

Taylor County, WV

Land Use Master Plan 2015



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Executive Summary

This Land Use Master Plan (LUMP) conveys information on Taylor County's current demographic and geographic status. This plan will be used to evaluate the potential of post-mine sites for development, and evaluate Taylor 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 Taylor County's development goals. The Nick J. Rahall Appalachian Transportation Institute (RTI) coordinates with the Office of Coalfield Community Development to provide this essential information. There are no post-mine developments in Taylor County. However, this plan will help Taylor take advantage of its post-mine sites to spur development.

Taylor County's population has fluctuated since the 1980s, experiencing decline through the early 1990s and then increasing through 2013. The County's median age and age distribution are average for the State, indicative of a population capable of productivity in the labor force. The population is projected to decrease through 2030.

Employment consists mainly of Education and Health Services; Trade, Transportation, and Utilities; and Leisure and Hospitality. Government and Education and Health Services are the major wage contributors. Taylor County total wages have been on the rise since the mid-1990s, with a steep increase during 2013. Of particular note is

the amount of income, as opposed to wages, derived from government transfers. In 2013, approximately 28 percent of Taylor County income is from government transfers. Taylor 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.

Taylor County's total enrollment experienced overall decline from the 2005-2006 to the 2012-2013 school years. The County's dropout rate fluctuated, but has generally declined from the 2005-2006 to 2012-2013 school years as well.

Approximately 15 percent of Taylor County residents 25 and over do not have a high school diploma.

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 consideration in any development strategy. Taylor County has no interstate, three U.S. Routes, and two State Routes. The County does have some rail presence, but hosts no local airports.

Taylor County also has 6 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 Taylor County. The environment of the County should be considered in an overall development strategy. Taylor County is not heavily forested and does not produce wood by-products, but does have a few scattered areas of state parks and wildlife management areas. Taylor County is also not on the list of air pollution non-attainment areas, which is positive. Taylor County has a small number of completed Marcellus Shale wells, as well as several more that are permitted, and has a favorability for enhanced geothermal drilling, particularly in the eastern portion of the County. However, Taylor appears to have very little potential among wind and solar renewable energy resources.

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 Taylor County. The researchers identified sites in areas that fit the County's unique geographic,

demographic, and economic position. The researchers combined a distance analysis using a scoring system based on distance to certain essential utilities and features. These scores were summed and plotted. 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 top five sites within a view of the County.

The tables below are comprehensive comparisons between the top five post-mine lands for potential development Tables A, B and C compare results between the top five potential development sites, as determined by suitability analysis of all post-mine lands in the County. In Table A, distances for each variable are compared between sites to give an idea of the more suitable site for specific criterion under consideration. For example, if we want to identify the site located closest to power lines, the distance measurements from each site to the nearest power line is listed in Table A.

Table B shows the total weighted score. The mining sites considered as the best candidates for potential redevelopment are the five with the highest total weighted score.

Table C illustrates how each criterion contributes to the final total score and the importance of the weights. A scale of values, based on ideal distances for each criteria, is used to calculate the total

Absolute score. The Relative scale is calculated by comparing each site in relationship to others instead of set distances. Because of the assumption that one criterion may be more important than others (different weights), the rank order of the sites absolute and relative scores can

change once the weights for each criteria are mathematically applied. A high or low value in a heavily weighted criteria can dramatically raise or lower a sites total weighted score.

Table A: Distances Comparison Between Top Five Sites for Potential Development

Suitability Ranking	1	2	3	4	5	Weight
Broadband	0.05	0.10	0.00	0.15	2.66	9
Gas Pipes	1.92	1.83	2.06	0.94	3.48	6
National Waterway Network	16.12	16.46	16.56	13.55	14.43	4
Pipe Lines	0.82	0.93	1.22	0.25	1.19	6
Power Lines	0.28	0.22	0.06	0.42	0.10	10
Railroads	0.30	0.43	0.27	1.33	1.24	5
Sewer Lines	0.08	0.32	0.20	1.32	0.93	8
Water Lines	0.18	0.28	0.09	0.34	0.01	10
Existing Highway	3.66	3.59	3.27	0.23	0.01	8
Intermodal Terminal Facilities	11.85	12.19	12.30	8.97	14.66	6
Interstate	8.52	8.86	8.97	4.22	9.69	8
Sewer Treatment Facilities	0.94	1.28	1.39	2.85	1.06	7
Solid Waste Treatment Facilities	12.62	12.95	13.06	8.97	14.66	8

Table B: Total Score Comparison Between Top Five Sites for Potential Development

Suitability Ranking	1	2	3	4	5	Weight
Broadband	90	90	90	67.5	11.25	9
Gas Pipes	30	30	13.5	42	1.5	6
National Waterway Network	3	3	3	4	4	4
Pipe Lines	18	18	4.5	60	4.5	6
Power Lines	100	100	100	75	100	10
Railroads	50	50	50	17.5	17.5	5
Sewer Lines	80	80	80	28	60	8
Water Lines	100	35	100	35	100	10
Existing Highway	20	40	40	80	80	8
Intermodal Terminal Facilities	42	42	31.5	60	21	6
Interstate	56	56	42	80	42	8
Sewer Treatment Facilities	70	70	70	24.5	70	7
Solid Waste Treatment Facilities	56	56	42	56	20	8
Total Weighted Score	715	670	666.5	629.5	531.75	

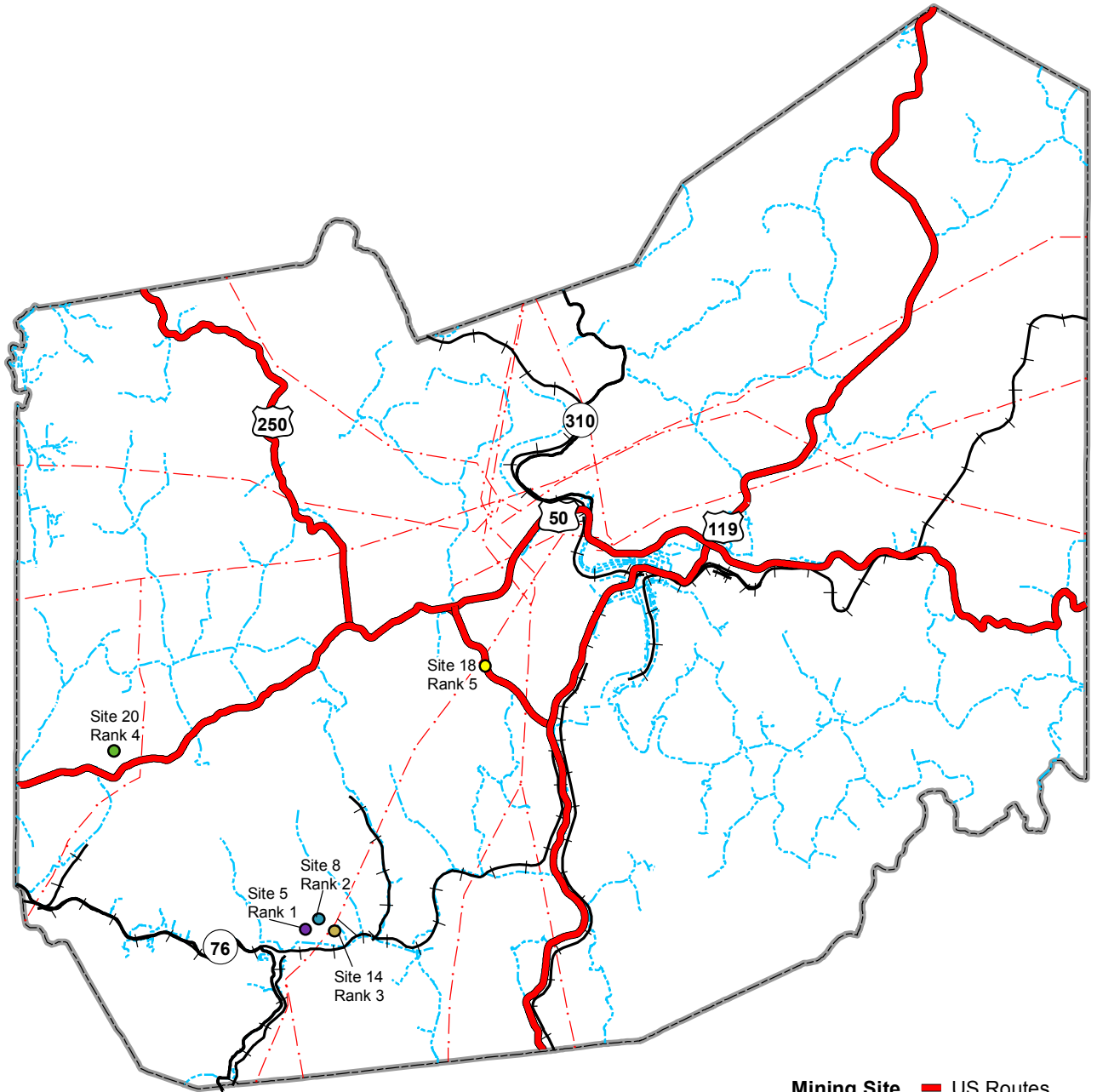
Table C: Absolute/Relative Score Comparison Between Top Five Sites for Potential Development

Suitability Ranking	1	2	3	4	5	Weight
Broadband	10	10	10	10	5	9
Gas Pipes	5	5	3	7	1	6
National Waterway Network	1	1	1	1	1	4
Pipe Lines	3	3	1	10	1	6
Power Lines	10	10	10	10	10	10
Railroads	10	10	10	7	7	5
Sewer Lines	10	10	10	7	10	8
Water Lines	10	7	10	7	10	10
Existing Highway	10	10	10	10	10	8
Intermodal Terminal Facilities	7	7	7	10	7	6
Interstate	7	7	7	10	7	8
Sewer Treatment Facilities	10	10	10	7	10	7
Solid Waste Treatment Facilities	7	7	7	7	5	8
Total Absolute Score	100	97	96	103	84	

Suitability Ranking	1	2	3	4	5	Weight
Broadband	10	10	10	7.5	2.5	9
Gas Pipes	10	10	7.5	10	2.5	6
National Waterway Network	7.5	7.5	7.5	10	10	4
Pipe Lines	10	10	7.5	10	7.5	6
Power Lines	10	10	10	7.5	10	10
Railroads	10	10	10	5	5	5
Sewer Lines	10	10	10	5	7.5	8
Water Lines	10	5	10	5	10	10
Existing Highway	2.5	5	5	10	10	8
Intermodal Terminal Facilities	10	10	7.5	10	5	6
Interstate	10	10	7.5	10	7.5	8
Sewer Treatment Facilities	10	10	10	5	10	7
Solid Waste Treatment Facilities	10	10	7.5	10	5	8
Total Relative Score	120	117.5	110	105	92.5	

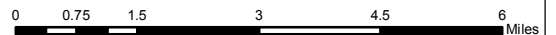
Top Five Sites for Potential Development

Taylor County



- Mining Site**
- Site 5
- Site 8
- Site 14
- Site 20
- Site 18
- US Routes
- WV Routes
- Railroads
- Water Line
- Power Line
- County Boundary

Source: Rahall Transportation Institute Analysis 2015



Site's General Info.

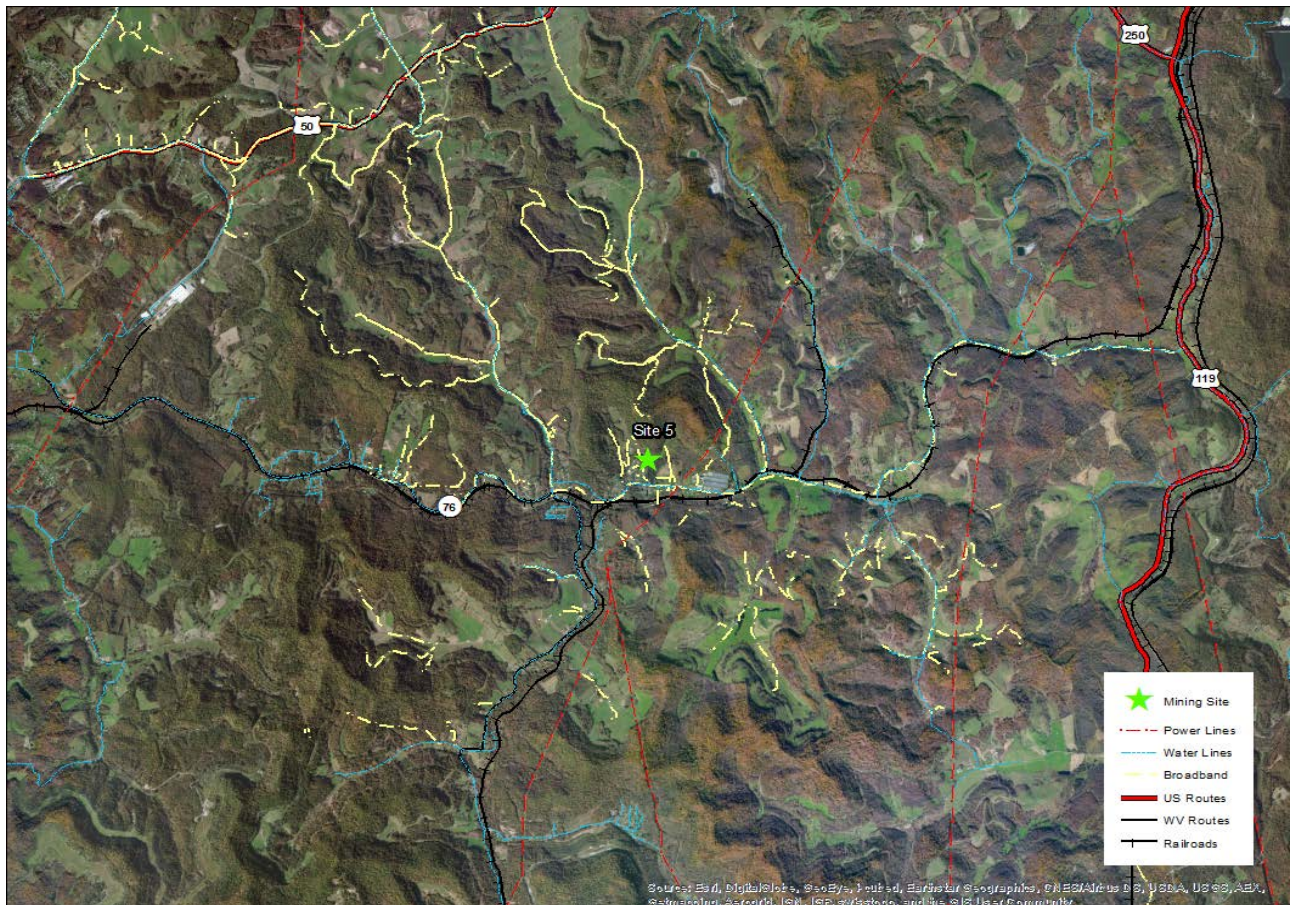
Permittee	Muletrain Coal Inc
Facility Name	N/A
Permit ID	S101690
Issue Date	9/21/1990
Expiration Date	9/21/1995
Current Acres	95.69
Lat	39° 16'11.0000"
Long	80° 7'10.0000"
Nearest Post Office	Unknown

Site Number	5
Suitability Ranking	1
Total Score	715

Distance Analysis Results

Broadband	0.05
Gas Pipes	1.92
National Waterway Network	16.12
Pipe Lines	0.82
Power Lines	0.28
Railroads	0.30
Sewer Lines	0.08
Water Lines	0.18
Existing Highway	3.66
Intermodal Terminal Facilities	11.85
Interstate	8.52
Sewer Treatment Facilities	0.94
Solid Waste Treatment Facilities	12.62

Site number 5 should be the first choice for potential development. It scores high in many of the most important features, such as Power Lines (0.34 mi.), Water Lines (0.18 mi.), and is close to Broadband (0.05 mi.). This site is relatively far from Existing Highways (3.6 mi.).



Site's General Info.

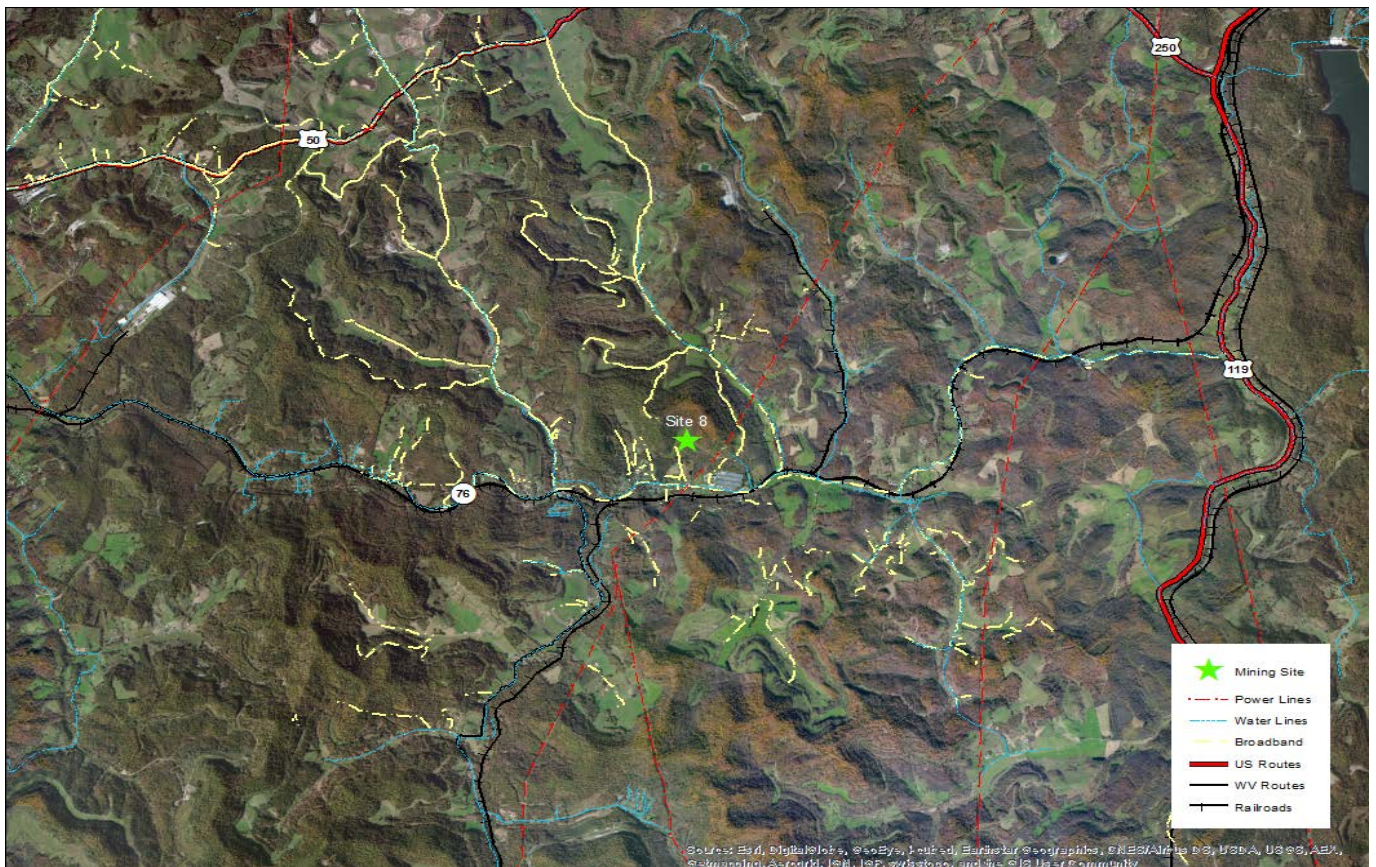
Permittee	Scjl Co-Leasing Corporation, Inc
Facility Name	N/A
Permit ID	S103989
Issue Date	12/28/1990
Expiration Date	12/28/1995
Current Acres	26.9
Lat	39° 16'18.0000"
Long	80° 6'56.0000"
Nearest Post Office	Unknown

Site Number	8
Suitability Ranking	2
Total Score	670

Distance Analysis Results

Broadband	0.10
Gas Pipes	1.83
National Waterway Network	16.46
Pipe Lines	0.93
Power Lines	0.22
Railroads	0.43
Sewer Lines	0.32
Water Lines	0.28
Existing Highway	3.59
Intermodal Terminal Facilities	12.19
Interstate	8.86
Sewer Treatment Facilities	1.28
Solid Waste Treatment Facilities	12.95

Site number 8 has the second highest score in the suitability model. The site is located close to utility features such as Water Lines (0.28 mi.), Sewer Lines (0.32 mi.) and Power Lines (0.22 mi.), which makes the site to be a good place for future development. Broadband access is close (0.10 mi.) but, access to an existing highway is far (3.59 mi.).



Site's General Info.

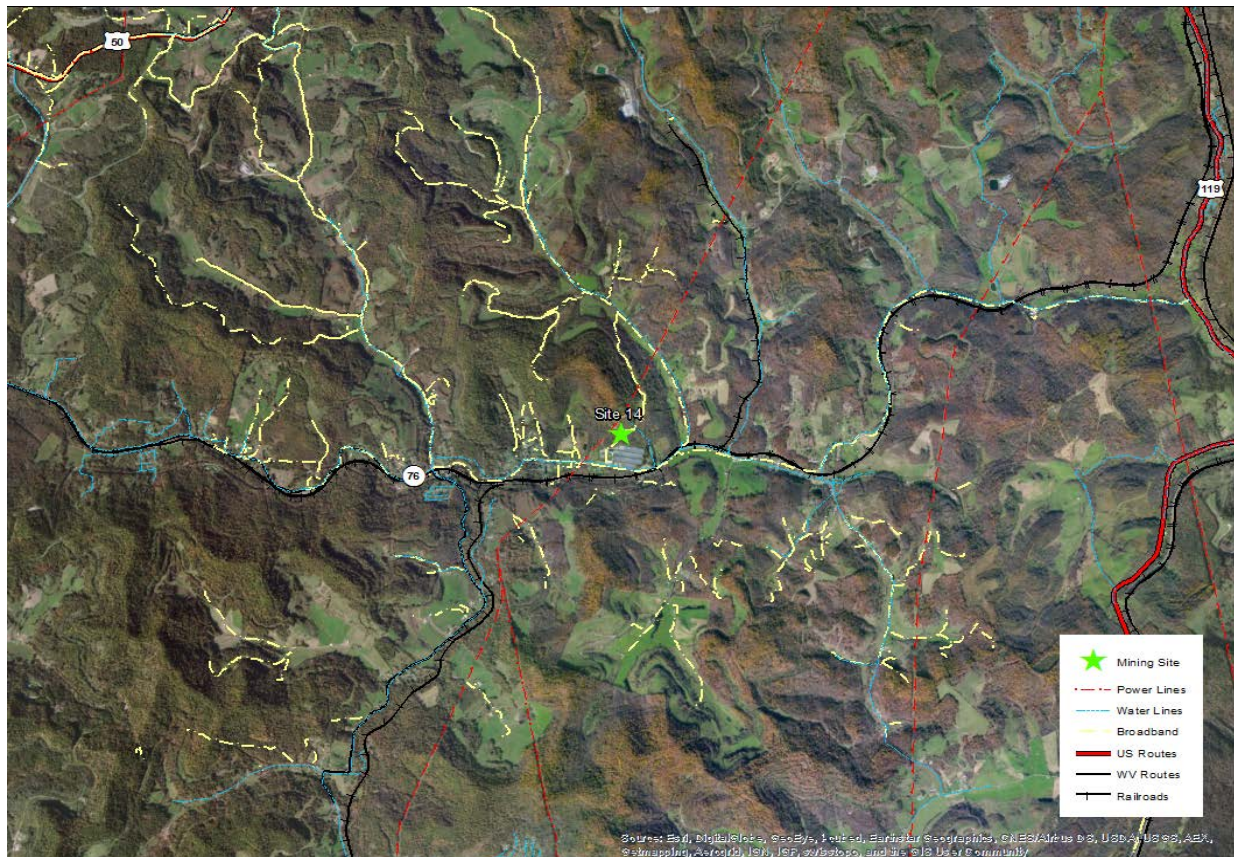
Permittee	Smith Construction Co
Facility Name	N/A
Permit ID	C000584
Issue Date	10/1/1984
Expiration Date	10/1/1989
Current Acres	N/A
Lat	39° 16'10.0000"
Long	80° 6'40.0000"
Nearest Post Office	Unknown

Site Number	14
Suitability Ranking	3
Total Score	666.5

Distance Analysis Results

Broadband	0.00
Gas Pipes	2.06
National Waterway Network	16.56
Pipe Lines	1.22
Power Lines	0.06
Railroads	0.27
Sewer Lines	0.20
Water Lines	0.09
Existing Highway	3.27
Intermodal Terminal Facilities	12.30
Interstate	8.97
Sewer Treatment Facilities	1.39
Solid Waste Treatment Facilities	13.06

Site number 14 is listed as the third suitable site for post-mine land development. The site is fairly close to several important criteria. It is close to Power Lines (0.06 mi.) and to both Sewer (0.20 mi.) and Water Lines (0.09 mi.). This site has Broadband capability on site already (0.00 mi.).



Site's General Info.

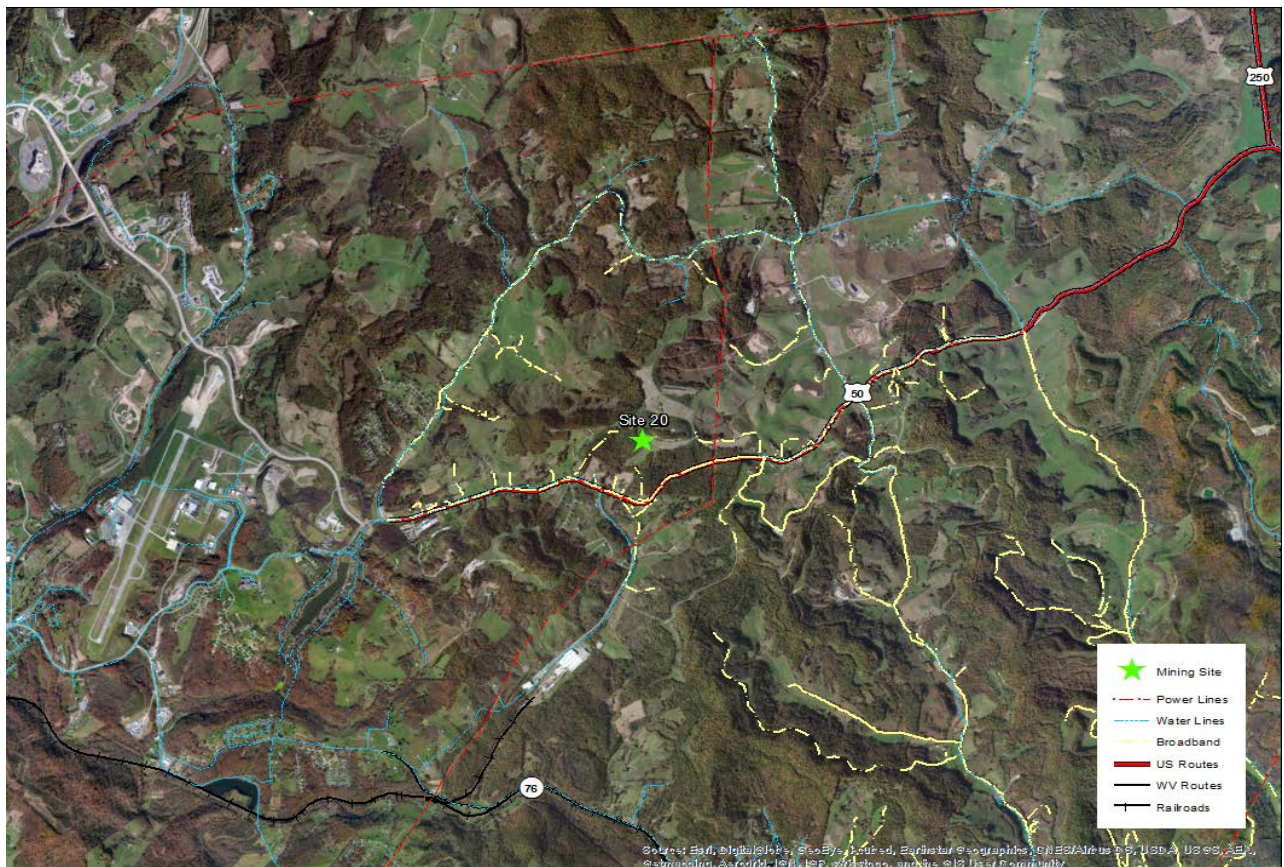
Permittee	Thompson Coal & Const Inc
Facility Name	N/A
Permit ID	S010378
Issue Date	5/25/1978
Expiration Date	9/15/1992
Current Acres	N/A
Lat	39° 18'18.0000"
Long	80° 10'28.0000"
Nearest Post Office	Unknown

Site Number	20
Suitability Ranking	4
Total Score	629.5

Distance Analysis Results

Broadband	0.15
Gas Pipes	0.94
National Waterway Network	13.55
Pipe Lines	0.25
Power Lines	0.42
Railroads	1.33
Sewer Lines	1.32
Water Lines	0.34
Existing Highway	0.23
Intermodal Terminal Facilities	8.97
Interstate	4.22
Sewer Treatment Facilities	2.85
Solid Waste Treatment Facilities	8.97

Site number 20 is ranked as the fourth suitable site for post-mine land development in the county. The advantages of the site are its relative proximity to Broadband (0.15 mi.) and utilities. This site scored well in most categories. The main disadvantage is the relatively greater distance to utilities: Power Lines (0.42 mi.), Sewer Lines (1.32 mi.) and Water Lines (0.34 mi.).



Site's General Info.

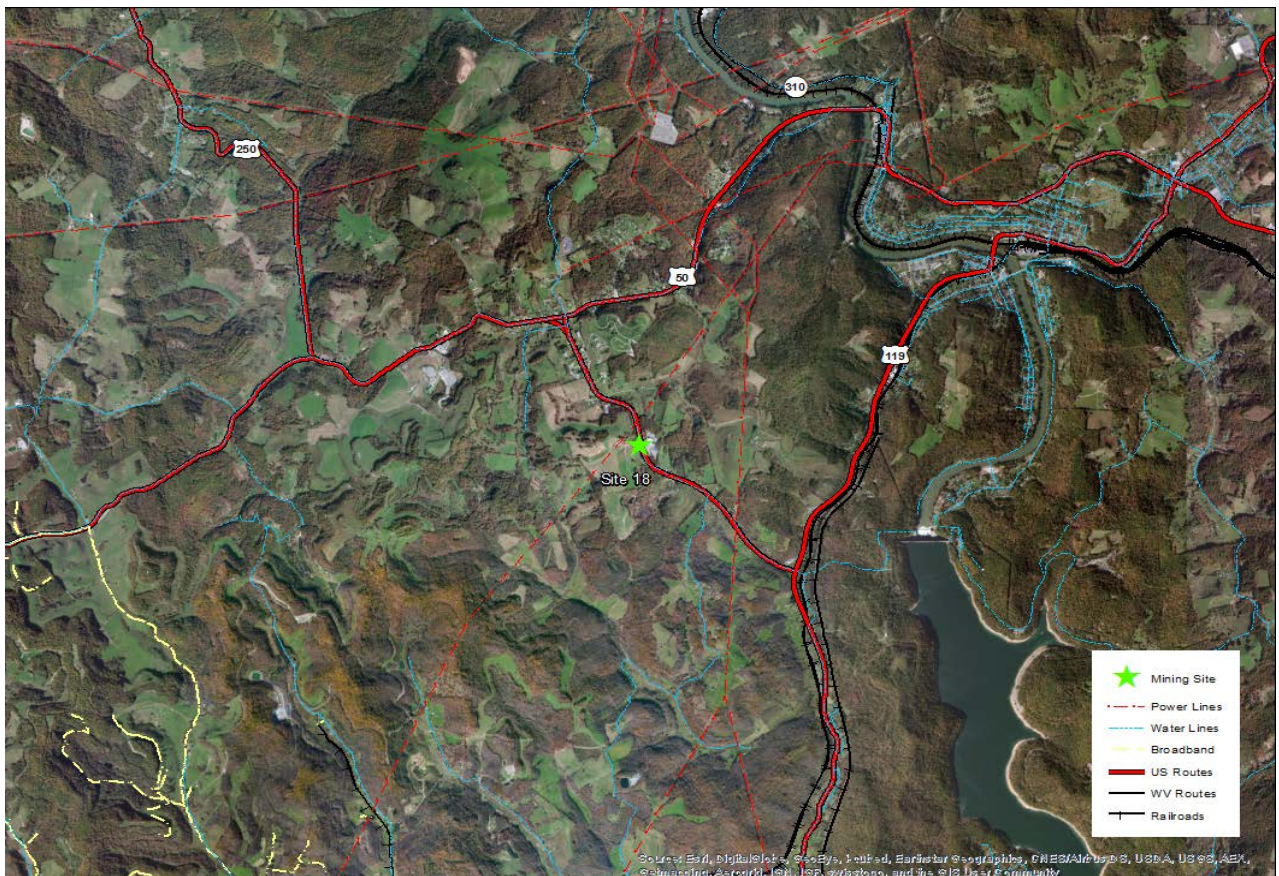
Permittee	Williams Dozer Service Inc
Facility Name	N/A
Permit ID	S101090
Issue Date	6/12/1990
Expiration Date	6/12/1995
Current Acres	25.99
Lat	39° 19'19.0000"
Long	80° 4'4.0000"
Nearest Post Office	Unknown

Site Number	18
Suitability Ranking	5
Total Score	531.75

Distance Analysis Results

Broadband	2.66
Gas Pipes	3.48
National Waterway Network	14.43
Pipe Lines	1.19
Power Lines	0.10
Railroads	1.24
Sewer Lines	0.93
Water Lines	0.01
Existing Highway	0.01
Intermodal Terminal Facilities	14.66
Interstate	9.69
Sewer Treatment Facilities	1.06
Solid Waste Treatment Facilities	14.66

Site number 18 has the fifth highest score in the suitability model for its close distance to Power Lines (0.10 mi.) and Existing Highway access (0.01 mi.), heavily weighted criteria. The distance from the site to other important criteria, such as Gas Pipes (3.48 mi.) and Broadband (2.66 mi.), are higher than average hurting the overall score.



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 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 Taylor County. Taylor County's economy is comprised mainly of employment and activities in the Government, Trade, Transportation, and Utilities, and Education and Health Services, sectors. The resulting combination has led to a constant increase in total wages. However, this has not translated to a complete success, as the population continues to fluctuate (with expected declines in the next 15 years) and employment diversification is limited. This plan will put focus on these issues, encouraging an analysis of the range of options available to policymakers, including land use planning.

This plan, including both the demographic and post-mine site analysis, requires data gathered from professional, secondary sources. Every attempt has been made to verify the accuracy of this data. However, the datasets are subject to differing methodologies, third-party error, and changes in time. Any and all information should be verified for accuracy.

II. Planning Area

Taylor County was first formed in 1844, 19 years before West Virginia became a state. It was named for U.S. Senator John Taylor. At the beginning of the 20th century, B&O railroad employed about 500 men in Taylor County. Now, manufacturing, government, and public utilities are the biggest employers in the area. The county also benefits from its natural resources. Coal, timber, as well as tourism and recreation are all successful industries in the area.¹

III. Existing Conditions

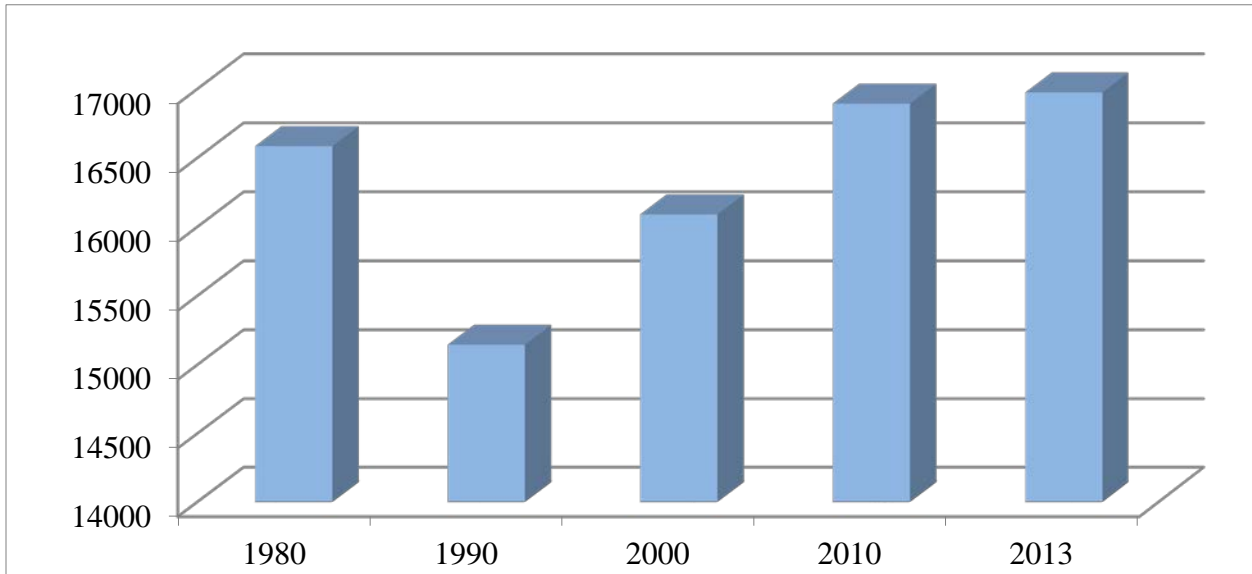
This information will provide a background understanding of the demographic trends in the County. This base information is meant to provide overall detail on Taylor County's status as it stands. Part IV will deal with possible future site development information, to be considered with the demographic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

¹ Belling, Ella. 2013. "Taylor County." e-WV: The West Virginia Encyclopedia. Accessed March 9, 2015.

Population

The population of Taylor County in 2013 was 16,973 according to Stats Indiana, ranking it 34th in county population among the 55 counties in West Virginia.² The decennial censuses show that Taylor County lost population from 1980 to 1990, but has resumed growth into the 2000s through 2013.

Figure 1: Census Populations for Taylor County

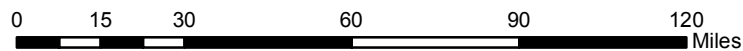
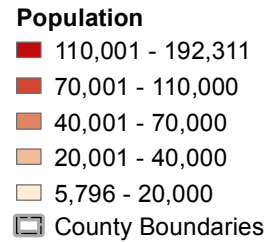
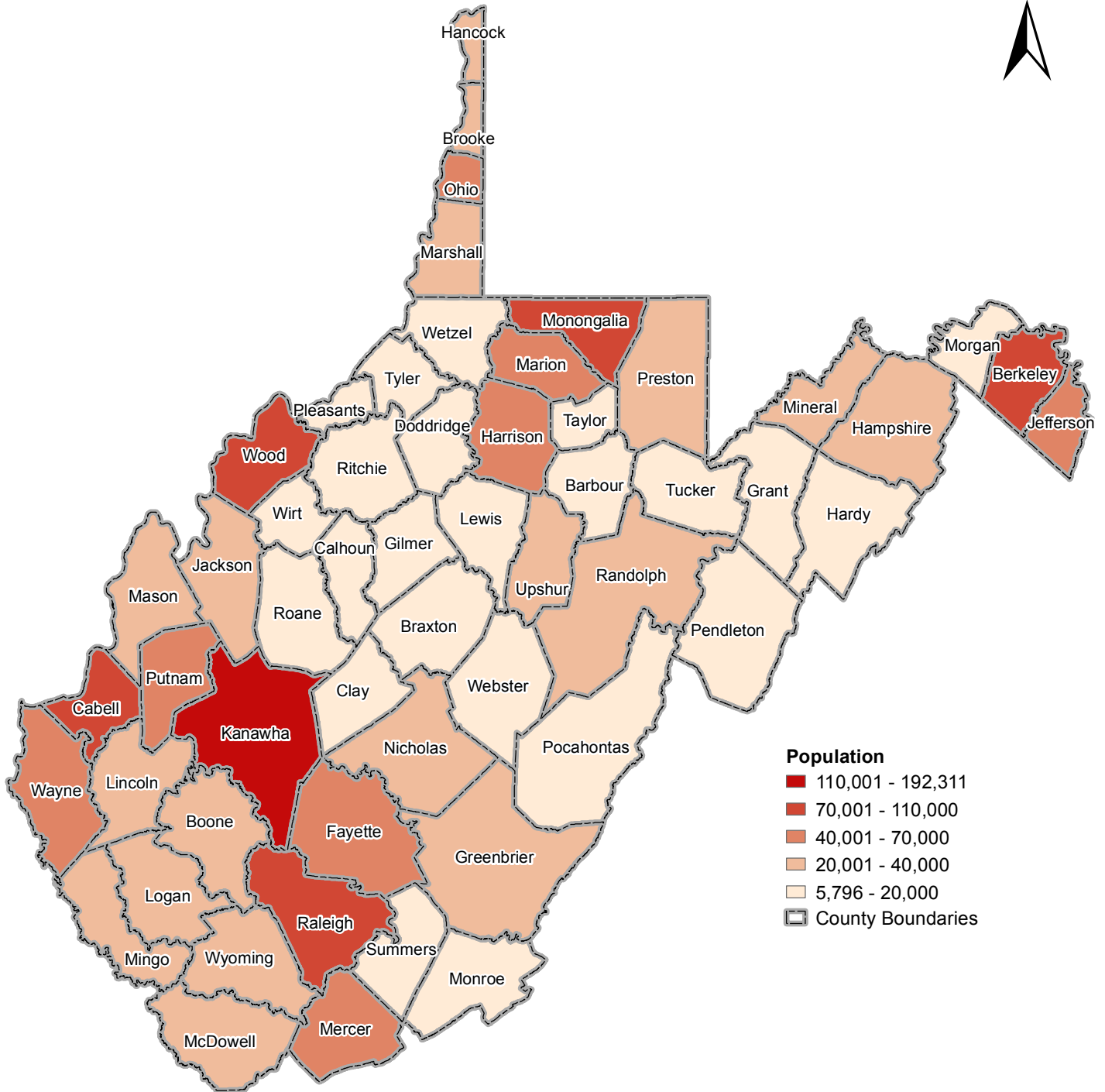


Source: Stats Indiana, USA Counties in Profile

Map 1 illustrates the Taylor County population compared to West Virginia overall. Taylor is one of the less-populated counties in the State.

² U.S. Census Bureau, “2013 American Community Survey 5-year Estimates,” Accessed January 19, 2015, www.factfinder2.census.gov

Demographic Population



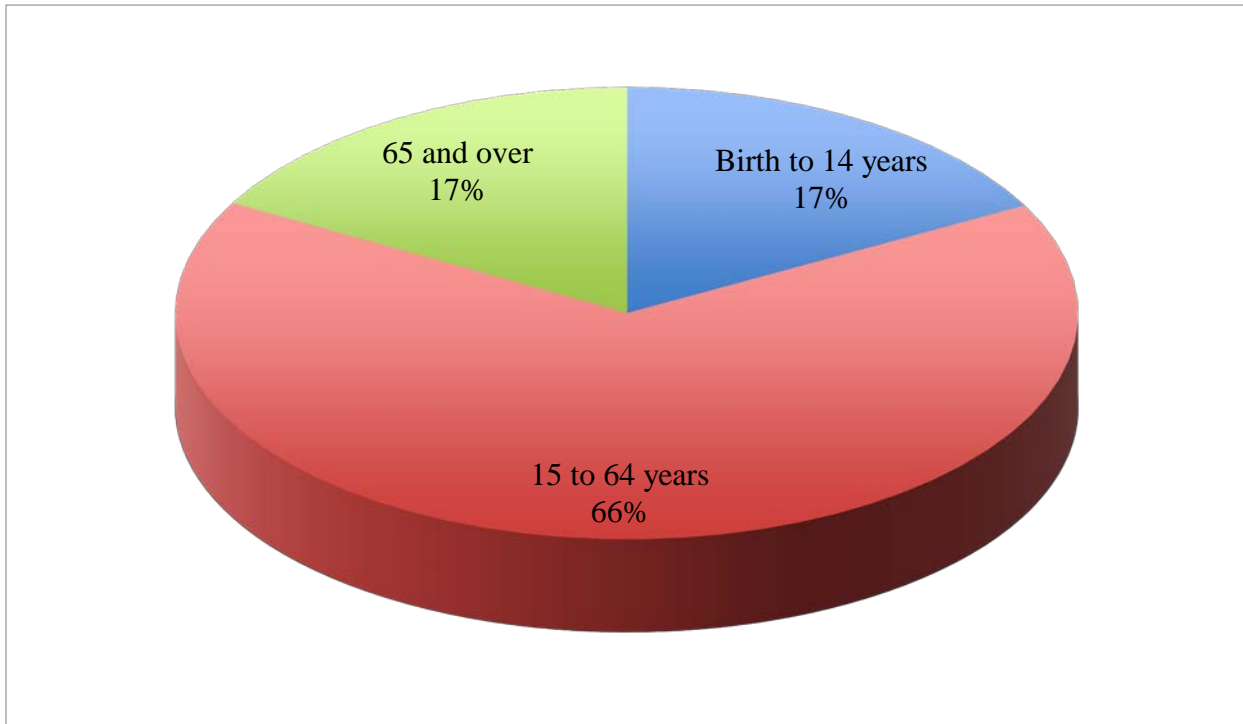
Source: U.S. Census Bureau, 2009-2013 American Community Survey

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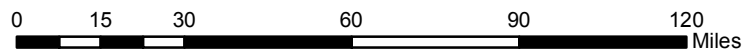
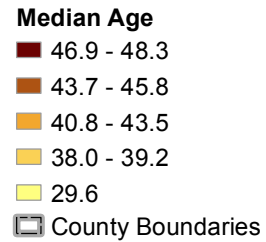
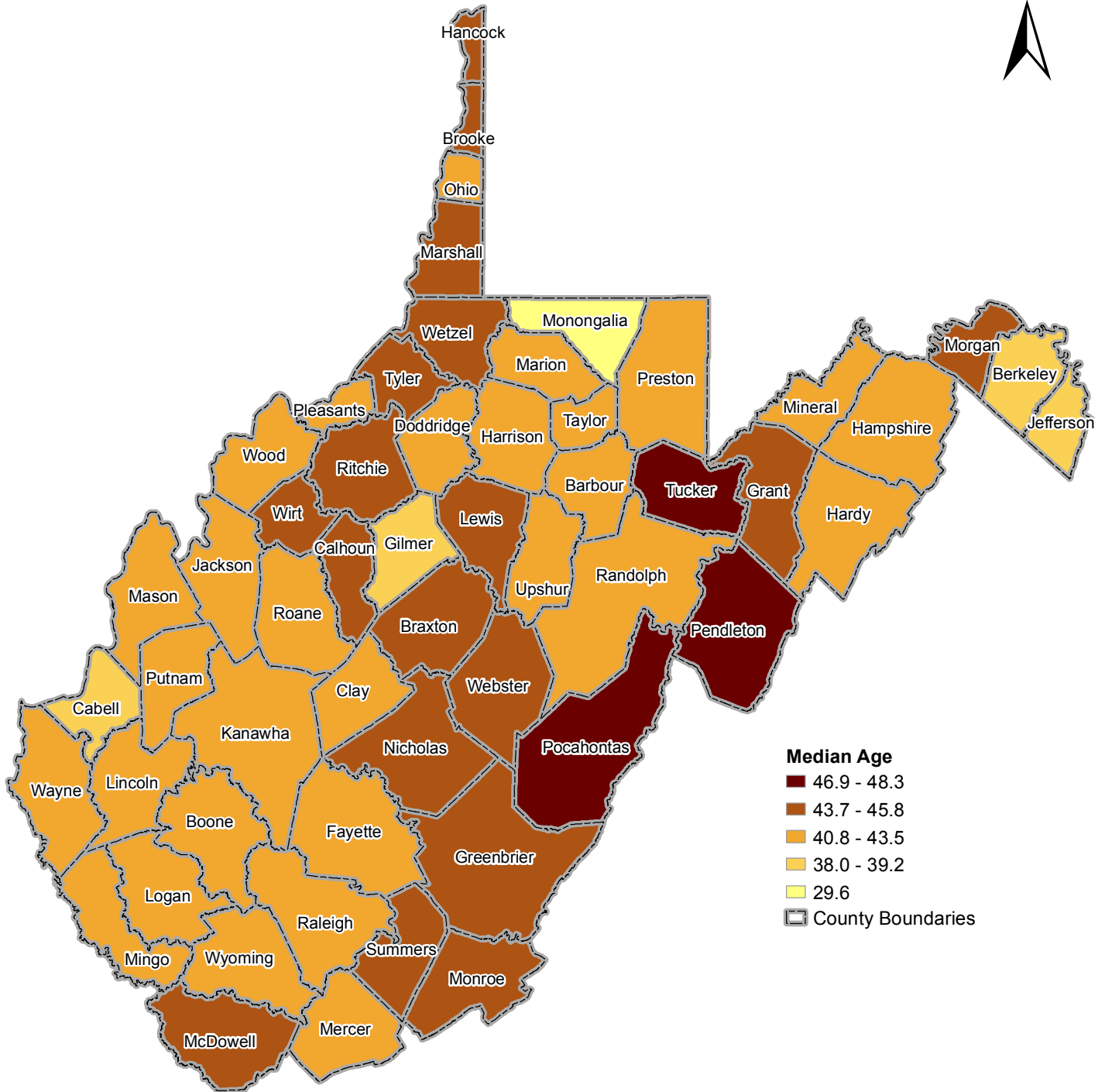
According to the ACS, around 23 percent of Taylor County residents are 60 years of age and over, while 15 percent are between 5 and 17 years of age and just over 5 percent are below the age of 5. Approximately 3,394 people (or 20 percent) are of retirement age. The median age in Taylor is 43, which is very near the median age of the State (Map 2). The majority of the population is of prime working age, as denoted in Figure 2.

Figure 2: Taylor County Age Breakdown



Source: 2013 American Community Survey 5-Year Estimate Calculation

Demographic Median Age



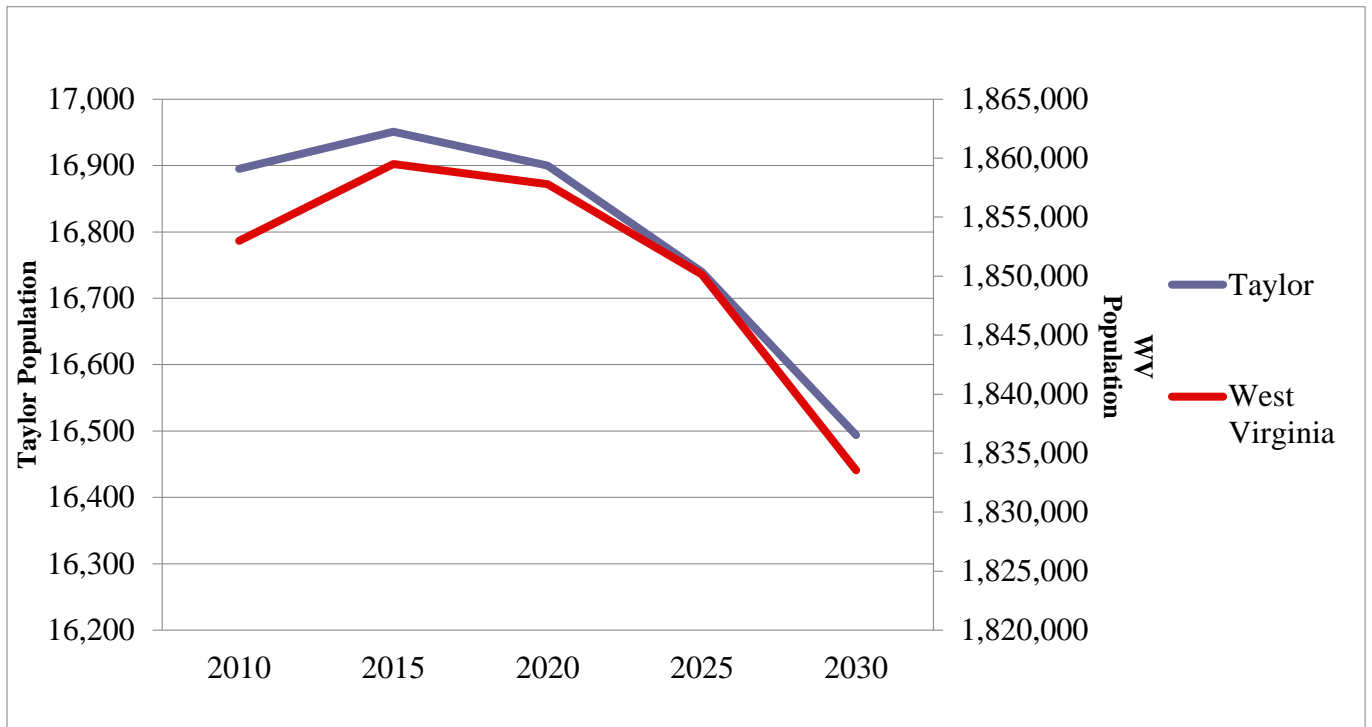
Source: U.S. Census Bureau, 2009-2013 American Community Survey

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The Bureau of Business and Economic Research at West Virginia University projects a 2.43 percent decrease in the Taylor County population between 2010 and 2030, which is slightly higher than the projected decline of the West Virginia population.³ The model for the projection is based on past population patterns and statistics, and should not be taken as permanent. The projected decrease follows a period of population volatility from the 1980s through 2013.

Figure 3: Population Projections



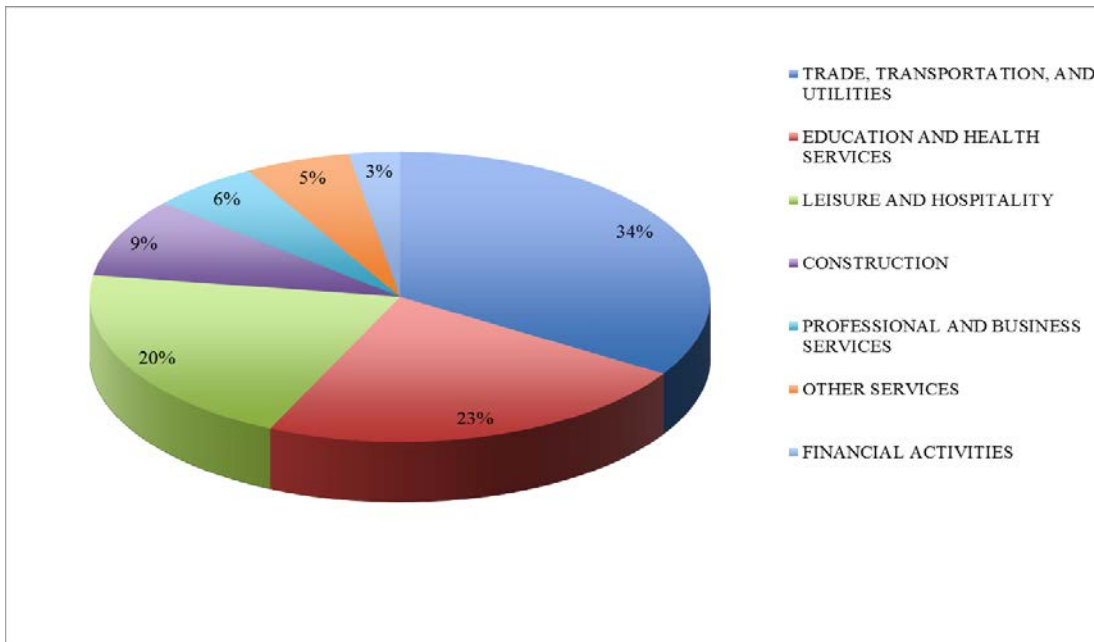
Source: WVU Bureau of Business and Economic Research

³ Christiadi, Deskins, J. and Lego, B. "Population Trends in West Virginia through 2030." Bureau of Business and Economic Research, College of Business and Economics, West Virginia University, Morgantown, WV (March 2014).

Employment

Workforce West Virginia has a complete dataset on employment numbers and wages. The total number of employed in 2013 was 3,193. Approximately 34 percent of wage earners in Taylor County worked in Trade, Transportation, and Utilities and approximately 23 percent worked in Education and Health Services. Along with Leisure and Hospitality, these three industries comprise three-fourths of Taylor County's total employment, suggesting a less-diversified mix of industry employment.

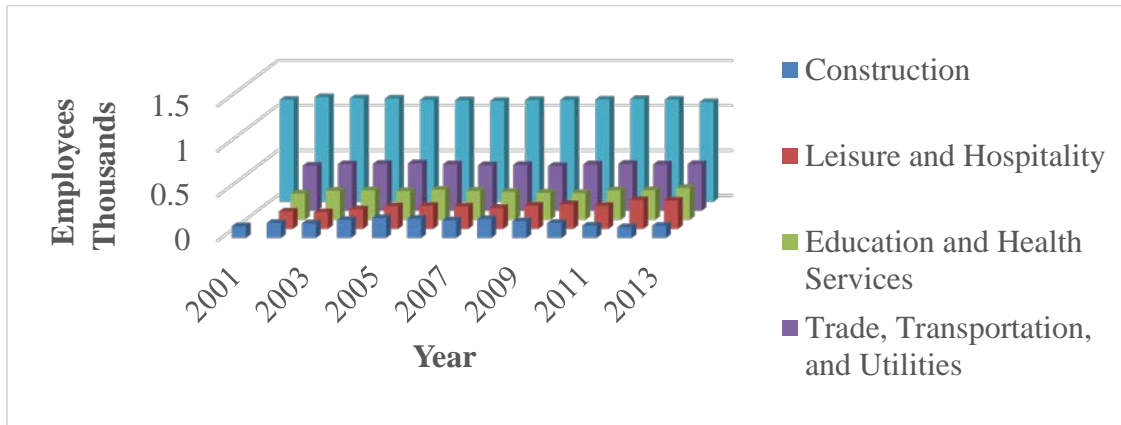
Figure 4: 2013 Taylor County Employment



Source: Workforce West Virginia

The current top five sectors have generally been the top five employers over the past decade in Taylor County. Leisure and Hospitality has seen the largest growth (of approximately 63 percent since 2002). The Education and Health Services sector experienced moderate growth (20 percent), employment in Construction experienced a growth of roughly 4 percent and the Trade, Transportation, and Utilities sector experienced modest growth of about 3 percent. The Government sector declined by about 2 percent.

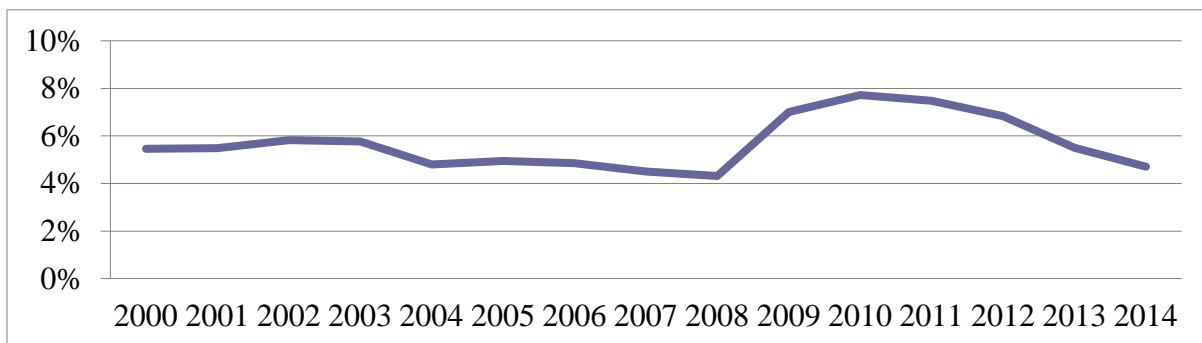
Figure 5: Taylor County Employment by 5 Sectors 2001-2012



Source: Workforce West Virginia

The civilian labor force in the County is one of the most interesting statistics when determining potential investors. As Map 3 shows, Taylor’s participation rate is slightly above average compared to other counties in the State. One component of the labor force, the unemployment rate, shows a slight decline from the early 2000s to 2008. As with most areas, Taylor experienced a sudden increase in the unemployment rate in 2008 (Figure 6). Unemployment has been slowly falling since peaking in 2010. Note that 2013 data is used for this graph and map, as the data for Workforce West Virginia and the Census Bureau did not match because the most recent data has not been seasonally adjusted.

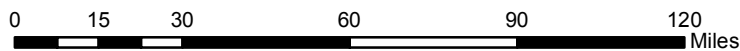
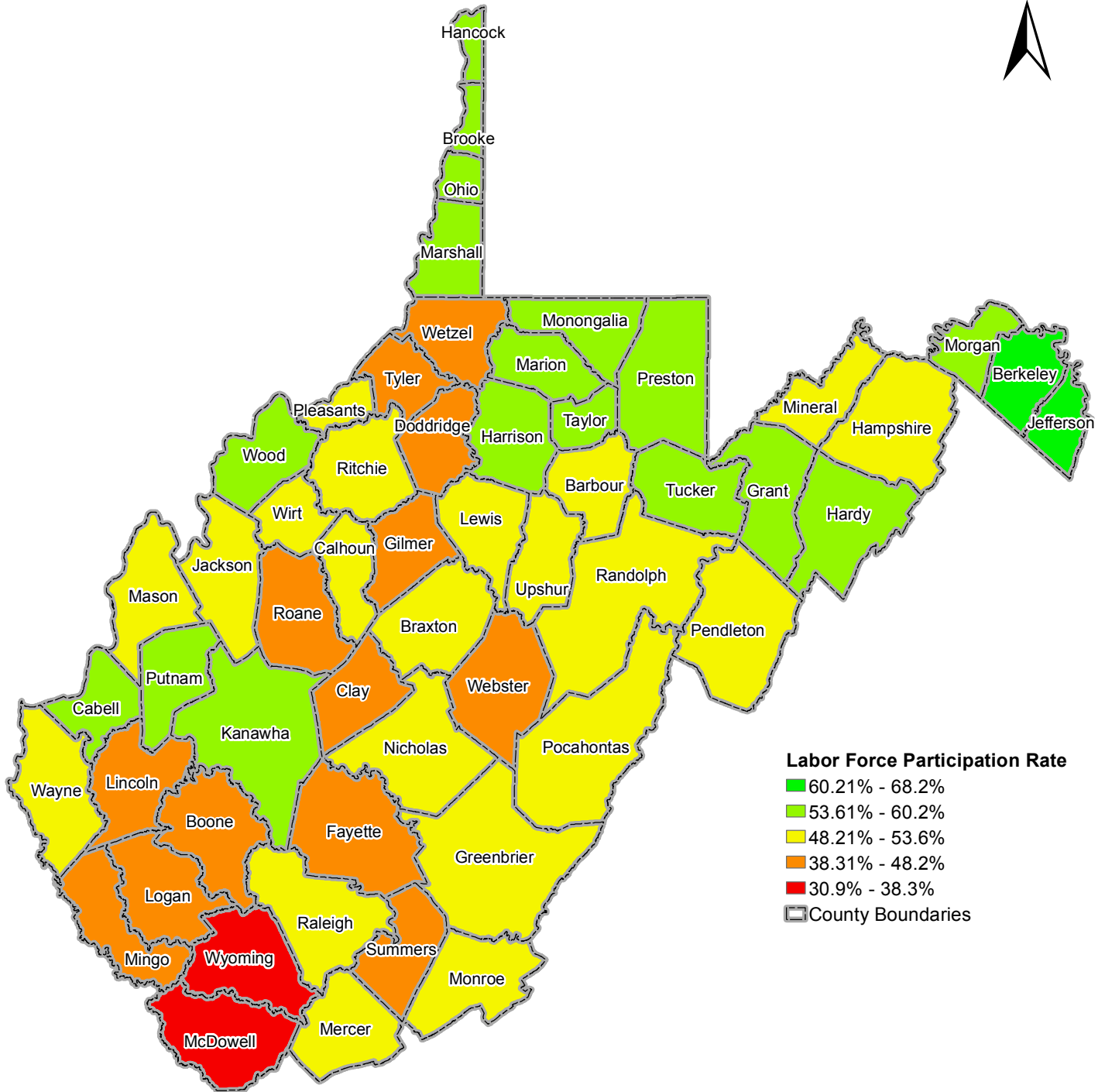
Figure 6: Taylor County Unemployment Rate



Source: Workforce West Virginia

Demographic

Labor Force Participation Rate

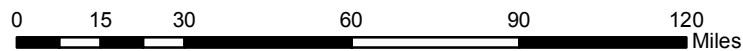
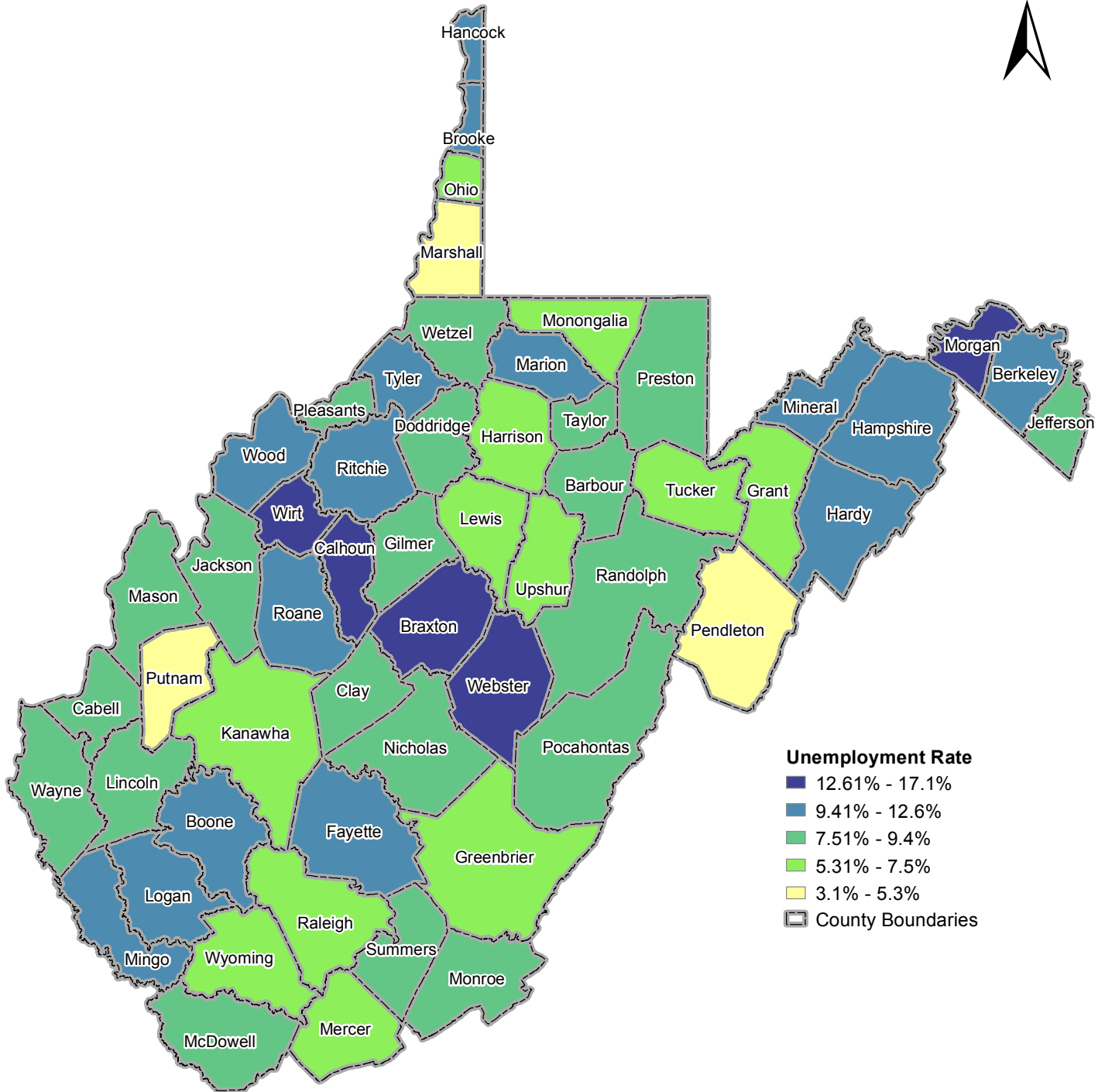


Source: U.S. Census Bureau, 2009-2013 American Community Survey

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Demographic Unemployment Rate



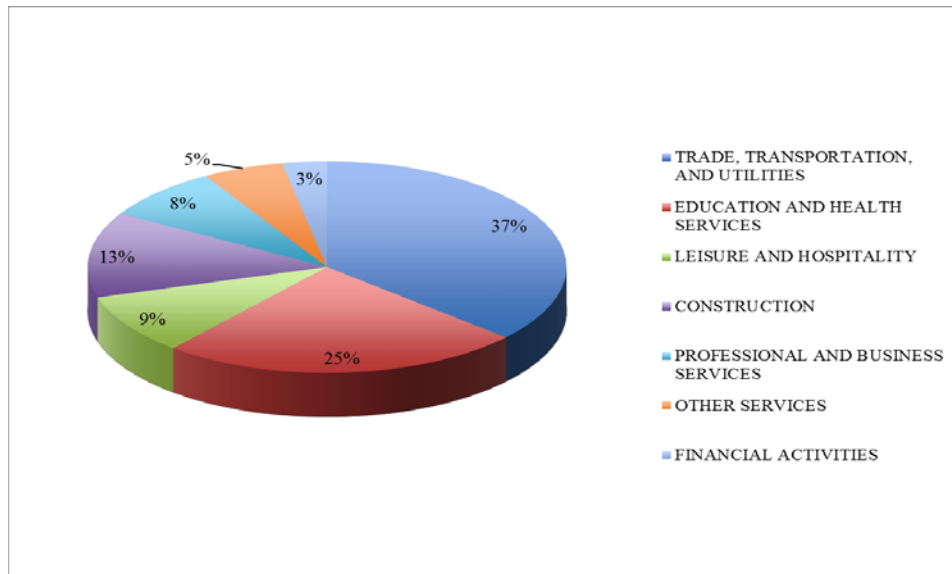
Source: U.S. Census Bureau, 2009-2013 American Community Survey

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Wages and Income

Taylor County's wage contributors vary widely in the level of contribution. The highest earning sector in the county is Trade, Transportation, and Utilities. (Figure 7). Education and Health Services is next because of the sheer size of the sector in the County, followed by Construction. As with employment, wages in other sectors in Taylor County make up much smaller portions.

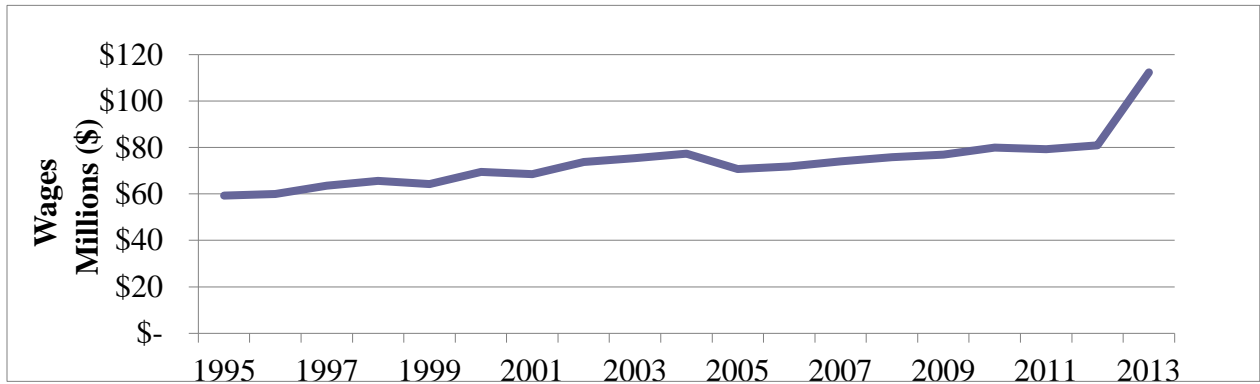
Figure 7: 2013 Taylor County Total Wages



Source: Workforce West Virginia

Historically, wages for Taylor County have shown a tendency to rise, though there was a slight decrease in the early 2000s. Then, wages in Taylor County experienced a sharp increase in 2013. Taylor County experienced relatively steady employment growth, 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 Taylor County.

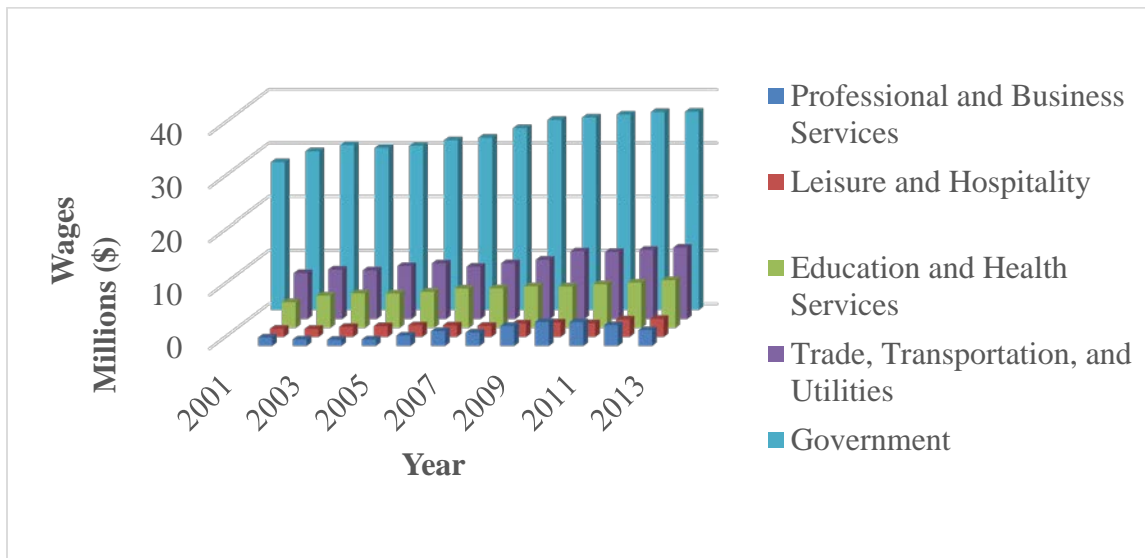
Figure 8: Taylor County Total Wages 1995-2013



Source: Workforce West Virginia

Figure 9 confirms the general trend in wages and that most of the top sectors grew throughout the decade. Wages in the Construction sector experienced some volatility, particularly around the time of the recessions in the early 2000s and in recent years as well. Wages in the Government, Leisure and Hospitality, and Trade, Transportation, and Utilities sectors experienced relatively steady growth during this time period.

Figure 9: Taylor County Total Wages by 5 Sectors 2001-2012

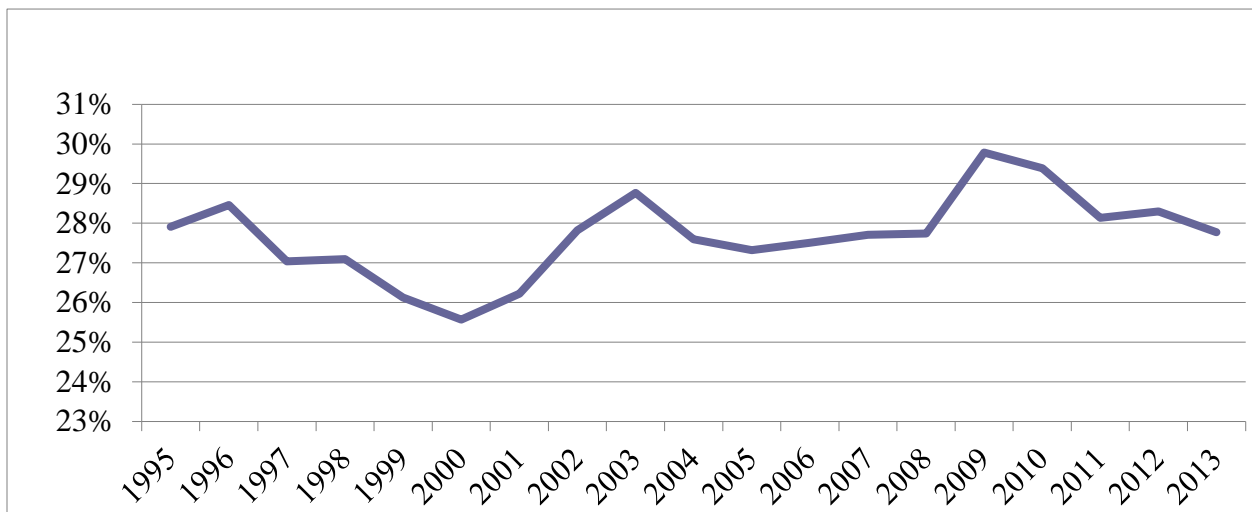


Source: Workforce West Virginia

In most American counties, one would find that the majority of income for people stems from wages. In West Virginia, 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. In Taylor County, wages for all employment exceeded

\$112 million.⁴ By comparison, income for the County was larger, nearly \$503 million in 2013.⁵ Though there are many components to income other than work earnings, 28 percent of total Taylor County income is derived from government transfers. Government transfers accounted for about 98 percent of total transfers in Taylor County, dwarfing transfers from private institutions such as charities. Government transfers have fluctuated greatly in Taylor County over the years with spikes in both 2003 and 2009, but they have consistently contributed between 26 and 30 percent of income. This does not count the wages for government workers. This number is similar to many other counties in West Virginia, and is not the worst nor the best ratio in the State.

Figure 10: Government Transfers as a Percentage of Income for Taylor County



Source: U.S. Bureau of Economic Analysis

The total personal income of Taylor County is therefore made up of 28 percent government transfers. Compared to the State, Taylor County has an above average ratio of government transfers to personal income. According to the BEA, per capita income was \$26,677 for Taylor County in 2013. Annual net earnings, or income from work, is displayed in Map 5, and Taylor is ranked among the middle tier in earned income in West Virginia.

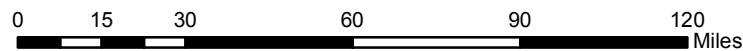
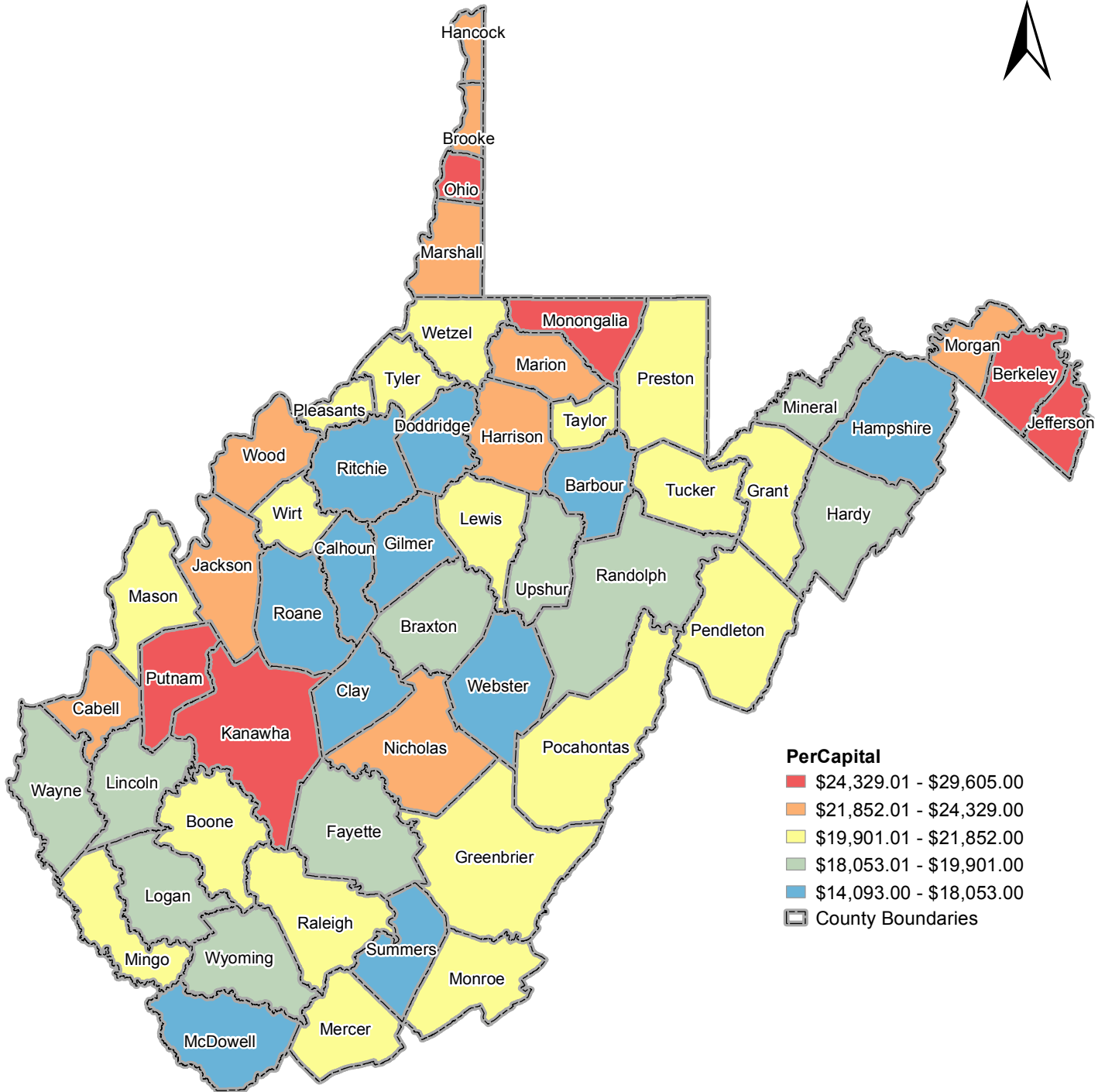
Another measure of economic health is the number of establishments that do business in the area. Map 6 shows the number of establishments in each county in West Virginia. Taylor County appears to be at the lowest end of the spectrum. The number of establishments may be misleading, as the Education and Health Services and Government sectors are typically characterized by a small number of firms.

⁴ “Employment and Wages – 2013, Taylor County,” Workforce West Virginia, Accessed January 18, 2015, <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 January 18, 2015, <http://www.bea.gov/regional/index.htm>.

Demographic

Per Capita Annual Net Earning



Source: U.S. Census Bureau, 2009-2013 American Community Survey

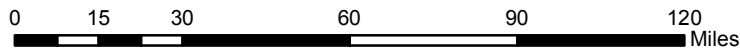
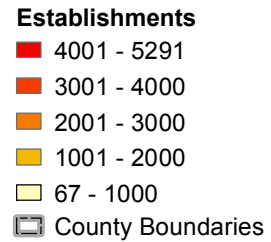
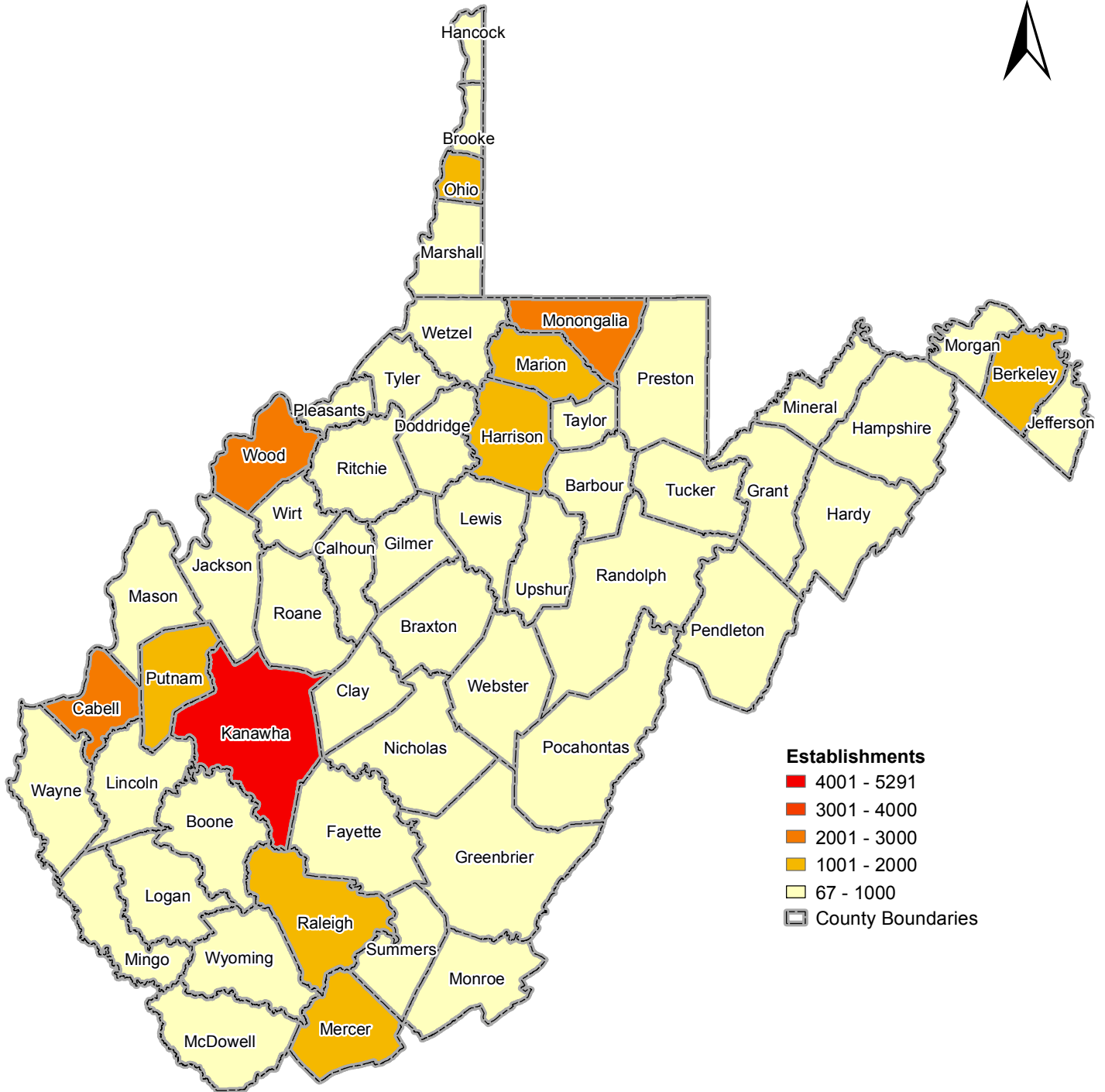
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www.njrati.org

Demographic

Number of Establishments



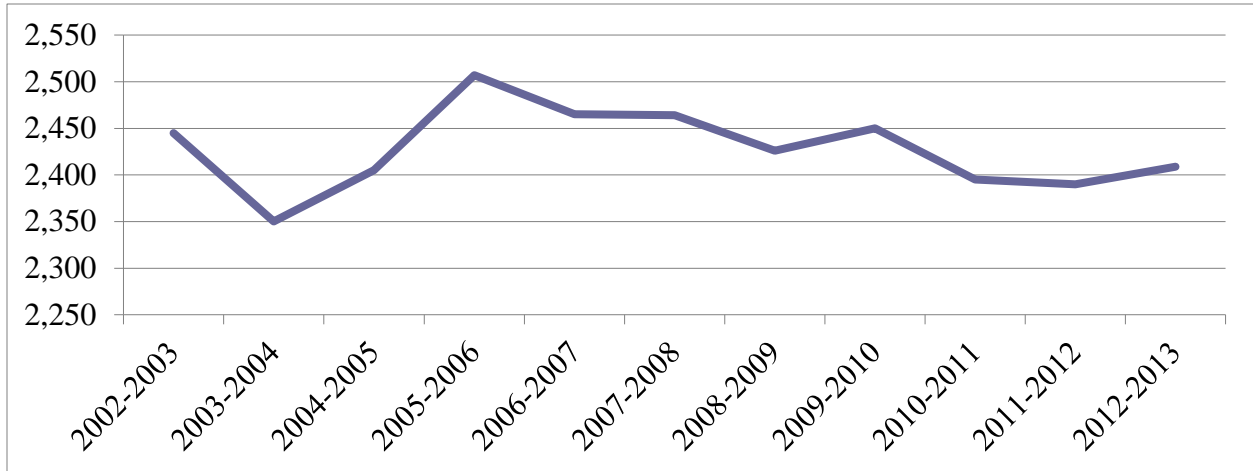
Source: U.S. Census Bureau, 2011

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Education

Taylor County has one high school, one vocational school, one middle school, and three elementary schools as of the 2013-2014 school year.⁶ Taylor County 2nd month school enrollment exhibited a short period of fluctuation followed by overall decline from in the early 2000s, experiencing periods of volatility. Taylor County's 2nd month enrollment is below average for the State (Map 7).

Figure 11: Taylor County School Enrollment

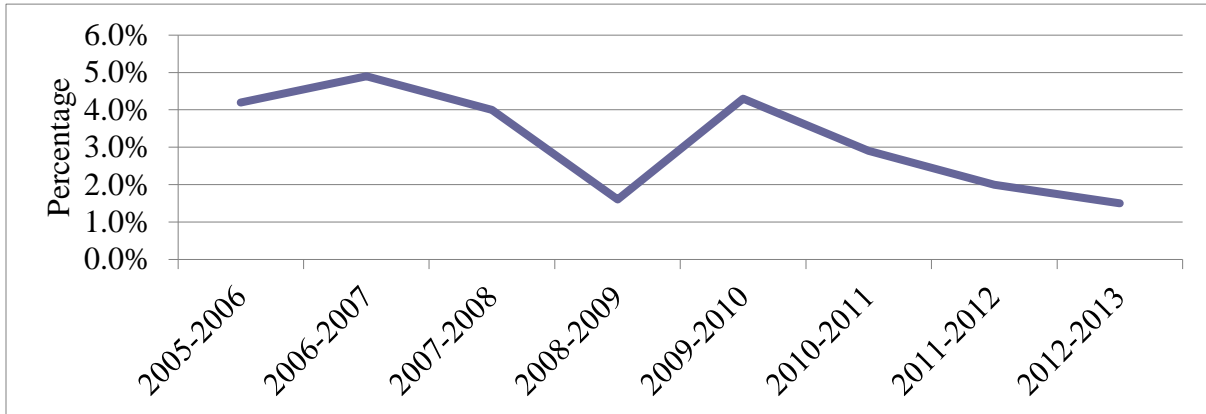


Source: WVEIS

The West Virginia Education Information System (WVEIS) also has dropout rates for the school years from 2005-2006 to 2012-2013. 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 experienced a period of decline until the 2008-2009 school year, when dropouts spiked and then continued once again to decline (Figure 12).

⁶ "School Profiles," West Virginia Education Information System, West Virginia Department of Education, Accessed March 9, 2015, <http://wveis.k12.wv.us/nclb/profiles/>.

Figure 12: Taylor County Dropout Rate

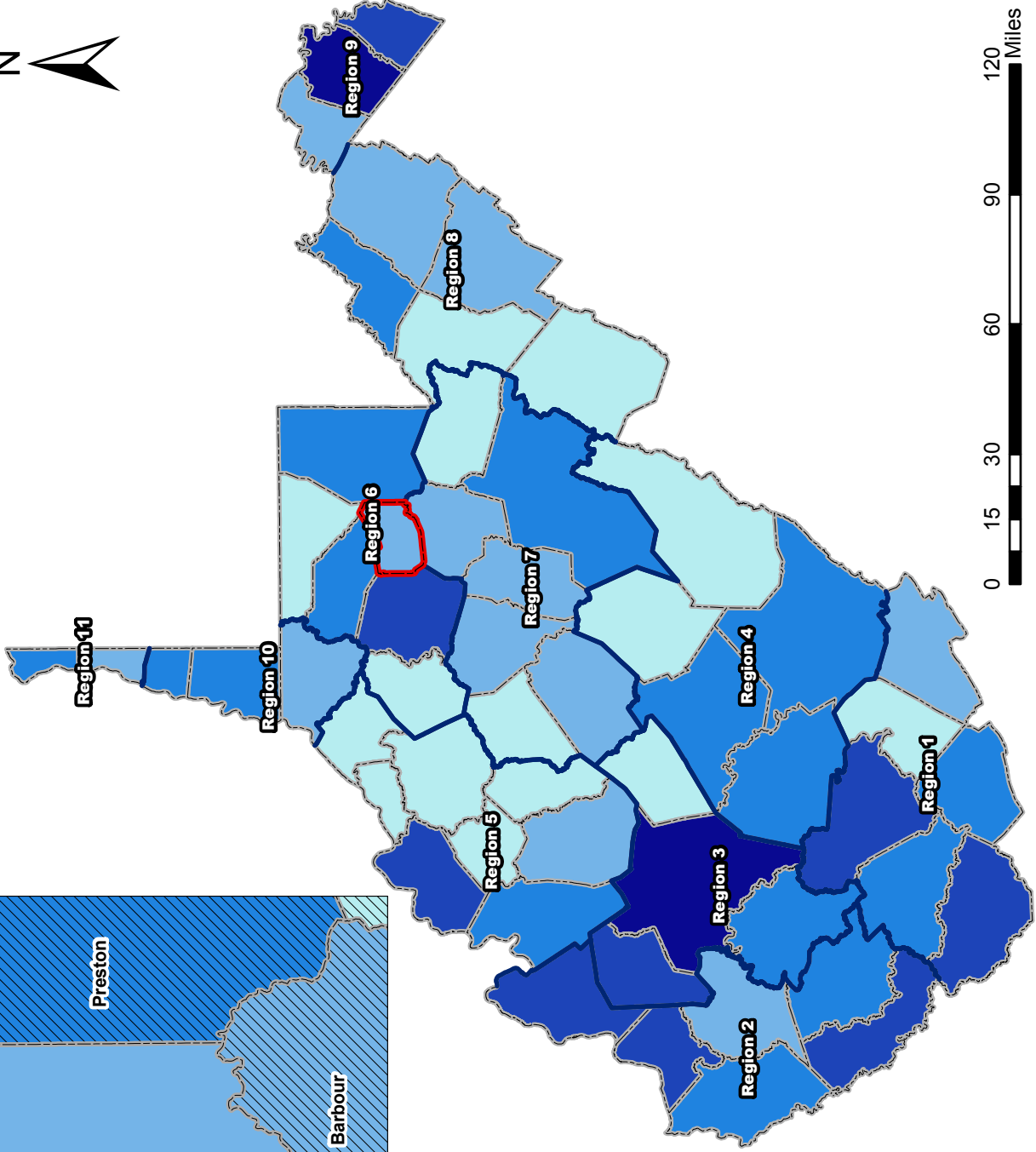
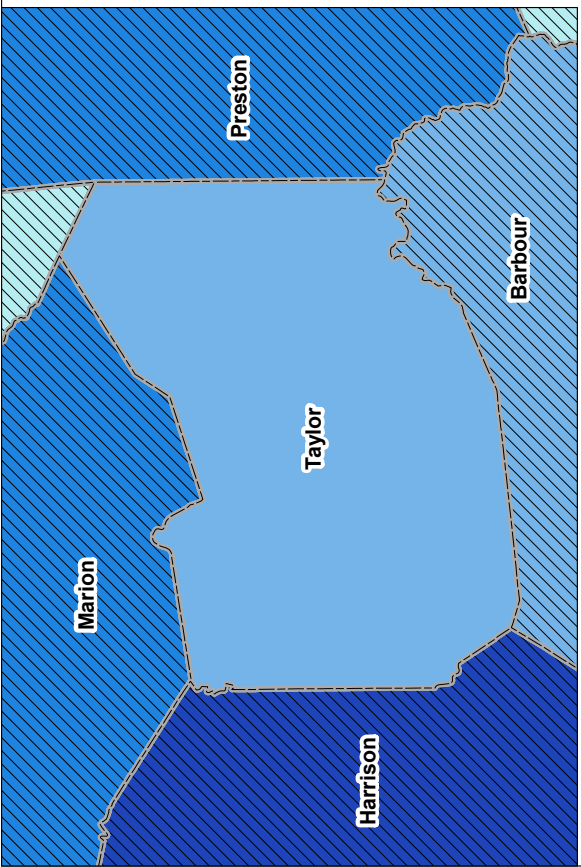


Source: WVEIS

Map 8 shows each county's dropout rate. Taylor County currently has an average dropout rate. Maps 9 and 10 show the total graduates and the graduation rate by county. In Taylor, total graduates are below average for the State, while graduation rates are average. Taylor County's schools' locations are noted in Map 11. Not coincidentally, the major schools are located on the main roads in the County. The largest school by attendance in the County is Taylor County Middle 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

Taylor County



- Planning Regions Line
- 904 - 1978
- 1979 - 3832
- 3833 - 7412
- 7413 - 13259
- 13260 - 27936
- County Boundaries



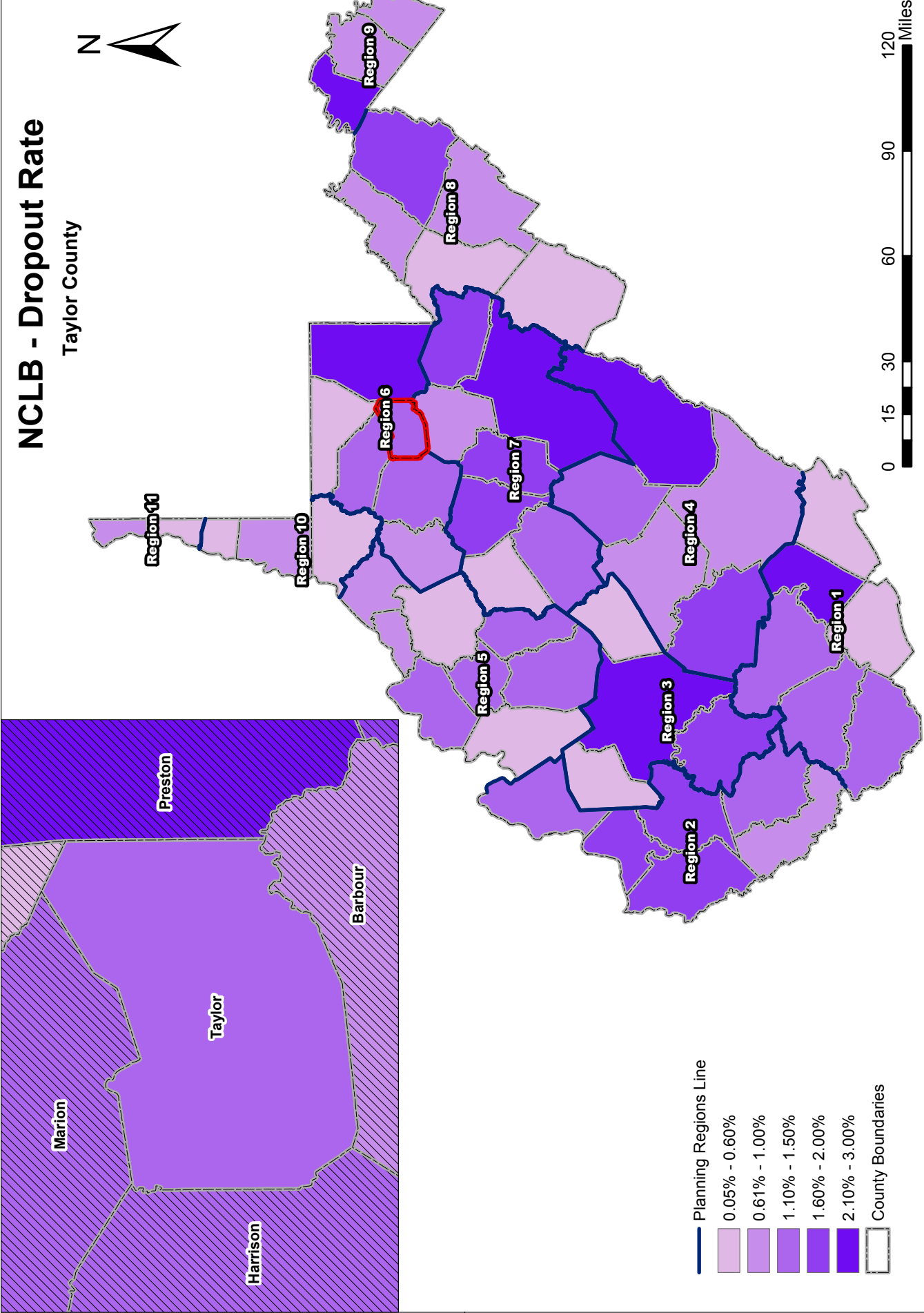
Source: West Virginia Department of Education 2015

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NCLB - Dropout Rate

Taylor County



- Planning Regions Line
- 0.05% - 0.60%
- 0.61% - 1.00%
- 1.10% - 1.50%
- 1.60% - 2.00%
- 2.10% - 3.00%
- County Boundaries

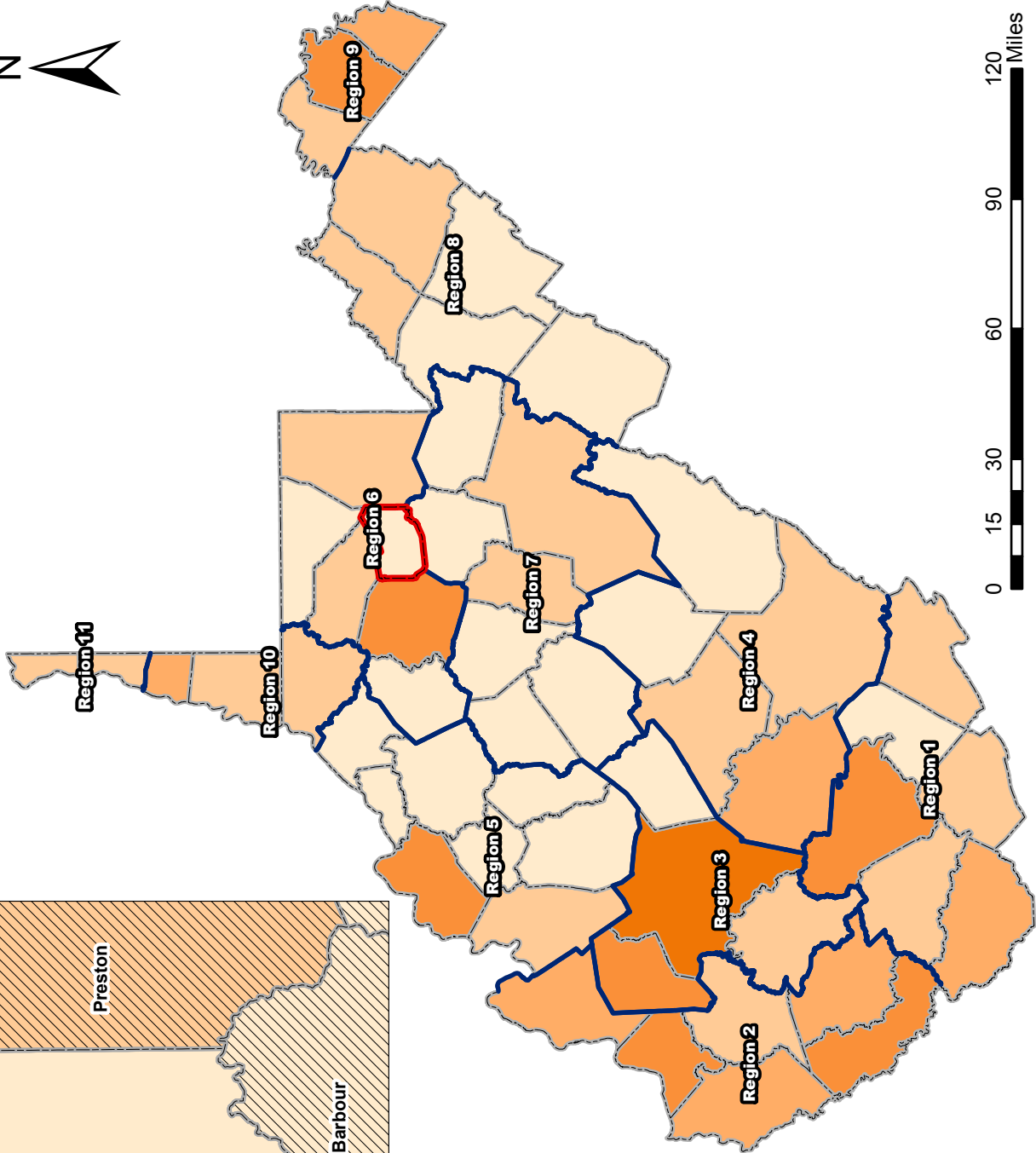
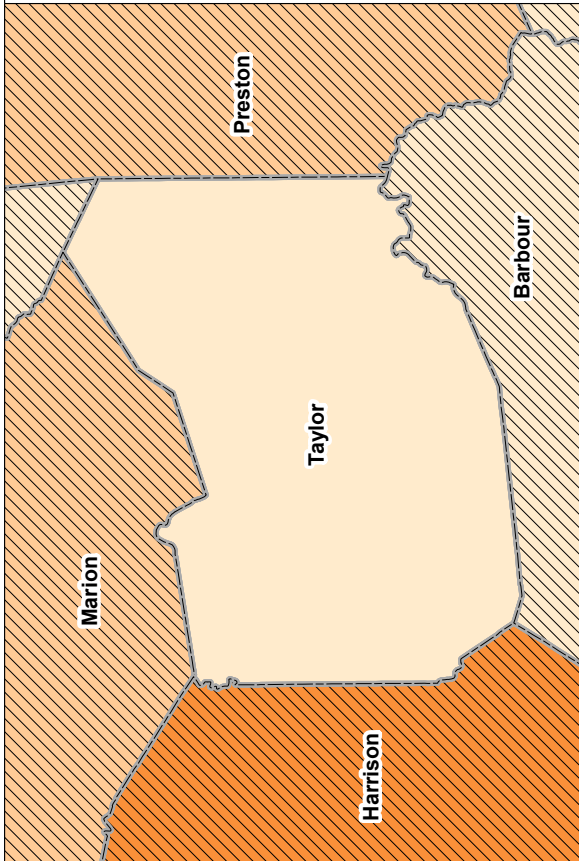
Source: West Virginia Department of Education 2015

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NCLB - Total Graduates

Taylor County



Planning Regions Line

- 53 - 151
- 152 - 312
- 313 - 514
- 515 - 931
- 932 - 1361

County Boundaries



Source: West Virginia Department of Education 2014

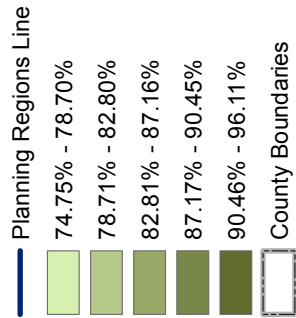
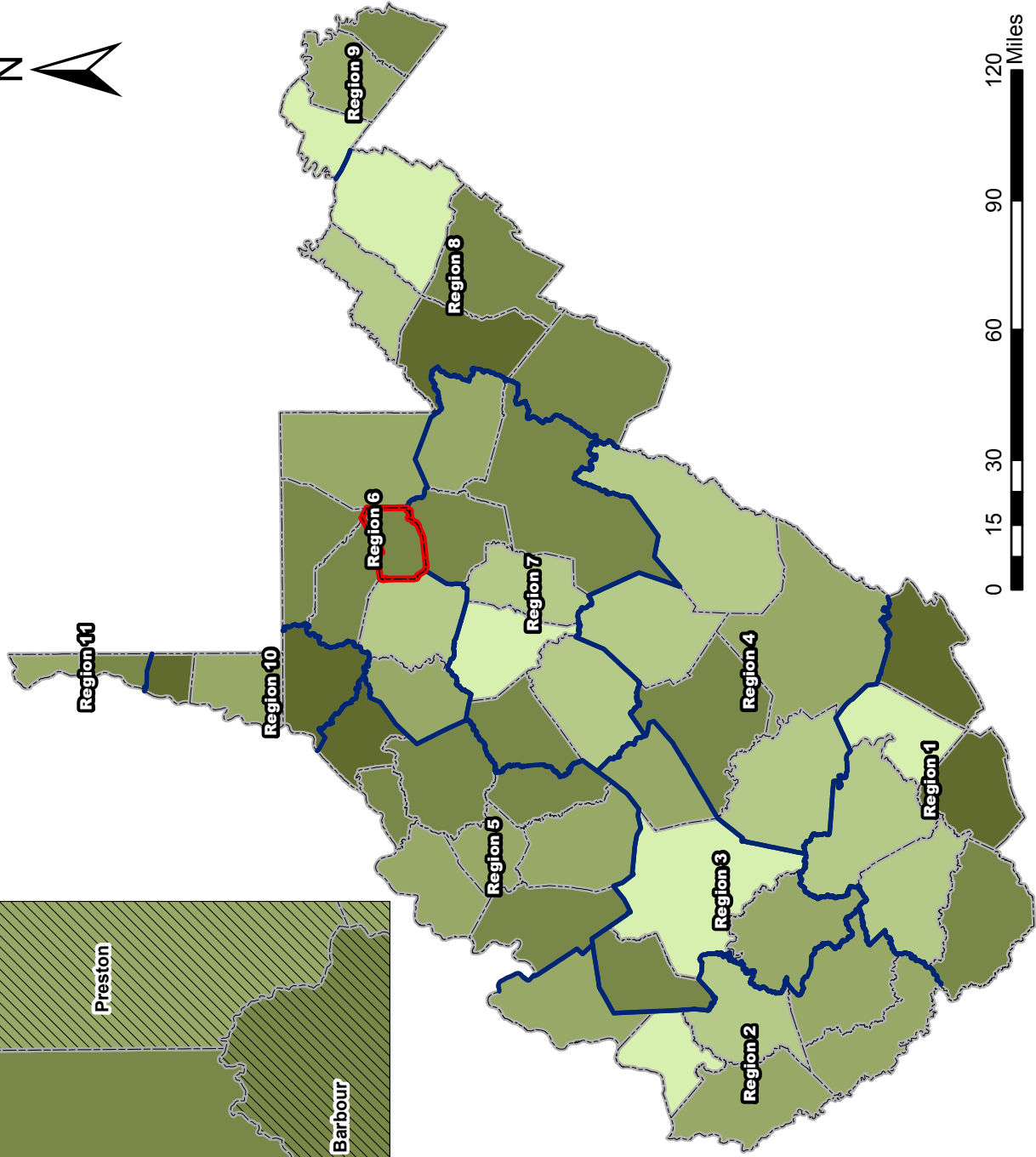
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www.rjrahi.org

NCLB - Graduates Rate

Taylor County



Source: West Virginia Department of Education 2015

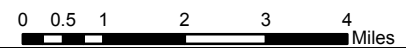
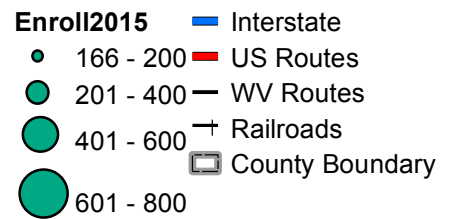
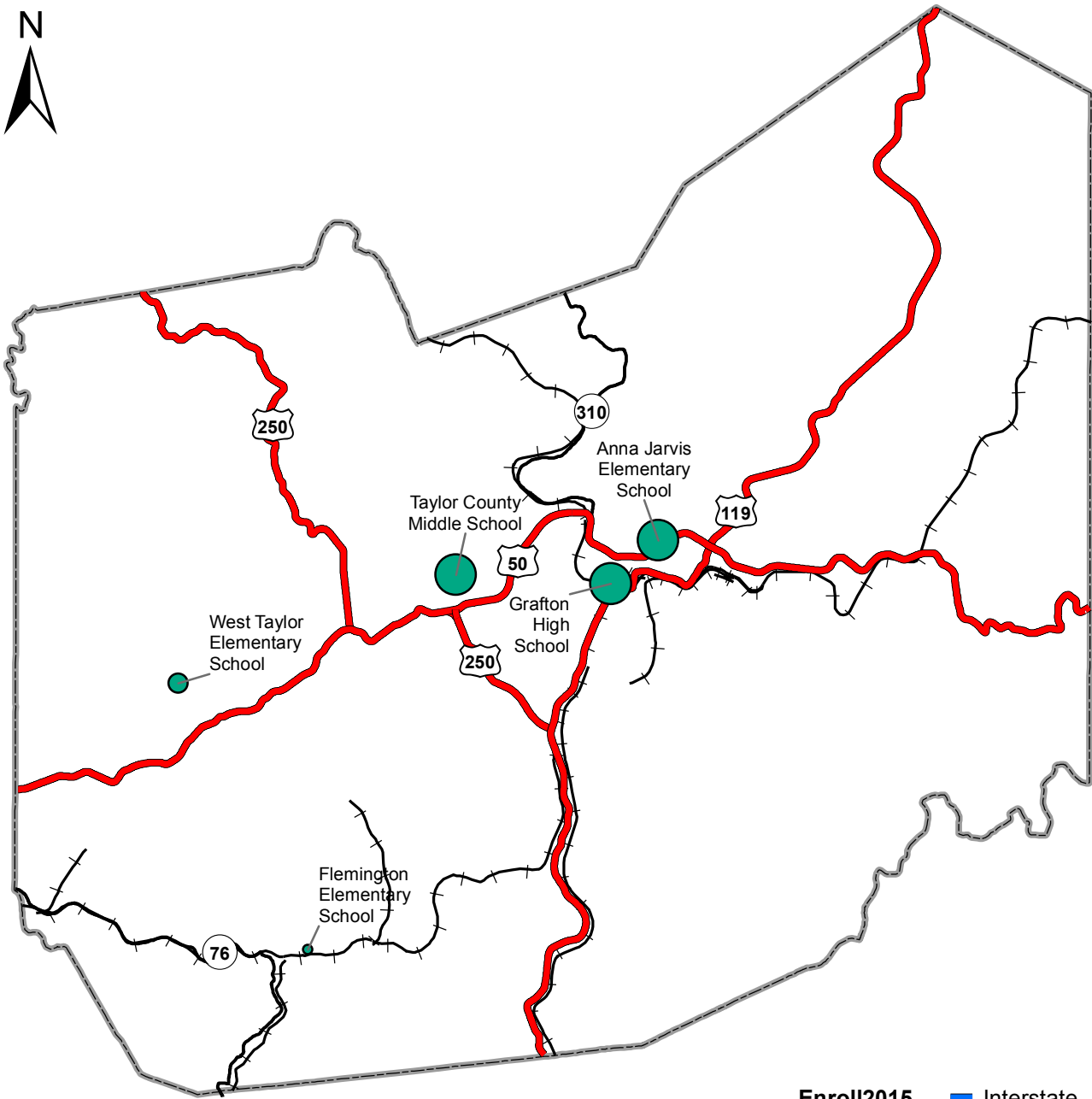
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www.rjatit.org

Total Attendance by School - 2015

Taylor County



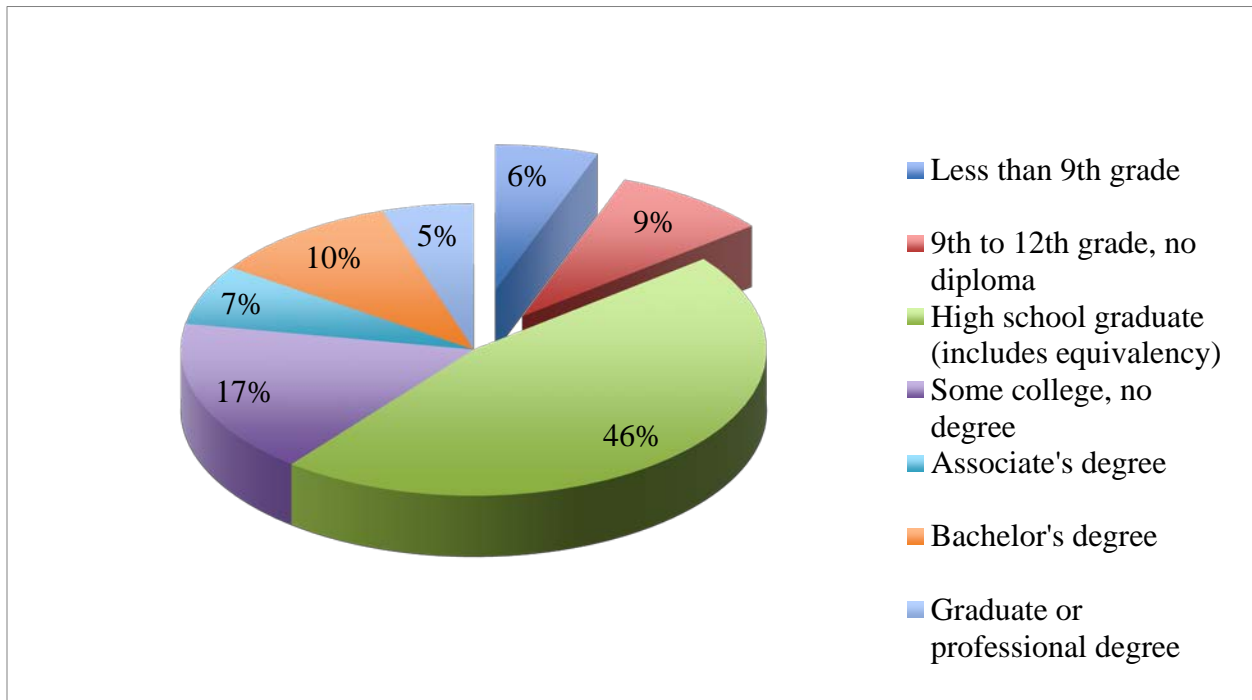
Source: West Virginia Department of Education 2015

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The ACS also maintains data on the educational attainment of the population that is 25 years and over. In Taylor County, 46 percent of these residents have a high school diploma or equivalent. Approximately 14 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: Taylor County Educational Attainment



Source: 2013 American Community Survey 5-Year Estimates

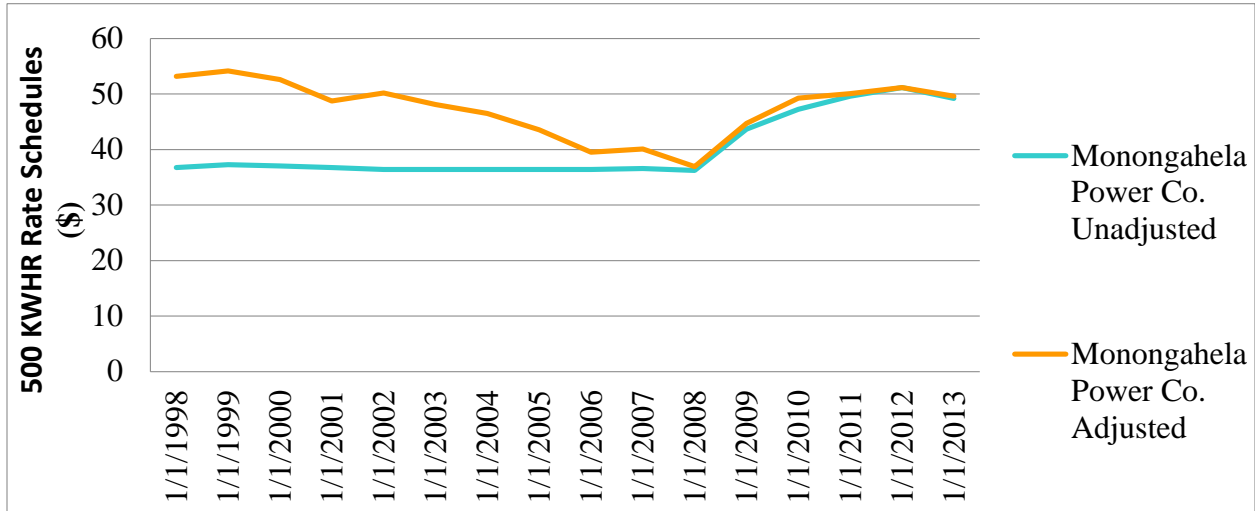
Utilities and Infrastructure

Taylor County has 24 utility companies according to the West Virginia Public Service Commission (PSC). Economic development depends on infrastructure, and Taylor County has several providers of water and sewer, two major providers of electricity (Monongahela Power Company and Harrison Rural Electrification Association, Inc.), and one electric wholesaler (American Bituminous Power Partners, L.P.).

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 from 1998 to 2013. The adjusted and unadjusted prices are provided in Figure 14.

Figure 14: Power Company Prices



Source: West Virginia Public Service Commission and U.S. Bureau of Labor Statistics

The graph shows that electricity rates steadily decreased in real terms through 2008 and remained fairly constant with adjustment. Both adjusted and unadjusted prices have increased since 2008. 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 Taylor 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. Taylor County has 14 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.

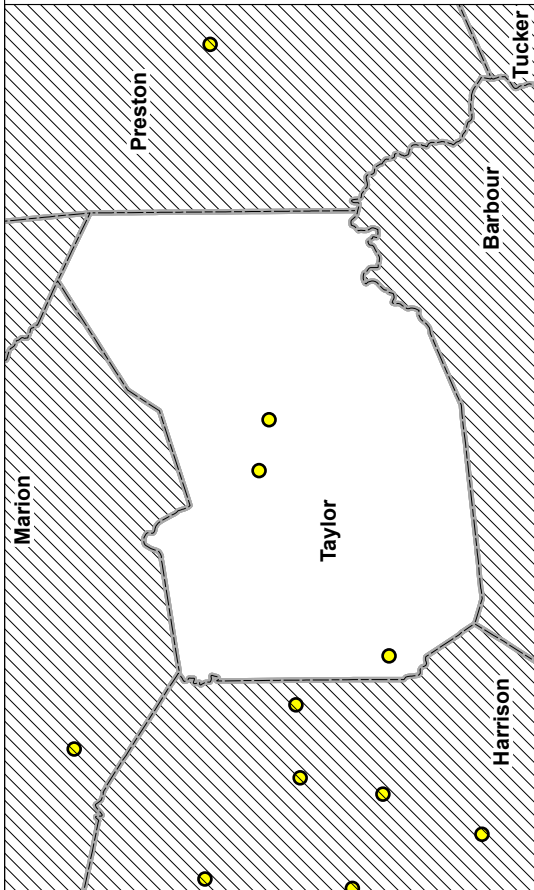
Table 1: Taylor County Water and Sewer Rates

Hamrick Public Service District	
Water Rates	
First 3,000 gallons used per month	\$9.14 per 1,000 gallons
Next 3,000 gallons used per month	\$8.14 per 1,000 gallons
Next 4,000 gallons used per month	\$6.76 per 1,000 gallons
Next 10,000 gallons used per month	\$5.91 per 1,000 gallons
All Over 20,000 gallons used per month	\$4.09 per 1,000 gallons
Davis Municipal Water Department	
Water Rates	
\$7.85 per 1,000 gallons	
Each metered customer shall be charged a flat rate of \$35.33 per month.	
Thomas Municipal Water Department	
Water Rates	
First 2,000 gallons used per month	\$5.88 per 1,000 gallons
Next 18,000 gallons used per month	\$5.42 per 1,000 gallons
All over 20,000 gallons used per month	\$4.48 per 1,000 gallons
City of Parsons	
Water Rates	
First 2,000 gallons used per month	\$13.40 per thousand gallons
Next 3,000 gallons used per month	\$11.65 per thousand gallons
Next 5,000 gallons used per month	\$10.31 per thousand gallons
Next 10,000 gallons used per month	\$ 8.14 per thousand gallons
Next 30,000 gallons used per month	\$ 6.31 per thousand gallons
All over 50,000 gallons used per month	\$ 4.42 per thousand gallons
Canaan Valley Public Service District	
Water Rates	
No current record available	
Town of Davis Sewer System	
Sewer Rates	
Flat Rate	\$3.40 per 1,000 gallons.
<i>Minimum Charge</i>	\$10.20 per month
City of Thomas	
Sewer Rates	
\$7.08 per 1,000 gallons of water used per month	
<i>Minimum Charge</i>	\$21.24 per month
<i>Non-metered Water Supply</i>	\$28.32 per month

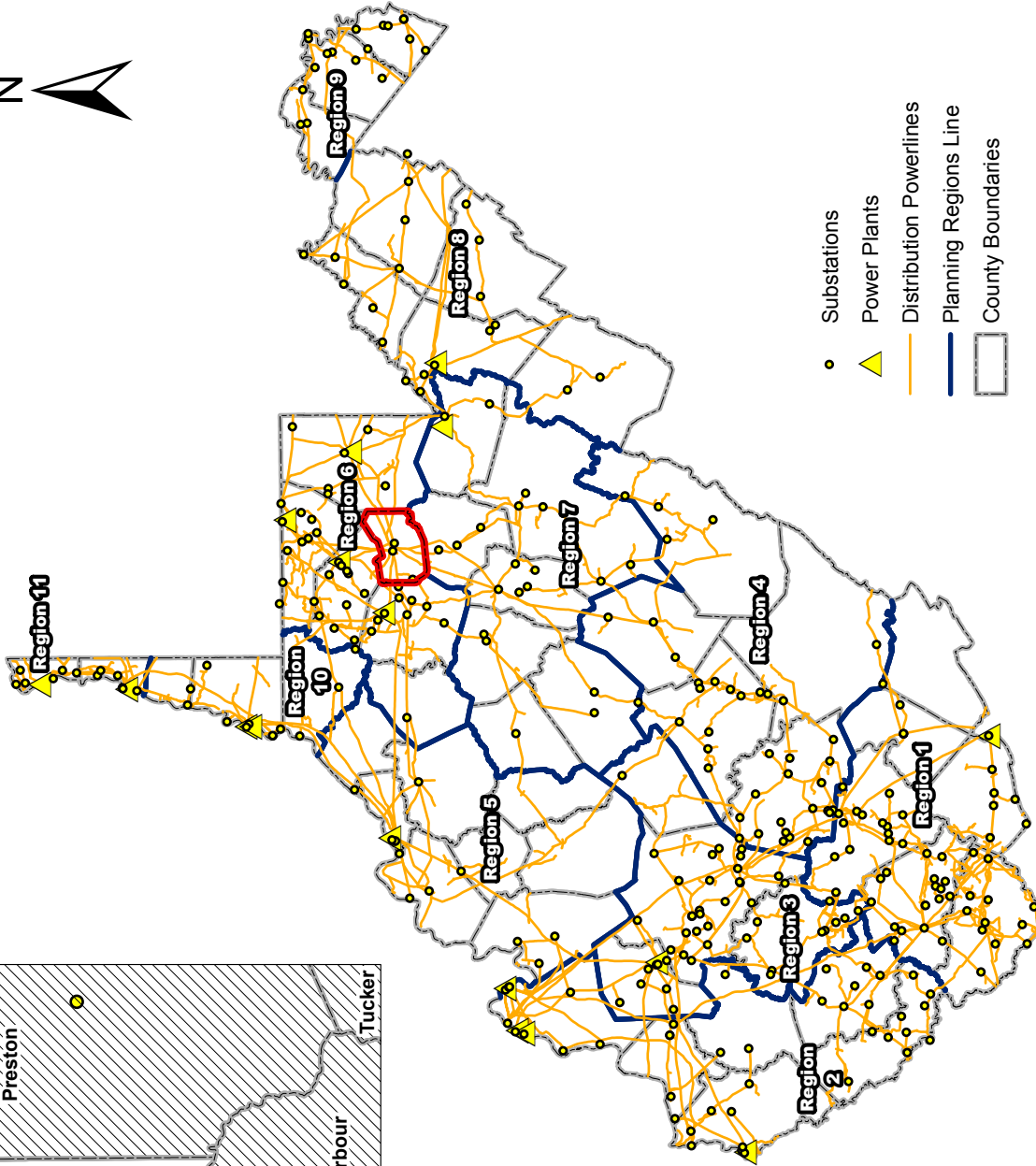
City of Parsons	
Sewer Rates	
First 5,000 gallons used per month	\$ 10.74 per 1,000 gallons
Next 15,000 gallons used per month	\$ 5.71 per 1,000 gallons
All over 20,000 gallons used per month	\$ 3.45 per 1,000 gallons
Canaan Valley Public Service District	
Sewer Rates	
<i>Minimum Charge</i>	\$65 per Equivalent Dwelling Unit (EDU)i
Hamrick Public Service District	
Sewer Rates	
Per 1,000 gallons used	\$10.15
<i>Minimum Charge</i>	\$20.30
<i>Non-metered Water Supply</i>	\$49.94 per month
Timberline Four Seasons Utilities, Inc.	
Sewer Rates	
First 4,000 gallons of water used per month	\$3.69 per 1,000 gallons
Next 6,000 gallons of water used per month	\$3.11 per 1,000 gallons
All Over 10,000 gallons of water used per month	\$2.40 per 1,000 gallons
West Virginia Resorts, LLC	
Sewer Rates	
<i>Residential Service</i>	\$21.60 per month
<i>Commercial Service</i>	
First 400 gallons per month	\$20.00 per 1,000 gallons per month
Next 400 gallons per month	\$15.00 per 1,000 gallons per month
All Over 800 gallons per month	\$ 8.50 per 1,000 gallons per month
Timberline Four Seasons Utilities, Inc.	
Water Rates	
First 4,000 gallons used per month	\$9.44 per 1,000 gallons
Next 6,000 gallons used per month	\$7.27 per 1,000 gallons
Over 10,000 gallons used per month	\$5.44 per 1,000 gallons
West Virginia Resorts LLC	
Water Rates	
<i>Residential Service</i>	\$24.54 per month
<i>Commercial Service</i>	
First 400 gallons per month	\$30.00 per 1,000 gallons per month
Next 400 gallons per month	\$15.00 per 1,000 gallons per month
All Over 800 gallons per month	\$ 7.50 per 1,000 gallons per month

Utilities - Electricity

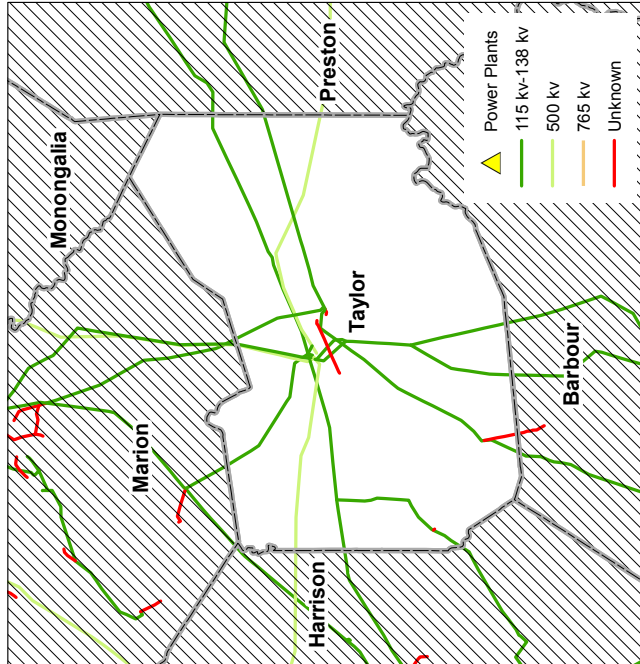
Taylor County



● Electricity Substations



- Substations
- ▲ Power Plants
- Distribution Powerlines
- Planning Regions Line
- County Boundaries



- ▲ Power Plants
- 115 kv-138 kv
- 500 kv
- 765 kv
- Unknown

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

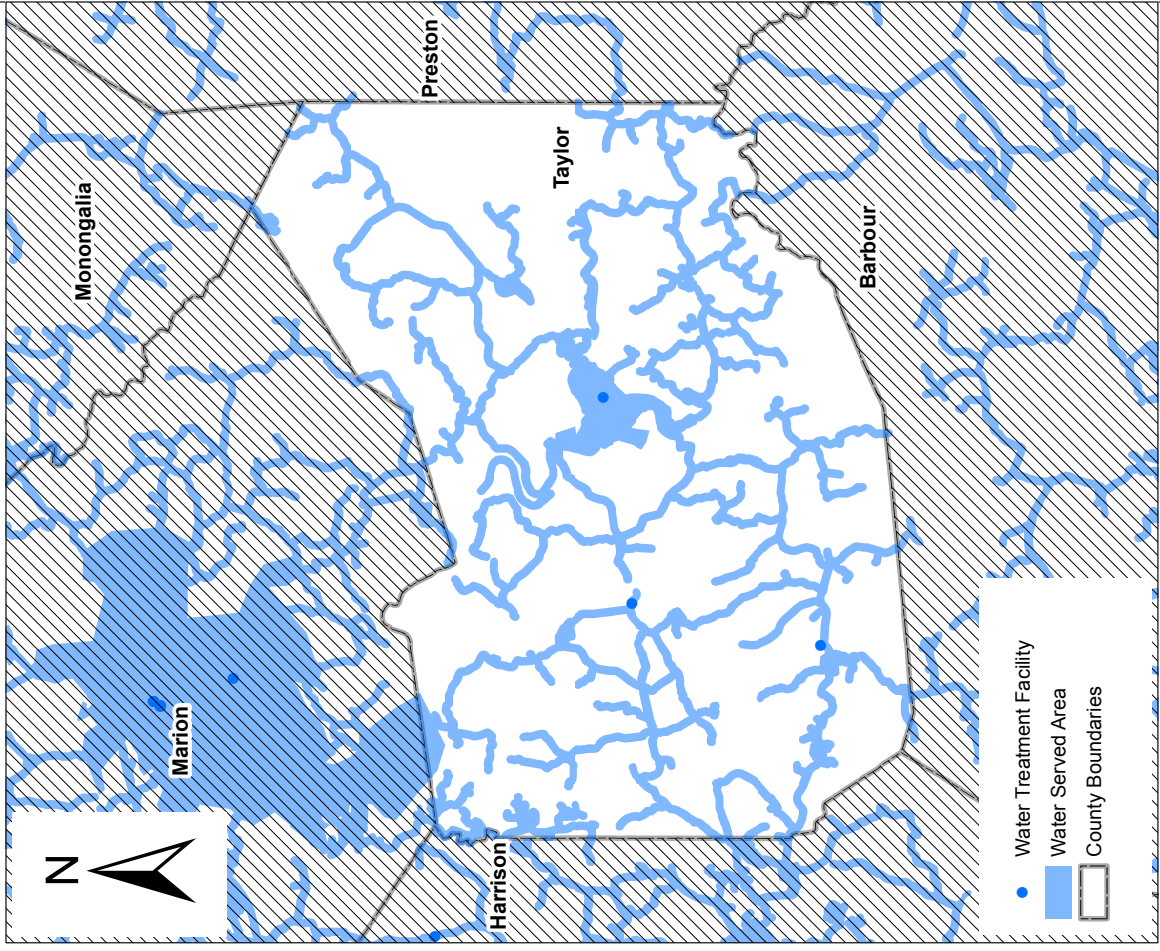
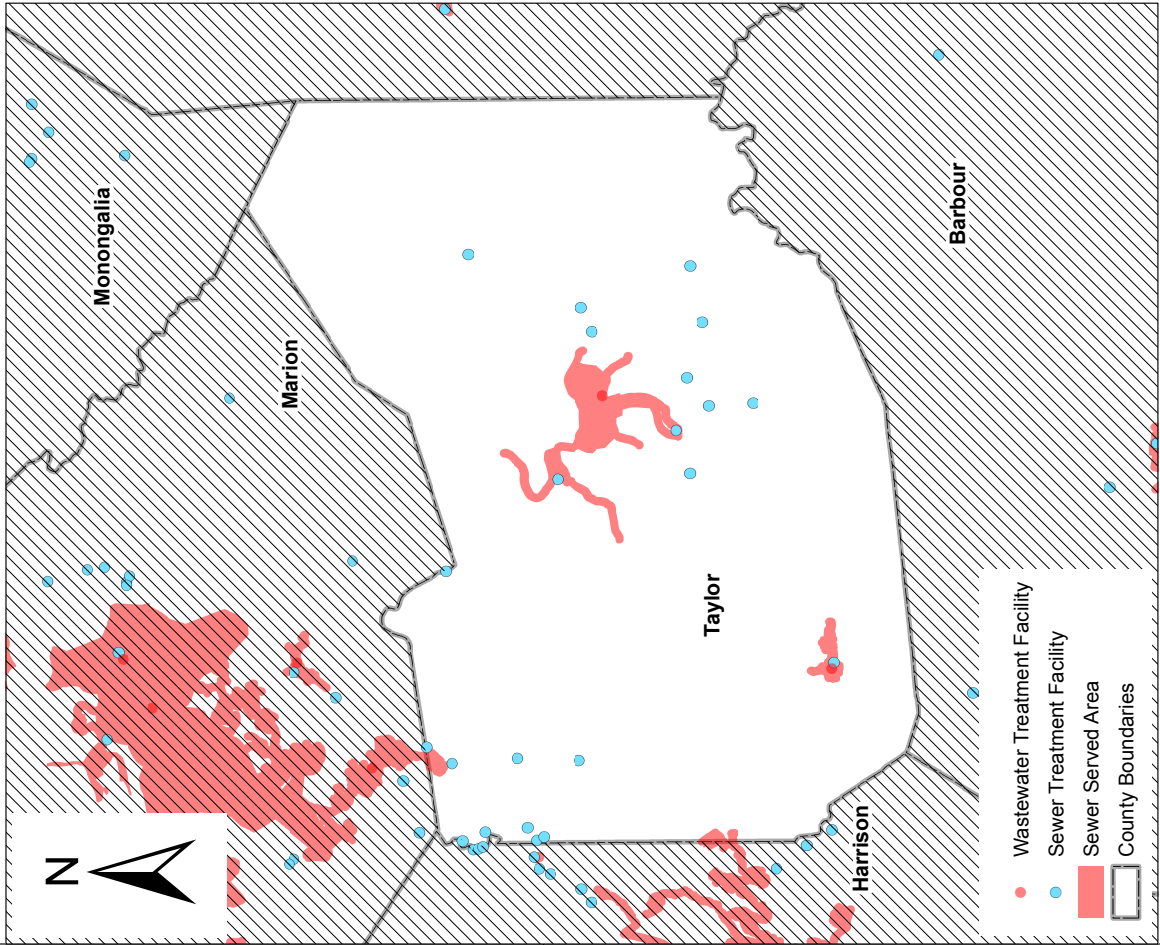
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www.rta.org

Utilities - Water and Sewer

Taylor County



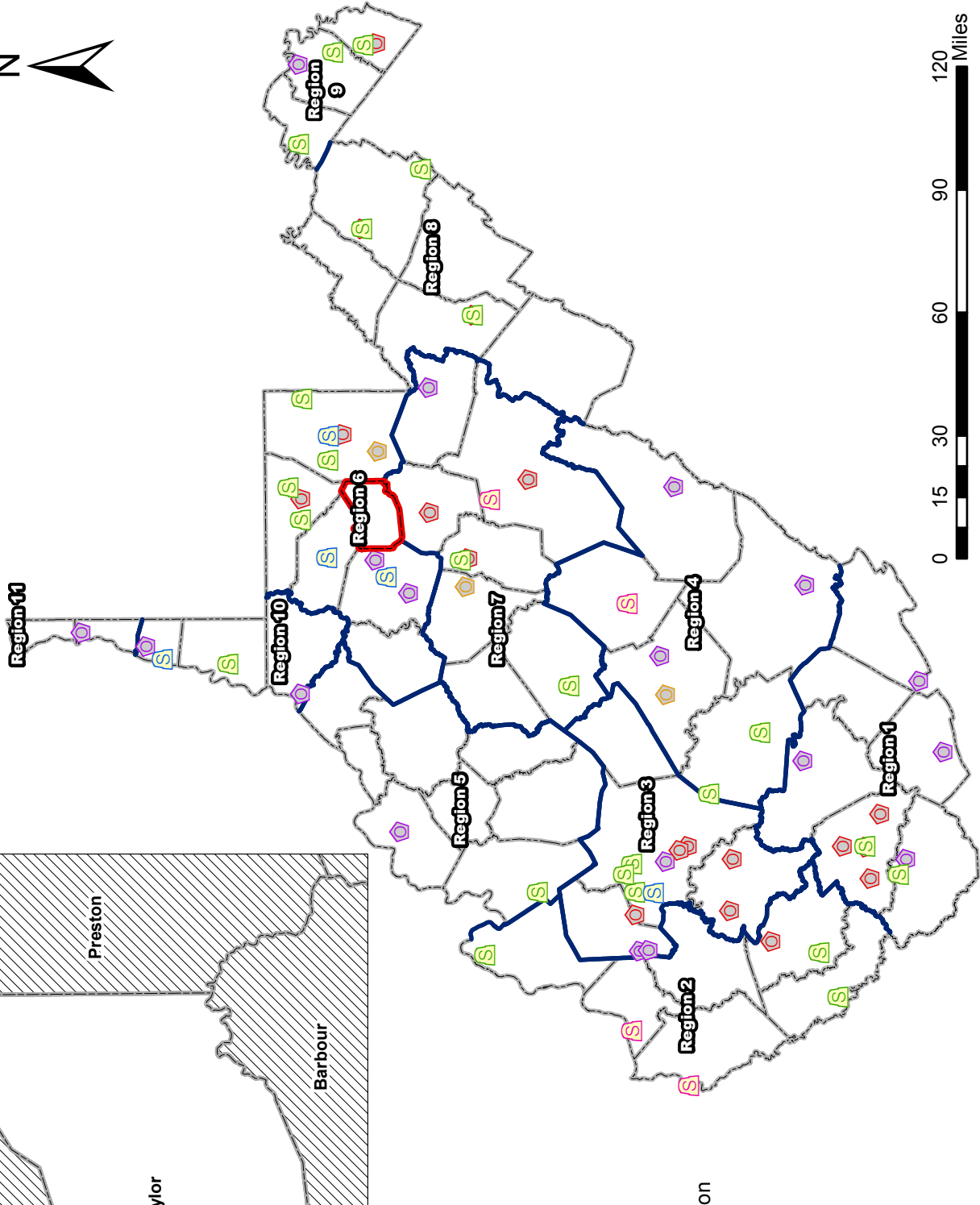
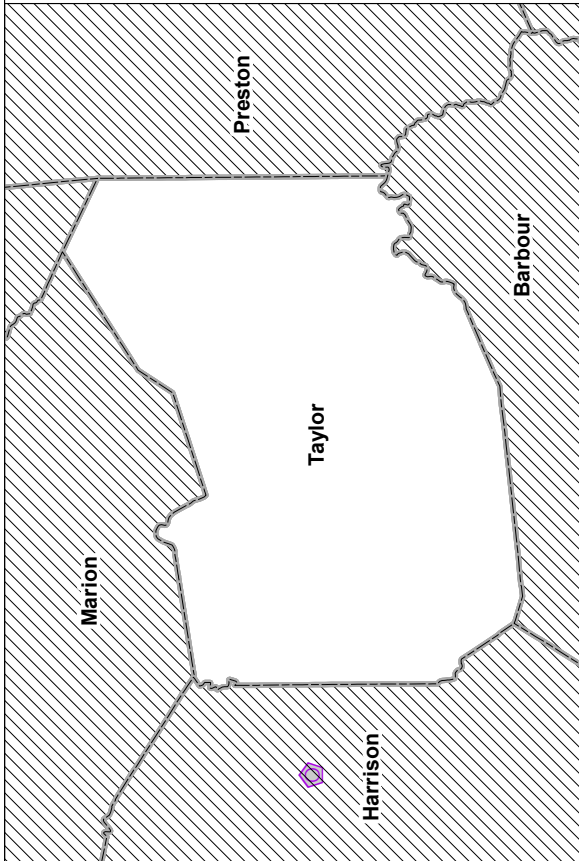
Source: West Virginia Infrastructure and Jobs Development Council N.A.

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Utility - Solid Waste Facility






Taylor County



Non Operational Facility

-  Post-closure status
-  Closure status
-  A non LCAP** facility

Operational Facility

-  Operational landfill
-  Solid waste transfer station
-  Operational tire monofill
-  Planning Regions Line
-  County Boundaries

** Landfill Closure Assistance Program



Source: West Virginia Solid Waste Management Board 2012

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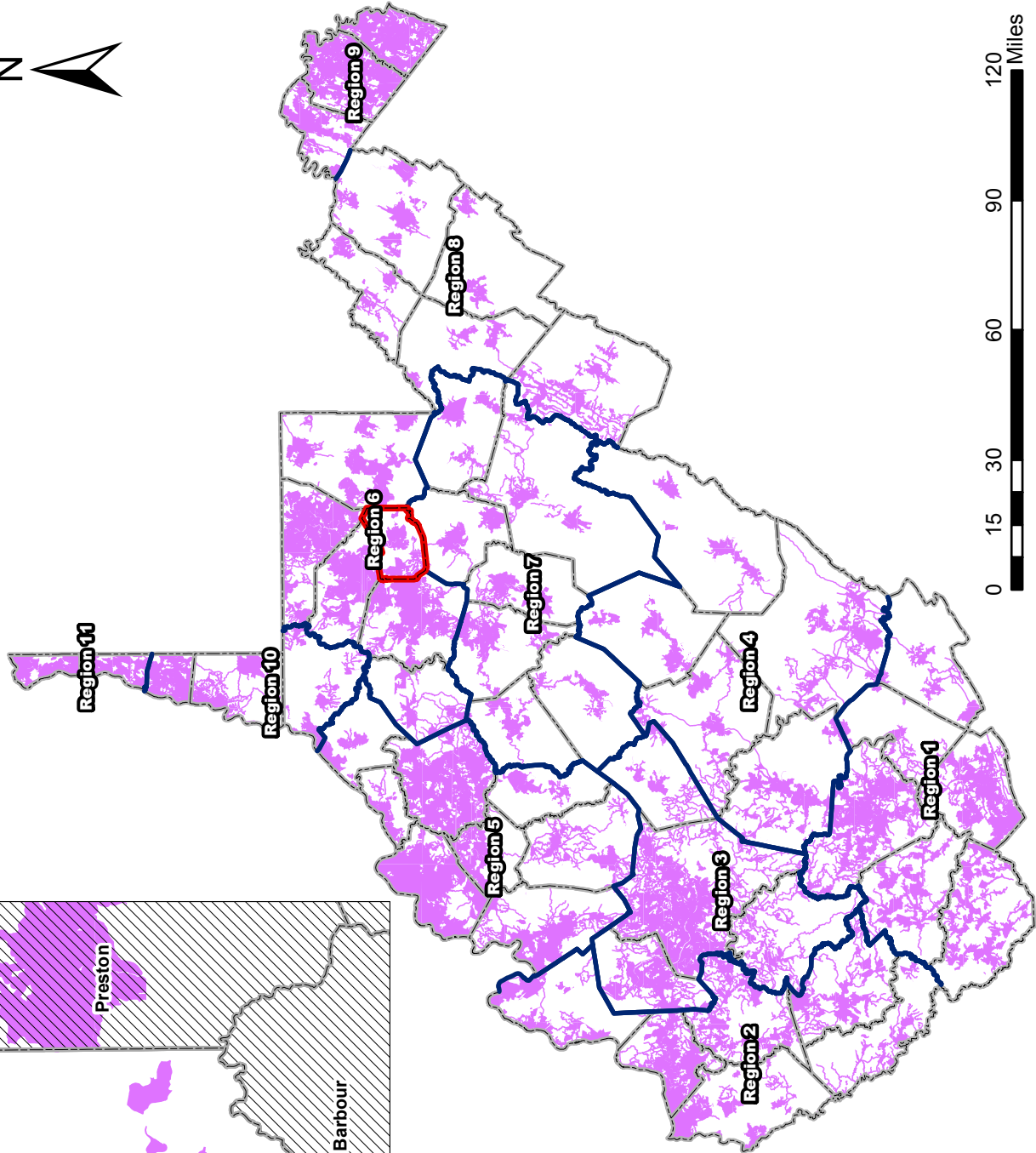
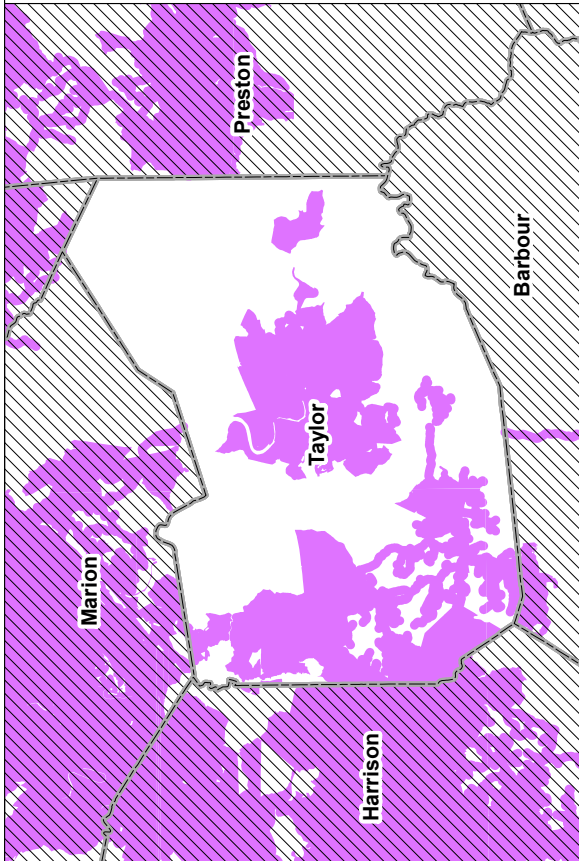
One essential modern convenience, now widely understood as an essential utility in a globalized world, is broadband access. The following 11 maps demonstrate Taylor County's broadband infrastructure in relation to the State's. The largest number of providers in Taylor County is five, which are most densely concentrated in the eastern section of the County. Taylor County broadband infrastructure closely resembles neighboring counties of Harrison and Marion. Of particular note is the presence of greater than 10 mbps of wireless speed across most of the County, mostly contiguous mobile wireless coverage, and extremely limited areas where no broadband coverage is reported.

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 Taylor County internet service as exhibited by West Virginia. 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. Note also that the map data is for 2014, the most recent map available. Changes have been made in recent years, thanks to broadband expansion programs encouraged by the State.

Broadband - Internet Cable and FTTP Coverage

Taylor County



- Planning Regions Line
- Cable and FTTP
- County Boundaries

Source: West Virginia Broadband Mapping Program 2014

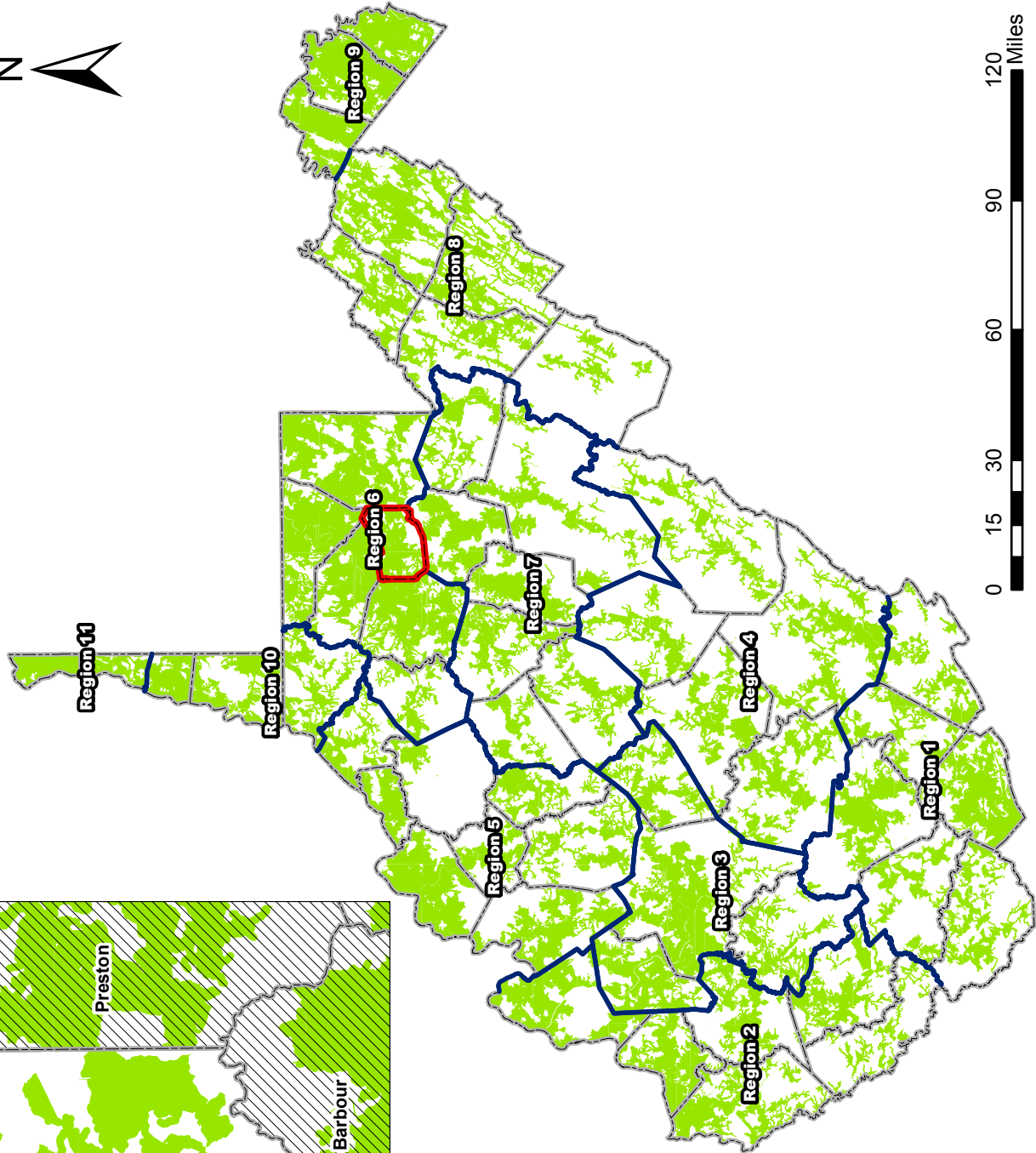
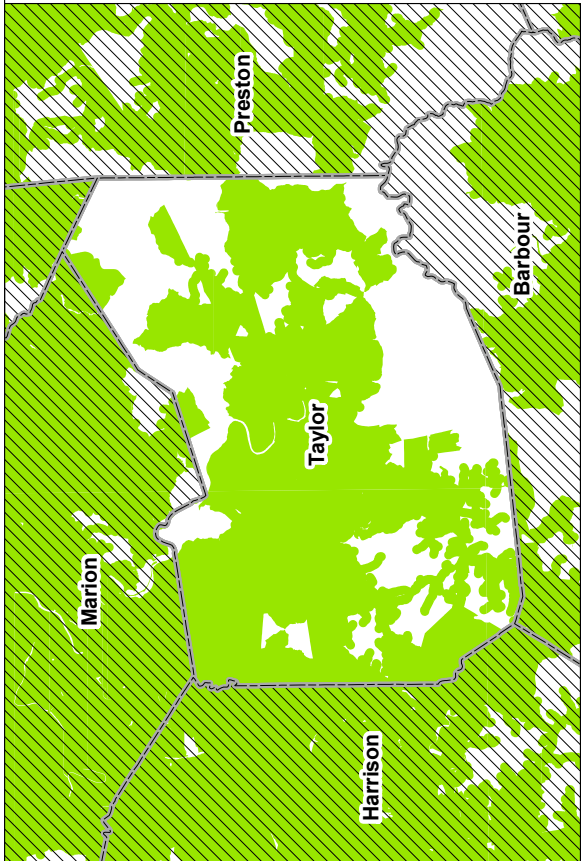
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www.rahtall.org

Broadband - Internet DSL, BPL, Other Copper

Taylor County



-  Planning Regions Line
-  DSL, BPL, Other Copper
-  County Boundaries

Source: West Virginia Broadband Mapping Program 2014

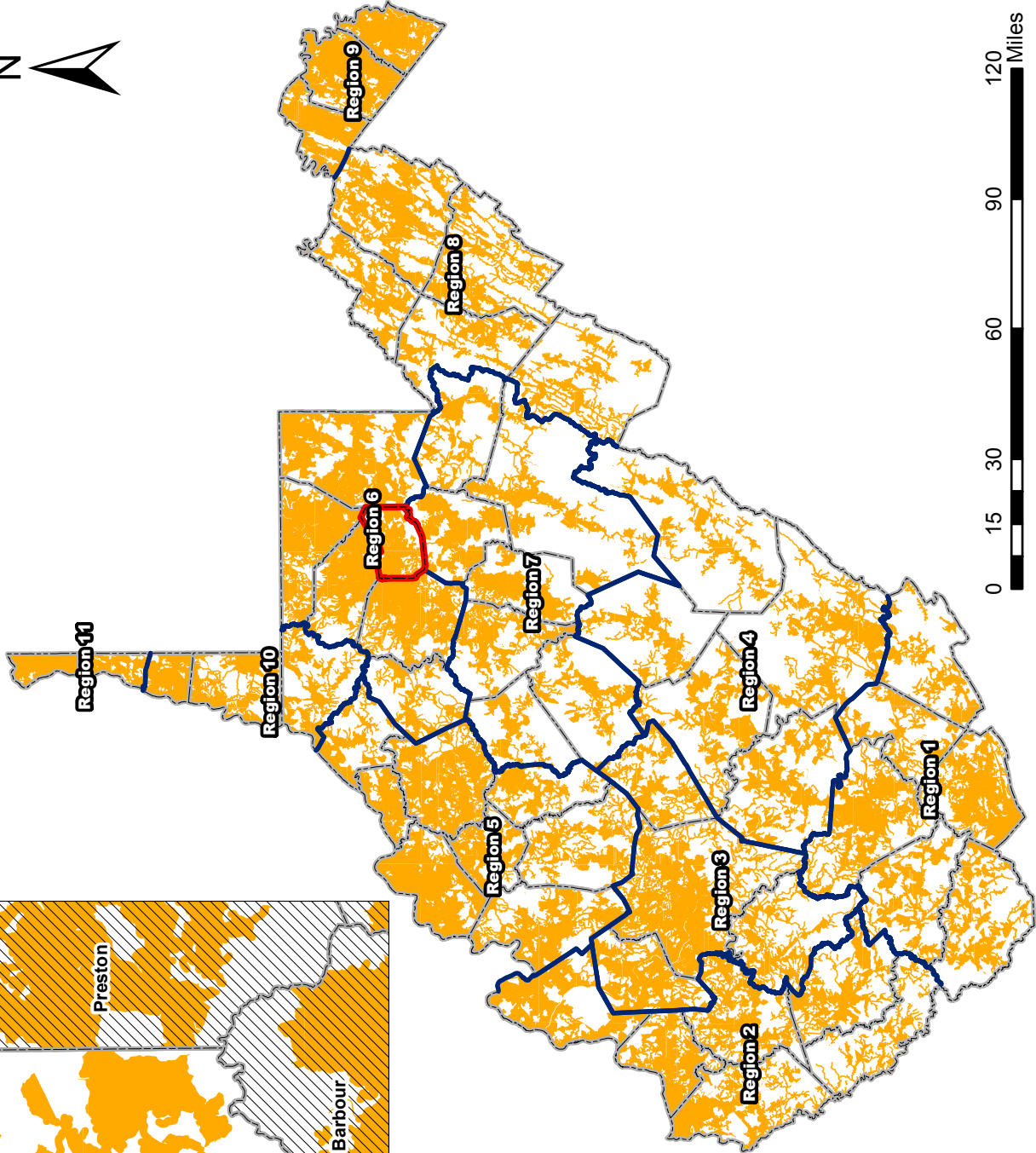
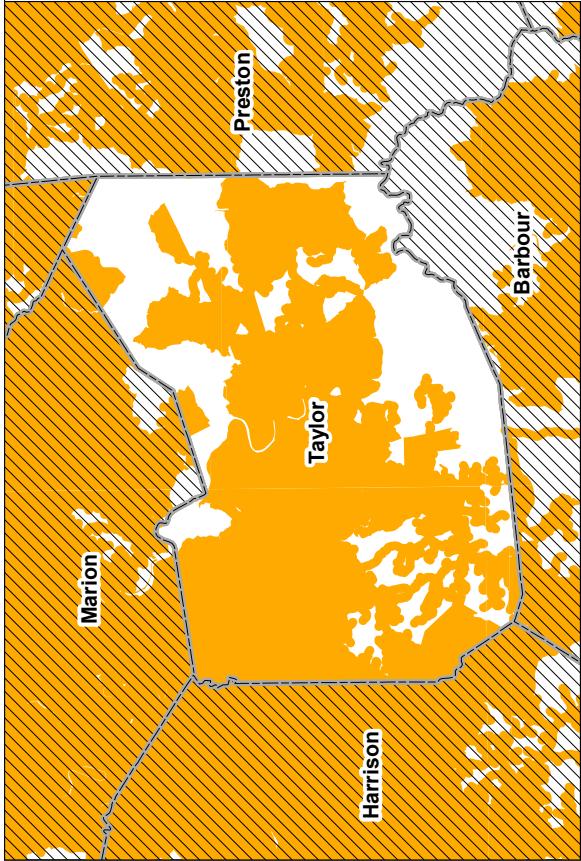
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www.rtiappi.org

Broadband - Internet Wireline Coverage

Taylor County



- Planning Regions Line
- Wireline Coverage
- County Boundaries

Source: West Virginia Broadband Mapping Program 2014

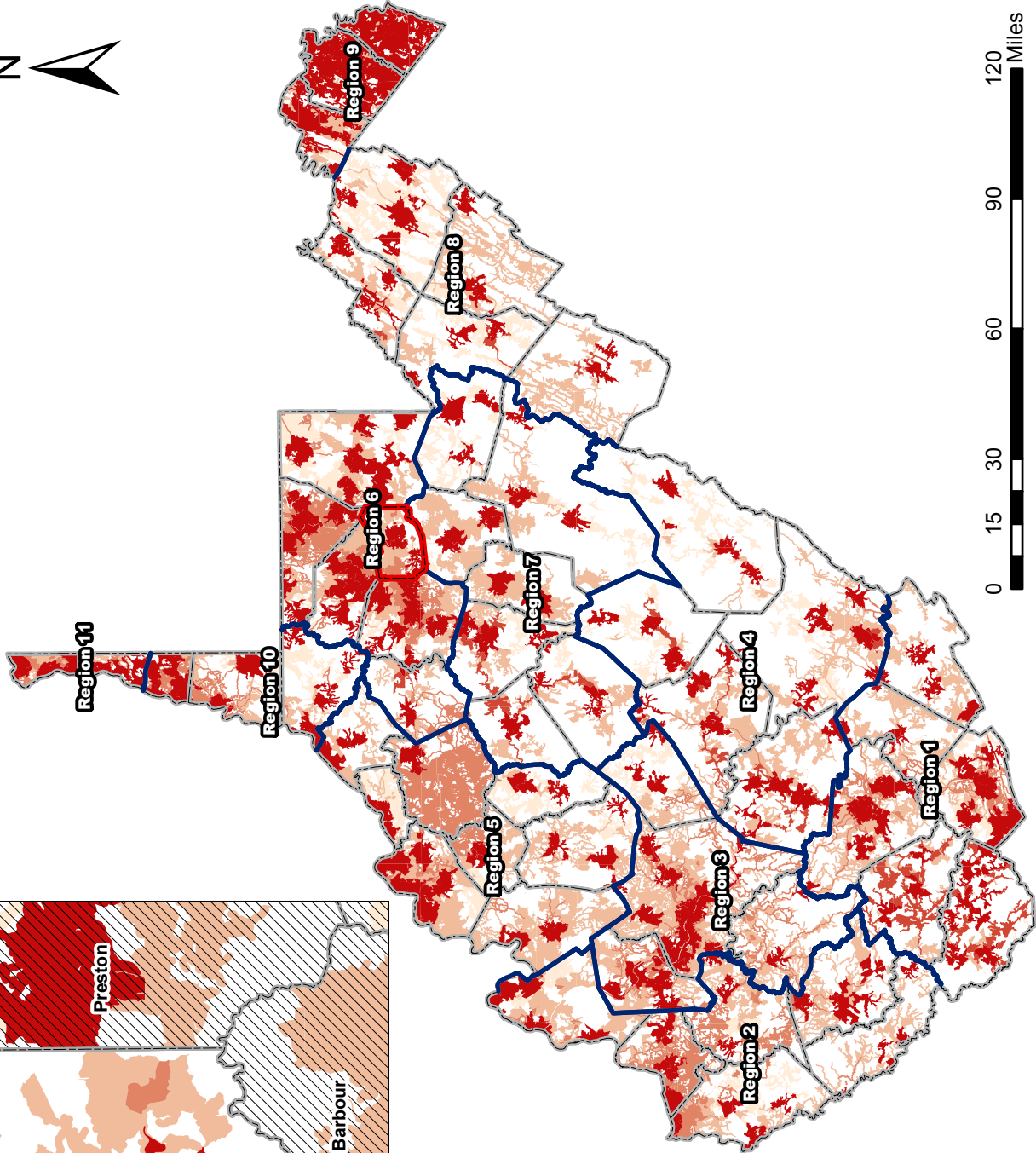
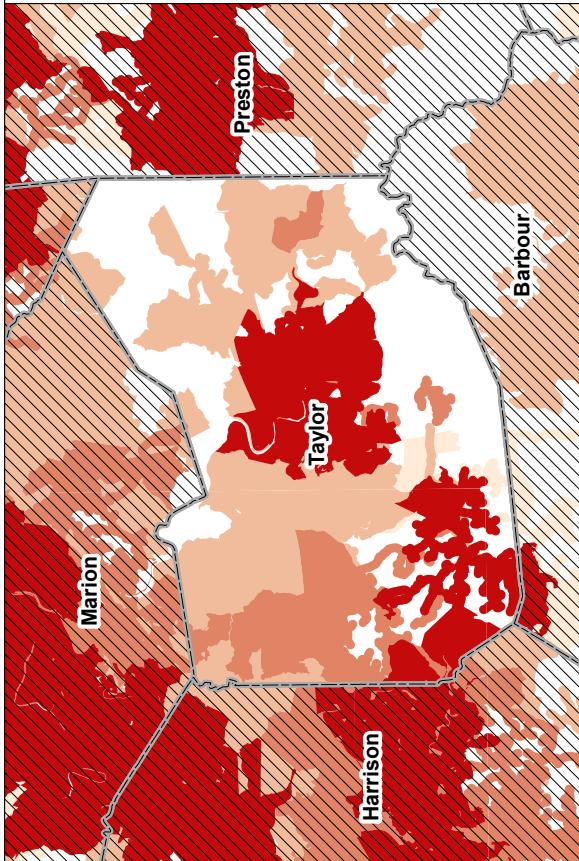
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www.rta.org

Broadband - Internet MaxUp Speed Wireline

Taylor County



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

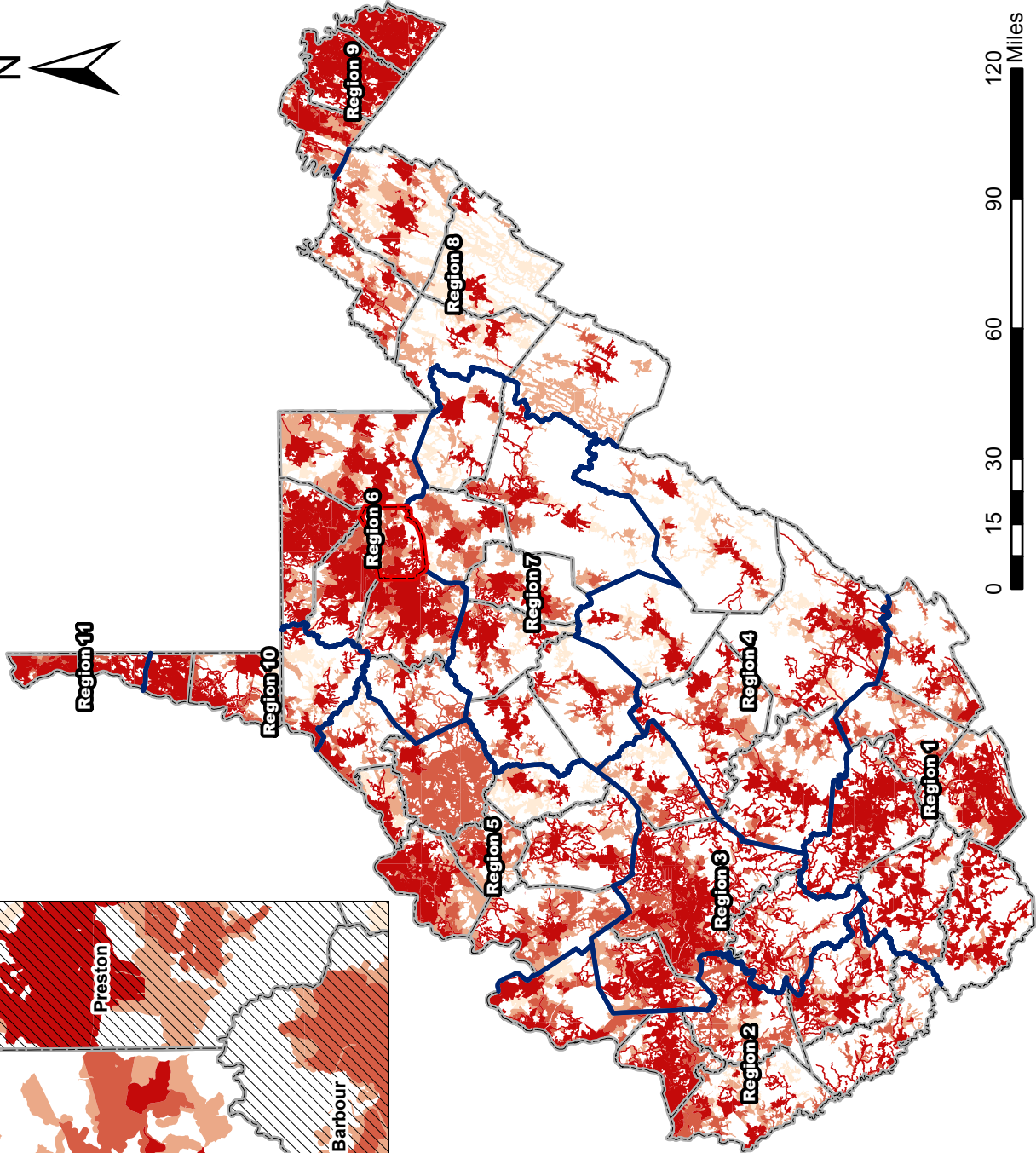
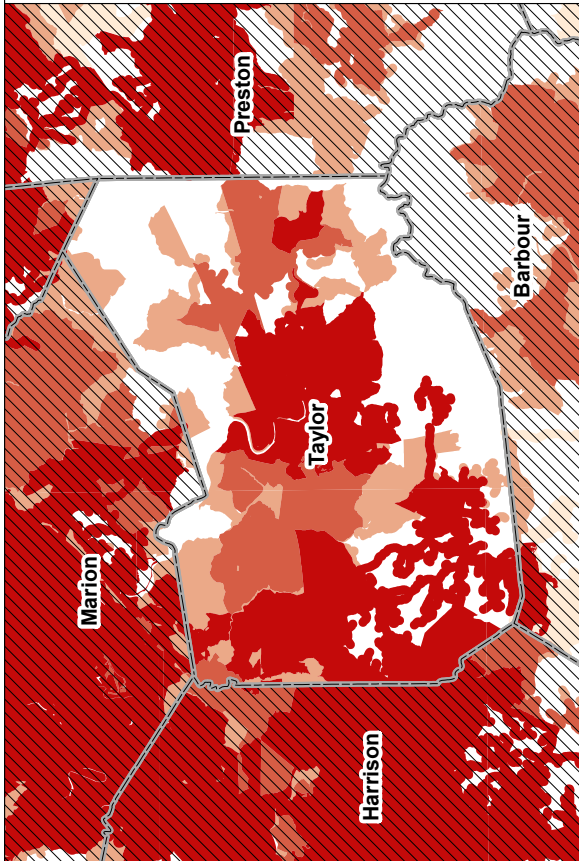
Source: West Virginia Broadband Mapping Program 2014







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Broadband - Internet MaxDown Speed Wireline

Taylor County



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



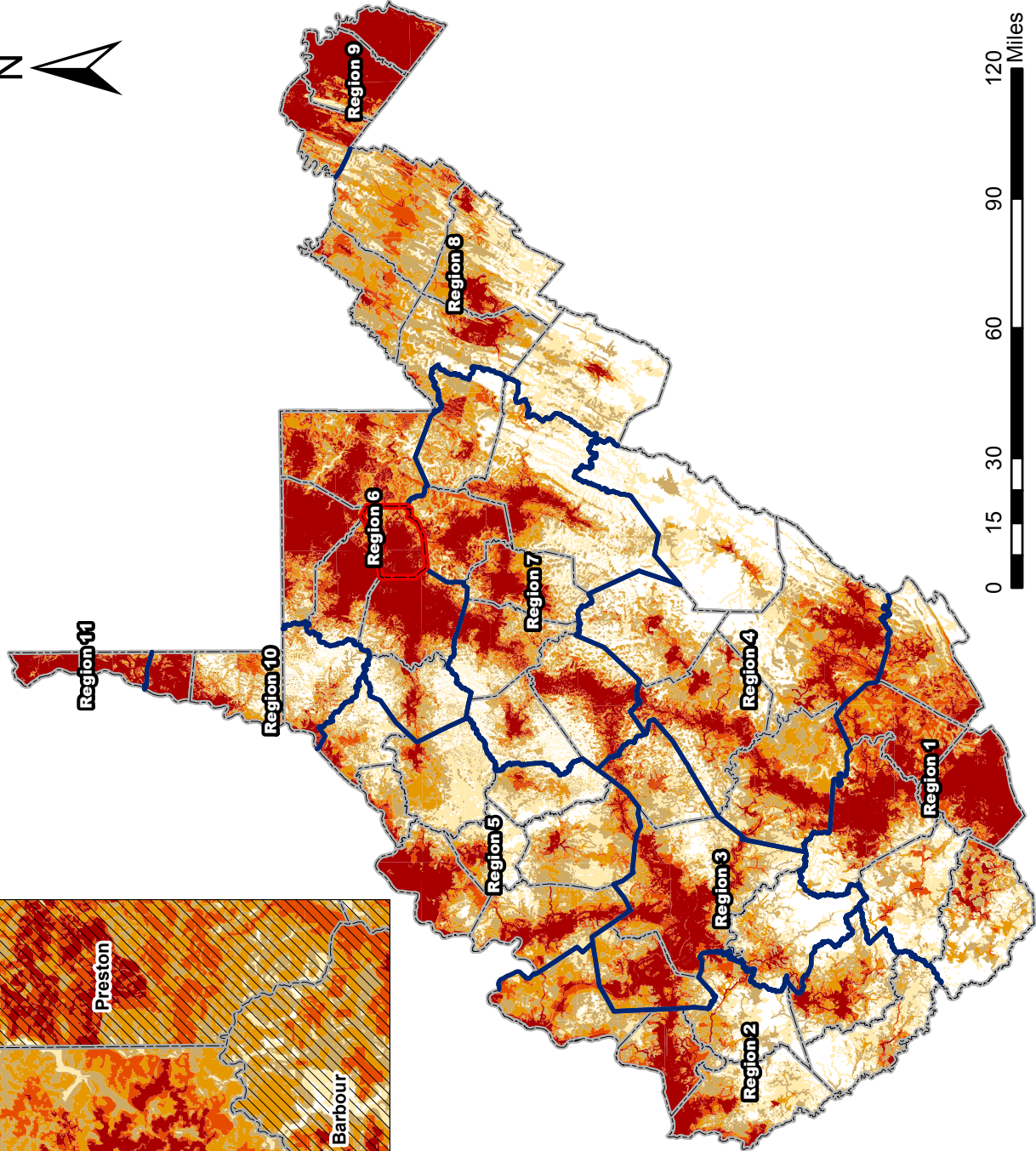
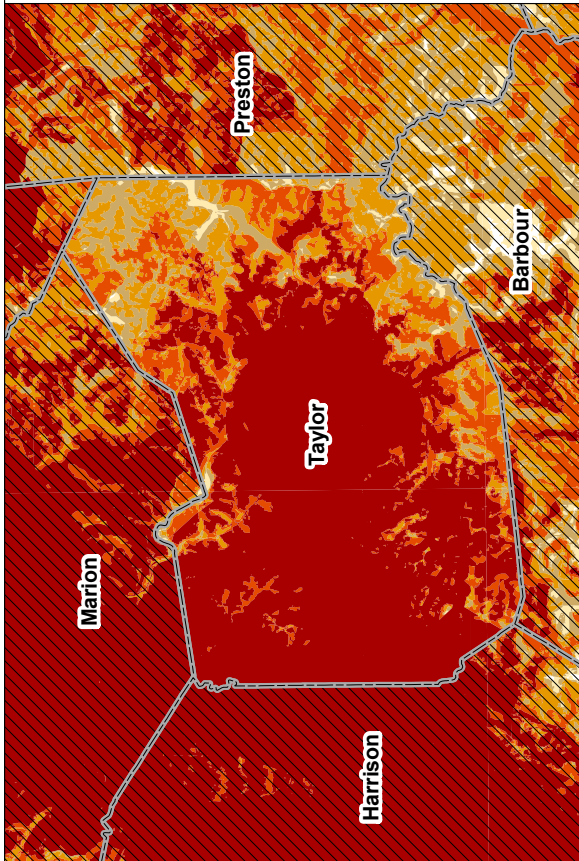
Source: West Virginia Broadband Mapping Program 2014

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Broadband - Internet Total Number of Providers

Taylor County



- Planning Regions Line
- 1 Provider
- 2 Providers
- 3 Providers
- 4 Providers
- 5 Providers
- County Boundaries



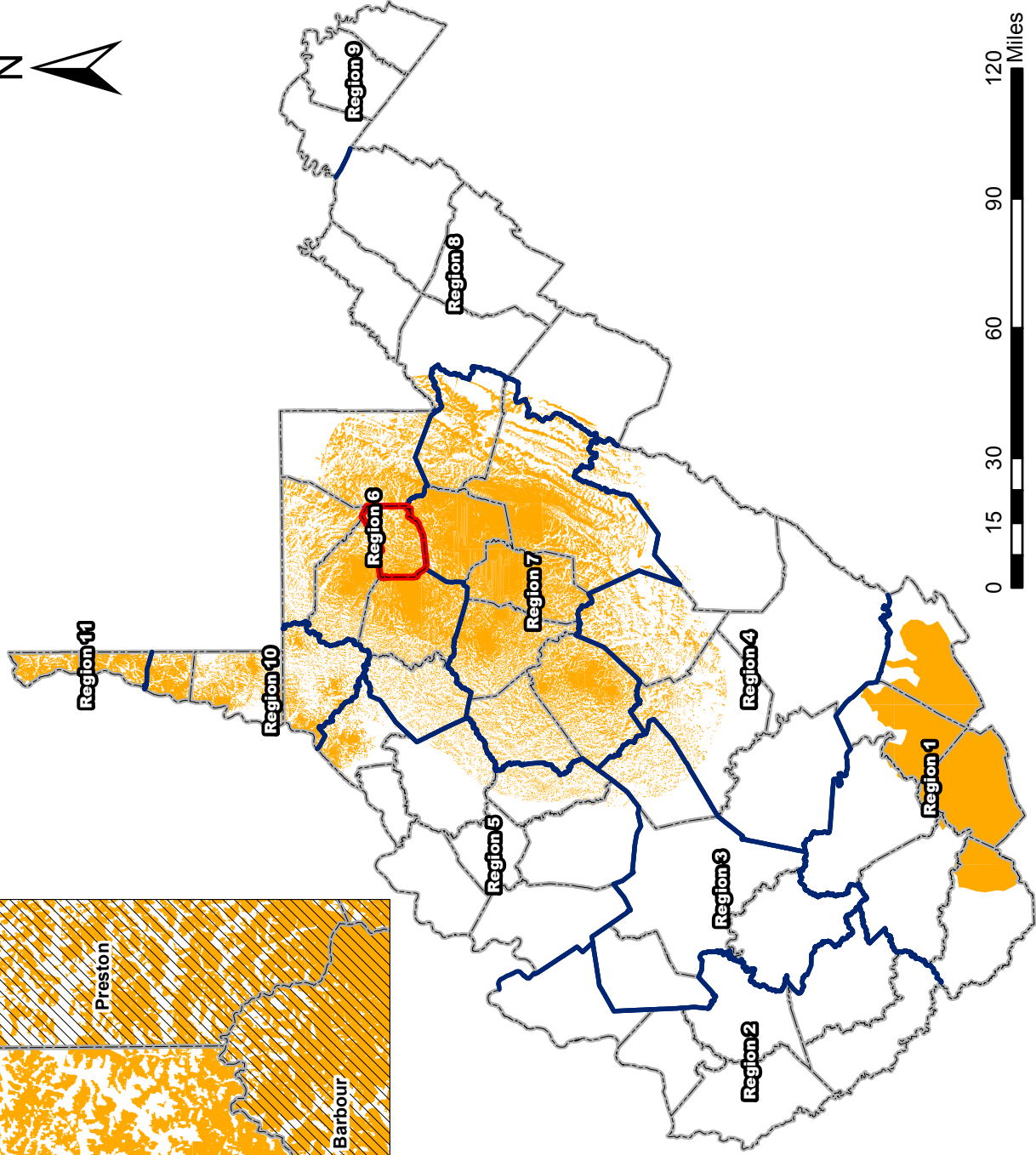
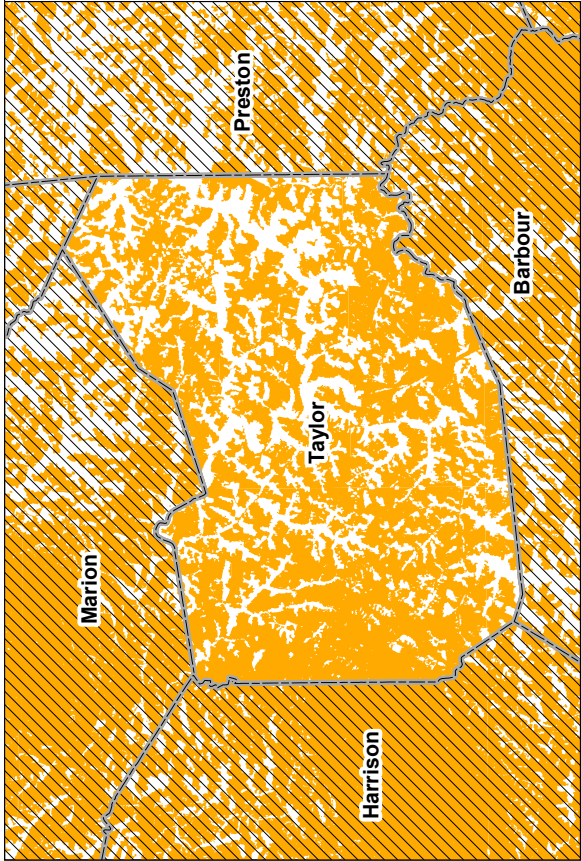
RTI
 RAHALL APPLACHIAN
 TRANSPORTATION INSTITUTE
www.rti.tti.org

Source: West Virginia Broadband Mapping Program 2014

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Broadband - Internet Fixed Wireless Coverage

Taylor County



- Planning Regions Line
- Fixed Wireless
- County Boundaries

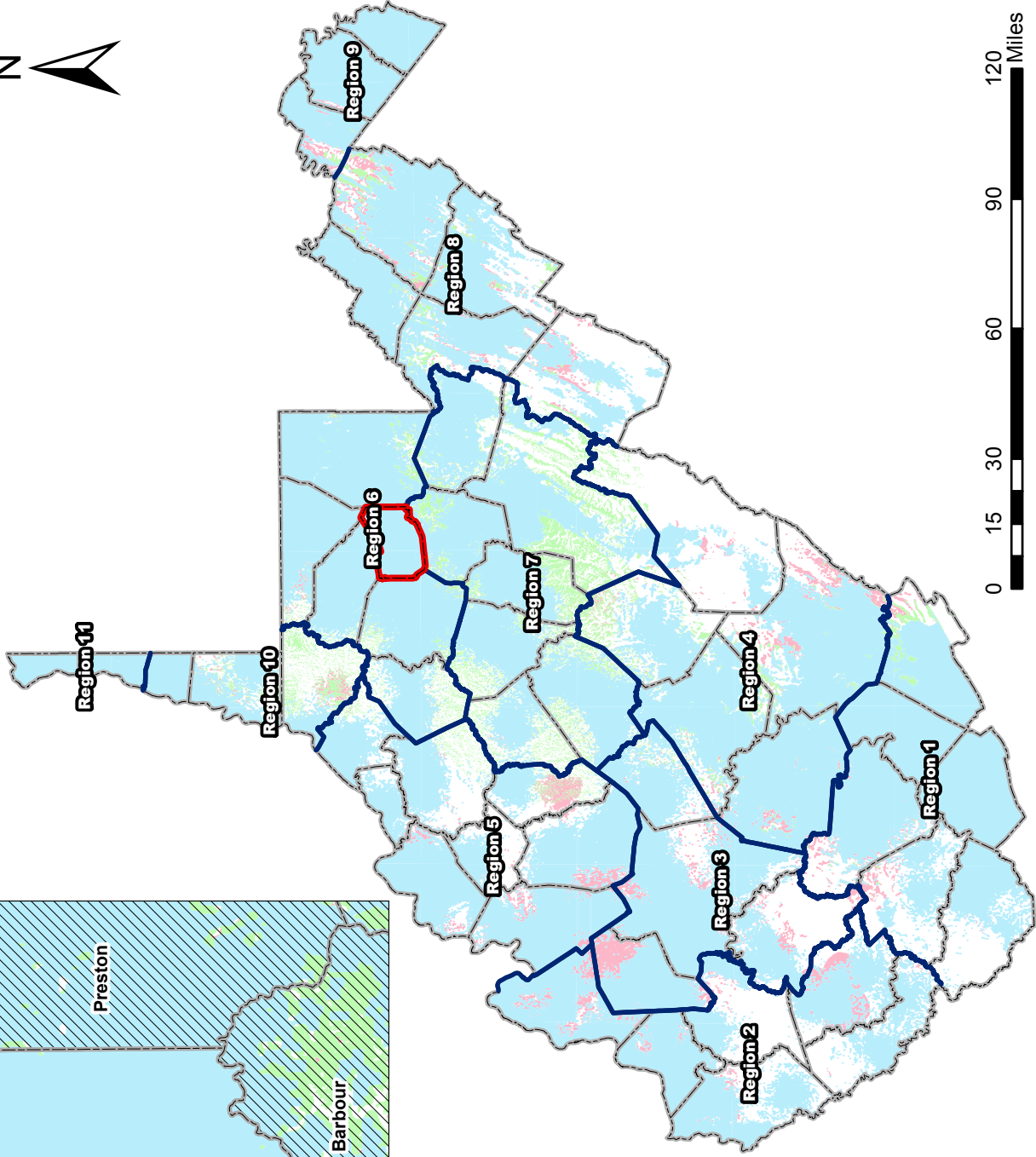
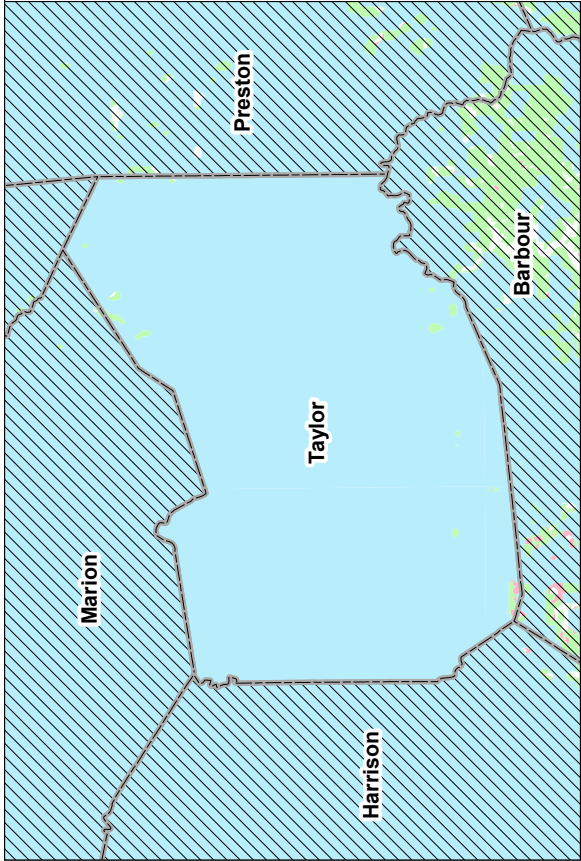
Source: West Virginia Broadband Mapping Program 2014






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Broadband - Internet MaxDown Speed Wireless

Taylor County



-  Planning Regions Line
-  768 kbps - 3 mbps
-  3 - 10 mbps
-  > 10 mbps
-  County Boundaries

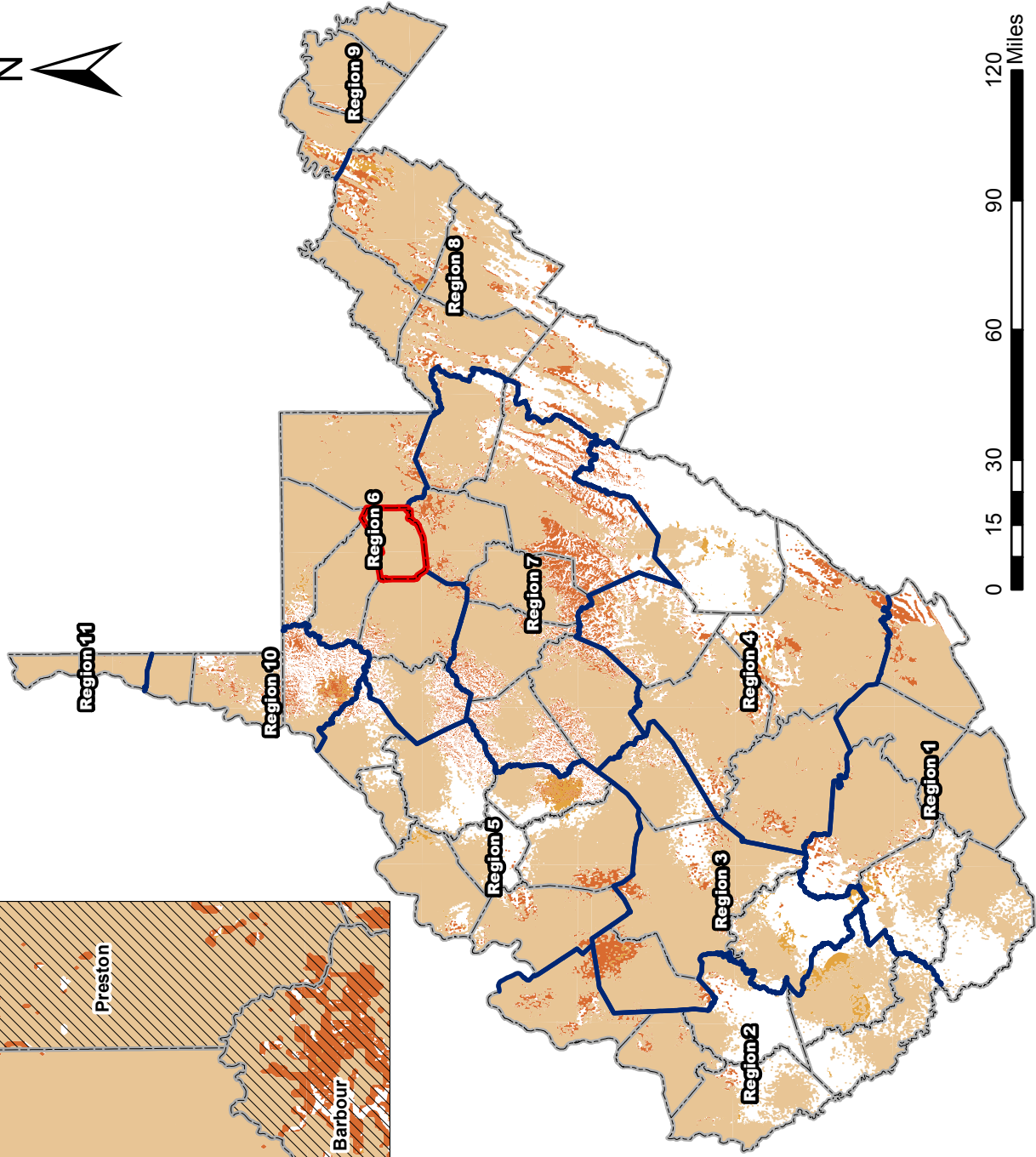
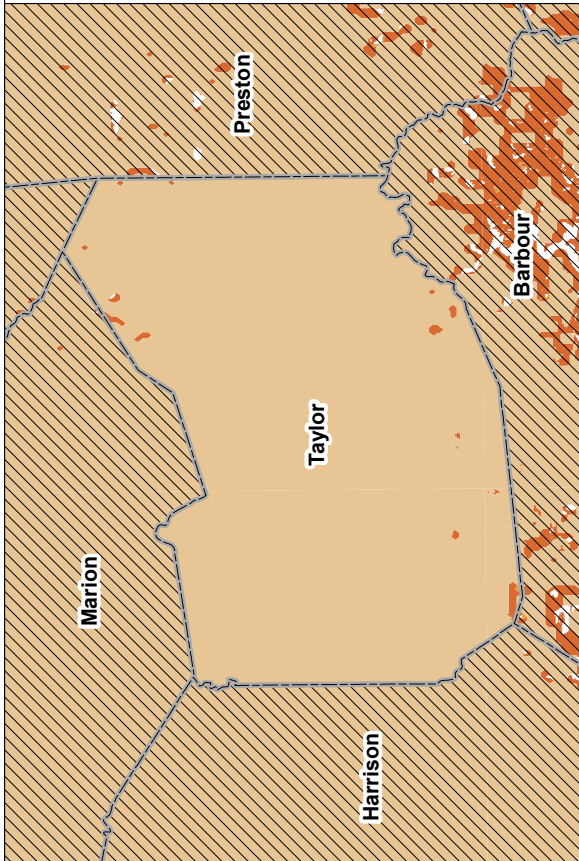
Source: West Virginia Broadband Mapping Program 2014

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Broadband - Internet MaxUp Speed Wireless

Taylor County



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



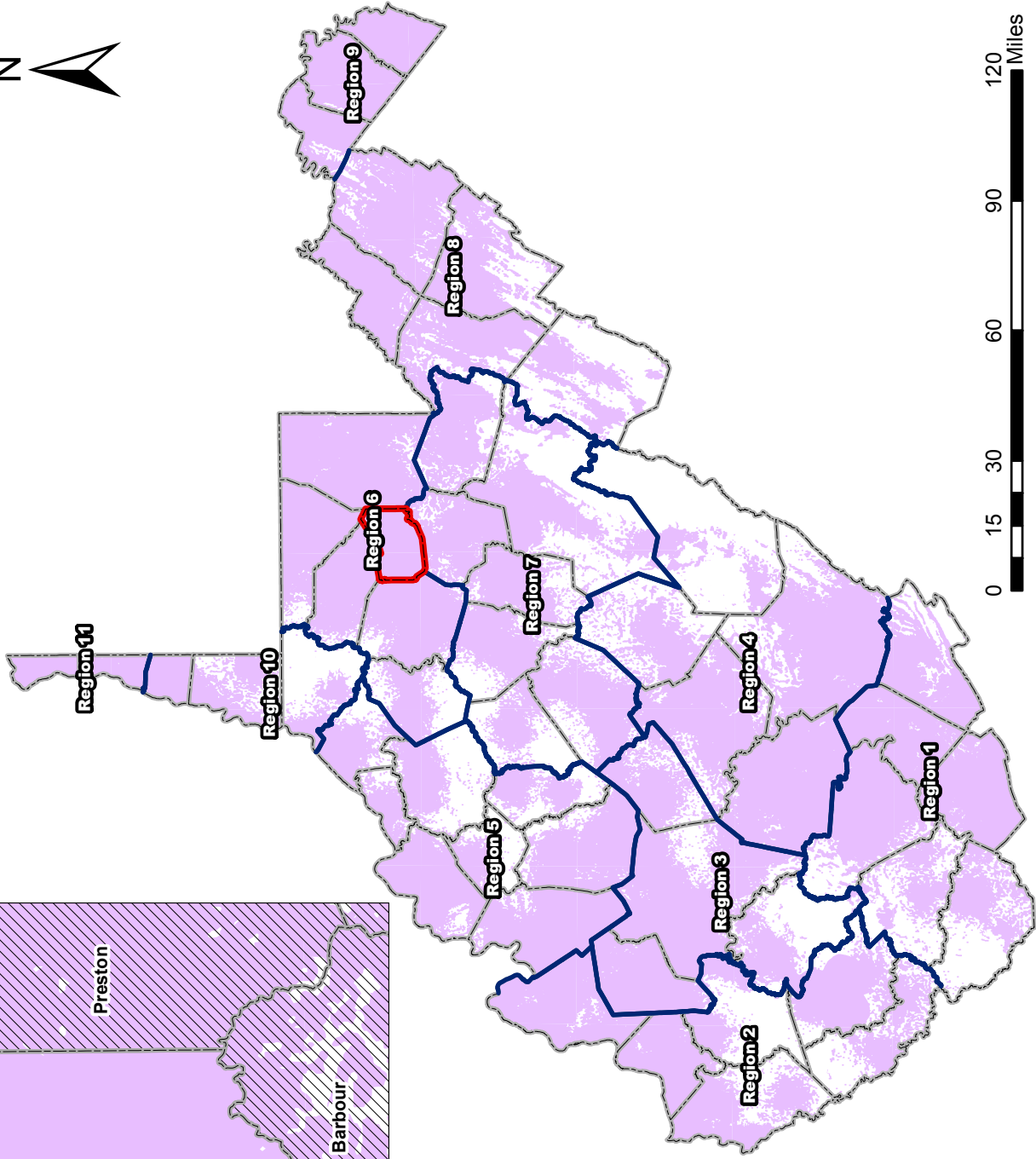
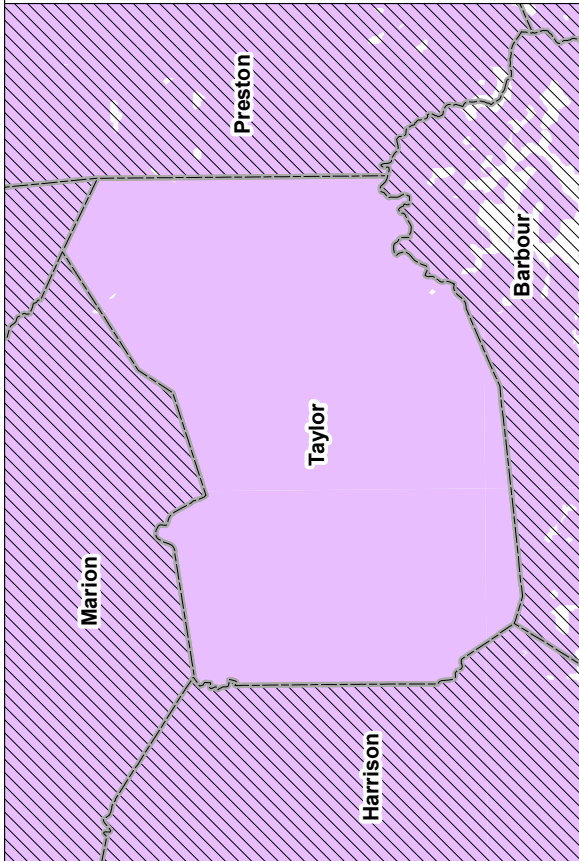
Source: West Virginia Broadband Mapping Program 2014

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Broadband - Internet Mobile Wireless Coverage

Taylor County



- Planning Regions Line
- Mobile Wireless
- County Boundaries

Source: West Virginia Broadband Mapping Program 2014

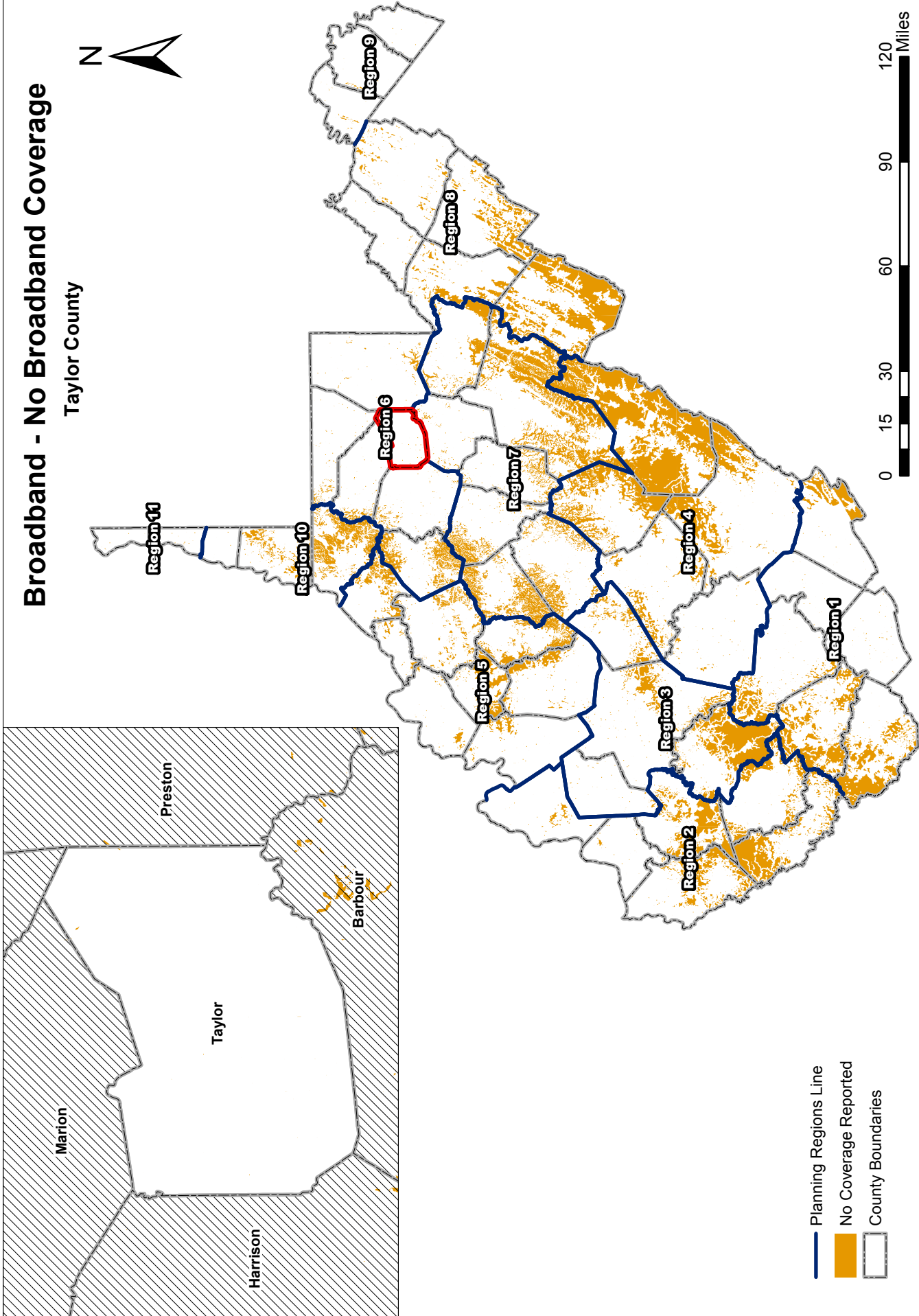
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www.rtaiti.org

Broadband - No Broadband Coverage

Taylor County



-  Planning Regions Line
-  No Coverage Reported
-  County Boundaries



Source: West Virginia Broadband Mapping Program 2014

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www.rta.org

Transportation

Highways

Taylor County has no interstate presence, three U.S. routes—Route 50, Route 119, and Route 250, and State Routes 76 and 310 (Map 26).

Rail

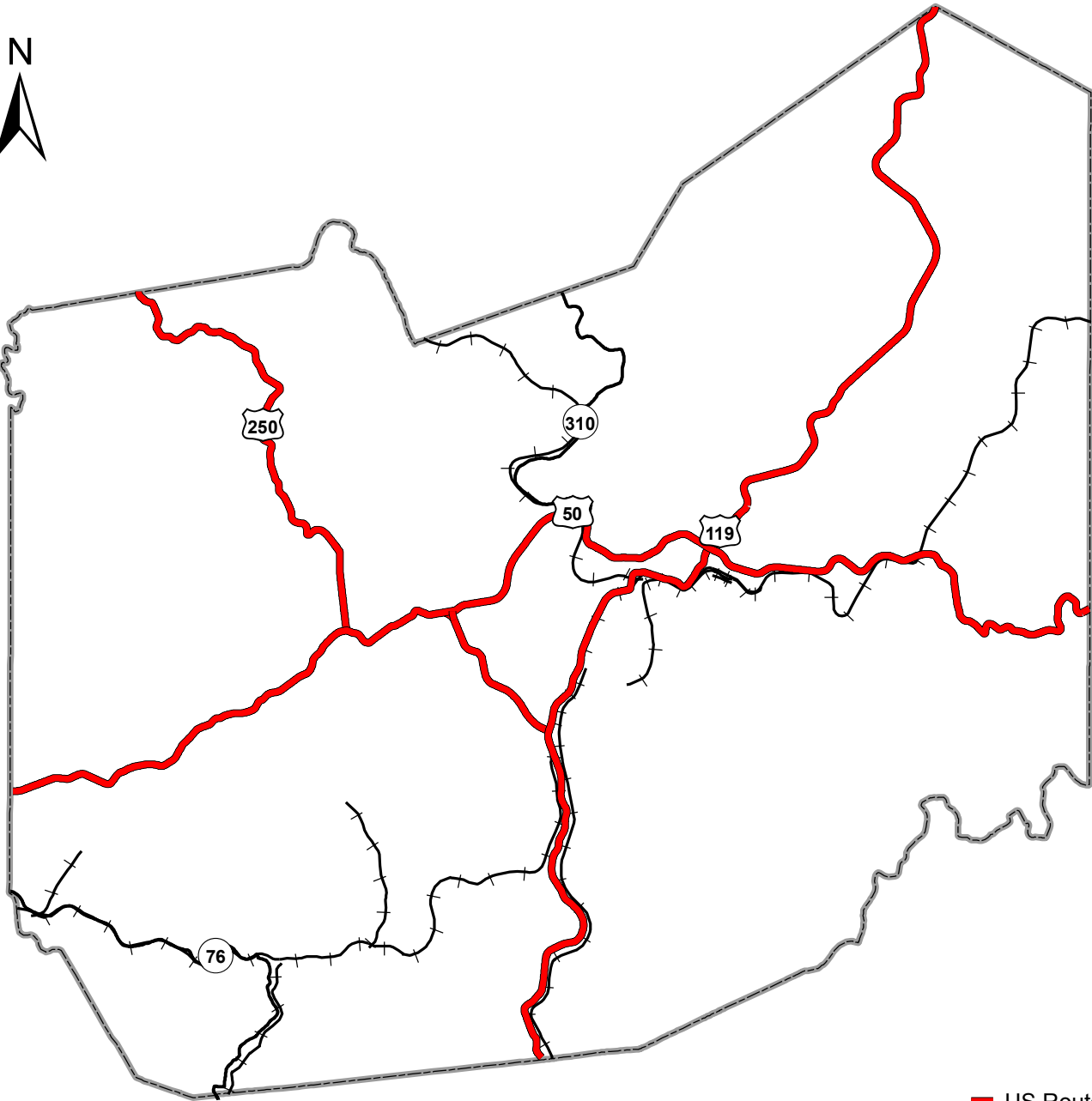
Taylor County has a rail system present in the southern and central portions of the County.





Air

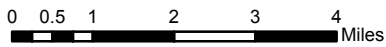
Taylor County has no airports.

Transportation

Taylor County



-  US Routes
-  WV Routes
-  Railroads
-  County Boundary



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

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Current Post-Mine Economic Development Sites

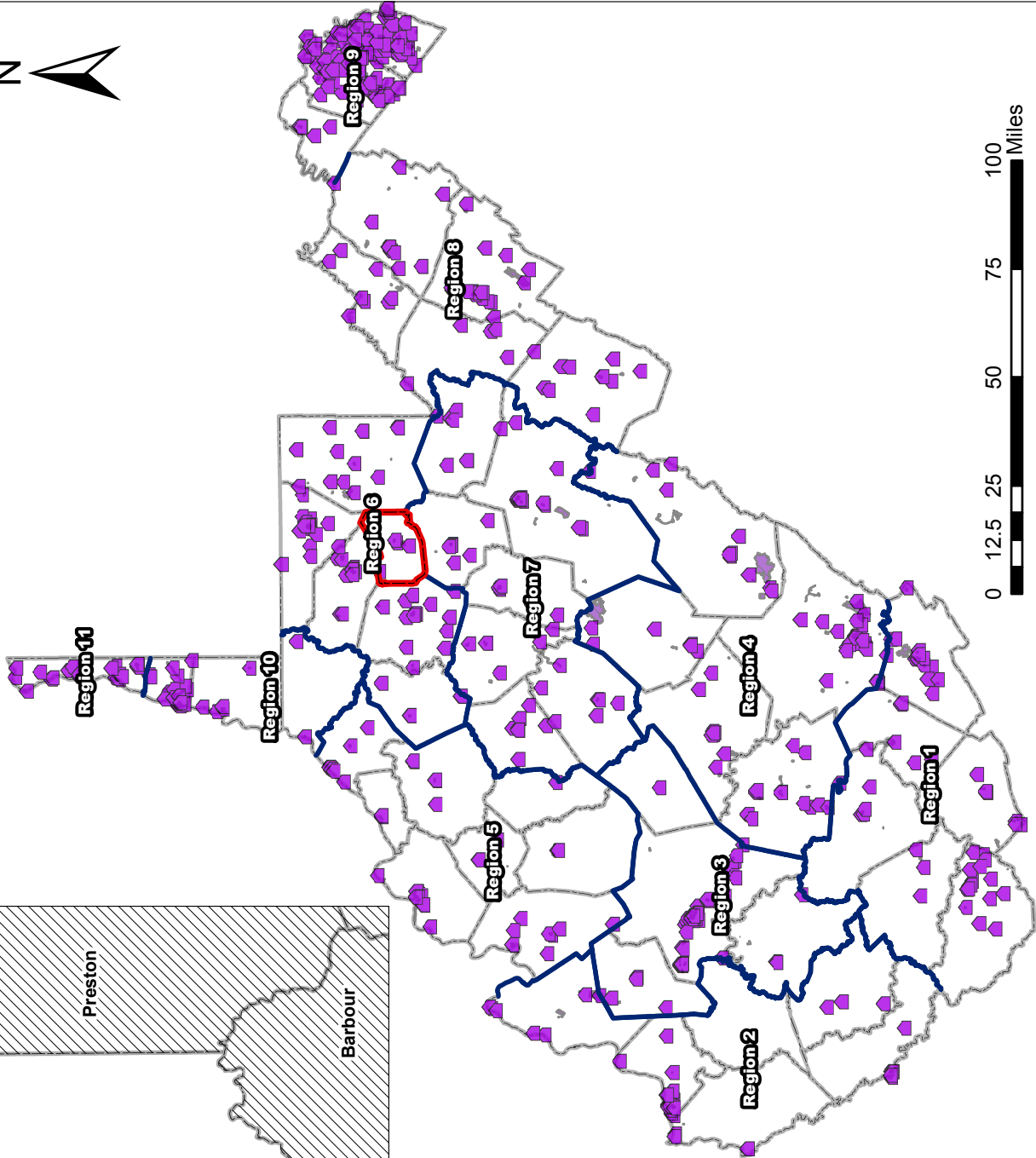
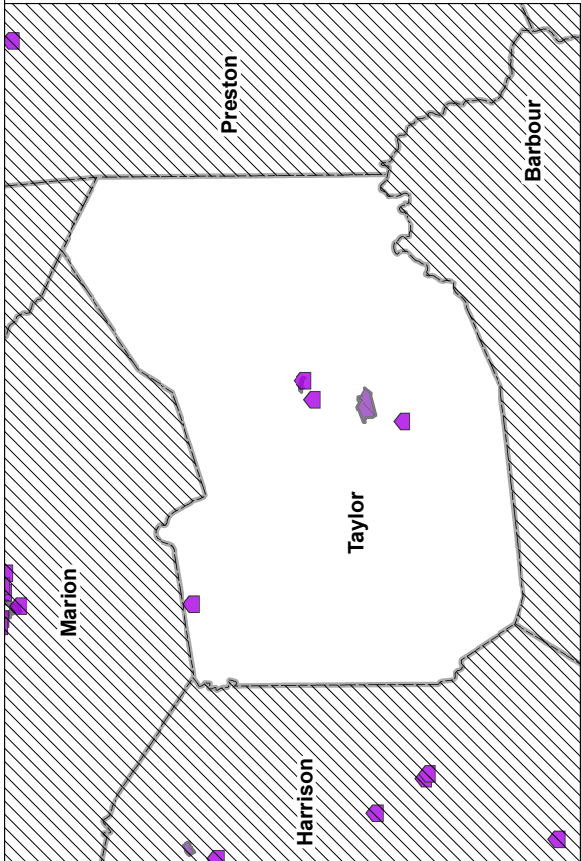
Taylor County has no major developments on its post-mine sites.





Historic Preservation

Historic preservation will be essential in a county steeped in coal mining history. Taylor County has 5 listings in the National Register of Historic Places. There are a number of historic buildings in the County mostly built in the early 1900s that exemplify certain building styles popular at the time, mostly concentrated in the Grafton area. (Map 27). 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

Taylor County



-  National Register of Historic Place
-  Planning Regions Line
-  National Register of Historic Place (Area)
-  County Boundaries



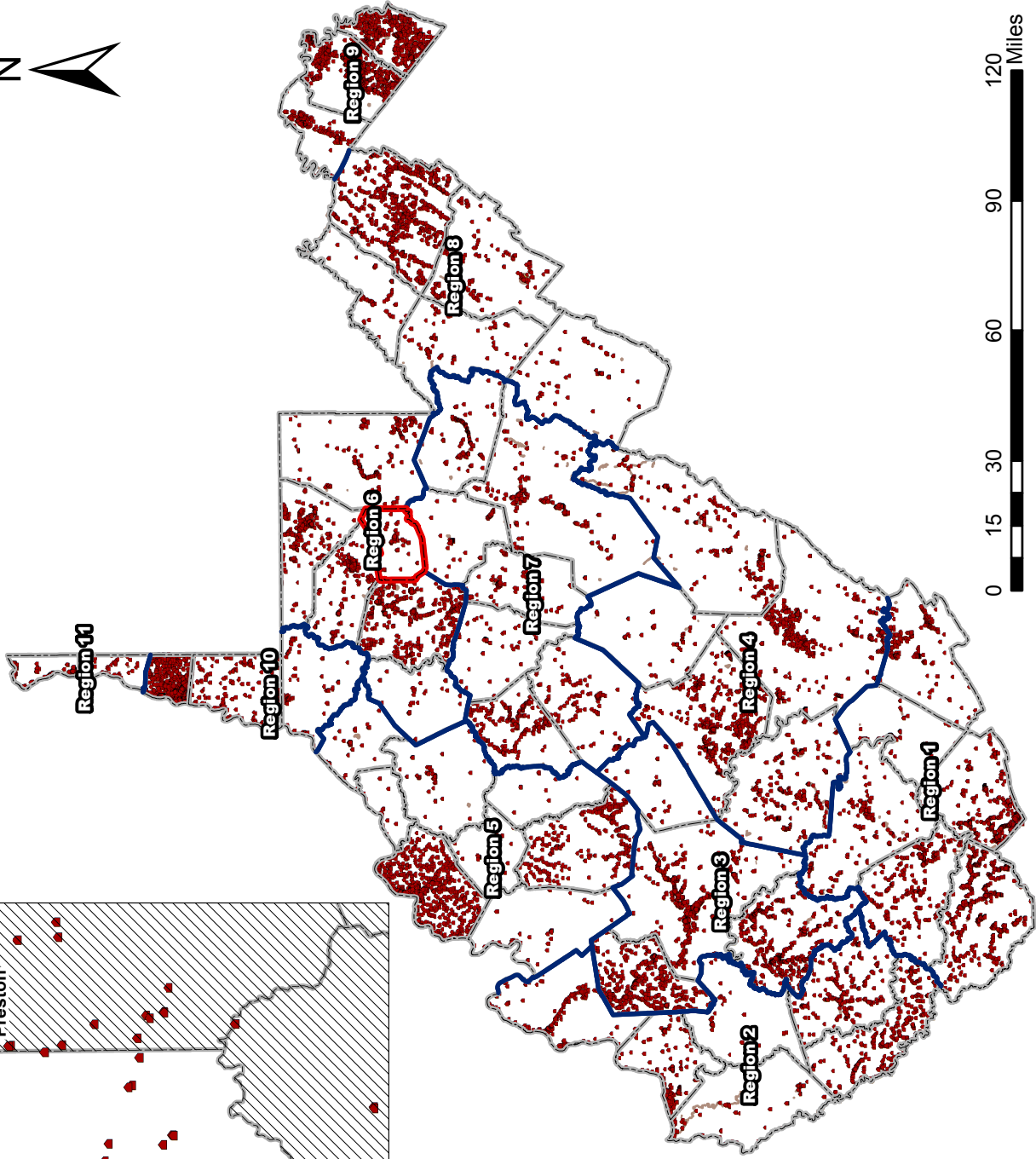
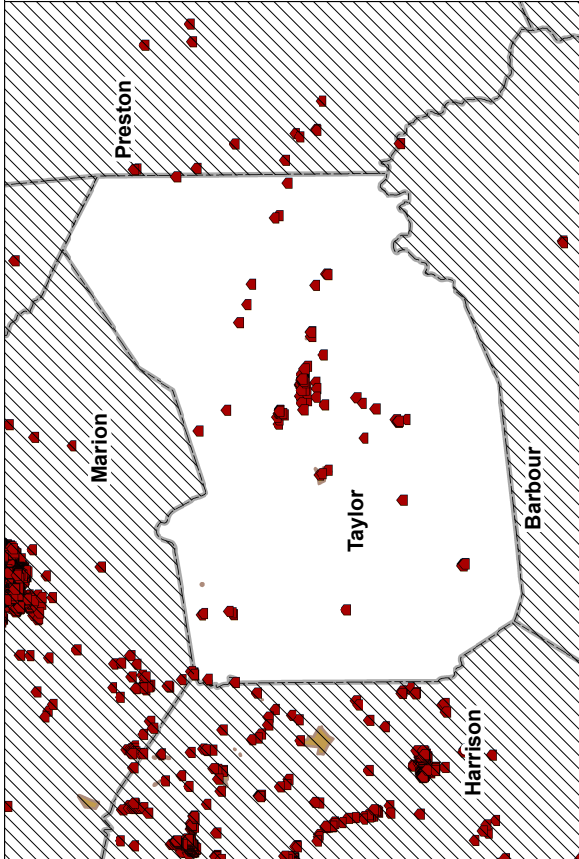
Source: West Virginia State Historic Preservation Office 2014

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State Historic Architecture

Taylor County



- State Historic Architecture
- Planning Regions Line
- State Historic Architecture (Area)
- County Boundaries

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 resources in a county. This serves to inform potential investors about what possibilities the land provides for production of resources and energy. Taylor 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. Taylor's wetland inventory is clustered and sporadic throughout the County (Map 29).

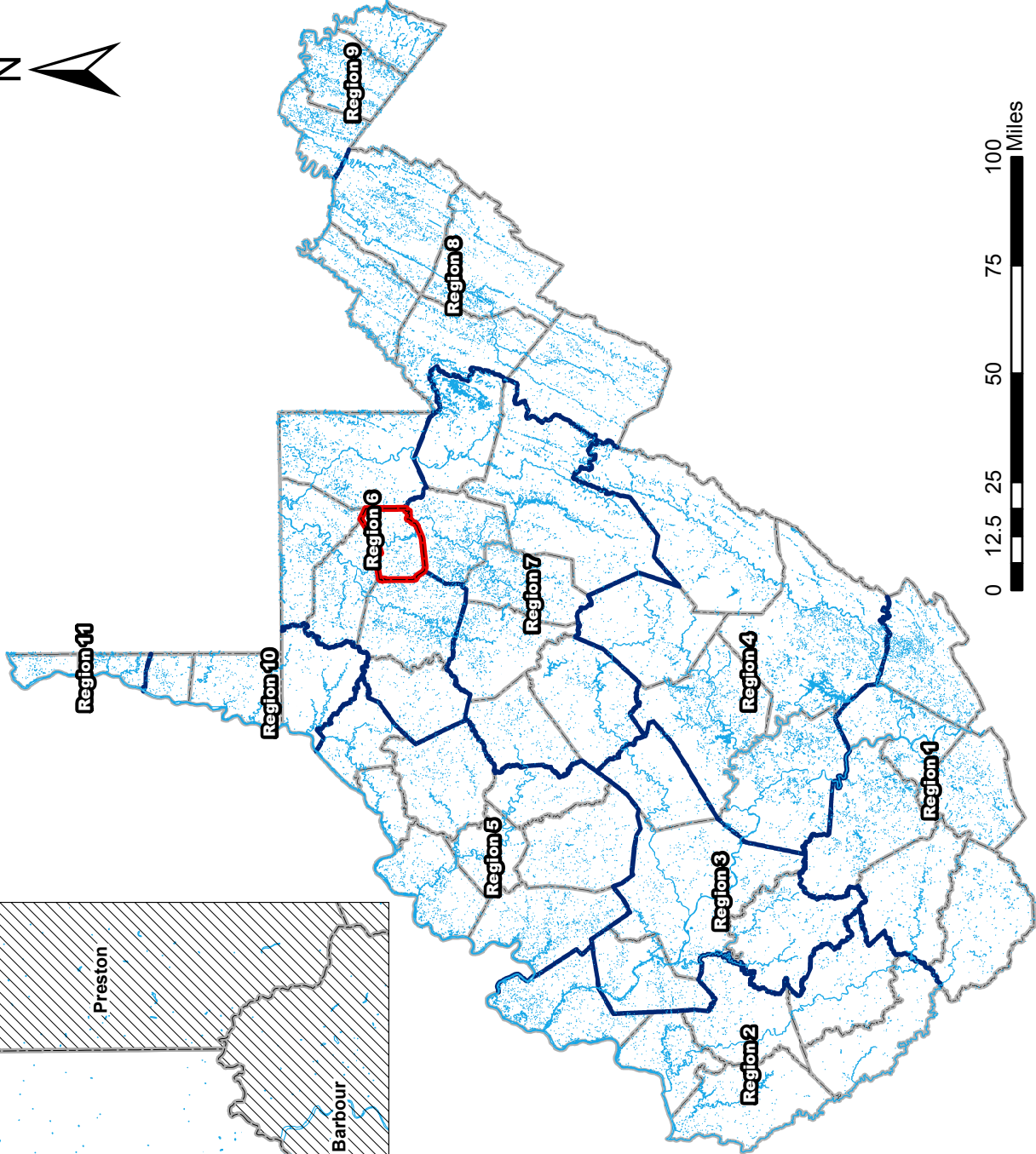
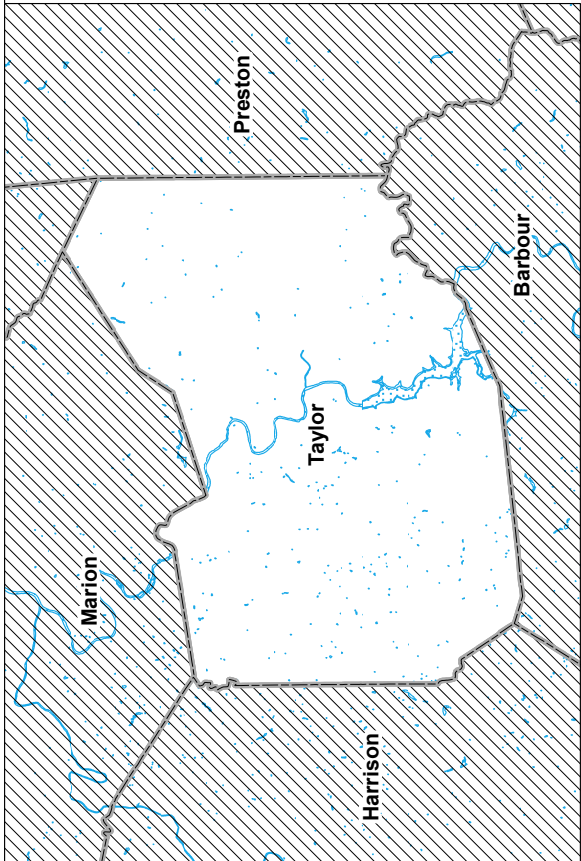
The State also possesses a respectable amount of park and forest land. Most of this land is located in the eastern portion of the State, the area that contains the main part of the Appalachian Mountain range. Taylor County contains a state park as well as a few wildlife management areas (Map 30).




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; Taylor 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

Taylor County



-  Planning Regions Line
-  National Wetlands Inventory
-  County Boundaries

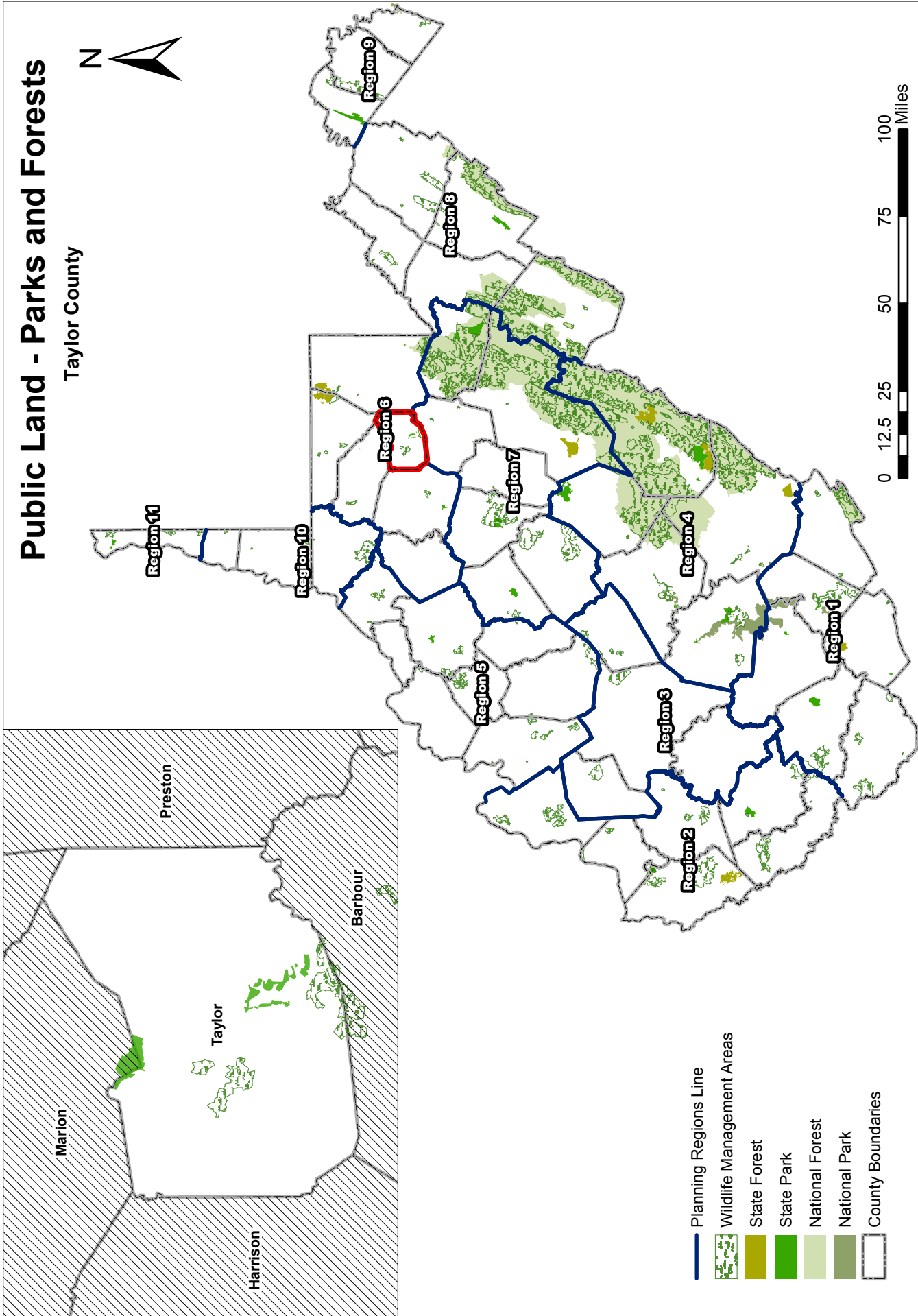
Source: United States Fish and Wildlife Service 1996








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Public Land - Parks and Forests

Taylor County



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

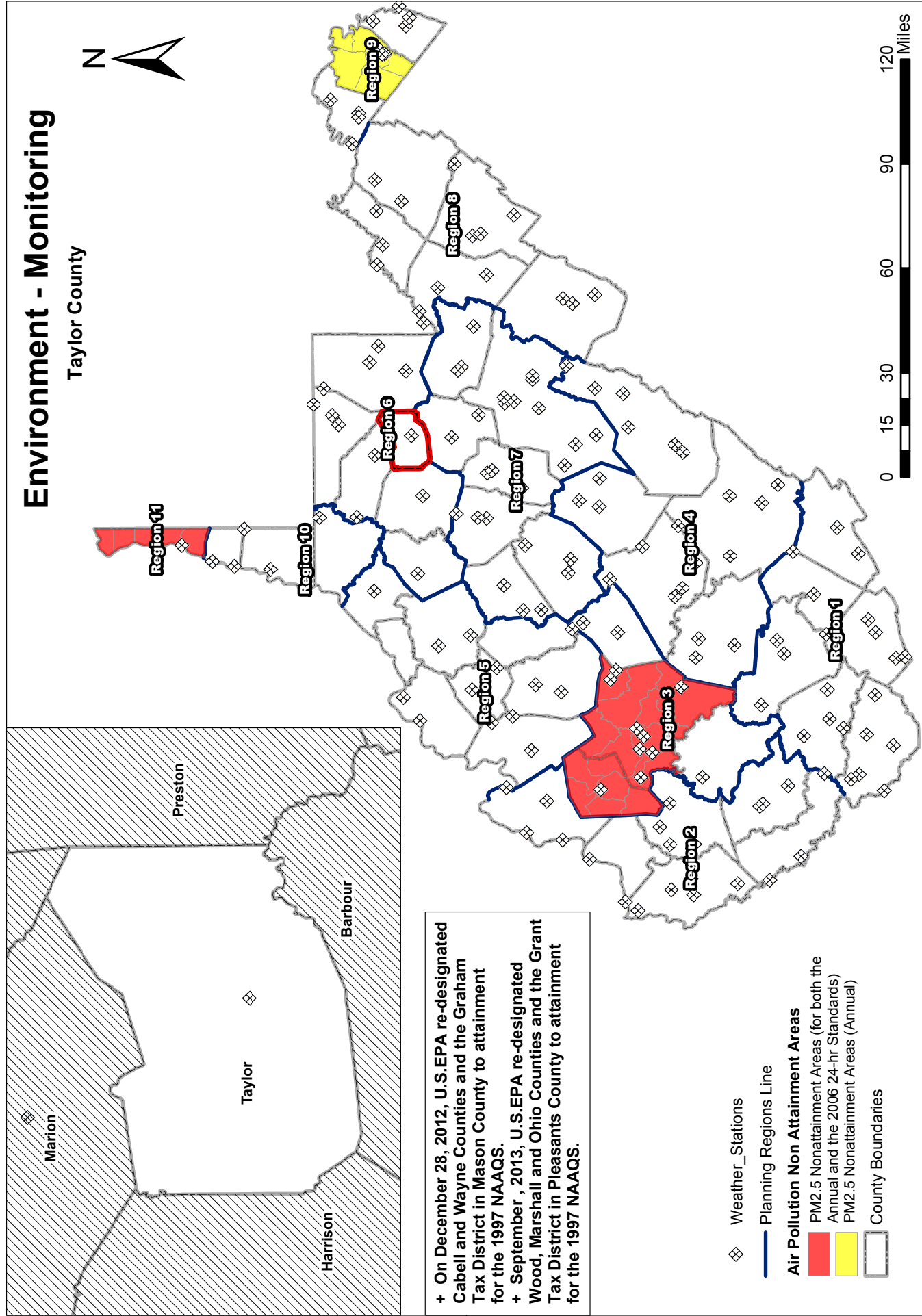
Source: Wildlife Management Areas: West Virginia Division of Natural Resources 2002; State Forest: West Virginia Division of Forestry 2004; State Park: West Virginia Division of Natural Resources, Natural Resource Analysis Center 2000; National Forest: United States Forest Service 2005; National Park: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

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Environment - Monitoring

Taylor County



+ 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.
 + September, 2013, U.S.EPA re-designated Wood, Marshall and Ohio Counties and the Grant Tax District in Pleasants 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

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, 2013

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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 energy in a number of ways. Taylor County has gas pipelines that run through the County, but no oil or oil pipeline presence (Map 32). Taylor County does have play in the Marcellus shale, with a small number of completed and larger number of permitted wells (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.

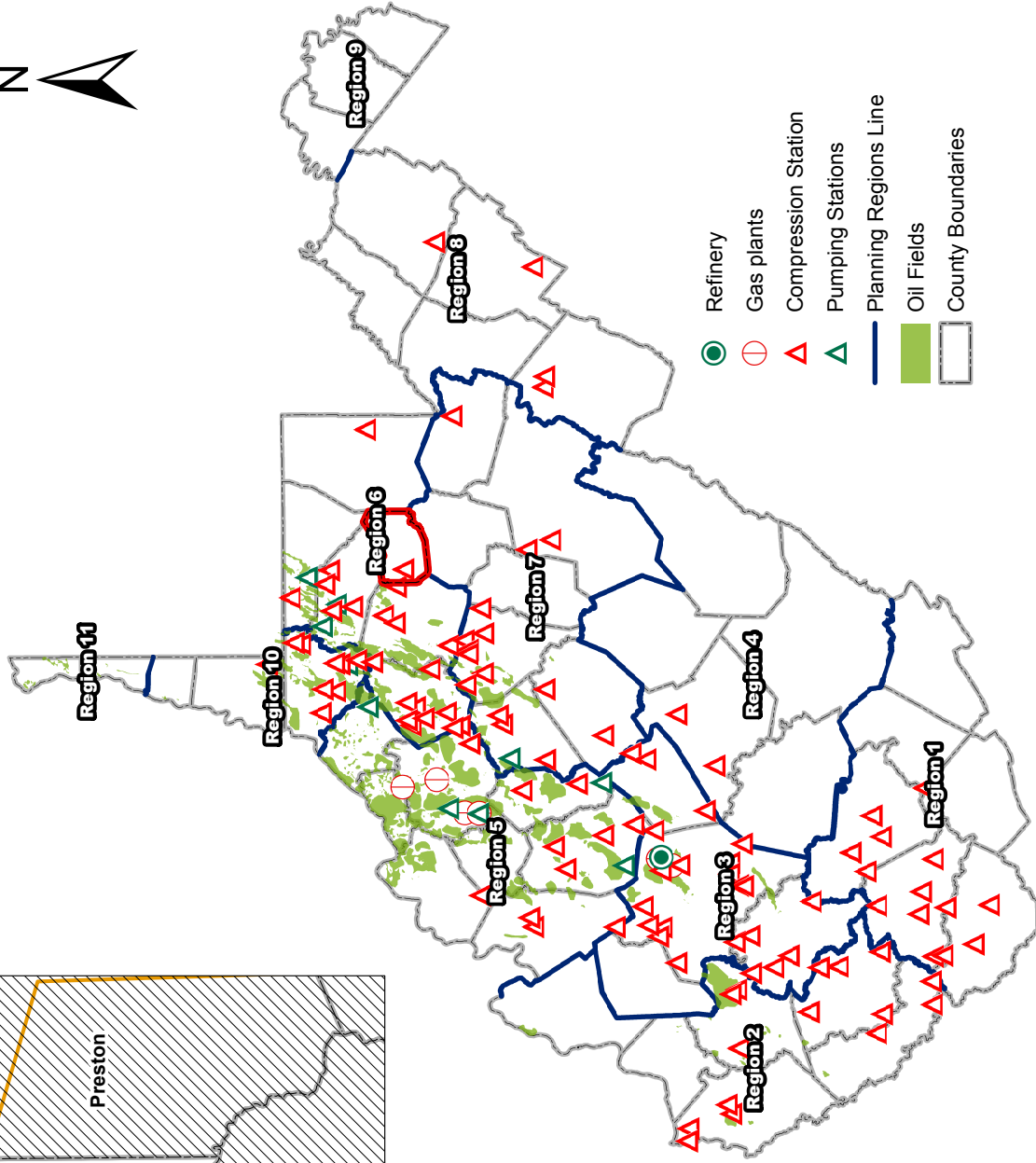
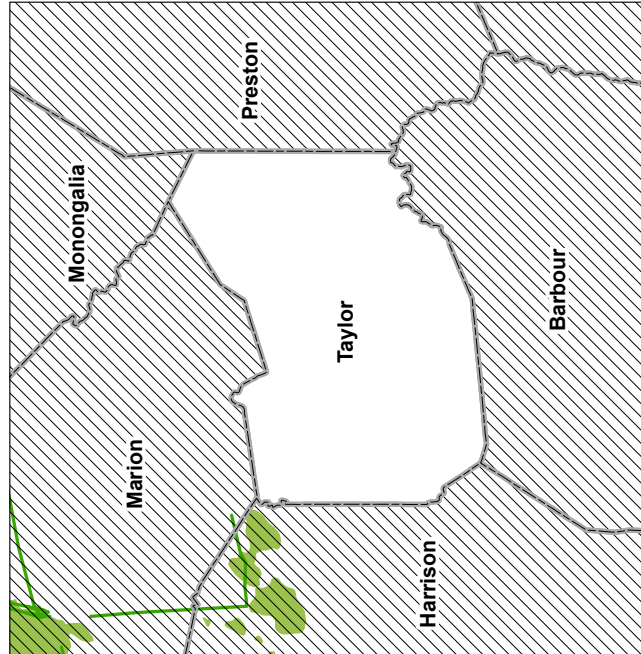
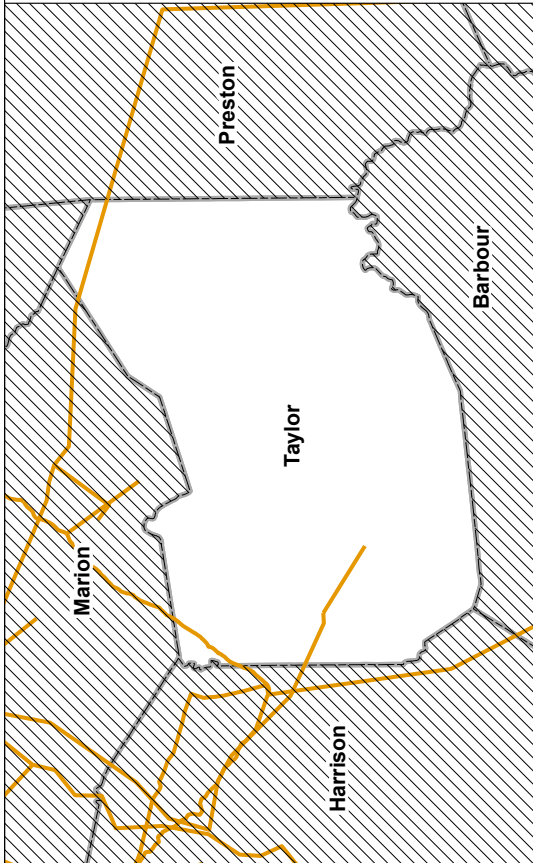
Potential renewable energy sources were also examined. Wood by-products are a potential energy source classified as biomass energy. Naturally it is most useful in areas with a great deal of wood products. West Virginia is one of the most forested States in the country. Taylor County appears to be among the least forested counties in West Virginia (Map 34), possibly explaining why the County has no current activity in the production of wood by-products (Maps 35 and 36). 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 appears to have great potential in certain parts of the State, as shown in Map 37, and Taylor appears to have a favorable potential for enhanced geothermal systems. The potential for wind and solar development in the County is less favorable. 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).

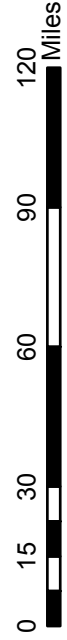
⁹ *Ibid.*

Energy - Gas and Oil

Taylor County

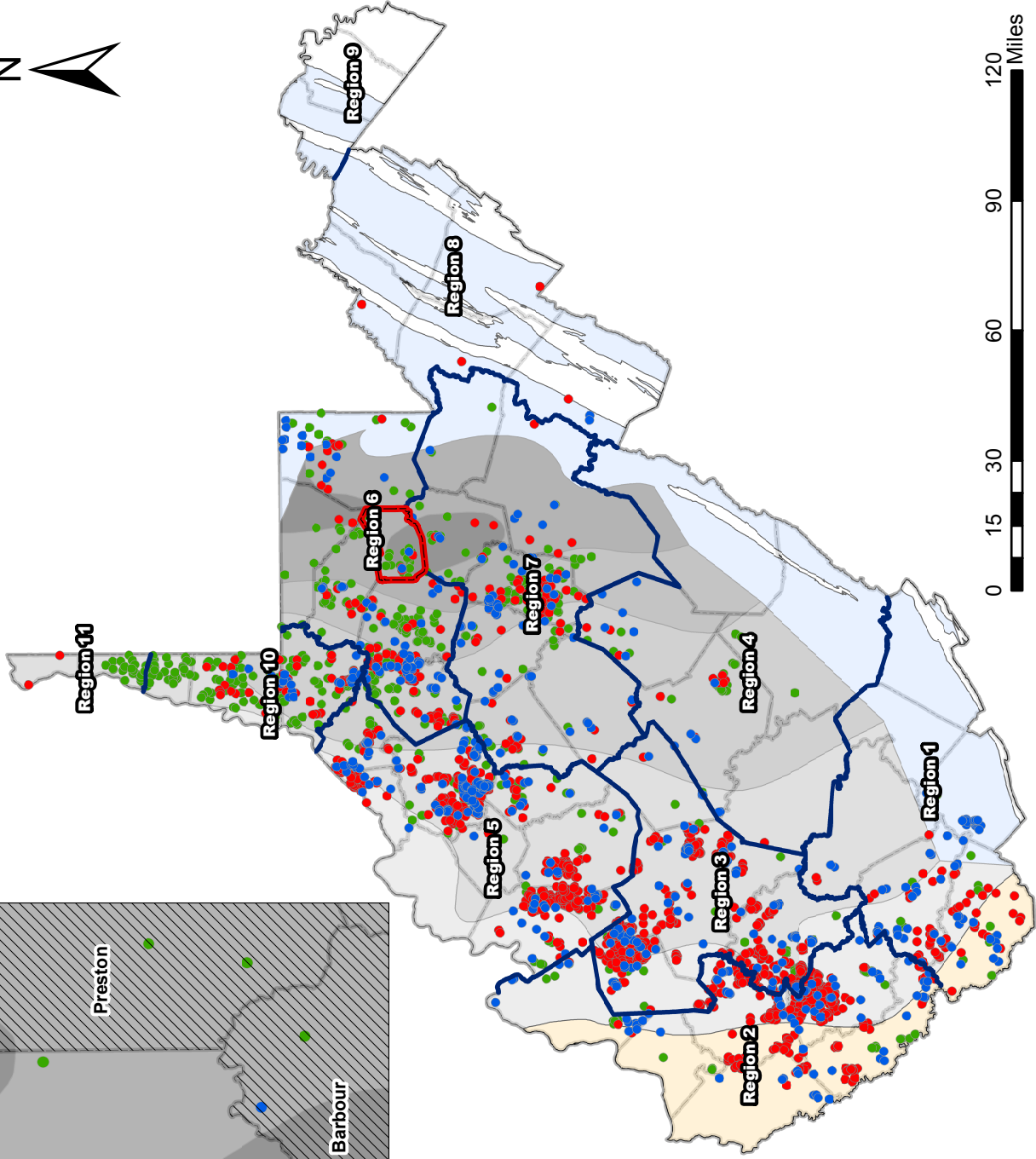
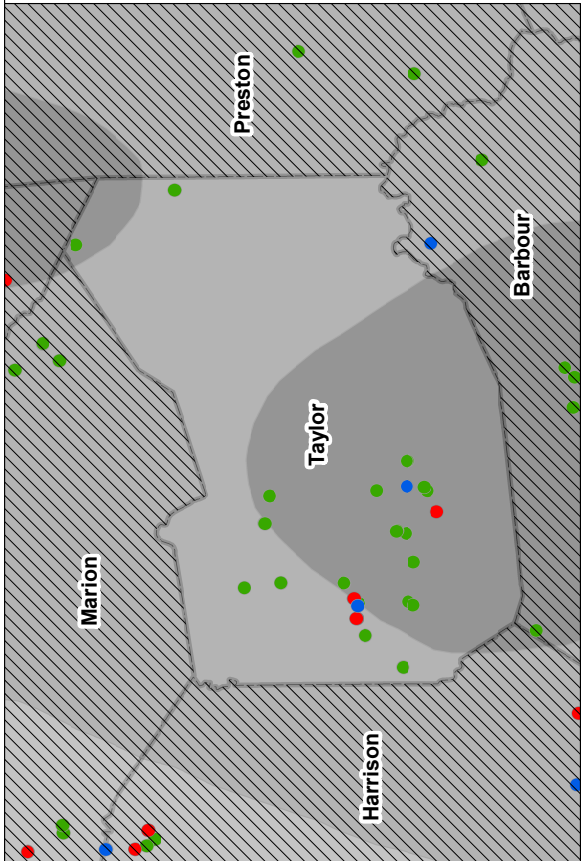


- Refinery
- Gas plants
- Compression Station
- Pumping Stations
- Planning Regions Line
- Oil Fields
- County Boundaries



Energy - Marcellus Wells

Taylor County



- 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

Source: West Virginia Geological and Economic Survey 2014

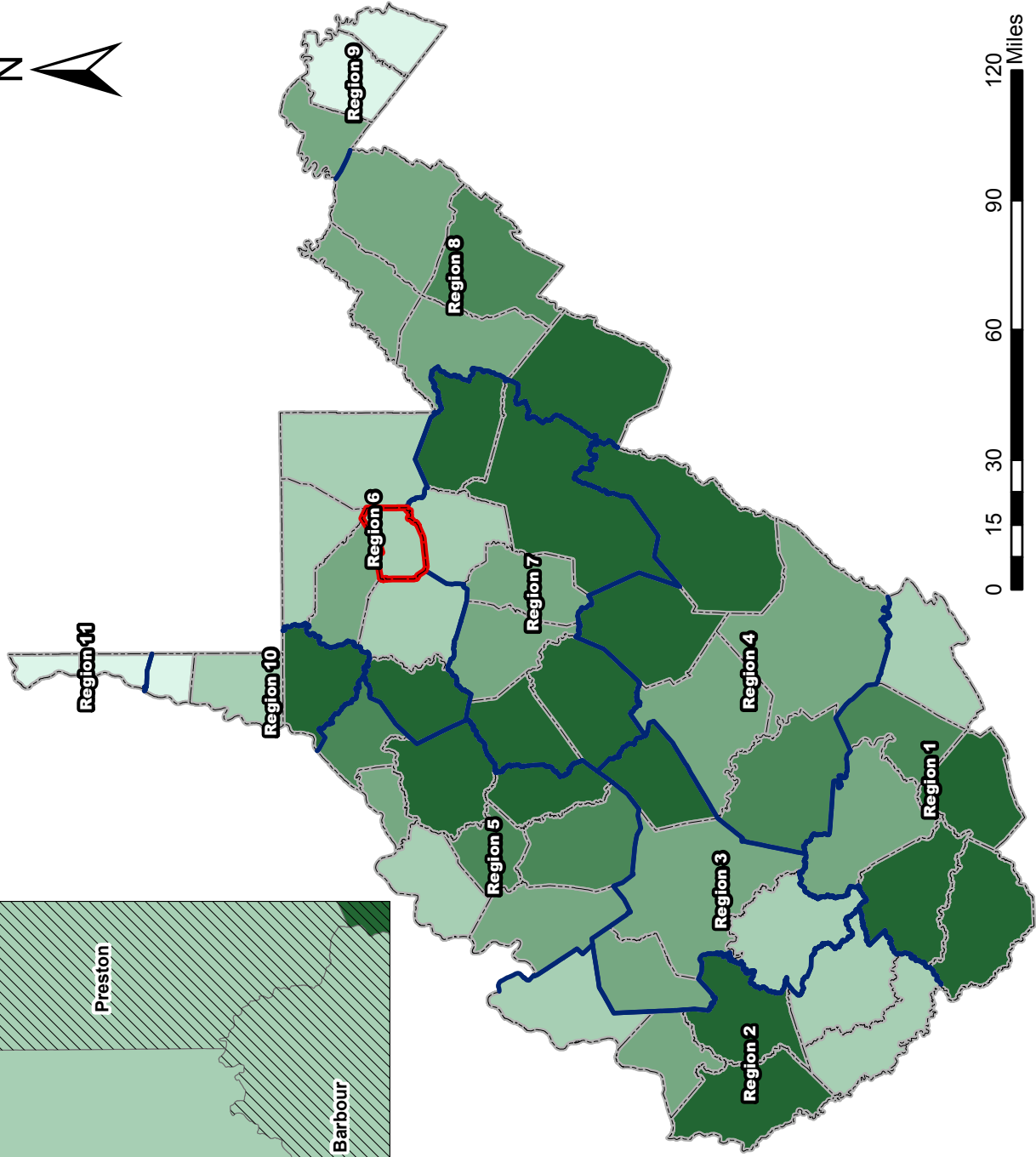
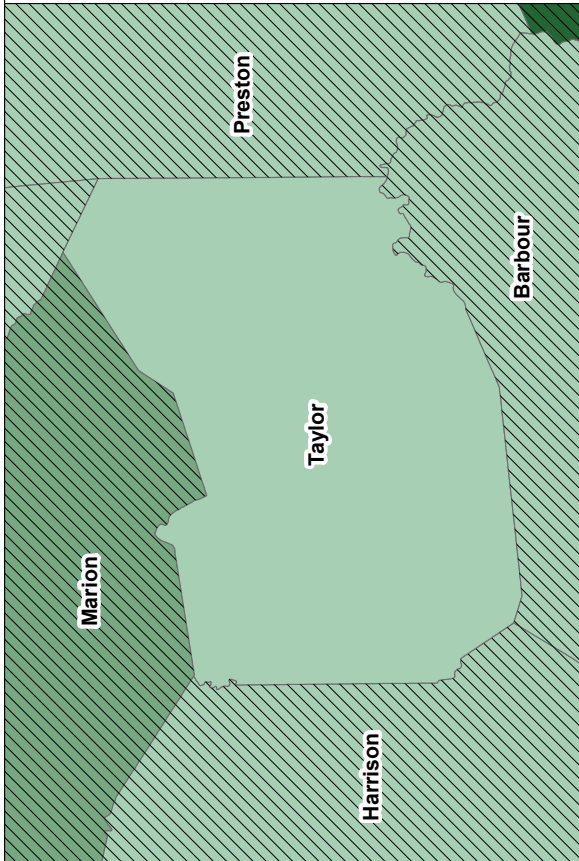
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www.rtaati.org

Energy - Percent Forest Coverage

Taylor County



- Planning Regions Line
- 45.87% - 65%
- 65.01% - 75%
- 75.01% - 82%
- 82.01% - 85%
- 85.01% - 100%
- County Boundaries

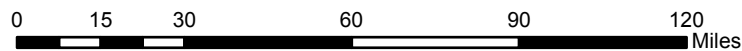
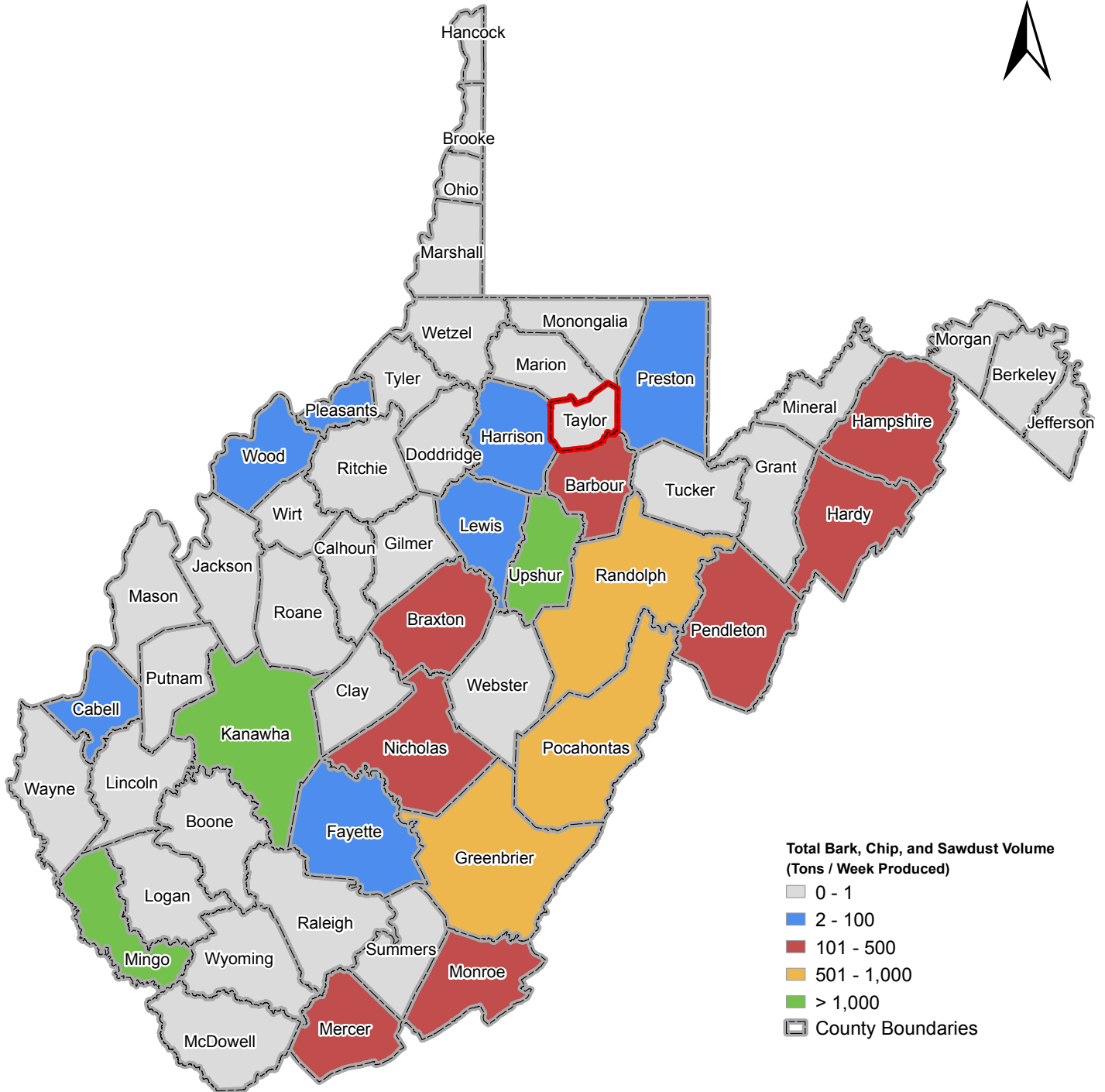
Source: Rahall Transportation Institute 2013

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Renewable Energy - Wood By Products

Bark, Chip, and Sawdust Volume Produced - Taylor County



Source: West Virginia Division of Forestry 2014

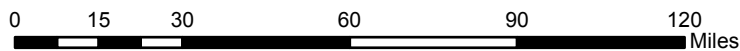
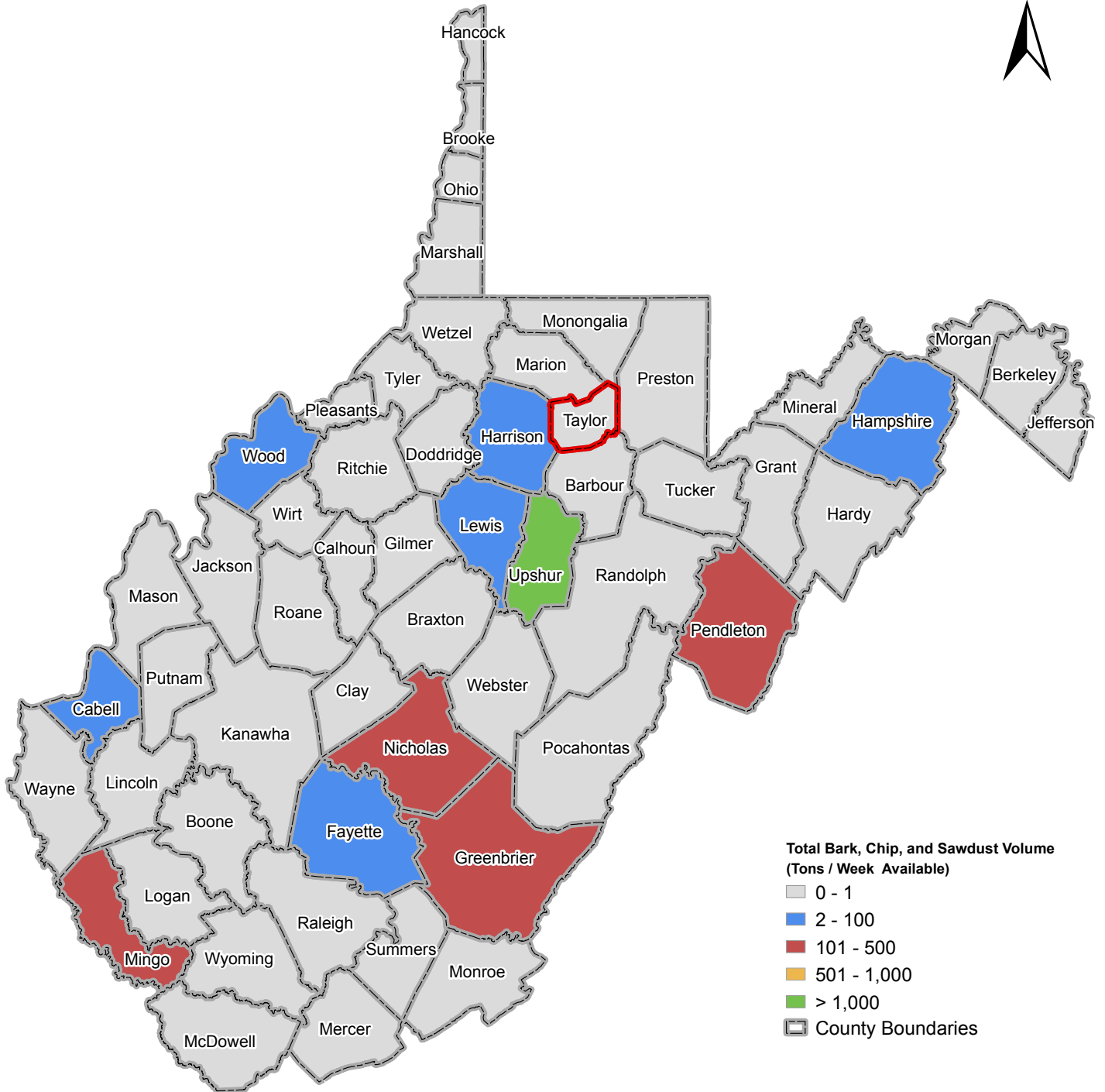
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www.njrati.org

Renewable Energy - Wood By Products

Bark, Chip, and Sawdust Volume Available - Taylor County



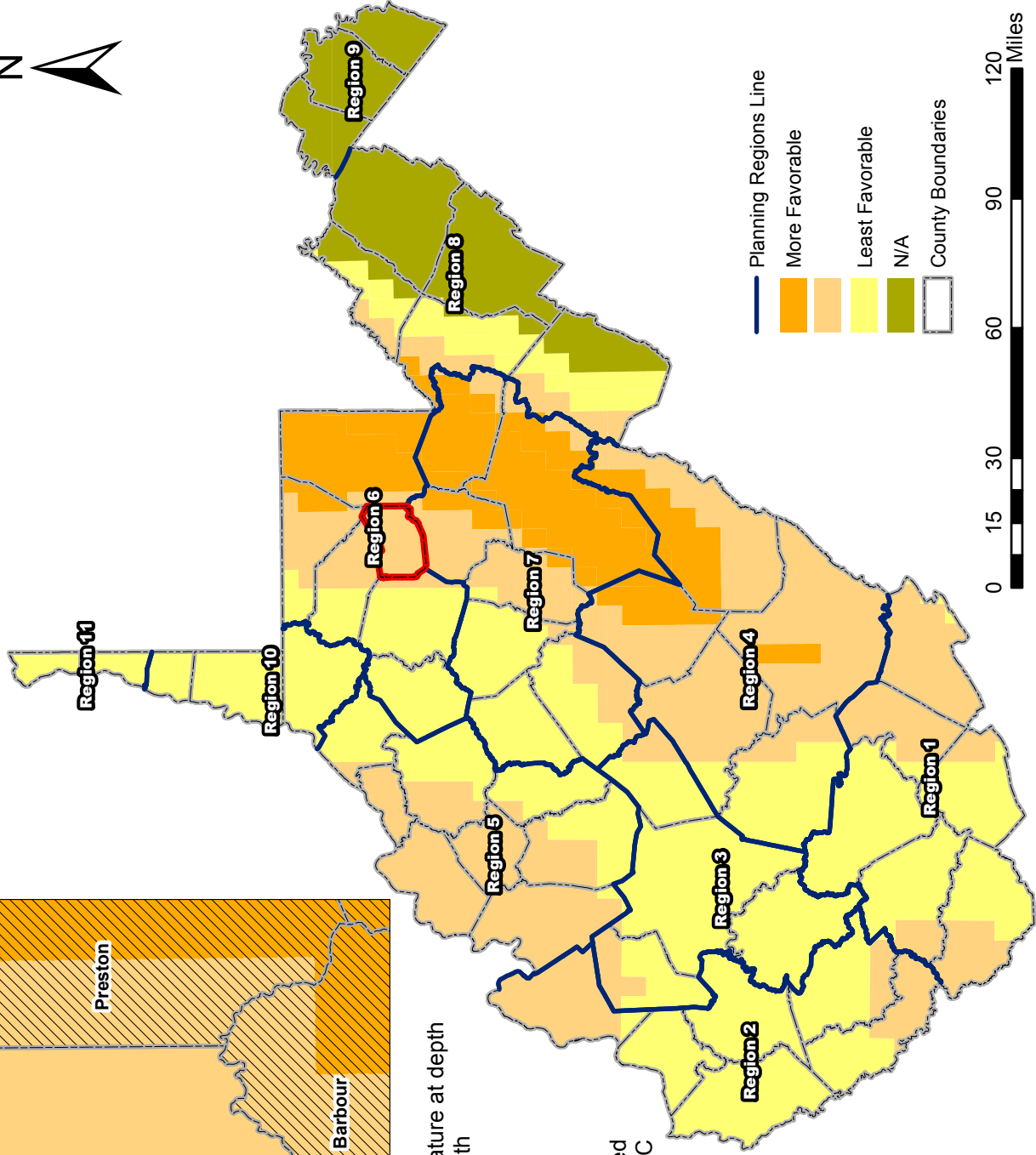
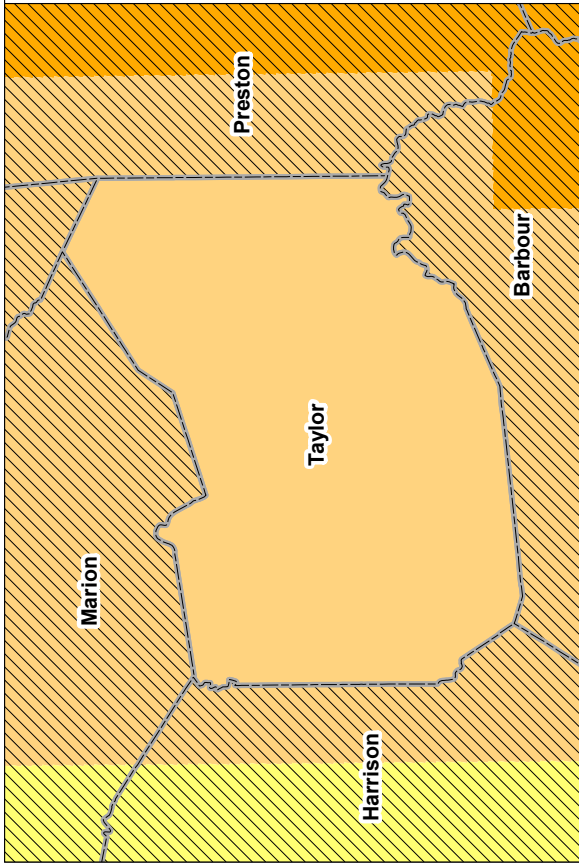
Source: West Virginia Division of Forestry 2014

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Energy - Geothermal Resource of Taylor County

Favorability of Deep Enhanced Geothermal Systems



— Planning Regions Line
■ More Favorable
■ Least Favorable
■ N/A
□ County Boundaries



— Source data for deep EGS includes temperature at depth from 3 to 10 km and analyses (for regions with temperatures ≥ 150 degrees C).

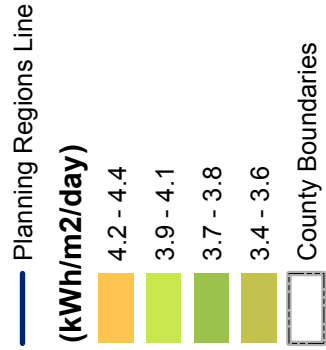
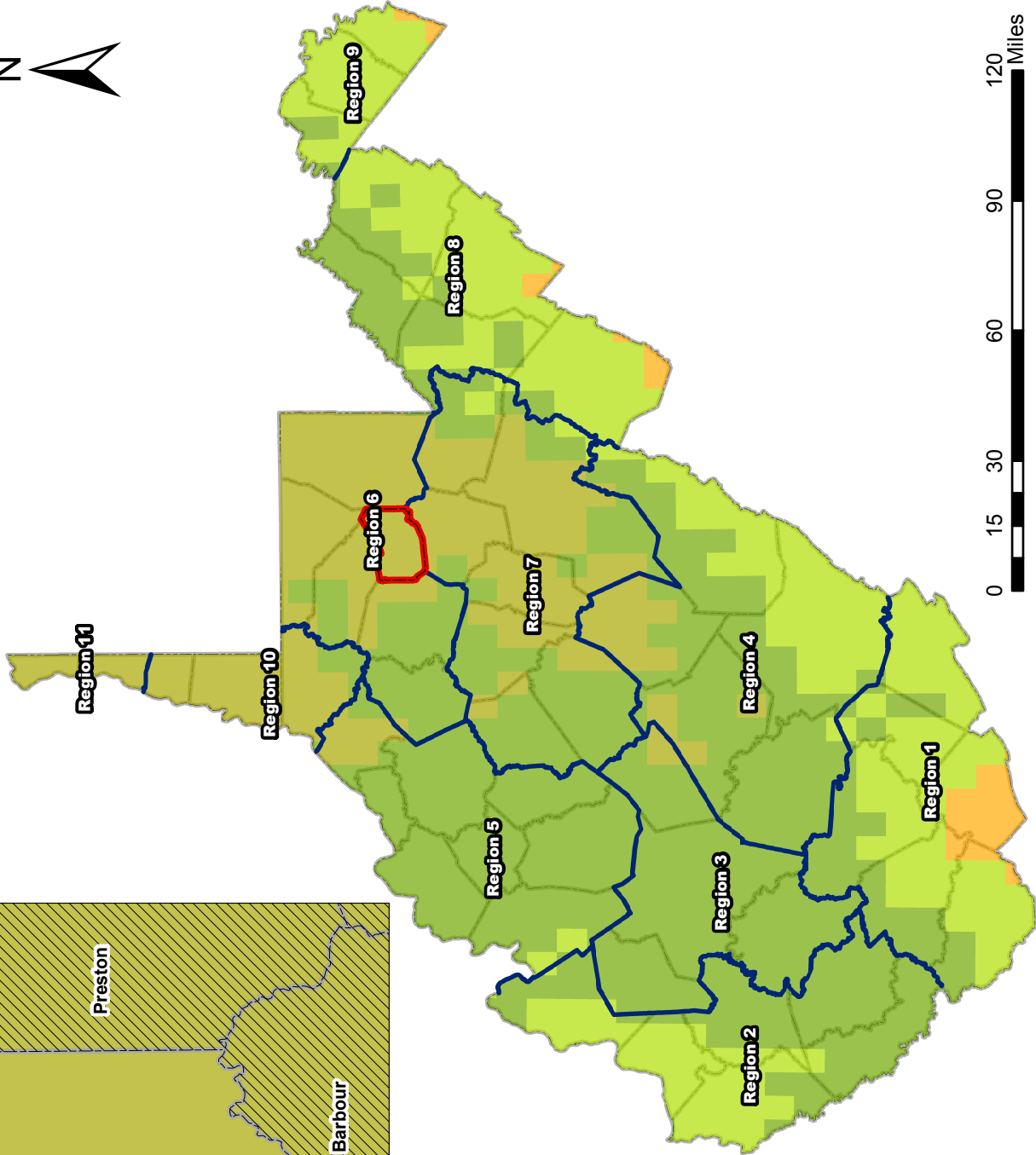
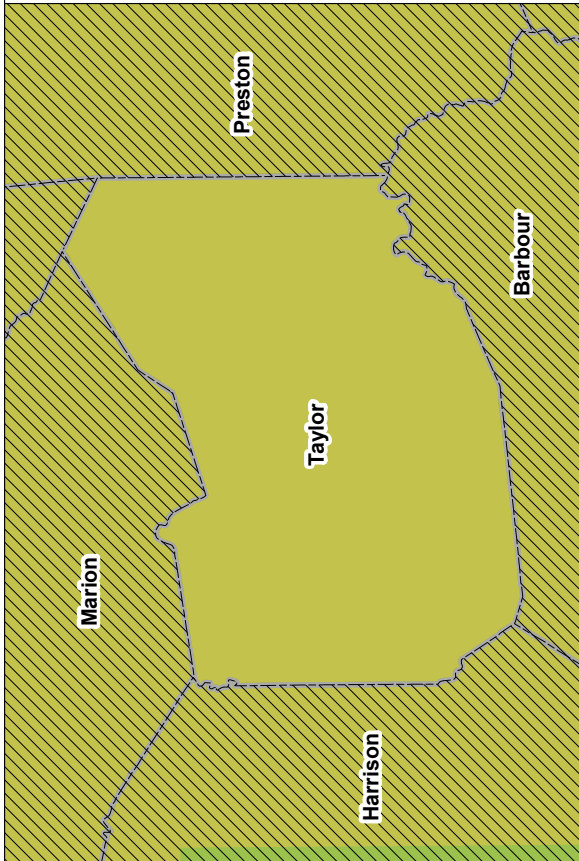
— Class values reflect relative favorability, with 1 being more favorable, 3 being least favorable, and "N/A" regions not having been assessed due to temperatures less than 150 degrees C at 10 km depth.

Source: National Renewable Energy Laboratory 2009

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Solar - Renewable Energy

Taylor County



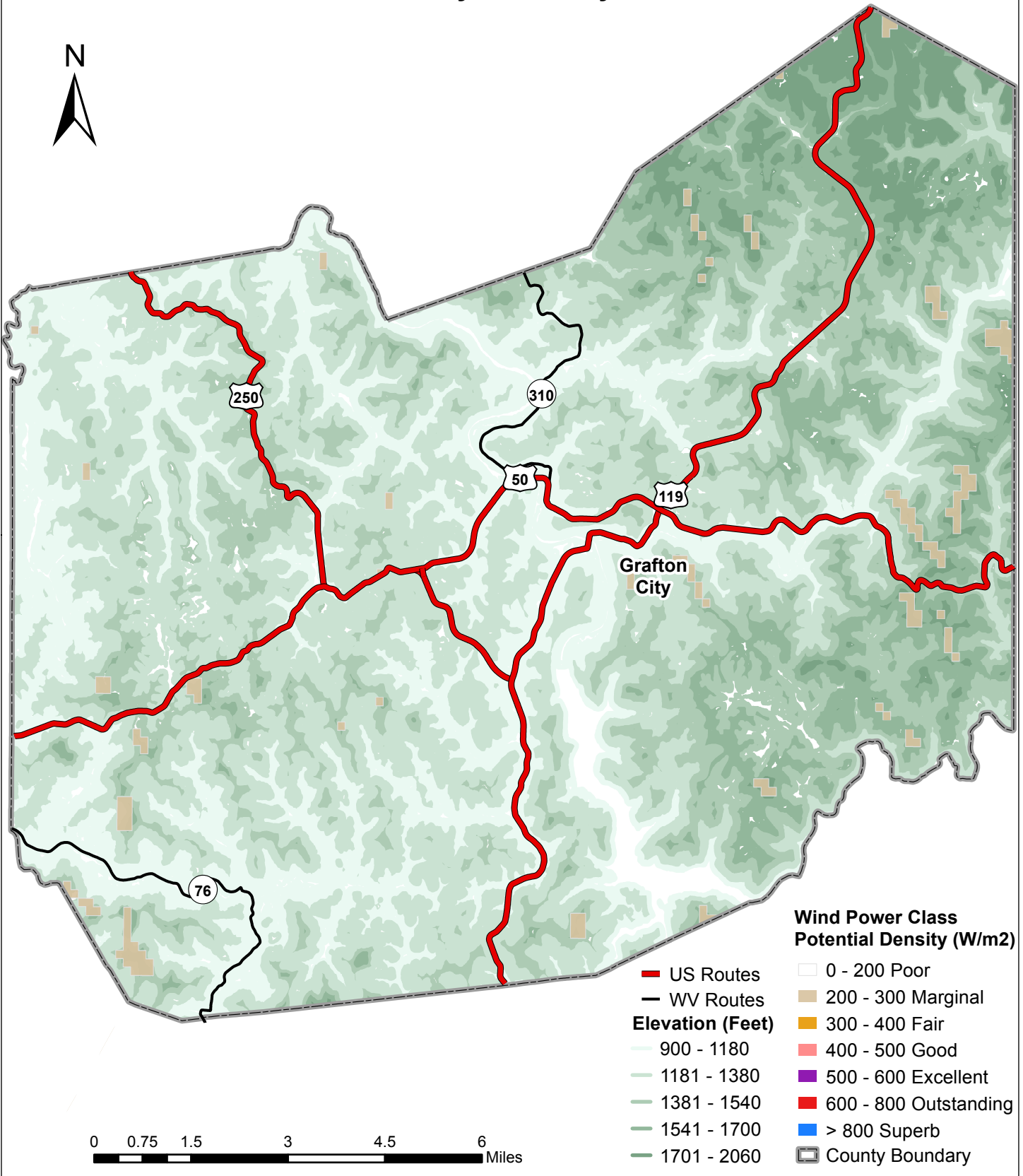
Source: National Renewable Energy Laboratory 2012

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Renewable Energy-Wind

Taylor County



Wind Power Class Potential Density (W/m²)

- US Routes
- WV Routes
- Elevation (Feet)**
- 900 - 1180
- 1181 - 1380
- 1381 - 1540
- 1541 - 1700
- 1701 - 2060
- 0 - 200 Poor
- 200 - 300 Marginal
- 300 - 400 Fair
- 400 - 500 Good
- 500 - 600 Excellent
- 600 - 800 Outstanding
- > 800 Superb
- County Boundary

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 Taylor. 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.

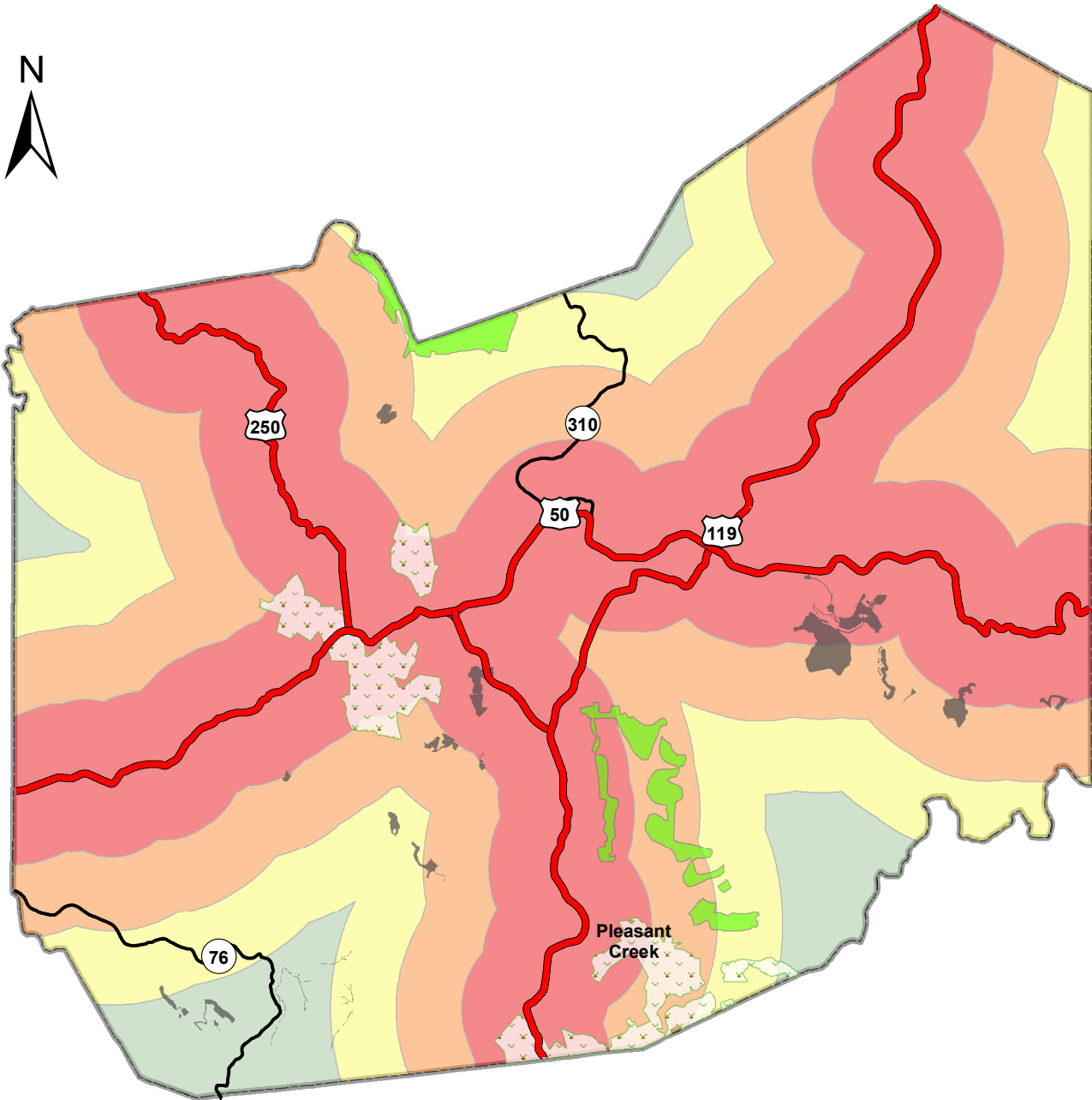
Table 2: Smart Planning Utilizations

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

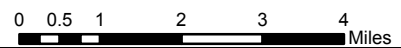
Land development or redevelopment options are determined through a review of the redevelopment authority's anticipated needs. The required infrastructure component standards are determined on a site by site basis by the county economic development authority as designated by West Virginia Code Chapter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

Landuse Criteria

Taylor County



- US Routes
- WV Routes
- Mining Permit Boundaries
- Wild Life Management
- State Park Boundaries
- 0 to 1 Mile (Industrial; Commercial/Retail; Residential; Public Facilities; Recreation)
- 1 to 2 Miles (Industrial; Commercial/Retail, Residential; Public Facilities)
- 2 to 3 Miles (Industrial; Commercial/Retail, Residential; Recreation)
- 3 to 5 Miles (Industrial; Residential; Receration; Agriculture; Forestland)
- 5 to 10 Miles (Industrial; Residential; Agriculture; Forest Land)
- CountyBoundary



Source: Rahall Transportation Institute 2015

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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 Taylor 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.

The WV DEP permit database acts as a general clearinghouse for information, but is not infallible. The data is often updated by third-party sources, which increases the margin of error for site location. Because of this, the actual attributes being measured may not be at the distance stated because the mine site is not actually in the location given. The WV DEP has sought to minimize those errors, and RTI attempts to maintain the reliability of the measurements by observing their locations when mapping. RTI does not ensure the reliability of the site location or distances to the attributes. Any and all information should be verified for accuracy.

The initial data collection revealed all the mine sites in the County. Together, the team put together 23 sites for analysis. All of the sites and their distance attributes are listed below.

Table 3: Taylor County Potential Surface Mine Sites for Development

Site No	Permittee	Permit ID	Facility Name	Acres	Issue Date	Expiration Date
1	B & D COAL CO	S009783	NA	20	11/28/1983	11/28/1988
2	PATRIOT MINING COMPANY INC	S103189	NA	80.62	10/3/1989	10/3/1999
3	SWIFT CREEK DEVELOPMENT INC	S100292	NA	14.78	4/15/1994	4/15/1999
4	WEST VIRGINIA FUELS, INC	S016075	NA	0	7/14/1975	7/14/1980
5	MULETRAIN COAL INC	S101690	NA	95.69	9/21/1990	9/21/1995
6	PATRIOT MINING COMPANY INC	S101693	NA	44.5	10/18/1994	10/18/2004
7	TYGART VALLEY MINING, INC.	S103590	NA	14.75	9/20/1991	9/20/2001
8	SCJL CO-LEASING CORPORATION, INC	S103989	NA	26.9	12/28/1990	12/28/1995
9	LAROSA FUEL COMPANY INC	S100189	NA	59.8	3/22/1989	3/22/1994
10	HUFF COAL CO.	Z006281	NA	5	3/11/1983	3/11/1988
11	TOM PATTERSON COAL CO	S103387	NA	0	1/12/1988	1/12/1993
12	92 COAL CORP	S005885	NA	0	6/25/1985	6/25/1990
13	EDINBURGH ENTERPRISES	C000283	NA	0	2/18/1983	2/18/1988
14	SMITH CONSTRUCTION CO	C000584	NA	0	10/1/1984	10/1/1989
15	COALTRAIN CORPORATION	S100386	NA	0	2/10/1986	2/10/1991
16	CAPITOL COAL INC	S003777	NA	0	1/13/1977	1/13/1982
17	REBEKAH COAL COMPANY INC	S200608	RAGER SURFACE MINE	22	1/4/2011	1/4/2016
18	WILLIAMS DOZER SERVICE INC	S101090	NA	25.99	6/12/1990	6/12/1995
19	B & D COAL CO	S103886	NA	59.2	3/25/1986	3/25/1991
20	THOMPSON COAL & CONST INC	S010378	NA	0	5/25/1978	9/15/1992
21	FALCO COAL CO	S004483	NA	20	6/6/1983	6/6/1988
22	A & A COAL CO	S106986	NA	0	8/6/1986	8/6/1991
23	COALTRAIN CORPORATION	S100387	NA	145.7	9/10/1987	9/10/1992

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 and Existing Highway)
 - Distance to Intermodal Terminal Facility, National Waterway Network
 - 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

The following tables illustrate the results of road-path and Euclidean distance assessments for all of the identified sites for given criteria. All distances were recorded in miles.

Table 4: Assessment of Distances

Site No	Permit ID	Interstate (IS)	Sign - IS	Existing Highway (EH)	Sign - EH	Paved Road	Paved Road Name
1	S009783	10.16	I79	1.51	U50	0.26	Shelby Run
2	S103189	9.34	I79	2.42	U50	0.16	Wendel Road
3	S100292	9.77	I79	5.11	U50	0.01	Sinsel Road
4	S016075	9.58	I79	0.28	U250	0.26	US 250
5	S101690	8.52	I79	3.66	U119	0.11	Isabella Street
6	S101693	10.76	I79	3.06	U119	0.22	Wendel Road
7	S103590	7.44	I79	4.45	U50	0.14	Bailey Town Church
8	S103989	8.86	I79	3.59	U119	0.29	Simpson Road
9	S100189	8.95	I79	4.27	U50	0.13	Sub-Station Smith Farm
10	Z006281	10.04	I79	2.71	U119	0.12	Wyckoff Hollow
11	S103387	10.78	I79	1.87	U119	0.20	Wendel Road
12	S005885	8.42	I79	0.20	U50	0.22	US 50
13	C000283	7.44	I79	4.45	U50	0.14	Bailey Town Church
14	C000584	8.97	I79	3.27	U119	0.17	Simpson Road
15	S100386	9.42	I79	0.77	U50	0.13	Shelby Run
16	S003777	11.04	I79	2.15	U250	0.08	Harvey Road
17	S200608	10.35	I79	2.65	U119	0.16	Wendel Road
18	S101090	9.69	I79	0.01	U250	0.01	US 250
19	S103886	16.78	I79	1.19	U50	0.10	Knottsville Road
20	S010378	4.22	I79	0.23	U50	0.23	US 50
21	S004483	18.35	I79	2.26	U50	0.15	
22	S106986	16.01	I79	3.78	U50	0.27	96 Hollow
23	S100387	11.08	I79	1.92	U250	0.04	Harvey Road

Table 5: Shortest Distances from Sites to Other Transportation Methods

Site No	Permit ID	Railroad	IF	Intermodal Facility (IF) Name	NW	National Waterway (NW) Name
1	S009783	1.20	14.98	CSXT Clarksburg Bulk TransFlo	15.21	MONONGAHELA RIVER
2	S103189	1.54	14.09	CSXT Clarksburg Bulk TransFlo	15.62	MONONGAHELA RIVER
3	S100292	0.86	13.09	CSXT Clarksburg Bulk TransFlo	17.39	MONONGAHELA RIVER
4	S016075	1.53	14.54	CSXT Clarksburg Bulk TransFlo	14.32	MONONGAHELA RIVER
5	S101690	0.30	11.85	CSXT Clarksburg Bulk TransFlo	16.12	MONONGAHELA RIVER
6	S101693	1.86	15.12	CSXT Clarksburg Bulk TransFlo	17.05	MONONGAHELA RIVER
7	S103590	0.48	10.77	CSXT Clarksburg Bulk TransFlo	16.72	MONONGAHELA RIVER
8	S103989	0.43	12.19	CSXT Clarksburg Bulk TransFlo	16.46	MONONGAHELA RIVER
9	S100189	0.47	12.28	CSXT Clarksburg Bulk TransFlo	16.55	MONONGAHELA RIVER
10	Z006281	0.39	13.37	CSXT Clarksburg Bulk TransFlo	17.10	MONONGAHELA RIVER
11	S103387	0.28	14.94	CSXT Clarksburg Bulk TransFlo	17.06	MONONGAHELA RIVER
12	S005885	2.71	13.17	CSXT Clarksburg Bulk TransFlo	13.48	MONONGAHELA RIVER
13	C000283	0.48	10.77	CSXT Clarksburg Bulk TransFlo	16.72	MONONGAHELA RIVER
14	C000584	0.27	12.30	CSXT Clarksburg Bulk TransFlo	16.56	MONONGAHELA RIVER
15	S100386	1.79	14.38	CSXT Clarksburg Bulk TransFlo	14.47	MONONGAHELA RIVER
16	S003777	1.20	15.40	CSXT Clarksburg Bulk TransFlo	16.91	MONONGAHELA RIVER
17	S200608	1.22	14.71	CSXT Clarksburg Bulk TransFlo	16.64	MONONGAHELA RIVER
18	S101090	1.24	14.66	CSXT Clarksburg Bulk TransFlo	14.43	MONONGAHELA RIVER
19	S103886	2.00	23.46	CSXT Clarksburg Bulk TransFlo	18.26	MONONGAHELA RIVER
20	S010378	1.33	8.97	CSXT Clarksburg Bulk TransFlo	13.55	MONONGAHELA RIVER
21	S004483	2.60	25.03	CSXT Clarksburg Bulk TransFlo	19.83	MONONGAHELA RIVER
22	S106986	1.04	22.68	CSXT Clarksburg Bulk TransFlo	17.48	MONONGAHELA RIVER
23	S100387	0.95	15.56	CSXT Clarksburg Bulk TransFlo	16.68	MONONGAHELA RIVER

Table 6: Shortest Distances from Sites to Sewer Lines (SL) and Water Lines (WL)

Site No	Permit ID	Dist - SL	Utility (SL)	Dist - WL	Utility (WL)
1	S009783	1.42	City of Grafton Sewer Department	0.43	Southwestern Water District
2	S103189	1.77	Flemington Sanitary Board	0.18	Southwestern Water District
3	S100292	1.15	Flemington Sanitary Board	0.63	Southwestern Water District
4	S016075	0.80	City of Grafton Sewer Department	0.29	Southwestern Water District
5	S101690	0.08	Flemington Sanitary Board	0.18	Southwestern Water District
6	S101693	2.25	City of Grafton Sewer Department	0.13	Southwestern Water District
7	S103590	0.69	Flemington Sanitary Board	0.37	Southwestern Water District
8	S103989	0.32	Flemington Sanitary Board	0.28	Southwestern Water District
9	S100189	0.50	Flemington Sanitary Board	0.53	Southwestern Water District
10	Z006281	1.28	Flemington Sanitary Board	0.25	Southwestern Water District
11	S103387	1.94	Flemington Sanitary Board	0.24	Southwestern Water District
12	S005885	1.12	City of Grafton Sewer Department	0.26	Grafton Municipal Water Department
13	C000283	0.69	Flemington Sanitary Board	0.37	Southwestern Water District
14	C000584	0.20	Flemington Sanitary Board	0.09	Southwestern Water District
15	S100386	0.77	City of Grafton Sewer Department	0.17	Southwestern Water District
16	S003777	2.43	City of Grafton Sewer Department	0.46	Southwestern Water District
17	S200608	2.04	Flemington Sanitary Board	0.20	Southwestern Water District
18	S101090	0.93	City of Grafton Sewer Department	0.01	Southwestern Water District
19	S103886	3.83	City of Grafton Sewer Department	0.27	Taylor County Public Service District
20	S010378	1.32	City of Bridgeport	0.34	Southwestern Water District
21	S004483	5.02	City of Grafton Sewer Department	0.20	Taylor County Public Service District
22	S106986	2.79	City of Grafton Sewer Department	0.31	Taylor County Public Service District
23	S100387	2.58	City of Grafton Sewer Department	0.24	Southwestern Water District

Table 7: Shortest Distances from Sites to Broadband (BB) and Power Lines (PL)

Site No	Permit ID	Dist - BB	Provider (BB)	Dist - PL	Type (PL)	Size_kV
1	S009783	2.23	Citizens Telecommunications Company of West Virginia	0.39	Transmission	115-138
2	S103189	0.31	Citizens Telecommunications Company of West Virginia	0.37	Transmission	115-138
3	S100292	0.02	Citizens Telecommunications Company of West Virginia	1.05	Transmission	115-138
4	S016075	2.46	Citizens Telecommunications Company of West Virginia	0.14	Transmission	115-138
5	S101690	0.05	Cequel III Communications II	0.28	Transmission	115-138
6	S101693	0.74	Citizens Telecommunications Company of West Virginia	0.32	Transmission	115-138
7	S103590	0.14	Citizens Telecommunications Company of West Virginia	1.42	Transmission	115-138
8	S103989	0.10	Citizens Telecommunications Company of West Virginia	0.22	Transmission	115-138
9	S100189	0.15	Citizens Telecommunications Company of West Virginia	0.36	Transmission	115-138
10	Z006281	0.27	Cequel III Communications II	0.77	Transmission	115-138
11	S103387	0.25	Cequel III Communications II	0.66	Transmission	115-138
12	S005885	1.48	Frontier West Virginia, Inc.	0.91	Transmission	115-138
13	C000283	0.14	Citizens Telecommunications Company of West Virginia	1.42	Transmission	115-138
14	C000584	0.00	Cequel III Communications II	0.06	Transmission	115-138
15	S100386	2.26	Frontier West Virginia, Inc.	0.36	Transmission	115-138
16	S003777	1.15	Cequel III Communications II	0.69	Transmission	115-138
17	S200608	0.45	Citizens Telecommunications Company of West Virginia	0.05	Transmission	115-138
18	S101090	2.66	Citizens Telecommunications Company of West Virginia	0.10	Transmission	115-138
19	S103886	0.36	Frontier West Virginia, Inc.	2.63	Transmission	500
20	S010378	0.15	Frontier West Virginia, Inc.	0.42	Transmission	115-138
21	S004483	1.50	Frontier West Virginia, Inc.	2.29	Transmission	500
22	S106986	0.49	Frontier West Virginia, Inc.	2.41	Transmission	500
23	S100387	0.90	Cequel III Communications II	0.71	Transmission	115-138

Table 8: Shortest Distances from Sites to Sewer (SW) and Solid Waste (SD) Treatment Facilities

Site No	Permit ID	Dist - SW	Facility (SW)	Dist - SD	Facility (SD)
1	S009783	2.44	Taylor Cnty Senior Center	14.98	Meadowfill
2	S103189	3.51	FLEMINGTON TOWN OF	14.10	Meadowfill
3	S100292	1.89	FLEMINGTON TOWN OF	13.86	Clarksburg, City of
4	S016075	1.67	Taylor Cnty Senior Center	14.55	Meadowfill
5	S101690	0.94	FLEMINGTON TOWN OF	12.62	Clarksburg, City of
6	S101693	4.22	FLEMINGTON TOWN OF	15.52	Meadowfill
7	S103590	1.53	FLEMINGTON TOWN OF	11.54	Clarksburg, City of
8	S103989	1.28	FLEMINGTON TOWN OF	12.95	Clarksburg, City of
9	S100189	1.37	FLEMINGTON TOWN OF	13.04	Clarksburg, City of
10	Z006281	2.46	FLEMINGTON TOWN OF	14.13	Clarksburg, City of
11	S103387	3.76	Taylor Cnty Senior Center	15.53	Meadowfill
12	S005885	2.87	GRAFTON CITY OF	13.16	Meadowfill
13	C000283	1.53	FLEMINGTON TOWN OF	11.54	Clarksburg, City of
14	C000584	1.39	FLEMINGTON TOWN OF	13.06	Clarksburg, City of
15	S100386	2.71	GRAFTON CITY OF	14.39	Meadowfill
16	S003777	2.71	Taylor Cnty Senior Center	15.80	Meadowfill
17	S200608	3.81	FLEMINGTON TOWN OF	15.11	Meadowfill
18	S101090	1.06	Taylor Cnty Senior Center	14.66	Meadowfill
19	S103886	1.77	BEAULAH LAND PERSONAL CARE	13.78	Charlie Pase (monofill)
20	S010378	2.85	MAPLE LAKE CLUB, INC.	8.97	Meadowfill
21	S004483	3.34	BEAULAH LAND PERSONAL CARE	13.05	Charlie Pase (monofill)
22	S106986	1.13	BEAULAH LAND PERSONAL CARE	16.36	Charlie Pase (monofill)
23	S100387	2.48	Taylor Cnty Senior Center	15.84	Meadowfill

Table 9: Shortest Distances from Sites to Gas Pipe (GP) and Oil Pipe (OP)

Site No	Permit ID	Dist - GP	Company Gas Pipe	Dist - OP	Company Oil Pipeline
1	S009783	3.13	Equitrans, LP	1.70	E
2	S103189	1.12	Equitrans, LP	1.61	E
3	S100292	2.68	Dominion Transmission Inc.	1.08	CN
4	S016075	3.23	Equitrans, LP	1.08	E
5	S101690	1.92	Equitrans, LP	0.82	E
6	S101693	1.62	Equitrans, LP	1.92	Unknown
7	S103590	2.03	Equitrans, LP	0.82	E
8	S103989	1.83	Equitrans, LP	0.93	E
9	S100189	2.70	Equitrans, LP	1.50	E
10	Z006281	2.57	Equitrans, LP	2.29	E
11	S103387	2.42	Equitrans, LP	2.59	E
12	S005885	2.84	Equitrans, LP	0.07	Unknown
13	C000283	2.03	Equitrans, LP	0.82	E
14	C000584	2.06	Equitrans, LP	1.22	E
15	S100386	3.02	Equitrans, LP	1.00	E
16	S003777	2.47	Equitrans, LP	2.52	Unknown
17	S200608	1.60	Equitrans, LP	2.12	E
18	S101090	3.48	Equitrans, LP	1.19	E
19	S103886	7.96	Hope Gas, Inc.	6.12	E
20	S010378	0.94	Equitrans, LP	0.25	E
21	S004483	7.53	Hope Gas, Inc.	7.07	CN
22	S106986	7.84	Hope Gas, Inc.	5.07	E
23	S100387	2.61	Equitrans, LP	2.80	Unknown

Suitability Model

The suitability model for Taylor 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, RTI’s own research on the existing conditions in Taylor 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 four 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 existing highway ranges from 2.5 to 5 miles, the site will be given 7 points for the Existing Highways 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 12 (below). This score set is used to sharpen differences 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.

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:

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

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

Sites with higher total scores reveal a higher chance of being developed. Total scores will vary according to a combination of four components: weights, absolute scores, and relative scores.

1. Weighting

Table 10 prioritizes post-mining land-use criteria for surface coal mining site selection in Taylor 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 5: Weighting Sites Selection Criteria

No	Criteria	Weight
1	Broadband	9
2	Gas Pipes	6
3	National Waterway Network	4
4	Oil Pipelines	6
5	Power Lines	10
6	Railroads	5
7	Sewer Lines	8
8	Water Lines	10
9	Existing Highway	8
10	Intermodal Terminal Facilities	6
11	Interstate	8
12	Sewer Treatment Facilities	7
13	Solid Waste Treatment Facilities	8

2. Scoring

2.1 Absolute Scores:

The shorter the distance to a feature from a site, the higher absolute score the site receives. Table 11 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 previously, 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 “Existing

Highway” are much smaller than ones for “Solid Waste Treatment Facilities”. This is because highways are denser than solid waste treatment facilities. Both, however, have the same weights.

Table 6: Absolute Scoring System

Absolute Score		10	7	5	3	1
Criteria (Miles)	Broadband	0 - 0.5	0.5 - 2	2 - 3	3 - 4	> 4
	Gas Pipes	0 - 0.5	0.5 - 1.5	1.5 - 2	2 - 2.5	> 2.5
	National Waterway Network	0 - 2.5	2.5 - 5	5 - 7.5	7.5 - 10	> 10
	Oil Pipelines	0 - 0.25	0.25 - 0.5	0.5 - 0.75	0.75 - 1	> 1
	Power Lines	0 - 0.5	0.5 - 1.5	1.5 - 2	2 - 2.5	> 2.5
	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
	Existing 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
	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

2.2 Relative Scores:

Table 12 shows four statistical groups and their relative scores in the Taylor 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). Second, it is not affected by personal opinion and does not consider either traveling method or nature of criteria.

Table 7: 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	Broadband	0.00	0.14	0.36	1.32	2.66	
2	Gas Pipes	0.94	1.98	2.57	3.08	7.96	
3	National Waterway Network	13.48	15.42	16.64	17.06	19.83	
4	Oil Pipelines	0.07	0.96	1.50	2.40	7.07	
5	Power Lines	0.05	0.30	0.42	0.98	2.63	
6	Railroads	0.27	0.48	1.20	1.53	2.71	
7	Sewer Lines	0.08	0.73	1.28	2.15	5.02	
8	Water Lines	0.01	0.19	0.26	0.36	0.63	
9	Existing Highway	0.01	1.35	2.42	3.62	5.11	
10	Intermodal Terminal Facilities	8.97	12.29	14.38	15.05	25.03	
11	Interstate	4.22	8.90	9.69	10.77	18.35	
12	Sewer Treatment Facilities	0.94	1.46	2.44	2.86	4.22	
13	Solid Waste Treatment Facilities	8.97	13.04	14.10	14.10	16.36	

3. Taylor County’s Suitability Model:

Table 13 shows the total scores of all studied sites in Taylor County. Site 5 (Permit ID = S101690) has the highest score of 715. The sites with higher total scores suggest better opportunities for development. Results in Table 13 are also plotted in the bar chart (Figure 15) for better visualization. Among 23 analyzed potential development sites of Taylor County, it is easy to notice the top five sites and determine the most suitable sites for investment.

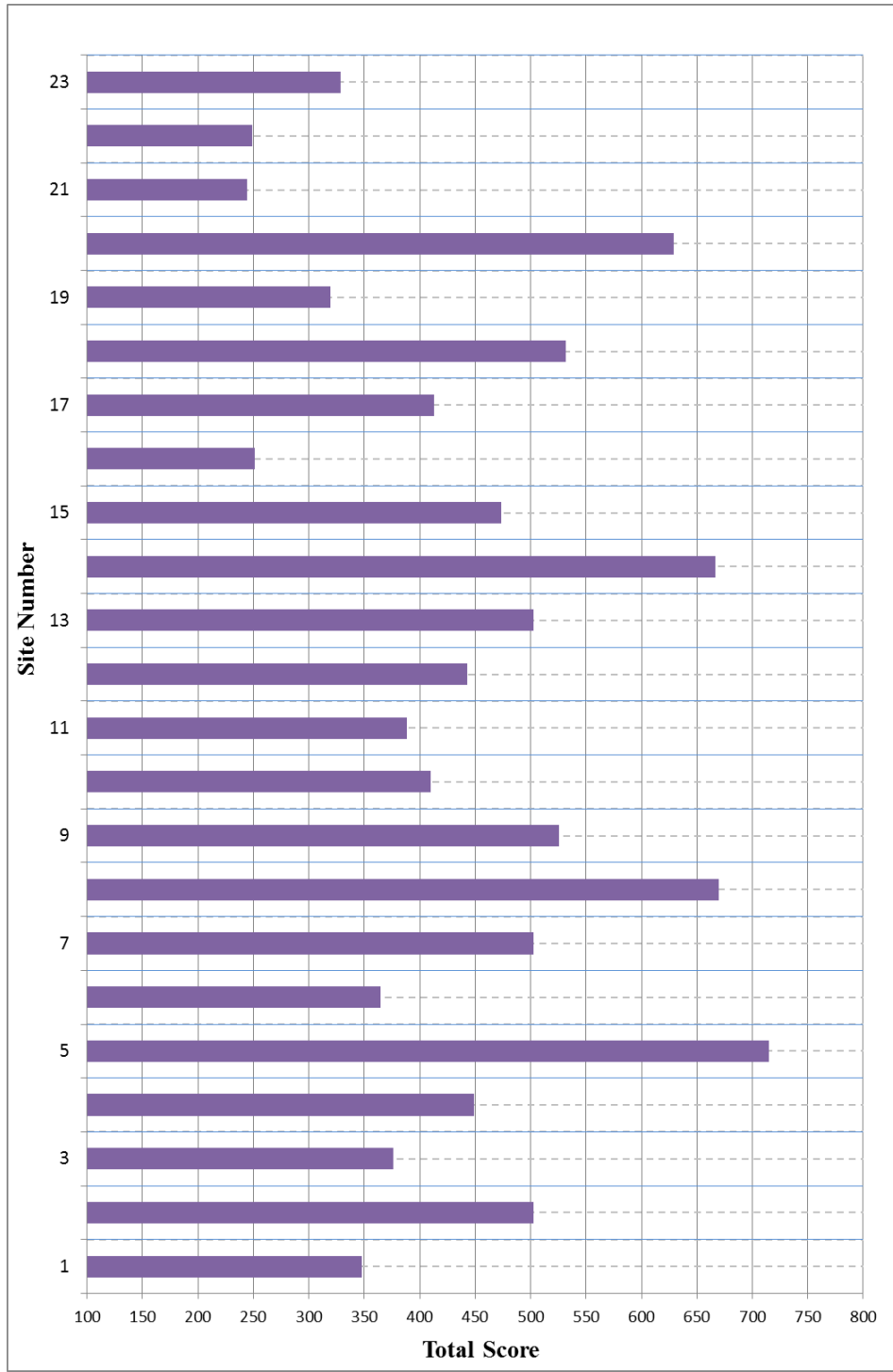
Certainly, any change in weight values or the scoring system will result in different output and may change the decision. For better analysis and decision-making, the dynamic suitability model, which allows modification in criteria’s weights, thresholds and scores is available for distribution through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

Besides a distance analysis, a suitability model for Taylor is supported by demographic data as well as two additional analyses, which are workforce analysis and retail location density (shown on Table 14 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 8: Total Score of Mine Sites in Taylor County

Site No	Permitee	PermitID	Score
1	B & D COAL CO	S009783	348
2	PATRIOT MINING COMPANY INC	S103189	503
3	SWIFT CREEK DEVELOPMENT INC	S100292	376
4	WEST VIRGINIA FUELS, INC	S016075	449.25
5	MULETRAIN COAL INC	S101690	715
6	PATRIOT MINING COMPANY INC	S101693	365
7	TYGART VALLEY MINING, INC.	S103590	502.5
8	SCJL CO-LEASING CORPORATION, INC	S103989	670
9	LAROSA FUEL COMPANY INC	S100189	525.5
10	HUFF COAL CO.	Z006281	410
11	TOM PATTERSON COAL CO	S103387	388.75
12	92 COAL CORP	S005885	442.75
13	EDINBURGH ENTERPRISES	C000283	502.5
14	SMITH CONSTRUCTION CO	C000584	666.5
15	COALTRAIN CORPORATION	S100386	473.5
16	CAPITOL COAL INC	S003777	251.5
17	REBEKAH COAL COMPANY INC	S200608	412.75
18	WILLIAMS DOZER SERVICE INC	S101090	531.75
19	B & D COAL CO	S103886	319.75
20	THOMPSON COAL & CONST INC	S010378	629.5
21	FALCO COAL CO	S004483	244.75
22	A & A COAL CO	S106986	249.25
23	COALTRAIN CORPORATION	S100387	329

Figure 15: Taylor 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. This data set 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 9: Employment and Unemployment within 5-, 10- and 15-mile Radii from the Site

Site No	Permit ID	Emp_05	Unemp_05	Emp_10	Unemp_10	Emp_15	Unemp_15
1	S009783	3,183	278	6,513	639	6,880	695
2	S103189	3,019	237	5,817	541	6,880	695
3	S100292	1,524	118	4,646	384	6,294	607
4	S016075	3,249	289	6,562	646	6,880	695
5	S101690	2,298	178	5,357	475	6,711	669
6	S101693	3,265	264	6,093	581	6,880	695
7	S103590	2,116	164	5,062	435	6,541	643
8	S103989	2,382	184	5,430	485	6,751	675
9	S100189	1,967	151	5,216	455	6,631	657
10	Z006281	2,335	184	5,757	531	6,869	693
11	S103387	2,622	208	5,998	565	6,880	695
12	S005885	3,457	293	6,315	614	6,880	695
13	C000283	2,116	164	5,062	435	6,541	643
14	C000584	2,325	178	5,457	489	6,758	676
15	S100386	3,295	288	6,516	640	6,880	695
16	S003777	2,959	244	6,257	602	6,880	695
17	S200608	3,007	239	5,971	562	6,880	695
18	S101090	3,197	288	6,608	653	6,880	695
19	S103886	1,244	155	4,415	501	6,867	694
20	S010378	2,316	181	4,906	418	6,519	641
21	S004483	950	117	3,850	456	6,486	664
22	S106986	1,621	202	4,919	541	6,880	695
23	S100387	2,842	235	6,240	599	6,880	695

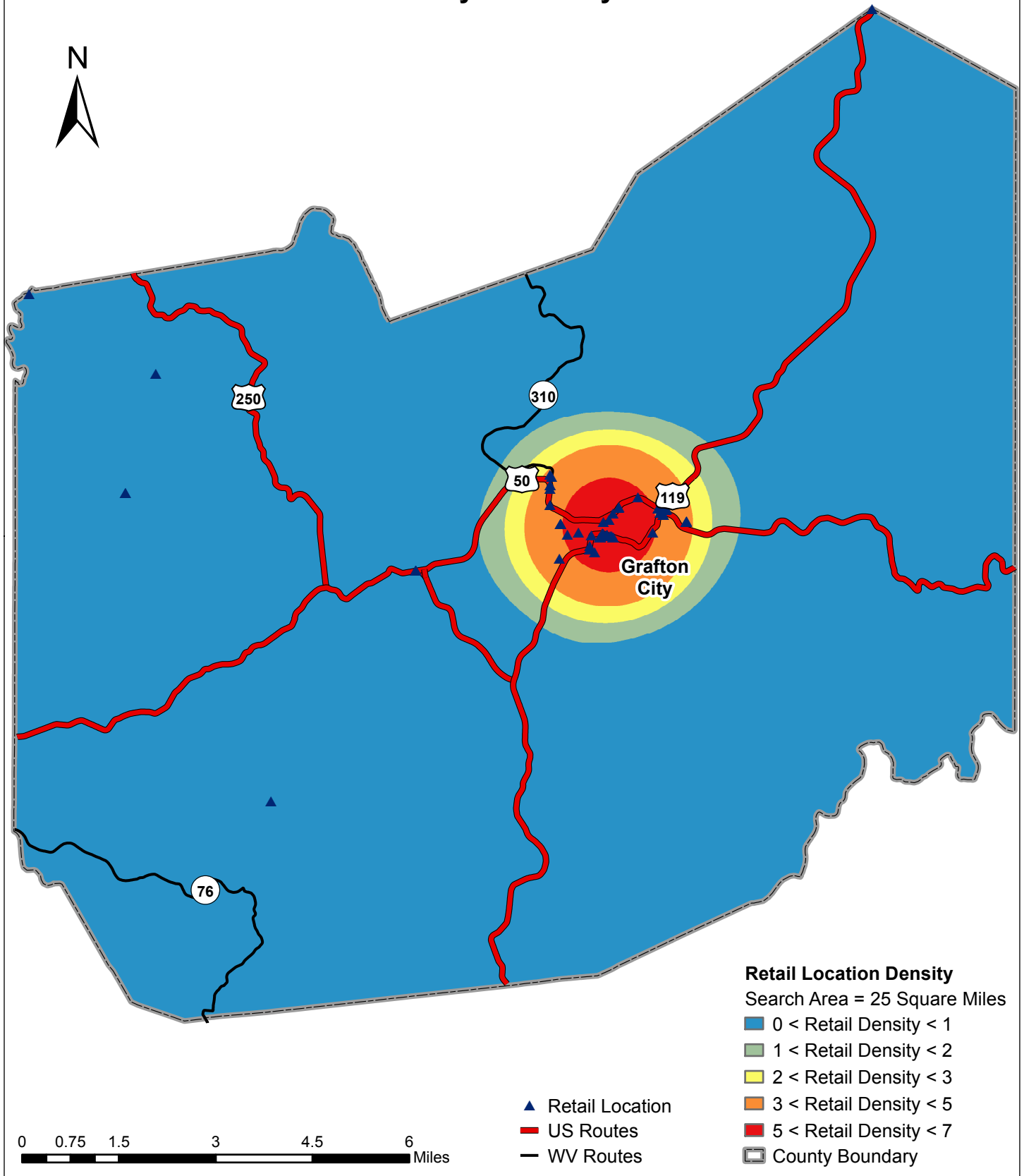
¹¹ Gary Langer, "Poll: Traffic in the United States," ABC News Online, February 13, 2005, Accessed March 1, 2013, <http://abcnews.go.com/Technology/Traffic/story?id=485098&page=1>.

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

Taylor County



VI. Conclusion

Although among the smaller and more-rural counties in West Virginia, Taylor County is well-positioned for economic stability. Several sectors, including Trade, Transportation and Utilities, have proven to be progressive for the County in recent years in terms of employment and wages. However, a large portion of Taylor County's total personal income is derived from government transfers. Coupled with limited diversification among its sectors and an aging population, attention is needed to ensure that the County will grow and thrive. This plan could be useful in that respect by assisting Taylor County in creating a development plan using their post-mine sites.

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 Taylor County to thrive.

Through a site distance analysis and complete demographic calculation, this plan provides the most comprehensive understanding of the economic state of Taylor 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.