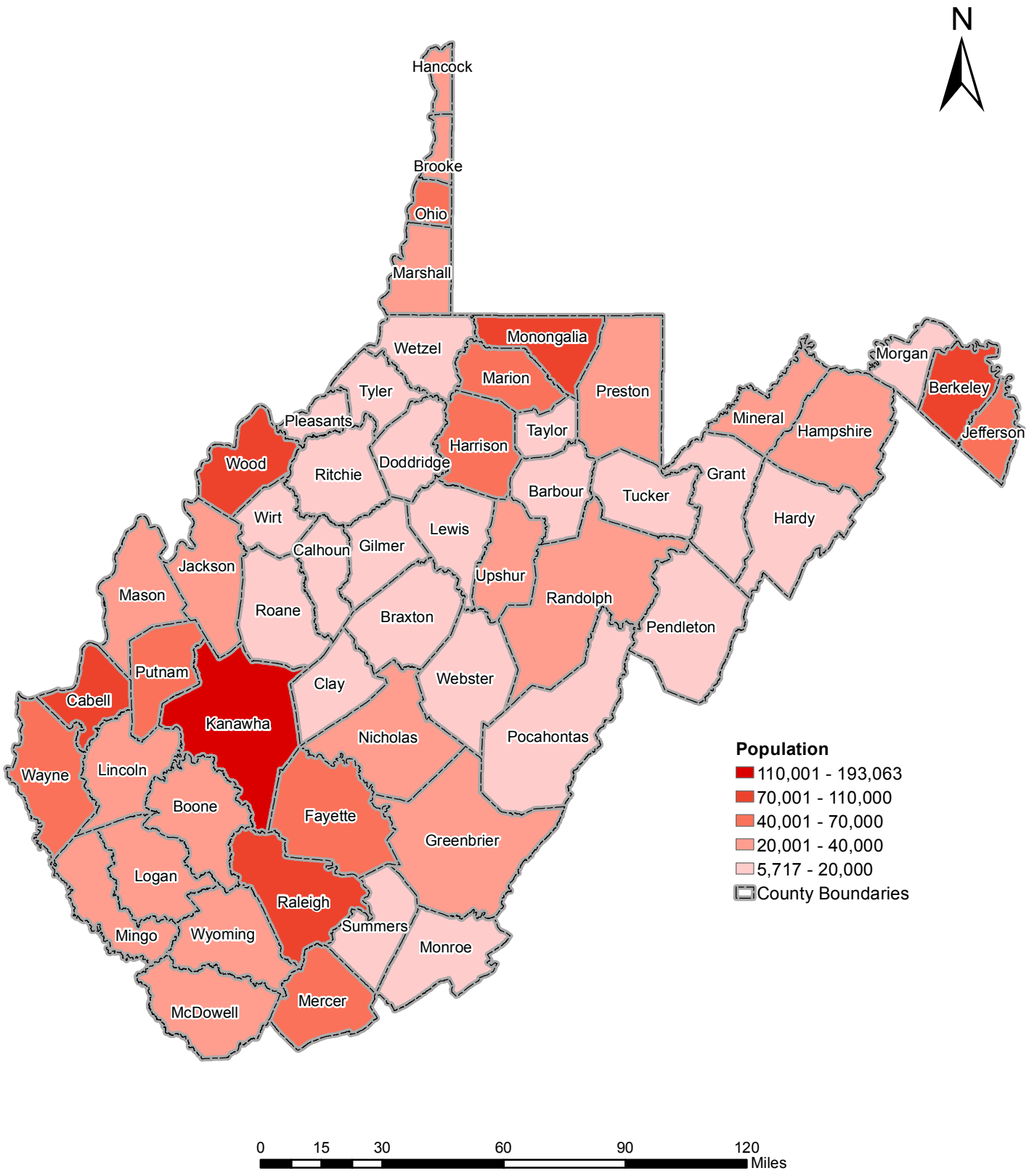
Source: Stats Indiana, USA Counties in Profile

Map 1 illustrates the Wyoming County population compared to West Virginia overall. Wyoming is at the lower end of the spectrum but is not as rural as many other counties in central and eastern West Virginia.

[2] United States Census Bureau, "2011 American Community Survey 5-year Estimates," Accessed April 20, 2013, www.factfinder2.census.gov

Demographic

Population



Source: United States Census Bureau 2011

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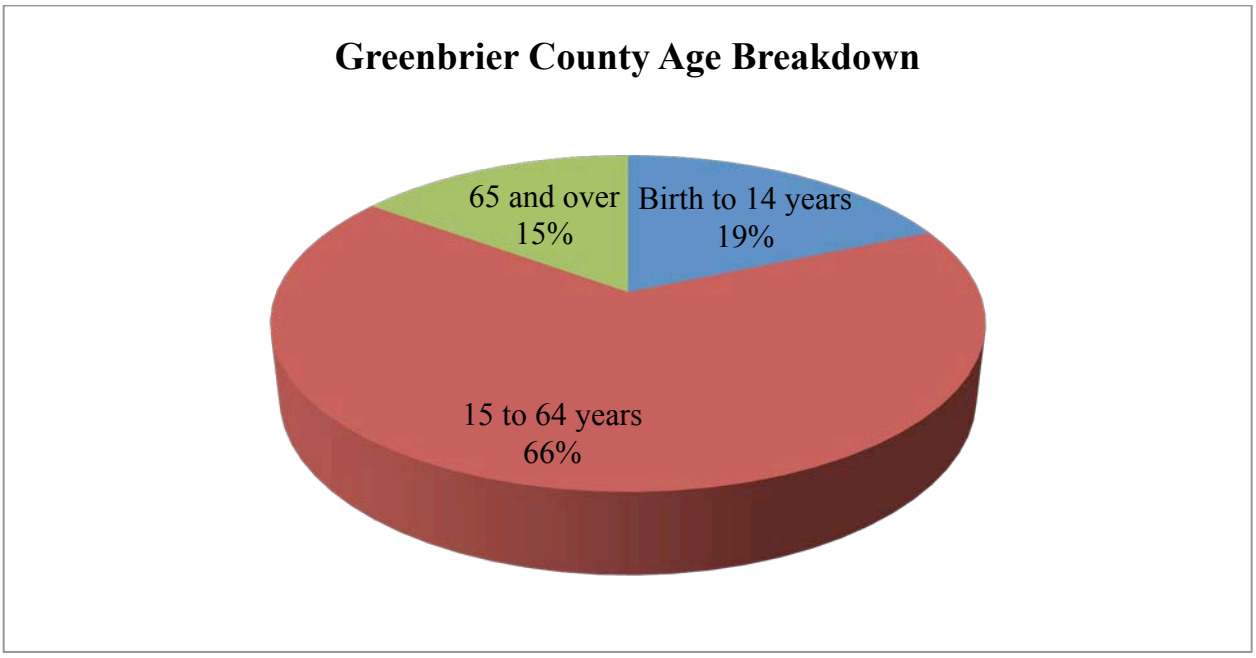
According to the ACS, 22 percent of Wyoming County residents are 60 years of age and over, while almost 16 percent are between 5 and 17 years of age and almost 6 percent are below the age of 5. As a result, approximately 5,000 people are of retirement age. The median age in Wyoming is 42.3, which is the same as the West Virginian median age (Map 2). The majority of the population is of working age, as denoted in Figure 2.

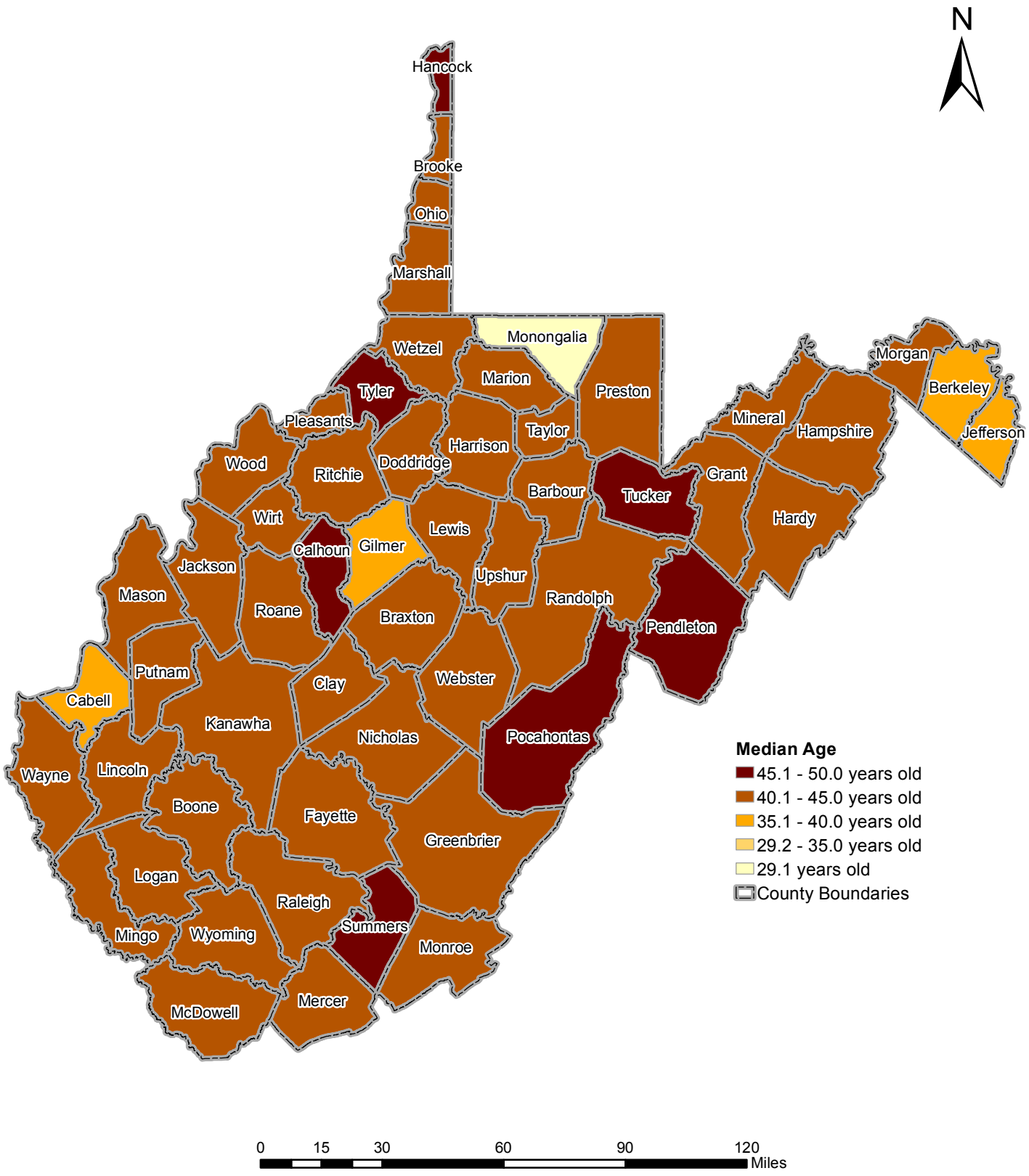
Figure 2



Source: 2011 American Community Survey 5-Year Estimate Calculation

Demographic

Median Age



Source: United States Census Bureau 2011

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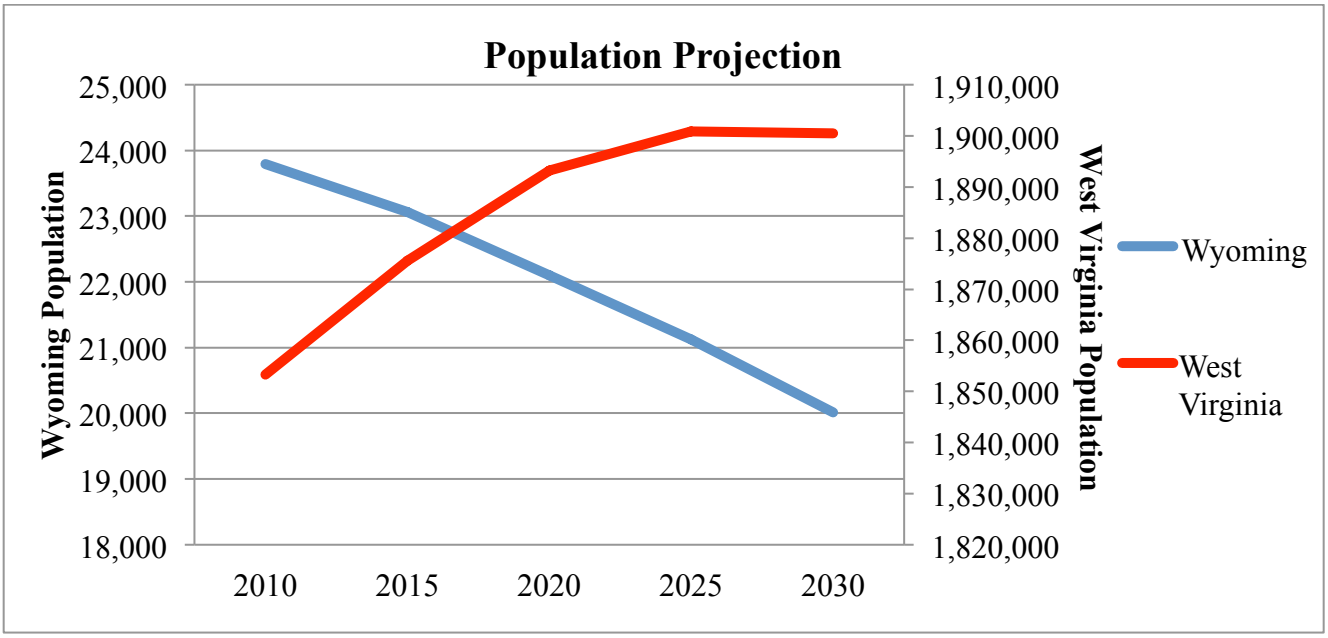
The Bureau of Business and Economic Research at West Virginia University projects a 6 percent decrease in the Wyoming County population between 2010 and 2030, which is significantly different from the projected growth of West Virginia.[3] The model for the projection is based on past population patterns and statistics, and should not be taken as permanent. The projected decrease may be derived from the constant decreasing of the past population of Wyoming County, indicating unhappy residents seeking opportunities elsewhere.

Figure 3



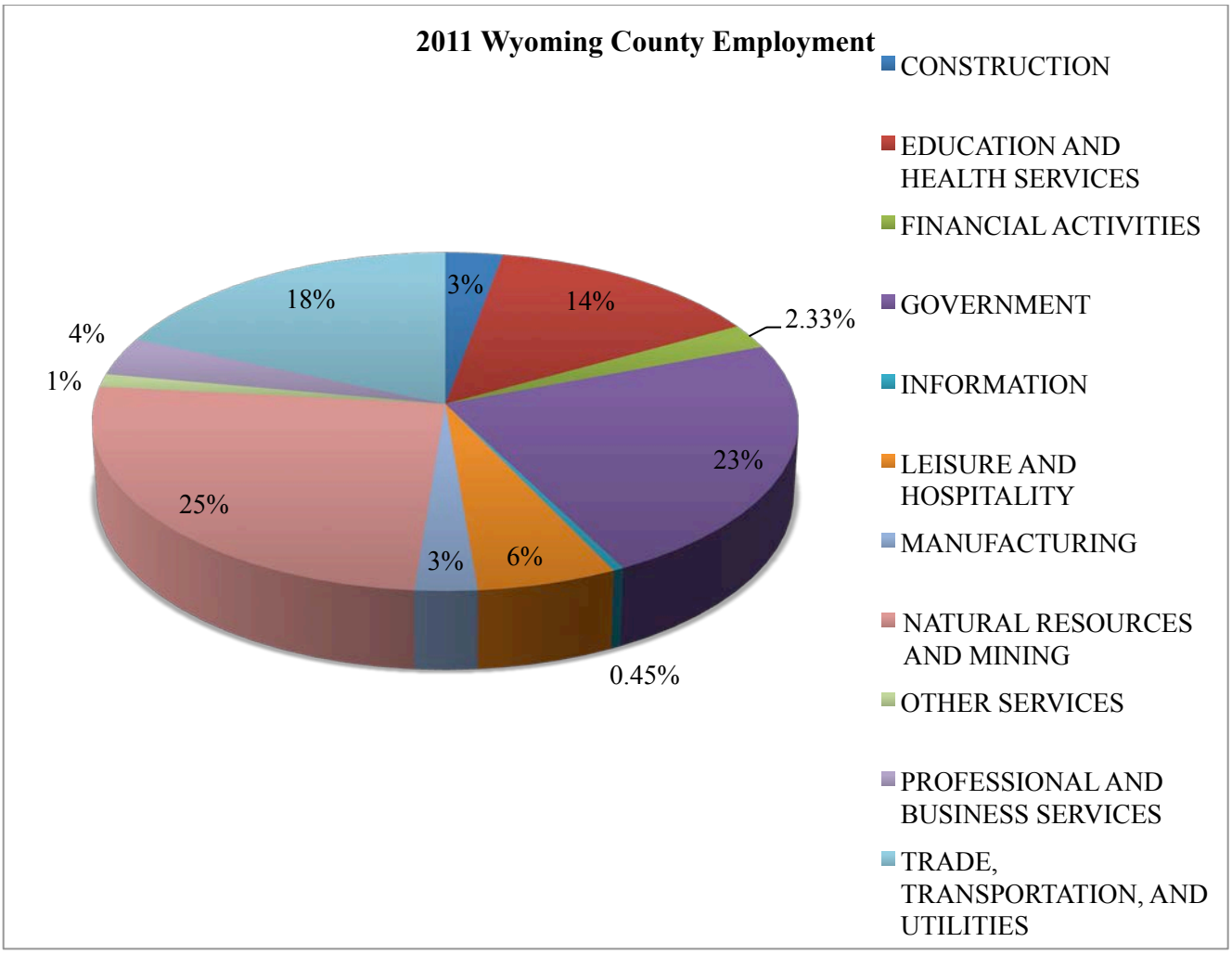
Source: WVU Bureau of Business and Economic Research

Employment

Workforce WV has a complete dataset on employment numbers and wages. The total number of employed in 2011 was 5,141. Approximately 25 percent of wage earners in Wyoming County worked in natural resources and mining while 23 percent worked in government. Wyoming County government employment is consistent with West Virginia employment patterns as a whole, and natural resources and mining is also fairly high. Though this diversification shields Wyoming slightly from adverse economic forces, it does little to insure growth and prosperity.

[3] Christiadi. "Population Projection for West Virginia Counties." Bureau of Business and Economic Research, College of Business and Economics, West Virginia University, Morgantown, WV (August 2011).

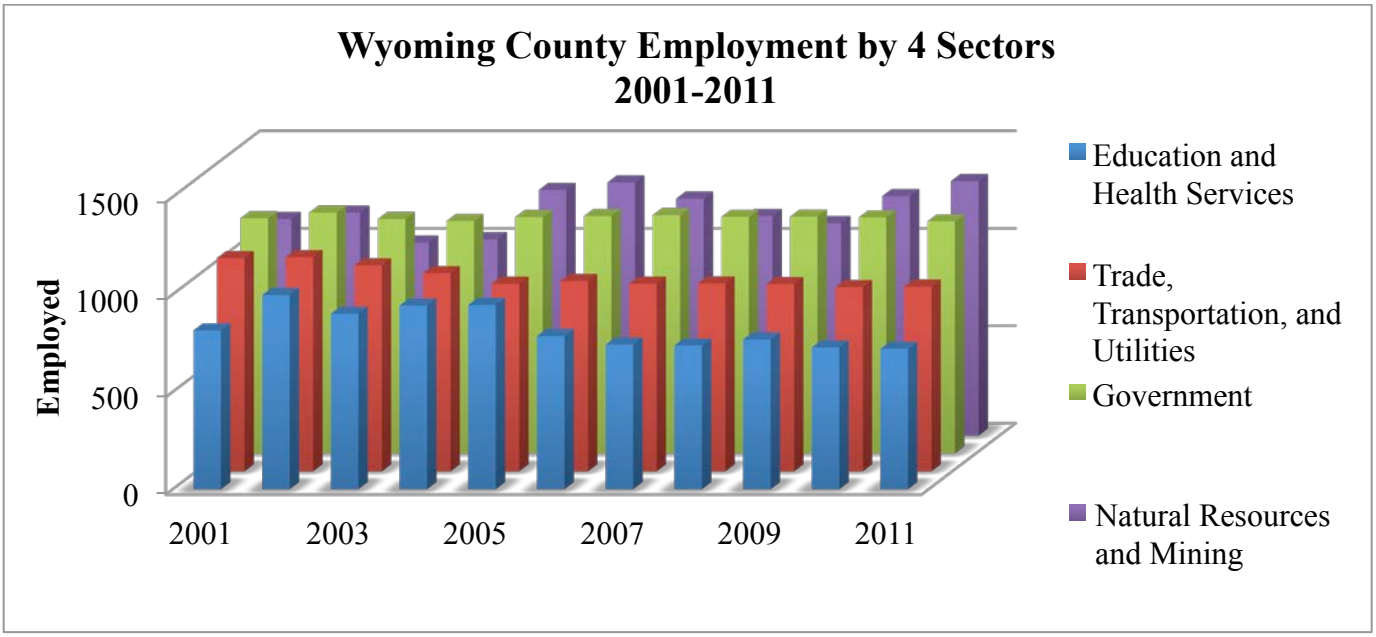
Figure 4



Source: Workforce WV

Four sectors have been the major contributors to employment throughout the past decade: Government; Education and Healthcare; Trade, Transportation and Utilities; and Natural Resources and Mining. Government was the highest employer, until 2006 when Natural Resource activity in the county skyrocketed. They have switched positions several times since Trade, Transportation, and Utilities saw an initial fall the first four years of the new millennium, but has stayed stable since, a surprising revelation considering this sector took a significant hit in other counties during the 2008 recession. Education and Health Services employment decreased in 2006, but has since remained fairly stable.

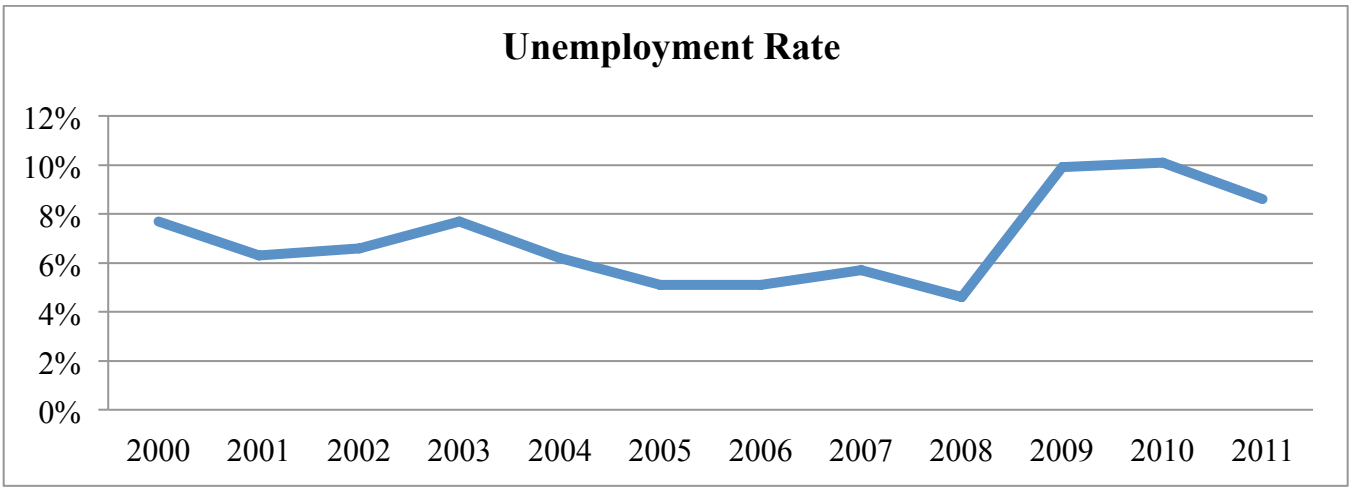
Figure 5



Source: Workforce WV

The civilian labor force in the county is one of the most interesting statistics when determining potential investors. As Map 3 shows, Wyoming's participation rate is at the bottom of the scale. This is a condition many coalfield counties face. Unemployment was decreasing until the recession in 2008 and natural resource sector cost cutting. (Figure 6). These employment figures reveal an economy in need of jobs and people willing to work those jobs. Map 4 provides 2011 unemployment rates for Wyoming compared with the rest of the State.

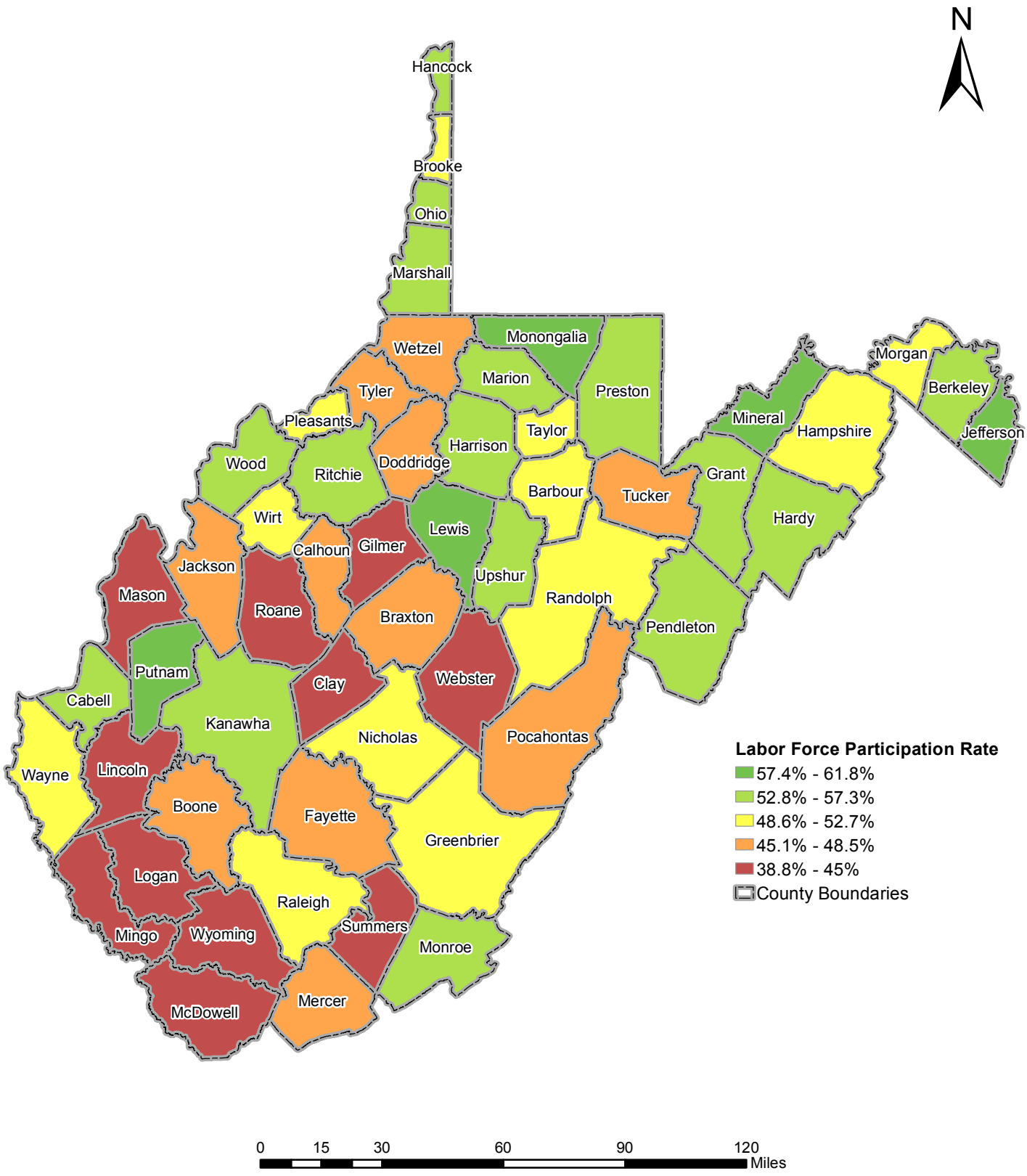
Figure 6



Source: Workforce WV

Demographic

Labor Force Participation Rate



Source: United States Census Bureau 2011

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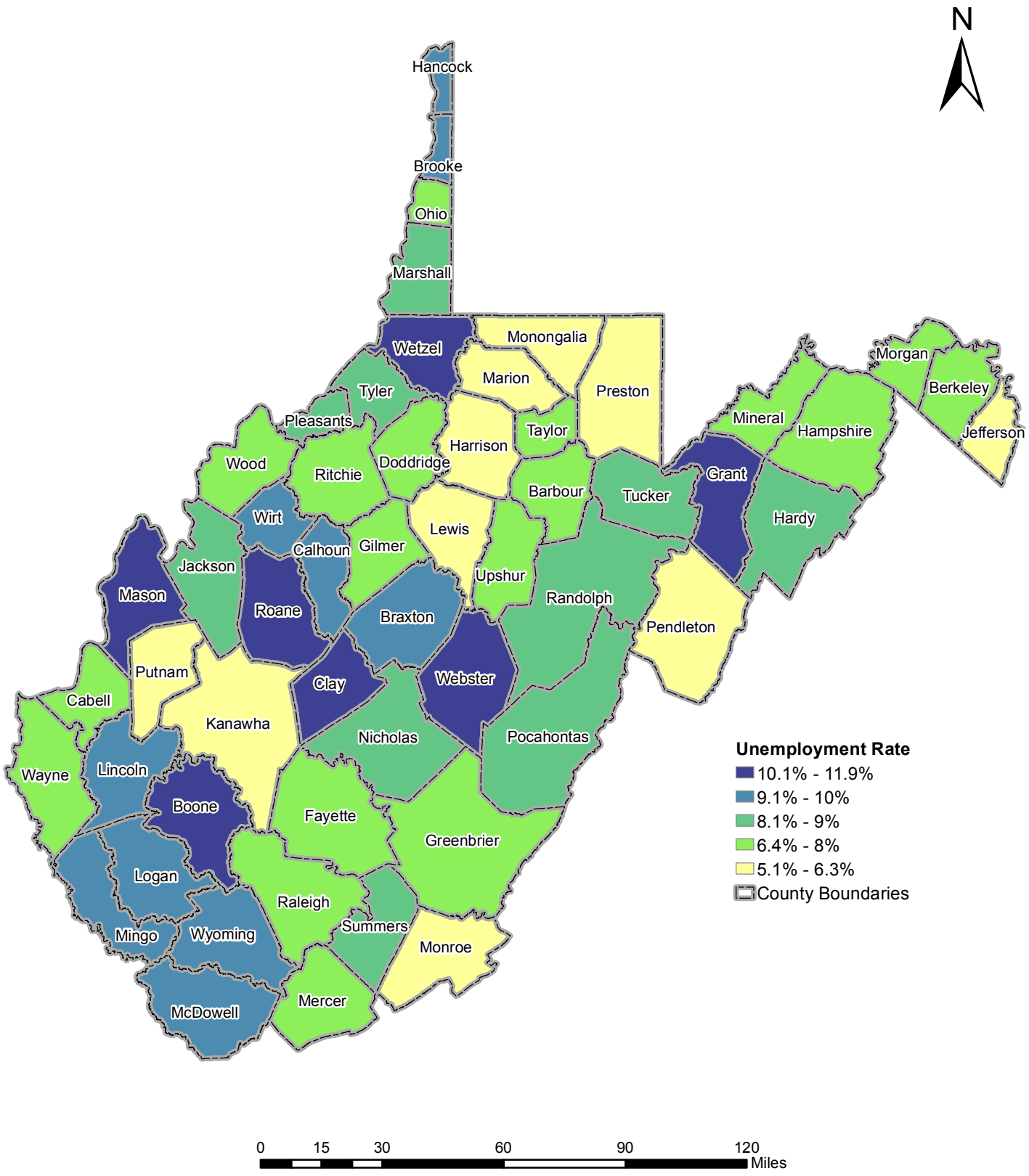
Demographic

Unemployment Rate



Source: United States Census Bureau 2011

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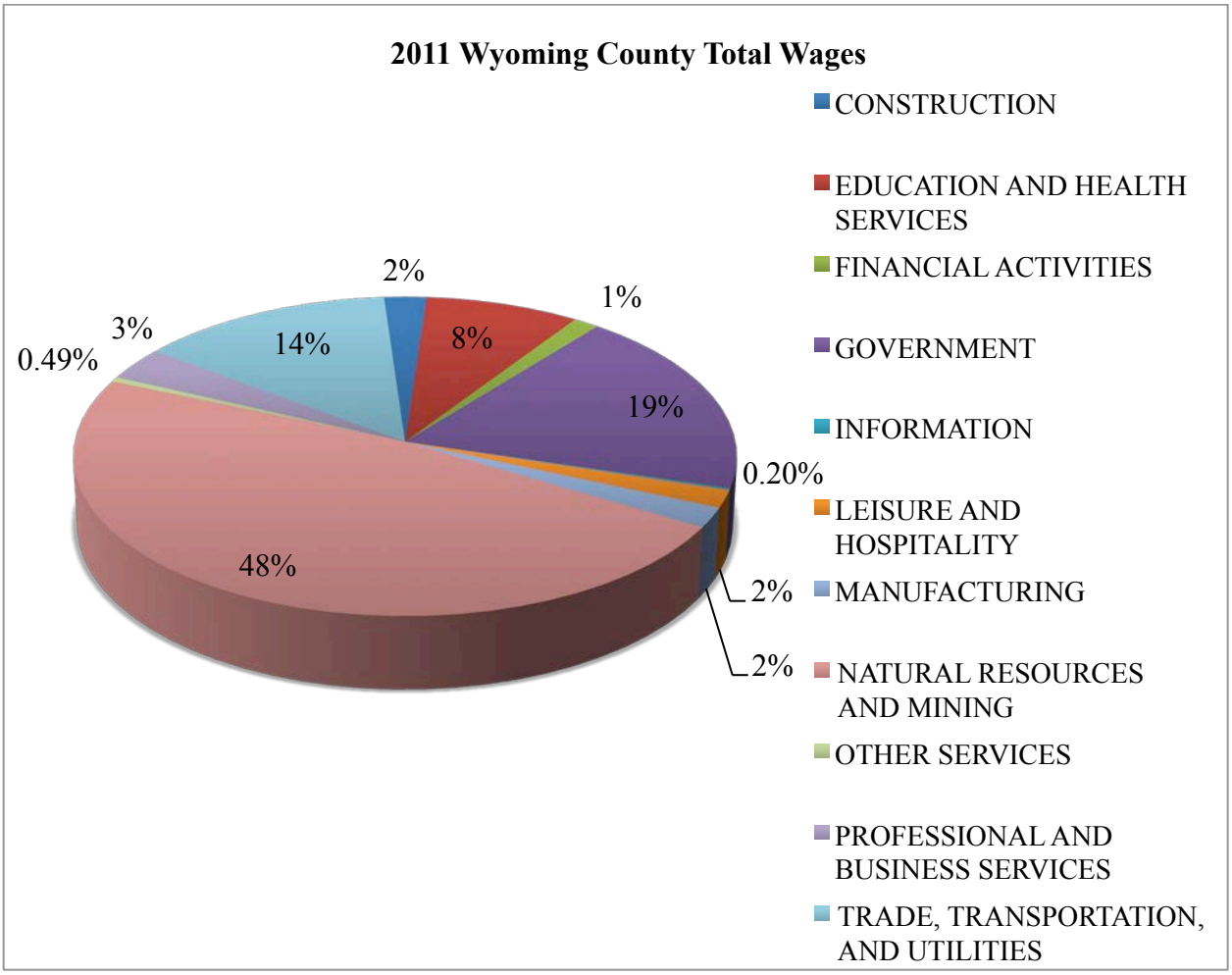
Wages and Income

Wyoming County's wage contributors are not widely varied. The highest, Natural Resources and Mining, makes up almost half of the total wage contributions, mainly from coal mining (Figure 7). Government is next because of the sheer size of the sector in the county, and the other sectors that are the top four employers are the next two wage contributors. Construction contributes the same as Trade, Transportation, and Utilities, but hires a far smaller proportion of workers.

Figure 7

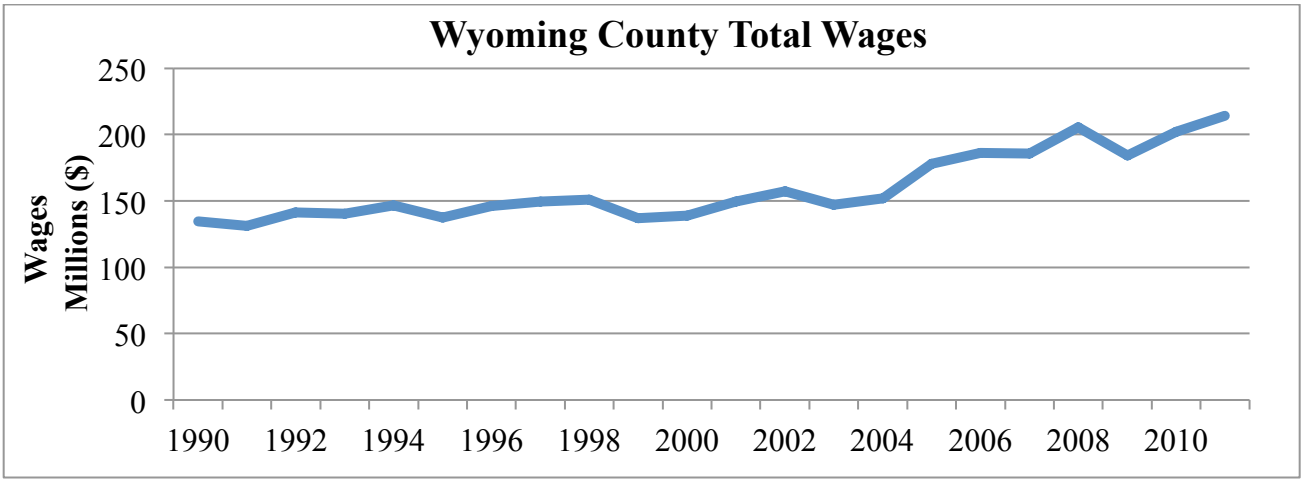


Source: Workforce WV

Historically, wages for Wyoming County have shown stagnation, with perhaps a slight rising tendency in 2004 as coal regained prominence and acceptance. Wyoming County has managed to grow its mining activity and keep many of its government jobs, allowing for wages to rise despite recession and cost-cutting factors that led to an increase in unemployment in other sectors. Figure 8 shows total wages for Wyoming County. Recession-endurable government and mining jobs make up so much of the Wyoming County portfolio that this outcome is mostly to

be expected. However, such a situation is not inherently sustainable, as it is based on two very finite resources: resources to mine, and political acceptance of government spending.

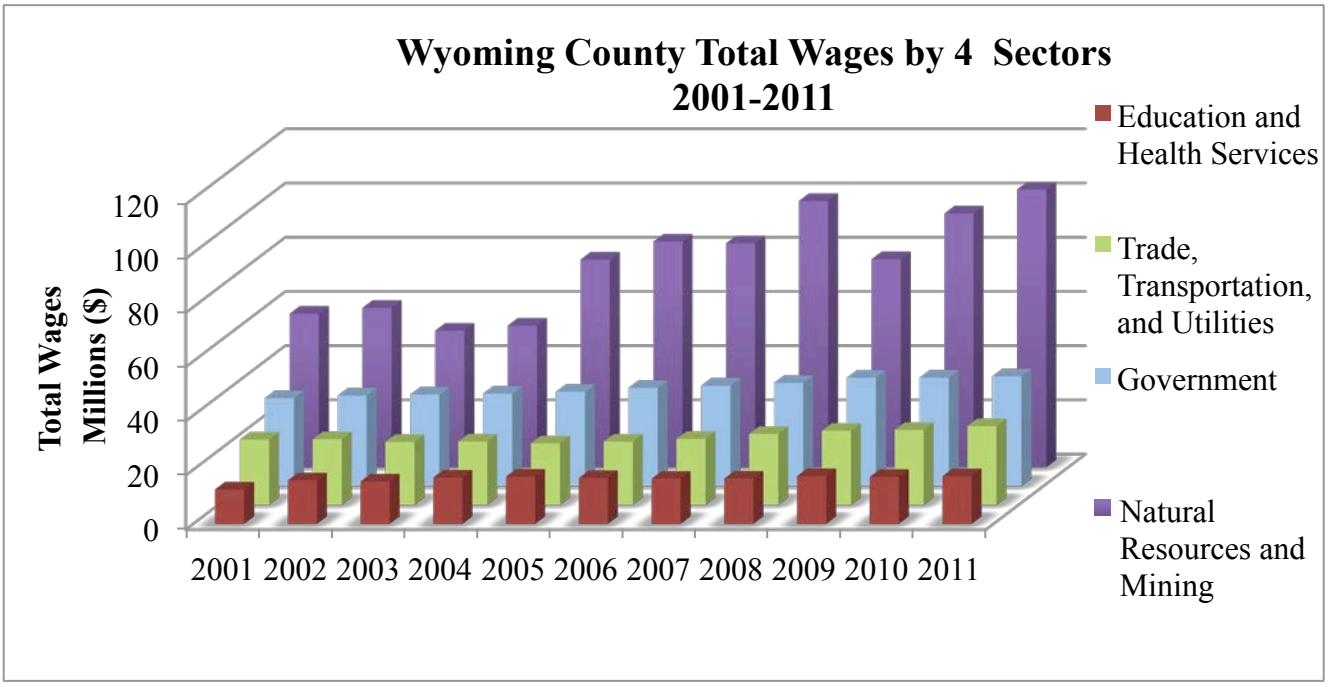
Figure 8



Source: Workforce WV

Figure 9 confirms the general trend in wages, also showcasing the dominance of the Natural Resources sector. Economic history is reflected in this sector's trend in particular: a revival of coal's fortunes between 2005 an 2006, and the decrease in wages during the recession, followed by an almost immediate recovery.

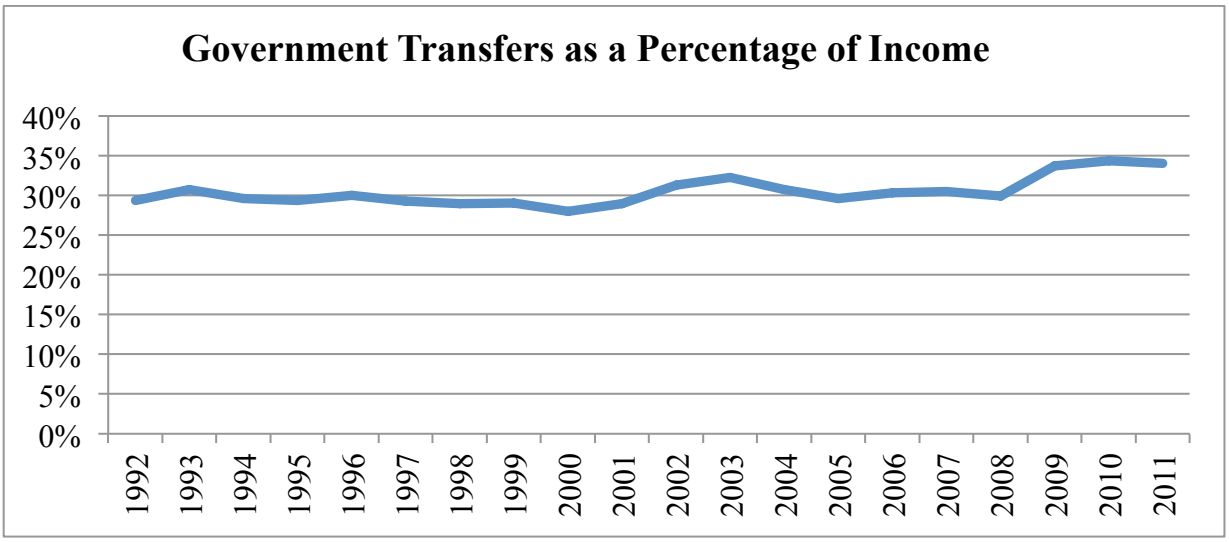
Figure 9



Source: Workforce WV

In most American counties, one would find that the majority of income for people stems from wages. In Wyoming County, however, an important distinction must be made between income and wages. Income is the total receipt of earnings resulting from any economic activity, while wages are derived from actual work in an employed setting. Therefore, dividends from stockholdings are considered income, but not wages. The distinction is necessary in the case of Wyoming County because in 2011, Wyoming County wages were $215 million for all industries.[4] Income for the County was larger (around $680 million). Though there are many components to income other than work earnings, 34 percent of total Wyoming County income is derived from government transfers.[5] Government transfers accounted for about 95 percent of total transfers to Wyoming County, dwarfing transfers from private institutions such as charities. Wyoming County has depended heavily on government transfers for the past 30 years, with said transfers consistently contributing about a third of county income. This does not count the wages for government workers.

Figure 10



Source: United States Bureau of Economic Analysis

The total personal income of Wyoming County is therefore made up of 34 percent government transfers and about 33 percent wages from work. Wyoming County has one of the highest ratios of government transfers, the 14th highest; however, multiple West Virginia counties surround Wyoming on the list. According to the BEA, per capita income was $29,106 for Wyoming

[4] "Employment and Wages – 2011, Wyoming County," Workforce WV, Accessed February 13, 2013, http://www.workforcewv.org/lmi/EW2011/ew11x059.htm

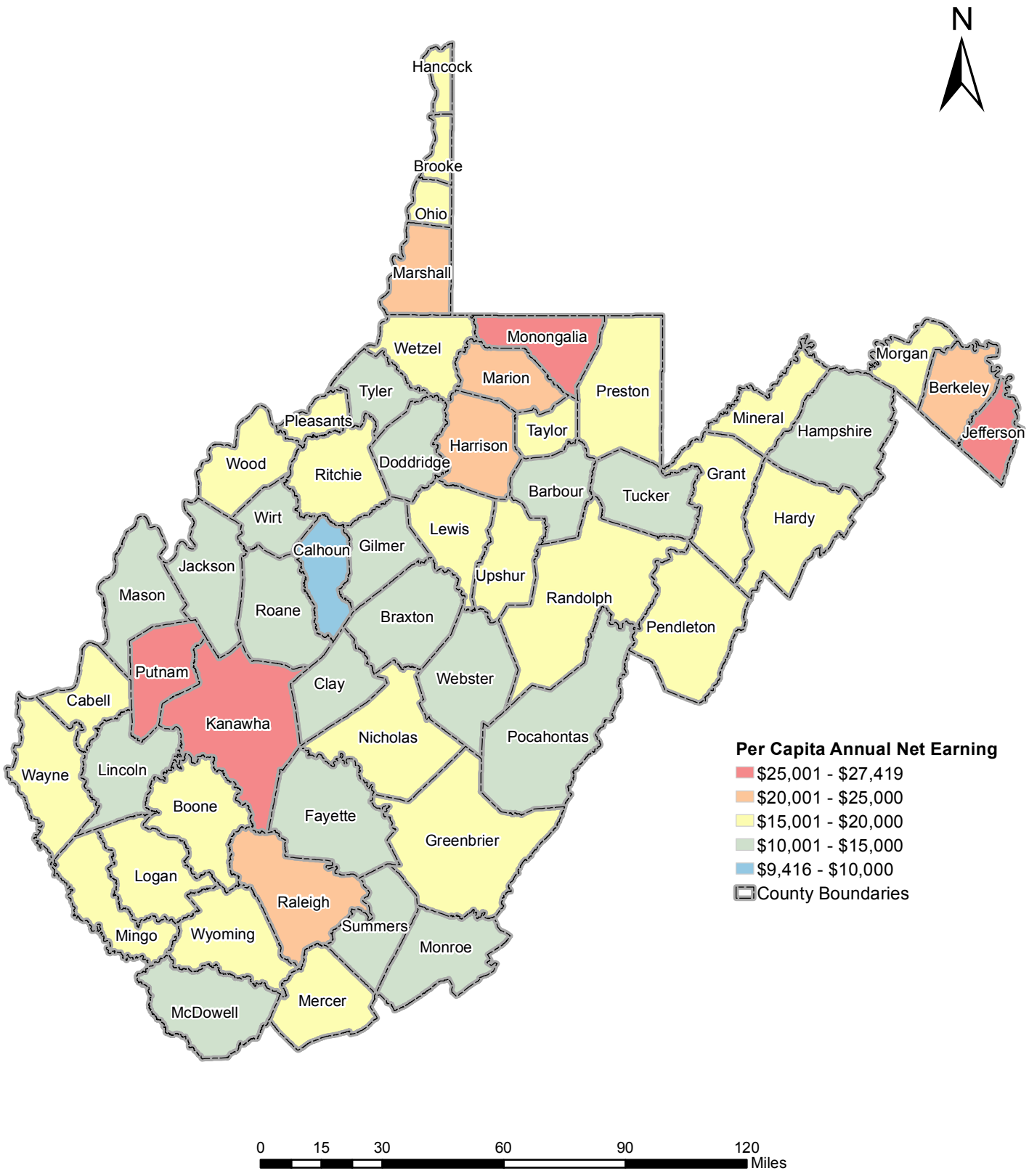
[5] "Tables CA 04 and CA 35 analysis," Bureau of Economic Analysis, Regional Economic Accounts, Local Area Person Income and Employment, Accessed February 13, 2013, http://www.bea.gov/regional/index.htm.

County. Earned income, or income from work, is displayed in Map 5, and Wyoming is ranked in the middle range in earned income in West Virginia.

Another measure of economic health is the number of establishments that do business in the area. Map 6 shows the number of establishments in each county in West Virginia. Wyoming County appears to be at the lowest end of the spectrum. The number of establishments may be misleading, as the natural resources sector and government services are characterized by a small number of firms.

Demographic

Per Capita Annual Net Earning



Source: United States Census Bureau 2011

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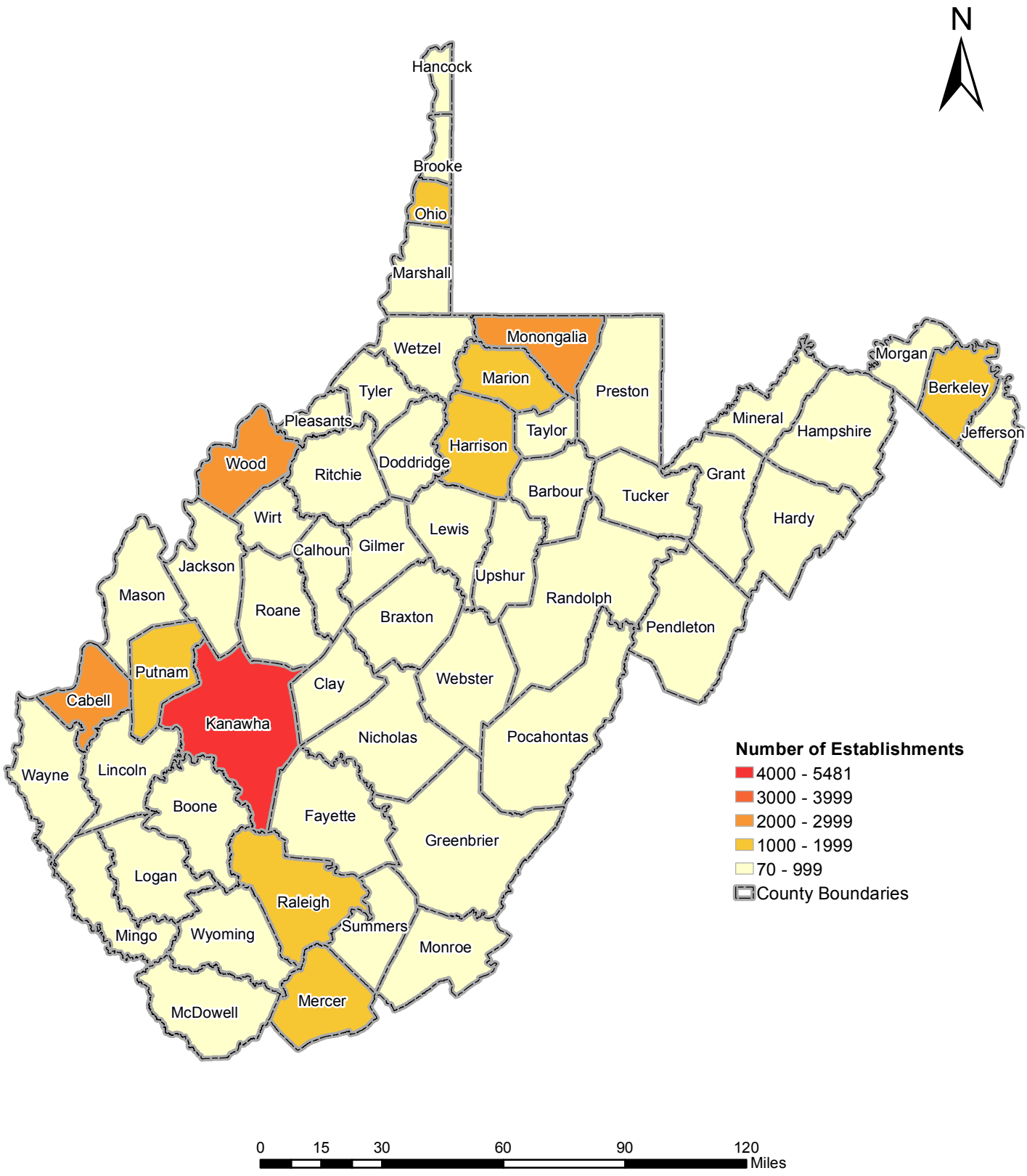
Demographic

Number of Establishments



Source: United States Census Bureau 2011

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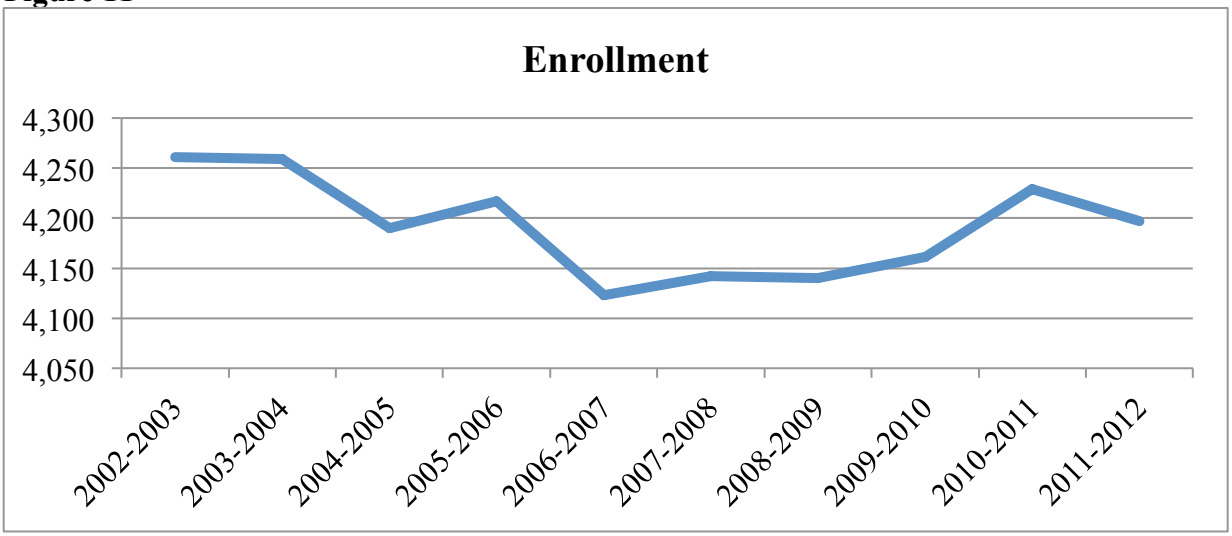
Education

Wyoming County has two high schools, seven middle schools, and eight elementary schools in the 2011-2012 school year.[6]

Wyoming County 2nd month school enrollment steadily declined until 2006, with some slight increases. It steadily rose until the 2010-2011 school year to the 2005-2006 level before declining again. Wyoming County 2nd month enrollment is at the low end of the spectrum but greater than most counties in central and eastern West Virginia (Map 7).

Figure 11

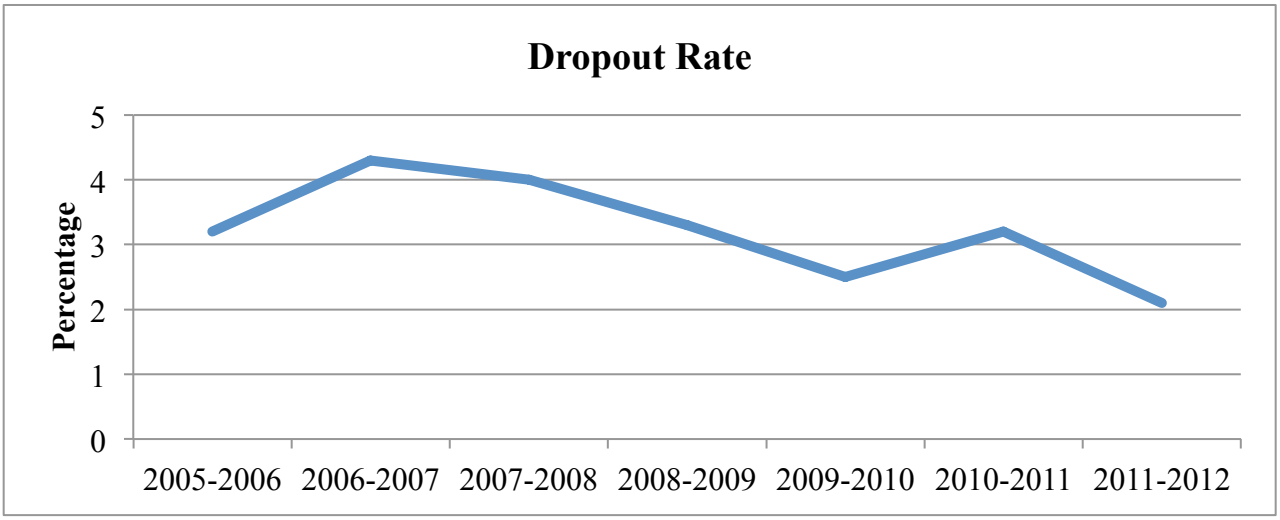


Source: WVEIS

The West Virginia Education Information System (WVEIS) also has dropout rates for the school years from 2005 to 2012. Dropout rates for grades 7-12, which showcase the most likely time for school dropouts, do not follow the total enrollment statistic, as total enrollment is computed with the grades below 7th grade as well. Dropout rates have significantly dropped since 2006, giving Wyoming County one of the lowest dropout rates in the state. This could be due to the increasing wages of the middle class natural resources and mining workers beginning to require more education for their children, but could also be due to the significant population drop leading to smaller proportions of students to be counted (Figure 12).

[6] "School Profiles," West Virginia Education Information System, West Virginia Department of Education, Accessed February 13, 2013, http://wveis.k12.wv.us/nclb/profiles/c_profile.cfm?cn=043.

Figure 12

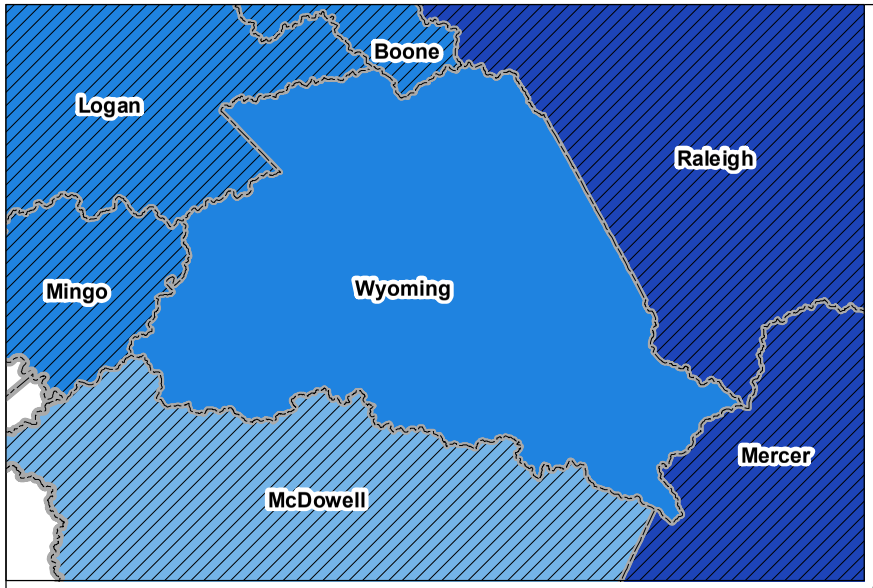


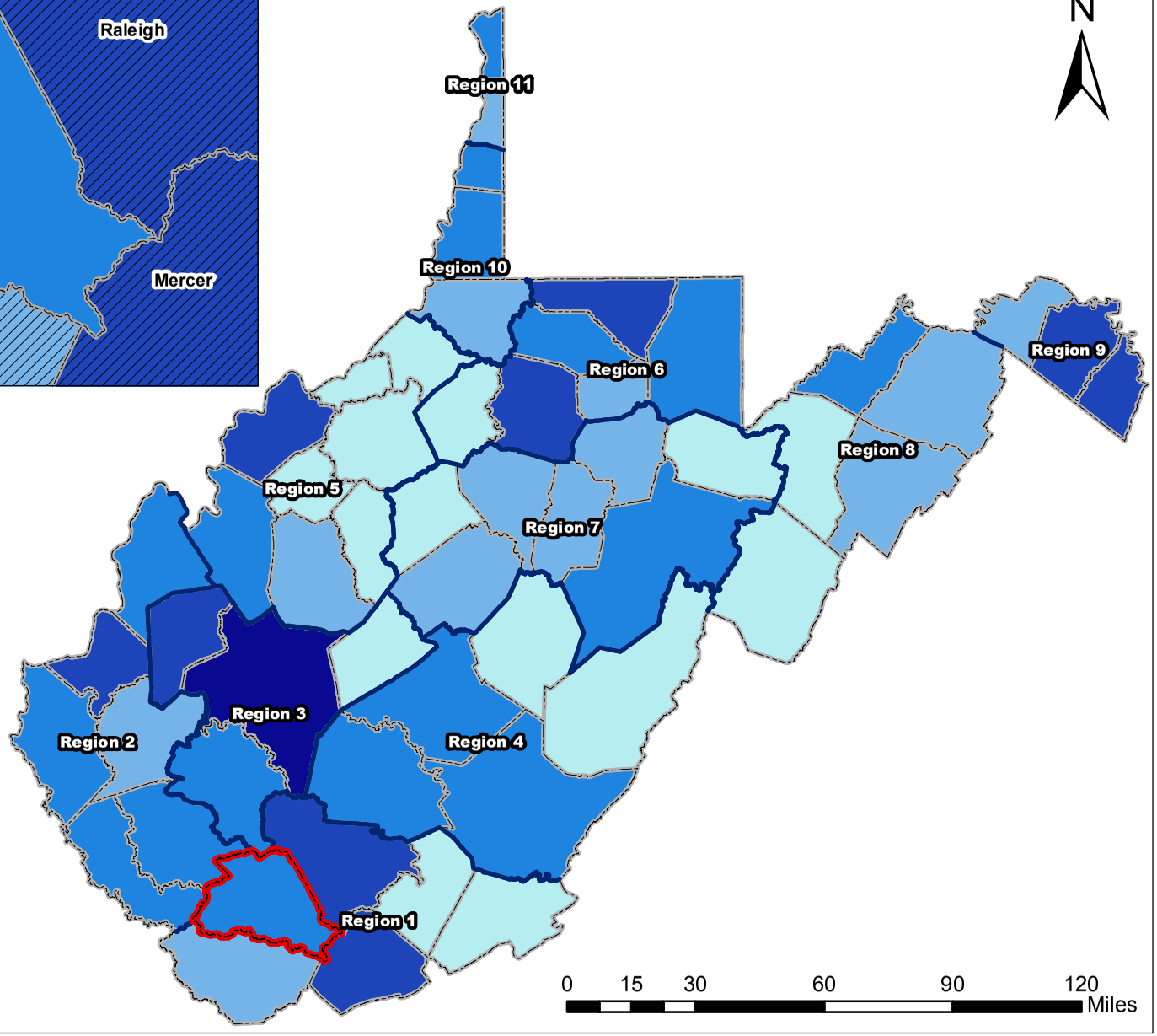
Source: WVEIS

Wyoming County currently has a low dropout rate. This is an achievement that not many counties in West Virginia share. Map 8 shows each county's dropout rate. Maps 9 and 10 show the total graduates and the graduation rate by county. The number of graduates in Wyoming County is similar to those of the other coalfield counties of West Virginia. The graduation rate is about average for the state. Wyoming County has several schools with large attendance; their locations are noted in Map 11. Not coincidentally, the major schools are located on the main roads in the county. The largest schools by attendance in the county are Westside High School and Wyoming County East High School. The significance of the locations of these schools is the access to major transportation routes. The schools appear to be built in order for parents and students to maintain steady access, which is important to discourage dropping out and to maintain attendance levels.

NCLB - Second Month Enrollment

Wyoming County





Source: West Virginia Department of Education 2012

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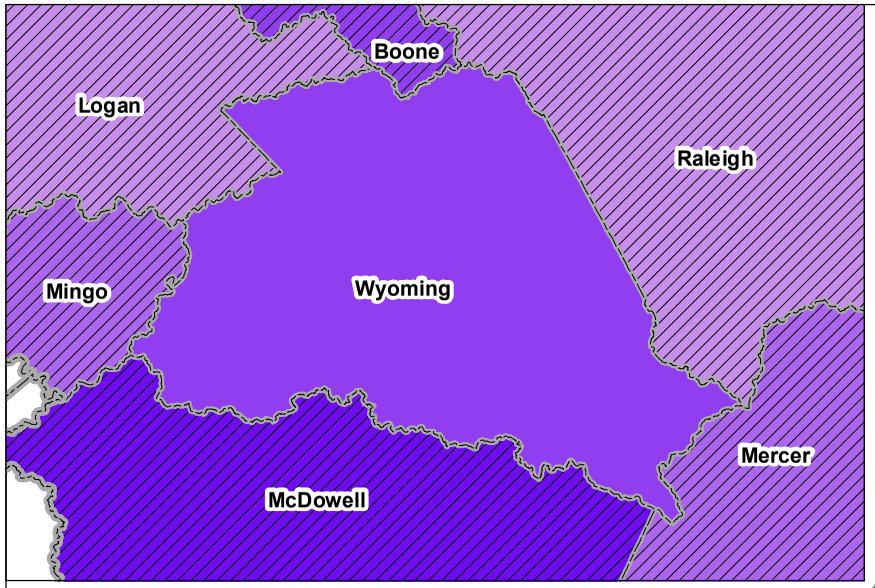
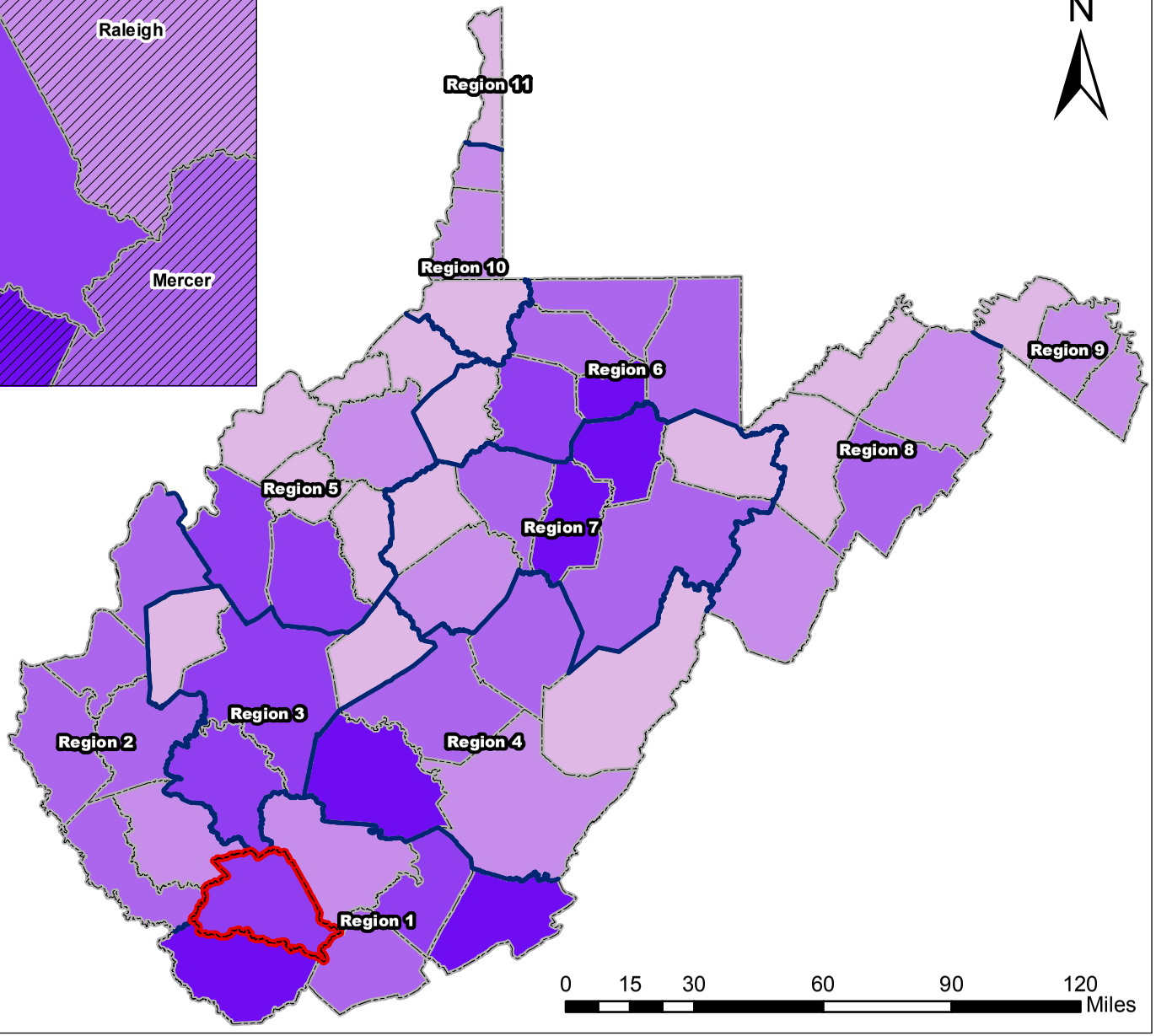
NCLB - Dropout Rate

Wyoming County





N

Planning Regions Line
0.40% - 1.70%
1.71% - 2.40%
2.41% - 3.10%
3.11% - 3.80%
3.81% - 4.70%
County Boundaries

0 15 30 60 90 120
Miles

Source: West Virginia Department of Education 2012

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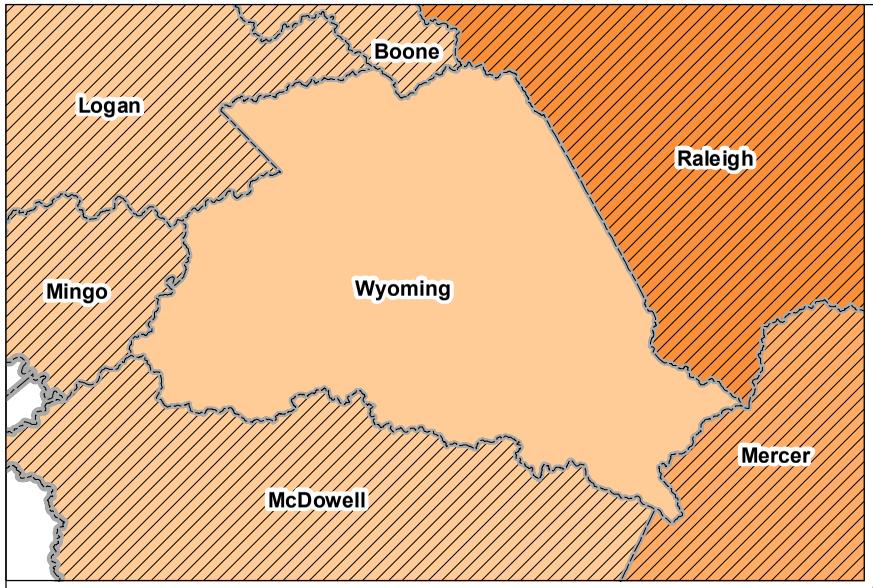
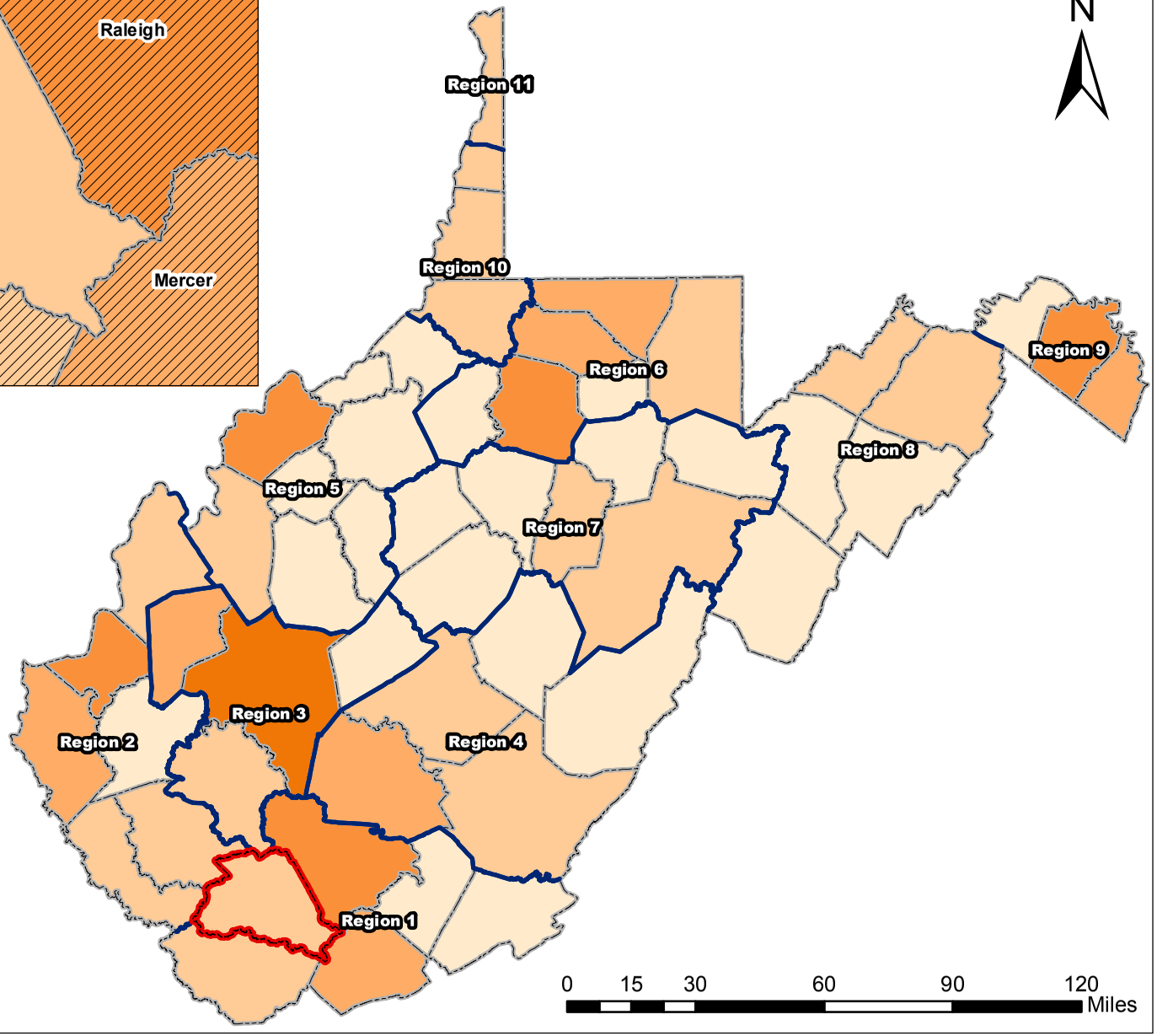
NCLB - Total Graduates

Wyoming County





Source: West Virginia Division of Natural Resources, Statewide Addressing and Mapping 2008

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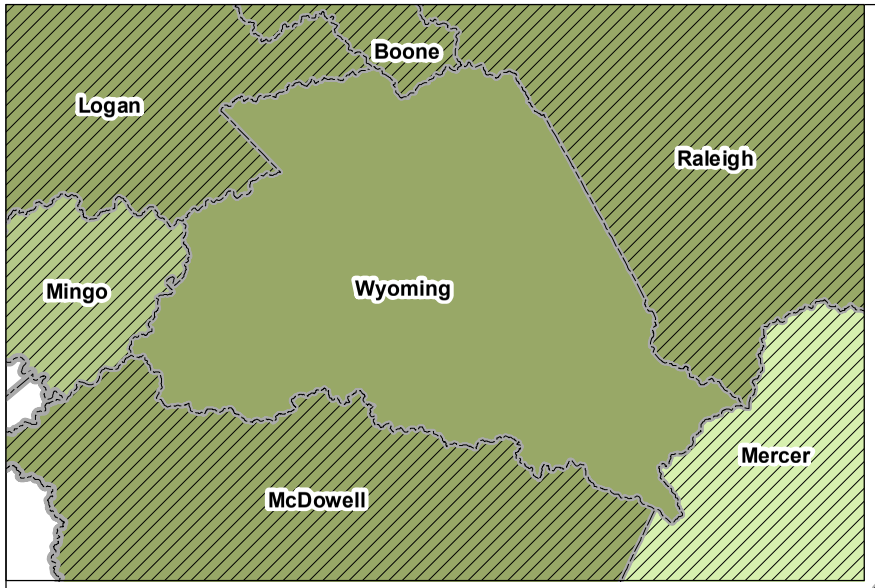
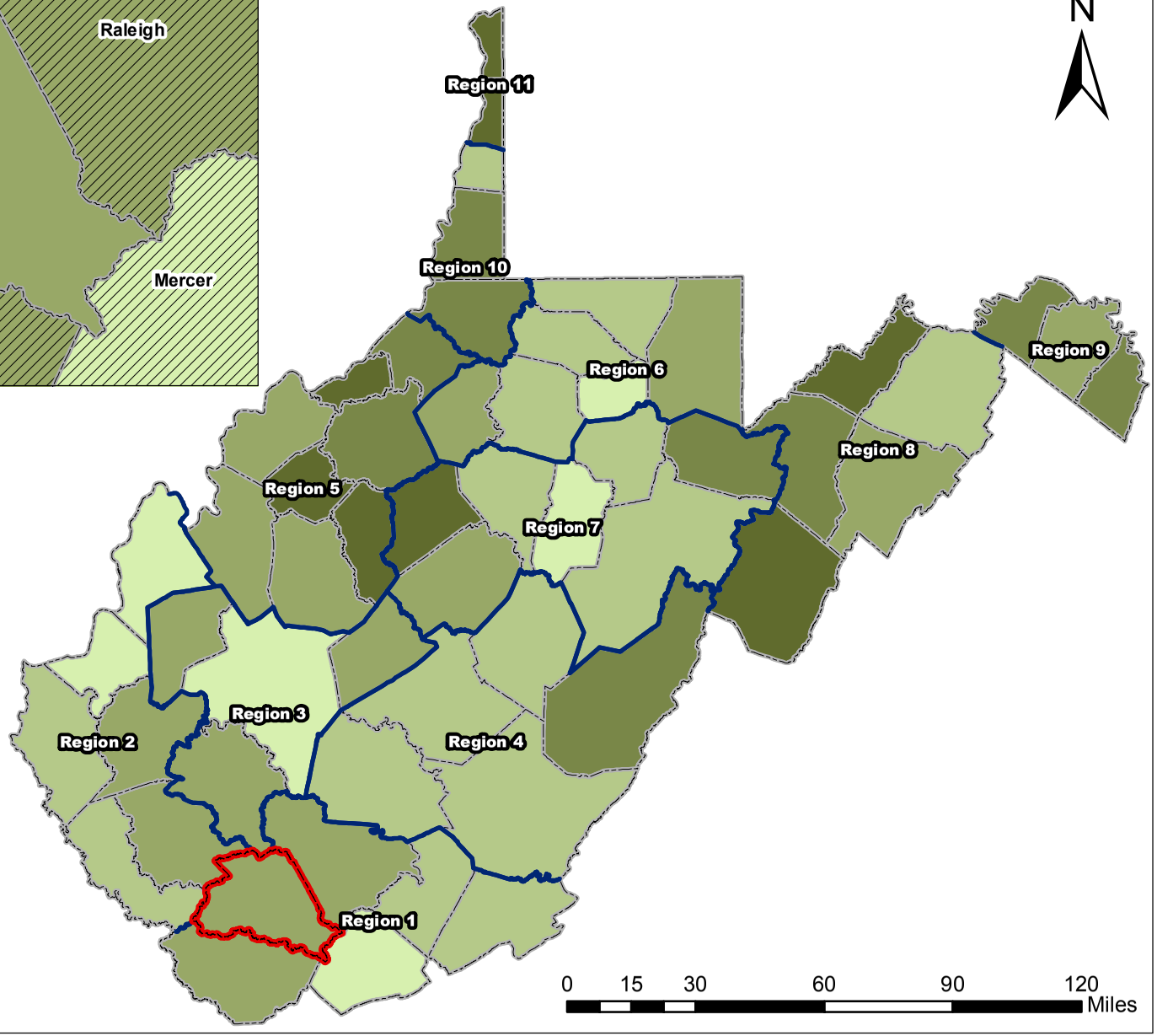
NCLB - Graduates Rate

Wyoming County





N

Planning Regions Line
67.40% - 71.80%
71.81% - 76.00%
76.01% - 80.30%
80.31% - 84.30%
84.31% - 90.30%
County Boundaries

0 15 30 60 90 120 Miles

Source: West Virginia Division of Natural Resources, Statewide Addressing and Mapping 2008

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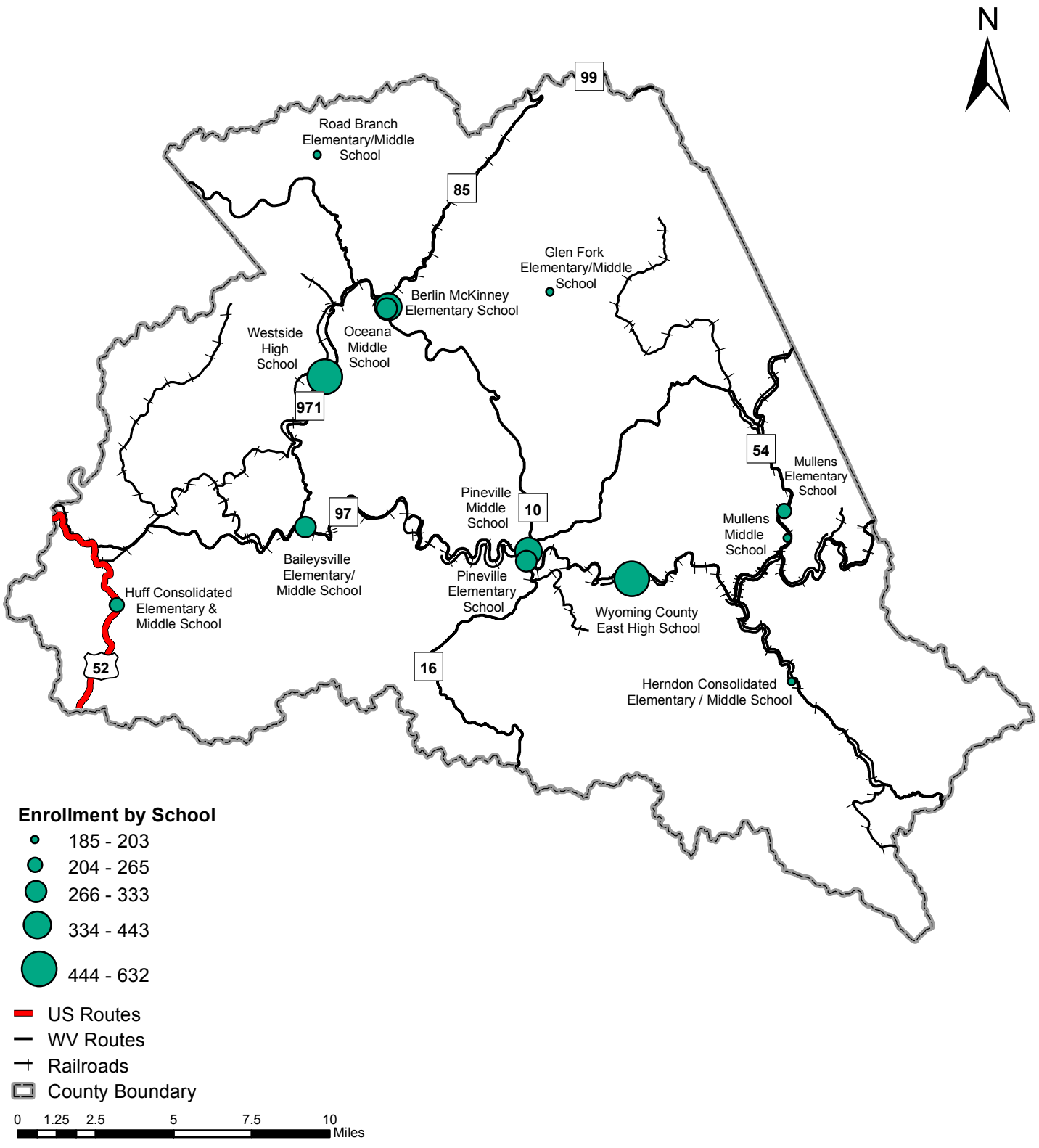
Total Attendance by School - 2012

Wyoming County



Source: West Virginia Department of Education 2012

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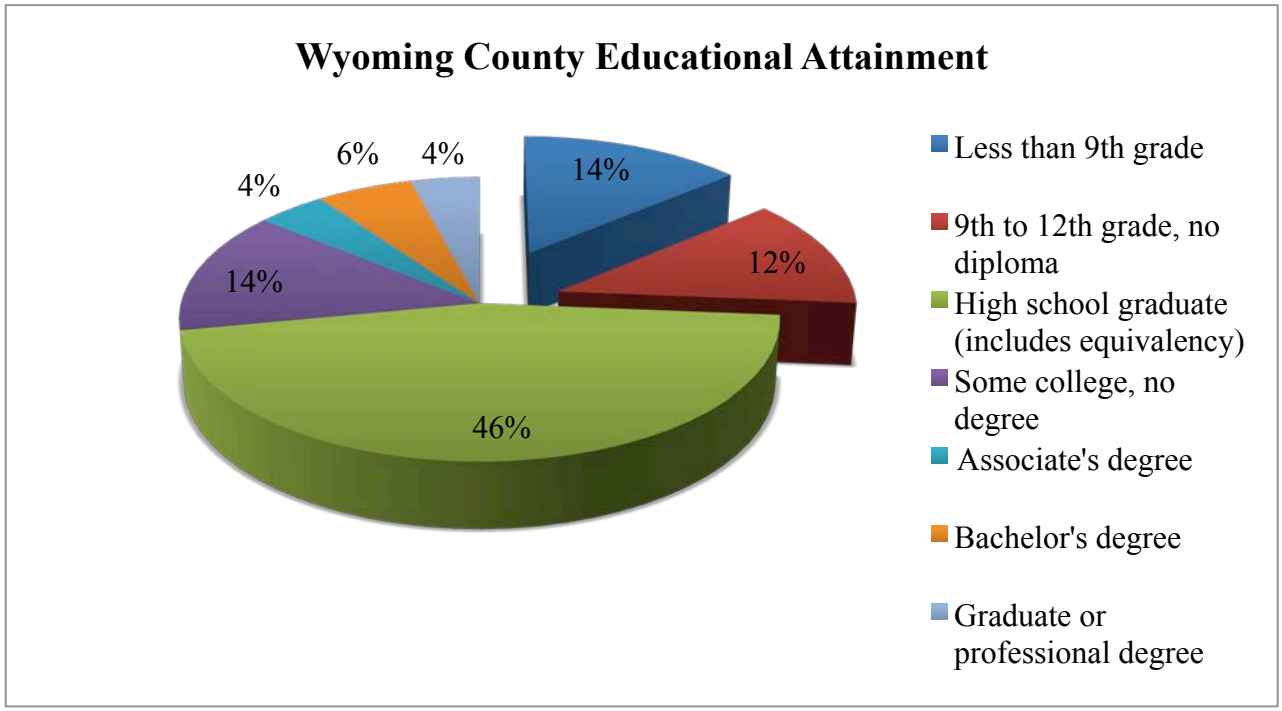
The ACS also maintains data on the educational attainment of the population that is 25 years and over. Forty-six percent of these residents have a high school diploma or equivalent. However, 26 percent have less than a high school diploma. This is a rather high number and particularly concerning when the relationship between education and jobs is considered.

Figure 13



Source: 2011 American Community Survey 5-Year Estimates

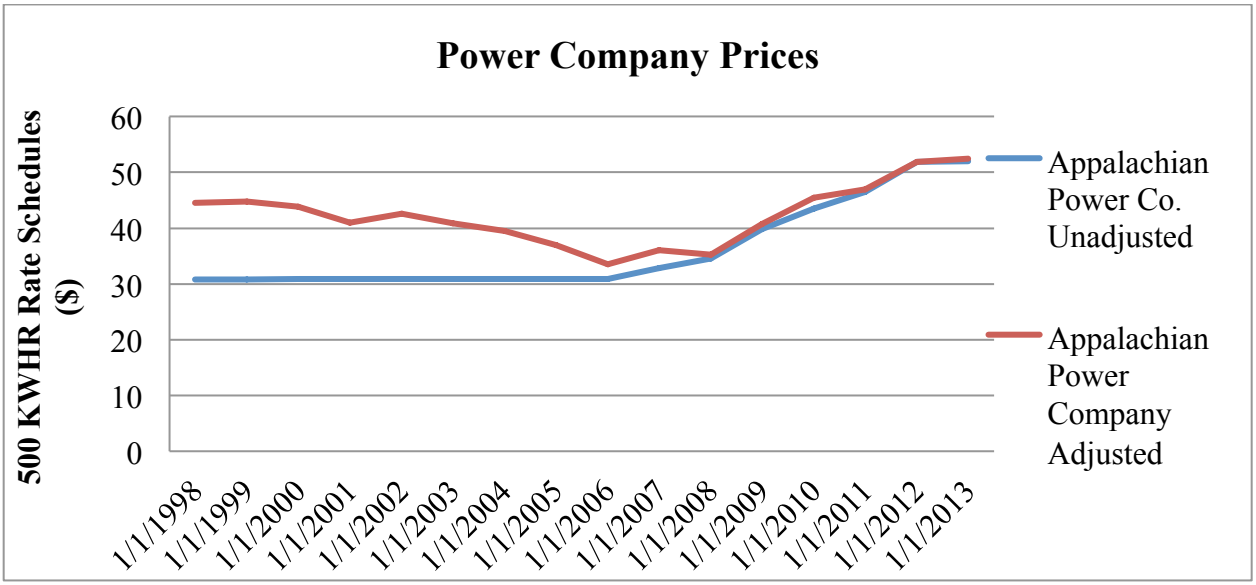
Utilities and Infrastructure

Wyoming County has 30 utility companies according to the West Virginia Public Service Commission (PSC). Economic development depends on infrastructure, and Wyoming County has several providers of water and sewer, and one provider of electricity. Appalachian Power Company (American Electric Power) provides residential, industrial, and large-capacity service to Wyoming County.

The West Virginia Public Service Commission maintains tariff rates for all companies involved in providing utilities. Of particular importance are electricity tariffs; the monitoring of these tariffs is an ongoing project. To that end, the PSC observes the growth rate of tariffs and possesses a 20-year comparison based on the average residential utility rate of the State. This provides a significant overview of how electric prices behave in West Virginia as a whole. As Figure 14 shows, if the tariffs are not adjusted by the Consumer Price Index (CPI), it would appear that rates are constantly increasing. Viewing rates in such a manner would be a misunderstanding, and would be incorrect in reference to a State with the highs and lows of West

Virginia's past. The Bureau of Labor Statistics has a CPI for electricity prices dating to 1998. The adjusted and unadjusted prices are provided in Figure 14.

Figure 14



Source: WV Public Service Commission and United States Bureau of Labor Statistics

The graph shows that electricity rates steadily decreased in real terms through 2006 and remained fairly constant with adjustment. Both adjusted and unadjusted prices have increased since 2006. Many possible factors contributed to this rise, including the increased costs of energy and the increased demand. Map 12 also shows the distribution of power lines, plants, and substations within West Virginia and Wyoming County.

The two other utilities of particular importance are water and sewer. Table 1 displays water and sewer metered rates for the providers of those services. They are all public services with varying rates and categories. Wyoming County has 11 public sewer and water providers. Maps 13 and 14 show the water and sewer facilities and the served areas for each of these utilities, as well as the solid waste management facilities in West Virginia, including the one located in Wyoming.

Table 1: Wyoming County Water and Sewer Rates

Glen Rogers Public Service District	
Water Rates	
First 3000 gallons used per month	9.70 per 1000 gallons
Next 7000 gallons used per month	6.80 per 1000 gallons
Next 10000 gallons used per month	6.20 per 1000 gallons
All Over 20000 gallons used per month	5.57 per 1000 gallons

Sewer Rates	
First 2000 gallons used per month	10.90 per 1000 gallons
Next 8000 gallons used per month	10.19 per 1000 gallons
All Over 10000 gallons used per month	10.05 per 1000 gallons
Town of Oceana	
Water Rates (Oceana Municipal Water Works)	
First 3000 gallons used per month	9.38 per 1000 gallons
Next 3000 gallons used per month	8.08 per 1000 gallons
Next 94000 gallons used per month	5.54 per 1000 gallons
All Over 100000 gallons used per month	4.80 per 1000 gallons
Sewer Rates (Town of Oceana Sewer System)	
All amounts used per month	10.00 per 1000 gallons
Brenton Public Service District	
Water Rates	
All amounts used per month	20.60 per customer
Eastern Wyoming Public Service District	
Water Rates	
First 2000 gallons used per month	11.33 per 1000 gallons
Next 58000 gallons used per month	10.84 per 1000 gallons
Next 240000 gallons used per month	7.96 per 1000 gallons
All Over 300000 gallons used per month	4.09 per 1000 gallons
Kopperston Public Service District	
Water Rates	
First 3000 gallons used per month	7.91 per 1000 gallons
Next 5000 gallons used per month	7.05 per 1000 gallons
Next 17000 gallons used per month	5.54 per 1000 gallons
Next 75000 gallons used per month	4.01 per 1000 gallons
All Over 100000 gallons used per month	2.49 per 1000 gallons
Raleigh County Public Service District	
Water Rates	
First 2000 gallons used per month	7.12 per 1000 gallons
All Over 2000 gallons used per month	7.12 per 1000 gallons
Ravencliff-McGraws-Saulsville Public Service District	
Water Rates	
First 3000 gallons used per month	10.98 per 1000 gallons
Next 7000 gallons used per month	9.04 per 1000 gallons
All Over 10000 gallons used per month	7.06 per 1000 gallons
Center Public Service District	
Sewer Rates	
First 2000 gallons used per month	14.56 per 1000 gallons
Next 8000 gallons used per month	7.95 per 1000 gallons
Next 10000 gallons used per month	6.62 per 1000 gallons
Next 30000 gallons used per month	5.95 per 1000 gallons
Next 50000 gallons used per month	4.64 per 1000 gallons

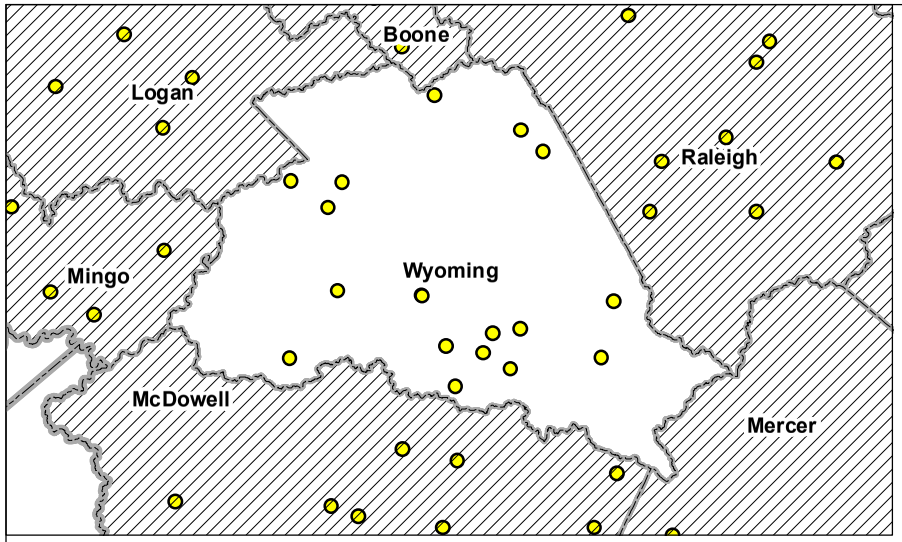
Next 100000 gallons used per month	3.97 per 1000 gallons
All Over 200000 gallons used per month	2.99 per 1000 gallons
Town of Pineville	
Water Rates	
First 2500 gallons used per month	10.00 per 1000 gallons
Next 7500 gallons used per month	8.75 per 1000 gallons
All Over 10000 gallons used per month	7.50 per 1000 gallons
City of Mullens	
Sewer Rates (Sanitary Board)	
First 3000 gallons used per month	8.00 per 1000 gallons
Next 3000 gallons used per month	7.20 per 1000 gallons
Next 14000 gallons used per month	6.60 per 1000 gallons
Next 30000 gallons used per month	6.10 per 1000 gallons
Next 50000 gallons used per month	5.55 per 1000 gallons
All Over 100000 gallons used per month	8.20 per 1000 gallons

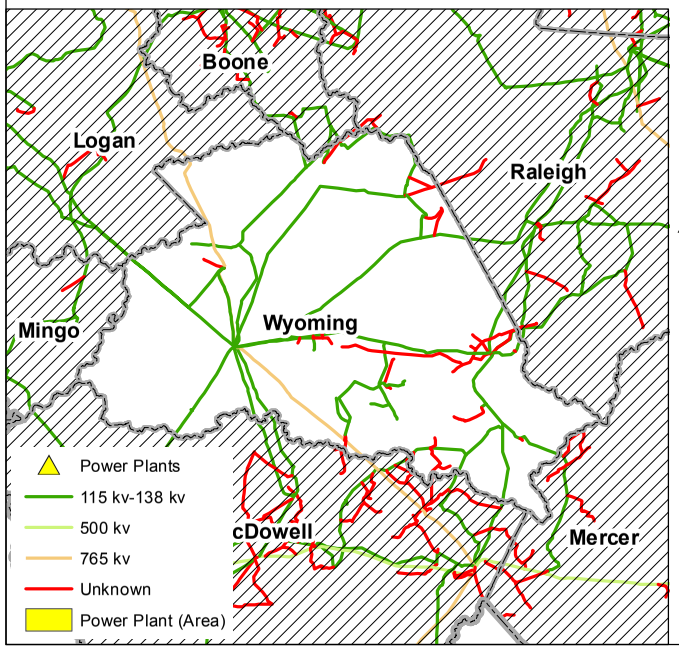
Three private water companies, Alpoca Water Works, Inc.; Covel Water Works, Inc.; and Ostego Community Water System, also service Wyoming County. The general service rates are listed in the table below, and are rounded to the nearest cent.

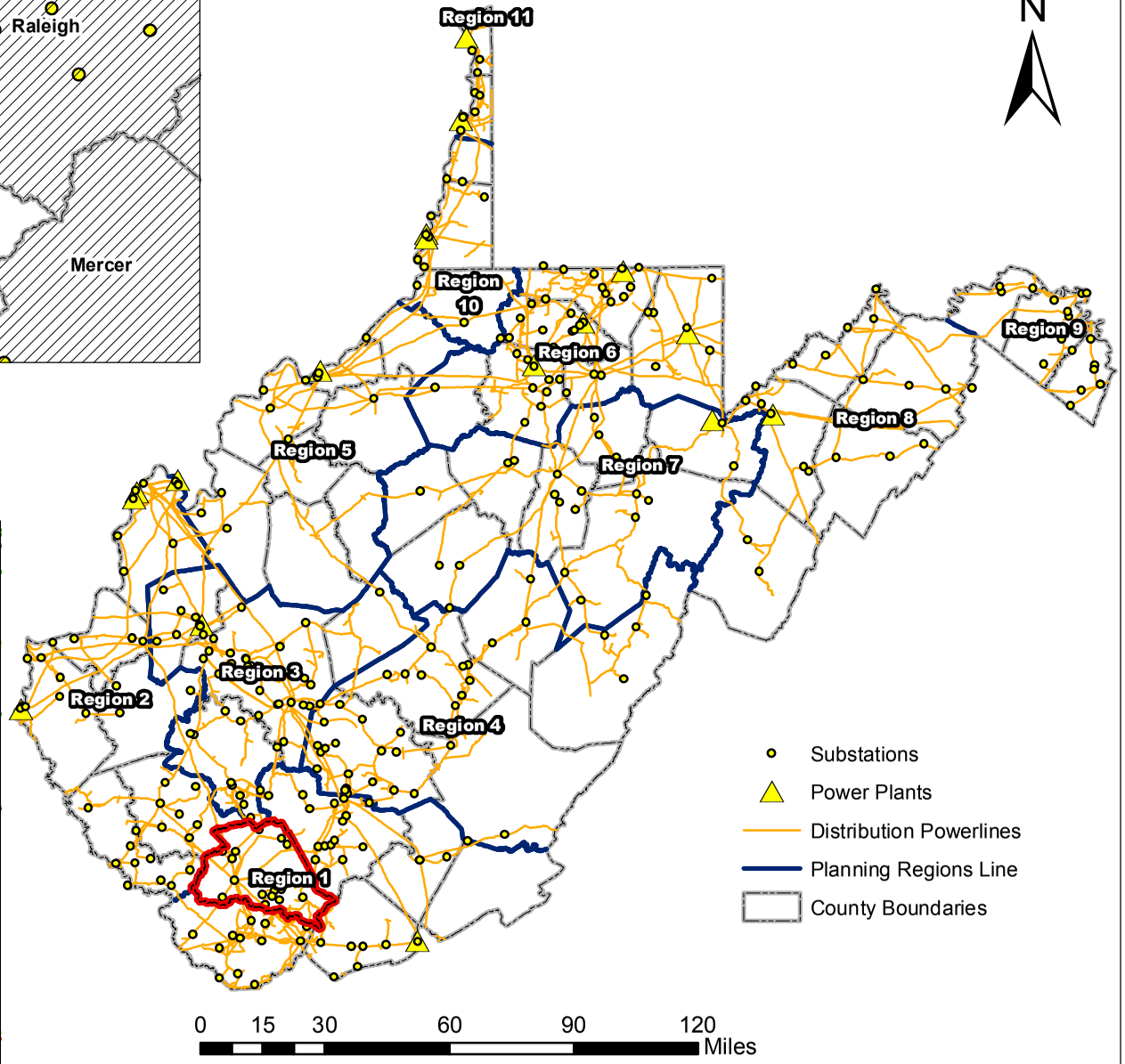
Alpoca Water Work, Inc.	
Domestic Customers	20.36 per month
Commercial Customers	23.30 per month
School	581.41 per month
Car Wash	108.99 per month
Covel Water Works, Inc.	
All amounts used per month	25.00 per month
Otsego Community Water System	
All amounts used per month	39.79 per month

Utilities - Electricity

Wyoming County







Source: West Virginia Division of Natural Resources, Statewide Addressing and Mapping 2008

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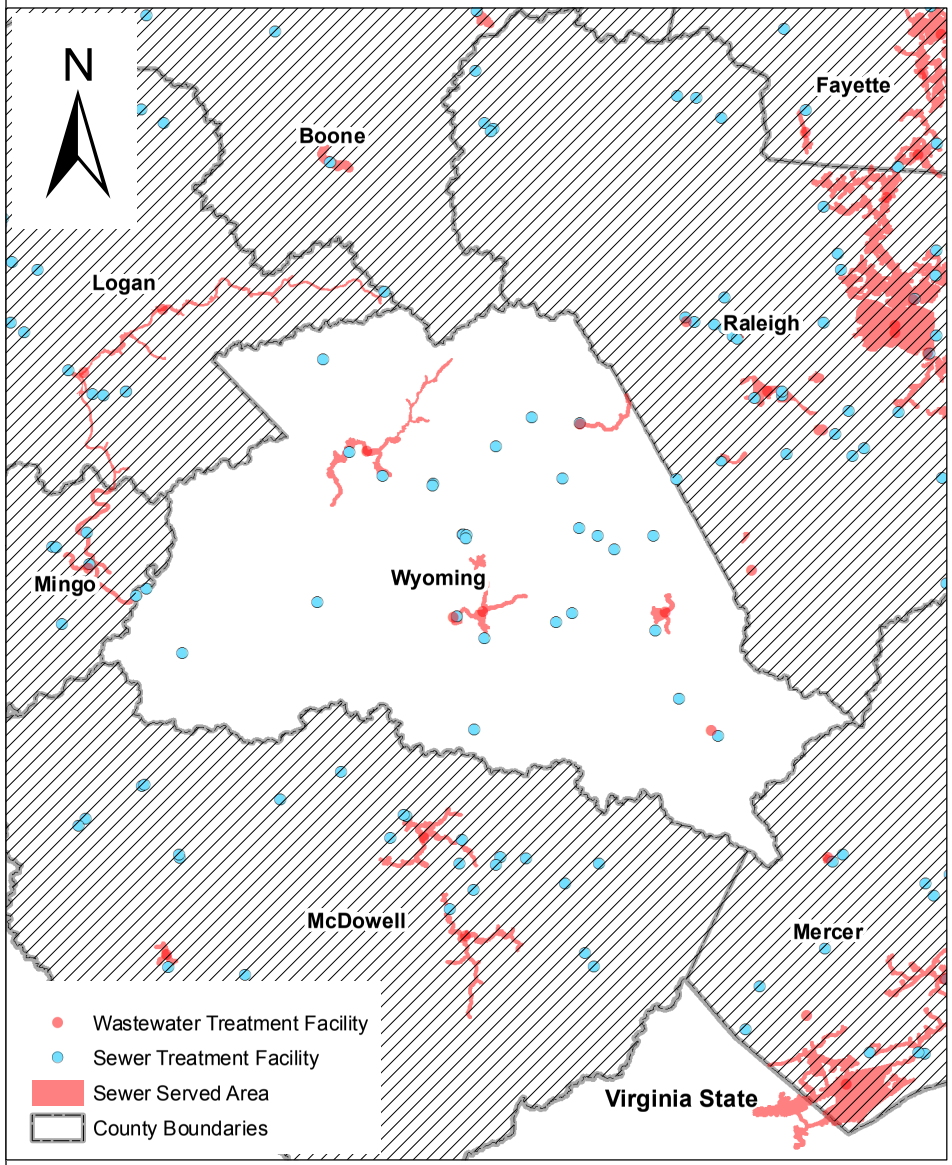
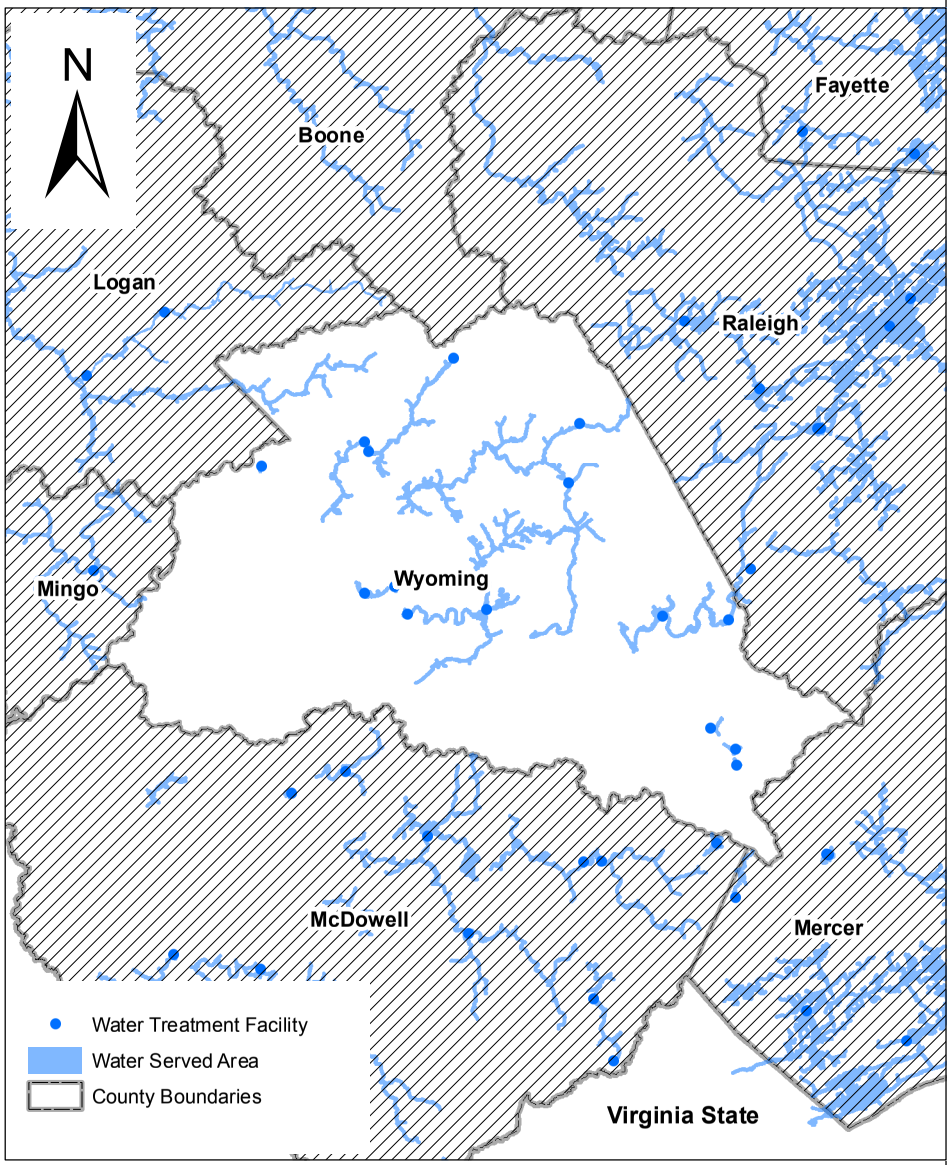
Utilities - Water and Sewer

Wyoming County





0 15 30 60 90 120 Miles

Source: West Virginia Infrastructure and Jobs Development Council N.A.

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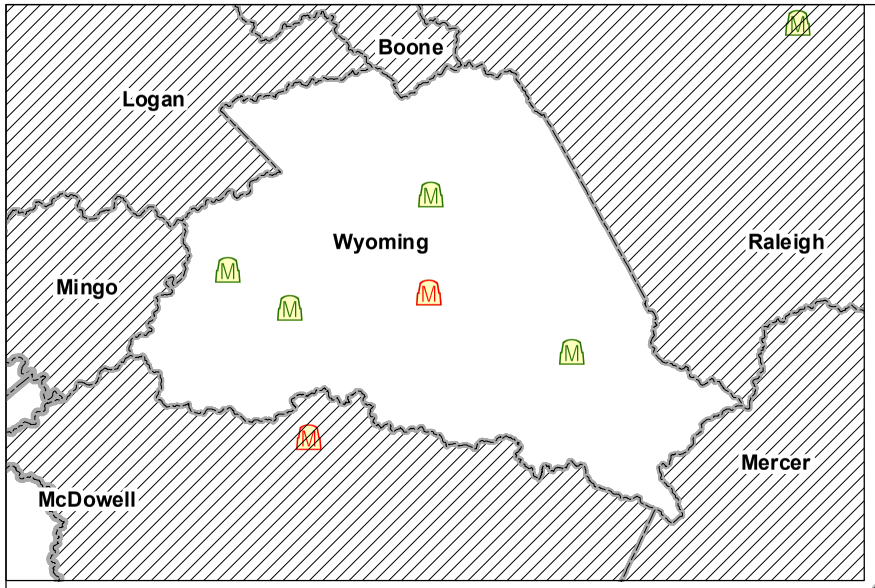
Utility - Solid Waste Facility

Wyoming County



Source: West Virginia Department of Environmental Protection 2002

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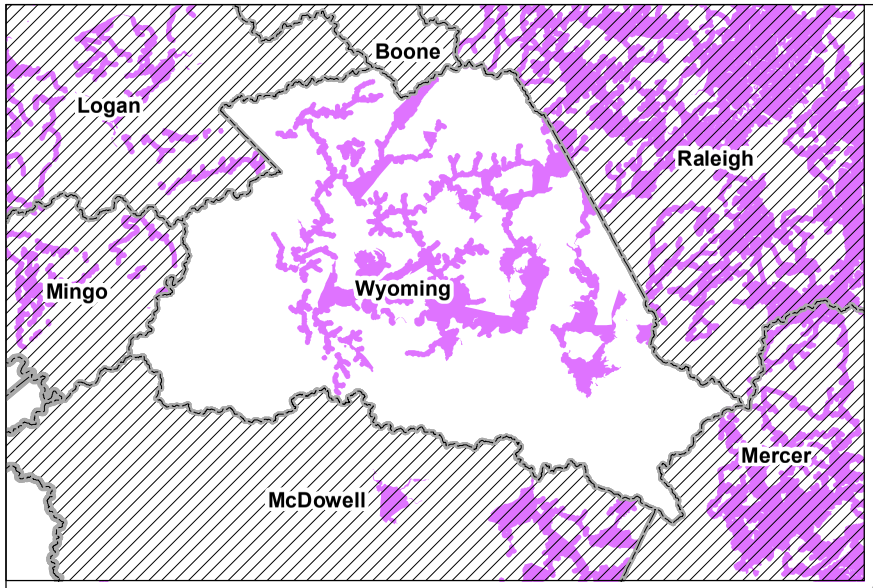
One essential modern convenience, now widely understood as an essential utility in a globalized world, is broadband access. The following 11 maps demonstrate Wyoming County's broadband infrastructure in relation to the State's. The largest number of providers in Wyoming County is 3 near Mullens. Wyoming County broadband infrastructure closely resembles other coalfield counties. Of particular note is the distinct lack of connectivity in almost every part of the county. The county has extensive areas lacking cable internet and broadband coverage, as well as a lack of providers.

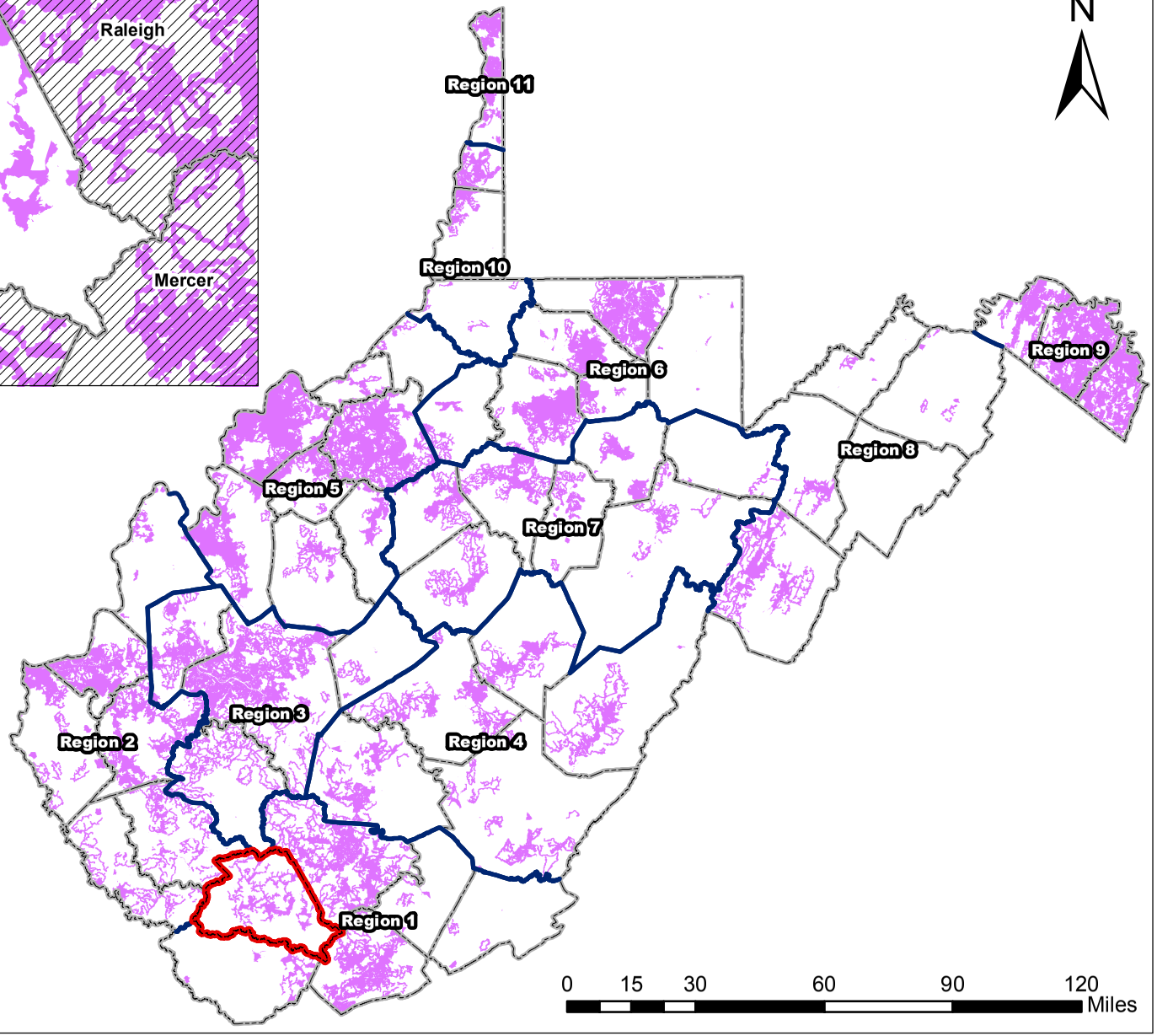
Map 15 shows physical cable infrastructure running from ISPs to other structures. DSL, BPL, and other copper represent the transferal system of broadband (Map 16). Map 17 shows the entire wire system, represented by physical wires, while Maps 18 and 19 show the maximum uploading and downloading speeds for the system. Map 20 shows the total number of providers, which is denser in the more economically developed areas of the State. Map 21 has fixed wireless coverage, or the connection between two fixed points wirelessly by radio or other links, and the next two maps show the maximum uploading and downloading speeds in a given area (22 and 23). Map 24 shows the location of mobile wireless coverage, including for smartphones and tablets, and Map 25 shows areas where no broadband coverage is reported in any way.

Each of these maps shows the same pattern in Wyoming County internet service as exhibited by WV. Internet service, specifically broadband, is non-existent in many rural areas, and instead focuses on population centers. While this may be financially wise, it deprives rural areas of an increasingly integral link to a globalized economy and society. All areas now need broadband service, and a complete inventory of these services is needed to plan for future investment in any given area.

Broadband - Internet Cable and FTTP Coverage

Wyoming County





N

Planning Regions Line
Cable and FTTP
County Boundaries

0 15 30 60 90 120
Miles

Source: West Virginia Broadband Mapping Program 2012

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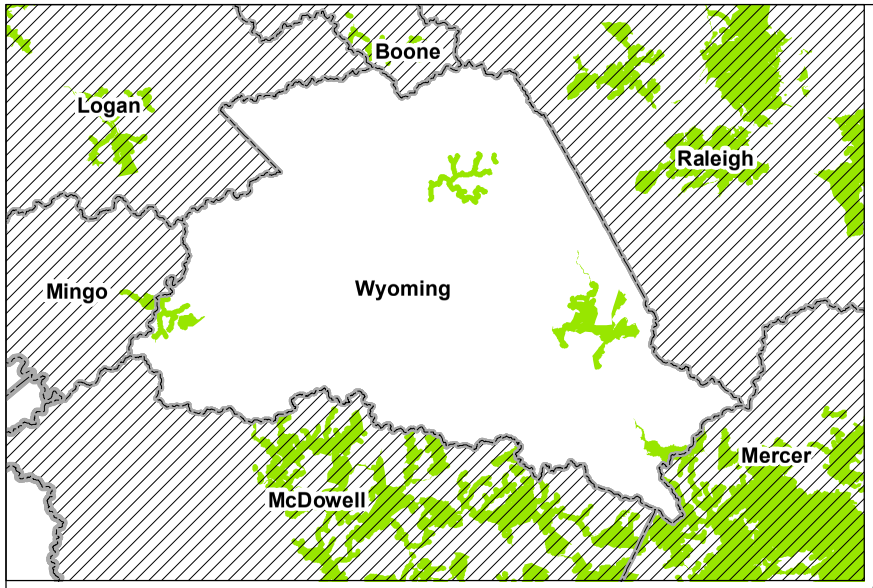
Broadband - Internet DSL, BPL, Other Copper

Wyoming County



Source: West Virginia Broadband Mapping Program 2012

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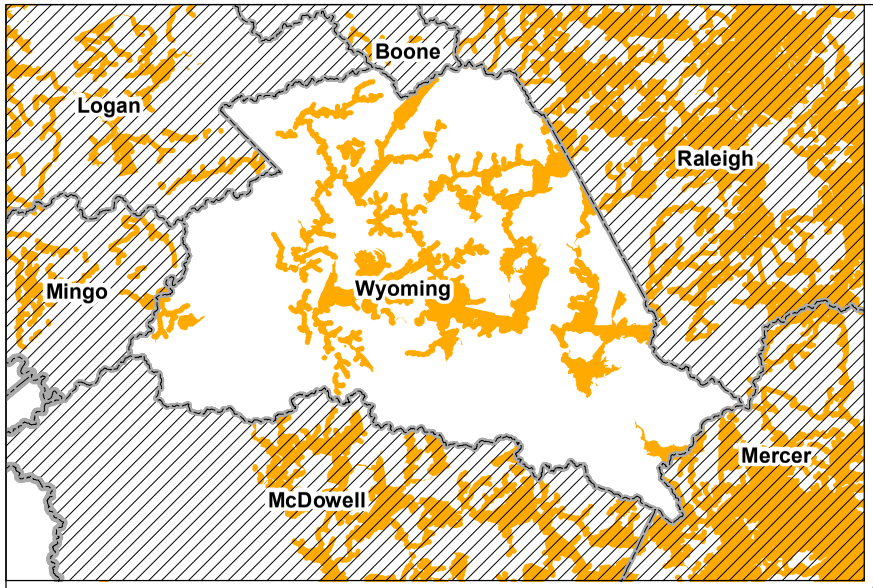
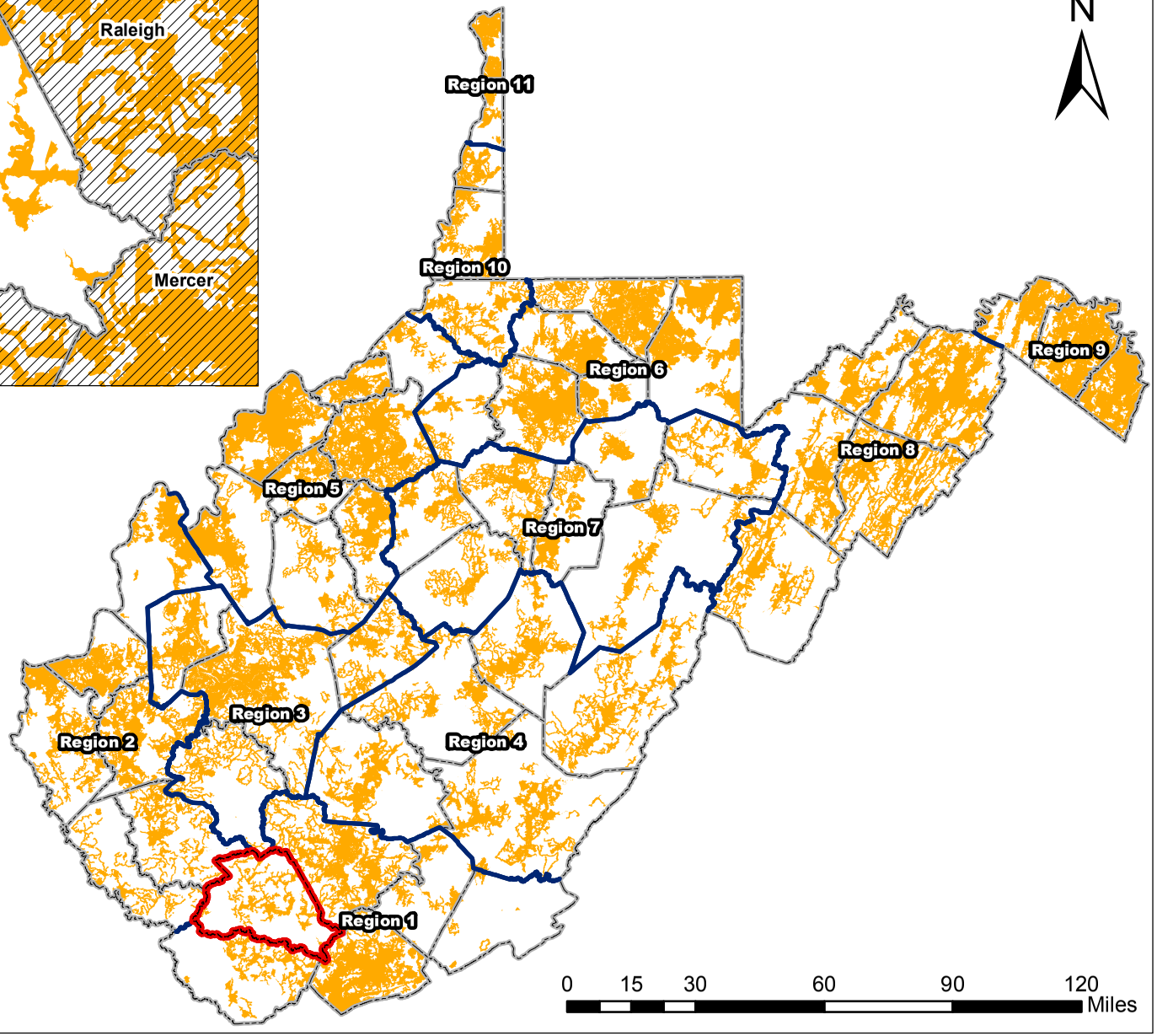
Broadband - Internet Wireline Coverage

Wyoming County





Source: West Virginia Broadband Mapping Program 2012

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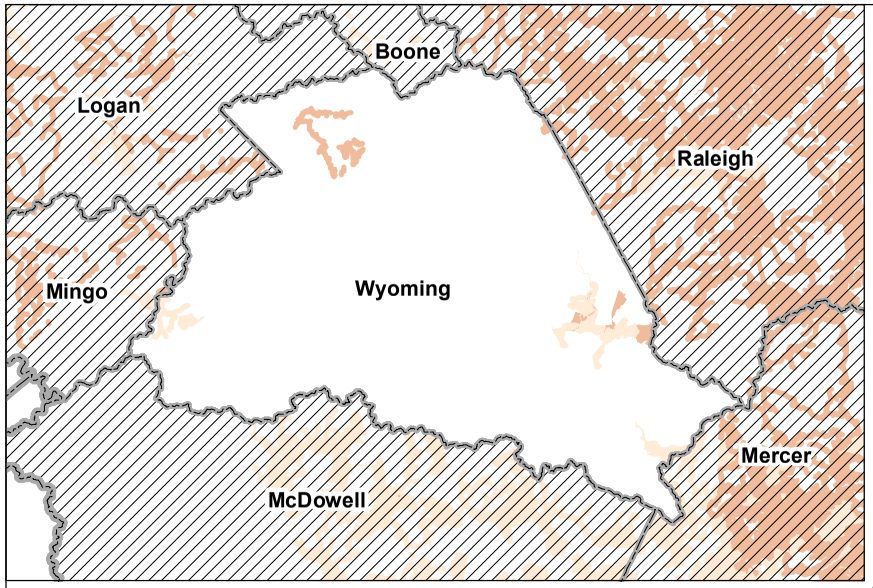
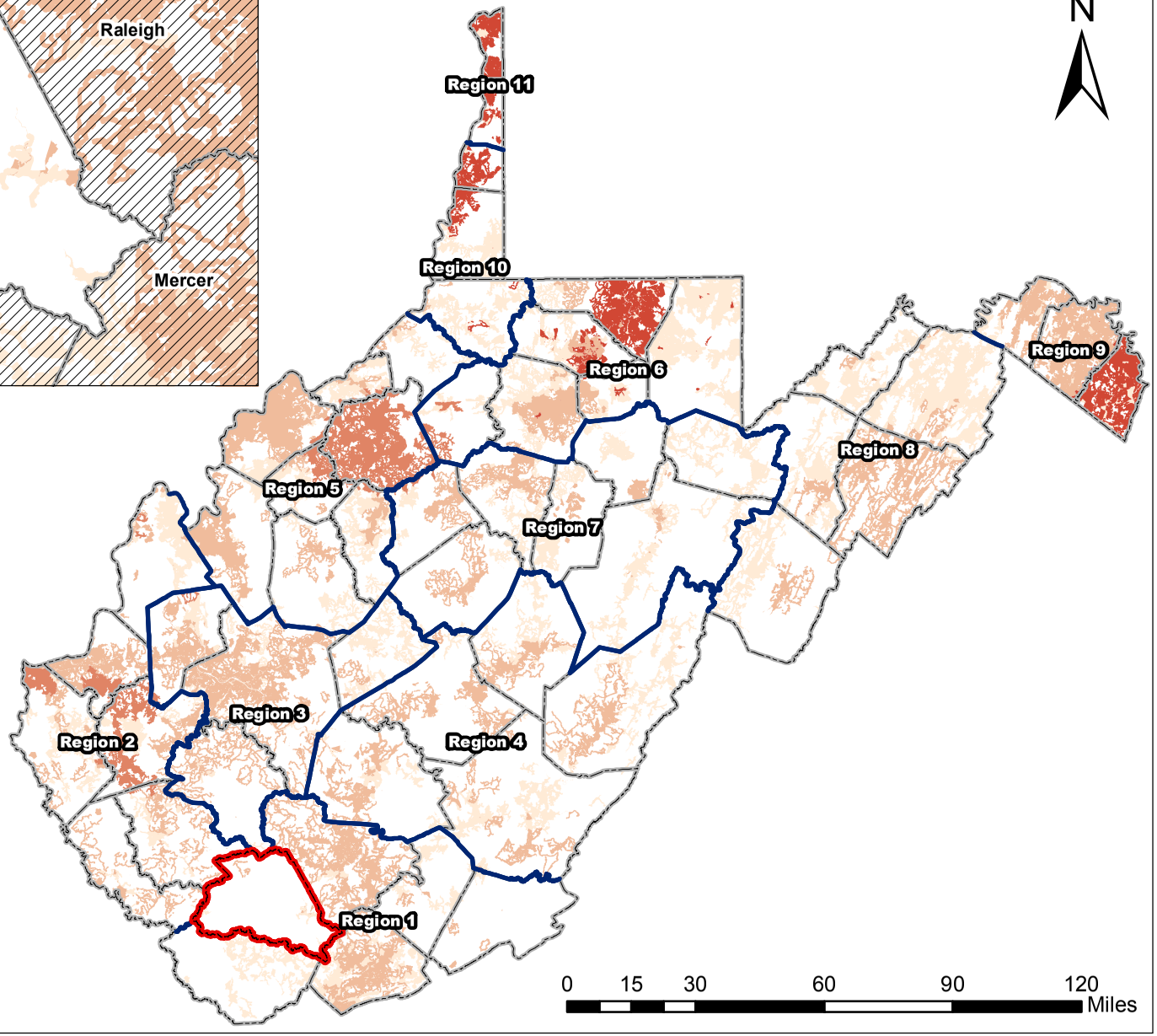
Broadband - Internet MaxUp Speed Wireline

Wyoming County





Planning Regions Line
200 - 768 kbps
768 kbps - 3 mbps
3 - 10 mbps
10 - 25 mbps
Greater than 25 mbps
County Boundaries

Source: West Virginia Broadband Mapping Program 2012

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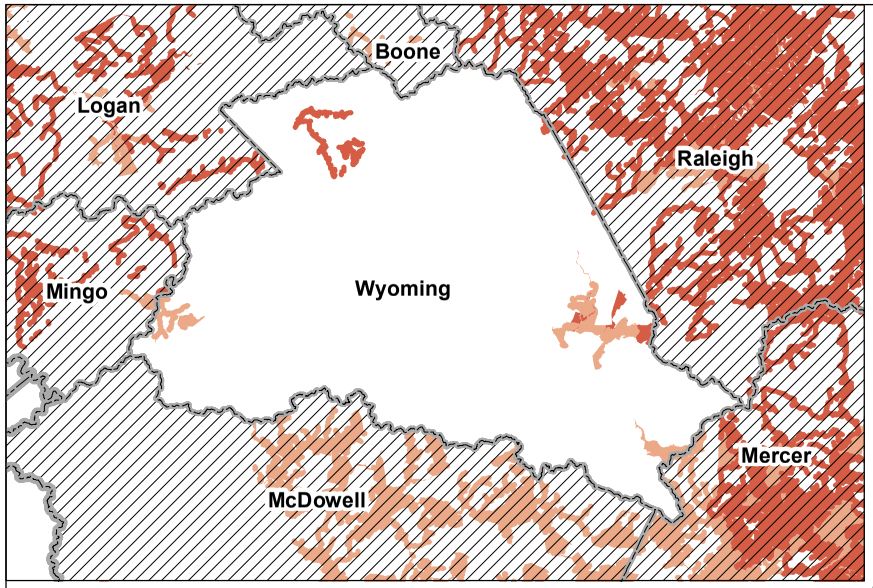
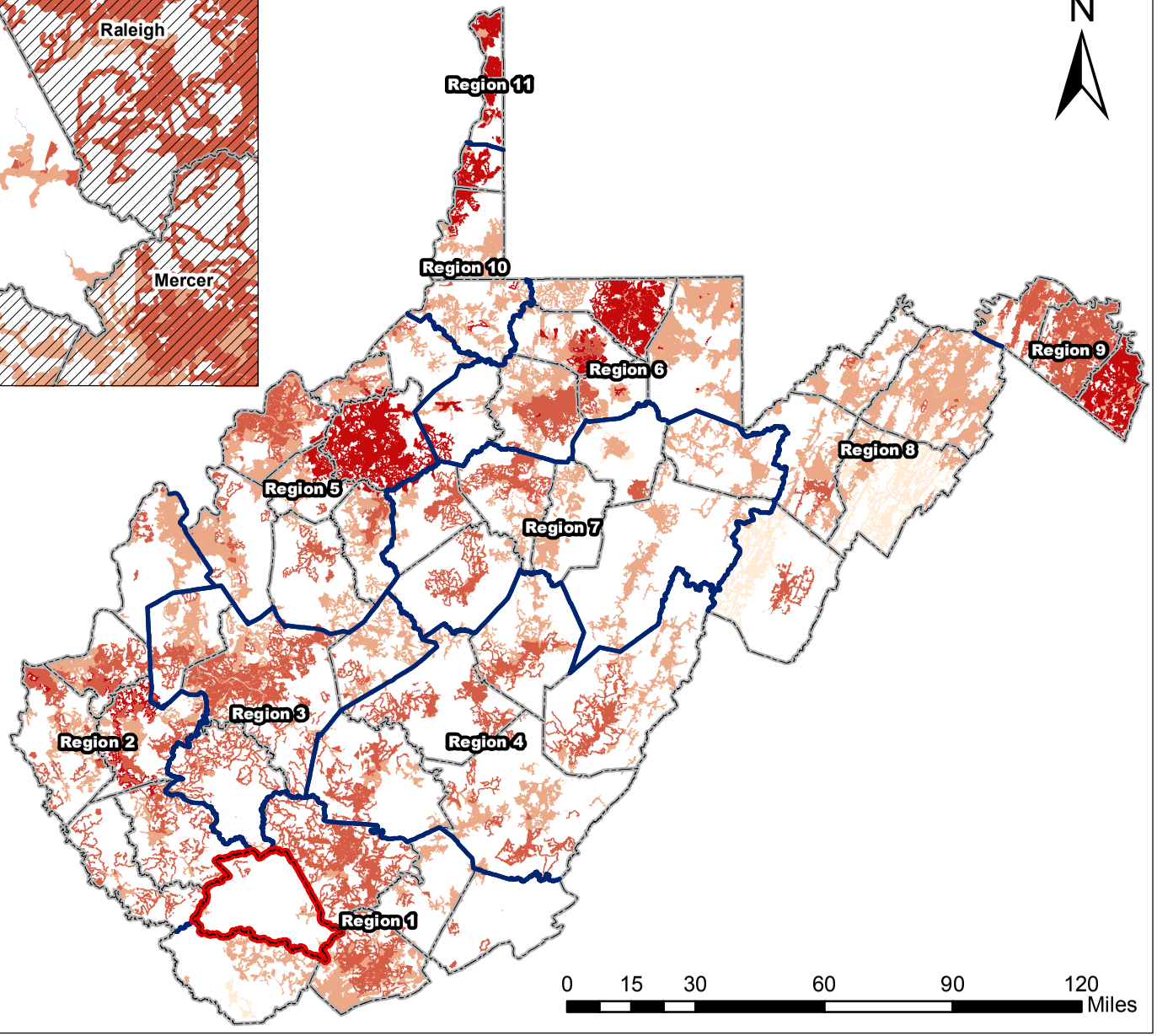
Broadband - Internet MaxDown Speed Wireline

Wyoming County





N

Planning Regions Line
768 kbps - 3 mbps
3 - 10 mbps
10 - 25 mbps
Greater than 25 mbps
County Boundaries

0 15 30 60 90 120
Miles

Source: West Virginia Broadband Mapping Program 2012

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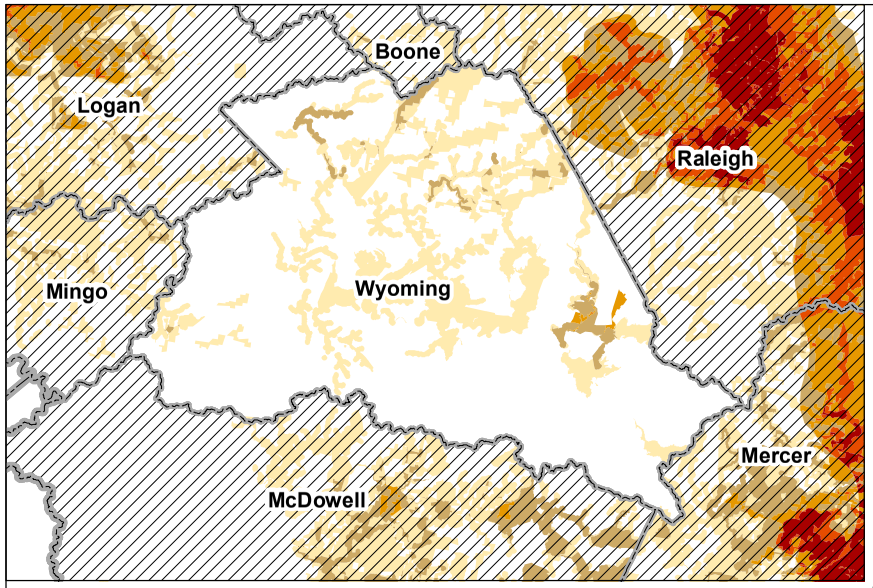
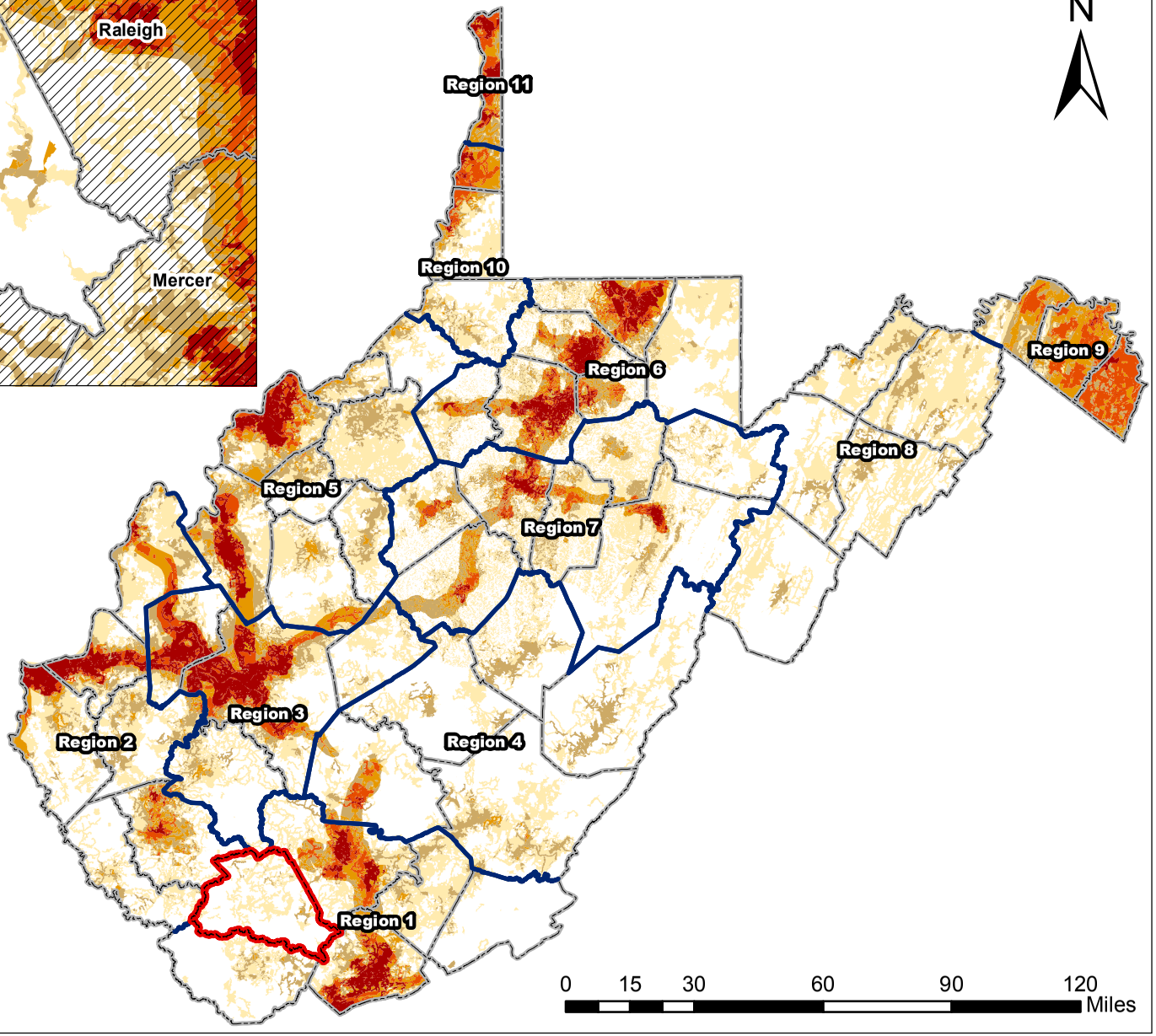
Broadband - Internet Total Number of Providers

Wyoming County





Source: West Virginia Broadband Mapping Program 2012

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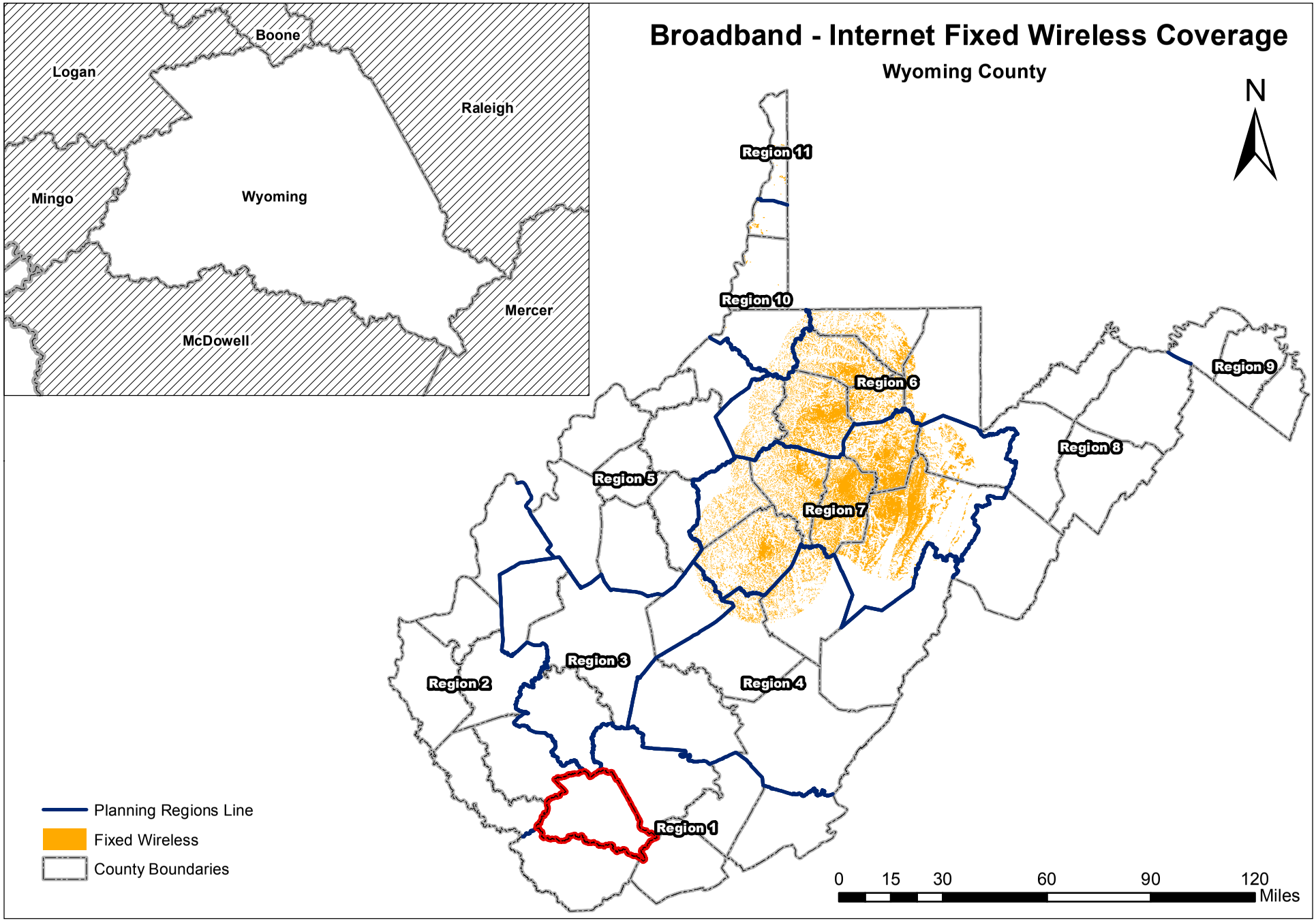
Broadband - Internet Fixed Wireless Coverage

Wyoming County



Source: West Virginia Broadband Mapping Program 2012

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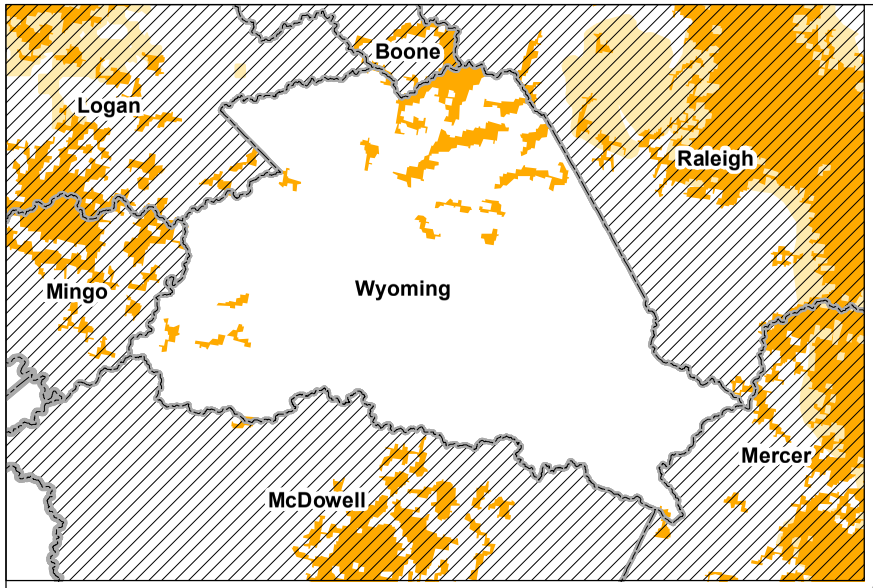
Broadband - Internet MaxDown Speed Wireless

Wyoming County



Source: West Virginia Broadband Mapping Program 2012

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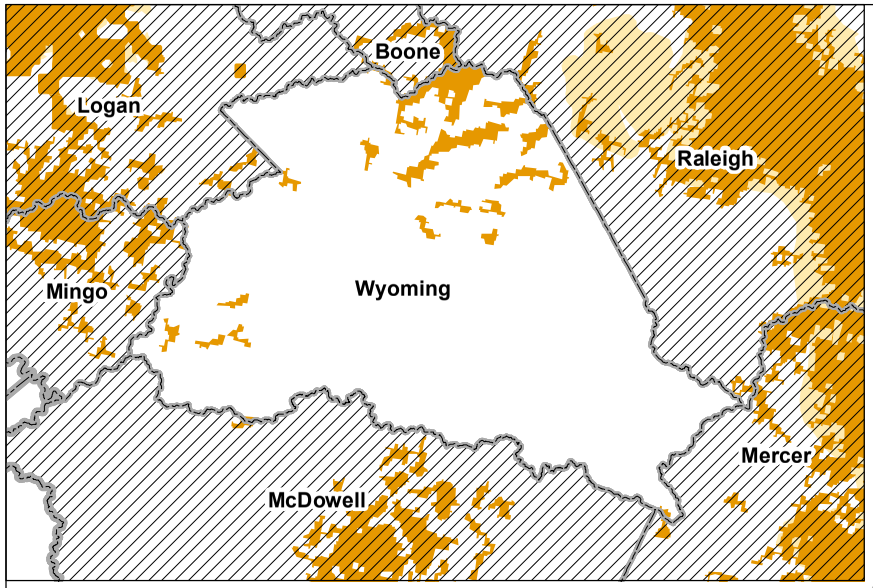
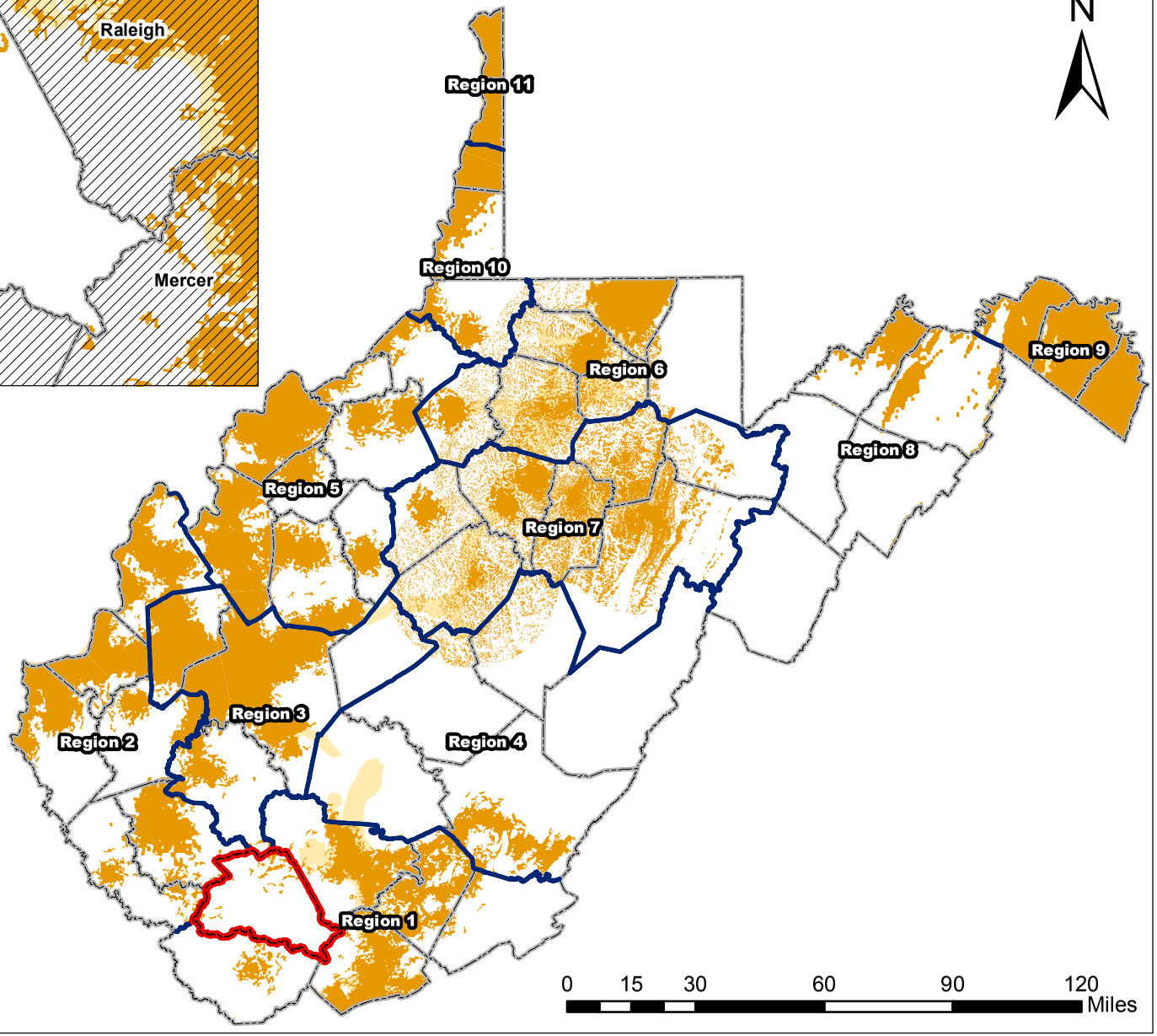
Broadband - Internet MaxUp Speed Wireless

Wyoming County





N

Planning Regions Line
200 - 768 kbps
768 kbps - 3 mbps
County Boundaries

0 15 30 60 90 120
Miles

Source: West Virginia Broadband Mapping Program 2012

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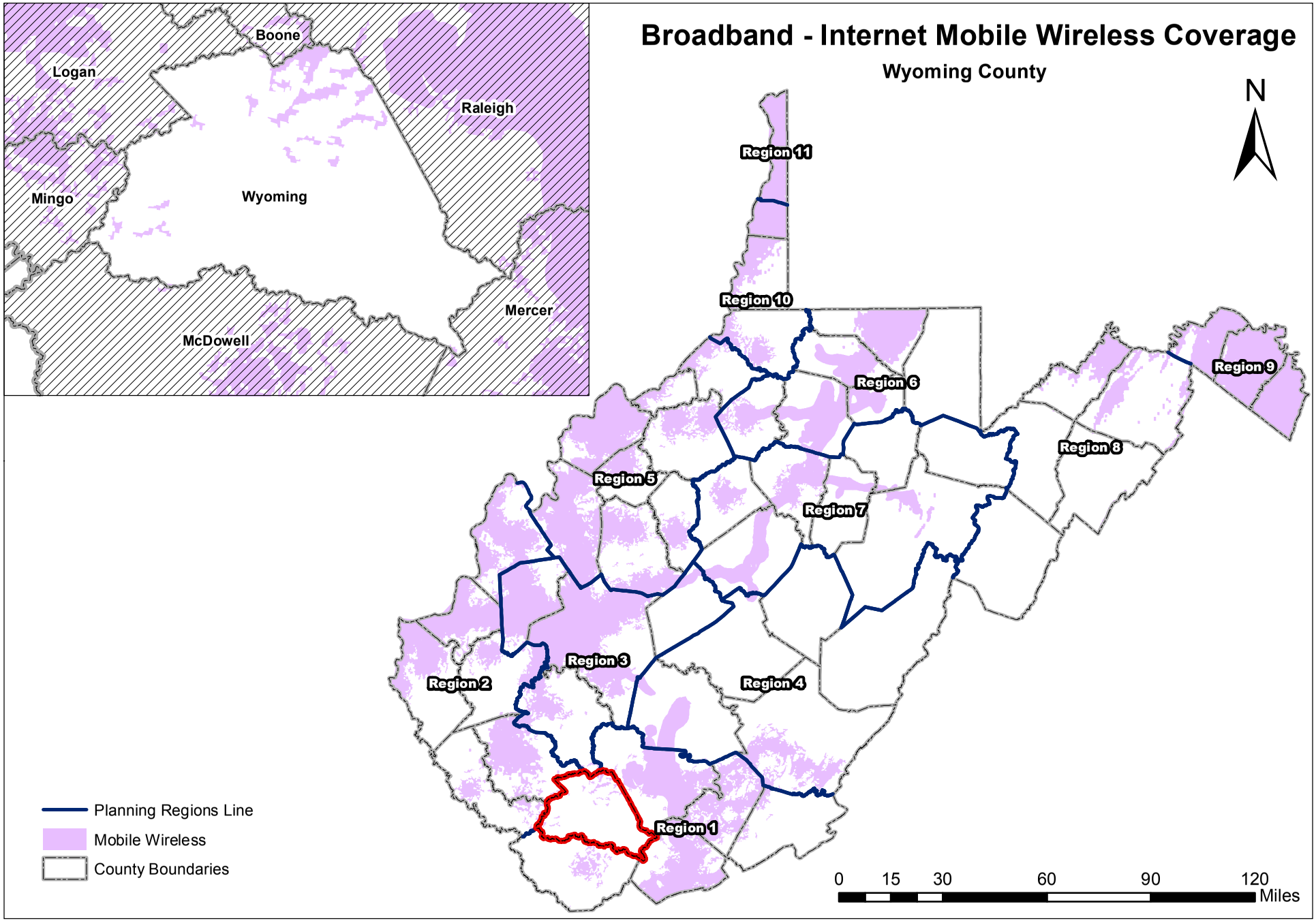
Broadband - Internet Mobile Wireless Coverage

Wyoming County



Source: West Virginia Broadband Mapping Program 2012

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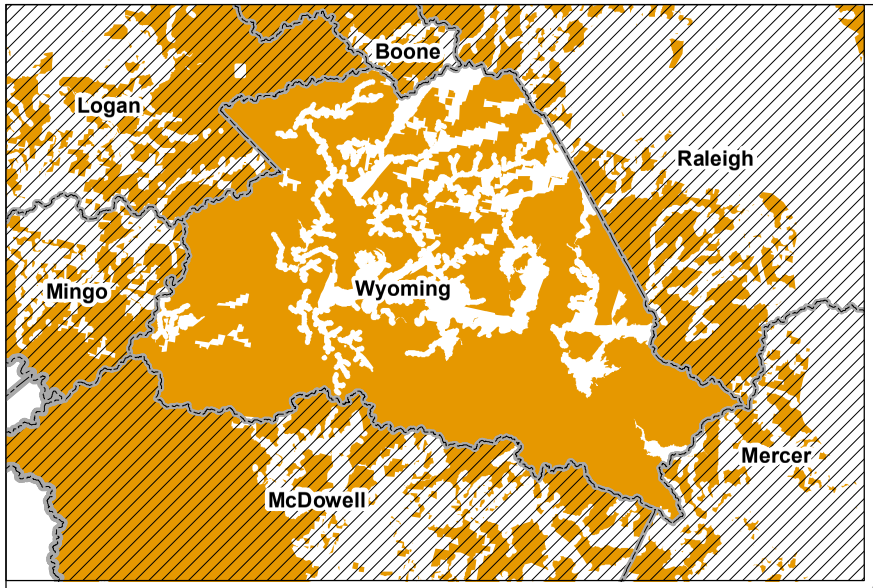
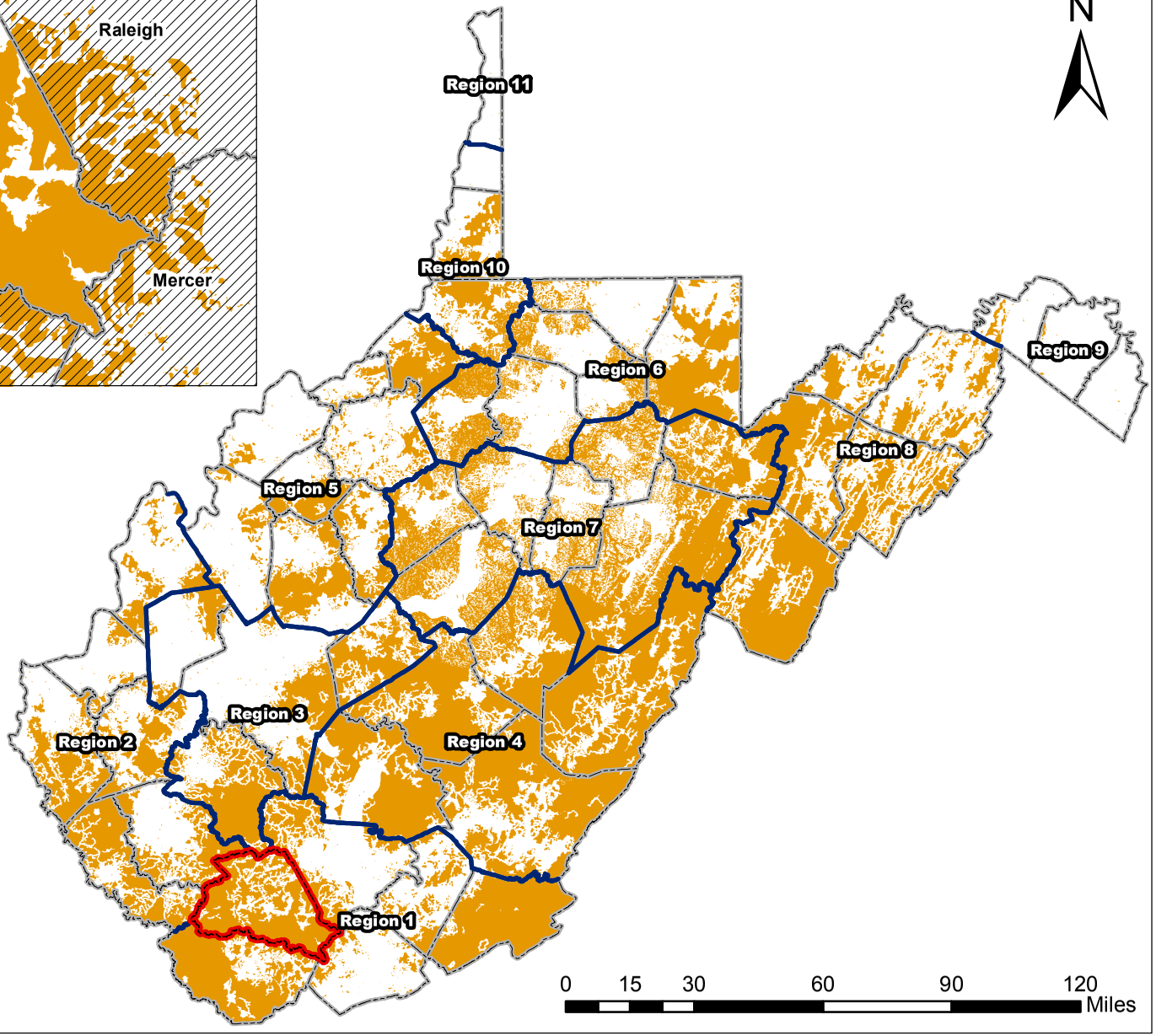
Broadband - No Broadband Coverage

Wyoming County





Source: West Virginia Broadband Mapping Program 2012

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Transportation

Highways

Wyoming County has a small part of US Route 52 in its westernmost section, as well as State Routes 10, 16, 54, 80, 85, 97, 99, and 971 (Map 26).

Rail

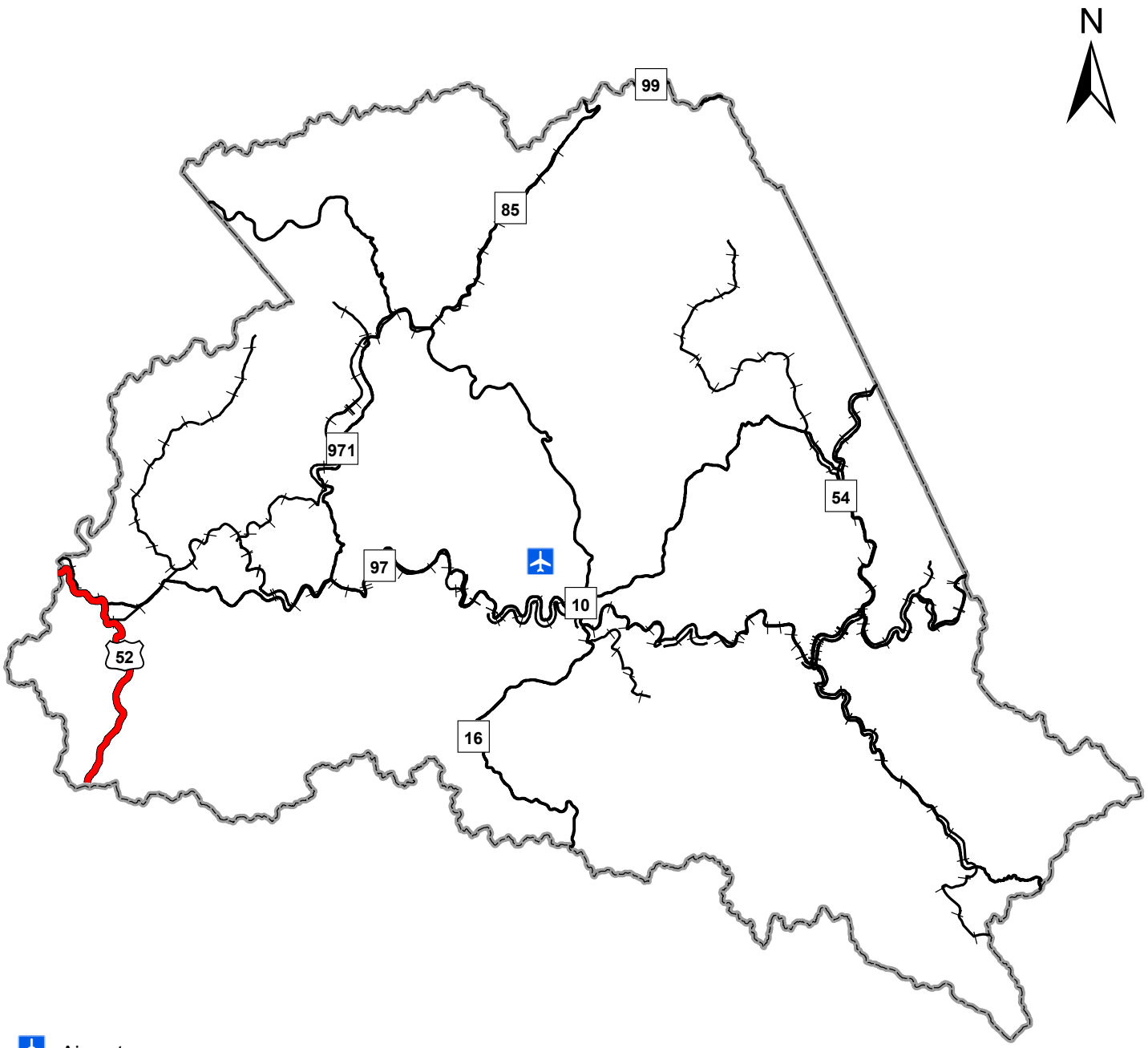
Norfolk Southern owns and operates several miles of track in the county.

Air

Wyoming County has Kee Field Airport, a small airport open to the public located near Pineville, WV.

Transportation

Wyoming County



Source: Airports; United States Department of Transportation 2012, West Virginia GIS Technical Center; US Routes, West Virginia Routes, I66 Pikeville, King Coal Highway; West Virginia Department of Transportation 2012; Railroads; Rahall Transportation Institute 2012

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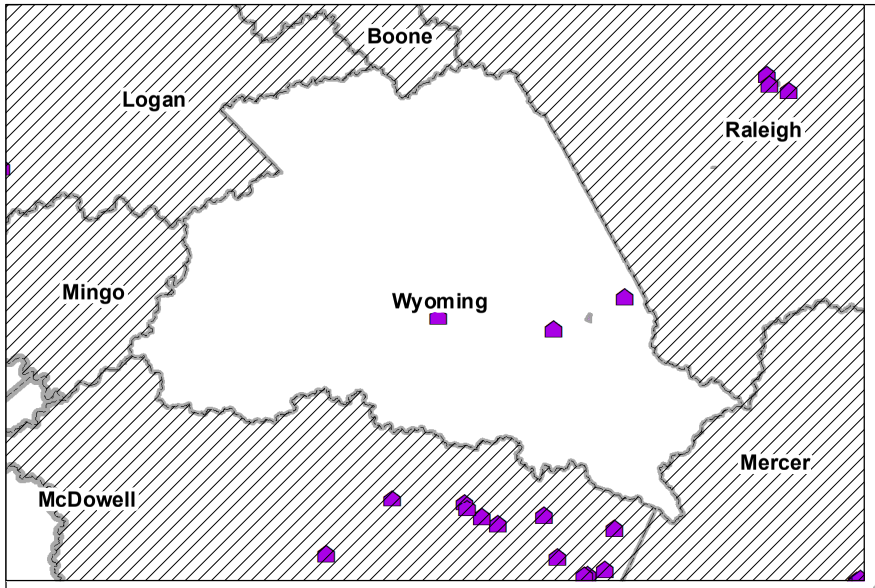
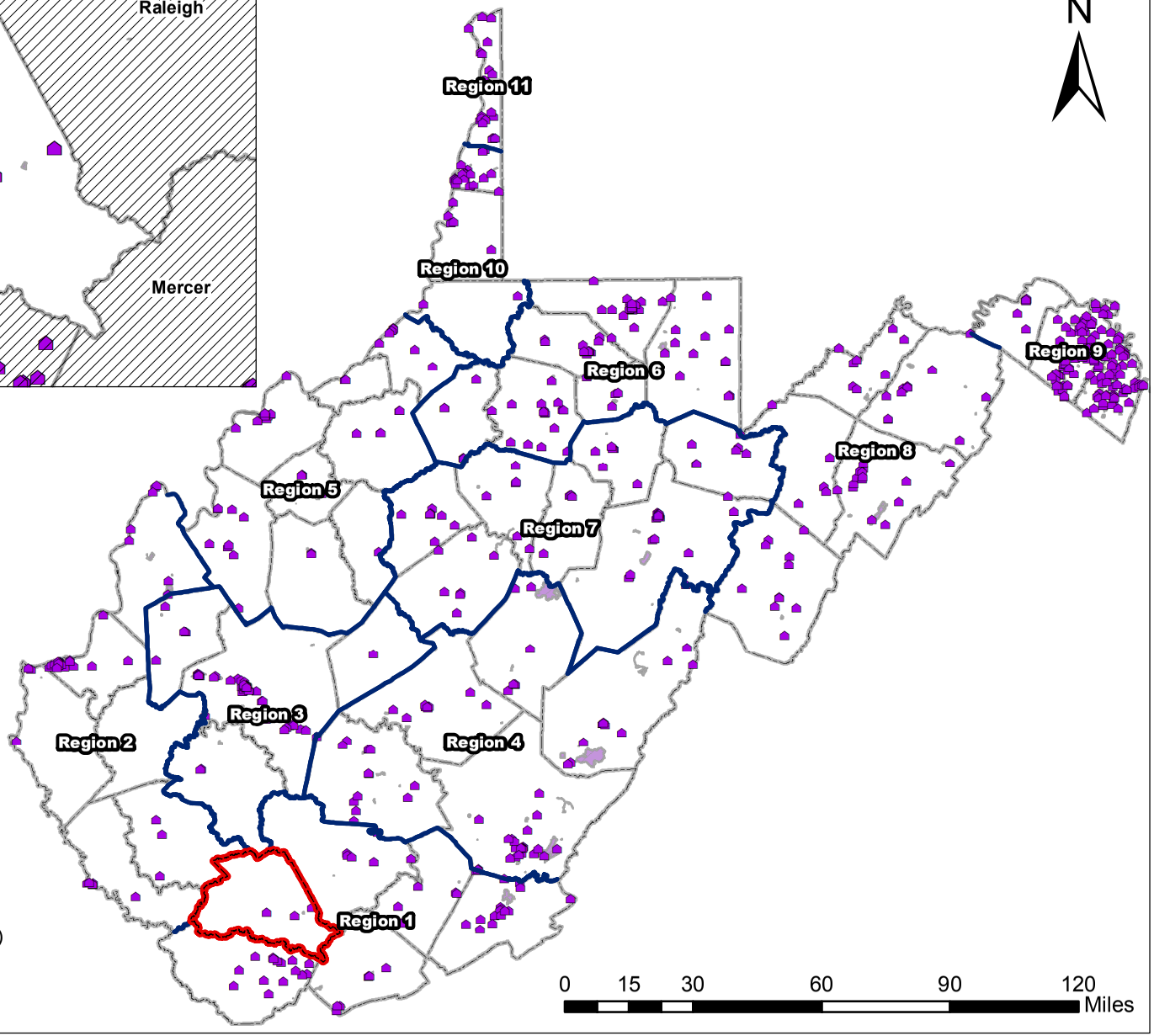
Historic Preservation

Historic preservation will be essential in a county steeped in coal mining history. Wyoming County has four listings in the National Register of Historic Places that include an historic district, a church, and the county courthouse (Map 27). However, other historic areas have been designated by West Virginia. Map 28 gives a spatial position to each designated State historic piece of architecture.

National Register of Historic Place

Wyoming County





Source: West Virginia State Historic Preservation Office 2012

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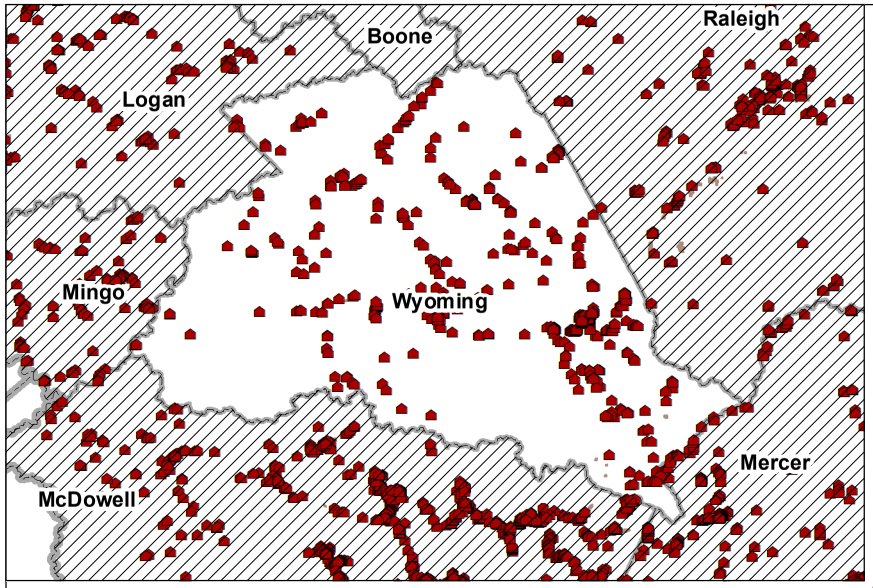
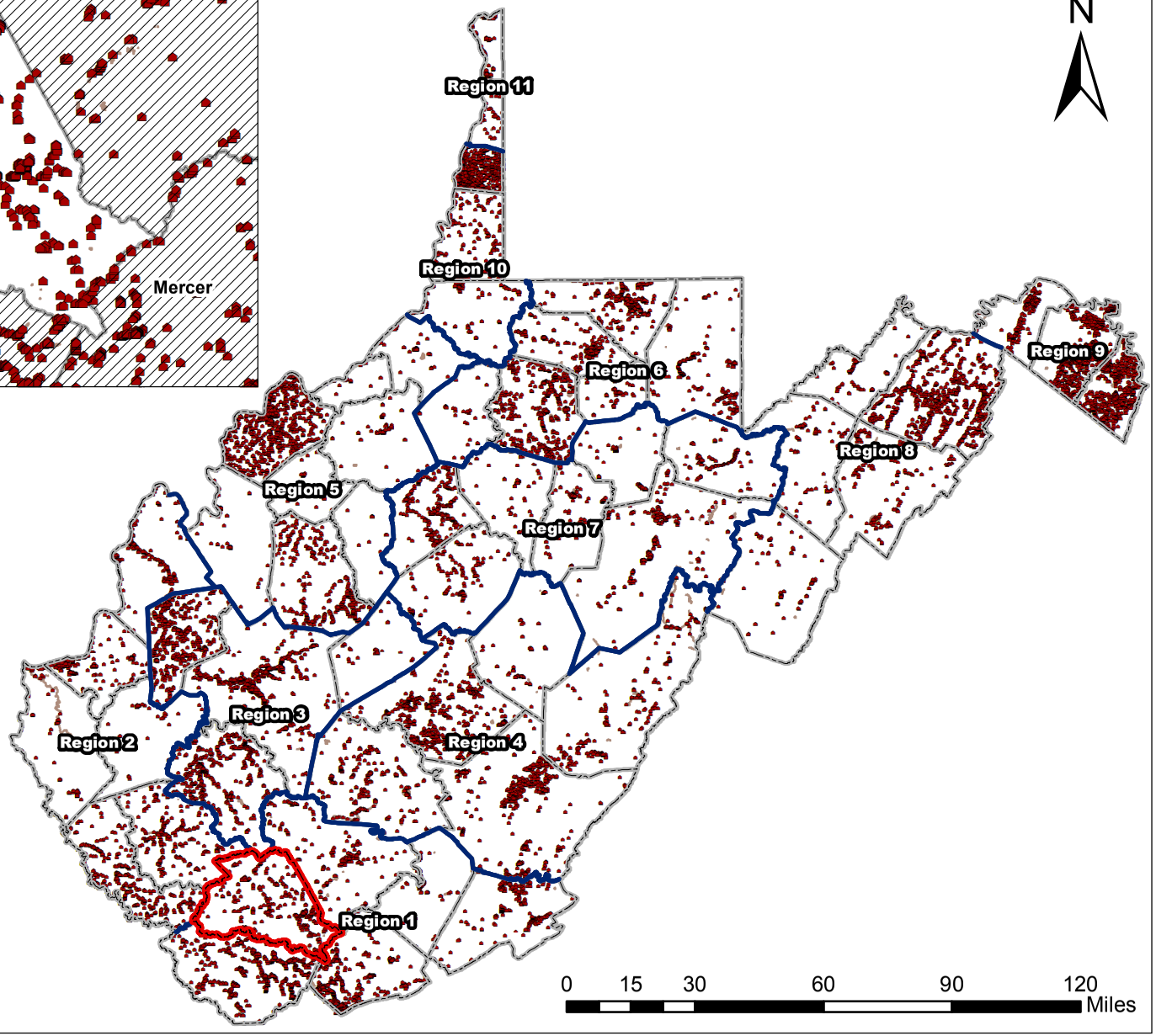
State Historic Architecture

Wyoming County





N

State Historic Architecture

Planning Regions Line

State Historic Architecture (Area)

County Boundaries

0 15 30 60 90 120 Miles

Source: West Virginia State Historic Preservation Office 2012

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Natural Resources, Environment, and Energy

Particular importance should be given to the spatial positions of natural resource areas, geographic environments, and potential energy sources in a county. This serves to inform potential investors about what possibilities the land provides for production of resources and energy. Wyoming County has several advantages in these areas that can be utilized to the advantage of the citizens.

West Virginia has an extensive wetlands inventory, because of its extensive system of lakes, streams, and rivers. Wetlands provide many environmental benefits, including housing fish, replenishing groundwater, and relaying nutrients. Wyoming County's system is not extensive, but does have one main line that traverses the county from west to east (Map 29).

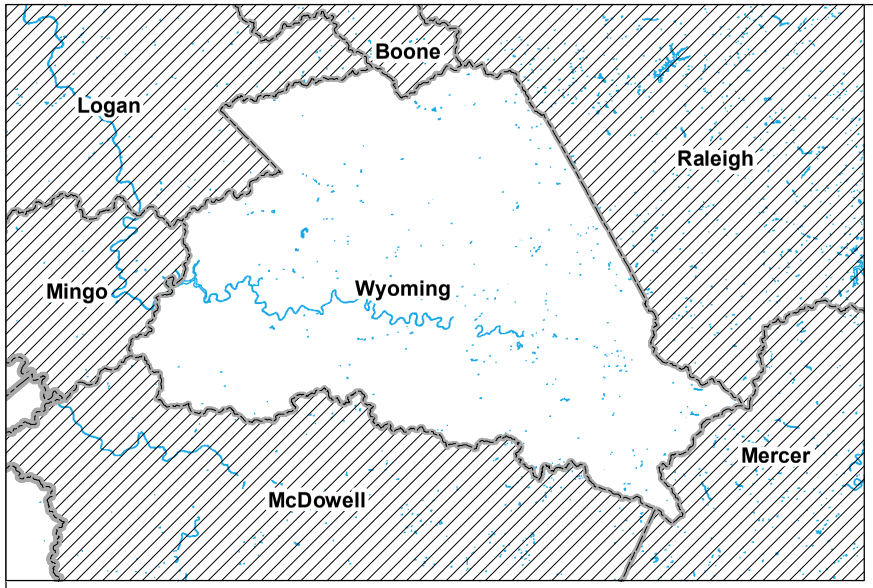
The State also possesses a respectable amount of park and forest land. Most of this land is located in the eastern portion of the State, the area that contains the main part of the Appalachian Mountain range. Wyoming County contains a state park and a large part of a wildlife management area (Map 30).

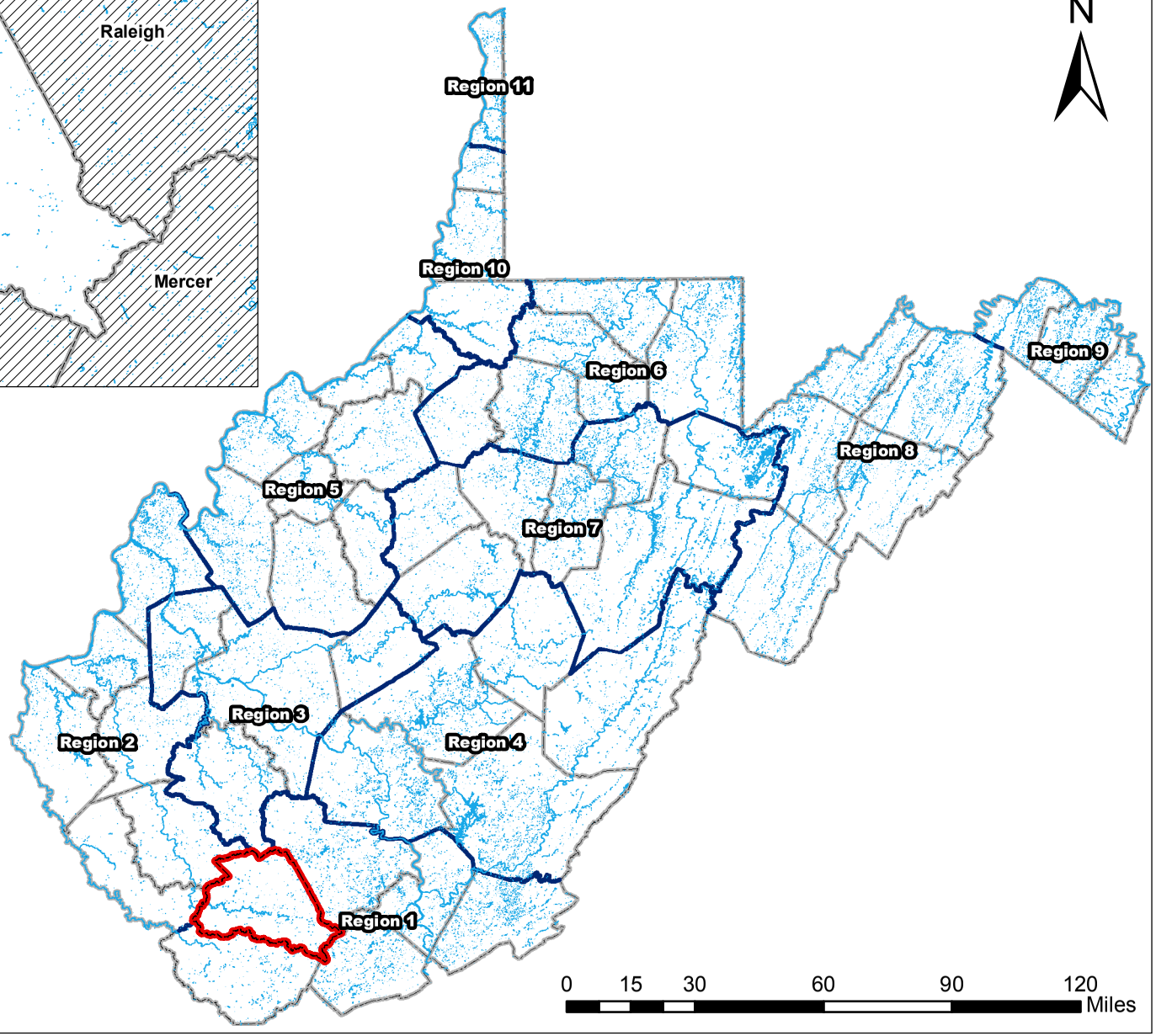
Air quality is a necessary environmental health benchmark that can determine the health and vitality of an area's residents. The air pollution non-attainment areas are "areas of the country where air pollution levels persistently exceed the national ambient air quality standards."[7] There are six full counties in West Virginia that are designated air pollution non-attainment areas, either in annual or 2006 24-hour standards as of the publication of this plan; Wyoming County is not among them (Map 31).

[7] "The Green Book Nonattainment Areas for Criteria Pollutants," Environmental Protection Agency, Accessed March 1, 2013, http://www.epa.gov/oaqps001/greenbk/.

Hydrology - National Wetlands Inventory

Wyoming County





Source: United States Fish and Wildlife Service 1996

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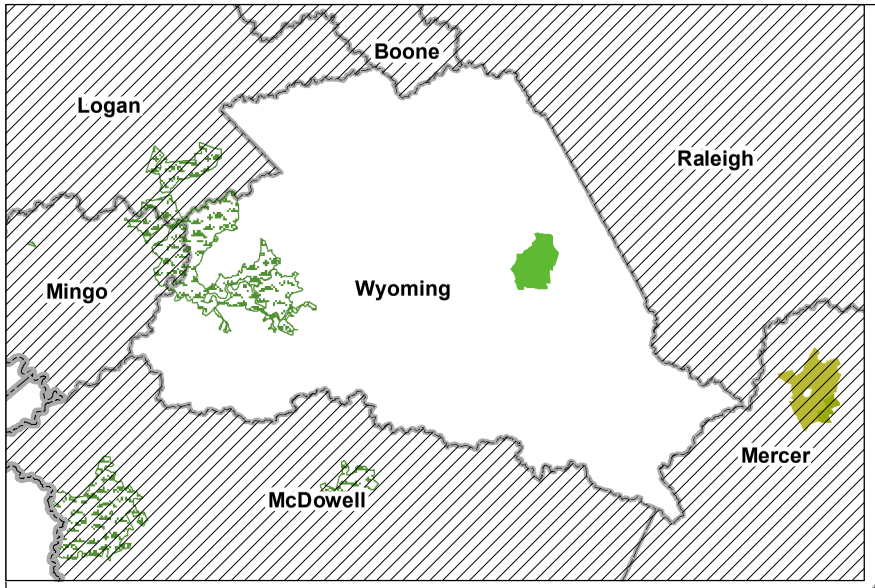
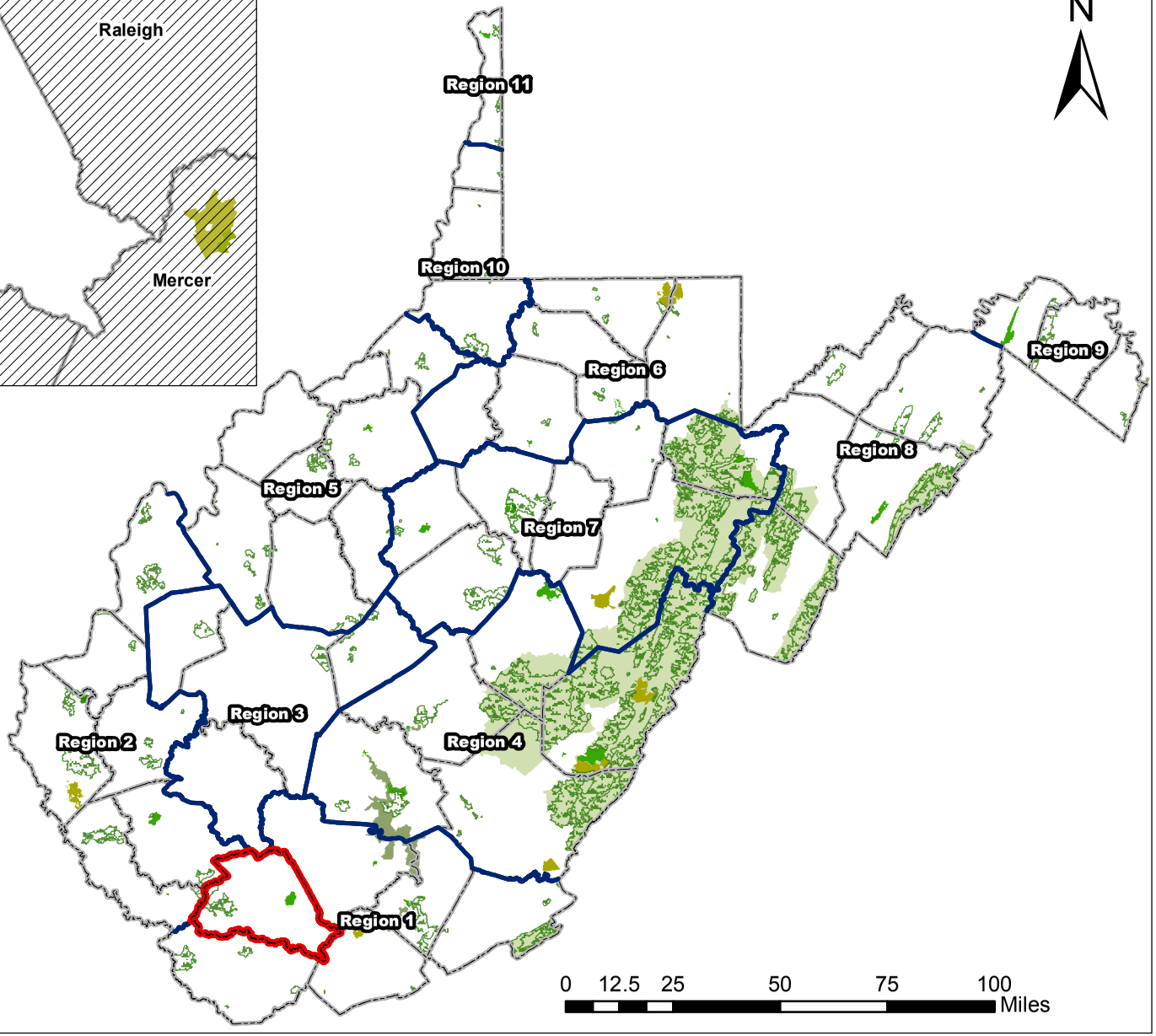
Public Land - Parks and Forests

Wyoming County





N

Planning Regions Line
Wildlife Management Areas
State Forest
State Park
National Forest
National Park
County Boundaries

0 12.5 25 50 75 100
Miles

Source: Wildlife Management Areas; West Virginia Division of Natural Resources 2002; State Forest; West Virginia Division of Forestry 2004; State Park; West Virginia Division of Natural Resources, Natural Resource Analysis Center 2000 National Forest; United States Forest Service 2005; National Park; United States National Park Service 2003

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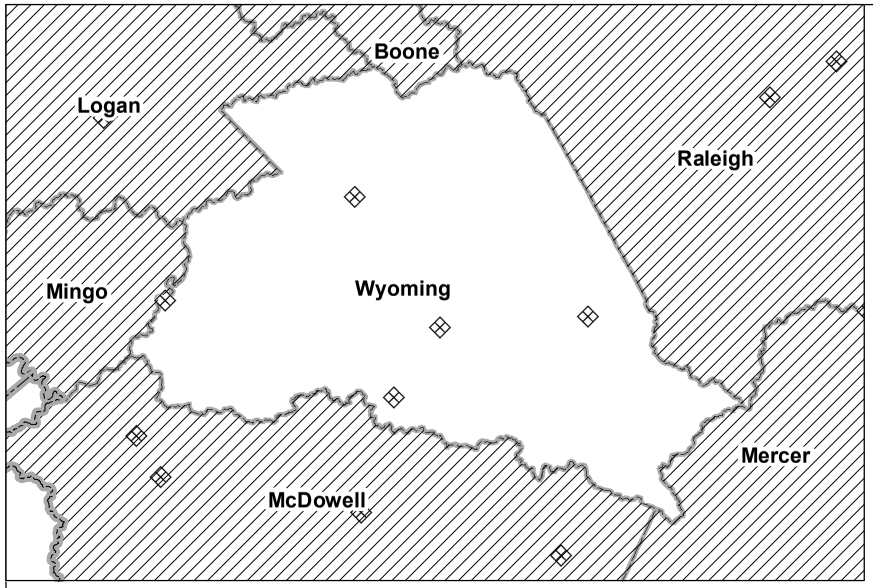
Environment - Monitoring

Wyoming County



N

Region 11
Region 10
Region 9
Region 6
Region 8
Region 5
Region 7
Region 3
Region 2
Region 4
Region 1

On December 28, 2012, U.S.EPA re-designated Cabell and Wayne Counties and the Graham Tax District in Mason County to attainment for the 1997 NAAQS.

Weather_Stations

Planning Regions Line

Air Pollution Non Attainment Areas

PM2.5 Nonattainment Areas (for both the Annual and the 2006 24-hr Standards)

PM2.5 Nonattainment Areas (Annual)

County Boundaries

0 15 30 60 90 120 Miles

Source: Weather Stations; National Oceanic and Atmospheric Administration 1999; Air Pollution Non Attainment Areas; West Virginia Department of Environmental Protection and United States Environmental Protection Agency.

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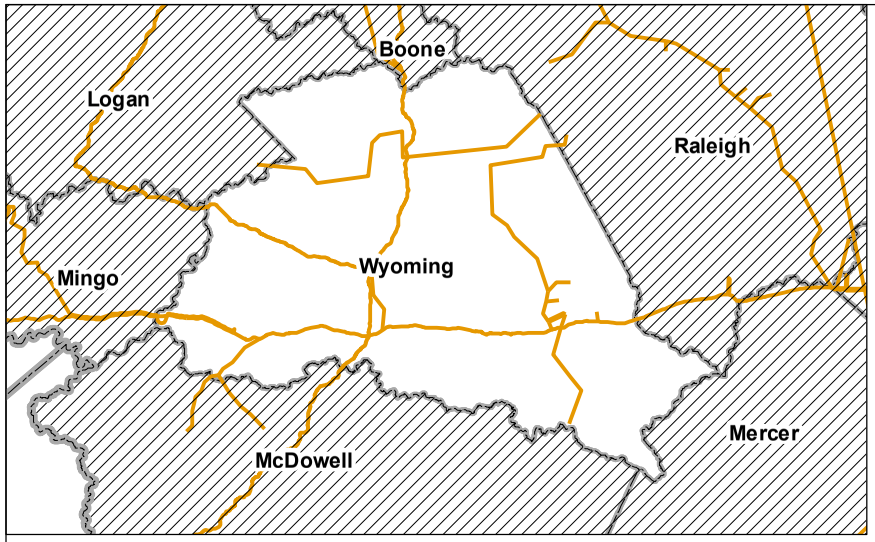
West Virginia's past and most likely its future are defined by energy. Besides coal, other options for energy have been investigated in the State. Gas and oil are of course the main energy staples in the nation, and West Virginia has access to this sort of energy in a number of ways. Wyoming County is a network of gas, containing an significant infrastructure of gas pipes (Map 32). Wyoming County was also a player in the development of the Marcellus Shale, and has a number of wells, with surveys showing possible thickness of up to 40 feet (Map 33). The Marcellus Shale will continue to be a major player in West Virginia's energy layout for the foreseeable future, and as technology improves recoverability may also. Wyoming County has developed its current system to meet current energy needs.

Potential renewable energy sources were also examined. Wood byproducts are a potential energy source classified as biomass energy. Naturally it is most useful in areas with a great deal of wood products. West Virginia is one of the most forested States in the country. Wyoming County appears to be one of the most forested counties in West Virginia (Map 34). However, it appears Wyoming County is not a major player in producing energy by wood byproducts, and for which byproducts are readily available (Maps 35 and 36). This indicates that there may be some great opportunities in developing this market. Other potential renewable energy sources include geothermal (Map 37), solar (Map 38), and wind (Map 39). Each of these resources was examined in a recent report from the Center of Business and Economic Research at Marshall University.[8] None of these sources was "likely to provide fuel or electricity at a lower cost" than coal and oil. Subsidizing these resources appears to be the only way to encourage faster growth in consumption, and in some cases they still have very limited potential in West Virginia. Geothermal energy, however, appears to have great potential in certain parts of the State, as shown in Map 37. Wyoming County appears to be more favorable than other counties for solar and geothermal development, but is still considered unsuitable for large scale development. Still, technology is not predictable, and improvements could occur in each of these resource areas that will make generation more feasible. Efforts to monitor research in all these areas should be undertaken to make use of any potential developments.[9]

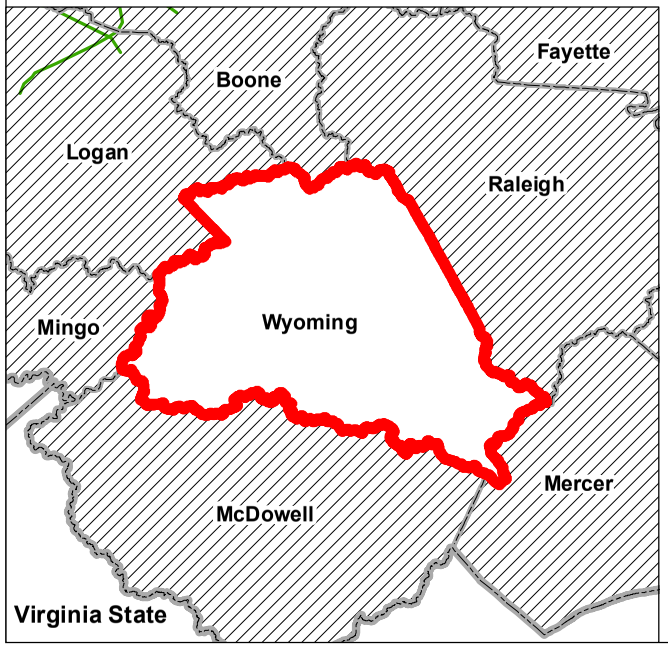
[8] Kent, Calvin, Risch, Christine, and Pardue, Elizabeth. *Renewable Energy Policy: Opportunities for West Virginia.* Center for Business and Economic Research, Huntington, WV (2012).
[9] Ibid.

Energy - Gas and Oil

Wyoming County

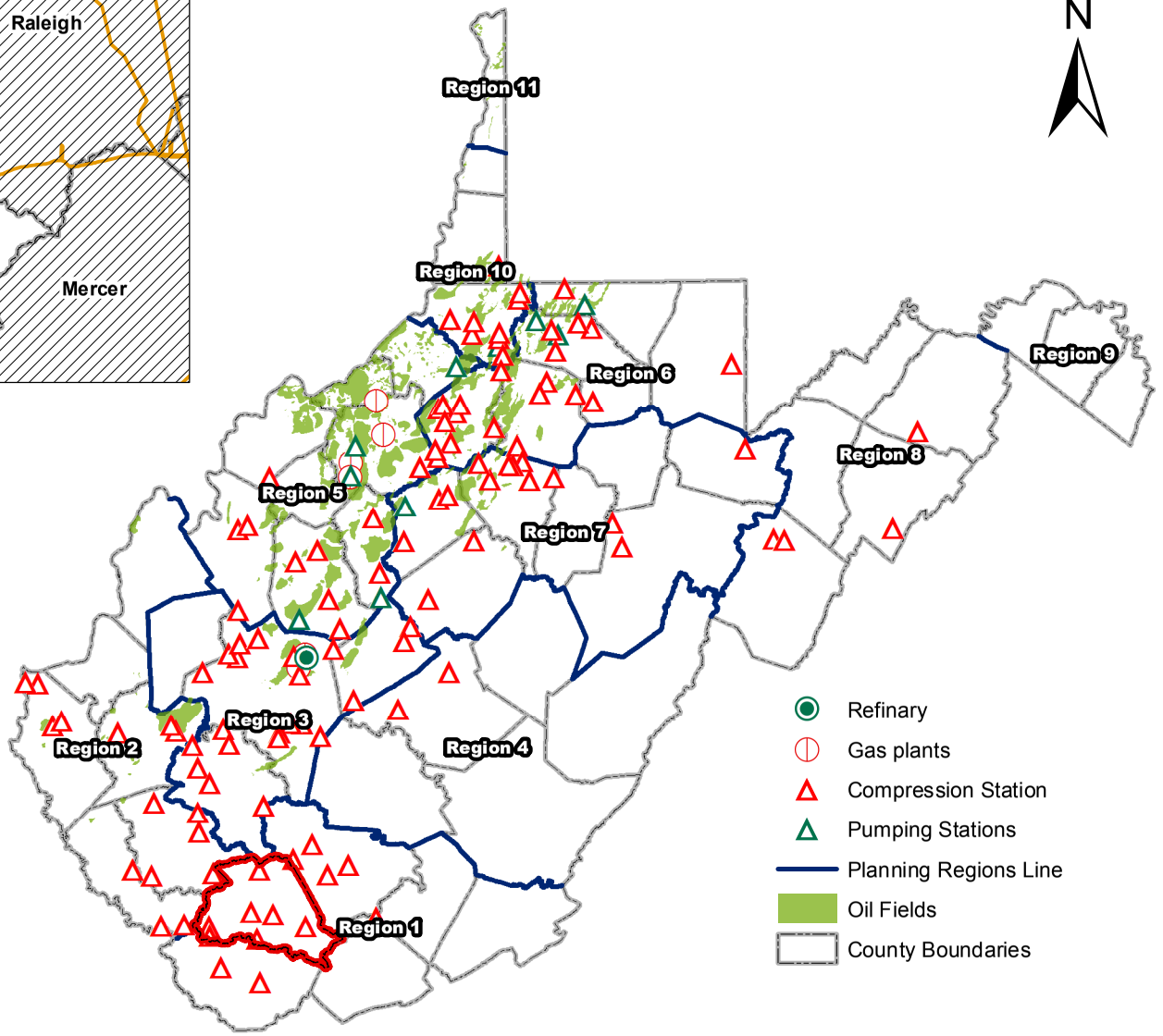


Gas Pipe



Oil Pipelines

Oil Fields



Source: West Virginia Geological and Economic Survey 2007

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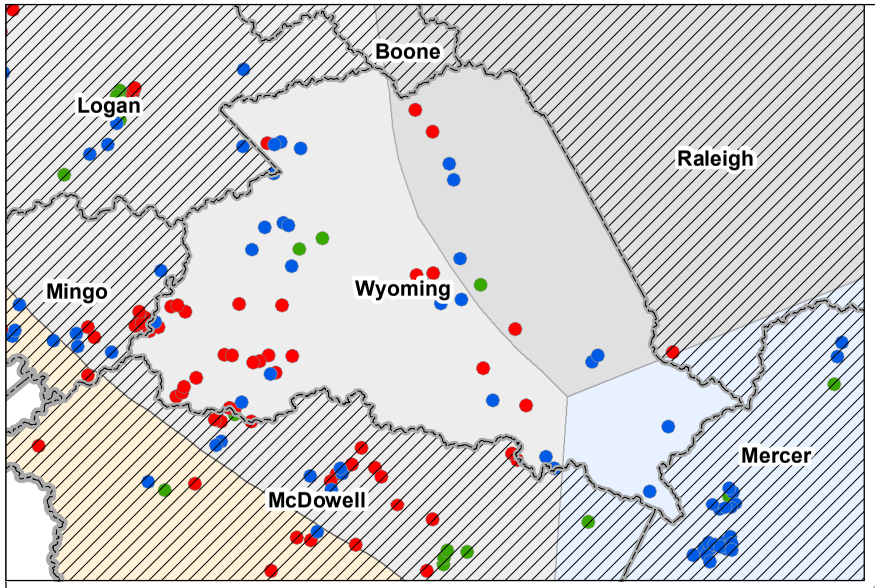
Energy - Marcellus Wells

Wyoming County



N

Region 11
Region 10
Region 9
Region 6
Region 8
Region 5
Region 7
Region 3
Region 2
Region 4
Region 1

- Cancelled Marcellus Wells
- Completed Marcellus Wells
- Permitted Marcellus Wells
- Planning Regions Line
- 0 ft. - 20 ft.
- 21 ft. - 40 ft.
- 41 ft. - 60 ft.
- 61 ft. - 80 ft.
- 81 ft. - 100 ft.
- Over 100 ft.
- Possible/Uncertain Marcellus
- Uncertain thickness
- Marcellus assumed to be absent
- County Boundaries

0 15 30 60 90 120 Miles

Source: West Virginia Geological and Economic Survey 2012

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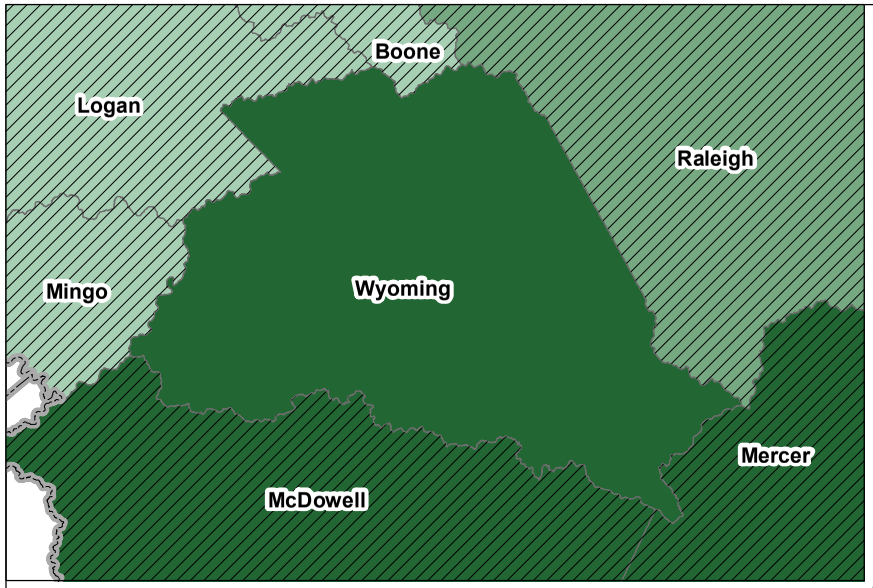
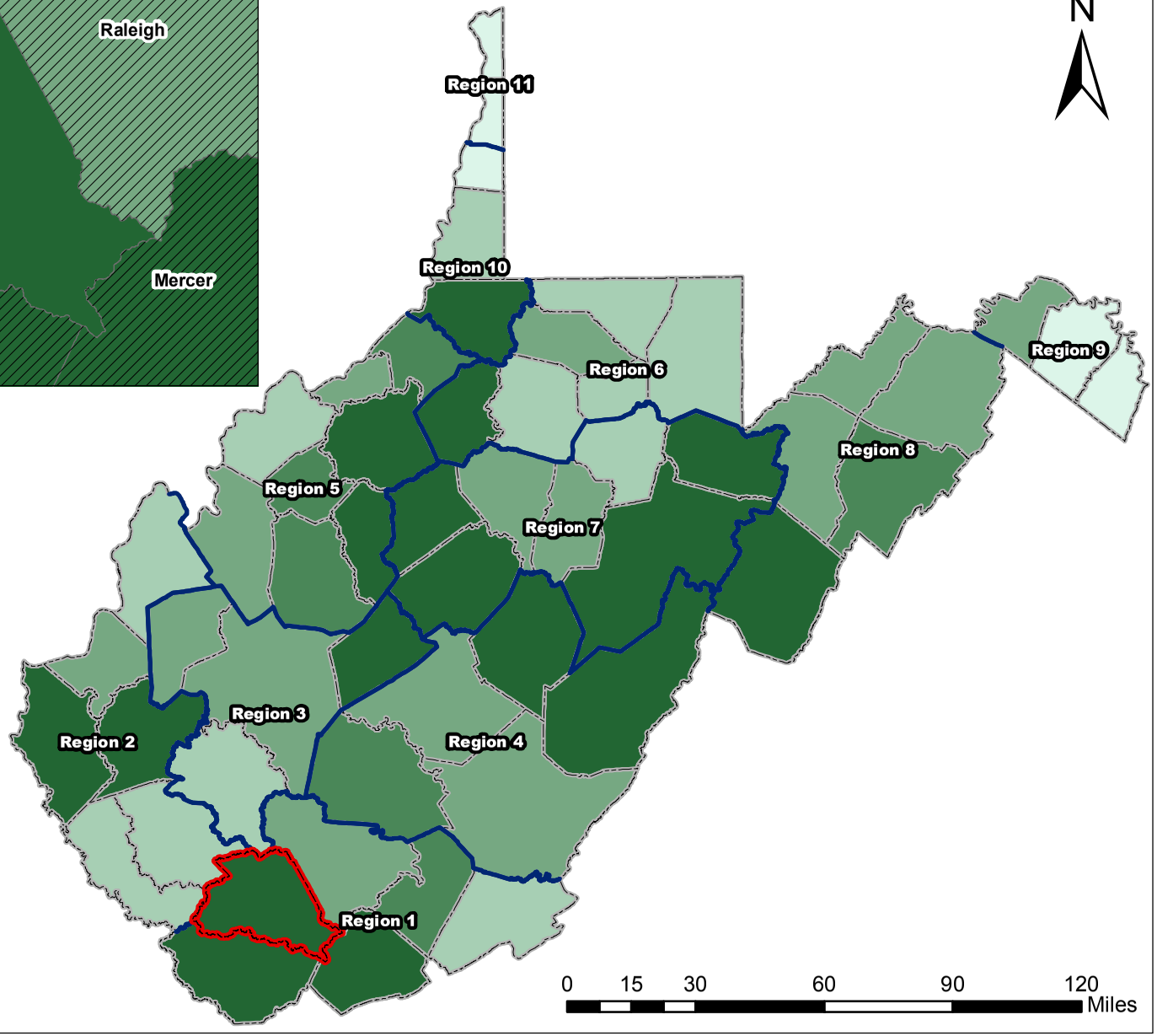
Energy - Percent Forest Coverage

Wyoming County





Source: Rahall Transportation Institute 2013

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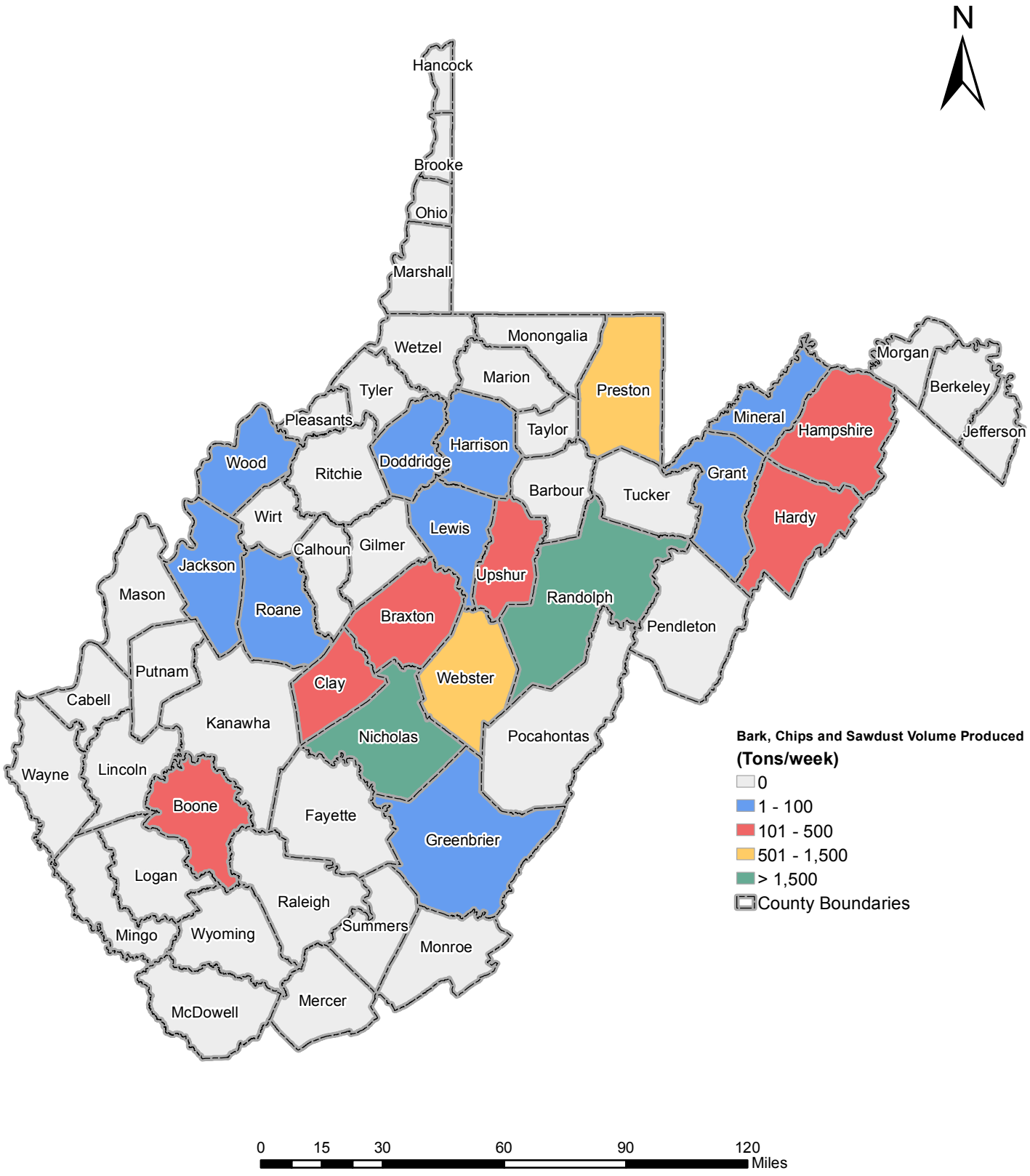
Renewable Energy - Wood By Products

Bark, Chip and Sawdust Volume Produced - Wyoming County



Source: Appalachian Hardwood Center 2011

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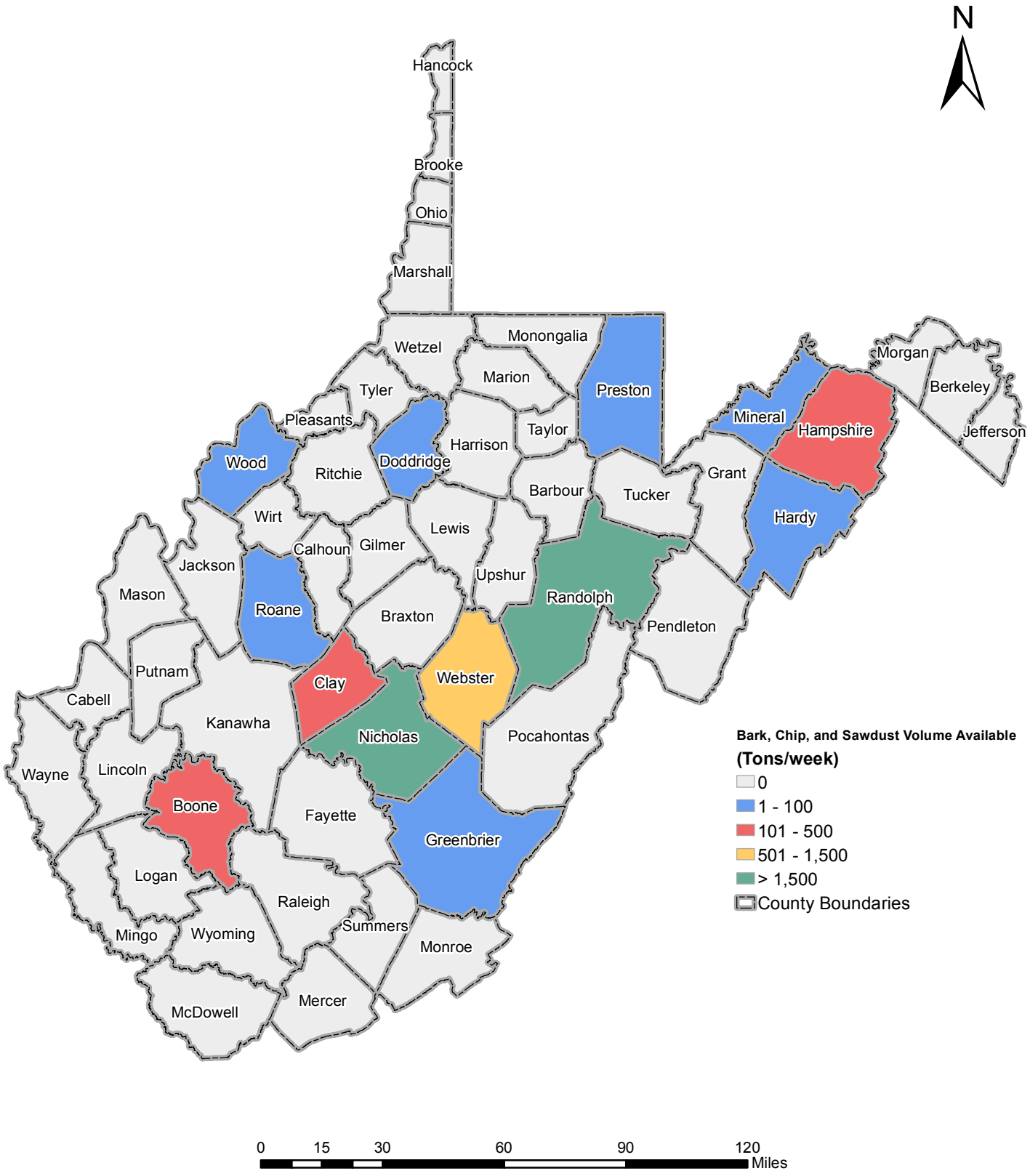
Renewable Energy - Wood By Products

Bark, Chip, and Sawdust Volume Available - Wyoming County



Source: Appalachian Hardwood Center 2011

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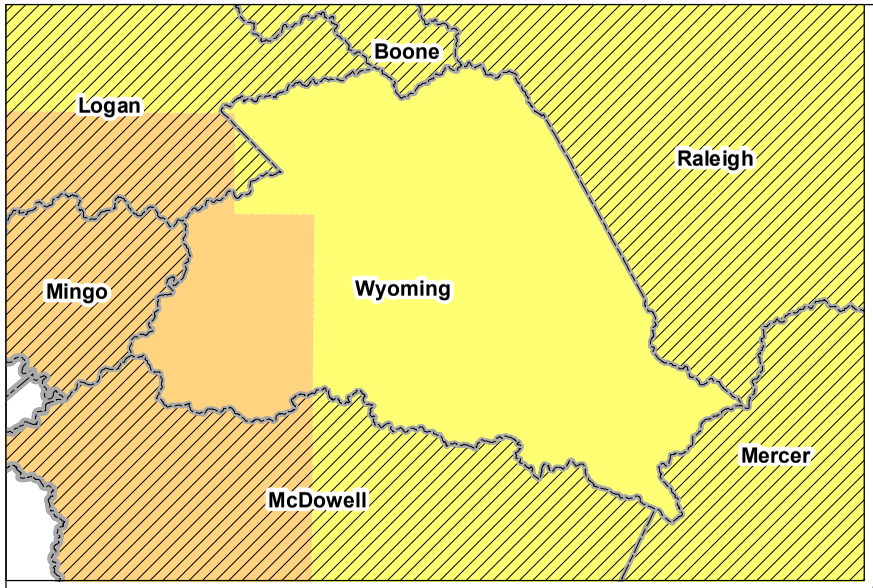
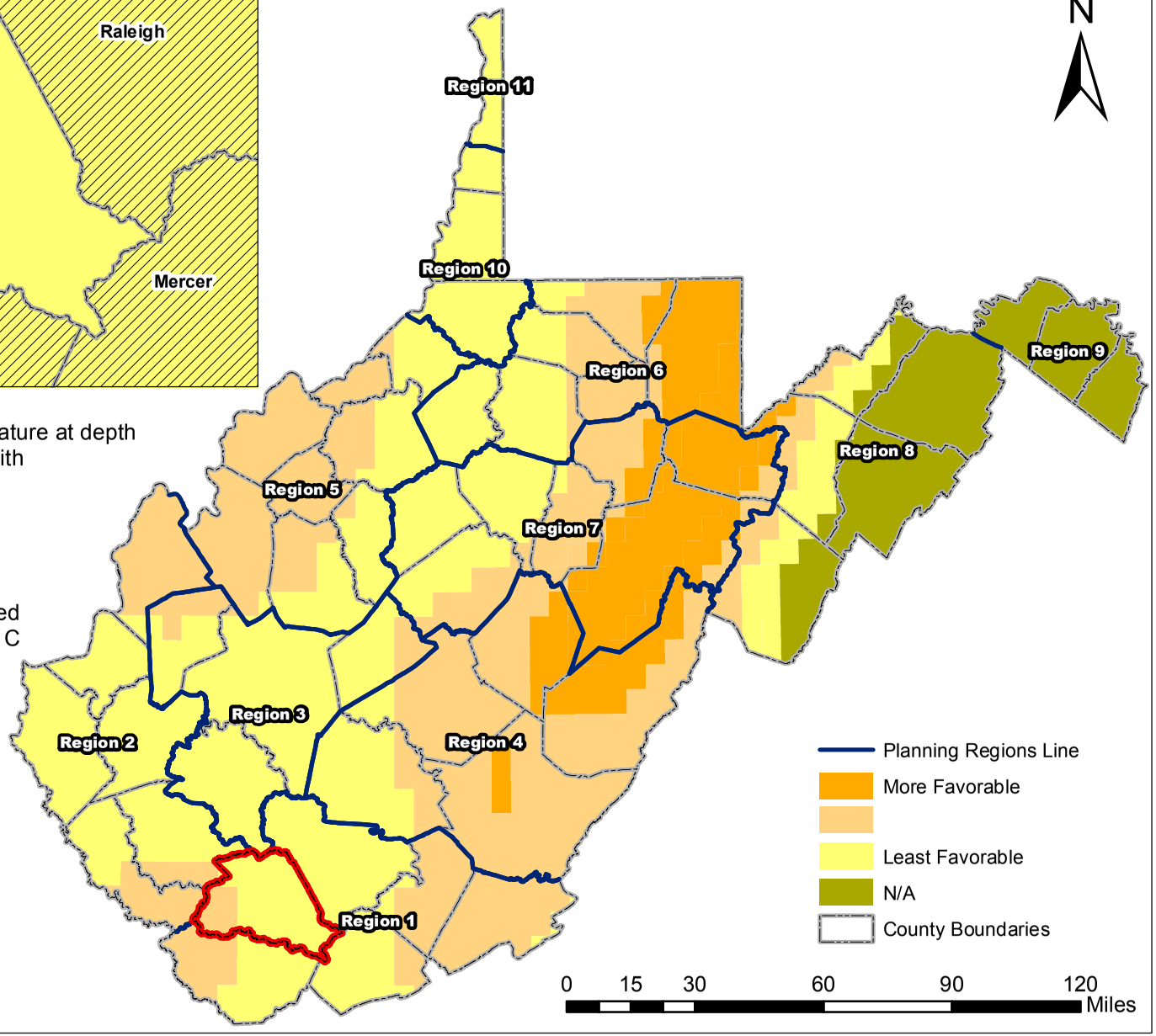
Energy - Geothermal Resource of Wyoming County

Favorability of Deep Enhanced Geothermal Systems



_ Source data for deep EGS includes temperature at depth from 3 to10 km and analyses (for regions with temperatures >= 150 degrees C).

_ Class values reflect relative favorability, with 1 being more favorable, 3 being least favorable, and "N/A" regions not having been assessed due to temperatures less than 150 degrees C at 10 km depth.



Source: National Renewable Energy Laboratory 2009

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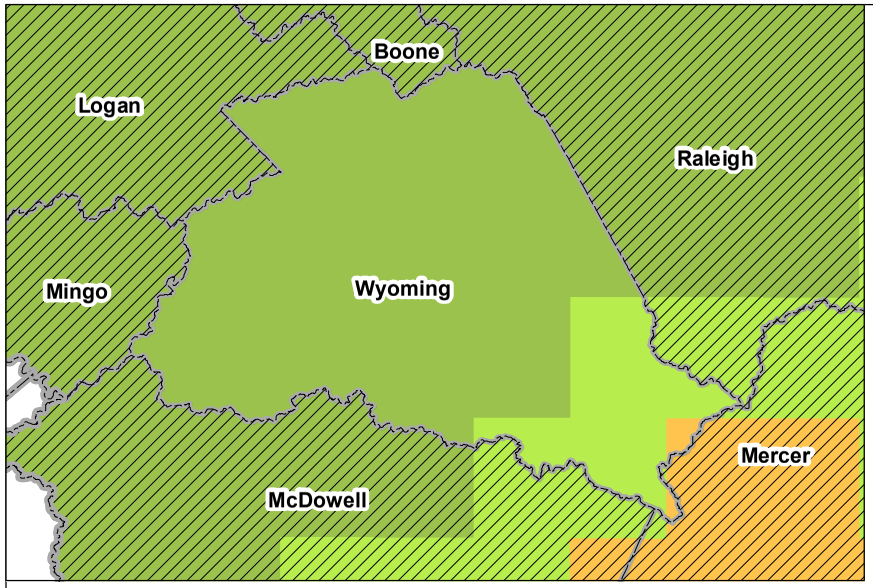
Solar - Renewable Energy

Wyoming County



Source: National Renewable Energy Laboratory 2012

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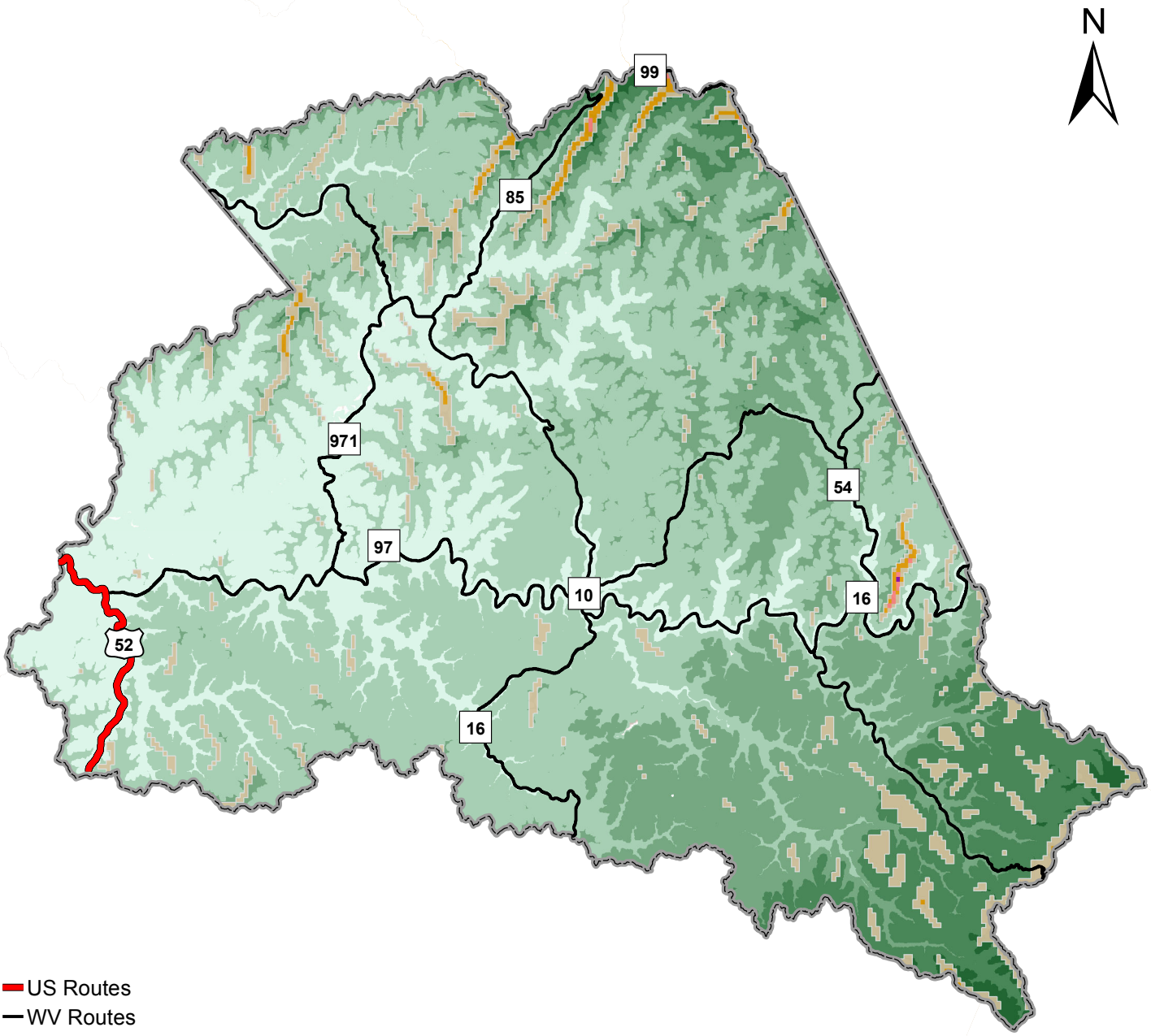
Renewable Energy-Wind

Wyoming County



Source: National Renewable Energy Laboratory 2006, United States Geological Survey n.d., ESRI, 2013

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IV. Land Use Smart Planning

The research team constructed a smart planning criterion that would apply to each mine site in Wyoming County. Tax Districts were utilized and labeled based on a particular land use practice that has previously been incorporated into the site. This criterion allows researchers and policymakers to determine suitability after weighing all the factors mentioned in the plan. A range of potential utilizations is given to give optimal control to policymakers and investors.

The table below (Table 2) provides the categories and their areas. The Smart Planning Map (Map 40) showcases the geographies separated by utilization.

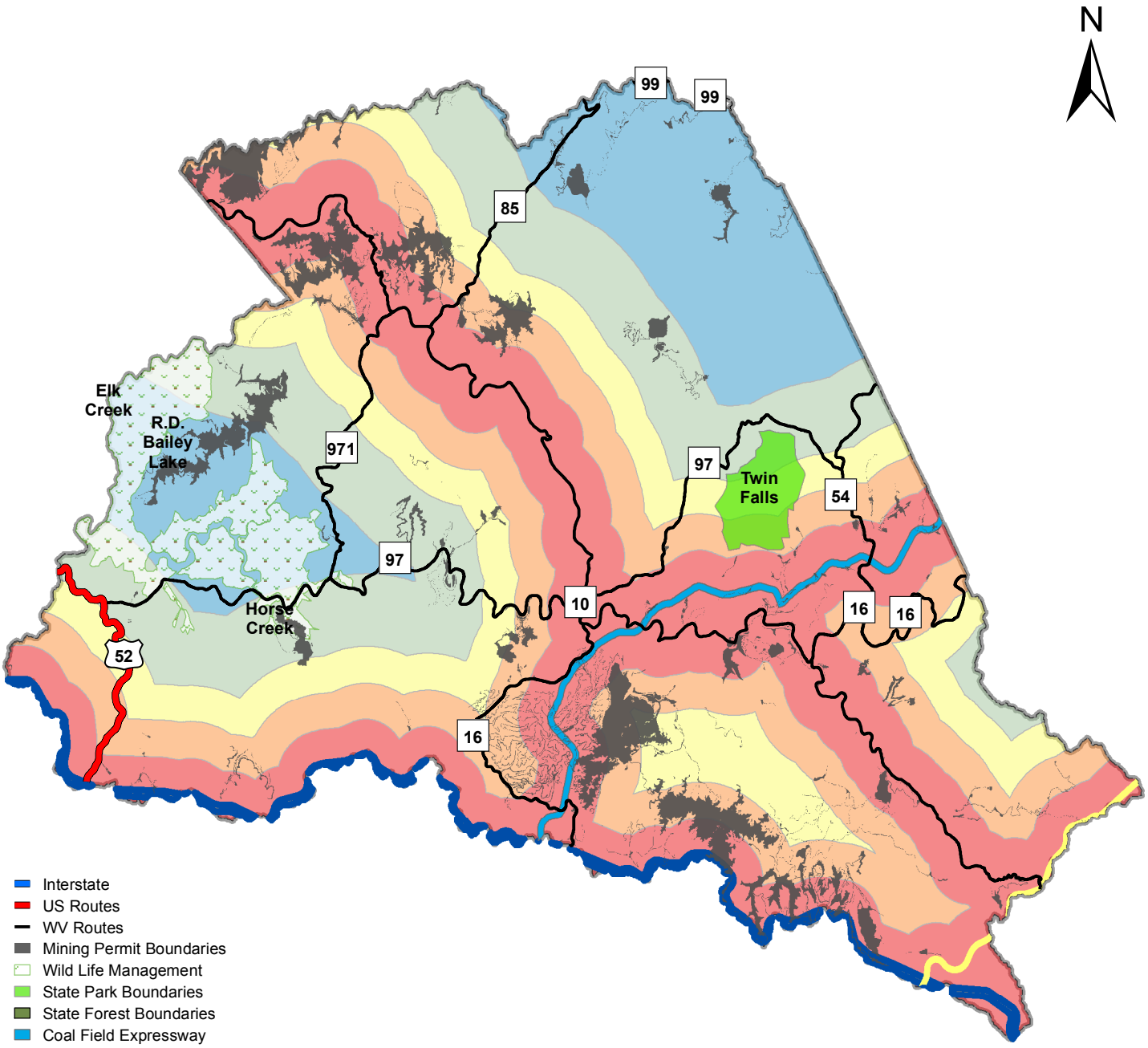
Table 2: Smart Planning Utilizations

Name	Smart Planning Criteria
Utilization Area 0-1 mile	Industrial, Commercial/Retail, Residential, Public Facility, Recreational
Utilization Area 1-2 miles	Industrial, Commercial/Retail, Residential, Public Facilities
Utilization Area 2-3 miles	Industrial, Commercial/Retail, Residential, Recreation
Utilization Area 3-5 miles	Industrial, Residential, Recreation, Agriculture, Forestland
Utilization Area 5-10 miles	Industrial, Residential, Agriculture, Forest Land
Utilization Area 10 miles +	Industrial, Residential, Agriculture, Forest Land

Land development or redevelopment options are determined through a review of the redevelopment authority's anticipated needs. The required infrastructure component standards are determined on a site by site basis by the county economic development authority as designated by West Virginia Code Chapter 05B Article 2A.

Landuse Criteria

Wyoming County



Source: Rahall Transportation Institute 2013

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V. Site Evaluation

Once the smart planning buffers have been created, the sites available for analysis are confirmed. This evaluation provides the county with an inventory of post mine sites that are suitable for development. The evaluation consists of existing infrastructure availability, which gives the most accurate assessment of a site's physical capabilities for investment purposes. This will encourage strategic development and evaluation.

Initial Data Collection:

The consulting team collected all available data on surface mines sites located in Wyoming County to produce an inventory of sites for analysis. The source for site information was primarily the West Virginia Department of Environment Protection (WV DEP) website, which allows permit searches by geographic location and mining type. The information provided by this source was used to develop a preliminary property database of all surface mines as well as general mapping.

Initial data collection revealed all of the mine sites in the county. Some of them are active sites where mining is currently going on and other sites are in various phases of bond. The potential mining site for development is the one that is not completely released or still active. There are 17 potential mining sites for development in Wyoming County, which are included in the following table.

Table 3: Wyoming County Potential Surface Mine Sites for Development

Site No.	Permittee	Permit_ID	Facility Name	Acres	Expiration Date	Nearest Post Office
1	Bluestone Coal Corporation	S401401	Contour And Auger No. 1 Mine	512.76	1/30/14	Northfork
2	Bluestone Coal Corporation	S400899	Pinnace Ridge Surface Mine	423.06	12/17/16	Northfork
3	Bluestone Coal Corporation	S400900	Sewell Seam Surface Mine No. 2	915	5/23/16	New Richmond
4	Dynamic Energy, Inc.	S402096	Coal Mountain No. 1 Surface Mine	1365.86	5/7/17	Coal Mountain
5	Dynamic Energy, Inc.	S402196	Coal Mtn Valley Fill No. 2	172.02	5/7/17	Coal Mountain
6	Jmac Leasing Inc	S400104	Surface Mine No. 2	322.27	12/5/15	Cyclone
7	Jmac Leasing Inc	S401499	Joe Branch Surface Mine No. 1	422.77	9/6/15	Cyclone

Site No.	Permittee	Permit_ID	Facility Name	Acres	Expiration Date	Nearest Post Office
8	Nufac Mining Company Inc	S402586	Sewell Strip No. 1	1194.95	6/13/16	New Richmond
9	Paynter Branch Mining Inc	S400106	Paynter Branch South Surface Mine	507.43	10/31/17	Cyclone
10	Paynter Branch Mining Inc	S400300	Paynter Branch North Surface Mine	485.22	12/27/15	Cyclone
11	Paynter Branch Mining Inc	S400896	Surface Mine No. 1	394.77	9/10/11	Cyclone
12	Paynter Branch Mining Inc	S401298	A. Z. Litz Surface Mine	262.57	7/30/14	Lynco
13	Pioneer Fuel Corporation	S011977	Unknown	582.36	1/6/13	Oceana
14	Pioneer Fuel Corporation	S400596	Simmons Fork Mountaintop Remove	867.79	11/7/11	Oceana
15	Pioneer Fuel Corporation	S401595	Winifrede No. 2 Mountaintop Remove	733.3	9/20/15	Oceana
16	Rhino Eastern Llc	S401396	Skinned Poplar Strip	278.62	11/8/01	Glen Rogers
17	Rolling S Augering Llc	S400209	Mine Number 1	57.52	5/17/16	Brenton

Site Analysis (Distance Analysis)

Once the surface mining sites in the county were identified each of the sites were evaluated by estimating the shortest distance from the site to a specified criteria (features which are important to development). There are two types of distance calculation in this analysis: road-path and Euclidean distance. Road-path distance is the distance when travelling on an actual roadway from the site to the feature; Euclidean distance is when the distance is a straight line from the site to the feature, without the necessity of following a roadway. Following are lists of criteria used in the analysis:

- Road-path Distances:
  - Distance to nearest roadway (Interstate, Existing Highway, Proposed Highway…)
  - Distance to major airports (Tri-State, Yeager)
  - Distance to Intermodal Terminal Facility and Huntington Port
  - Distance to nearest Sewer/ Solid Waste Treatment Facility
- Euclidean Distances:
  - Distance to Water Lines, Sewer Lines, Power Lines and Broadband
  - Distance to Gas Pipe and Oil Pipe
  - Distance to Railroad, National Waterway Network

The following tables illustrate the results of these assessments for all of the identified sites. All distances were recorded in miles.

Table 4: Assessment of Distances

Site No.	Permit_ID	Interstate (IS)	Name - IS	Existing Highway (EH)	Name - EH	Paved Road	Paved Road Name	Proposed Highway (PH)	Name-PH
1	S401401	77.60	I64	4.14	US-52	0.05	King Coal Highway	0.32	Kingcoal Highway
2	S400899	79.60	I64	8.30	S10	0.45	Wagon Wheel road	3.94	Shawnee Highway
3	S400900	68.12	I64	4.69	S10	1.62	Pinnacle Creek Road	3.95	Coal Express Highway
4	S402096	81.06	I64	6.14	S97	0.55	Hatfield Branch Road	13.33	Kingcoal Highway
5	S402196	84.98	I64	10.04	S97	0.33	Toler Hollow Road	17.25	Kingcoal Highway
6	S400104	70.21	I64	0.89	S10	0.54	Beech Branch Road	27.31	Coal Express Highway

Site No.	Permit_ID	Interstate (IS)	Name - IS	Existing Highway (EH)	Name - EH	Paved Road	Paved Road Name	Proposed Highway (PH)	Name-PH
7	S401499	69.16	I64	0.22	S10	0.24	WV 10	26.25	Coal Express Highway
8	S402586	76.47	I64	5.31	S16	1.13	Indian Creek-Fort Branch Road	6.22	Coal Express Highway
9	S400106	69.27	I64	2.43	S10	0.46	Painter Branch-Campus Rd.	26.37	Coal Express Highway
10	S400300	63.44	I64	0.54	S10	0.41	Road Fork	20.55	Coal Express Highway
11	S400896	69.21	I64	2.38	S10	0.46	Painter Branch-Campus Rd.	26.31	Coal Express Highway
12	S401298	65.85	I64	0.10	S10	0.10	WV 10	22.95	Coal Express Highway
13	S011977	60.00	I64	1.10	S85	1.05	WV 10	17.09	Coal Express Highway
14	S400596	58.11	I64	2.65	S85	1.03	Jim's Branch Rd.	19.89	Coal Express Highway
15	S401595	56.36	I64	1.66	S85	1.20	Davy Creek Rd.	19.66	Coal Express Highway
16	S401396	53.29	I64	10.18	S99	0.89	Franks Run Road	16.22	Coal Express Highway
17	S400209	68.60	I64	2.05	S97	0.49	Shannon Mill Branch	12.00	Coal Express Highway

Table 5 Distances from Sites to Major Airports

Site No.	Permit_ID	Permittee	Tri-State	Yeager
1	S401401	Bluestone Coal Corporation	135.92	101.38
2	S400899	Bluestone Coal Corporation	146.82	105.92
3	S400900	Bluestone Coal Corporation	122.58	88.07
4	S402096	Dynamic Energy, Inc.	111.32	92.55
5	S402196	Dynamic Energy, Inc.	115.23	96.47
6	S400104	Jmac Leasing Inc	93.18	81.70
7	S401499	Jmac Leasing Inc	92.94	80.64
8	S402586	Nufac Mining Company Inc	129.55	95.03
9	S400106	Paynter Branch Mining Inc	97.18	80.76
10	S400300	Paynter Branch Mining Inc	99.16	74.93
11	S400896	Paynter Branch Mining Inc	97.11	80.70
12	S401298	Paynter Branch Mining Inc	95.95	77.34
13	S011977	Pioneer Fuel Corporation	103.84	71.49
14	S400596	Pioneer Fuel Corporation	105.09	69.60
15	S401595	Pioneer Fuel Corporation	103.31	67.85
16	S401396	Rhino Eastern Llc	117.41	74.16
17	S400209	Rolling S Augering Llc	116.70	82.19

Table 6: Shortest Distances from Sites to Other Transportation Methods

Rank	Permit_ID	Railroad (RR)	Owner (RR)	Intermodel Terminal Facility (River Point Processing Inc: Marmet)	National Waterway Network (Big Sandy Rivers)	Huntington Port
1	S401401	2.24	NS	90.88	9.02	128.93
2	S400899	2.28	NS	95.42	11.89	139.86
3	S400900	1.59	NS	77.56	7.12	115.59
4	S402096	0.85	NS	82.04	11.61	104.33
5	S402196	0.95	NS	85.96	11.83	108.24
6	S400104	2.37	XXXX	71.19	19.13	86.21
7	S401499	2.99	XXXX	70.14	18.28	85.98
8	S402586	3.25	NS	84.51	7.94	122.56
9	S400106	1.02	XXXX	70.25	15.92	90.21
10	S400300	2.01	XXXX	64.43	17.20	92.18
11	S400896	1.53	XXXX	70.19	16.70	90.15
12	S401298	2.45	XXXX	66.84	17.38	88.98
13	S011977	1.14	NS	60.98	16.11	96.86
14	S400596	1.76	NS	59.09	15.74	97.51
15	S401595	1.34	NS	57.34	16.84	95.73
16	S401396	2.07	CSXT	63.66	22.28	109.83
17	S400209	1.19	NS	71.69	9.59	109.72

Table 7: Shortest Distances from Sites to Sewer Lines (SL) and Water Lines (WL)

Site No.	Permit_ID	Sewer Lines	Public Utility - SL	Water Lines	Public Utility - WL
1	S401401	6.96	City of Welch	2.55	McDowell County Public Service District
2	S400899	7.39	Town of Mullens Sanitary Board	2.74	Crumpler Community Water Association, Inc.
3	S400900	3.31	Center Public Service District	2.91	Pineville Municipal Water Department
4	S402096	4.54	Town of Oceana Sewer System	2.70	Coal Mountain Public Service District
5	S402196	3.84	Town of Oceana Sewer System	2.31	Coal Mountain Public Service District
6	S400104	6.39	Town of Oceana Sewer System	0.85	Logan County Public Service District
7	S401499	5.48	Town of Oceana Sewer System	0.24	Logan County Public Service District
8	S402586	5.49	Center Public Service District	4.14	City of Welch
9	S400106	2.27	Town of Oceana Sewer System	1.19	Logan County Public Service District
10	S400300	2.62	Town of Oceana Sewer System	0.43	Logan County Public Service District
11	S400896	2.60	Town of Oceana Sewer System	0.59	Logan County Public Service District
12	S401298	3.64	Town of Oceana Sewer System	0.10	Logan County Public Service District
13	S011977	1.08	Town of Oceana Sewer System	1.05	Oceana Municipal Water Works
14	S400596	1.97	Town of Oceana Sewer System	1.16	Matheny Public Service District
15	S401595	1.55	Town of Oceana Sewer System	1.11	Kopperston Public Service District
16	S401396	0.89	Glen Rogers Public Service District	0.92	Glen Rogers Public Service District
17	S400209	3.30	Town of Oceana Sewer System	1.16	Brenton Public Service District

Table 8: Shortest Distances from Sites to Broadband and Power Lines

Site No.	Permit_ID	Broadband	Provider	Power Lines	Type	Size_kV
1	S401401	0.93	Citizens Telecommunications Company of West Virginia	0.04	Sub-Transmission	Unknown
2	S400899	1.84	Frontier West Virginia, Inc.	1.02	Transmission	115-138
3	S400900	0.63	Frontier West Virginia, Inc.	0.36	Transmission	115-138
4	S402096	2.04	Shentel Cable Company	0.35	Transmission	115-138
5	S402196	1.34	Shentel Cable Company	0.96	Transmission	115-138
6	S400104	0.84	Shentel Cable Company	1.12	Transmission	765
7	S401499	0.24	Shentel Cable Company	0.82	Transmission	765
8	S402586	2.29	Frontier West Virginia, Inc.	0.62	Transmission	115-138
9	S400106	1.35	Shentel Cable Company	0.57	Transmission	765

Site No.	Permit_ID	Broadband	Provider	Power Lines	Type	Size_kV
10	S400300	0.41	Cebridge Acquisition LLC	2.04	Transmission	765
11	S400896	0.58	Shentel Cable Company	1.30	Transmission	765
12	S401298	0.08	Shentel Cable Company	0.76	Transmission	765
13	S011977	0.10	Cebridge Acquisition LLC	0.18	Transmission	115-138
14	S400596	0.86	Frontier West Virginia, Inc.	1.31	Transmission	115-138
15	S401595	0.15	Cebridge Acquisition LLC	0.03	Transmission	115-138
16	S401396	0.04	Cebridge Acquisition LLC	0.57	Sub-Transmission	Unknown
17	S400209	0.41	Shentel Cable Company	1.16	Transmission	115-138

Table 9: Shortest Distances from Sites to Sewer and Solid Waste Treatment Facilities

Site No.	Permit_ID	Sewer Treatment (ST)	Facility Name (ST)	Solid Waste Treatment (SWT)	Facility Name (SWT)
1	S401401	6.96	City of Welch	4.43	unknown
2	S400899	7.39	Town of Mullens Sanitary Board	11.56	Talon Manufacturing Co Inc
3	S400900	3.31	Center Public Service District	5.09	Hale'S Convenient Mart
4	S402096	4.54	Town of Oceana Sewer System	10.54	R. D. Bailey Lake Wtp
5	S402196	3.84	Town of Oceana Sewer System	14.46	R. D. Bailey Lake Wtp
6	S400104	6.39	Town of Oceana Sewer System	6.28	Ralph R. Willis Vo-Tech School
7	S401499	5.48	Town of Oceana Sewer System	5.96	Road Branch Elementary School
8	S402586	5.49	Center Public Service District	5.79	John D. Rockefeller Iv Industrial Pk
9	S400106	2.27	Town of Oceana Sewer System	6.08	Road Branch Elementary School
10	S400300	2.62	Town of Oceana Sewer System	3.00	Road Branch Elementary School
11	S400896	2.60	Town of Oceana Sewer System	6.02	Road Branch Elementary School
12	S401298	3.64	Town of Oceana Sewer System	2.66	Road Branch Elementary School
13	S011977	1.08	Town of Oceana Sewer System	2.05	Oceana Town Of
14	S400596	1.97	Town of Oceana Sewer System	6.53	Oceana Wtp
15	S401595	1.55	Town of Oceana Sewer System	6.30	Oceana Wtp
16	S401396	0.89	Glen Rogers Public Service District	4.72	Glen Rogers Psd
17	S400209	3.30	Town of Oceana Sewer System	6.23	Baileysville Elementary And Junior High School

Table 10: Shortest Distances from Sites to Gas Pipe and Oil Pipe

Site No.	Permit_ID	Gas Pipe (GP)	Company Name (GP)	Oil Pipe (OP)	Company Name (OP)
1	S401401	2.00	Dominion Transmission Inc.	1.44	CN
2	S400899	0.86	Dominion Transmission Inc.	0.04	Unknown
3	S400900	1.65	Columbia Gas Transmission Corp.	1.68	CL
4	S402096	0.31	Dominion Transmission Inc.	0.30	CN
5	S402196	0.82	Dominion Transmission Inc.	0.80	CN
6	S400104	3.91	Dominion Transmission Inc.	1.41	CN
7	S401499	3.07	Dominion Transmission Inc.	0.54	CN
8	S402586	2.82	Columbia Gas Transmission Corp.	2.43	Unknown
9	S400106	1.30	Dominion Transmission Inc.	0.28	CN
10	S400300	2.75	Dominion Transmission Inc.	0.69	C
11	S400896	2.14	Dominion Transmission Inc.	0.58	CN
12	S401298	2.66	Dominion Transmission Inc.	0.37	CN
13	S011977	0.73	Dominion Transmission Inc.	0.22	C
14	S400596	0.27	Dominion Transmission Inc.	0.23	CN
15	S401595	0.56	Dominion Transmission Inc.	0.01	CN
16	S401396	0.78	Columbia Gas Transmission Corp.	0.26	CN
17	S400209	0.71	Dominion Transmission Inc.	0.72	CN

Suitability Model

The suitability model for Wyoming County is created with a weighted scoring method. The method scores options against a prioritized requirements list to determine which option best fits the selection criteria. Using a consistent list of criteria, weighted according to the importance or priority of the criteria to the researcher, a comparison of similar "products" can be completed. If numerical values are assigned to the criteria priorities (**weighting**) and the ability of the product to meet a specific criterion (**scoring**), a "score" can be derived. By summing the score (**total score**), the product most closely meeting the criteria can be determined.

Criteria are chosen and weighted based on published Land Use Master Plans (LUMPs) for several counties in West Virginia, our own research on the existing conditions in Wyoming County and expert advice about important factors to site development.[10] Then, scores for each site are given by comparing the closest distance from the site to all factors within given distance thresholds. There are three sets of scores in this suitability model: **absolute scores**, **relative scores** and the **total score**.

Absolute scores are given by comparing certain distance thresholds with the results of GIS Distance Analysis. Thresholds are determined mainly based on the researcher's experience, characteristics of the considered criteria and the priority given to the criteria. For example, if the closest distance from a site to an interstate ranges from 5 to 10 miles, the site will be given 7 points for the Interstate Criteria. Absolute scores will directly affect the site selection. Different score categories may result in significant change in the cost of investment, and will thus impact the county's decisions.

Relative scores, on the other hand, depend solely on the closest distances of sites to relative criteria features. Initially, statistical values will be computed according to distance values from all sites to a certain factor (criteria), including min, quartile 1 – Q1, quartile 2 – Q2, quartile 3 – Q3, and max. Then, distance values will be classified into four groups and given the scores shown in Table 13 (below). This score set is used to sharpen difference between all sites in a certain category and therefore aid the decision maker. For example, two sites may have the same absolute score (in the same range of miles) but may fall in different statistical groups. Then the two sites will have different relative scores.

[10] Joseph, M. (2006). A Decision-Support Model of Land Suitability Analysis for the Ohio Lake Erie Balanced Growth Program. EcoCity Cleveland.

The total score is a combination of weights, absolute scores, and relative scores. The following equation is used to calculate the total score of a certain studied site:

Total score of site A = $\sum$ (absolute score x relative score x weight)$_{ci}$ / 10 (ci: criteria i)

Sites with higher total scores reveal a higher chance of being developed. Total score will vary according to a combination of three components: weights, absolute scores, and relative scores. In this report, total scores are calculated by the linear equation indicating that all components are treated equally.

1. Weighting

Table 11 prioritizes post-mining land-use criteria for surface coal mining site selection in Wyoming County. Criteria weights are assigned on a one-to-ten scale. According to Joseph, utilities (power, water, and sewer) and road networks are considered more important factors to development. Therefore, those factors receive higher weights (7-10) in the suitability model. On the other hand, decision-makers are less affected by factors such as airports, national waterways, and ports. Those factors may be good supplements but do not critically change the investments.

Table 11: Weighting Sites Selection Criteria

No	Criteria	Weight
1	Interstate	8
2	Existing Highway	8
3	Proposed Highway	9
4	Yeager Airport	3
5	Tri-state Airport	3
6	National Waterway Network Ports	5
7	Sewer Treatment Facilities	7
8	Solid Waste Treatment Facilities	8
9	National Waterway Network	4
10	Intermodal Terminal Facilities	6
11	Sewer Lines	8
12	Railroads	5
13	Water Lines	10
14	Power Lines	10
15	Gas Pipes	6
16	Pipe Lines	6
17	Broadband	9

2. Scoring

2.1 Absolute Scores:

The shorter the distance to a feature from a site, the higher absolute score the site receives. Table 12 describes the thresholds and score categories for each criterion, ranging from 1 to 10. In order to achieve a better comparison between sites, the score scale is evenly distributed between five distance groups (1-3-5-7-10).

As mentioned above, thresholds are mainly defined based on researcher experience, traveling method from a site to the features (road-path vs. Euclidean), and characteristic of criteria (type of feature, priority, and density). For example, distance thresholds for "Solid Waste Treatment Facilities" are much smaller than ones for "Intermodal Terminal Facilities". This is because treatment facilities are much denser than intermodal terminal facilities. In addition, solid waste facilities are considered more important in site selection (weight: 8 vs. 6).

Table 12: Absolute Scoring System

Absolute Score		**10**	**7**	**5**	**3**	**1**
Criteria (Distances in miles)	Existing Highway	0 - 5	5 - 10	10 - 15	15 - 20	> 20
	Proposed Highway	0 - 5	5 - 10	10 - 15	15 - 20	> 20
	Intermodal Terminal Facilities	0 - 10	10 - 20	20 - 30	30 - 40	> 40
	Interstate	0 - 5	5 - 14	14 - 22	22 - 30	> 30
	National Waterway Network Ports	0 - 30	30 - 50	50 - 70	70 - 90	> 90
	Sewer Treatment Facilities	0 - 2.5	2.5 - 5	5 - 7.5	7.5 - 10	> 10
	Solid Waste Treatment Facilities	0 - 5	5 - 14	14 - 22	22 - 30	> 30
	Tri-State Airport	0 - 30	30 - 50	50 - 70	70 - 90	> 90
	Yeager Airport	0 - 30	30 - 50	50 - 70	01 - 90	> 90
	Broadband	0 - 0.5	0.5 - 2	2 - 3	3 - 4	> 4
	Gas Pipe (Natural Gas)	0 - 0.5	0.5 - 1.5	1.5 - 2	2 - 2.5	> 2.5
	National Network Waterway	0 - 2.5	2.5 - 5	5 - 7.5	7.5 - 10	> 10
	Power Lines	0 - 0.5	0.5 - 1.5	1.5 - 2	2 - 2.5	> 2.5
	Pipe Lines (Oil)	0 - 0.25	0.25 - 0.5	0.5 - 0.75	0.75 - 1	> 1
	Railroads	0 - 1	1 - 3	3 - 4	4 - 5	> 5
	Sewer Lines	0 - 1	1 - 3	3 - 4	4 - 5	> 5
	Water Lines	0 - 0.25	0.25 - 0.5	0.5 - 0.75	0.75 - 1	> 1

2.2 Relative Scores:

Table 13 shows four statistical groups and their relative scores in the Wyoming County land suitability model. The total number of coal mining sites will be equally distributed in each group. The relative score differs from the absolute score in two ways. First, thresholds for relative scores are derived only from real distances from the sites to the features (criteria). It is not affected by personal opinion and does not consider either traveling method or nature of criteria.

Table 13: Relative Scoring System

	Threshold (Distances in miles)	**Min - Q1**	**Q1 - Q2**	**Q2 - Q3**	**Q3 – Max**
	Relative Score	10	7.5	5	2.5
No.	**Criteria**	**Min**	**Q1**	**Q2**	**Q3**	**Max**
1	Interstate	0.10	1.00	2.43	5.72	10.18
2	Existing Highway	0.32	9.11	17.25	24.60	27.31
3	Proposed Highway	57.34	64.04	70.25	83.28	95.42
4	Yeager Airport	53.29	61.72	69.16	77.03	84.98
5	Tri-State Airport	85.98	90.18	97.51	112.71	139.86
6	National Waterway Network Ports	0.89	2.12	3.31	5.49	7.39
7	Sewer Treatment Facilities	2.05	4.57	6.02	6.41	14.46
8	Solid Waste Treatment Facilities	92.94	97.14	105.09	119.99	146.82
9	National Waterway Network	67.85	74.55	80.76	93.79	105.92
10	Intermodal Terminal Facilities	0.04	0.20	0.63	1.34	2.29
11	Sewer Lines	0.27	0.72	1.30	2.71	3.91
12	Railroads	7.12	10.60	15.92	17.29	22.28
13	Water Lines	0.03	0.35	0.76	1.14	2.04
14	Power Lines	0.01	0.24	0.54	1.10	2.43
15	Gas Pipes	0.85	1.16	1.76	2.33	3.25
16	Pipe Lines	0.89	2.12	3.31	5.49	7.39
17	Broadband	0.10	0.72	1.16	2.63	4.14

3. Wyoming County's Suitability Model:

Table 14 shows the total scores of all studied sites in Wyoming County. Site No-13 (Permit ID = S011977) has the highest score of 759.25. The sites with higher total scores suggest better opportunities for development. Results in Table 14 are also plotted in the bar chart (Figure 15) for better visualization. Among 17 potential development sites of Wyoming County, it is easy to see all the sites and determine that Sites No. 3, 12, 13, 15, and 16 are the most suitable sites for investment.

Certainly, any change in weight values or the scoring system will result in different output and may change the decision. For better analysis and decision-making, the dynamic suitability model, which allows modification in criteria's weights, thresholds and scores is available for distribution through RTI's Geospatial Program.

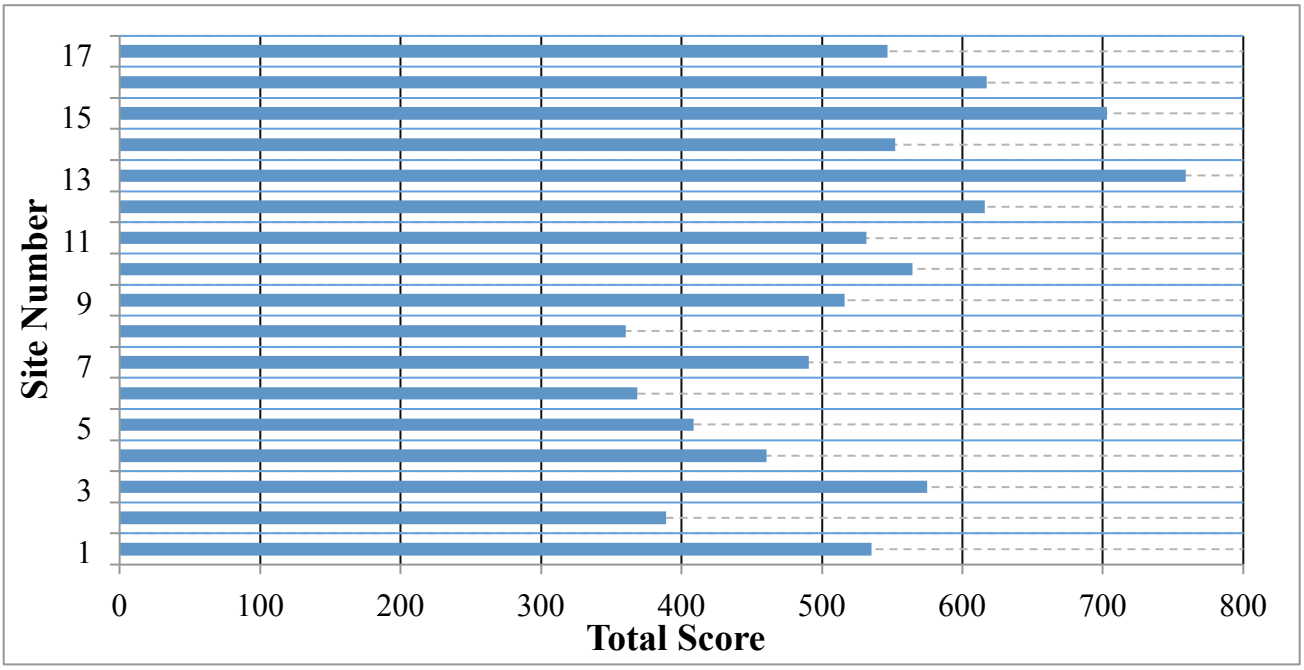
Besides a distance analysis, a suitability model for Wyoming County is supported by demographic data as well as two additional analyses, which are retail location density and workforce analysis (shown on Table 15 and Map 41 below). The best decision will be made with careful consideration of the suitability analysis as well as the demographic and economic information.

Table 14: Total score of all surface coal mining sites in Wyoming County

Site No.	Permittee	Permit_ID	Score
1	Bluestone Coal Corporation	S401401	535.5
2	Bluestone Coal Corporation	S400899	389
3	Bluestone Coal Corporation	S400900	575
4	Dynamic Energy, Inc.	S402096	460.75
5	Dynamic Energy, Inc.	S402196	408.5
6	Jmac Leasing Inc	S400104	368.5
7	Jmac Leasing Inc	S401499	490.5
8	Nufac Mining Company Inc	S402586	360.5

Site No.	Permittee	Permit_ID	Score
9	Paynter Branch Mining Inc	S400106	516
10	Paynter Branch Mining Inc	S400300	564.25
11	Paynter Branch Mining Inc	S400896	531.5
12	Paynter Branch Mining Inc	S401298	615.75
13	Pioneer Fuel Corporation	S011977	759.25
14	Pioneer Fuel Corporation	S400596	552
15	Pioneer Fuel Corporation	S401595	703
16	Rhino Eastern Llc	S401396	617.25
17	Rolling S Augering Llc	S400209	546.75

Figure 15: Wyoming County's Suitability Model (Total Score of Each Surface Coal Mining Site)



Work Force Analysis

A work force analysis estimates total employment and unemployment within a certain distance, providing potential labor sources if an investment is made on the site. According to Gary Langer, the average one-way commute time is 26 minutes or 16 miles.[11] It is reasonable to consider unemployment within 15 miles of the site as an upper limit for a potential employer. However, data constraints in Wyoming County only allow an investigation of up to a 10-mile radius. This data set also does not provide a skill set analysis however; therefore employers may not find the labor skills they need. This dataset provides the pool of labor resources from which to choose.

Table 15: Number of employment and unemployment within radius of 5 and 10 miles

Rank	Permit_ID	Emp_05	Unemp_05	Emp_10	Unemp_10
1	S401401	432	53	1640	199
2	S400899	547	85	1481	202
3	S400900	765	43	2686	312
4	S402096	1068	105	3694	468
5	S402196	1196	142	3874	497
6	S400104	340	30	1949	279
7	S401499	473	41	2357	363
8	S402586	683	62	2272	241
9	S400106	1120	148	3404	529
10	S400300	1055	137	3226	541
11	S400896	1050	133	3270	532
12	S401298	799	83	2995	501
13	S011977	1581	288	3800	627
14	S400596	1494	309	4144	706
15	S401595	1464	263	3652	626
16	S401396	373	88	1551	320
17	S400209	1624	287	4690	604

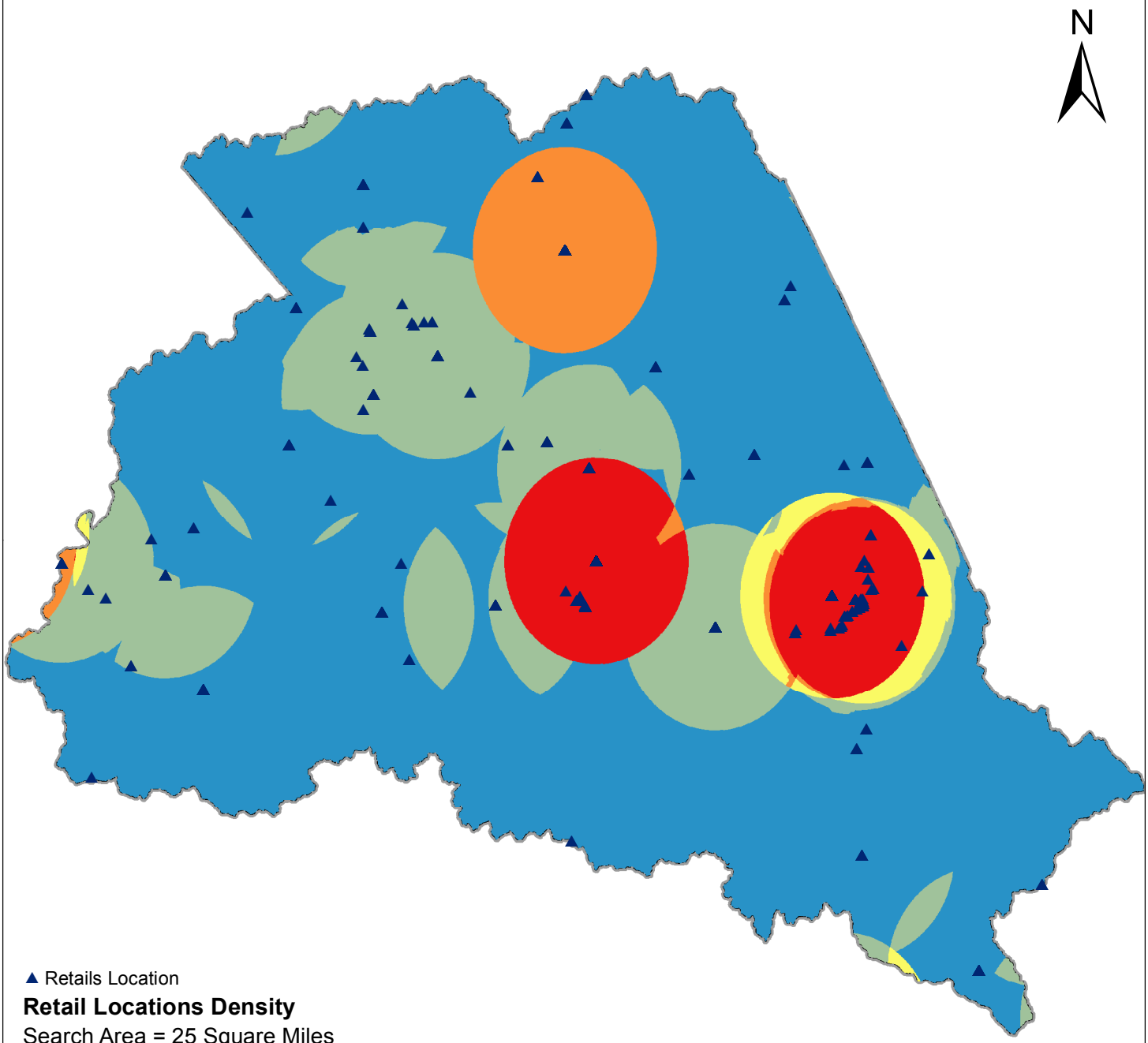
[11] Gary Langer, "Poll: Traffic in the United States," ABC News Online, February 13, 2005, Accessed March 1, 2013, http://abcnews.go.com/Technology/Traffic/story?id=485098&page=1.

Retail Location Analysis

A retail location analysis is a hot spot analysis that depicts a number of retailers within 25 square miles of any certain location in the county (Map 41). The result, as shown on the map, is displayed in blue-to-red color for retail's density from low to high. Normally, the area with a high density of retailers indicates an already developed and populated community, which possibly has the highest opportunity as well as the heaviest competition. The areas with low retail density showcase where population is lowest, but also where competition is lowest and which may provide retail opportunities.

Retail Location Density

Wyoming County



Source: ESRI 2011

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V. Conclusion

Wyoming County has been a stable yet struggling county over the past decades. Due to government services and the sustainment mining jobs, wages have been steadily growing for the past few years despite the recession. However, these two sectors may not continue to be stable, aging and educational issues persist, and post-mine land use has not been active. This plan could be useful in creating growth in Wyoming County through post-mine site development.

This plan has identified and displayed the five post-mine sites that are most suitable for development. These sites have the integral tools that researchers have shown can assist in spatial development. Though success is not guaranteed, this overview combined with careful strategic planning can bring about the changes in the trends that are necessary for Wyoming County to thrive.

Through a site distance analysis and complete demographic calculation, this plan provides the most comprehensive understanding of the economic state of Wyoming County and the potential of its land. By analyzing specific infrastructures and demographics, policymakers can begin attracting investors to post-mine sites, and continue the process of developing the economy. This plan provides strategic information; the choice as to how to utilize this information belongs with the administrators and people of the county.