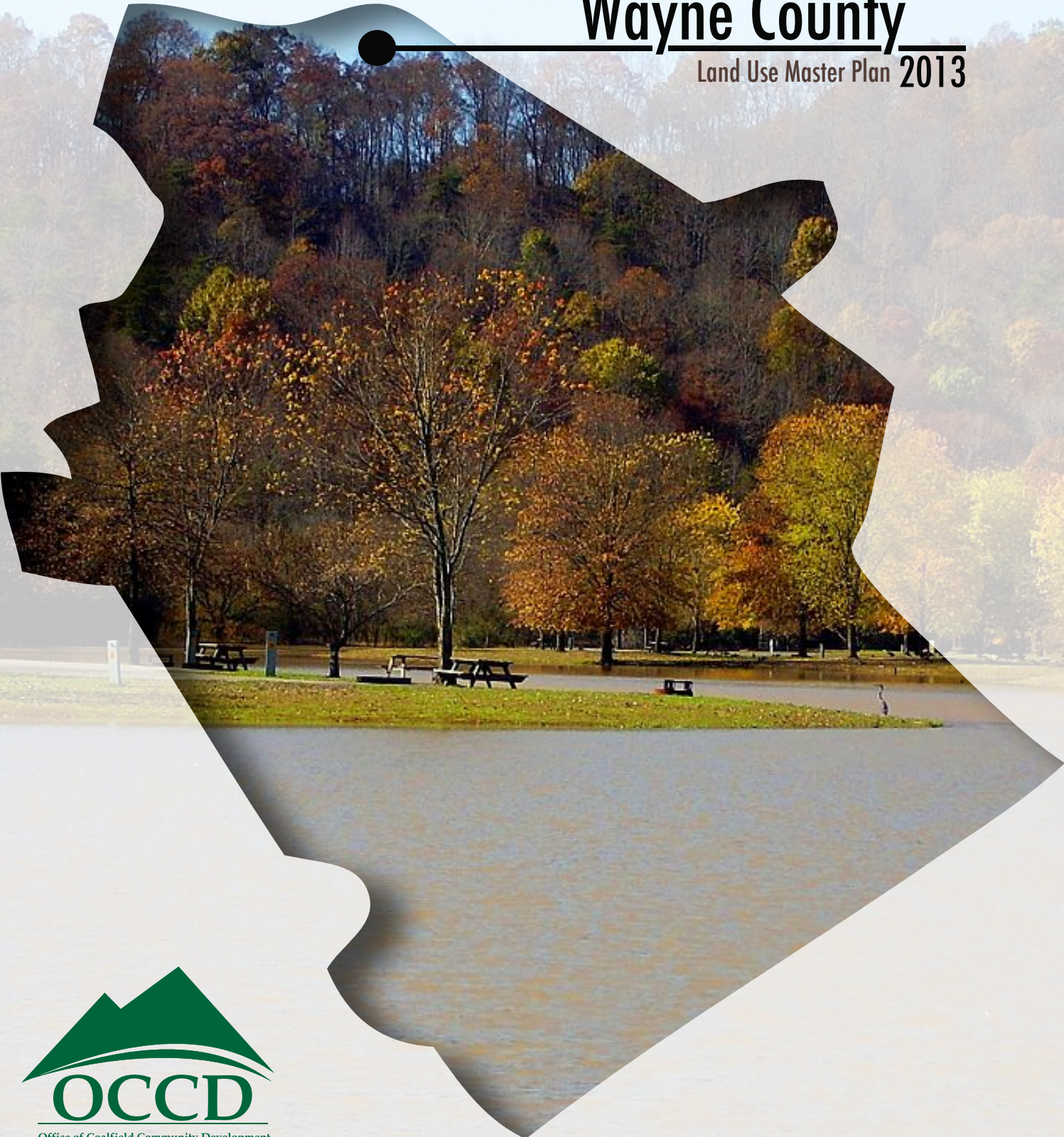


Wayne County

Land Use Master Plan 2013



Beech Fork Lake at Beech Fork State Park in Wayne County, West Virginia
(Photo by Youngamerican and touched up by WVhybrid)

Executive Summary

This Land Use Master Plan (LUMP) conveys information on Wayne County's current demographic and geographic status. This plan will be used to evaluate the potential of post-mine sites for development, and evaluate Wayne 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 Wayne County's development goals. The Nick J. Rahall Appalachian Transportation Institute (RTI) will coordinate with the Office of Coalfield Community Development to provide this essential information. This plan will help Wayne use its post-mine sites for economic development.

Wayne County has lost a great deal of citizens since 1980. Though the county seemed to be recovering population in 2000, it has since shrunk further. The county's median age and age distribution indicate a population capable of productivity in the labor force, but participation is low.

Employment consists mainly of Government; Trade, Transportation, and Utilities; Natural Resources and Mining; and Education and Health Services. Three of these sectors were also the major wage contributors. Even as Wayne County total wages have been on the rise, there is a significant lack of labor force participation in the county, indicating an increased apathy towards the labor force. Twenty-five percent of Wayne County income is from

government transfers. Overtime, the ratio of government transfers to income has risen and fallen in general with the national business cycle, but the trend has been mostly stable. However Wayne County's transfer ratio is less than the West Virginia state average in government transfers, as many counties derive over a third of their incomes from government transfers.

Wayne County's total enrollment has fallen in the past few years, reflecting the falling population, but the dropout rate is low, which indicates an involved youth and value of education. Wayne County's residents have relatively good educational achievement overall, with nineteen percent of residents possessing a post-secondary degree.

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

Transportation is an important issue in any development strategy. Wayne County has various transportation options, including a major interstate in the north, an extensive rail system, and a Tri-State Airport, the second largest airport by enplanements in the state.

Wayne County also has four historic sites in the National Register and several pieces of historic architecture designated by the state.

Historic preservation can be a basis for tourism, cultural identity, and community cohesion.

This plan also reviews energy and environmental issues in Wayne County. The environment of the county should be considered in an overall development strategy. Wayne County is heavily forested and contains a state park and a state forest. Wayne County is also not on the list of air pollution non-attainment areas, which is positive. Wayne County has a significant network of gas and oil pipes as well as an oil field. In renewable energy, biomass appears to be the most reasonable and productive option for Wayne County.

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 Wayne County. The researchers created a distance analysis using a scoring system based on distance to certain essential utilities and features,

summed the scores, and plotted each score for each mine site. A workforce analysis was conducted to determine available labor within certain radii for each site, and a retail analysis was conducted to determine which areas had the most retail activity.

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

The tables below are comprehensive comparisons of the five post-mine sites. In Tables A and B, distances and total scores are compared between sites, providing an idea of the more suitable sites under a considered criterion. For example, if we want to look for a site that is located closest to oil and gas pipes, the answer is site ranking #5, permit ID S503996. However, if we wanted the site closest to interstate, the best site is site ranking #1, permit ID S502708.

Table C explains how each criterion contributes to the final total score and the importance of the weights. Because of the assumption that one criterion may be more important than the others (different weights), the site with higher absolute and relative scores is still able to receive a smaller total score than the other sites. Site ranking #2 (PermitID S502997) is a good explanation of this situation. Site #2 has smaller absolute scores compared to Sites ranking #3 and #4. Still, Site #2 receives a higher total score because the distances from this site to major criteria (with weights from 8-10) are much shorter than Sites #3 and #4.

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

Suitability Ranking	1	2	3	4	5	Weight
Existing Highway	1.17	6.64	6.54	9.30	12.08	8
Proposed Highway	34.35	36.83	37.40	33.09	27.50	9
Intermodal Terminal Facilities	24.06	39.53	40.11	41.91	46.19	6
Interstate	28.95	38.30	38.89	40.68	46.80	8
National Waterway Network Ports	37.74	42.64	43.22	45.02	51.14	5
Sewer Treatment Facilities	32.17	34.90	35.48	31.19	25.63	7
Solid Waste Treatment Facilities	4.40	5.10	5.68	7.47	12.61	8
Tri-state Airport	31.74	45.65	46.24	48.03	53.14	3
Yeager Airport	81.08	61.44	61.35	65.98	68.54	3
Broadband	0.10	0.11	0.19	1.17	1.36	9
Gas Pipes	3.70	6.57	6.34	4.72	2.70	6
National Waterway Network	0.92	12.85	13.13	12.10	10.99	4
Power Lines	1.11	8.21	8.53	9.12	6.94	10
Oil Pipes	2.87	0.90	0.46	0.27	0.08	6
Railroad	0.87	5.26	4.91	5.95	7.63	5
Sewer Lines	12.05	14.45	14.69	14.48	12.35	8
Water Lines	0.85	3.85	3.96	3.72	1.82	10

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

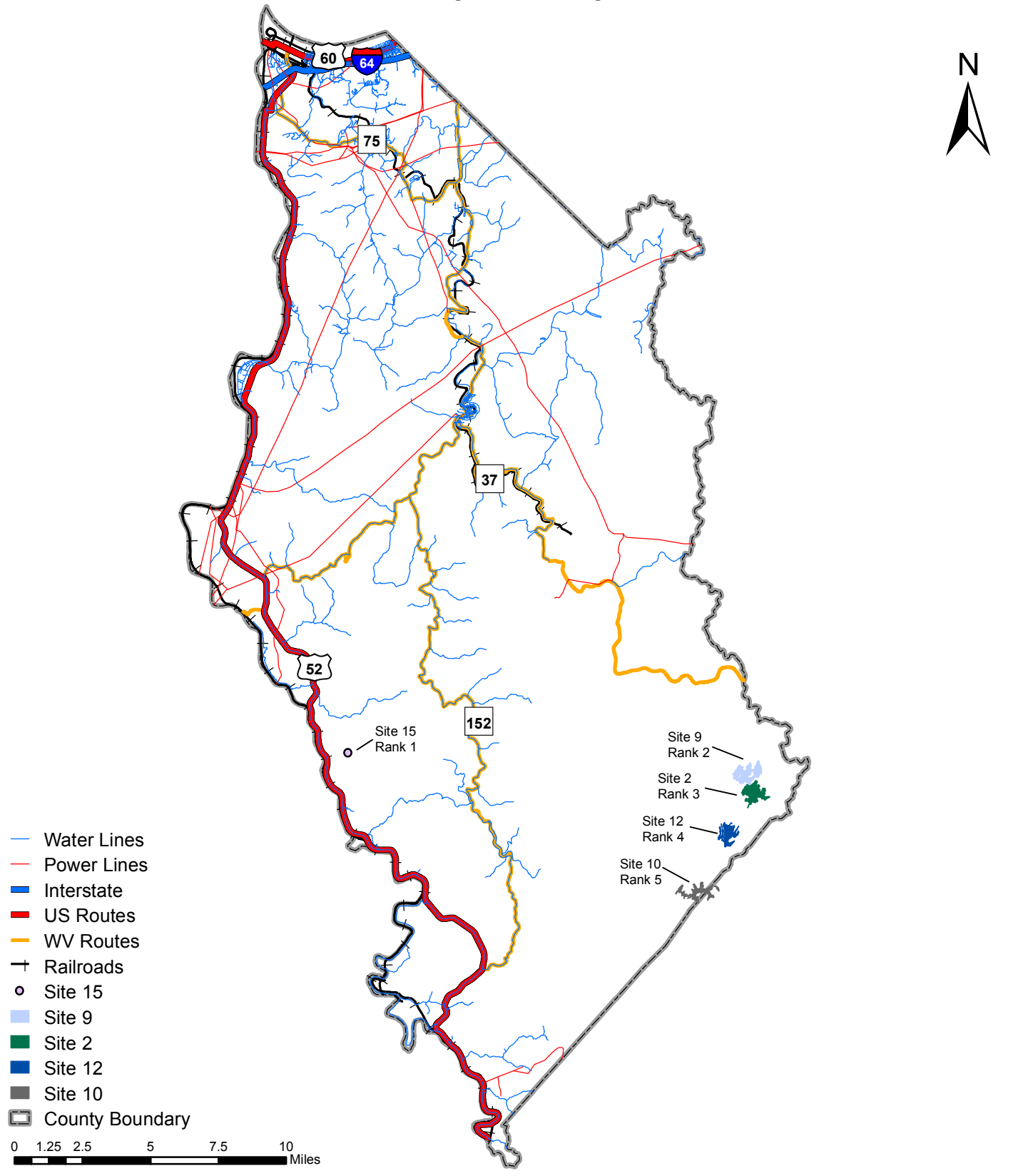
Suitability Ranking	1	2	3	4	5	Weight
Existing Highway	80	56	56	42	10	8
Proposed Highway	4.5	2.25	2.25	6.75	9	9
Intermodal Terminal Facilities	6	6	6	4.5	1.5	6
Interstate	8	8	8	6	2	8
National Waterway Network Ports	5	5	5	3.75	1.25	5
Sewer Treatment Facilities	3.5	1.75	1.75	5.25	7	7
Solid Waste Treatment Facilities	80	56	56	42	10	8
Tri-state Airport	3	3	3	2.25	0.75	3
Yeager Airport	0.75	3	3	2.25	0.75	3
Broadband	90	90	67.5	45	22.5	9
Gas Pipes	60	10.5	10.5	45	60	6
National Waterway Network	40	5	5	10	15	4
Power Lines	100	70	52.5	35	70	10
Oil Pipes	15	15	45	60	60	6
Railroad	50	35	50	26.25	17.5	5
Sewer Lines	40	30	20	20	40	8
Water Lines	100	75	75	75	100	10
Total Score	685.75	471.5	466.5	431	427.25	

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

Suitability Ranking	1	2	3	4	5	Weight
Existing Highway	10	7	7	7	5	8
Proposed Highway	1	1	1	1	1	9
Intermodal Terminal Facilities	1	1	1	1	1	6
Interstate	1	1	1	1	1	8
National Waterway Network Ports	1	1	1	1	1	5
Sewer Treatment Facilities	1	1	1	1	1	7
Solid Waste Treatment Facilities	10	7	7	7	5	8
Tri-state Airport	1	1	1	1	1	3
Yeager Airport	1	1	1	1	1	3
Broadband	10	10	10	10	10	9
Gas Pipes	10	7	7	10	10	6
National Waterway Network	10	5	5	5	5	4
Power Lines	10	7	7	7	7	10
Oil Pipes	10	10	10	10	10	6
Railroad	10	7	10	7	7	5
Sewer Lines	5	5	5	5	5	8
Water Lines	10	10	10	10	10	10
Total Absolute Score	102	82	85	85	81	
Suitability Ranking	1	2	3	4	5	Weight
Existing Highway	10	10	10	7.5	2.5	8
Proposed Highway	5	2.5	2.5	7.5	10	9
Intermodal Terminal Facilities	10	10	10	7.5	2.5	6
Interstate	10	10	10	7.5	2.5	8
National Waterway Network Ports	10	10	10	7.5	2.5	5
Sewer Treatment Facilities	5	2.5	2.5	7.5	10	7
Solid Waste Treatment Facilities	10	10	10	7.5	2.5	8
Tri-state Airport	10	10	10	7.5	2.5	3
Yeager Airport	2.5	10	10	7.5	2.5	3
Broadband	10	10	7.5	5	2.5	9
Gas Pipes	10	2.5	2.5	7.5	10	6
National Waterway Network	10	2.5	2.5	5	7.5	4
Power Lines	10	10	7.5	5	10	10
Oil Pipes	2.5	2.5	7.5	10	10	6
Railroad	10	10	10	7.5	5	5
Sewer Lines	10	7.5	5	5	10	8
Water Lines	10	7.5	7.5	7.5	10	10
Total Relative Score	145	127.5	125	120	102.5	

Top Five Sites for Potential Development

Wayne County



Source: Rahall Transportation Institute Analysis 2013

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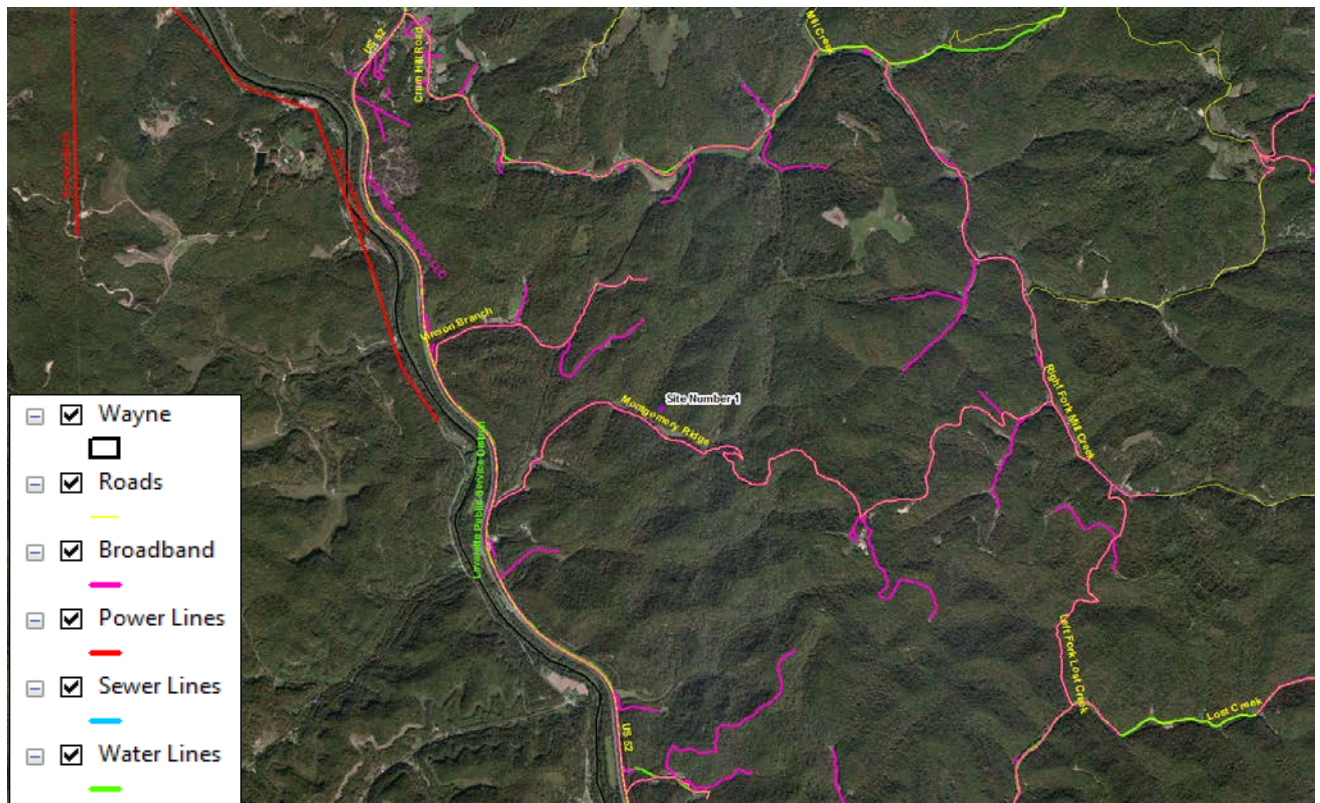
Site's General Info

Permittee	Meadow Fork Mining Co Llc
Facility Name	Powdermill Branch Surface Mine
Permit ID	S502708
Issue Date	1/18/2012
Expiration Date	1/18/2017
Current Acres	124
Lat	38° 02' 53.0000"
Long	82° 31' 14.0000"
Nearest Post Office	Fort Gay

Site Number	15
Suitability Ranking	1
Total Score	685.75

Distance Analysis Results

Existing Highway	1.17
Proposed Highway	34.35
Intermodal Terminal Facilities	24.06
Interstate	28.95
National Waterway Network Ports	37.74
Sewer Treatment Facilities	32.17
Solid Waste Treatment Facilities	4.40
Tri-state Airport	31.74
Yeager Airport	81.08
Broadband	0.10
Gas Pipes	3.70
National Waterway Network	0.92
Power Lines	1.11
Oil Pipes	2.87
Railroads	0.87
Sewer Lines	12.05
Water Lines	0.85



Site's General Info

Permittee	Argus Energy Wv Llc
Facility Name	Rollem Fork #3
Permit ID	S501895
Issue Date	1/5/1996
Expiration Date	1/5/2001
Current Acres	274.99
Lat	38° 02' 02.0000"
Long	82° 13' 56.0000"
Nearest Post Office	Cove Gap

Site Number	2
Suitability Ranking	3
Total Score	466.5

Distance Analysis Results

Existing Highway	6.54
Proposed Highway	37.40
Intermodal Terminal Facilities	40.11
Interstate	38.89
National Waterway Network Ports	43.22
Sewer Treatment Facilities	35.48
Solid Waste Treatment Facilities	5.68
Tri-state Airport	46.24
Yeager Airport	61.35
Broadband	0.19
Gas Pipes	6.34
National Waterway Network	13.13
Power Lines	8.53
Oil Pipes	0.46
Railroads	4.91
Sewer Lines	14.69
Water Lines	3.96



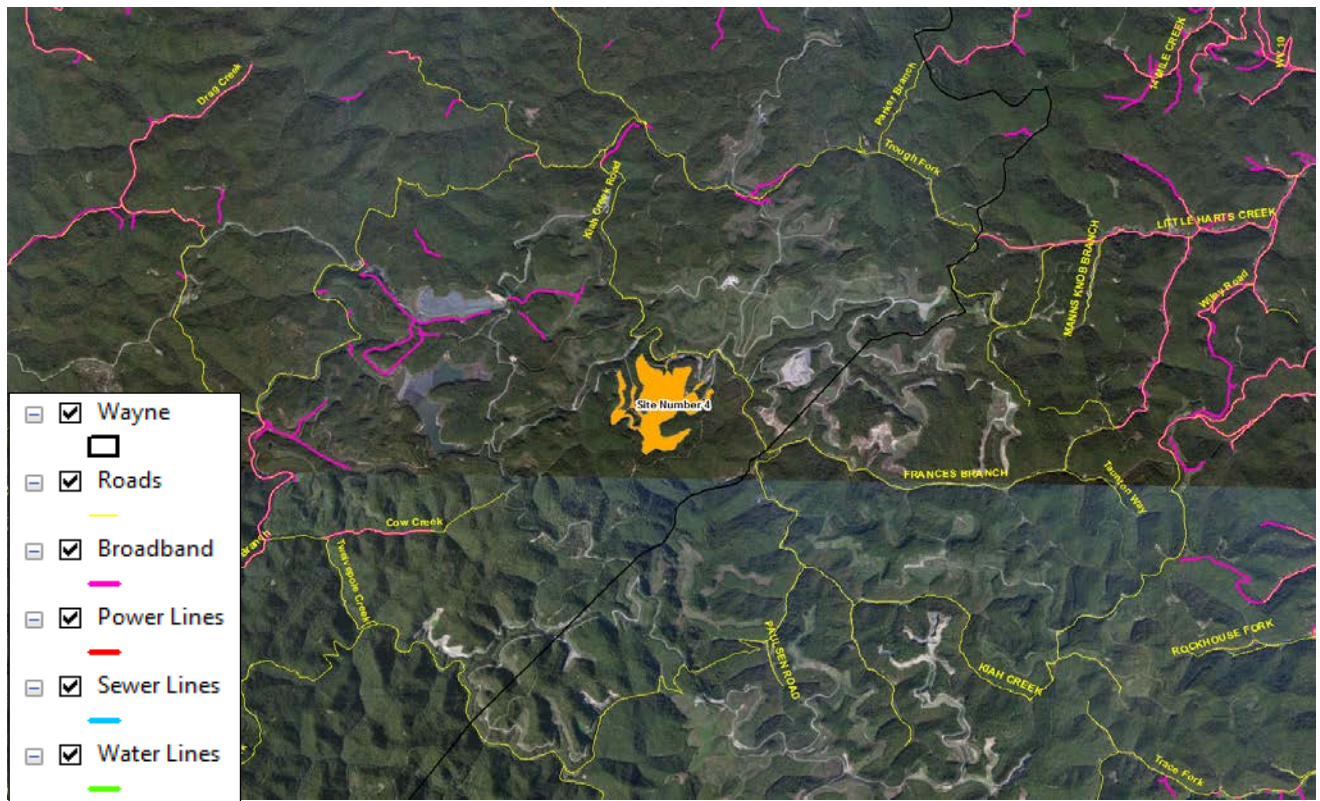
Site's General Info

Permittee	Argus Energy Wv Llc
Facility Name	Left Fork of Parker Branch Mine
Permit ID	S506389
Issue Date	9/29/1990
Expiration Date	9/29/2015
Current Acres	198.34
Lat	38° 00' 43.0000"
Long	82° 14' 46.0000"
Nearest Post Office	Harts

Site Number	12
Suitability Ranking	4
Total Score	431

Distance Analysis Results

Existing Highway	9.30
Proposed Highway	33.09
Intermodal Terminal Facilities	41.91
Interstate	40.68
National Waterway Network Ports	45.02
Sewer Treatment Facilities	31.19
Solid Waste Treatment Facilities	7.47
Tri-state Airport	48.03
Yeager Airport	65.98
Broadband	1.17
Gas Pipes	4.72
National Waterway Network	12.10
Power Lines	9.12
Oil Pipes	0.27
Railroads	5.95
Sewer Lines	14.48
Water Lines	3.72



Site's General Info

Permittee	Argus Energy Wv Llc
Facility Name	Wiley Br Surface Mine
Permit ID	S503996
Issue Date	10/21/1997
Expiration Date	10/21/2017
Current Acres	162.89
Lat	37° 58' 59.0000"
Long	82° 15' 43.0000"
Nearest Post Office	Unknown

Site Number	10
Suitability Ranking	5
Total Score	427.25

Distance Analysis Results

Existing Highway	12.08
Proposed Highway	27.50
Intermodal Terminal Facilities	46.19
Interstate	46.80
National Waterway Network Ports	51.14
Sewer Treatment Facilities	25.63
Solid Waste Treatment Facilities	12.61
Tri-state Airport	53.14
Yeager Airport	68.54
Broadband	1.36
Gas Pipes	2.70
National Waterway Network	10.99
Power Lines	6.94
Oil Pipes	0.08
Railroads	7.63
Sewer Lines	12.35
Water Lines	1.82



I. Introduction

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

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

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

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

This plan provides information and analysis specifically for Wayne County. Government services and trade, transportation and utilities dominate Wayne County's economy, like many economies in the West Virginia coalfields. Its population continues to fall despite several positive economic indicators, specifically total wages and the dropout rate. As Wayne County has little experience with post mine land use, this plan will analyze demographic activity and provide information that will encourage progress.

II. Planning Area

Wayne County was formed in 1842, twenty-one years before West Virginia became a state. The county was named after a Revolutionary War legend. Wayne County's proximity to Cabell, which contains the city of Huntington, saw a major division in county settlement, with the northern part becoming heavily populated, while the southern part remained significantly rural. As with many of the coalfield counties, the boom from natural resource extraction brought people and money to the area, but through the Great Depression and the withdrawal of many natural resource industries, Wayne began to slip. Though possessing several positive economic indicators, Wayne County still has a great amount of work to do to improve its economic performance.¹ Analyzing this plan and the sites provided will be the best way to begin an overall economic strategy built around post mine land use.

¹ Massey, Tim "Wayne County," *The West Virginia Encyclopedia*, Accessed July 2, 2013, www.wvencyclopedia.org/articles/934.

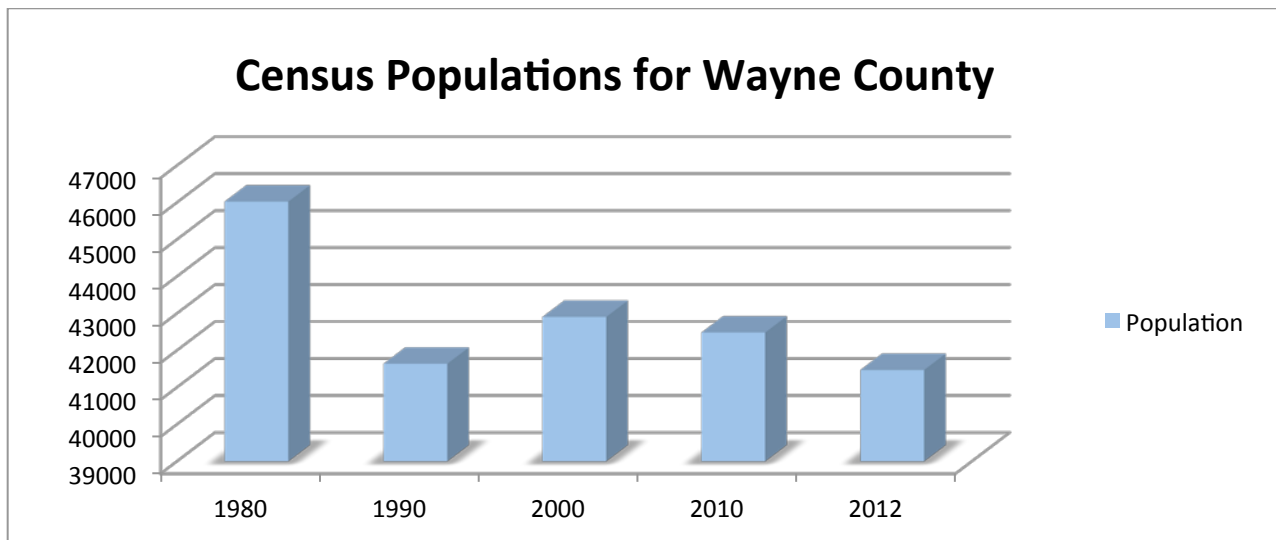
III. Existing Conditions

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

Population

The population of Wayne County in 2011 was 41,533 according to the 2011 American Community Survey (ACS) 5-year estimates, ranking it 14th in county population among the 55 counties in West Virginia.² The decennial censuses show that Wayne County lost almost 9 percent of its population between 1980 and 1990, recovered in 2000, but began decreasing again afterwards.

Figure 1

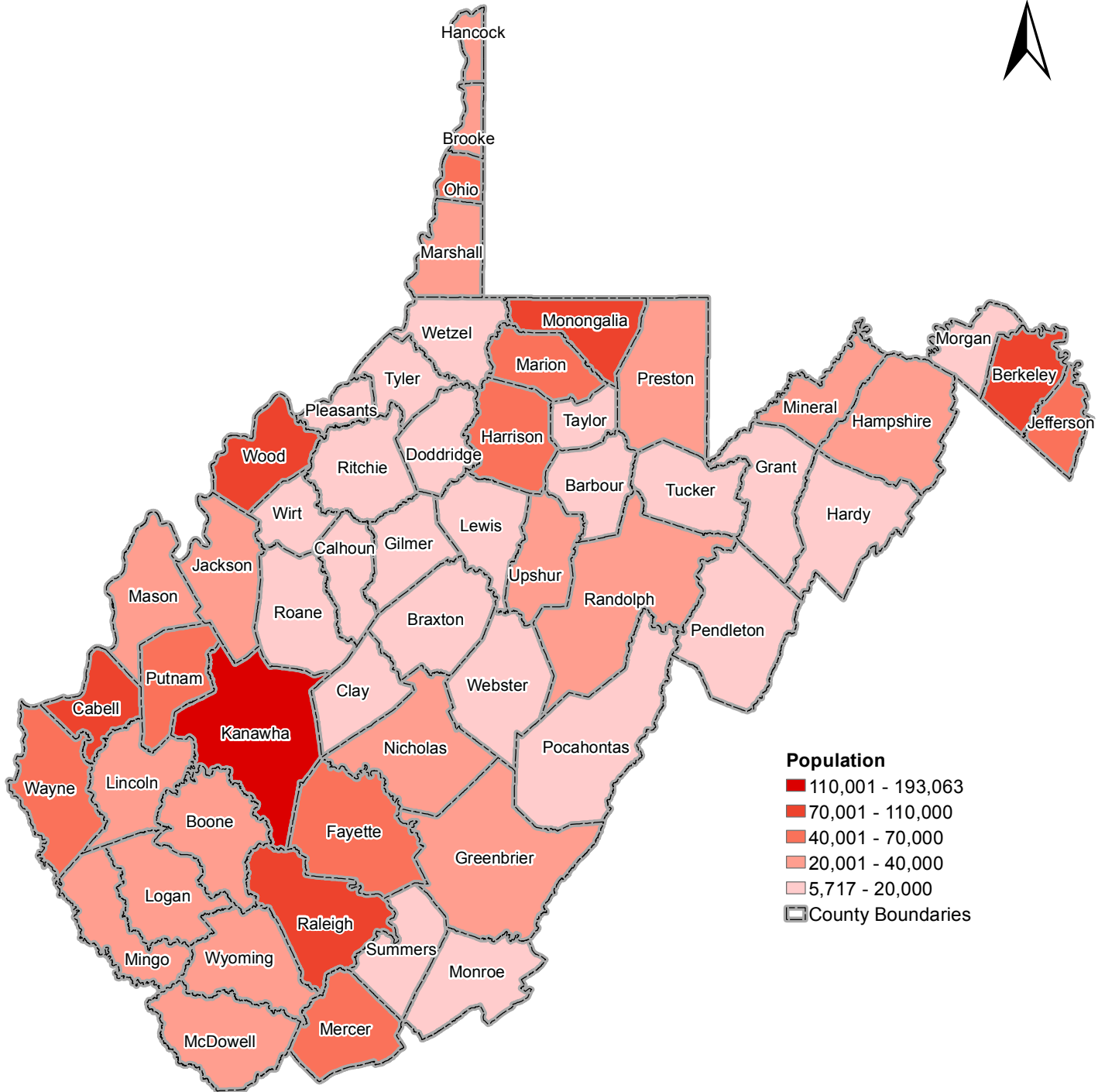


Source: Stats Indiana, USA Counties in Profile

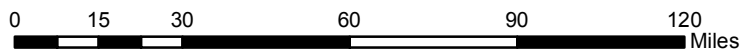
Map 1 illustrates the Wayne County population compared to West Virginia overall. Wayne is in the middle of the spectrum, containing part of the Huntington MSA but having a very rural southern area.

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

Demographic Population



Population
■ 110,001 - 193,063
■ 70,001 - 110,000
■ 40,001 - 70,000
■ 20,001 - 40,000
■ 5,717 - 20,000
□ County Boundaries



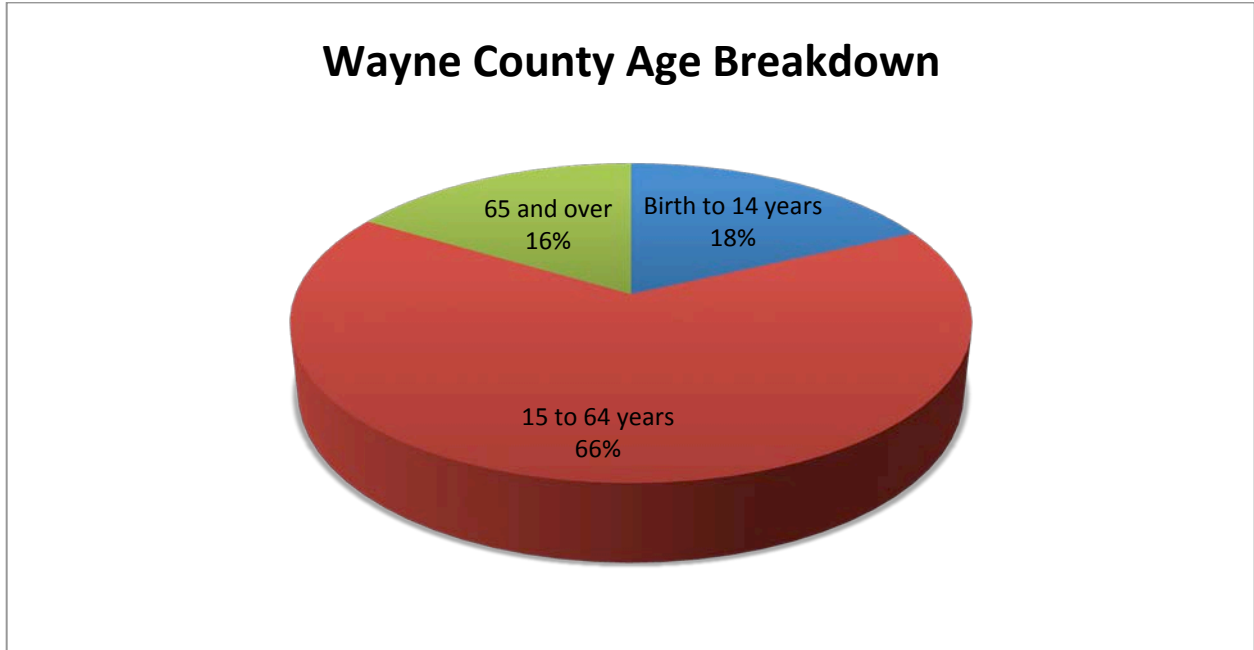
Source: United States Census Bureau 2011

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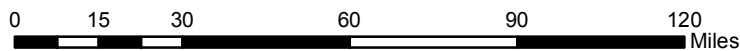
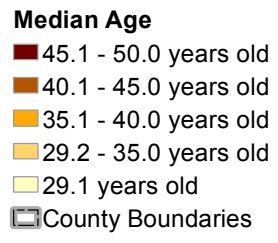
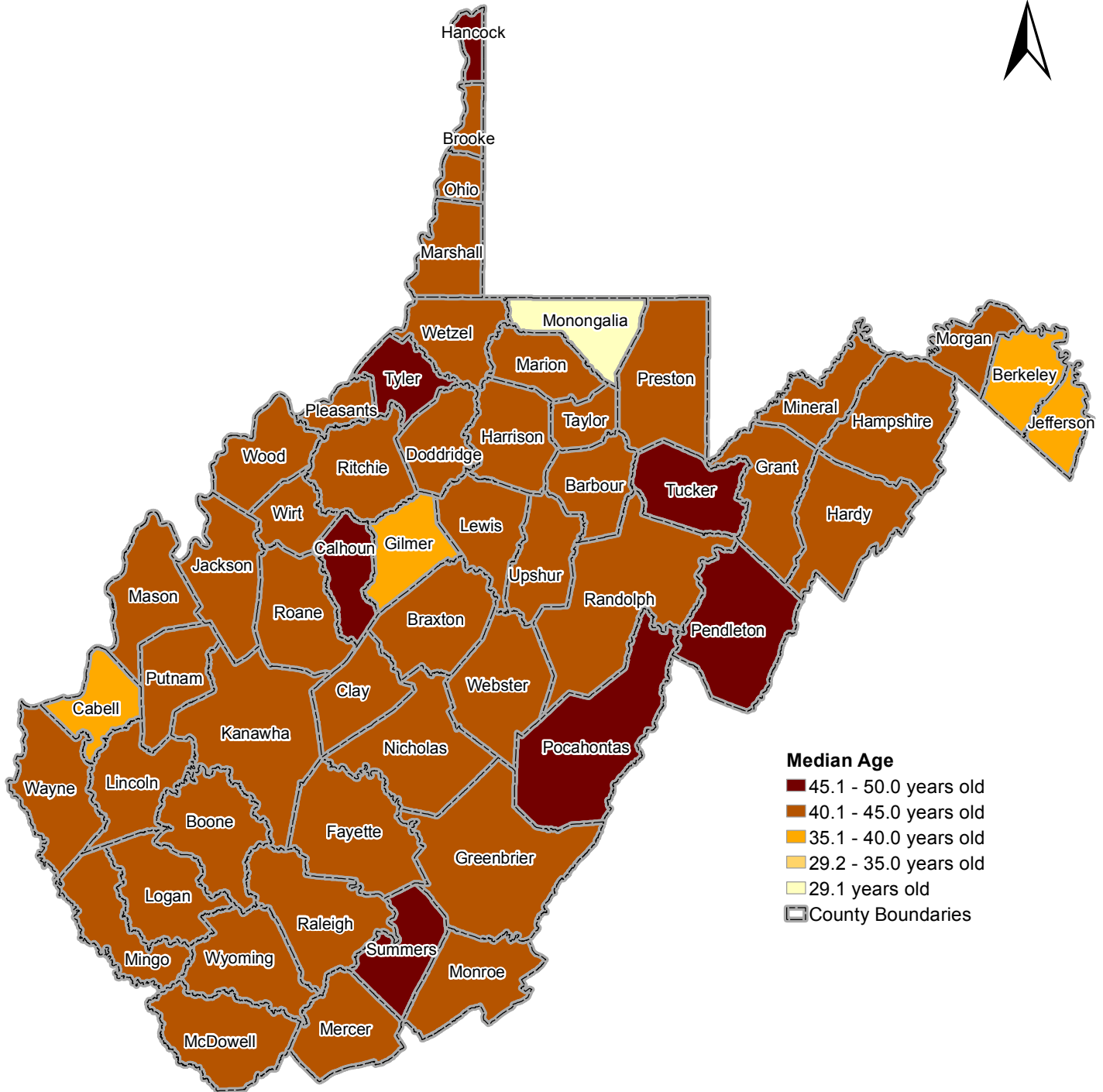
According to the ACS, approximately 23 percent of Wayne County residents are 60 years of age and over, while over 19 percent are between 5 and 19 years of age and almost 6 percent are below the age of 5. Approximately 6,980 people are of retirement age. The median age in Wayne is 41.5, which is the same as the West Virginian median age (Map 2). The majority of the population is of working age, as denoted in Figure 2.

Figure 2



Source: 2011 American Community Survey 5-Year Estimate Calculation

Demographic Median Age



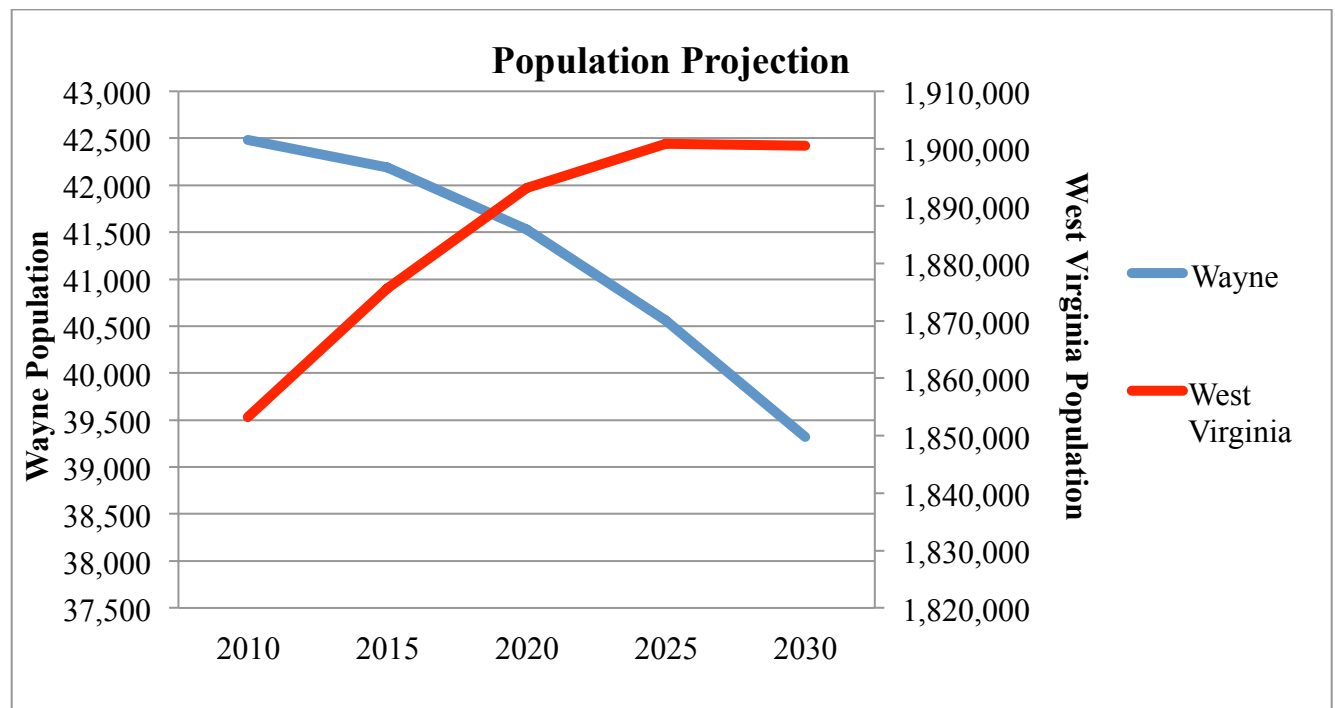
Source: United States Census Bureau 2011

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The Bureau of Business and Economic Research at West Virginia University projects a 7.4 percent decrease in the Wayne County population between 2010 and 2030, which is significantly different from the projected growth of West Virginia.³ The model for the projection is based on past population patterns and statistics, and should not be taken as permanent. Figure 3 shows the difference between the two projections.

Figure 3



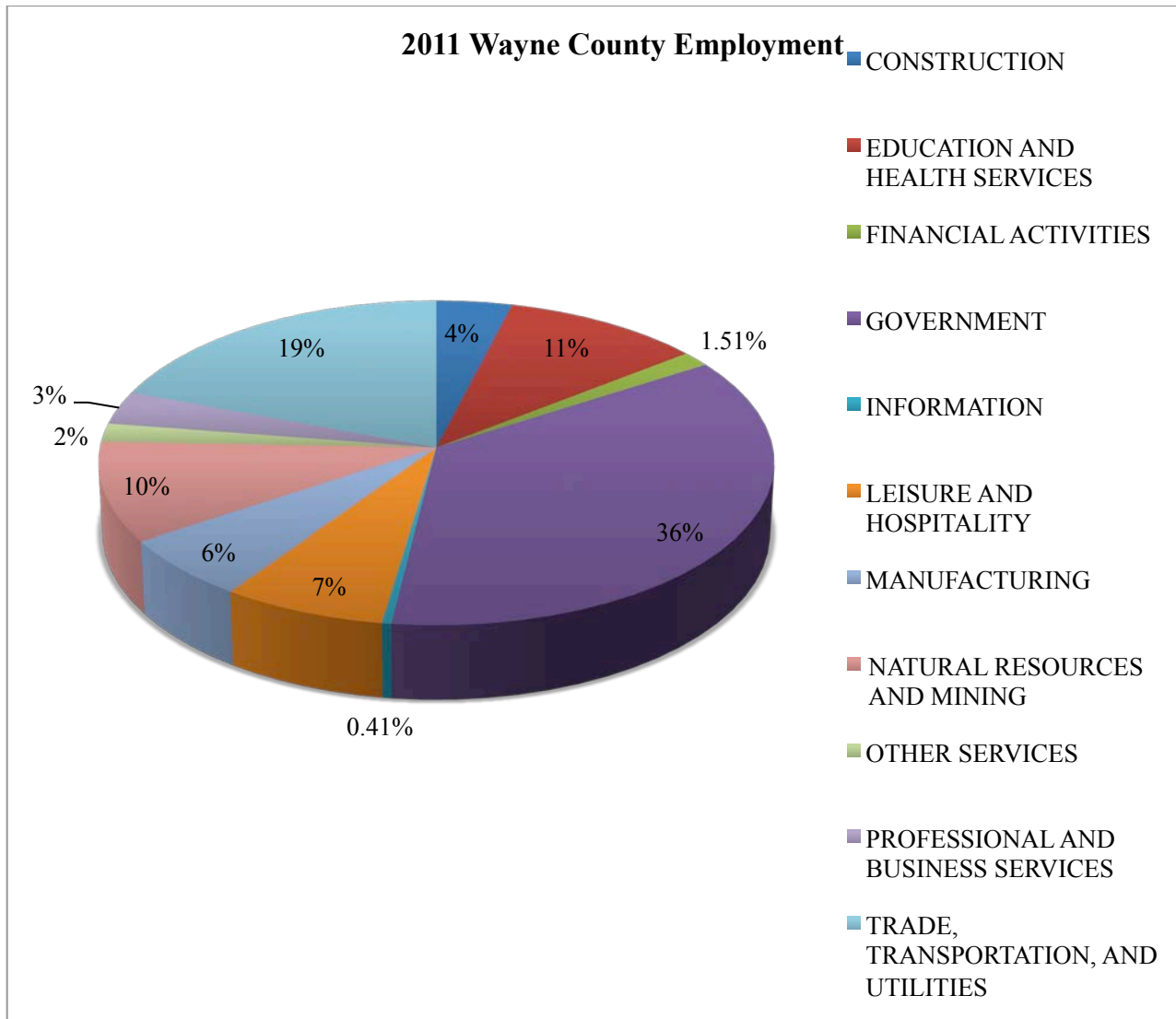
Source: WVU Bureau of Business and Economic Research

Employment

Workforce WV has a complete dataset on employment numbers and wages. The total number of employed in 2011 was 9,042. The largest four sectors are in line with the largest sectors in most other counties: Trade, Transportation, and Utilities; Education and Health Services; Natural Resources and Mining; and Government. Education and Health Services is the third highest employer, but is not one of the highest wage contributors, an understandable scenario. This is a fairly varied mix of employers that bodes well when enduring recessions or government budget cutting; however Government is an incredibly large sector, making the economy very vulnerable to changes in policy.

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

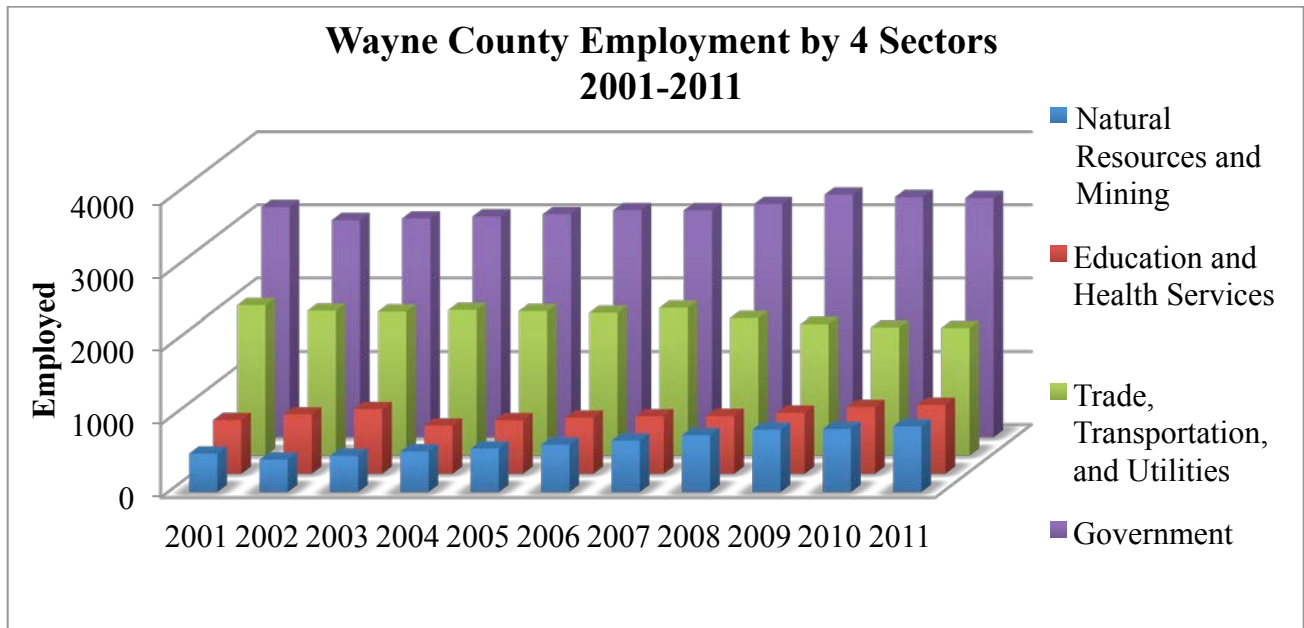
Figure 4



Source: Workforce WV

Four sectors have been the major contributors to employment throughout the past decade: Government; Trade, Transportation and Utilities; Education and Health Services; and Natural Resources and Mining (Figure 5). Government has consistently been the highest employer, while Trade, Transportation, and Utilities has been consistently second. The recession is reflected in the Trade, Transportation, and Utilities sector with a steady decline since 2008, but no other sector other than Government employs as many people. The Natural Resources and Mining sector has seen fairly steady growth in employment due to the revival of coal mining, and now almost equals the Education and Health Services sector.

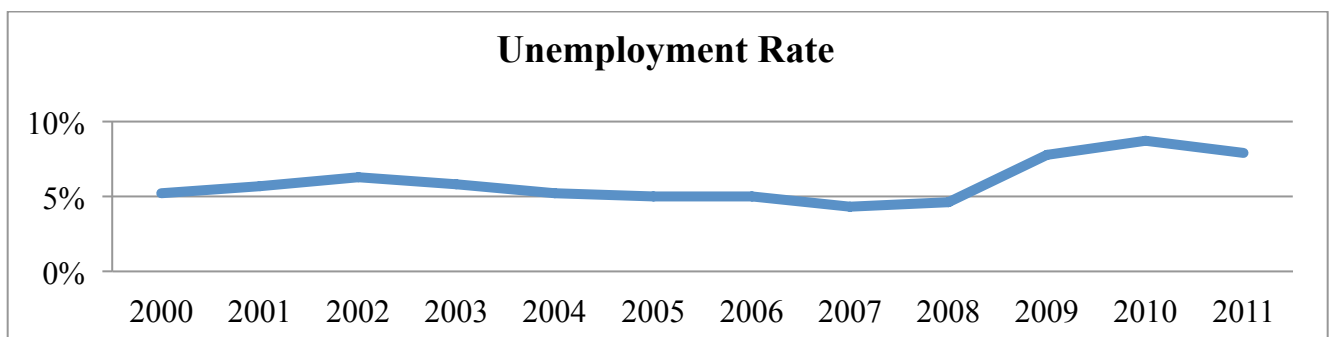
Figure 5



Source: Workforce WV

The civilian labor force in the county is one of the most interesting statistics when determining potential investors. As Map 3 shows, Wayne’s participation rate is in the middle of the scale. This is better participation than most of the coalfield counties, but is still not an encouraging sign. According to the ACS, approximately 51% of Wayne County adults are in the labor force. Of the just over 34,319 citizens over 16 years of age, over 16,000 are not only unemployed, but also have stopped looking for work.⁴ Unemployment was decreasing slowly until the recession in 2008, and recovers slowly (Figure 6). Map 4 provides 2011 unemployment rates for Wayne compared with the rest of the State.

Figure 6

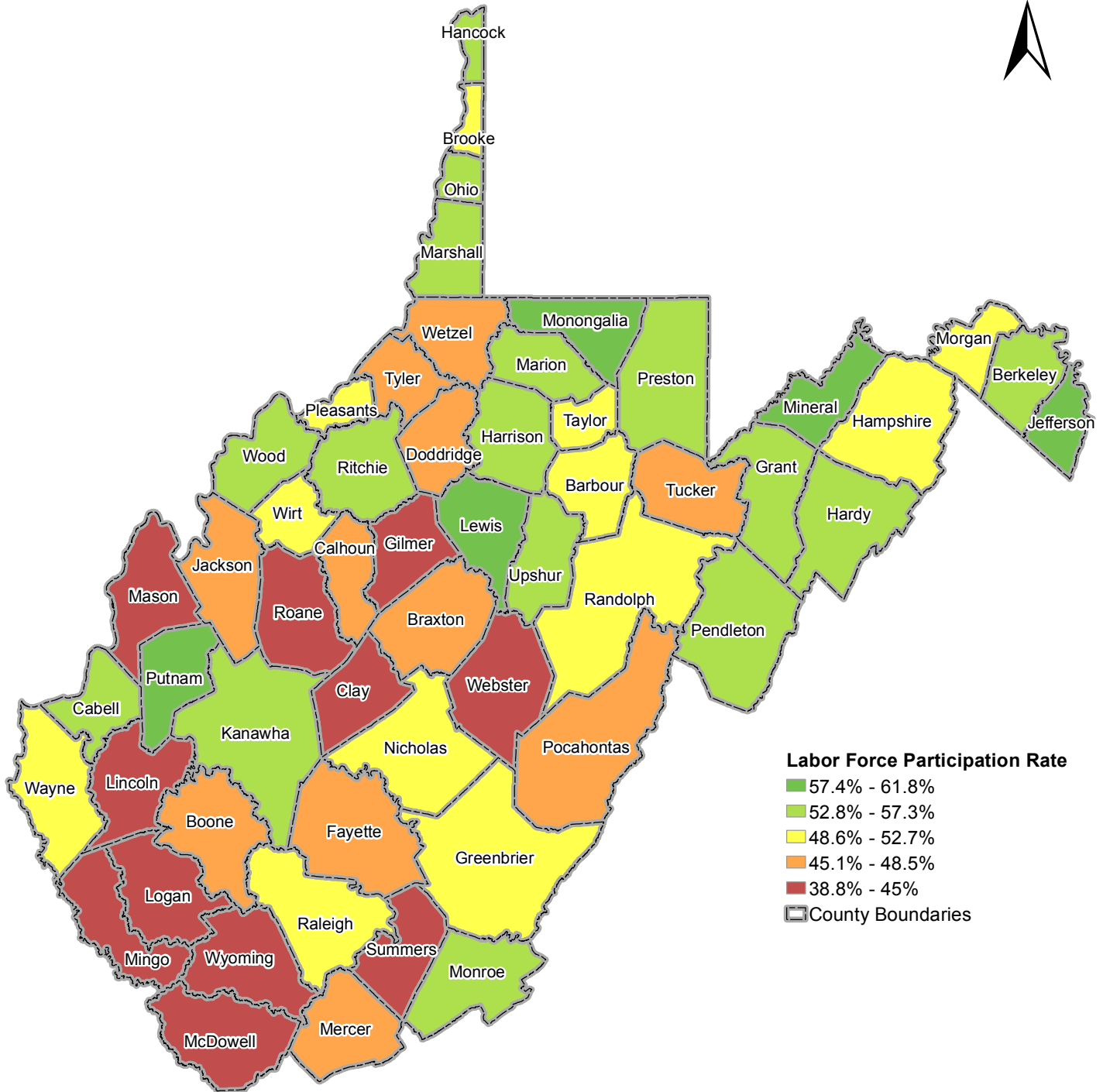


Source: Workforce WV

⁴ United States Census Bureau, “2011 American Community Survey 5-year Estimates,” Accessed April 20, 2013, www.factfinder2.census.gov

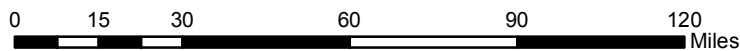
Demographic

Labor Force Participation Rate



Labor Force Participation Rate

- 57.4% - 61.8%
- 52.8% - 57.3%
- 48.6% - 52.7%
- 45.1% - 48.5%
- 38.8% - 45%
- County Boundaries

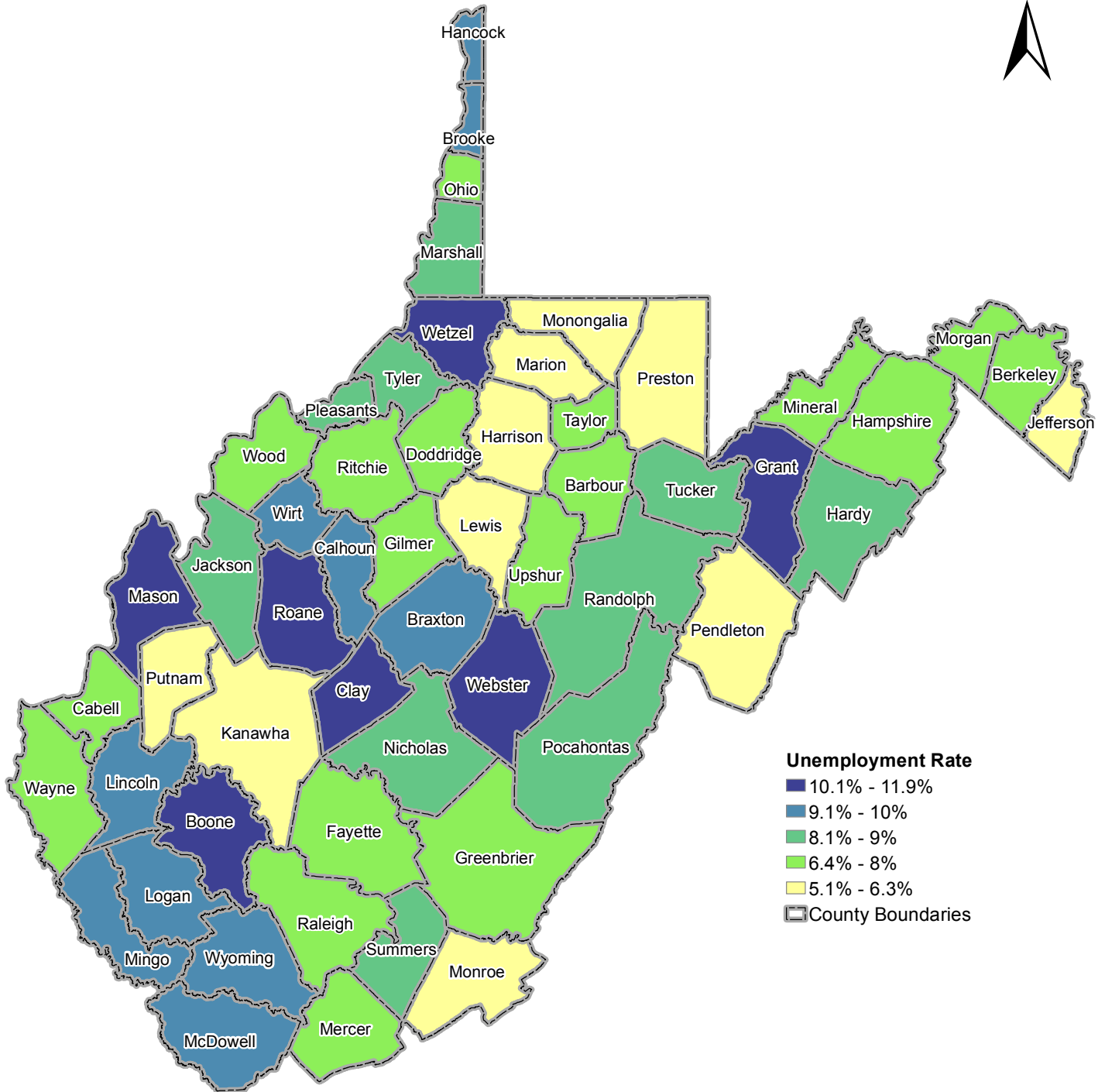


Source: United States Census Bureau 2011

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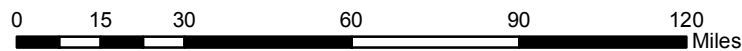


Demographic Unemployment Rate



Unemployment Rate

- 10.1% - 11.9%
- 9.1% - 10%
- 8.1% - 9%
- 6.4% - 8%
- 5.1% - 6.3%
- County Boundaries



Source: United States Census Bureau 2011

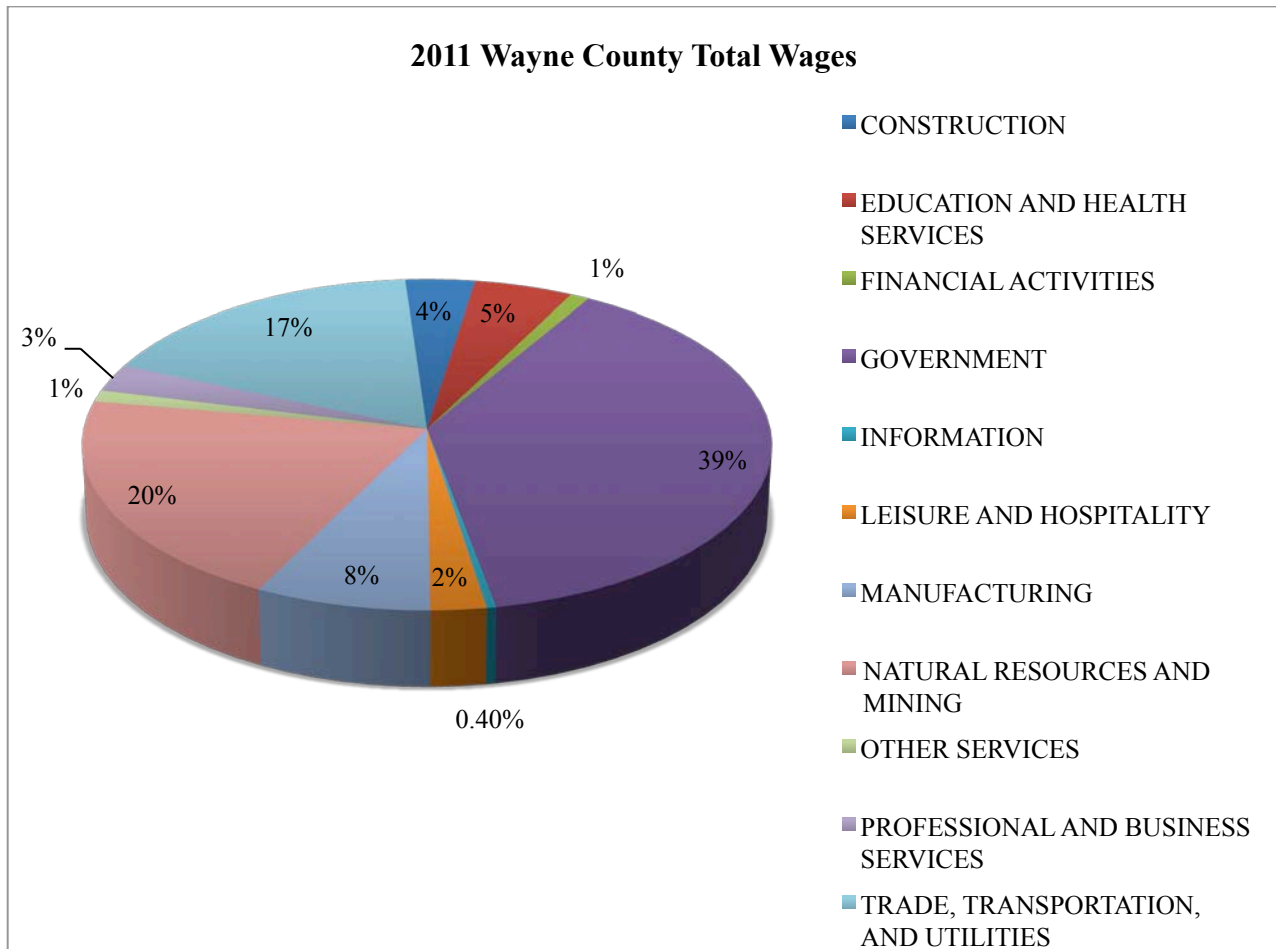
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Wages and Income

Wayne County's highest wage contributor is by far the Government services sector, making up over a third of the total wages of Wayne County, while the second highest, Natural Resources and Mining, makes up a fifth (Figure 7). Education and Health Service only makes up five percent of total wages in the county, even though the sector hires a larger proportion of workers, because of the low salaries in that sector.

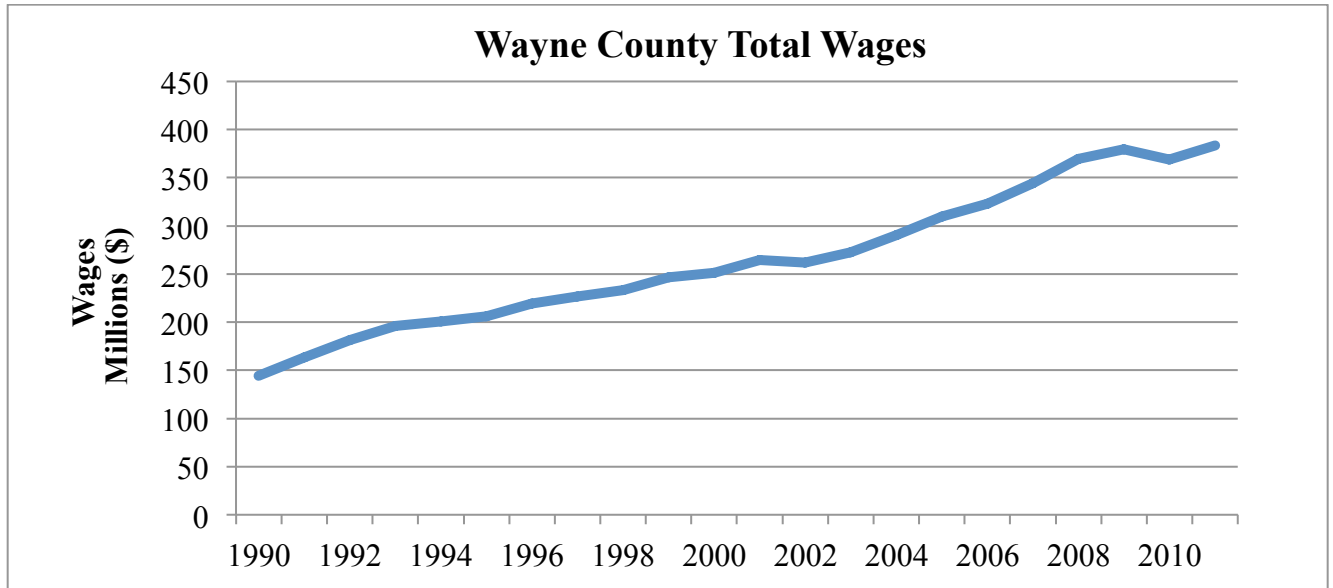
Figure 7



Source: Workforce WV

Historically, wages for Wayne County have shown a consistently upward trajectory (Figure 8). This can mostly be explained through the size and permanence of the Government services sector, but also by the growing share of Natural Resources employment. Trade, Transportation, and Utilities, while vulnerable to recessions, provide a great deal of employment opportunities and money, while Government is less vulnerable to recessions but more vulnerable to political will. It is not however, completely sustainable or indicative of an advanced economy, and efforts should be taken to further diversify the economy.

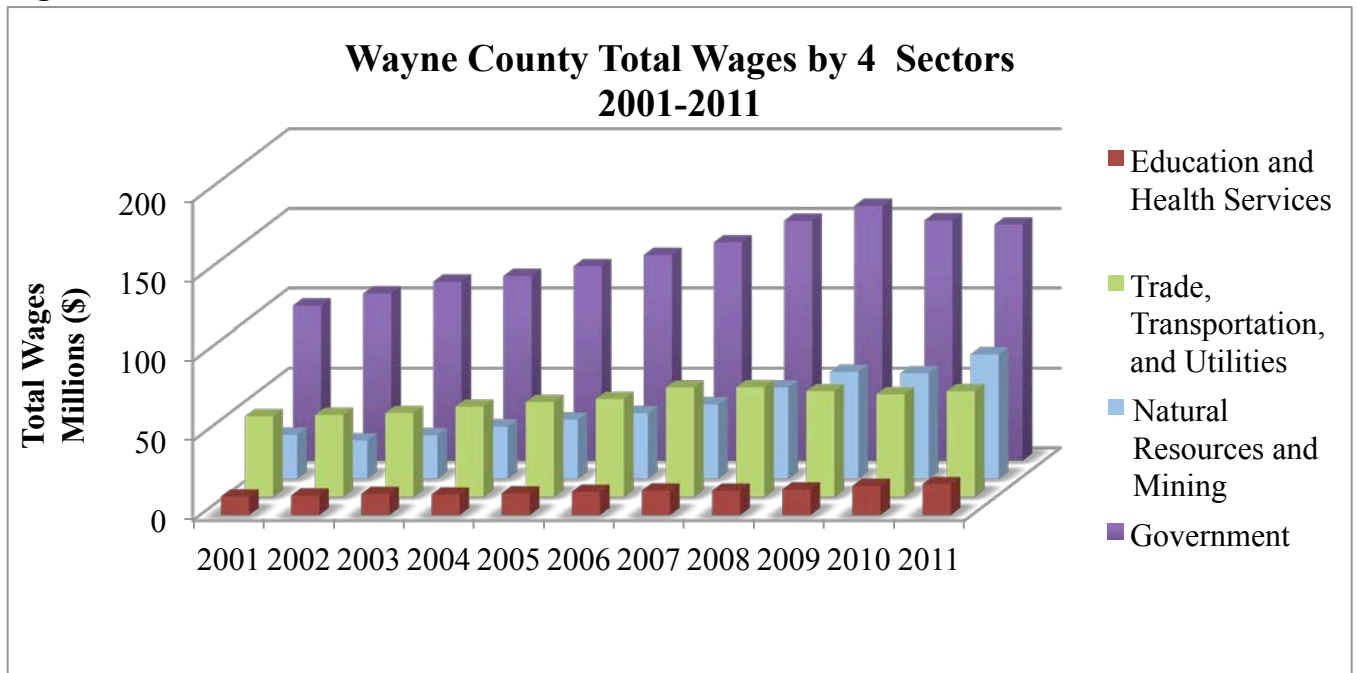
Figure 8



Source: Workforce WV

Figure 9 confirms the general trend in wages, also showcasing the dominance of two major sectors. Government has always been the major sector in Wayne, and the contribution of Trade, Transportation, and Utilities has only recently been overtaken by Natural Resources and Mining.

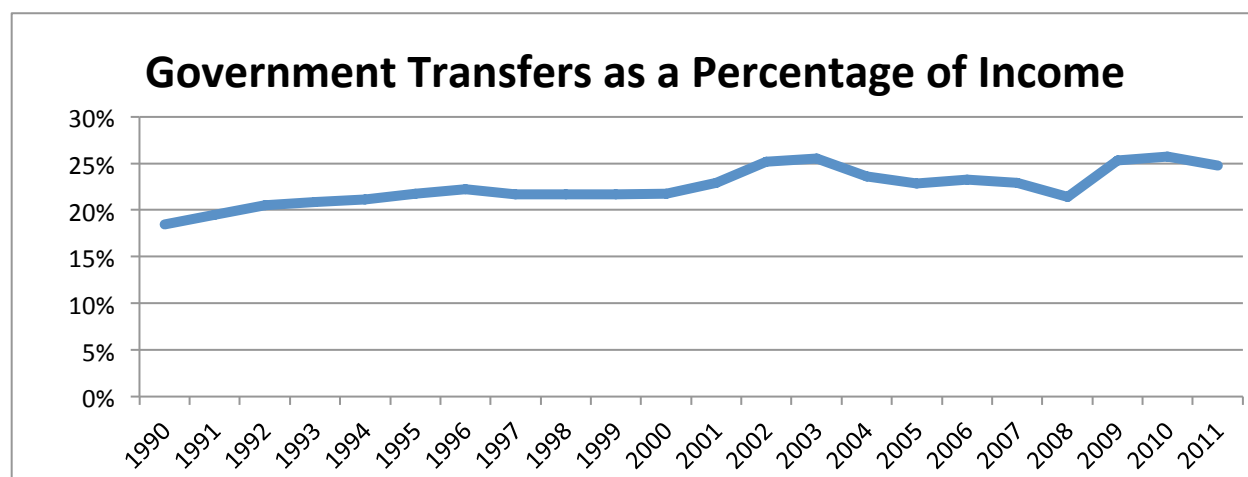
Figure 9



Source: Workforce WV

In most American counties, one would find that the majority of income for people stems from wages. In most West Virginia counties, 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. For example, dividends from stockholdings are considered income, but not wages. Wayne County follows national trends more closely. Wayne County wages were around \$378 million for all industries.⁵ Income for the County was larger (around \$1.2 billion). Though there are many components to income other than work earnings, 25 percent of total Wayne County income is derived from government transfers.⁶ Government transfers accounted for about 95 percent of total transfers to Wayne County, dwarfing transfers from private institutions such as charities. Wayne County's trends loosely follow national and state recession trends in the early 90s, 2000s, and 2008. Intuitively, this is how government transfers should work: transfers increase in bad times as more jobs are eliminated, and decrease in good times as more people are able to become employed or reemployed.

Figure 10



Source: United States Bureau of Economic Analysis

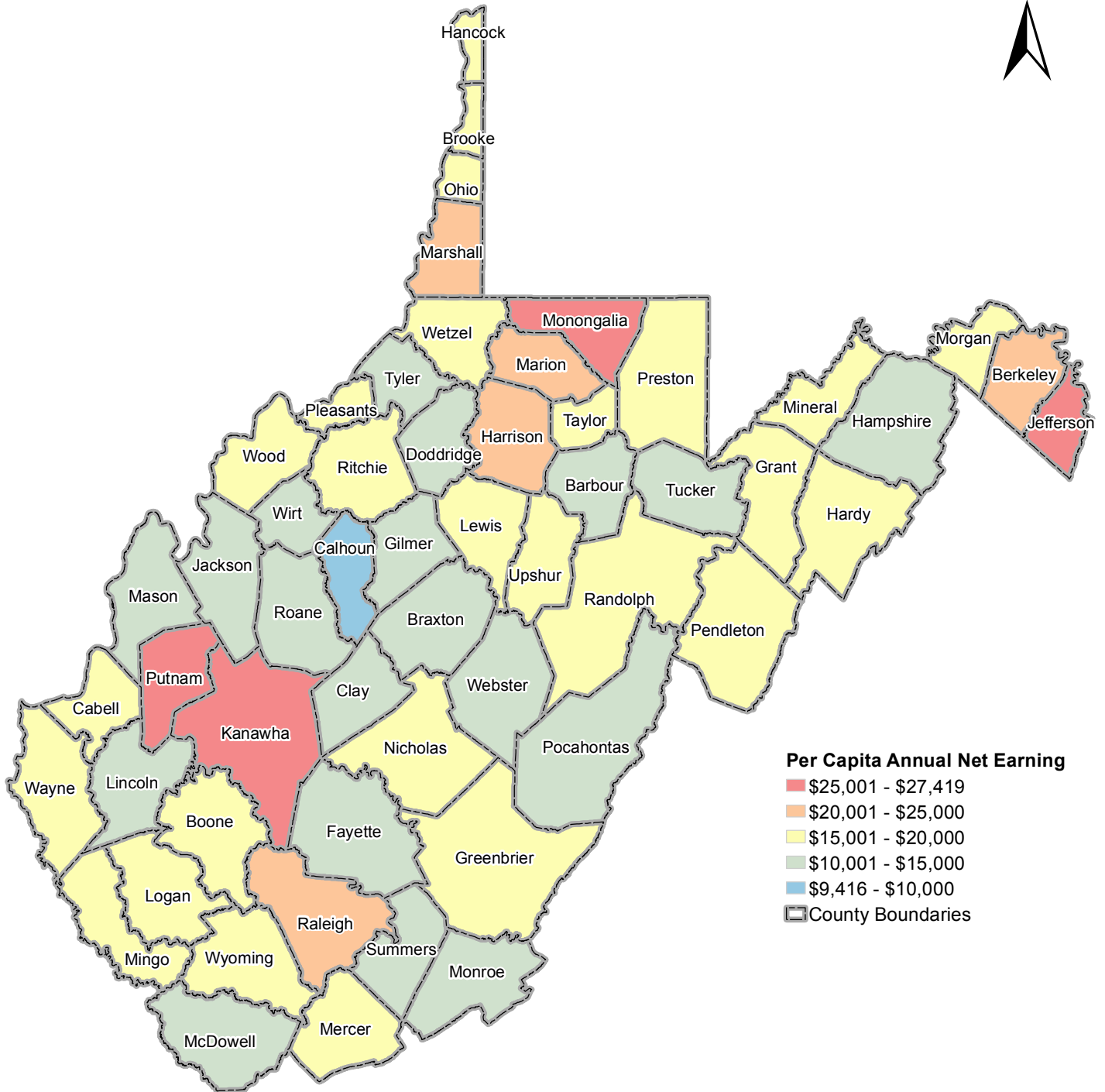
The total personal income of Wayne County is therefore made up of about 25 percent government transfers and around 70 percent wages from work. Wayne County about equals the state average in government transfers. According to the BEA, per capita income was \$29,361 for Wayne County. Earned income, or income from work, is displayed in Map 5, and Wayne is ranked about average in earned income in West Virginia.

⁵ "Employment and Wages – 2011, Wayne County," Workforce WV, Accessed February 13, 2013, <http://www.workforcewv.org/lmi/EW2011/ew11x059.htm>

⁶ "Tables CA 04 and CA 35 analysis," Bureau of Economic Analysis, Regional Economic Accounts, Local Area Person Income and Employment, Accessed February 13, 2013, <http://www.bea.gov/regional/index.htm>.

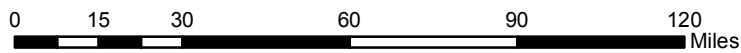
Demographic

Per Capita Annual Net Earning



Per Capita Annual Net Earning

- \$25,001 - \$27,419
- \$20,001 - \$25,000
- \$15,001 - \$20,000
- \$10,001 - \$15,000
- \$9,416 - \$10,000
- ▭ County Boundaries



Source: United States Census Bureau 2011

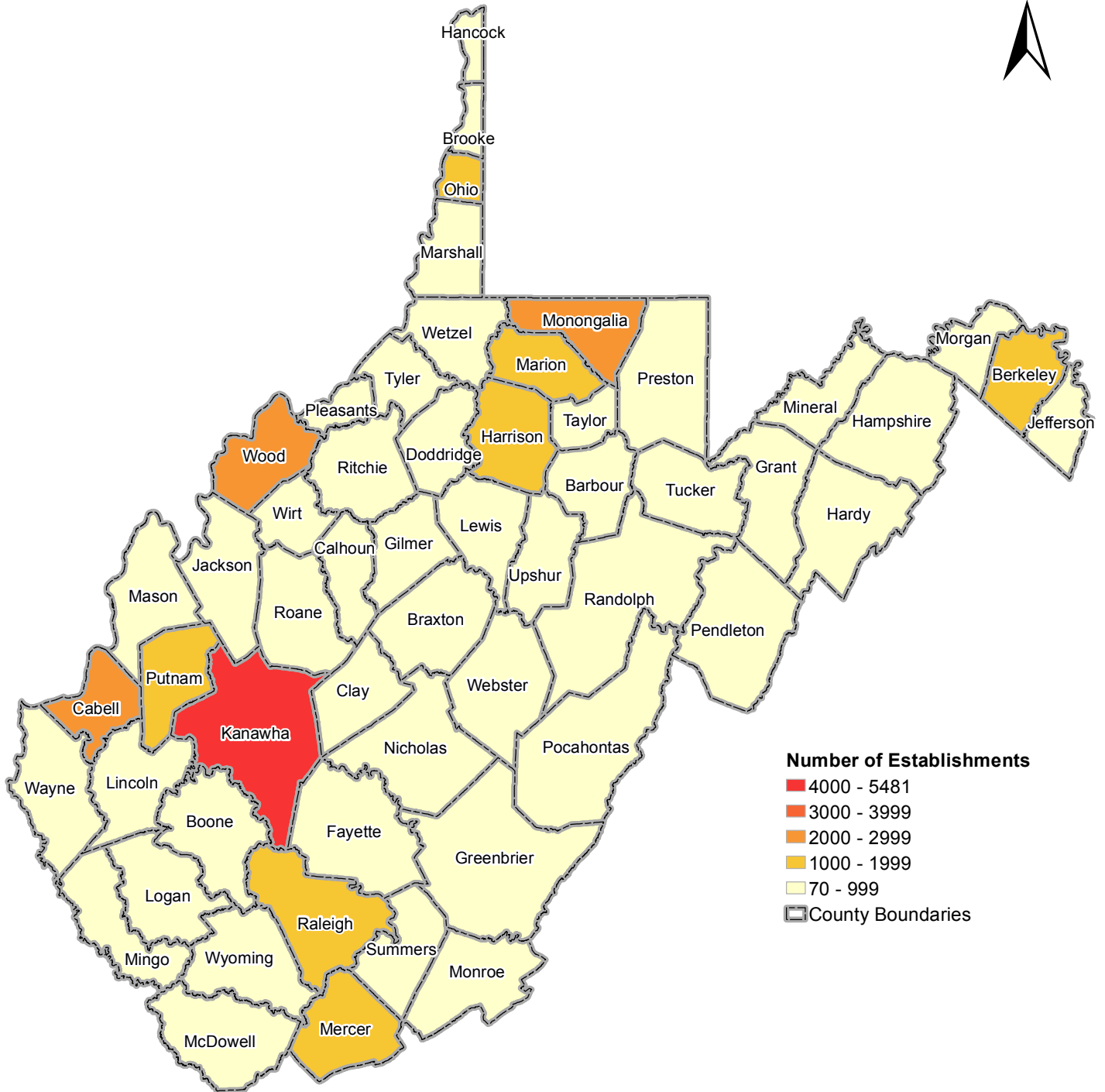
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Another measure of economic health is the number of establishments that do business in the area. Map 6 shows the number of establishments in each county in West Virginia. Wayne County is at the low end of the spectrum, but its proximity to Cabell County, and thus Huntington, may give it an edge in economic health over other coalfield counties. This indicates greater economic health relative to the state average.

Demographic

Number of Establishments



Number of Establishments

4000 - 5481

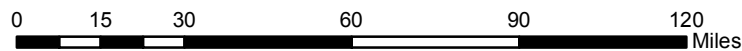
3000 - 3999

2000 - 2999

1000 - 1999

70 - 999

County Boundaries



Source: United States Census Bureau 2011

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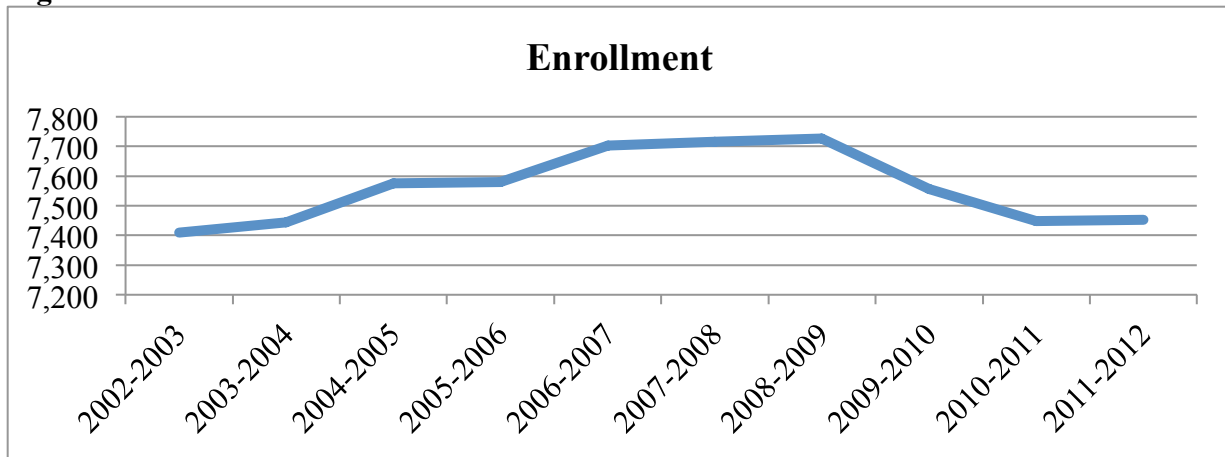
www.njrati.org

Education

Wayne County has three high schools, six middle schools, and twelve elementary schools as of the 2012-2013 school year.⁷

Wayne County 2nd month school enrollment was slowly climbing until 2008, when it suddenly began falling, most likely because of the fall in population. Wayne County 2nd month enrollment is about average, smaller than the more populous regions but greater than some of the counties in the northwest (Map 7).

Figure 11

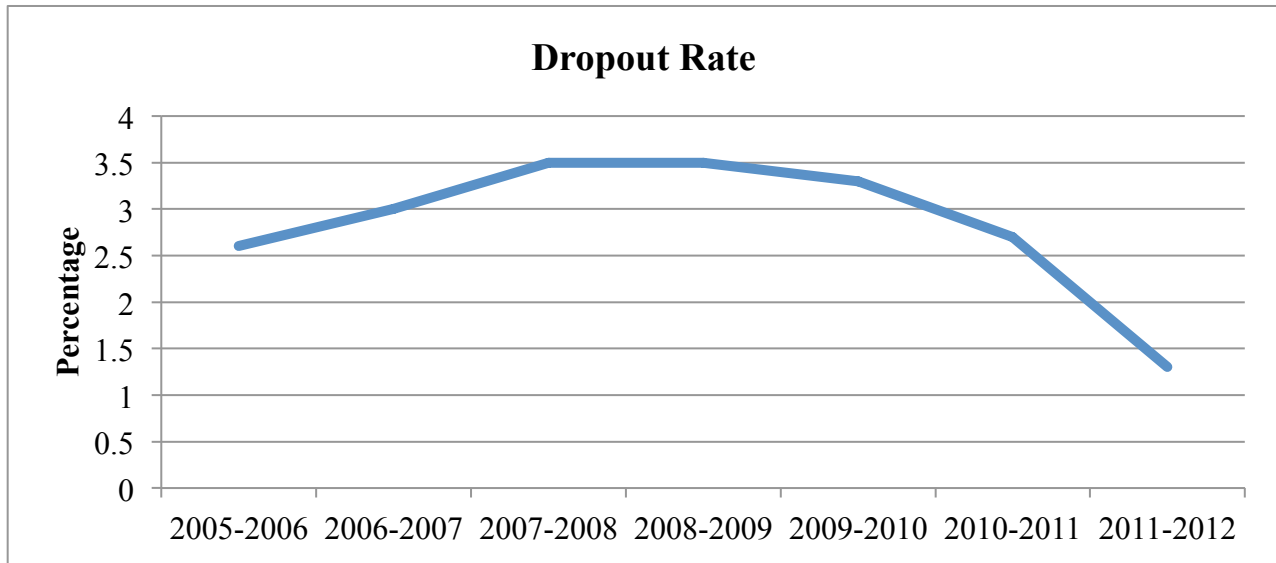


Source: WVEIS

The West Virginia Education Information System (WVEIS) also has dropout rates for the school years from 2005 to 2012. Dropout rates for grades 7-12, which showcase the most likely time for school dropouts, do not follow the total enrollment statistic, as total enrollment is computed with the grades below 7th grade as well. Dropout rates began a slow decrease in 2007 and continue decreasing as unemployment has risen and jobs for high school dropouts have become impossible to find (Figure 12). Wayne County currently has a lower dropout rate than many other West Virginia counties, indicating a high value of education to students and parents.

⁷ “School Profiles,” West Virginia Education Information System, West Virginia Department of Education, Accessed February 13, 2013, http://wveis.k12.wv.us/nclb/profiles/c_profile.cfm?cn=043.

Figure 12

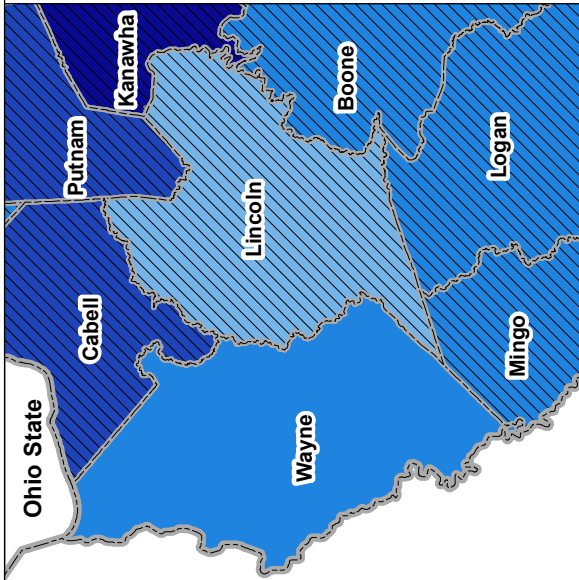


Source: WVEIS

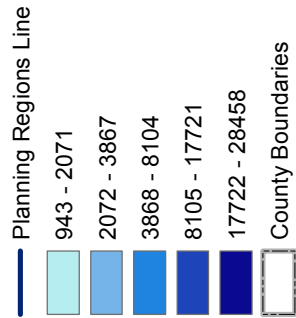
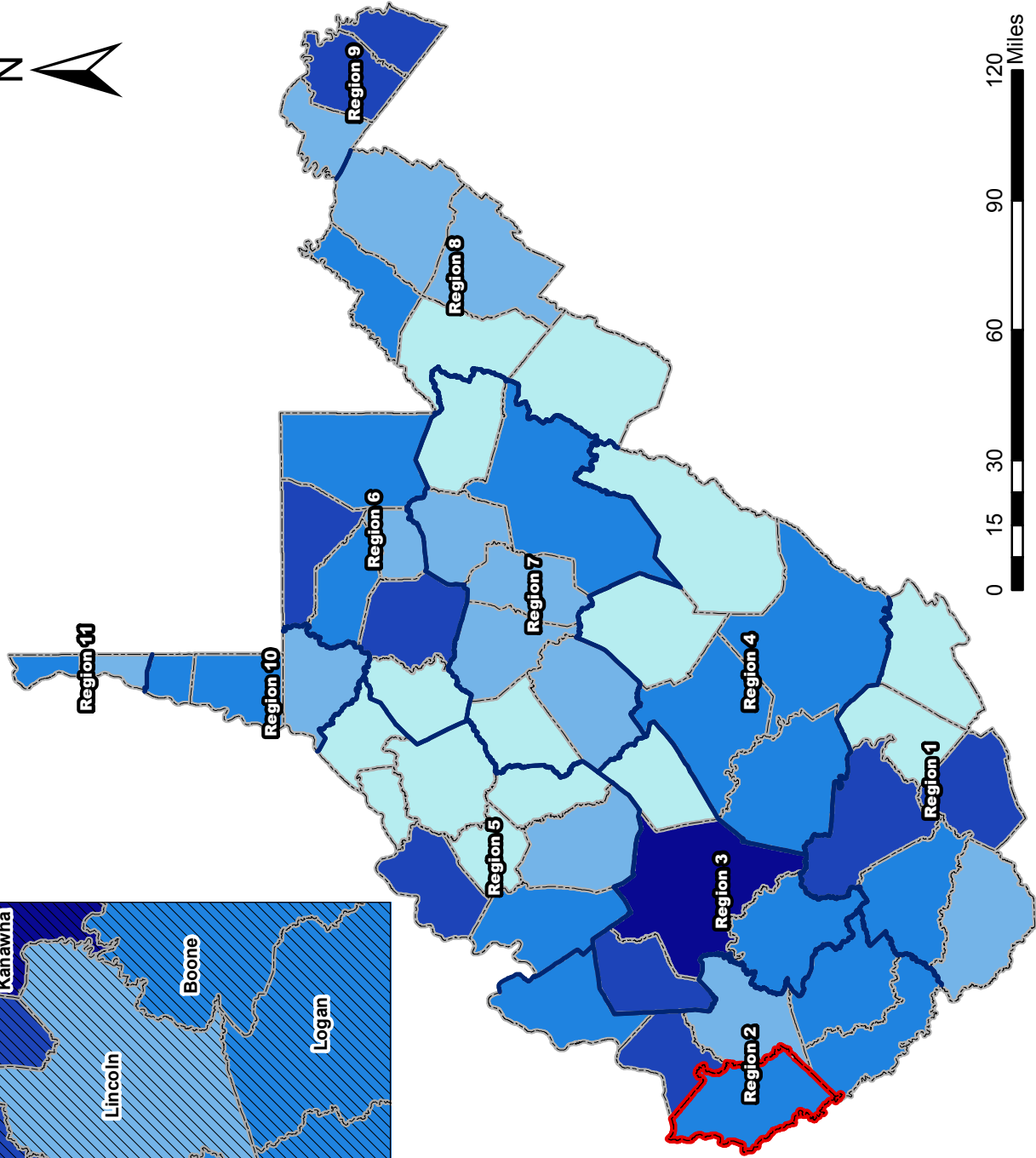
Map 8 shows each county's dropout rate. Maps 9 and 10 show the total graduates and the graduation rate by county. The number of graduates in Wayne County is slightly higher than those of the counties in the north-central area of West Virginia. Wayne County's largest schools are located on the main roads of the County; their locations are noted in Map 11. The largest school by attendance in the county is Spring Valley High School. The significance of the locations of these schools is the access to major transportation routes. The schools appear to be built in order for parents and students to maintain steady access, which is important to discourage dropping out and to maintain attendance levels.

NCLB - Second Month Enrollment

Wayne County



Kentucky State



Source: West Virginia Department of Education 2012

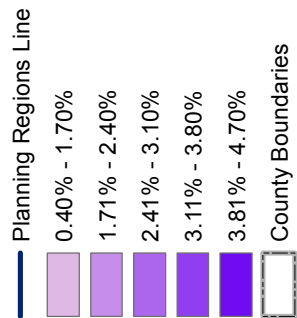
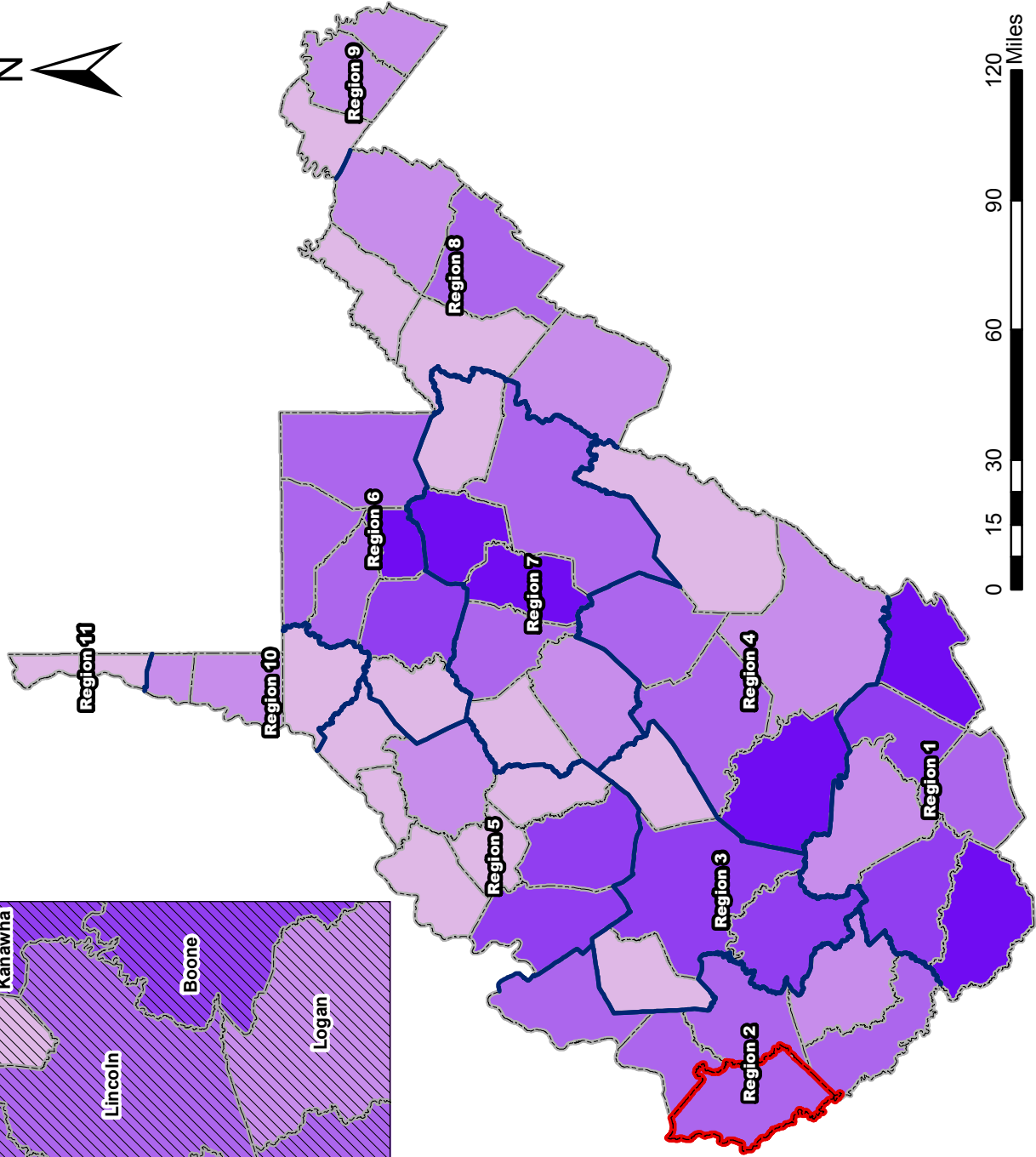
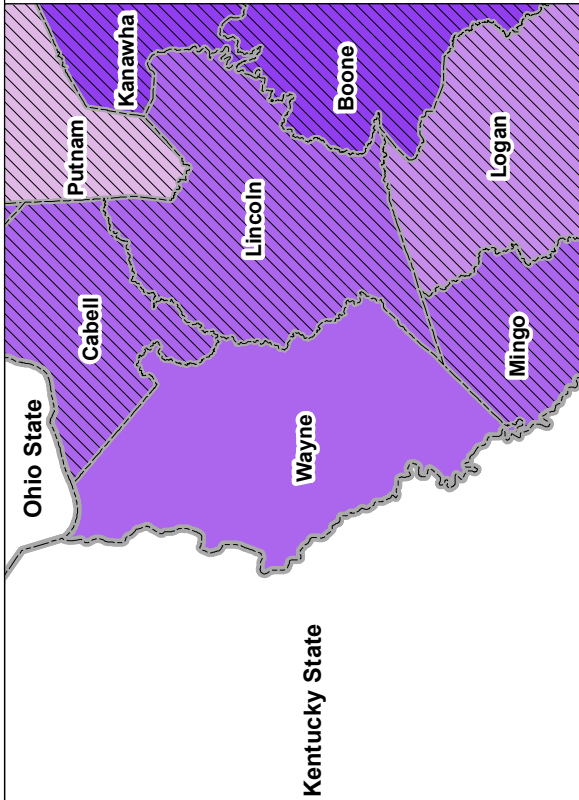
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www.rjraiti.org

NCLB - Dropout Rate

Wayne County



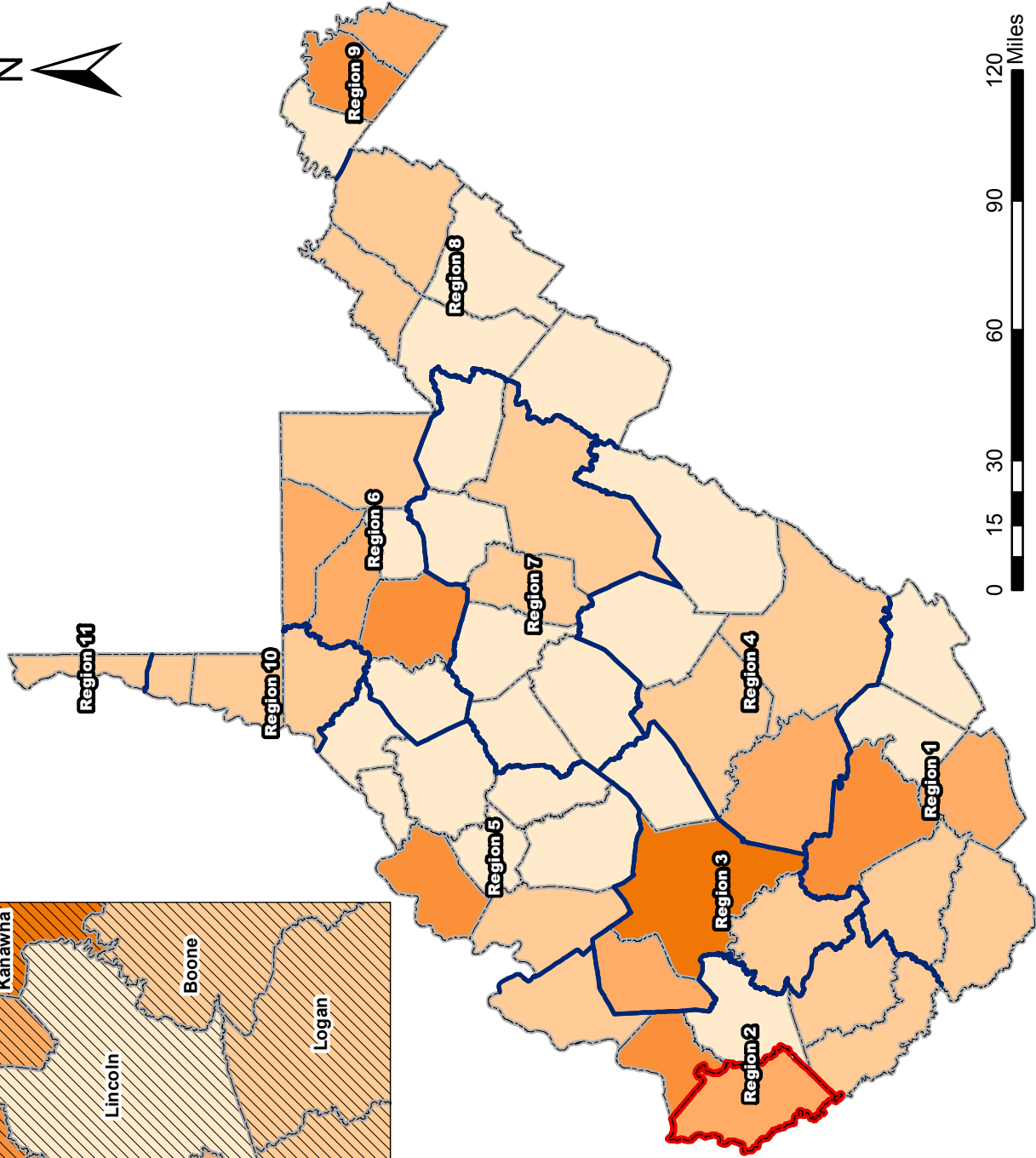
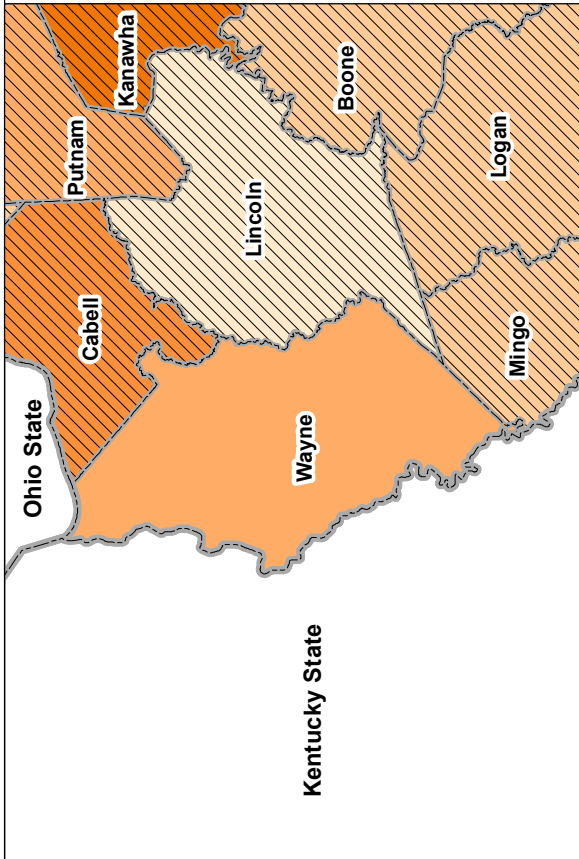
Source: West Virginia Department of Education 2012

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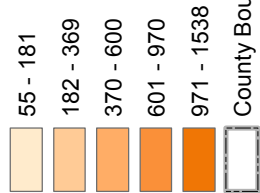


NCLB - Total Graduates

Wayne County



— Planning Regions Line



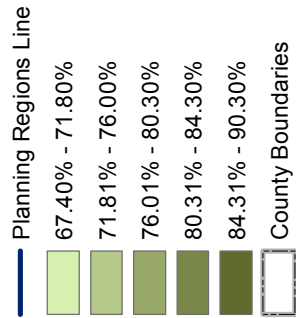
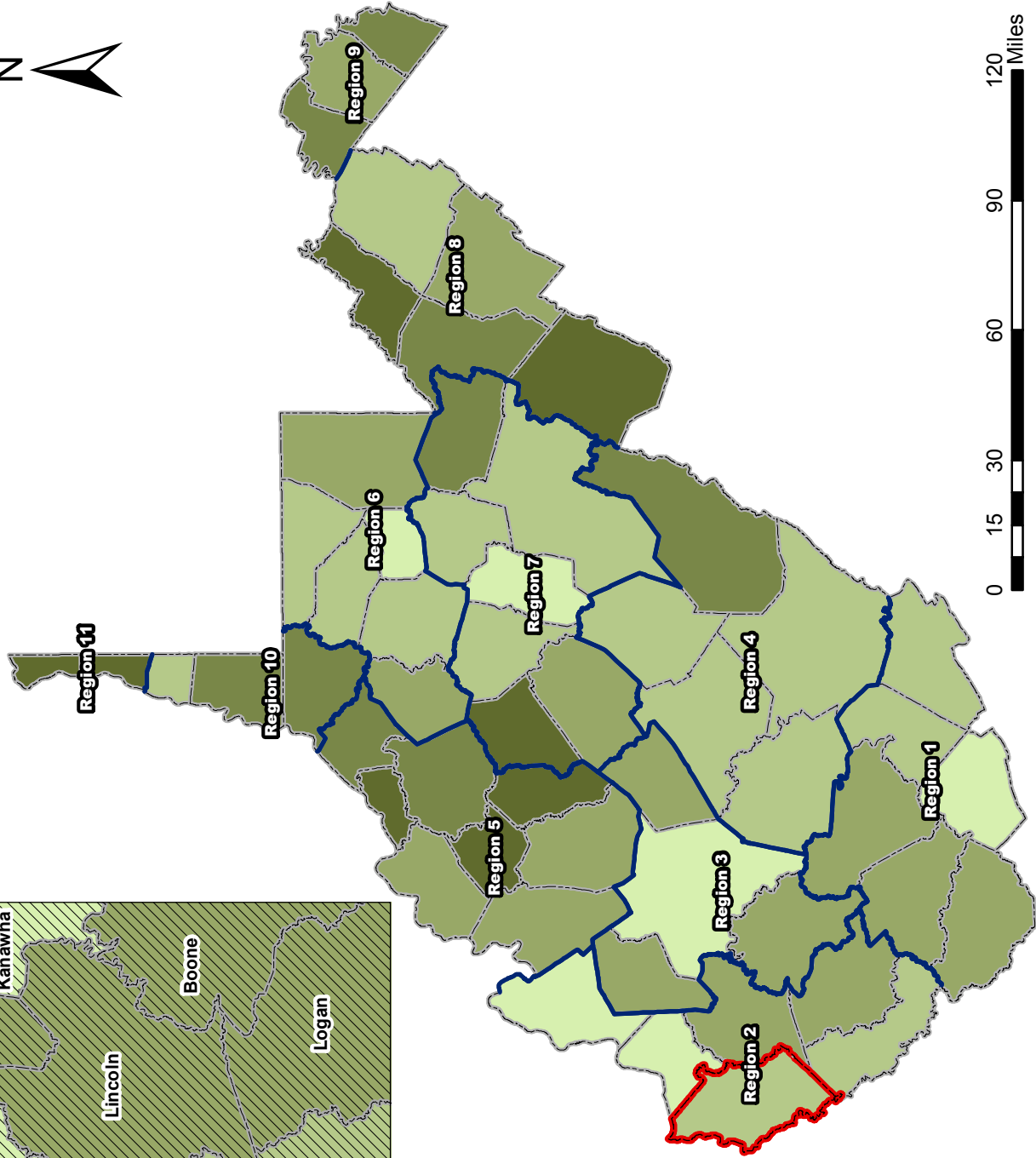
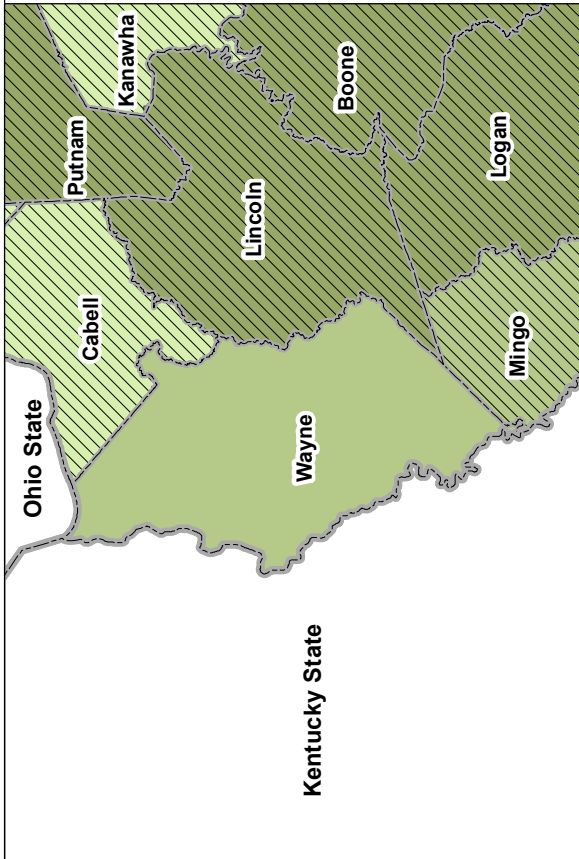
Source: West Virginia Division of Natural Resources, Statewide Addressing and Mapping 2008

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NCLB - Graduates Rate

Wayne County



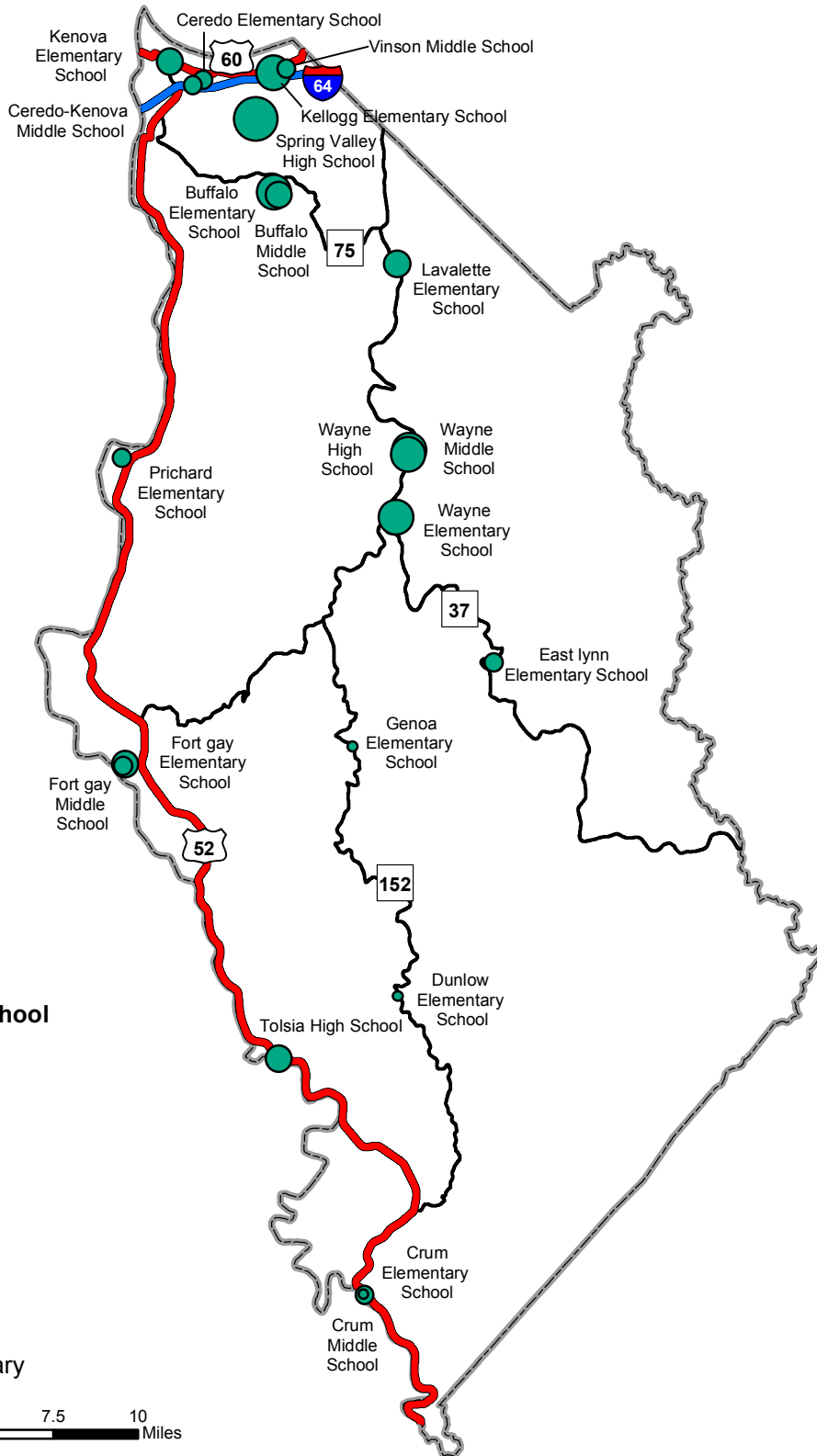
Source: West Virginia Division of Natural Resources, Statewide Addressing and Mapping 2008

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Total Attendance by School - 2012

Wayne County



Enrollment by School

- 93 - 127
- 128 - 278
- 279 - 443
- 444 - 652
- 653 - 1032

- Interstate
- US Routes
- WV Routes
- County Boundary

0 1.25 2.5 5 7.5 10 Miles

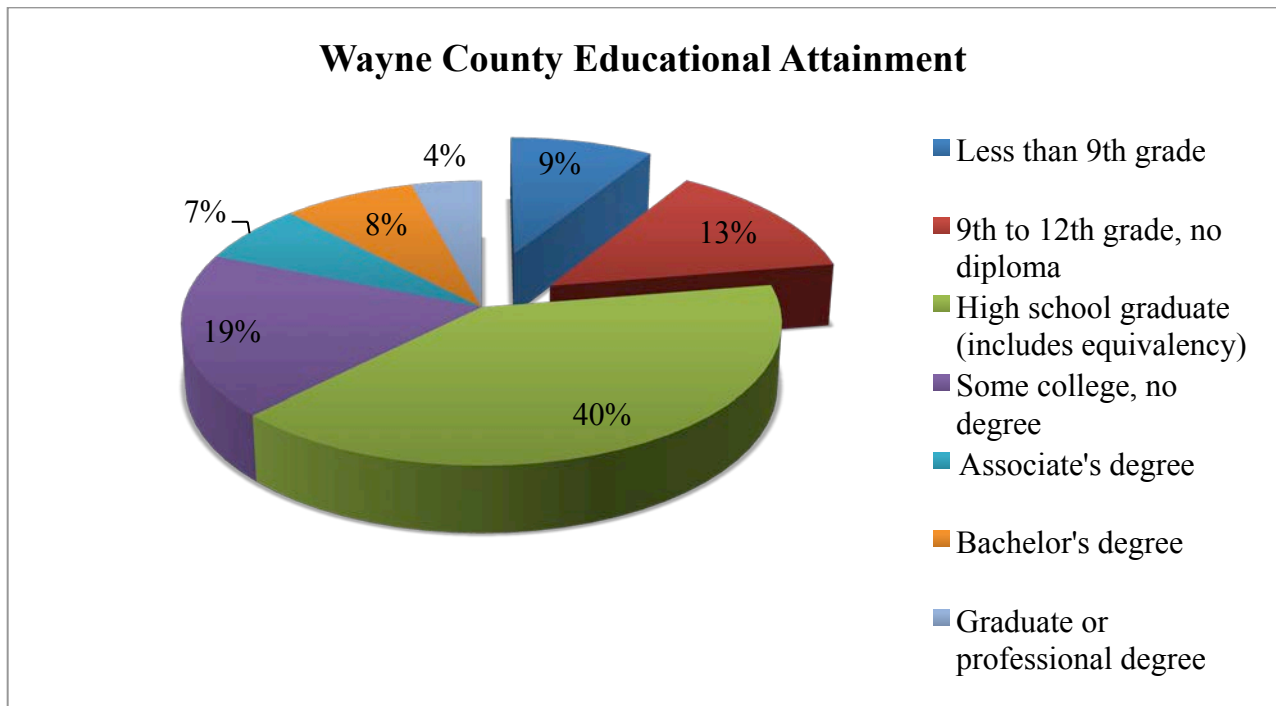
Source: West Virginia Department of Education 2012

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www.njrati.org

The ACS also maintains data on the educational attainment of the population that is 25 years and over. Twenty-two 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, but the relatively high number of those with post-secondary degrees (19 percent) is an encouraging sign.

Figure 13



Source: 2011 American Community Survey 5-Year Estimates

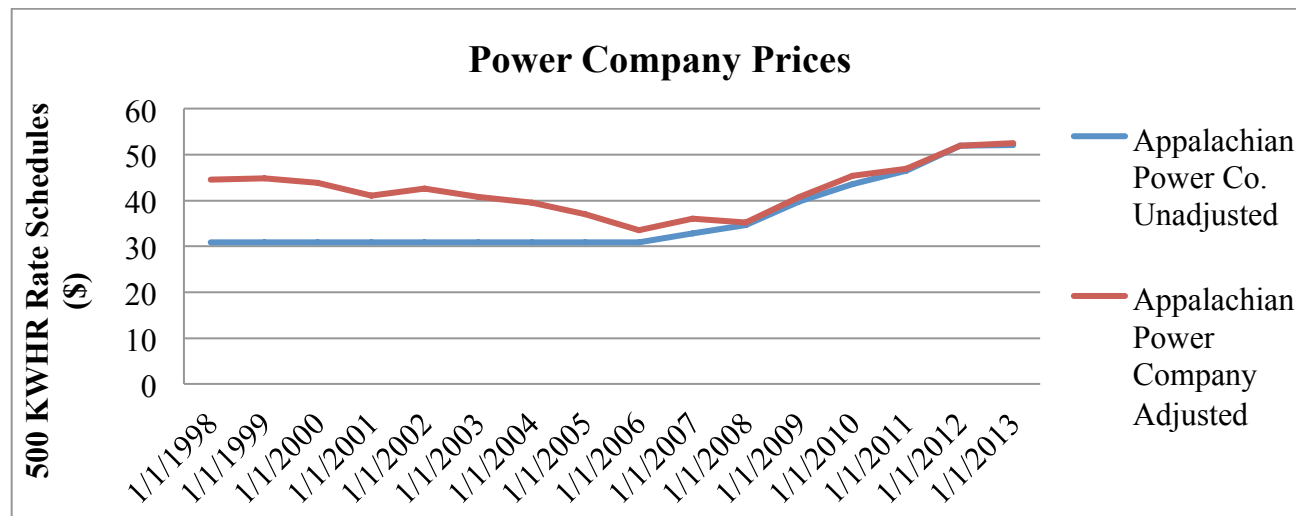
Utilities and Infrastructure

Wayne County has 28 utility companies according to the West Virginia Public Service Commission (PSC). Economic development depends on infrastructure, and Wayne County has several providers of water and sewer, and one provider of electricity. Appalachian Power Company (American Electric Power) provides residential, industrial, and large-capacity service to Wayne County. Big Sandy Peaker Plant sells wholesale electricity in the county.

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

misunderstanding, and would be incorrect in reference to a State with the highs and lows of West Virginia's past. The Bureau of Labor Statistics has a CPI for electricity prices dating to 1998. The adjusted and unadjusted prices are provided in Figure 14.

Figure 14



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

The graph shows that electricity rates steadily decreased in real terms through 2006 and remained fairly constant with adjustment. Both adjusted and unadjusted prices have increased since 2006. Many possible factors contributed to this rise, including the increased costs of energy and the increased demand. Map 12 also shows the distribution of power lines, plants, and substations within West Virginia and Wayne 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. Wayne County has 11 public sewer and water providers. Maps 13 and 14 show the water and sewer facilities and the served areas for each of these utilities, as well as the solid waste management facilities in West Virginia, including the one operating on Wayne's Kentucky border.

Table 1: Wayne County Water and Sewer Rates-Done

Branchland-Midkiff Public Service District	
Water Rates	
First 2000 gallons used per month	13.94 per 1000 gallons
Next 3000 gallons used per month	12.02 per 1000 gallons
Next 5000 gallons used per month	11.41 per 1000 gallons
Next 10000 gallons used per month	10.75 per 1000 gallons
All Over 20000 gallons used per month	9.49 per 1000 gallons

Crum Public Service District	
Water Rates	
First 3000 gallons used per month	11.60 per 1000 gallons
Next 3000 gallons used per month	10.99 per 1000 gallons
Next 4000 gallons used per month	10.06 per 1000 gallons
Next 10000 gallons used per month	9.18 per 1000 gallons
All Over 20000 gallons used per month	8.57 per 1000 gallons
Lavalette Public Service District	
Water Rates	
First 3000 gallons used per month	10.86 per 1000 gallons
Next 3000 gallons used per month	9.28 per 1000 gallons
Next 24000 gallons used per month	7.62 per 1000 gallons
Next 150000 gallons used per month	6.49 per 1000 gallons
All Over 180000 gallons used per month	5.41 per 1000 gallons
Northern Wayne County Public Service District	
Sewer Rates	
First 3000 gallons used per month	14.67 per 1000 gallons
All Over 3000 gallons used per month	14.67 per 1000 gallons
Prichard Public Service District	
Sewer Rates	
All amounts used per month	6.85 per 1000 gallons
Spring Valley Public Service District	
Sewer Rates	
First 300 cubic feet used per month	8.82 per 100 cubic feet
Next 400 cubic feet used per month	8.57 per 100 cubic feet
Next 3300 cubic feet used per month	8.53 per 100 cubic feet
Next 16000 cubic feet used per month	8.32 per 100 cubic feet
Next 20000 cubic feet used per month	8.22 per 100 cubic feet
All Over 40000 cubic feet used per month	8.08 per 100 cubic feet
Ceredo (Municipal Water Department and Town of Ceredo Sewer System)	
Water Rates	
First 3000 gallons used per month	7.33 per 1000 gallons
Next 17000 gallons used per month	6.77 per 1000 gallons
All Over 20000 gallons used per month	5.67 per 1000 gallons
Sewer Rates	
First 3000 gallons used per month	8.00 per 1000 gallons
Next 23000 gallons used per month	7.00 per 1000 gallons
All Over 25000 gallons used per month	5.50 per 1000 gallons

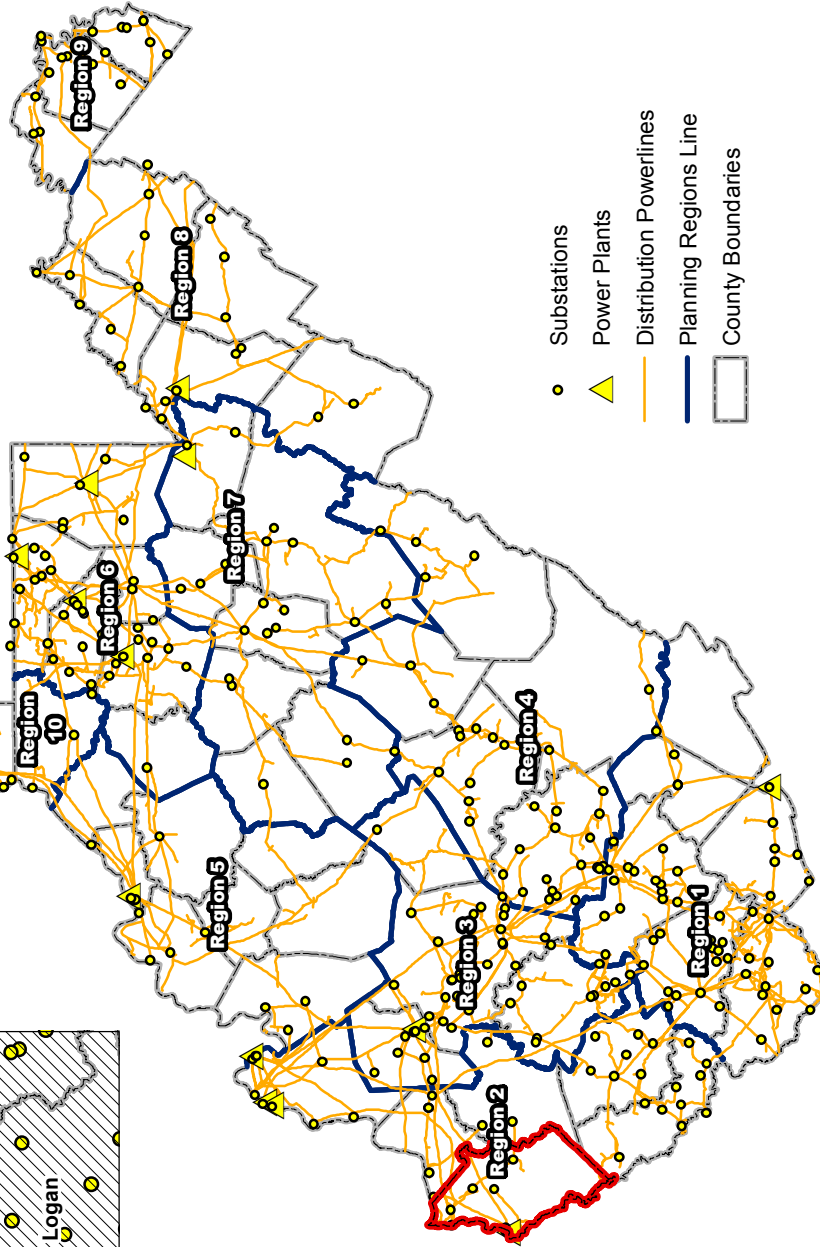
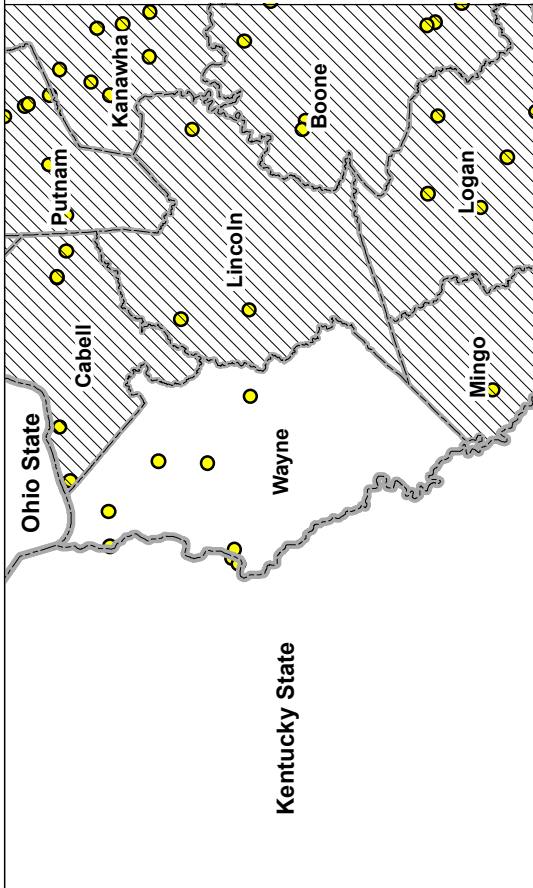
Fort Gay (Municipal Water Department and Town of Fort Gay)	
Water Rates	
First 2000 gallons used per month	12.61 per 1000 gallons
Next 8000 gallons used per month	4.89 per 1000 gallons
Next 10000 gallons used per month	4.45 per 1000 gallons
Next 20000 gallons used per month	4.09 per 1000 gallons
All Over 40000 gallons used per month	3.56 per 1000 gallons
Sewer Rates	
First 2000 gallons used per month	Flat rate 43.04
All Over 2000 gallons used per month	3.82 per 1000 gallons
Kenova (Water Department and City of Kenova)	
Water Rates	
First 2000 gallons used per month	7.46 per 1000 gallons
Next 3000 gallons used per month	7.00 per 1000 gallons
Next 5000 gallons used per month	6.53 per 1000 gallons
Next 10000 gallons used per month	5.92 per 1000 gallons
Next 20000 gallons used per month	5.43 per 1000 gallons
Next 5000 gallons used per month	4.75 per 1000 gallons
All Over 100000 gallons used per month	3.36 per 1000 gallons
Wayne (Municipal Water Department and Town of Wayne)	
Water Rates	
First 2000 gallons used per month	7.195 per 1000 gallons
Next 3000 gallons used per month	6.401 per 1000 gallons
Next 10000 gallons used per month	5.798 per 1000 gallons
Next 25000 gallons used per month	5.688 per 1000 gallons
All Over 40000 gallons used per month	5.145 per 1000 gallons
Sewer Rates	
First 2000 gallons used per month	7.30 per 1000 gallons
Next 3000 gallons used per month	6.64 per 1000 gallons
All Over 5000 gallons used per month	6.23 per 1000 gallons

Two private sewer companies, Hubbard Heights Subdivision Homeowners Association and Wastewater Management, Inc., and a private water company, West Virginia-American Water Company, also service Wayne County. Their rates are listed below.

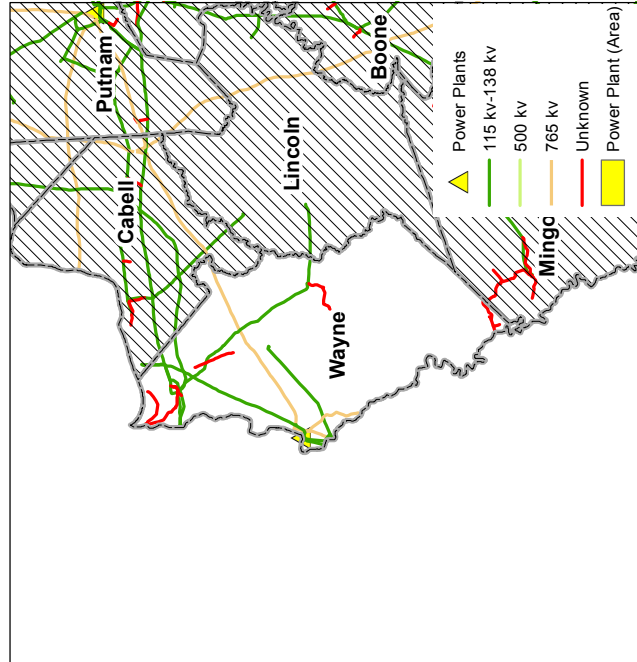
West Virginia-American Water	
First 1500 gallons used per month	minimum charge
Next 28500 gallons used per month	9.61 per 1000 gallons
Next 870000 gallons used per month	6.33 per 1000 gallons
Next 8100000 gallons used per month	4.61 per 1000 gallons
All Over 9000000 gallons used per month	3.00 per 1000 gallons
Hubbard Heights Subdivision Homeowners Association	
All amounts used per month	20.00 per month
Wastewater Management, Inc.	
All amounts used per month	20.50 per month

Utilities - Electricity

Wayne County



● Electricity Substations



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



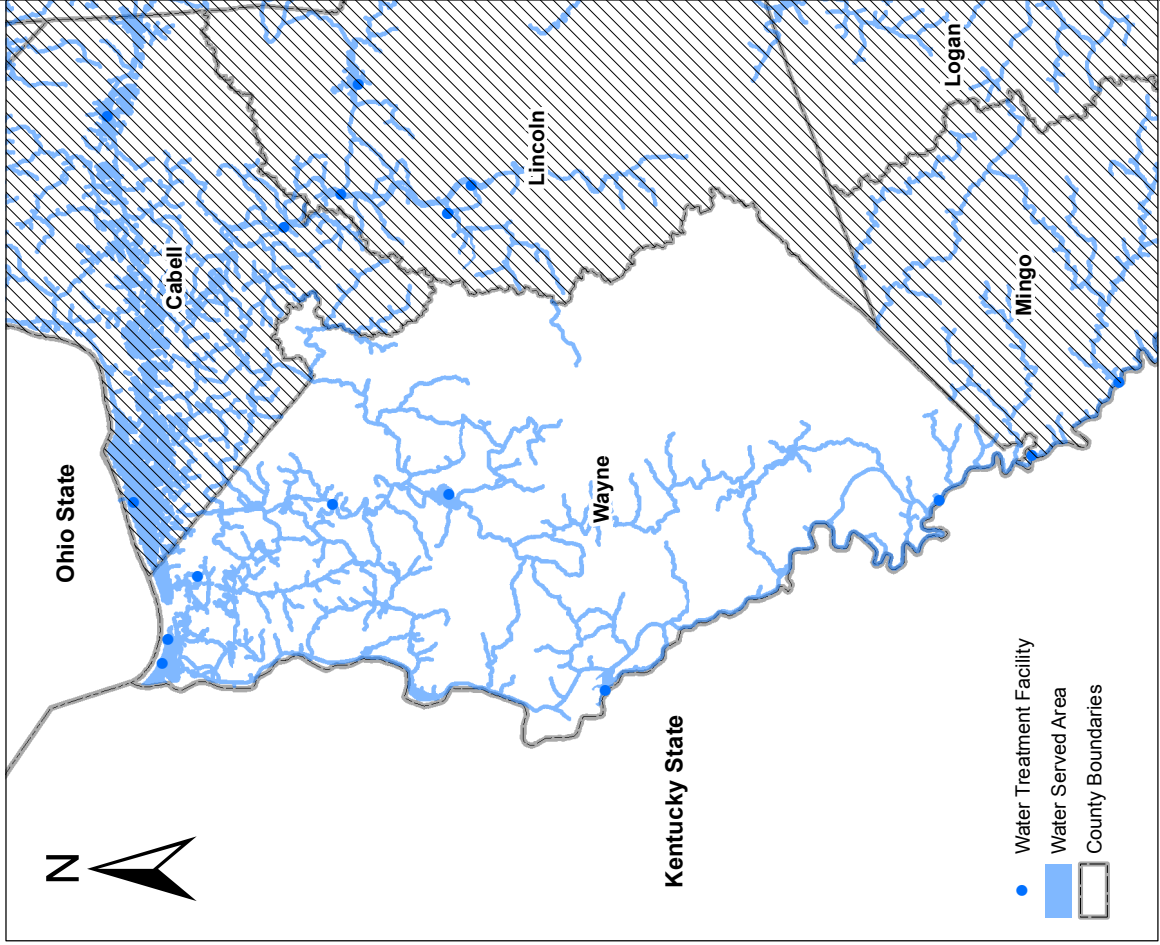
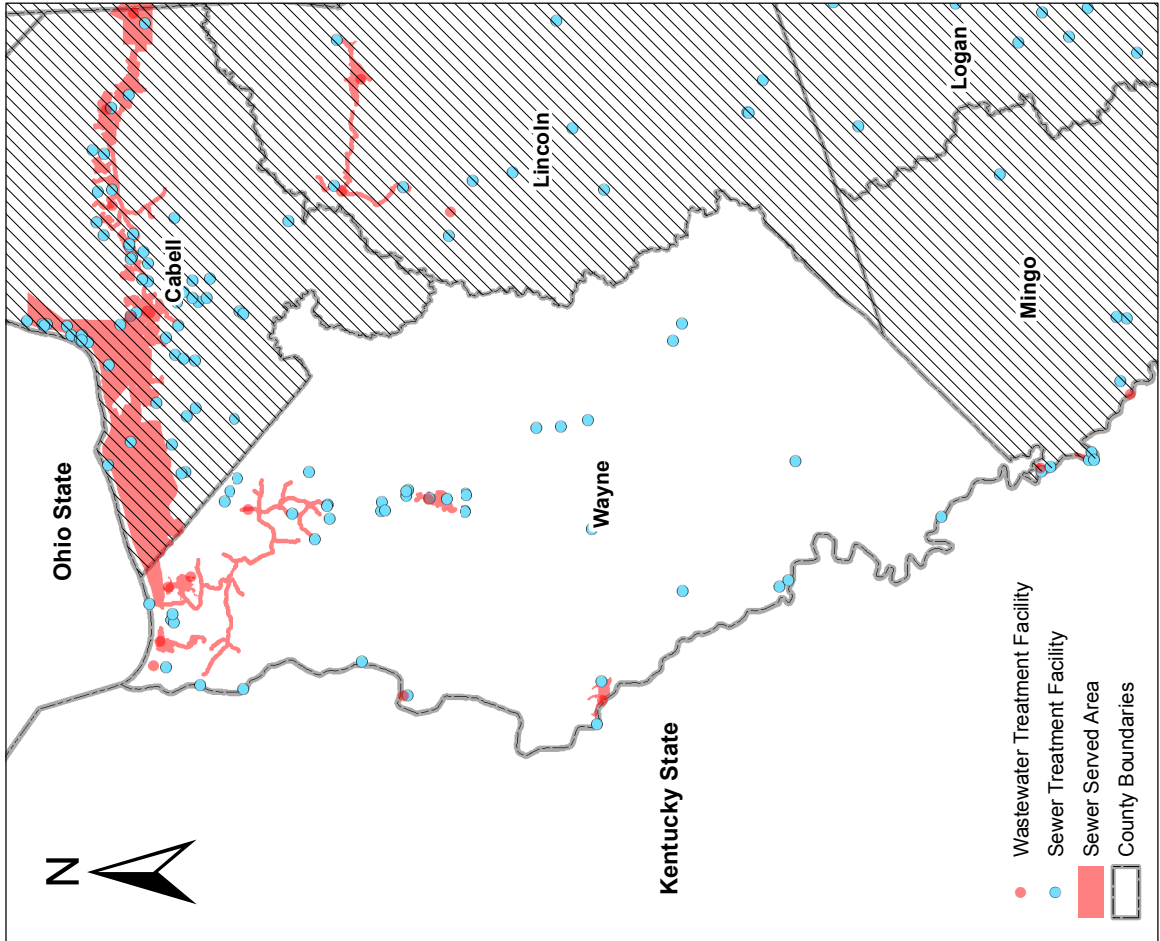
Source: West Virginia Division of Natural Resources, Statewide Addressing and Mapping 2008

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Utilities - Water and Sewer

Wayne County



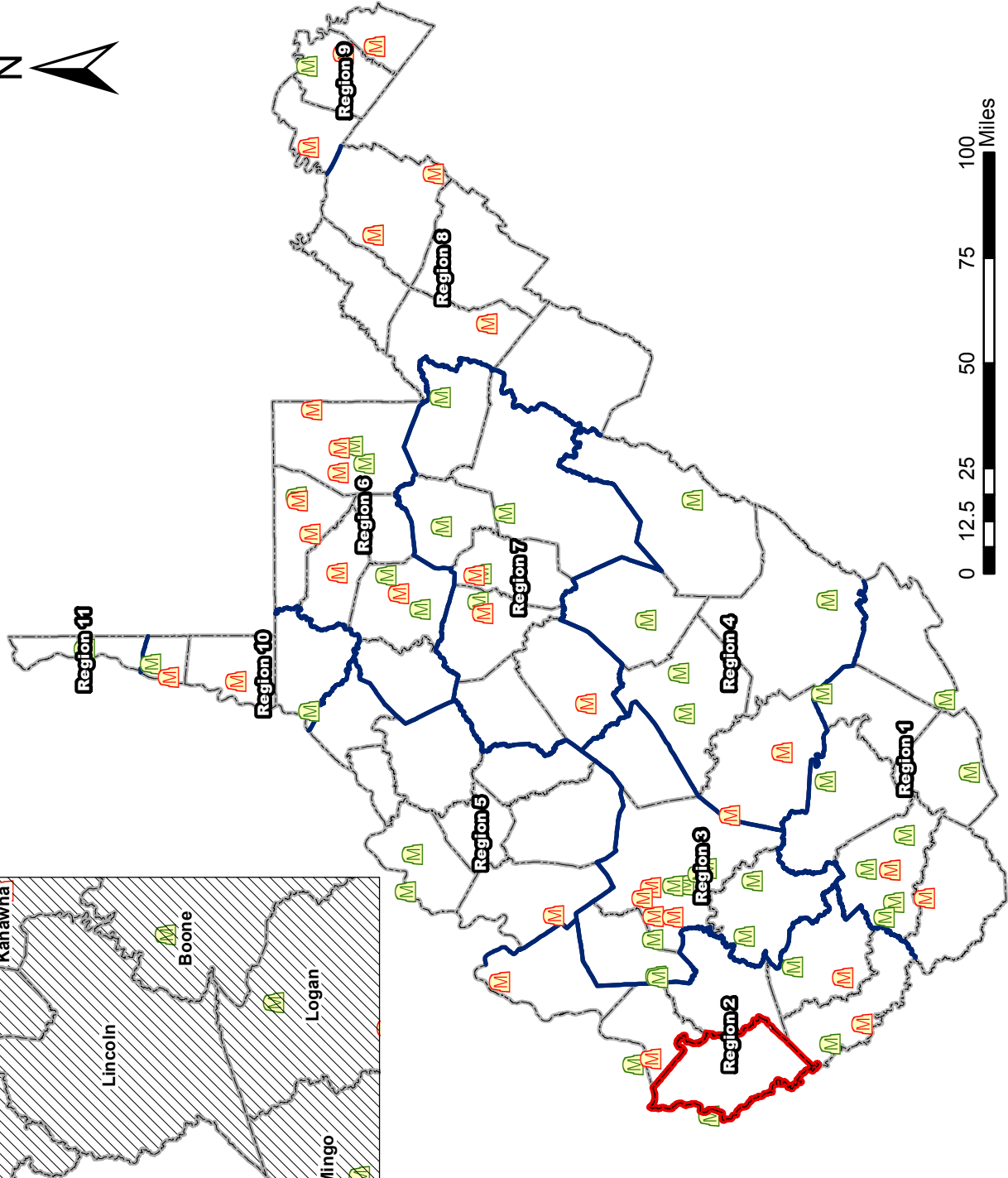
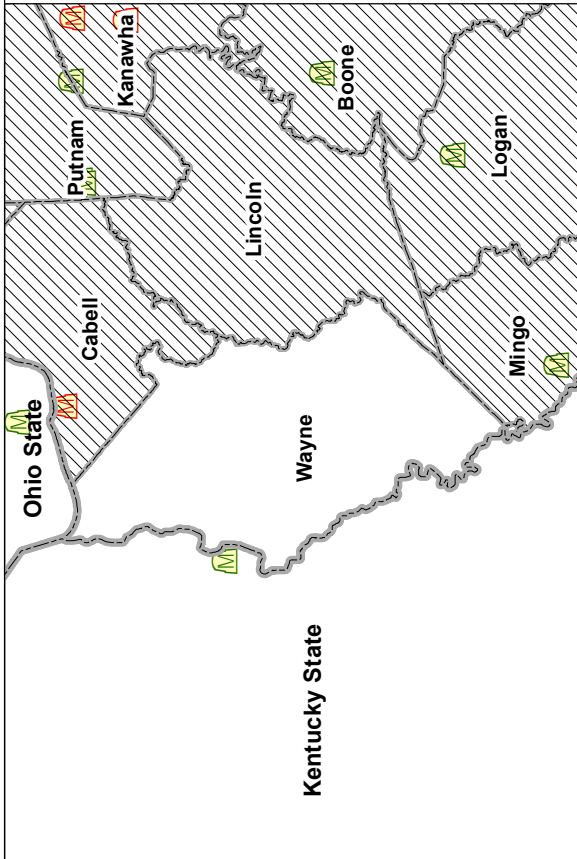
Source: West Virginia Infrastructure and Jobs Development Council N.A.

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Utility - Solid Waste Facility

Wayne County



- Closed
- Operating
- Planning Regions Line
- County Boundaries

Source: West Virginia Department of Environmental Protection 2002

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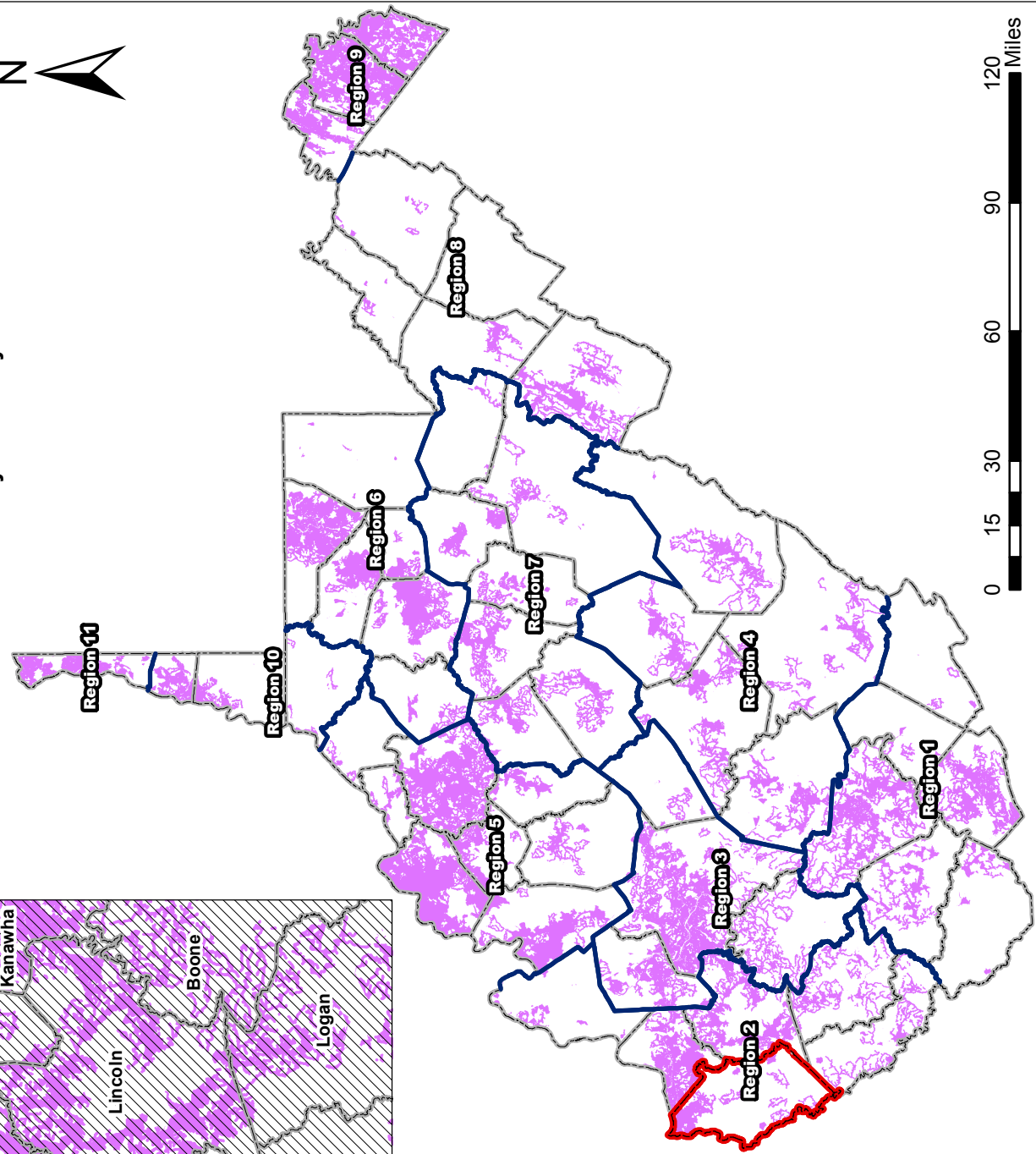
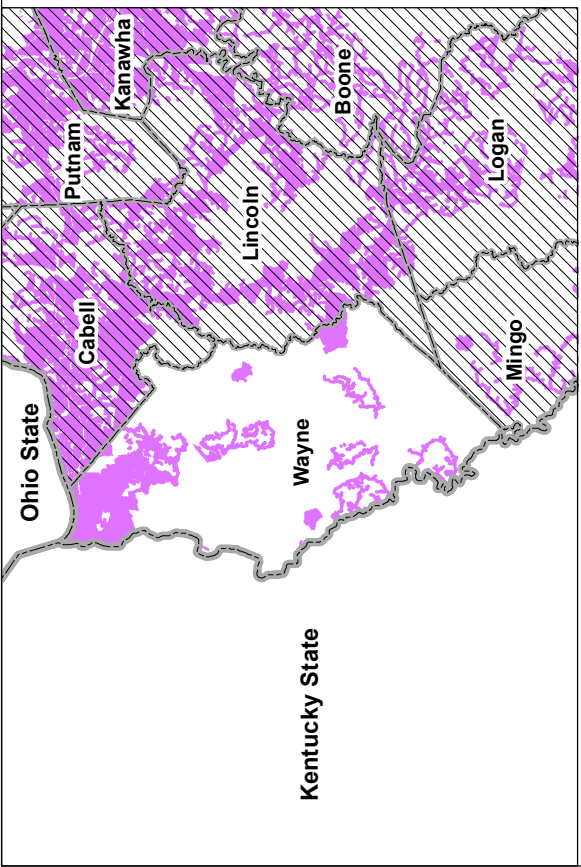
One essential modern convenience, now widely understood as an essential utility in a globalized world, is broadband access. The following 11 maps demonstrate Wayne County's broadband infrastructure in relation to the State's. The largest number of providers in Wayne County is 5, concentrated in the populated areas. Wayne County broadband infrastructure closely resembles those of the more populated counties due to the existence of Huntington in the north. Of particular note however is the distinct lack of fixed wireless, the connection of two fixed points wirelessly by radio or other links, and the rather large swaths of area without broadband coverage, particularly in Wayne's southern area.




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

Broadband - Internet Cable and FTTP Coverage

Wayne County



-  Planning Regions Line
-  Cable and FTTP
-  County Boundaries



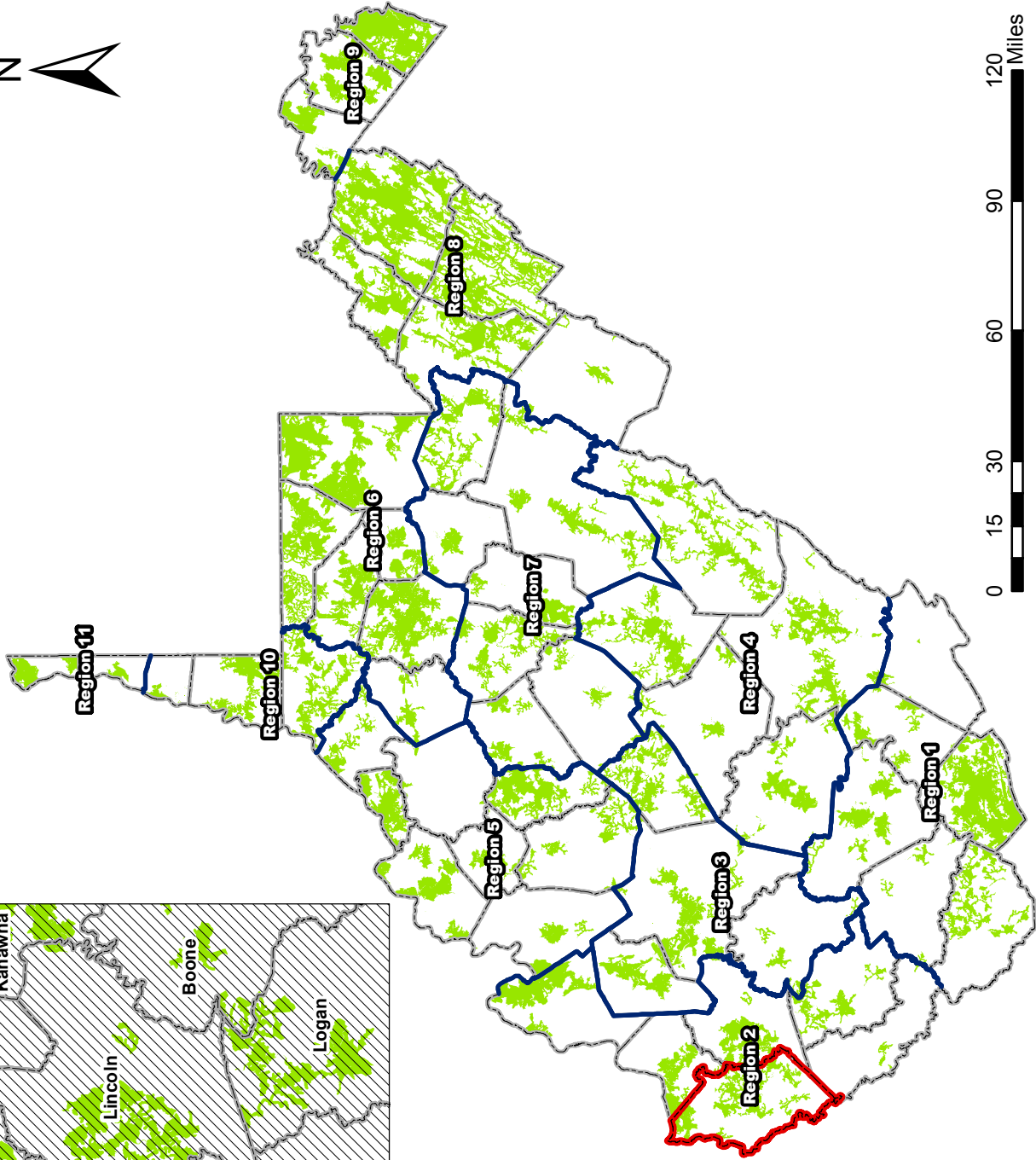
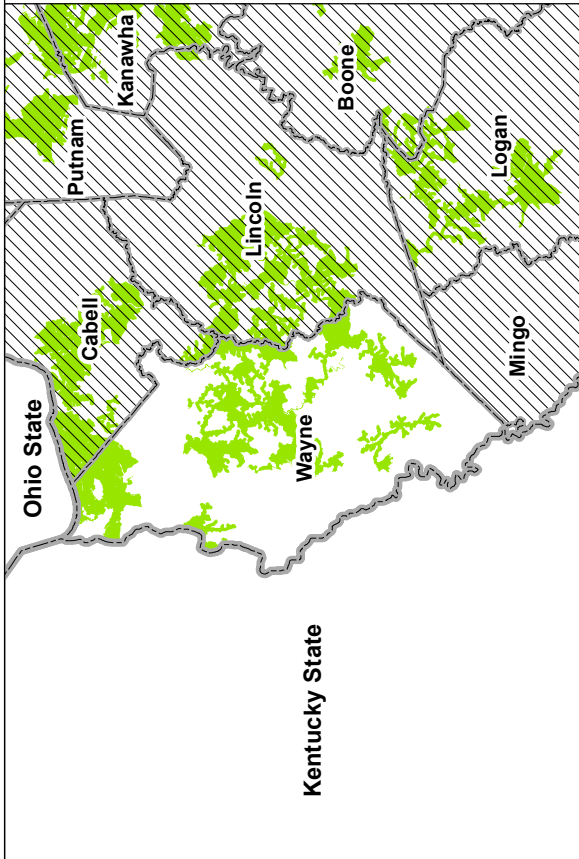
Source: West Virginia Broadband Mapping Program 2012




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Broadband - Internet DSL, BPL, Other Copper

Wayne County



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

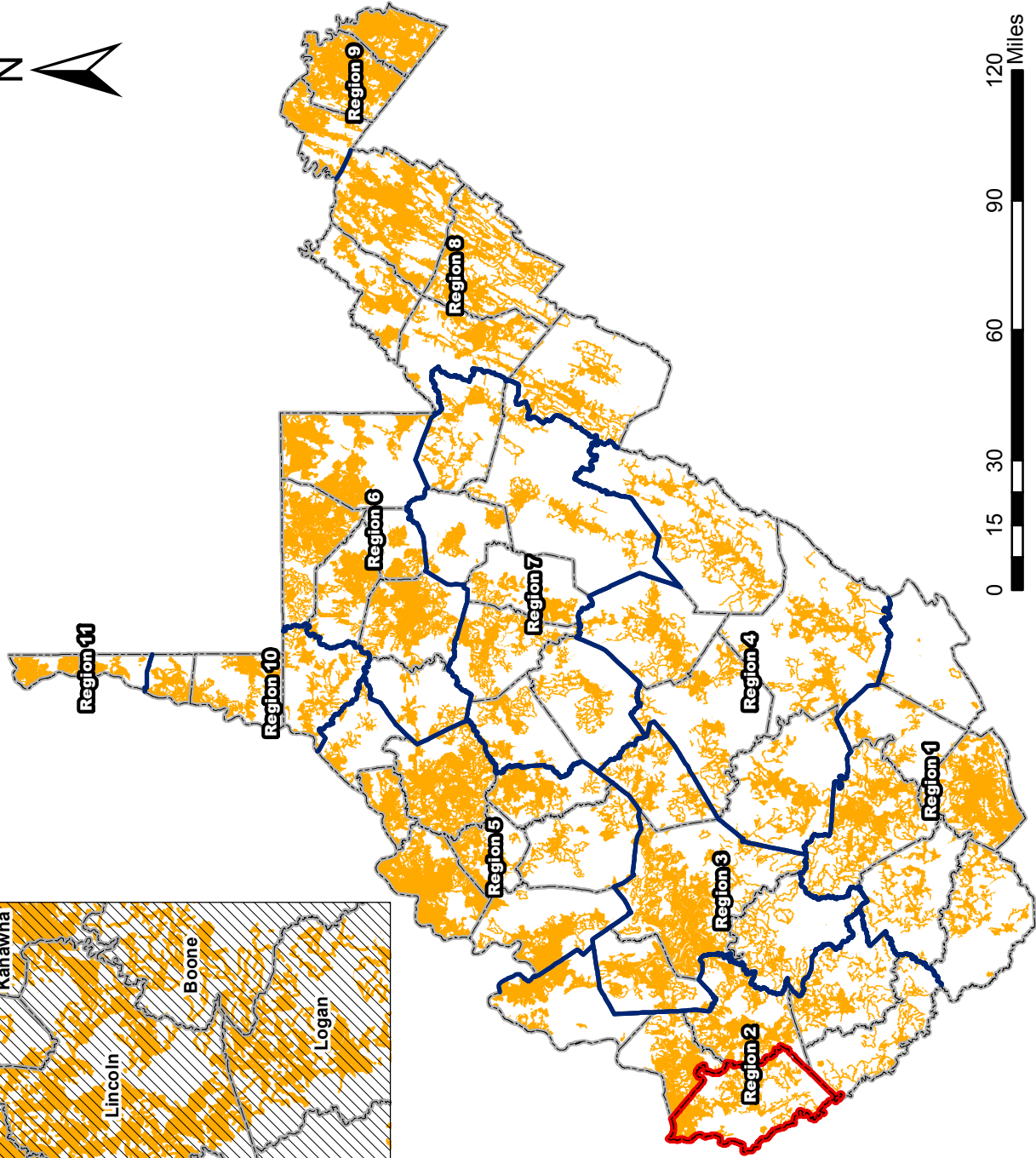
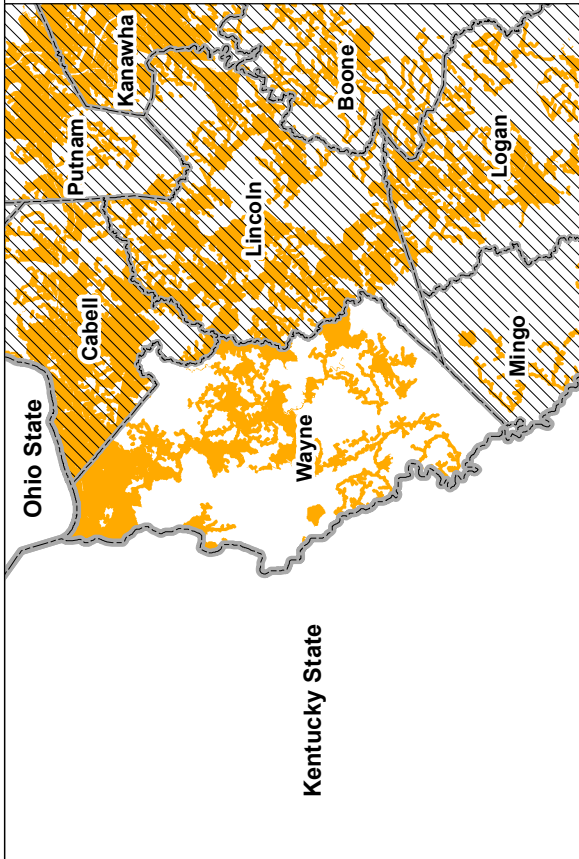
Source: West Virginia Broadband Mapping Program 2012




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Broadband - Internet Wireline Coverage

Wayne County



-  Planning Regions Line
-  Wireline Coverage
-  County Boundaries



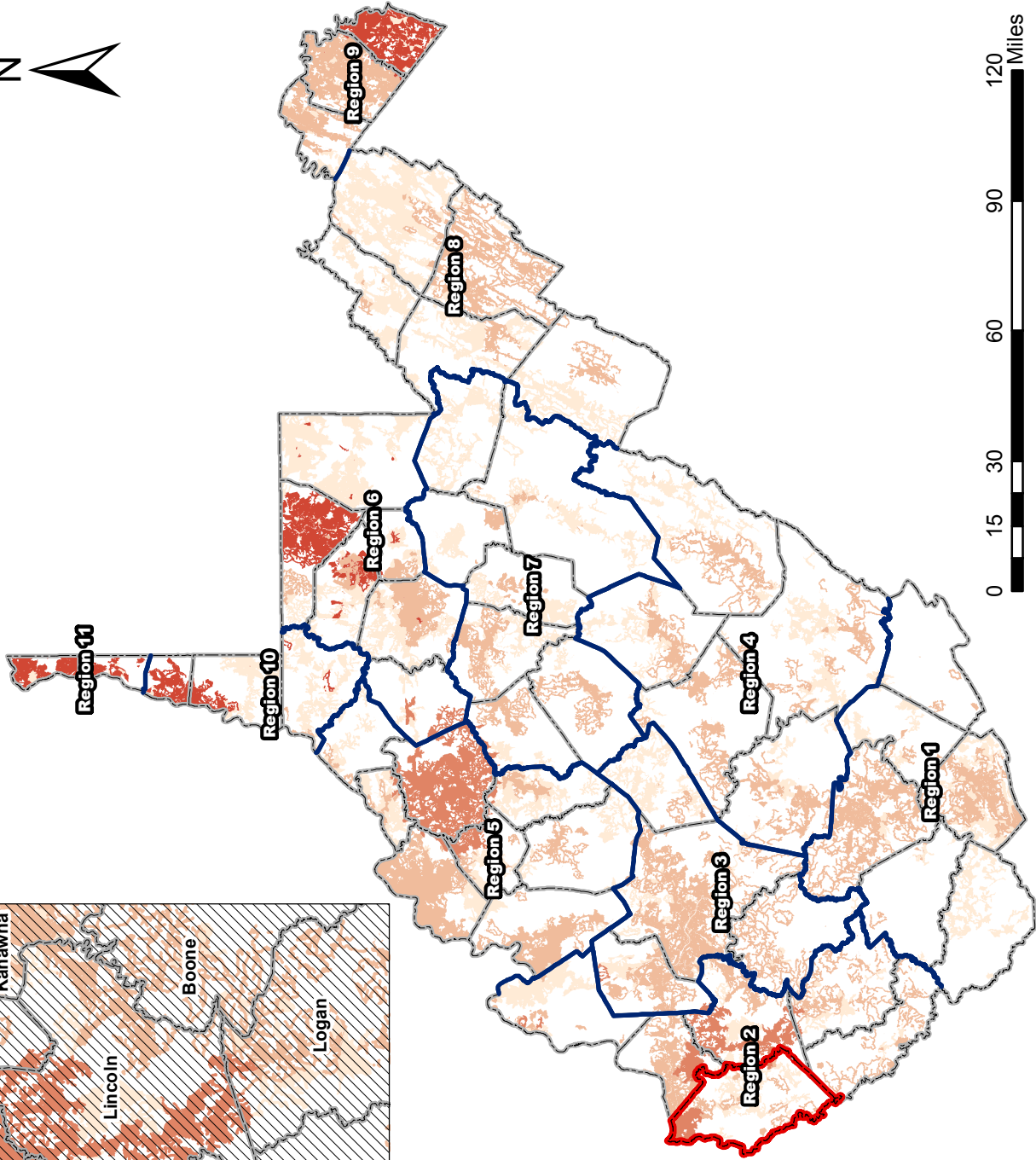
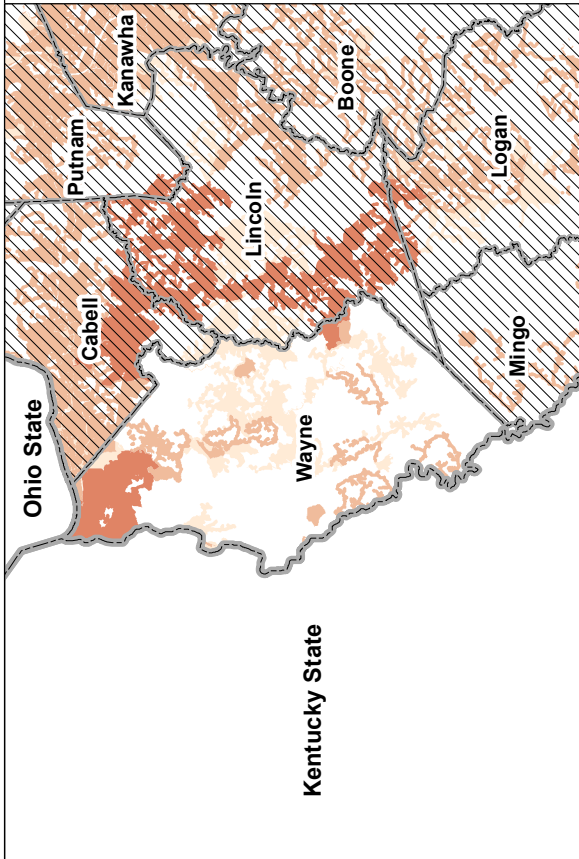
Source: West Virginia Broadband Mapping Program 2012

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Broadband - Internet MaxUp Speed Wireline

Wayne County



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



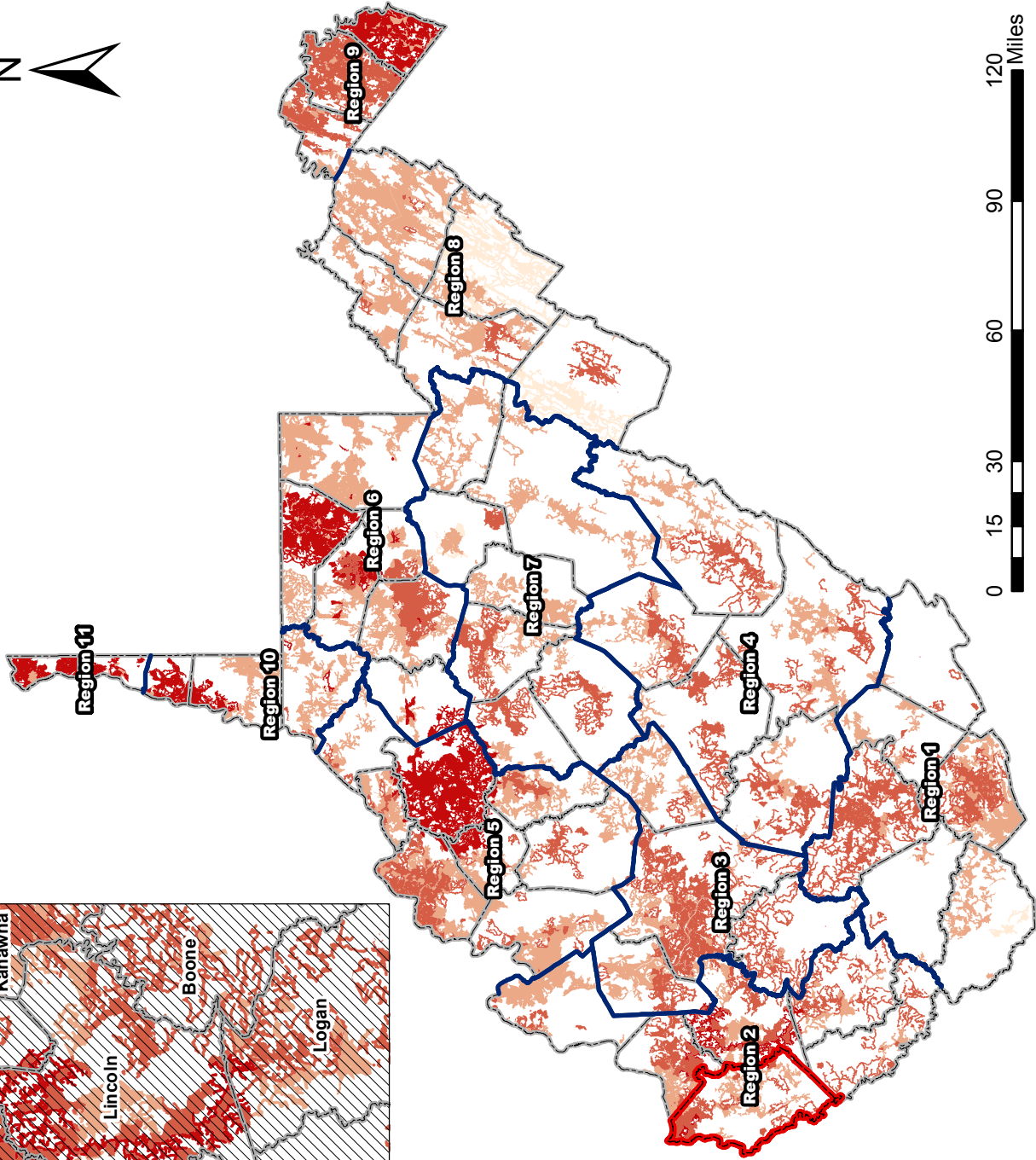
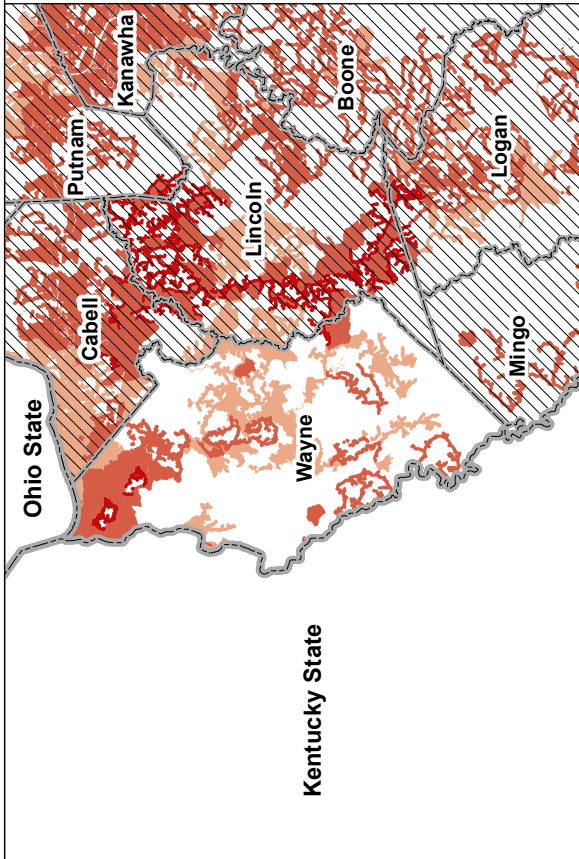
Source: West Virginia Broadband Mapping Program 2012

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Broadband - Internet MaxDown Speed Wireline

Wayne County



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



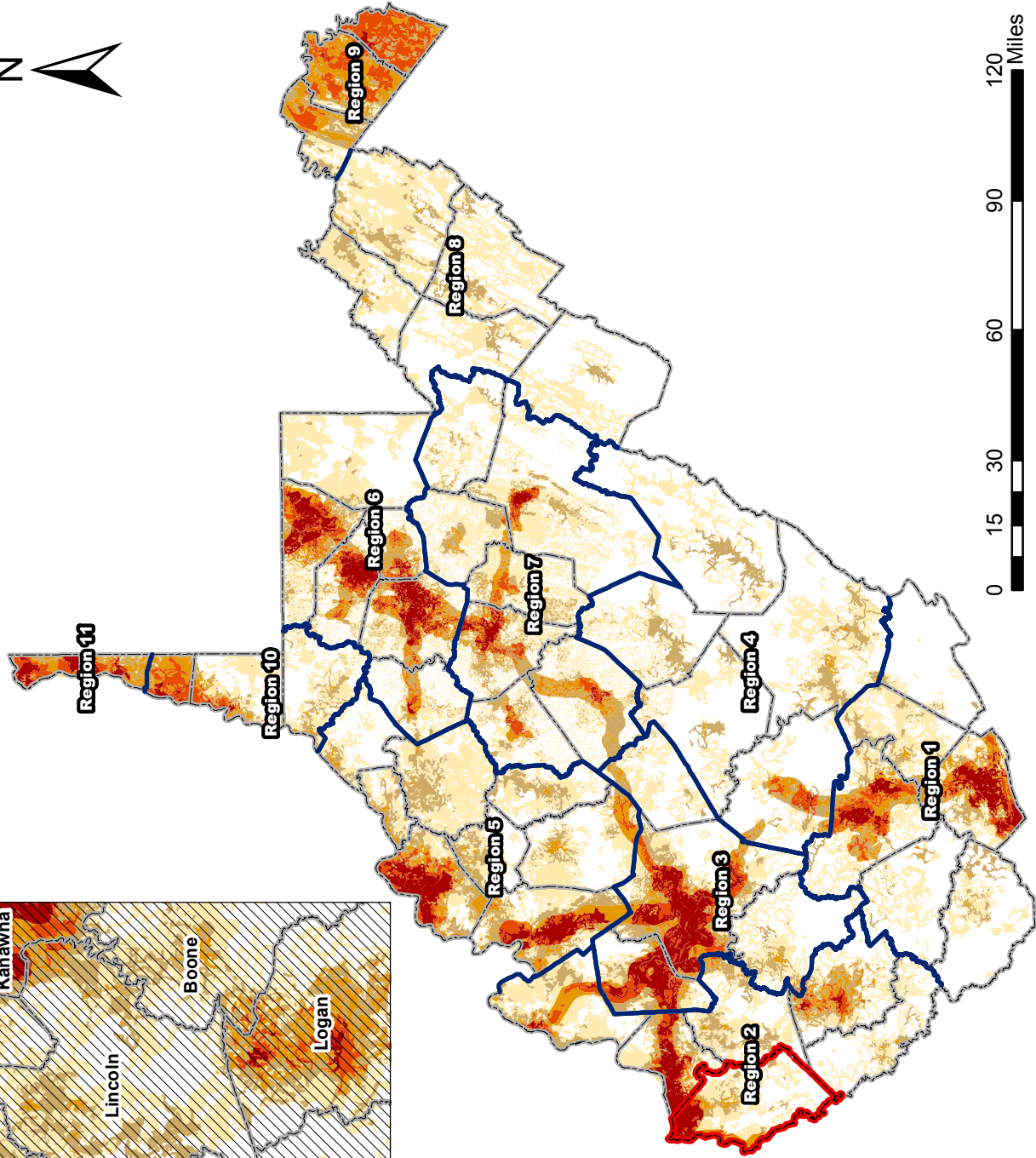
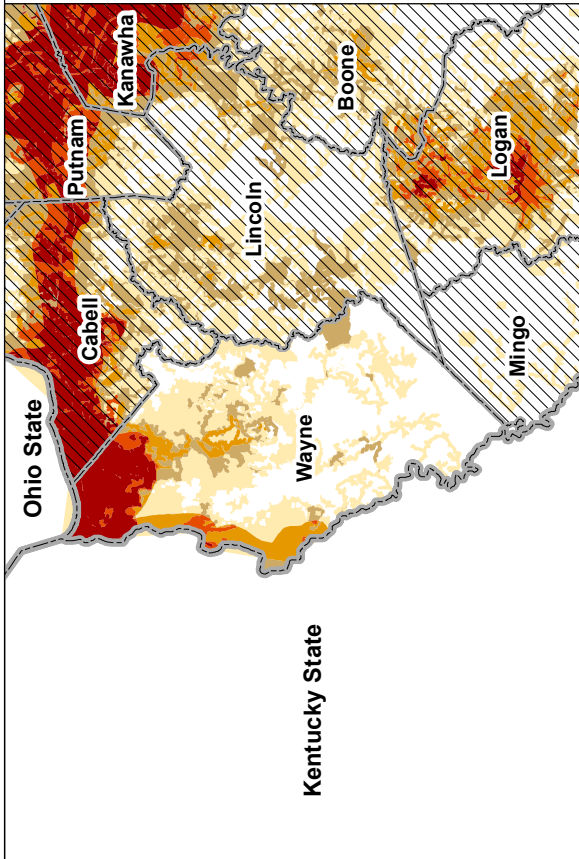
Source: West Virginia Broadband Mapping Program 2012

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Broadband - Internet Total Number of Providers

Wayne County



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

Source: West Virginia Broadband Mapping Program 2012

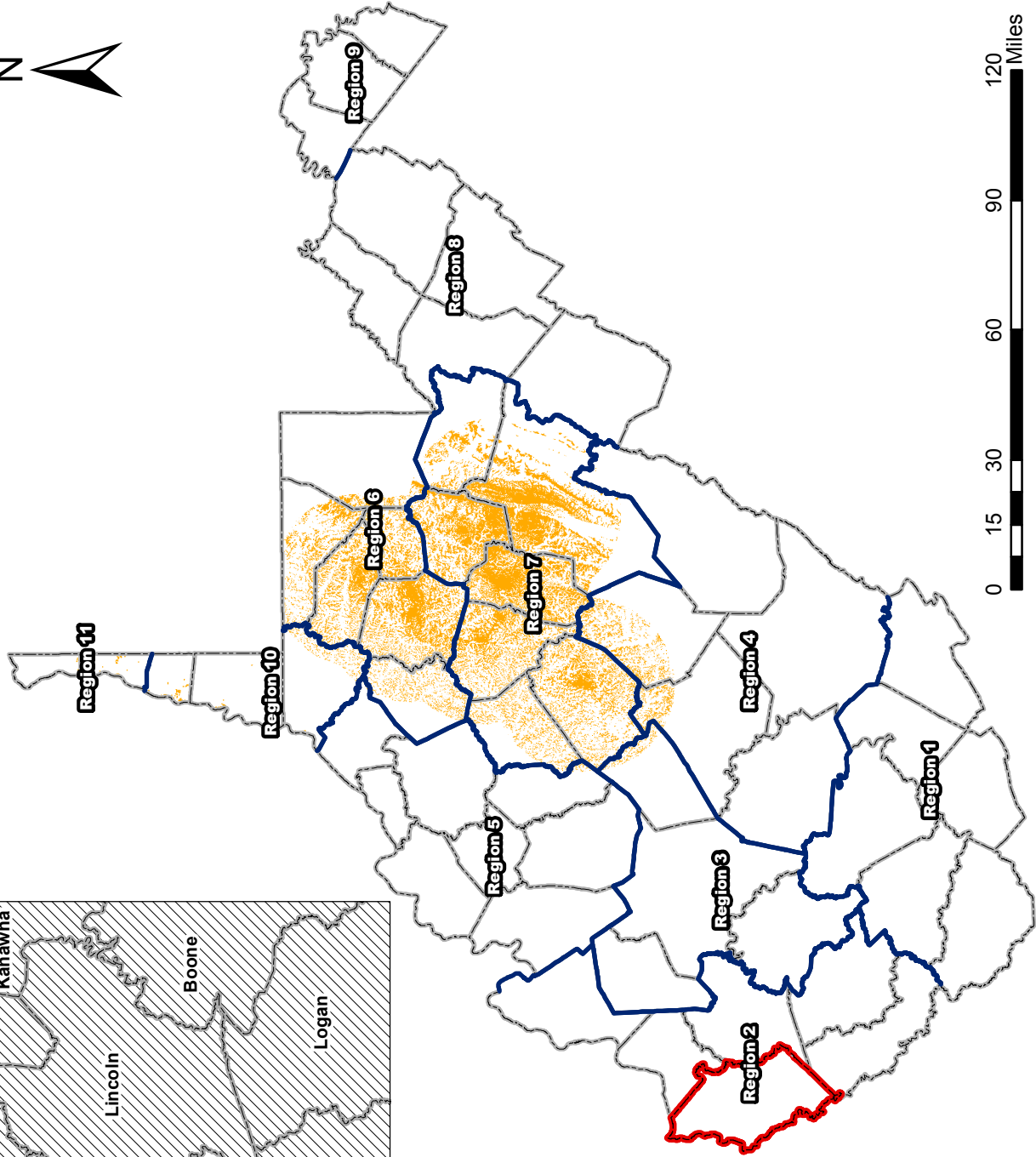
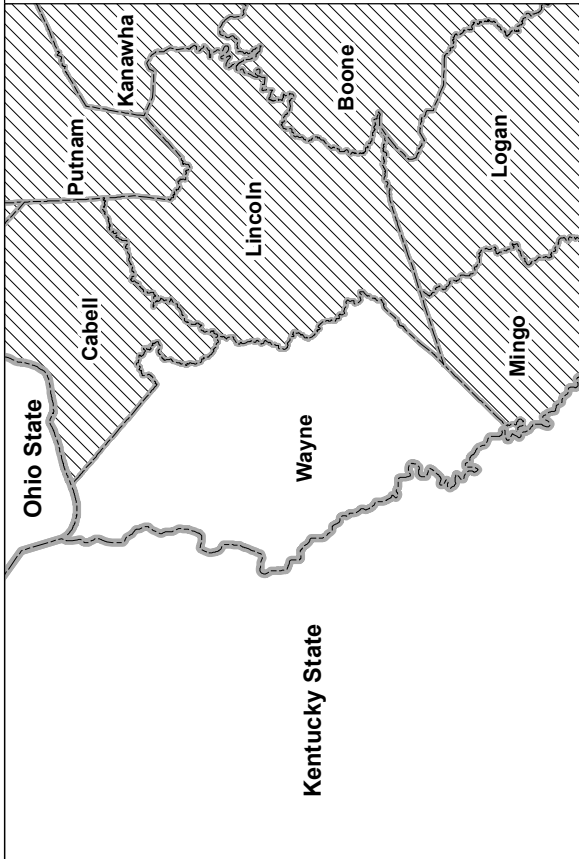
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Broadband - Internet Fixed Wireless Coverage

Wayne County



-  Planning Regions Line
-  Fixed Wireless
-  County Boundaries



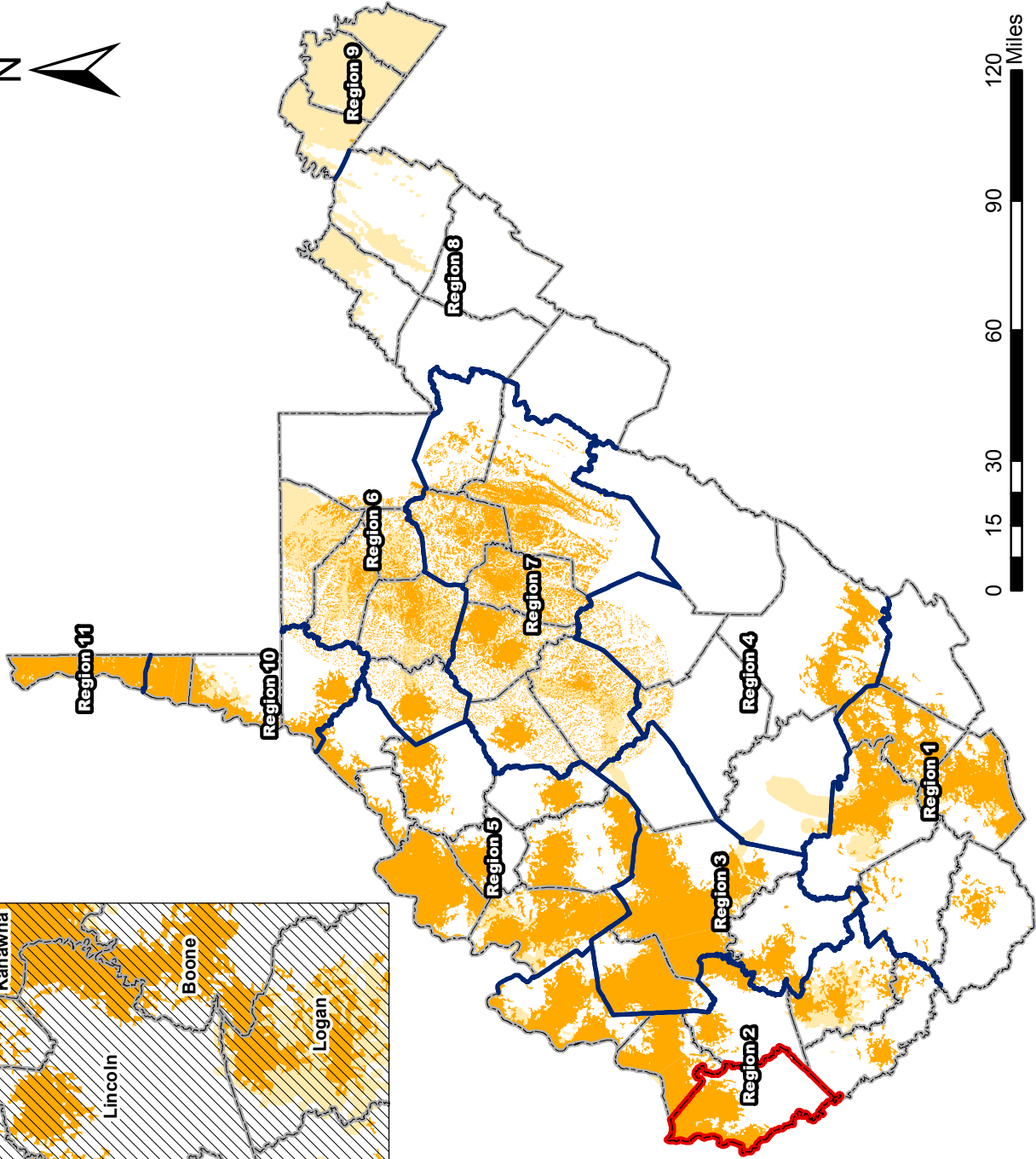
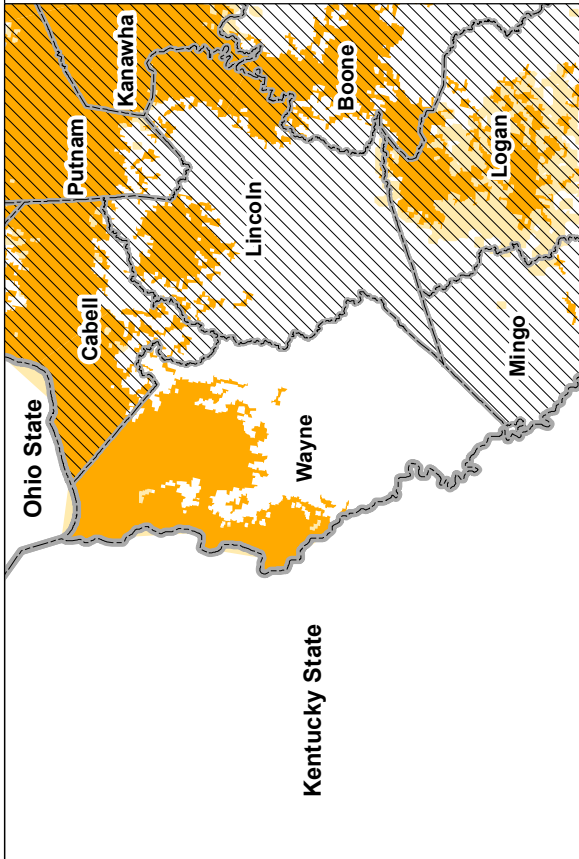
Source: West Virginia Broadband Mapping Program 2012





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Broadband - Internet MaxDown Speed Wireless

Wayne County



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



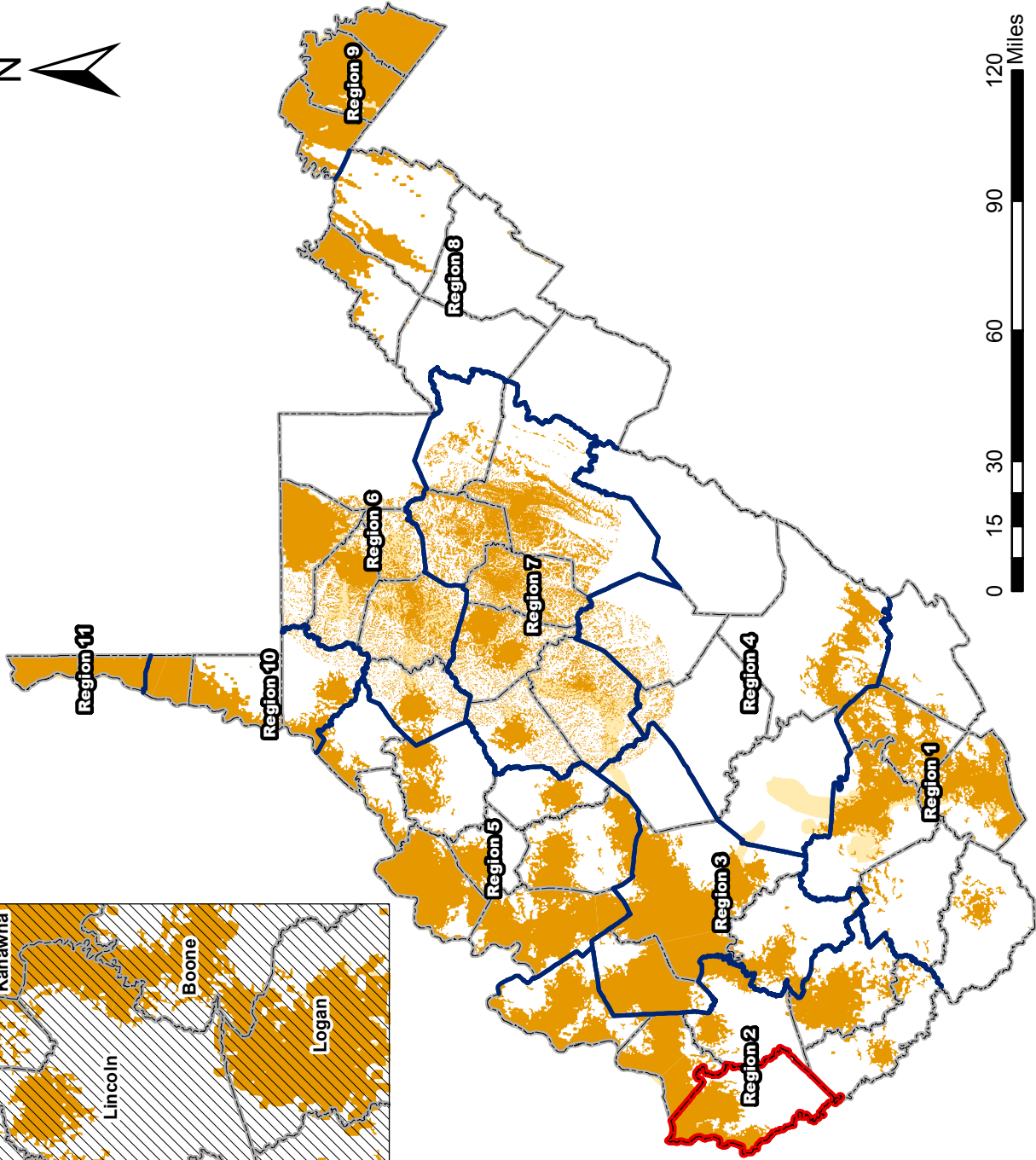
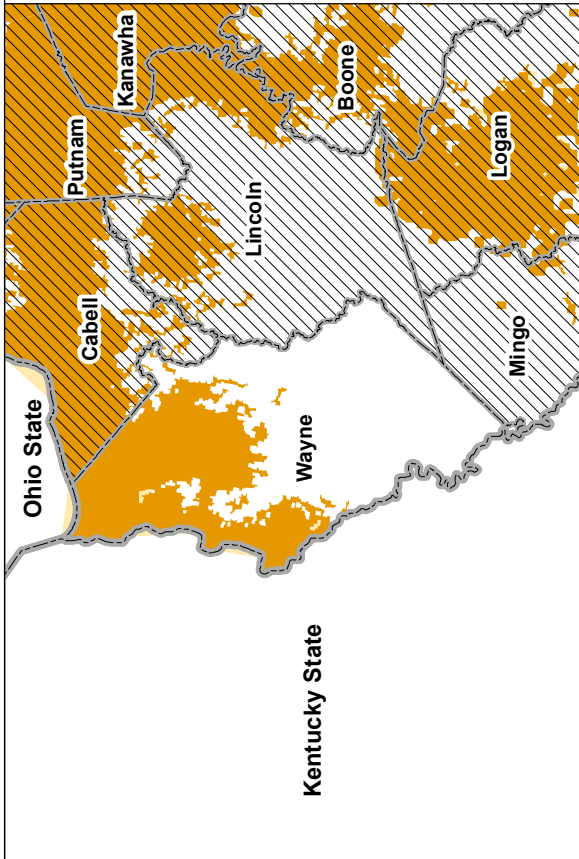
Source: West Virginia Broadband Mapping Program 2012





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Broadband - Internet MaxUp Speed Wireless

Wayne County



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

Source: West Virginia Broadband Mapping Program 2012

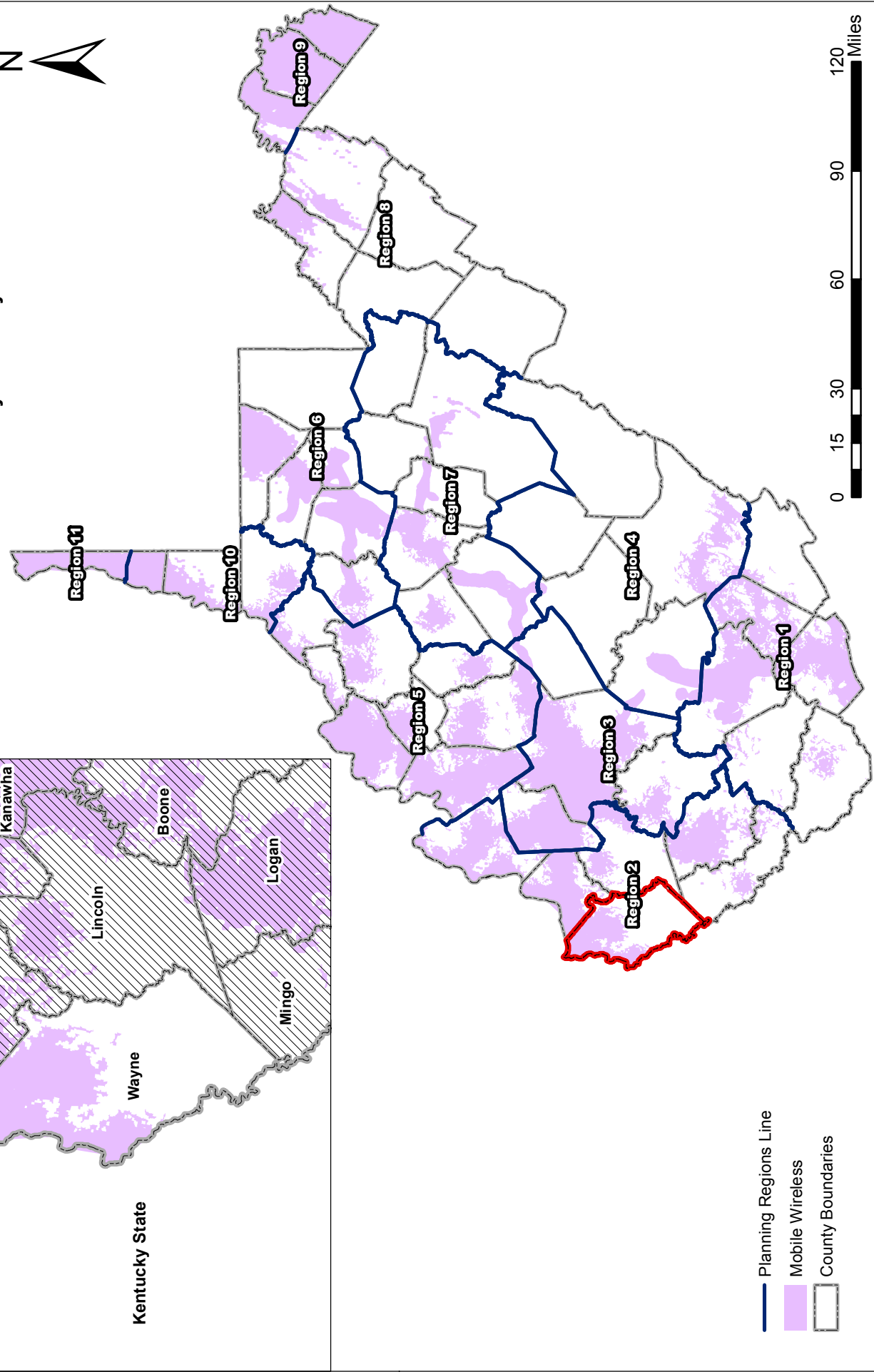
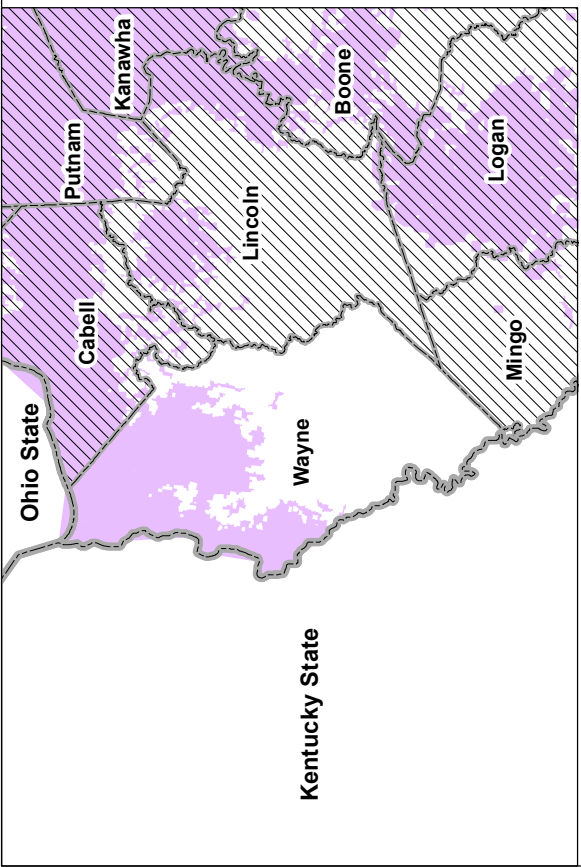
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Broadband - Internet Mobile Wireless Coverage

Wayne County



-  Planning Regions Line
-  Mobile Wireless
-  County Boundaries

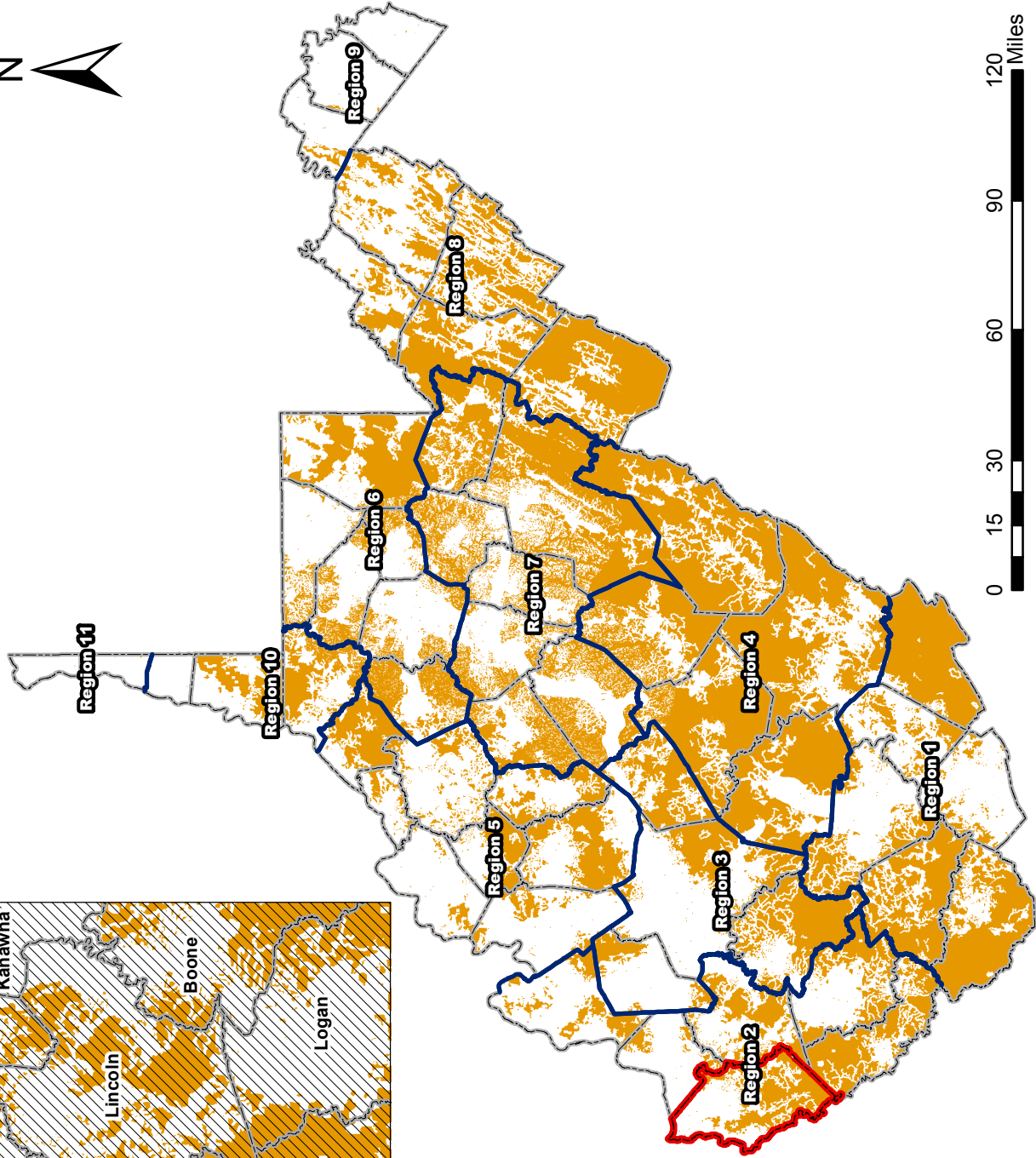
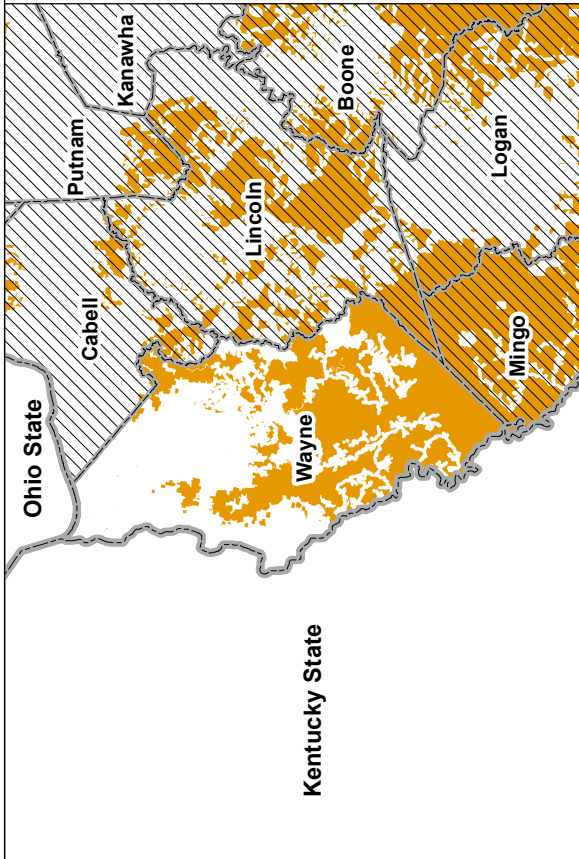
Source: West Virginia Broadband Mapping Program 2012




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Broadband - No Broadband Coverage

Wayne County



-  Planning Regions Line
-  No Coverage Reported
-  County Boundaries



Source: West Virginia Broadband Mapping Program 2012

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Transportation

Highways

Interstate 64 crosses the far north of the county, as does US Route 60. US Route 52 and State Routes 37, 75, and 152 cross Wayne County (Map 26).

Rail

Both Norfolk Southern and CSX own and operate dozens of miles of track in the county.

Air

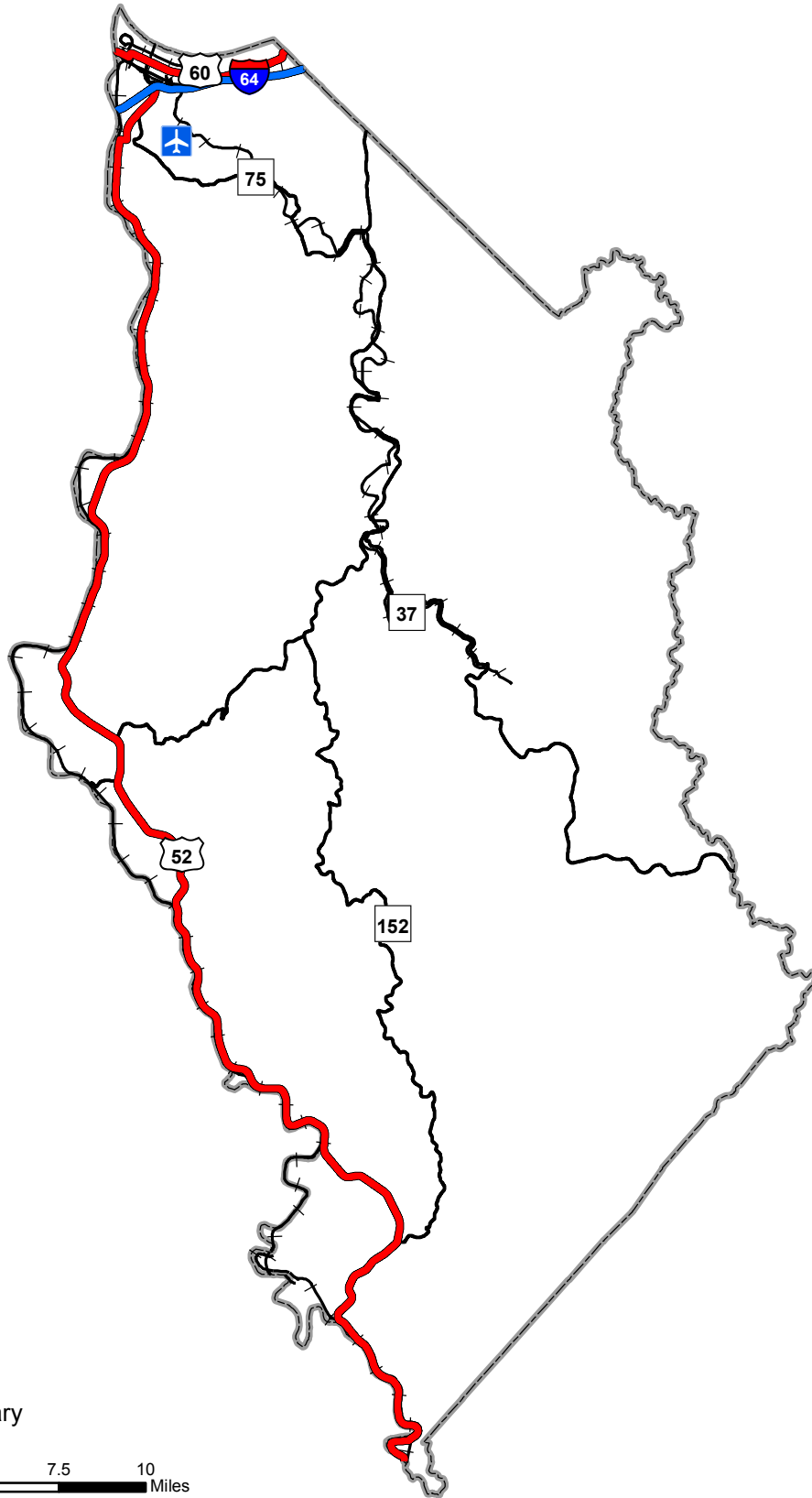
The Tri-State airport is located in Wayne, three miles south of Huntington. It is used for general purposes with two commercial airlines conducting passenger service. It is the second largest airport in West Virginia in enplanements, after Yeager Airport in Charleston, WV. Map 26 shows the location of the airport.

Intermodal

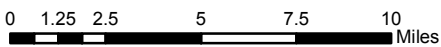
Wayne County is the site of the Heartland Intermodal Gateway at Prichard Intermodal Facility. The facility will be able to handle double-stack rail containers and will utilize its location to become a major distribution facility. The building of the facility will increase employment opportunities and bring logistics money to the area (Map 27).

Transportation

Wayne County



- Airport
- Interstate
- US Routes
- WV Routes
- Railroads
- County Boundary

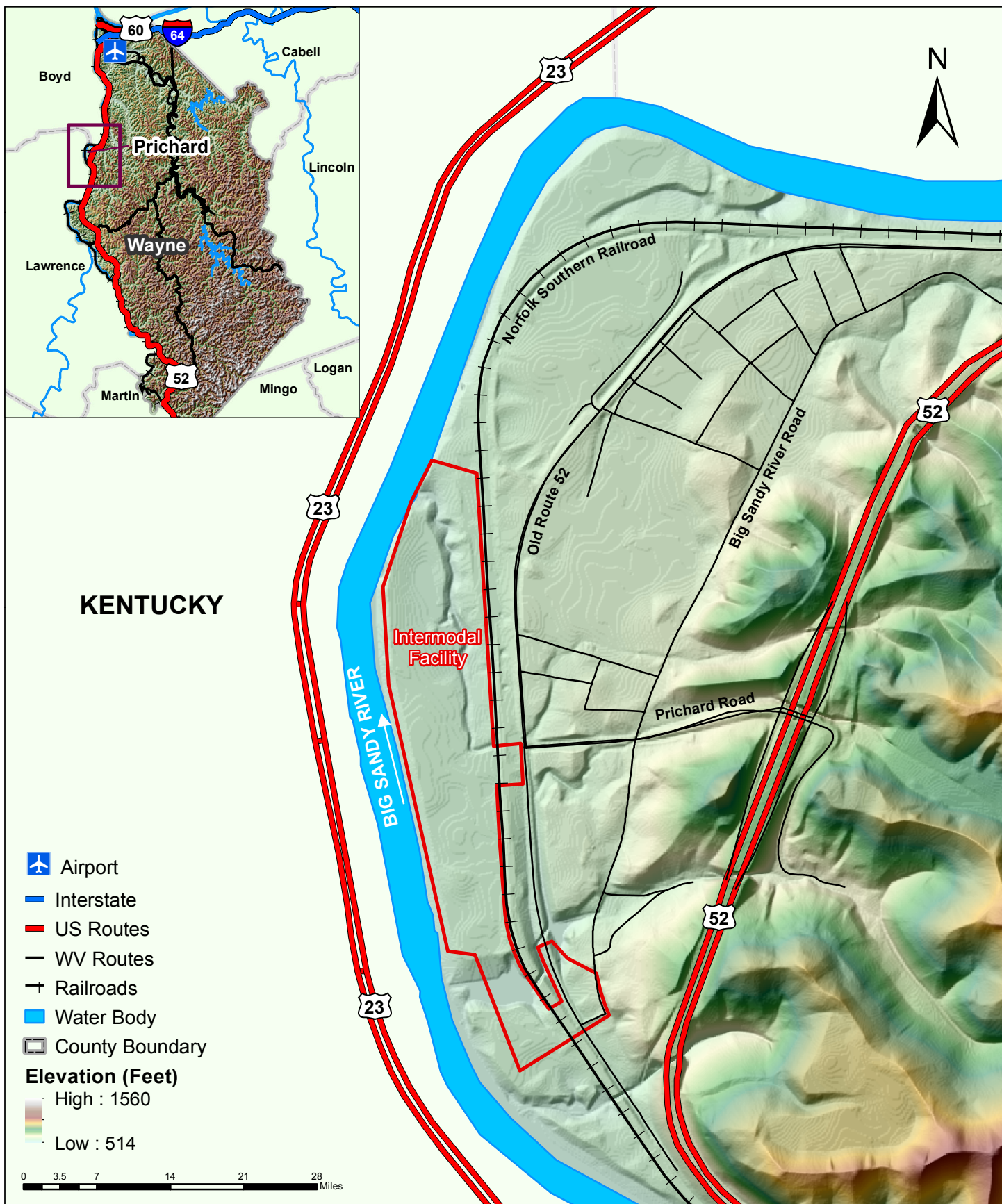


Source: Airports; United States Department of Transportation 2012, West Virginia GIS Technical Center; US Routes, West Virginia Routes, I66 Pikeville, King Coal Highway; West Virginia Department of Transportation 2012; Railroads; Rahall Transportation Institute 2012

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Heartland Intermodal Gateway at Prichard



Source: Rahall Transportation Institute 2013

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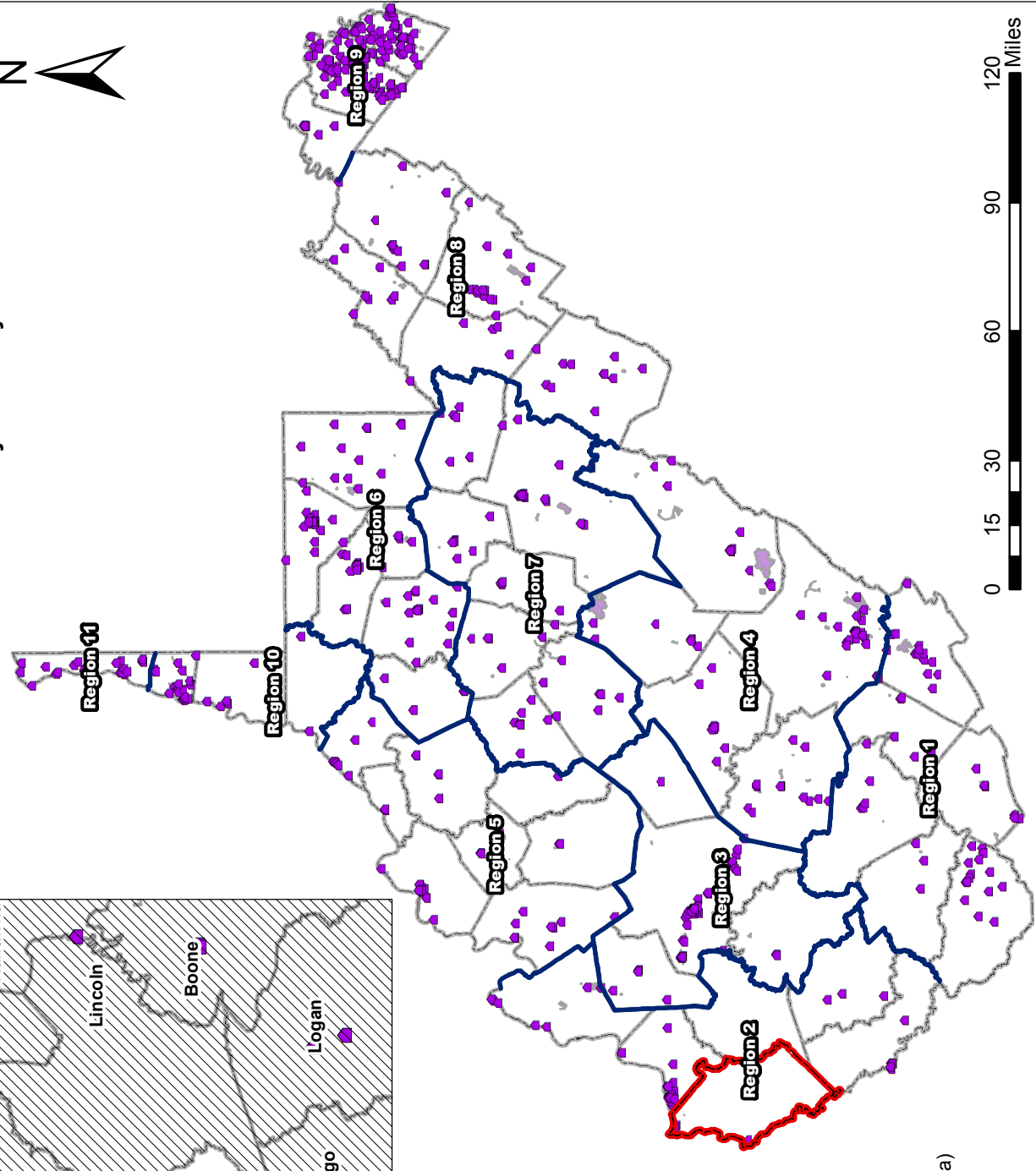
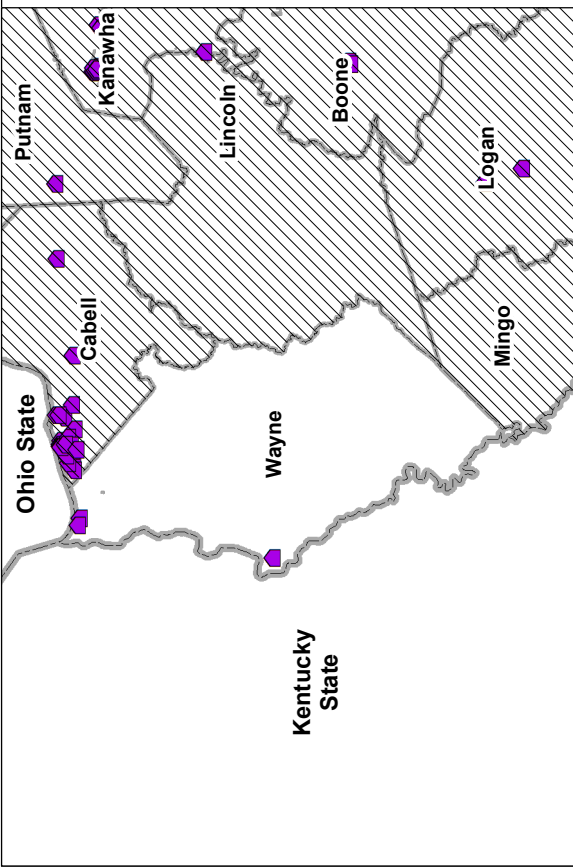






Historic Preservation

Historic preservation will be essential in a county steeped in coal mining history. Wayne County has 4 listings in the National Register of Historic Places (Map 28). However, other historic areas have been designated by West Virginia. Map 29 gives a spatial position to each designated State historic piece of architecture.

National Register of Historic Place

Wayne County



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



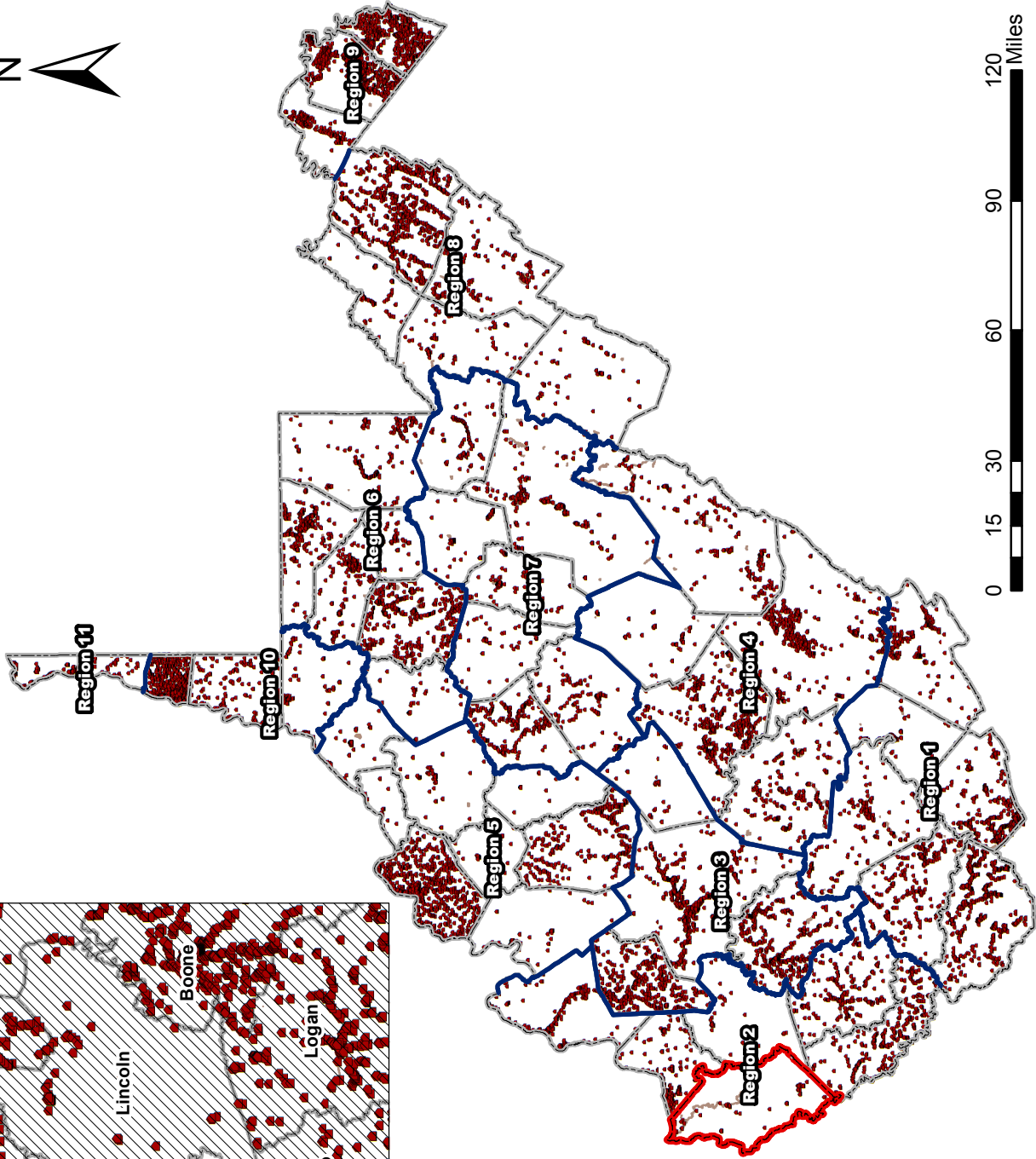
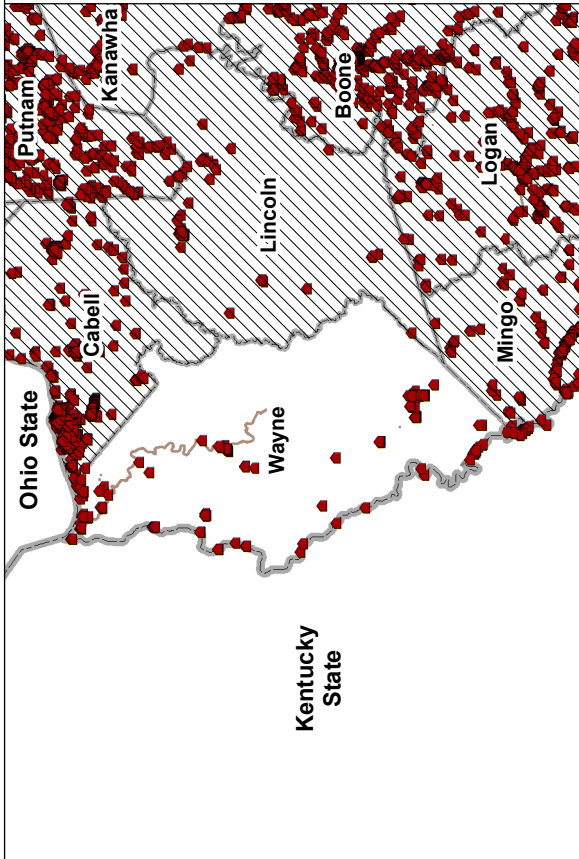
Source: West Virginia State Historic Preservation Office 2012

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State Historic Architecture

Wayne County



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



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Source: West Virginia State Historic Preservation Office 2012

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Natural Resources, Environment, and Energy

Particular importance should be given to the spatial positions of natural resource areas, geographic environments, and potential energy sources in a county. This serves to inform potential investors about what possibilities the land provides for production of resources and energy. Wayne 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. Wayne County's system is not extensive but does cover some significant areas in the north and central parts of the county (Map 30).

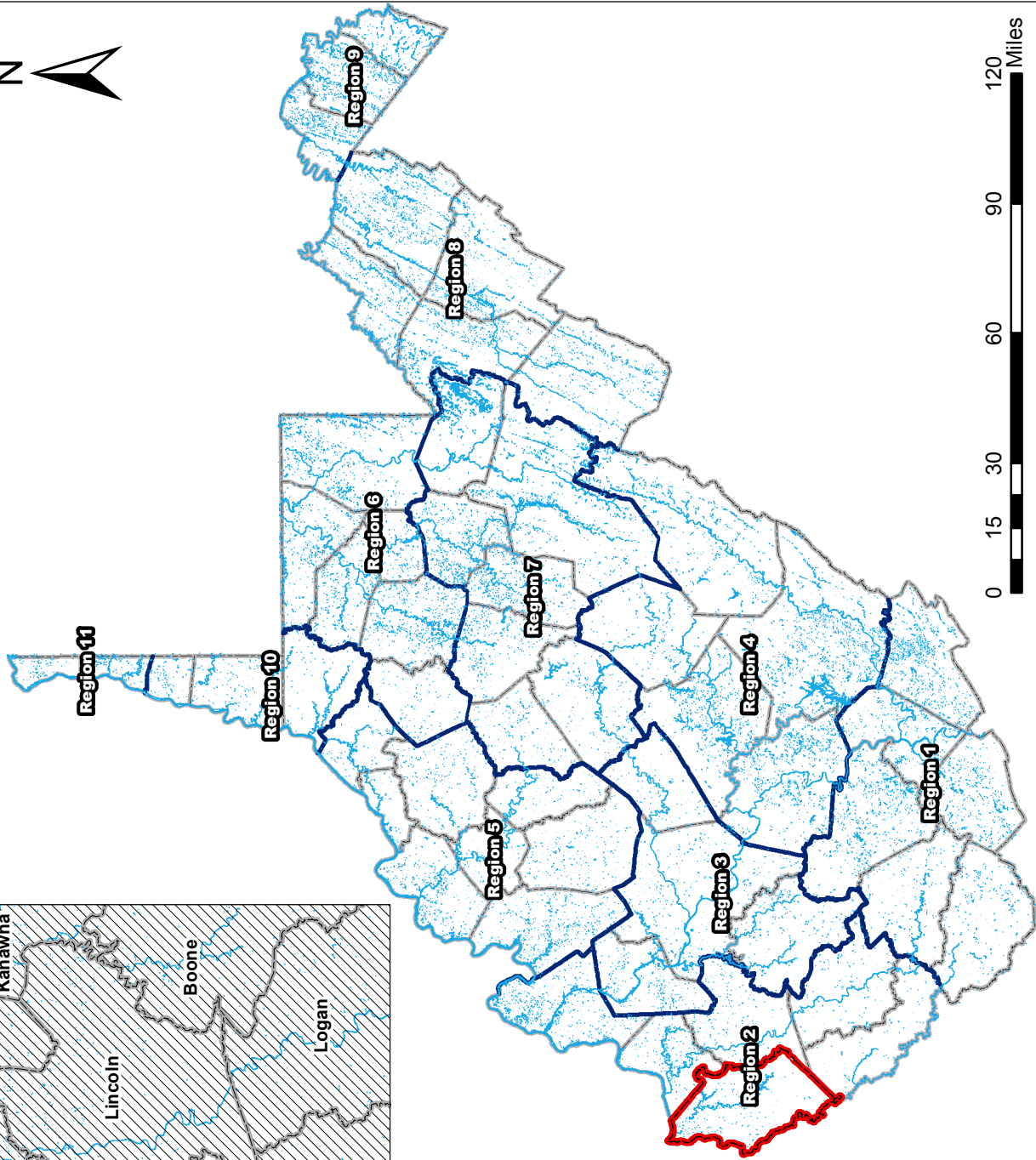
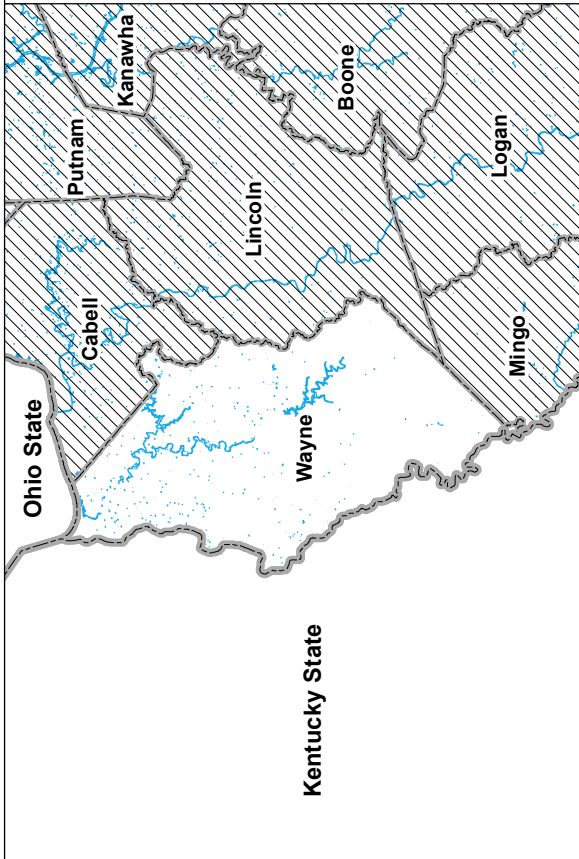
The State also possesses a respectable amount of park and forest land. Most of this land is located in the eastern portion of the State, the area that contains the main part of the Appalachian Mountain range. Wayne contains wildlife management areas, a state forest, and state park land (Map 31).




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."⁸ 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; Wayne County is not among them (Map 32).

⁸ "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

Wayne County



-  Planning Regions Line
-  National Wetlands Inventory
-  County Boundaries

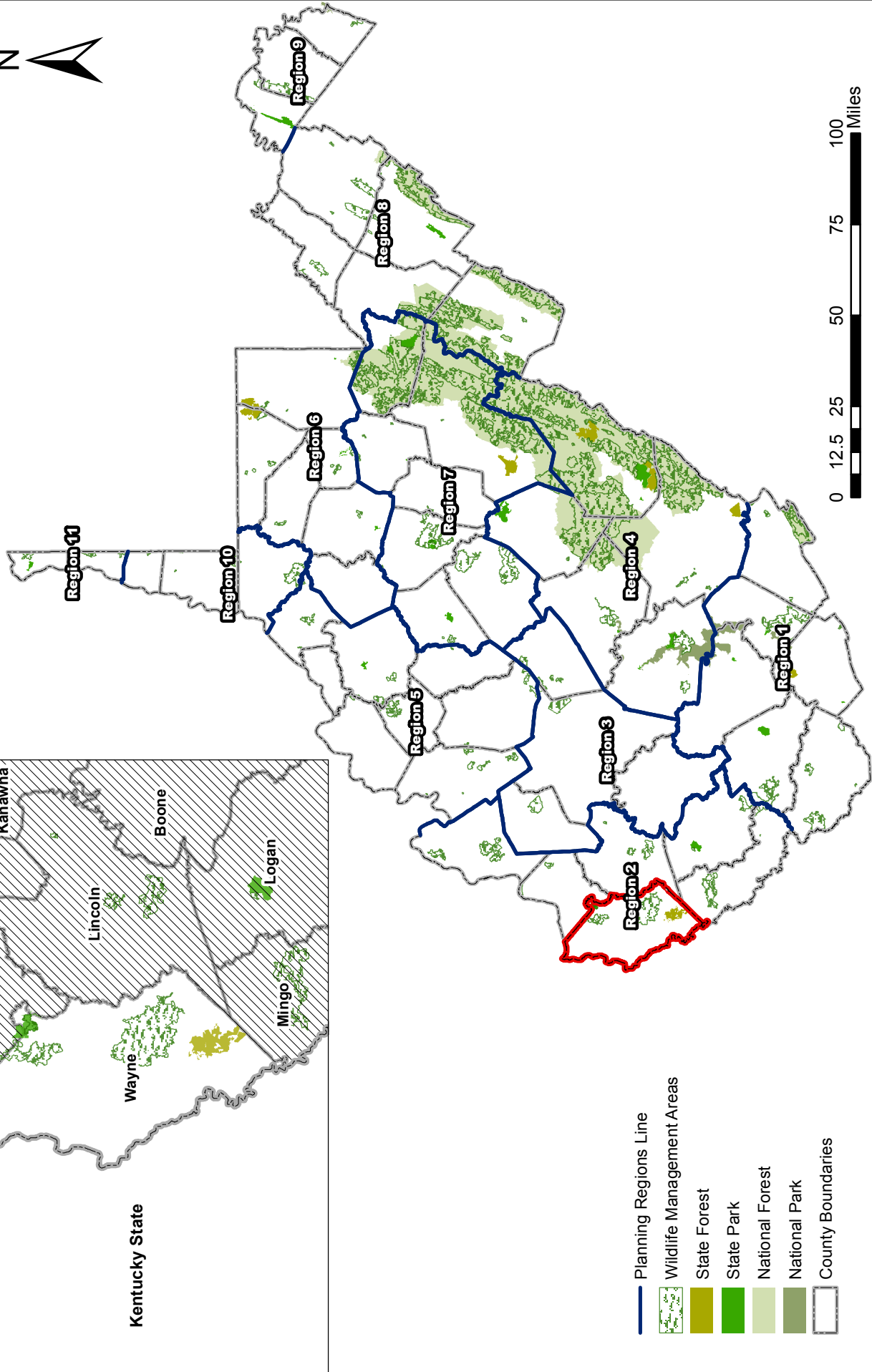
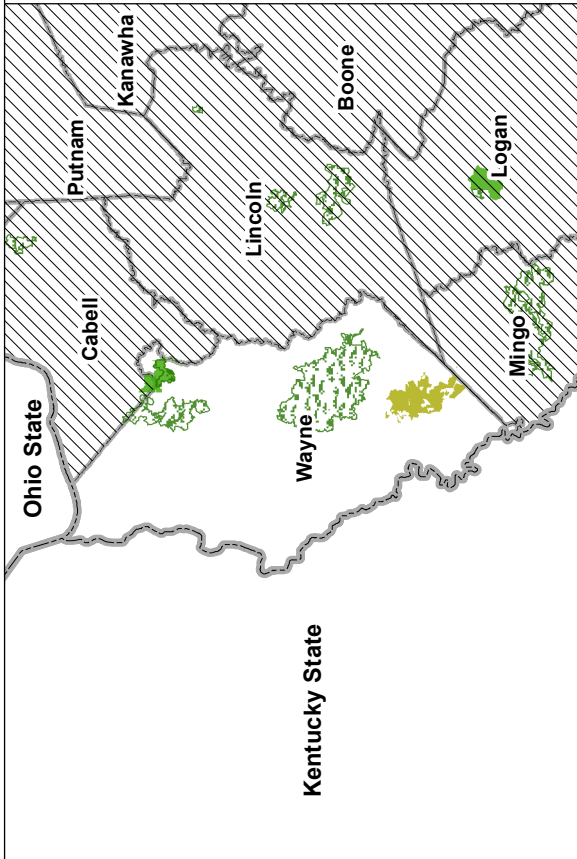
Source: United States Fish and Wildlife Service 1996








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Public Land - Parks and Forests

Wayne County



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

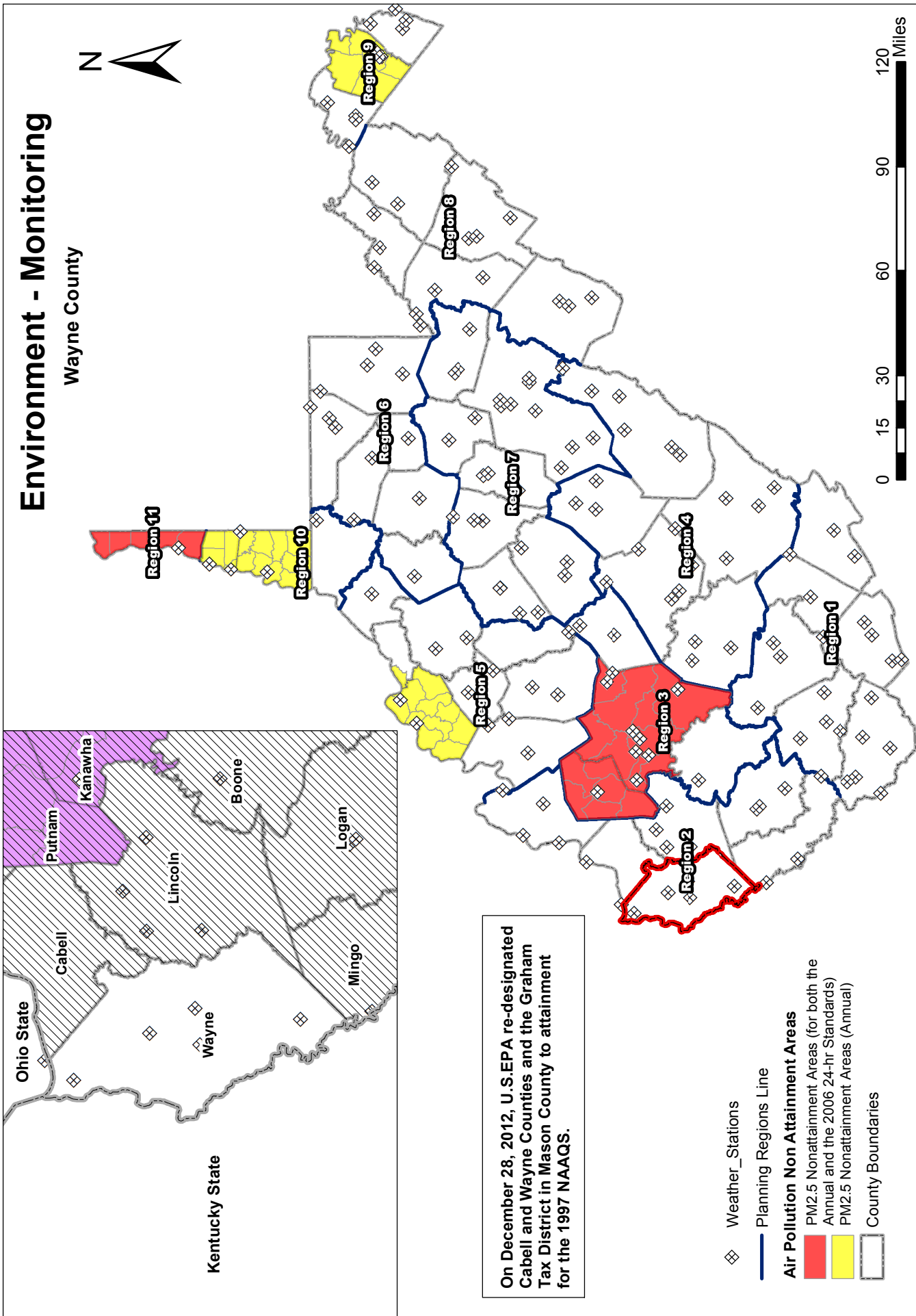
Source: Wildlife Management Areas; West Virginia Division of Natural Resources 2002; State Forest; West Virginia Division of Forestry 2004; State Park; West Virginia Division of Natural Resources; National Resource Analysis Center 2000; National Forest; United States Forest Service 2003; National Park;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

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Environment - Monitoring

Wayne 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.

- ◇ 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.

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West Virginia's past and most likely its future are defined by energy. Besides coal, other options for energy have been investigated in the State. Gas and oil are of course the main energy staples in the nation, and West Virginia has access to this sort of energy in a number of ways. Wayne County has two oil fields and an extensive network of gas pipes (Map 33). Wayne County play in the Marcellus shale appears to be very uncertain based on estimated shale thickness, but the county has about 6 completed wells (Map 34). 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.

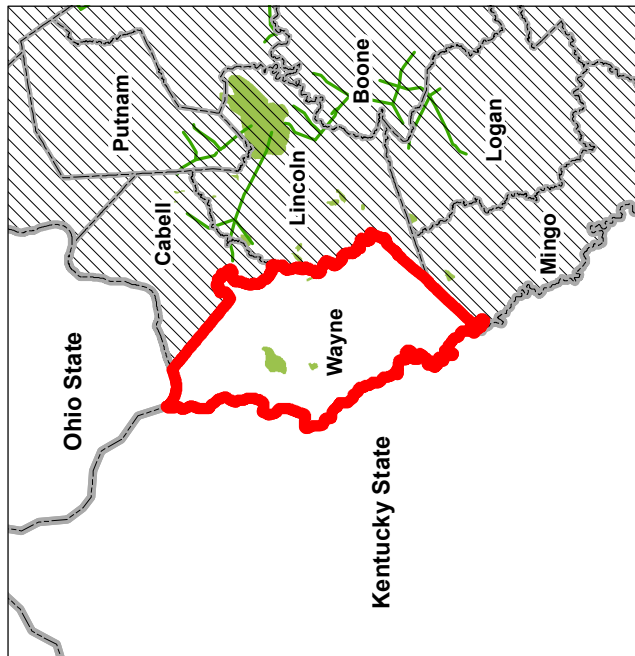
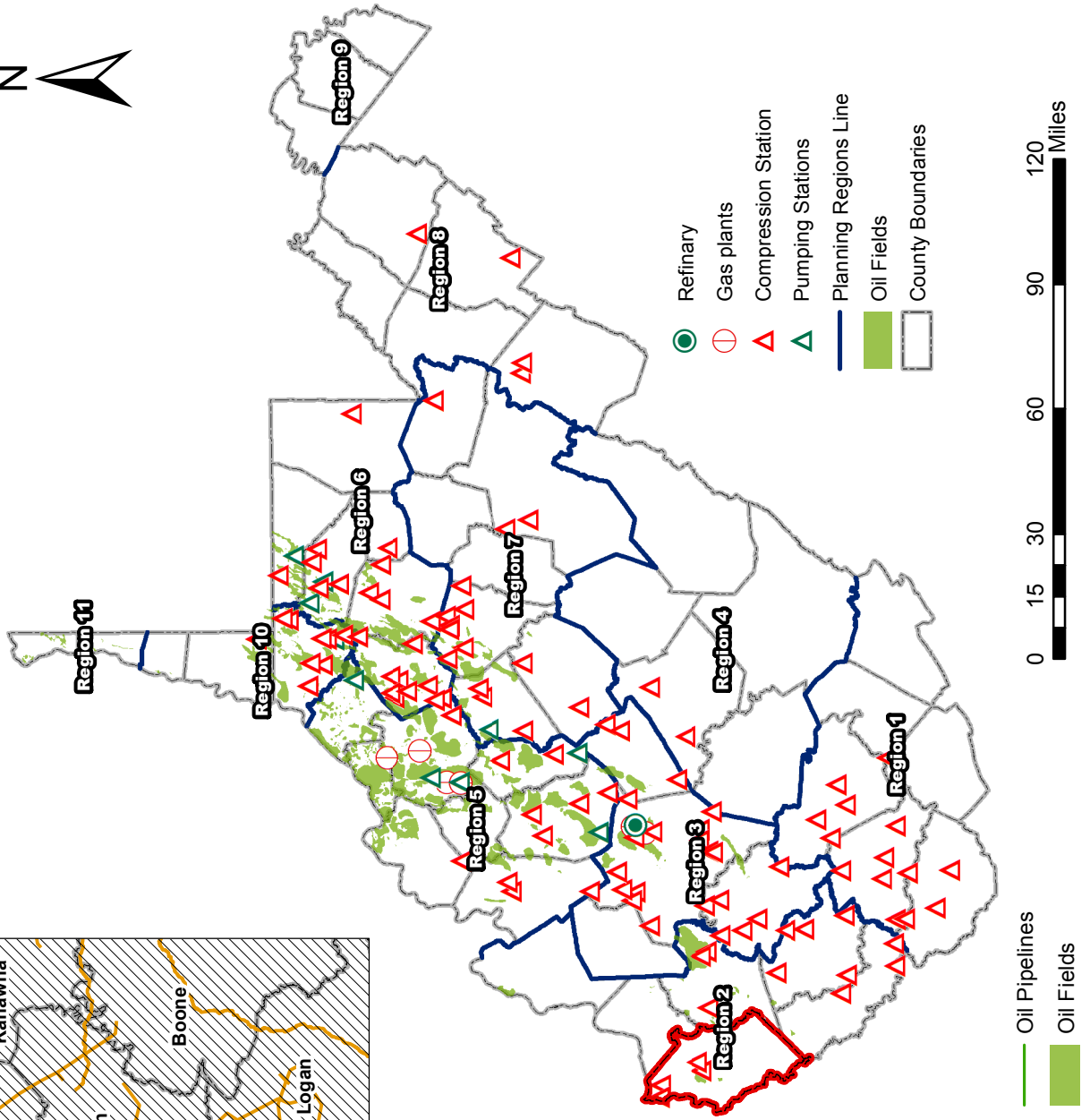
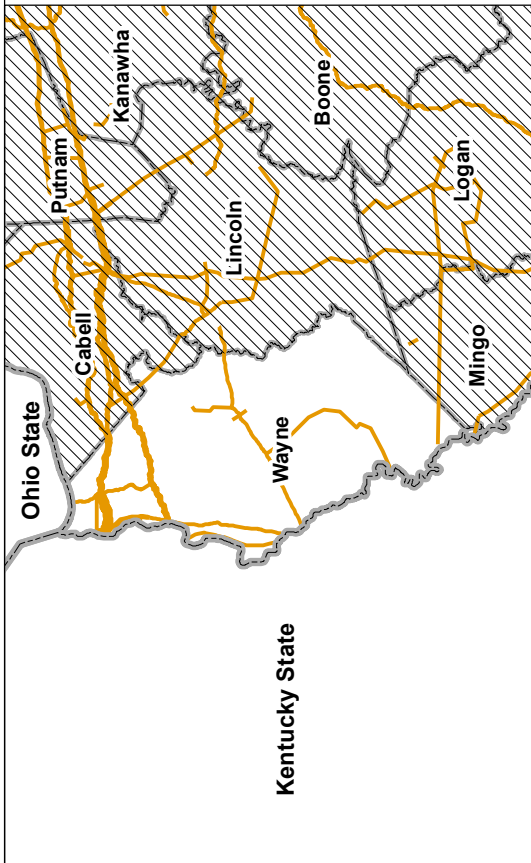
Potential renewable energy sources were also examined. Wood byproducts are a potential energy source classified as biomass energy. Naturally it is most useful in areas with a great deal of wood products. West Virginia is one of the most forested States in the country, and Wayne is one of the most heavily forested (Map 35). However, Wayne County is not a player in producing energy by wood byproducts, and for which byproducts are readily available (Maps 36 and 37). Wayne County's timber industry may also be able to expand, given that the logging residue and roundwood products total stock are low for such a heavily forested county (Maps 38 and 39). These may be activities to consider in the future. Other potential renewable energy sources include geothermal (Map 40), solar (Map 41), and wind (Map 42). Each of these resources was examined in a recent report from the Center of Business and Economic Research at Marshall University.⁹ None of these sources was "likely to provide fuel or electricity at a lower cost" than coal and oil. Subsidizing these resources appears to be the only way to encourage faster growth in consumption, and in some cases they still have very limited potential in West Virginia. Geothermal energy, however, appears to have great potential in certain parts of the State, as shown in Map 38, but Wayne does not appear to be a favorable location for development. In fact, Wayne does not appear to be favorable for any developments in these energies. 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.¹⁰

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

¹⁰ Ibid.

Energy - Gas and Oil

Wayne County

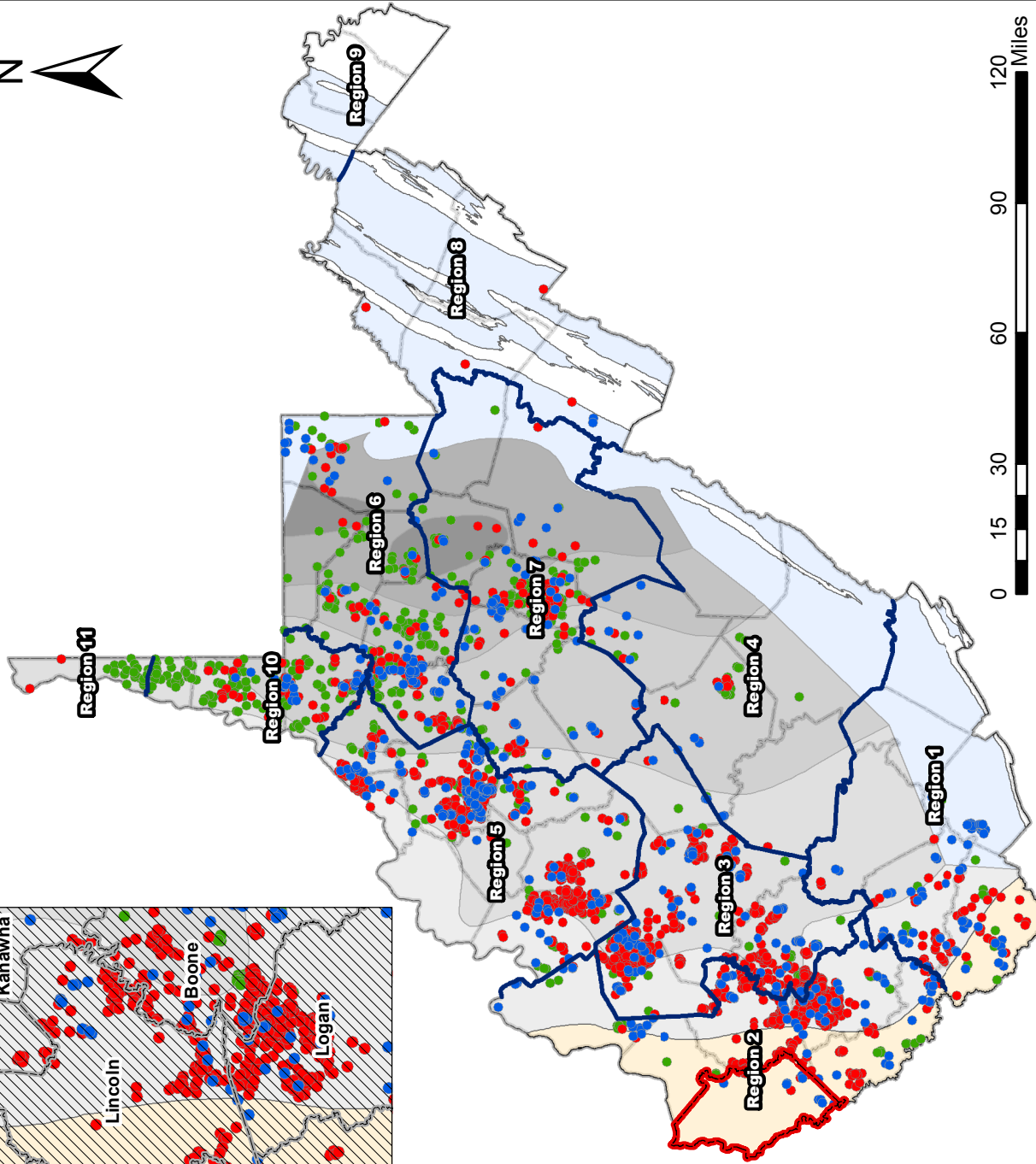
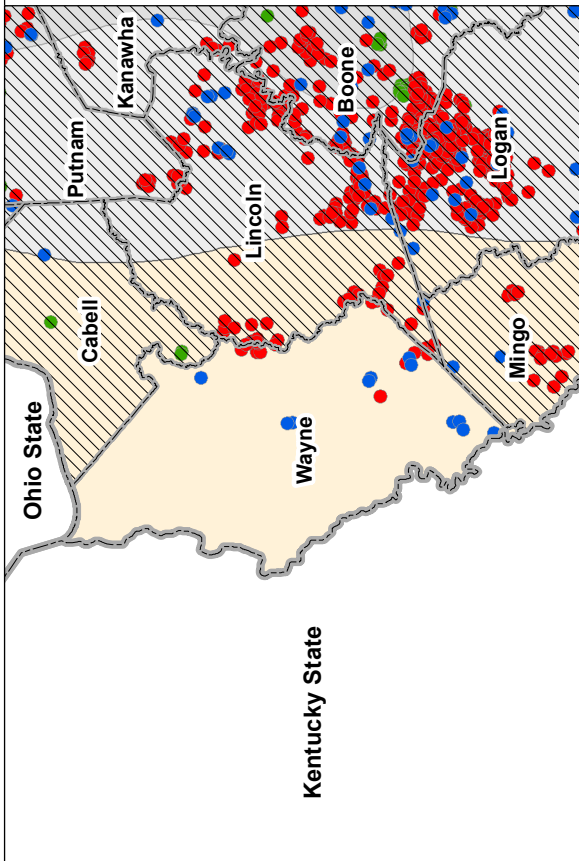


Source: West Virginia Geological and Economic Survey 2007

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Energy - Marcellus Wells

Wayne 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

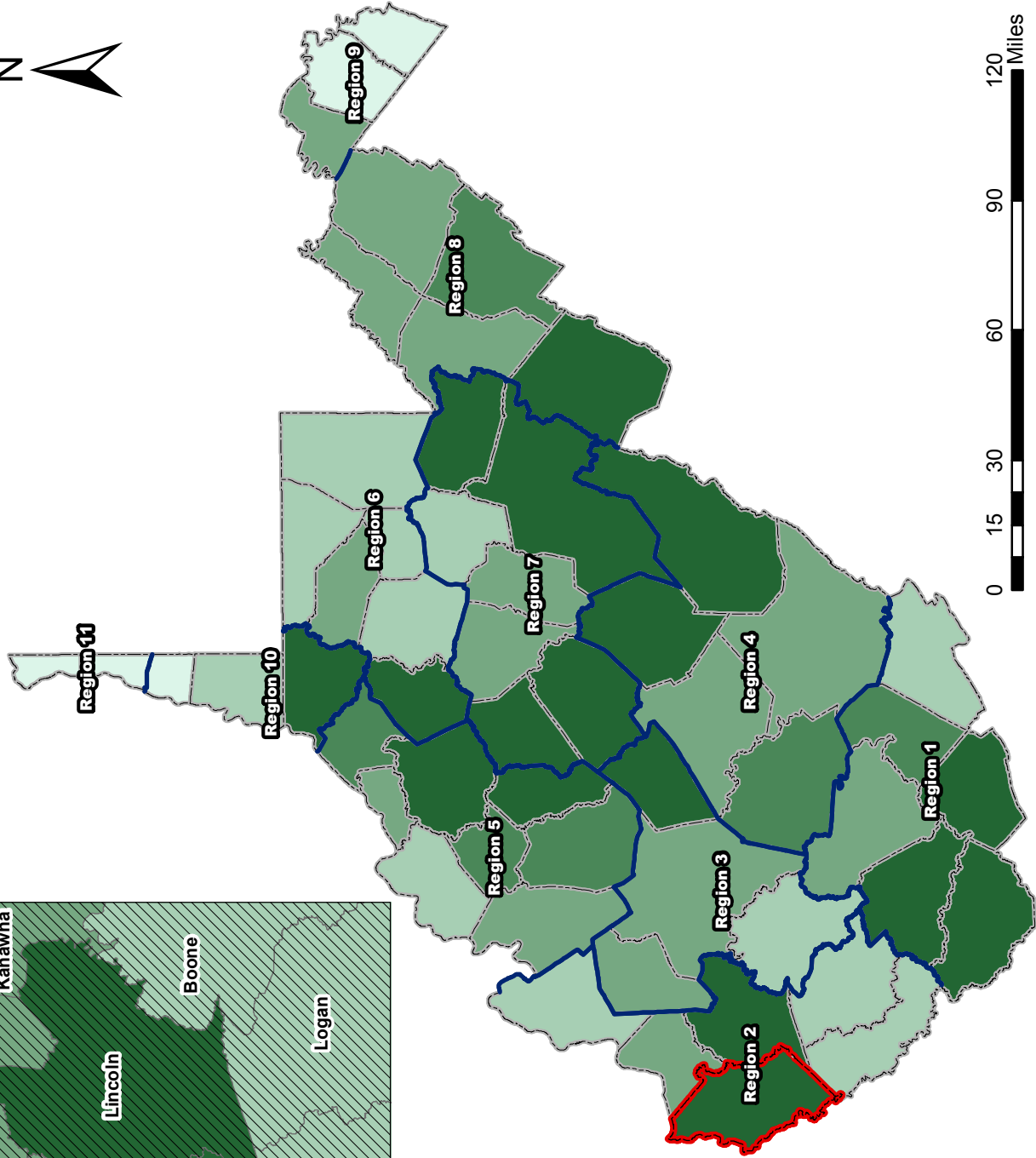
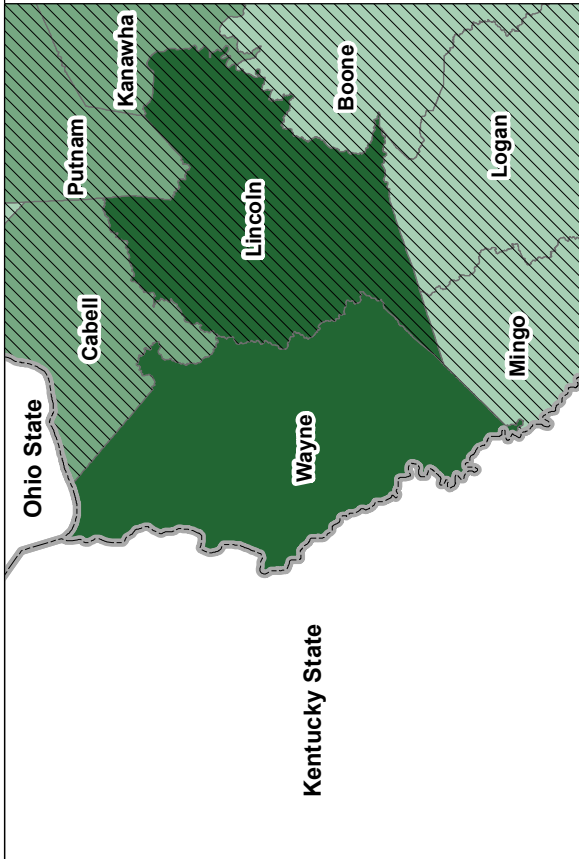
Source: West Virginia Geological and Economic Survey 2012

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Energy - Percent Forest Coverage

Wayne County



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

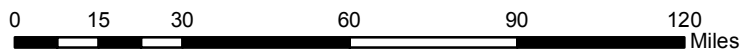
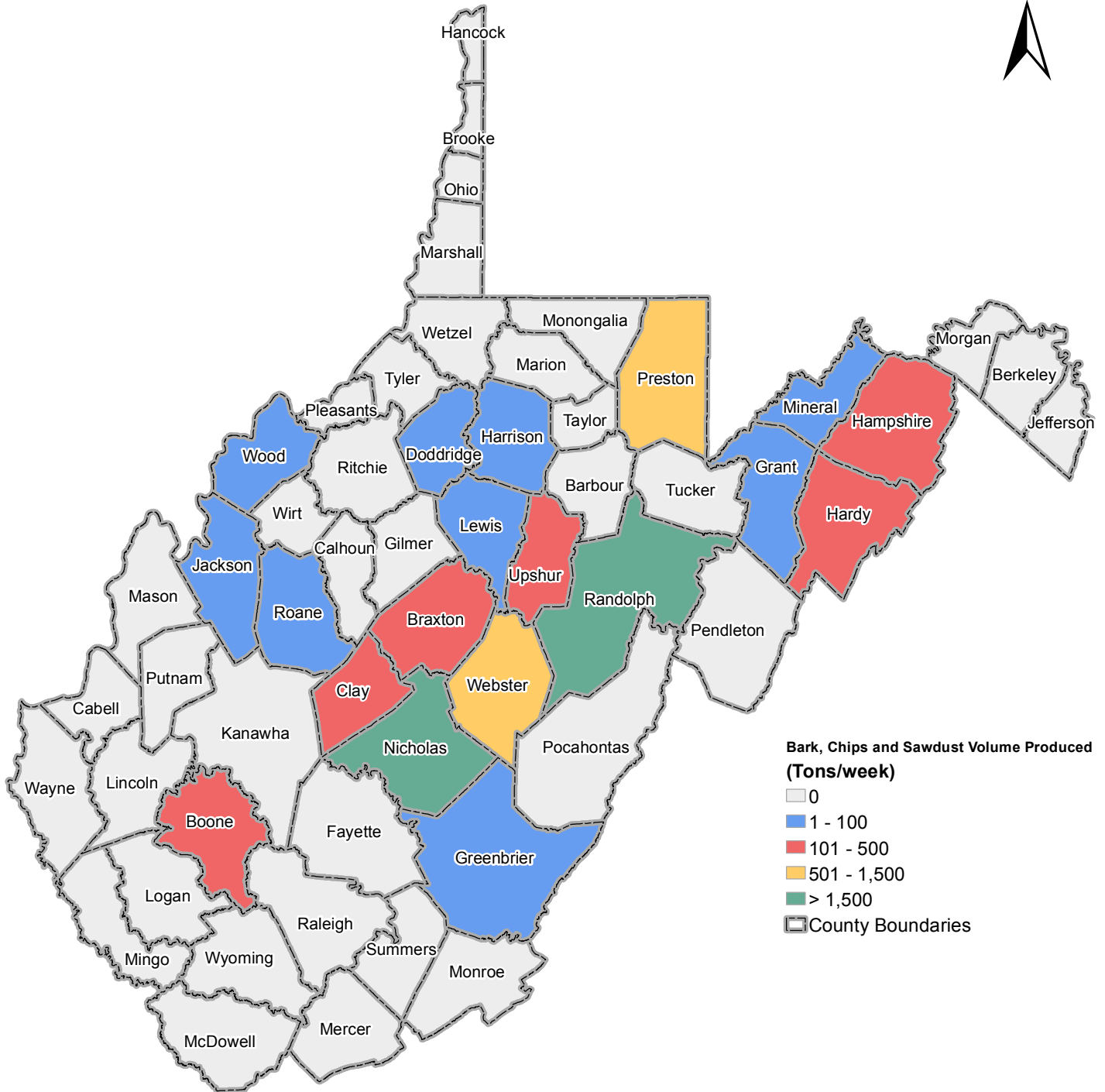
Source: Rahaal Transportation Institute 2013

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Renewable Energy - Wood By Products

Bark, Chip and Sawdust Volume Produced - Wayne County



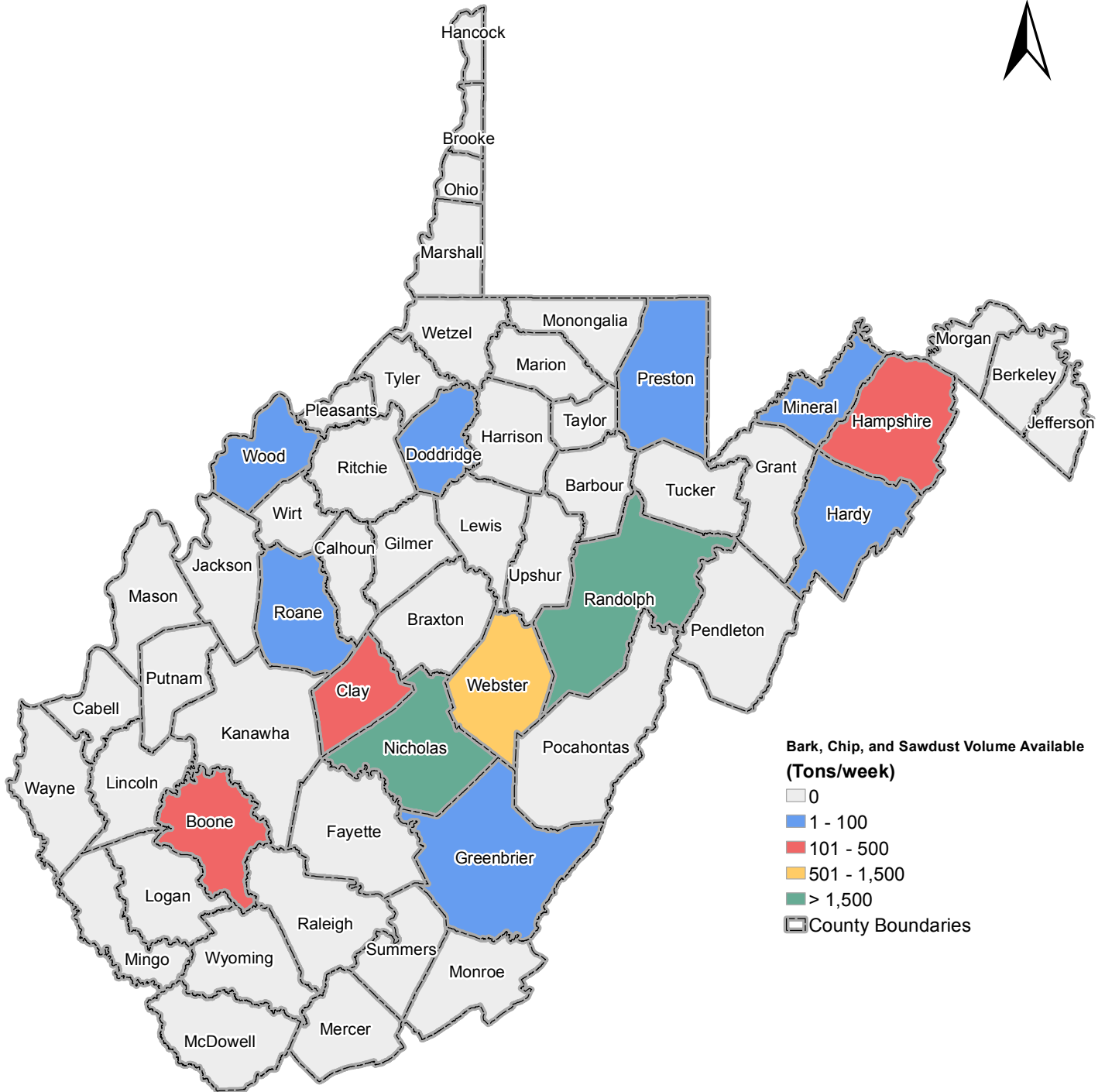
Source: Appalachian Hardwood Center 2011

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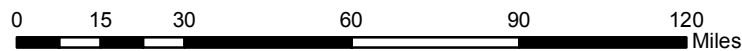
Renewable Energy - Wood By Products

Bark, Chip, and Sawdust Volume Available - Wayne County



Bark, Chip, and Sawdust Volume Available (Tons/week)

- 0
- 1 - 100
- 101 - 500
- 501 - 1,500
- > 1,500
- County Boundaries



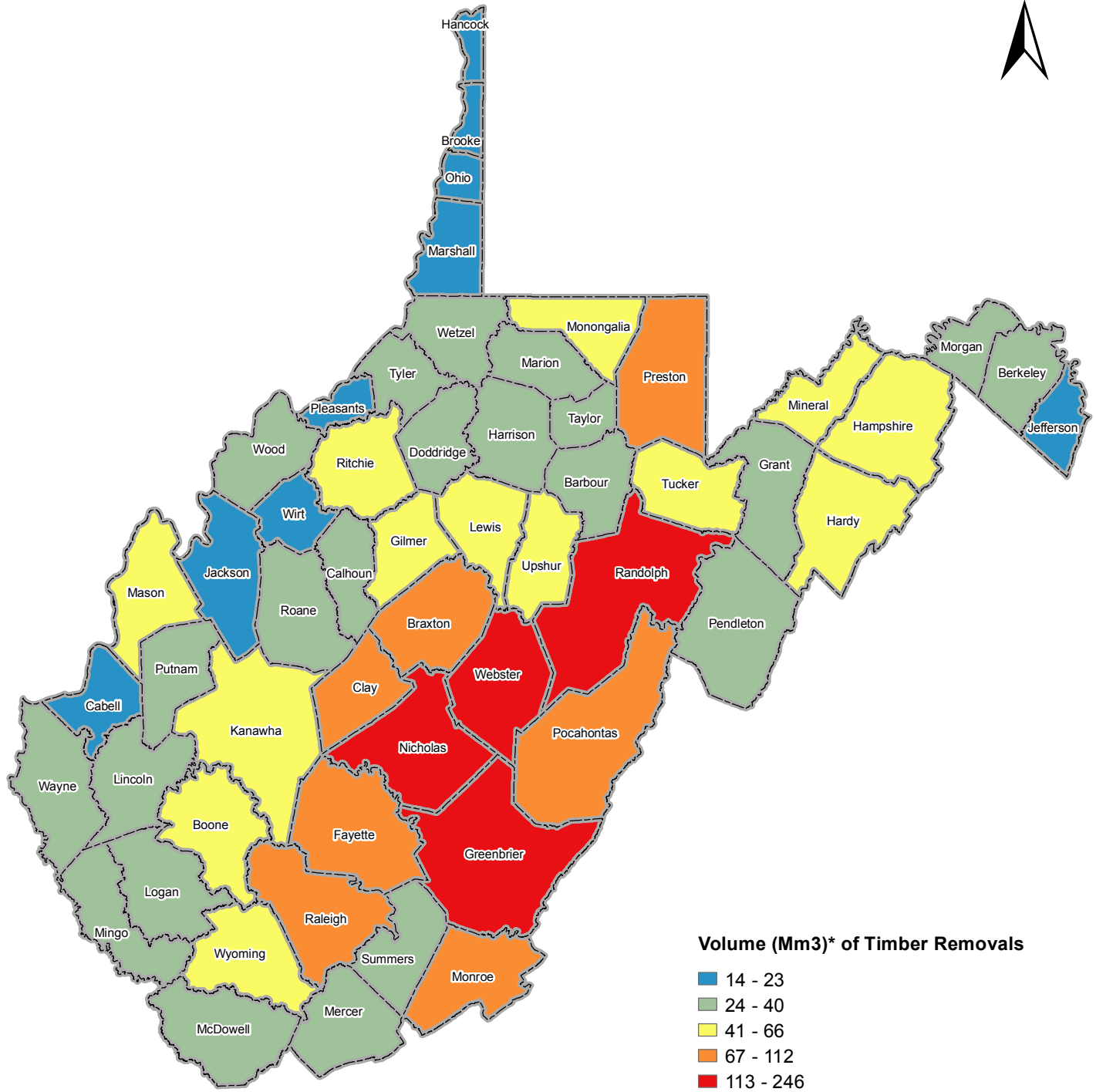
Source: Appalachian Hardwood Center 2011

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Renewable Energy - Timber Removal Volume

Logging Residue Total Stock - Wayne County

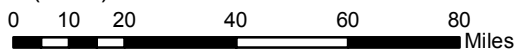


Volume (Mm³)* of Timber Removals

- 14 - 23
- 24 - 40
- 41 - 66
- 67 - 112
- 113 - 246

▭ County Boundaries

* (Mm³) Thousand cubic meters



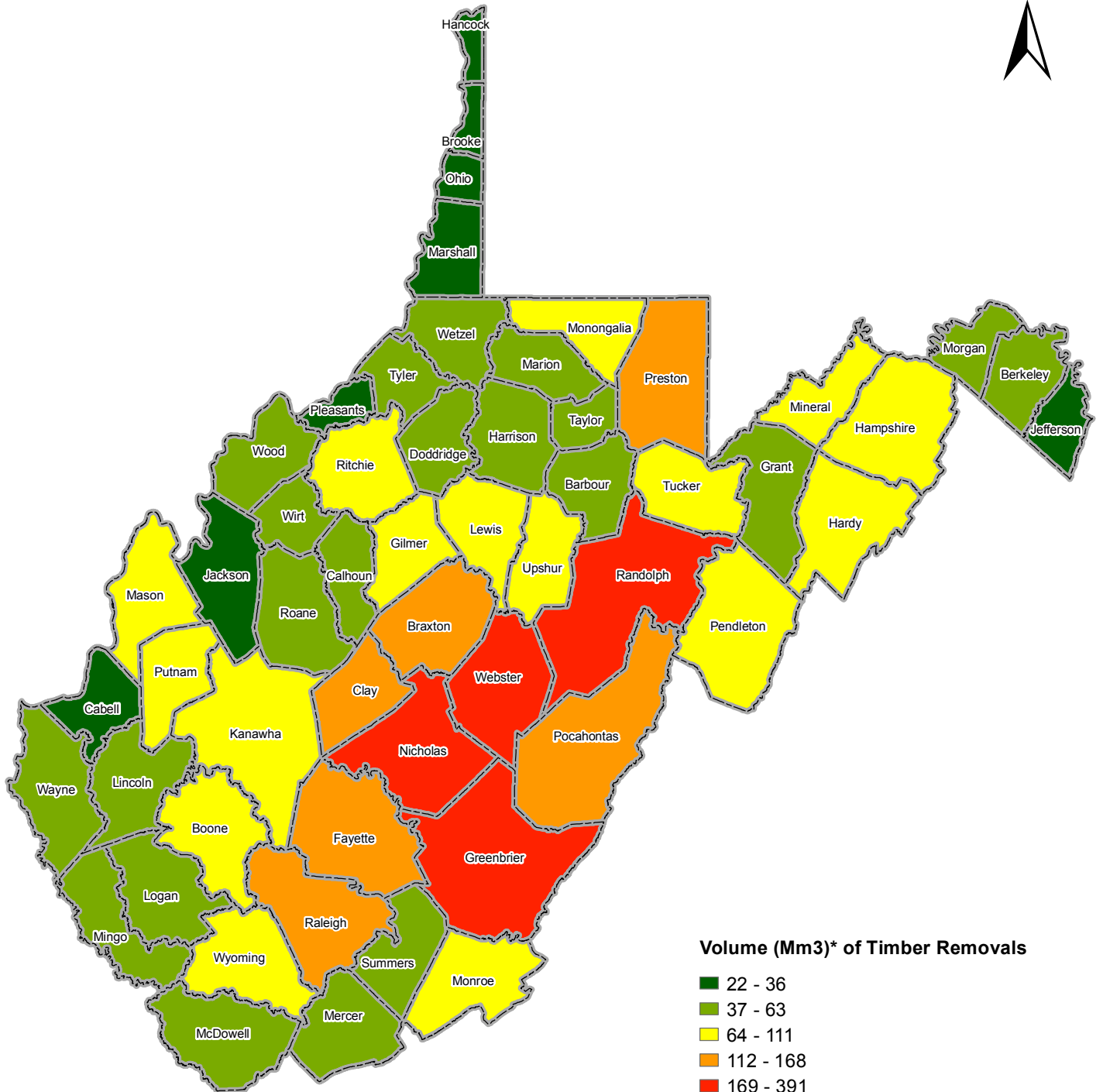
Source: The U.S Forest Service Timber Product Output 1996

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www.njrati.org

Renewable Energy - Timber Removal Volume

Roundwood Products Total Stock - Wayne County

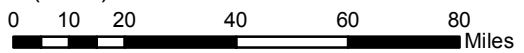


Volume (Mm3)* of Timber Removals

- 22 - 36
- 37 - 63
- 64 - 111
- 112 - 168
- 169 - 391

□ County Boundaries

* (Mm3) Thousand cubic meters



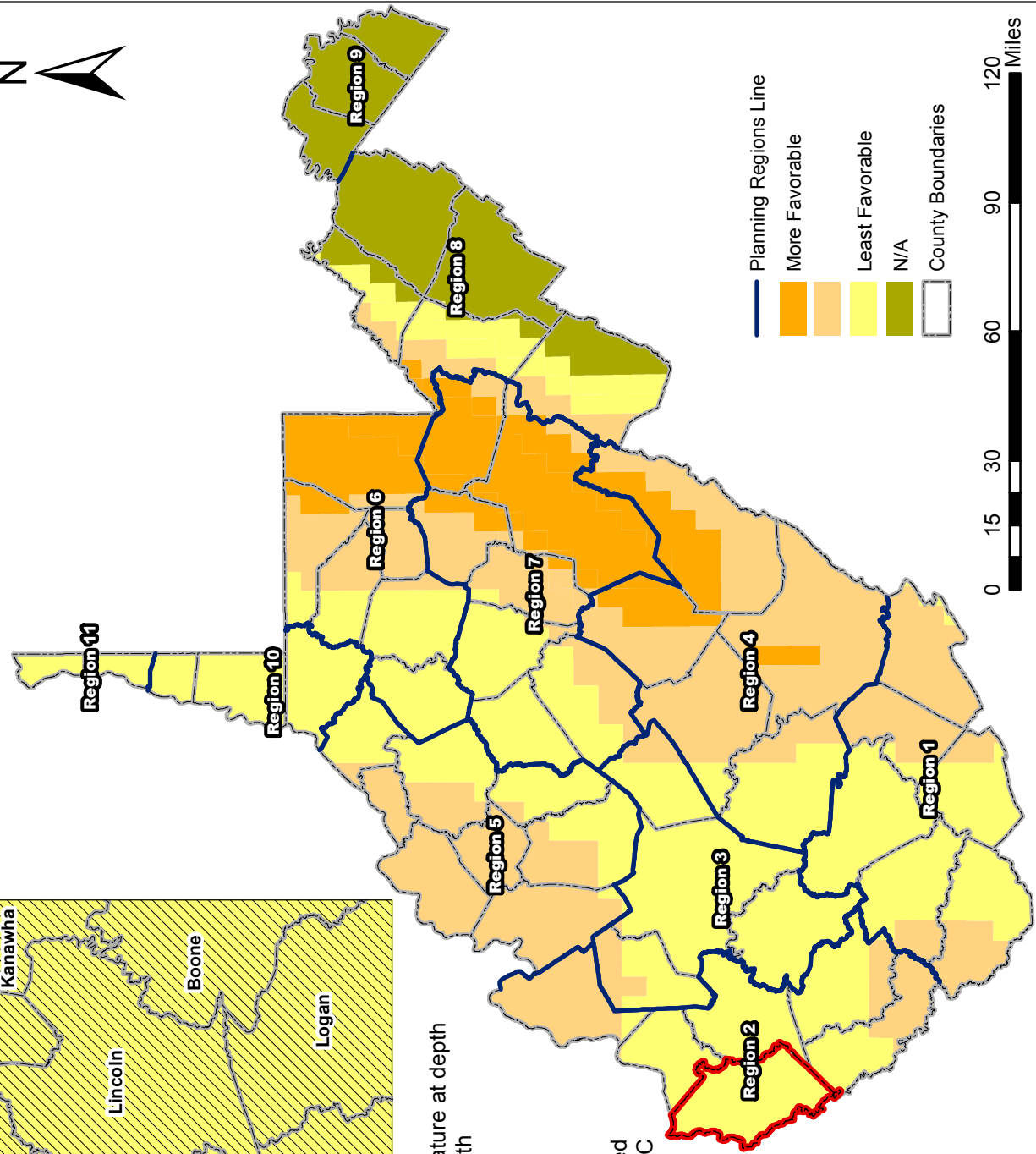
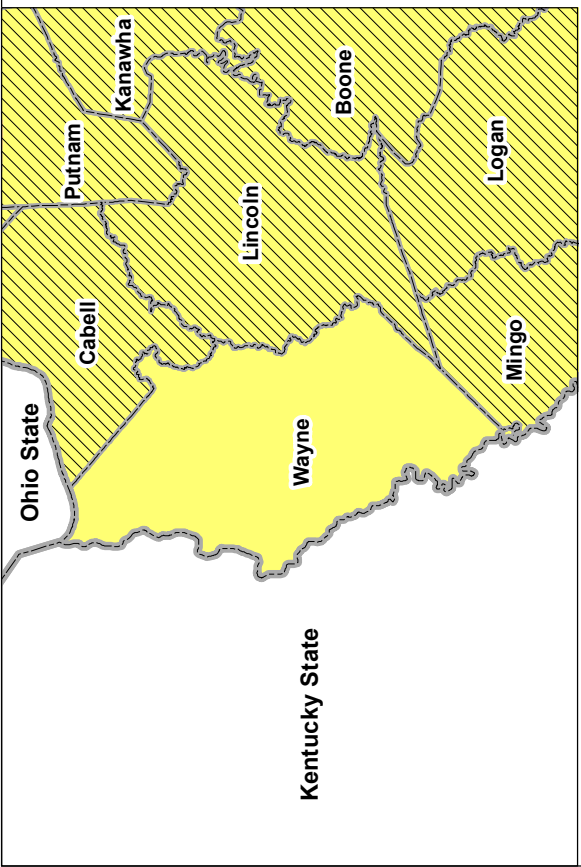
Source: The U.S Forest Service Timber Product Output 1996

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Energy - Geothermal Resource of Wayne 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 \geq 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.

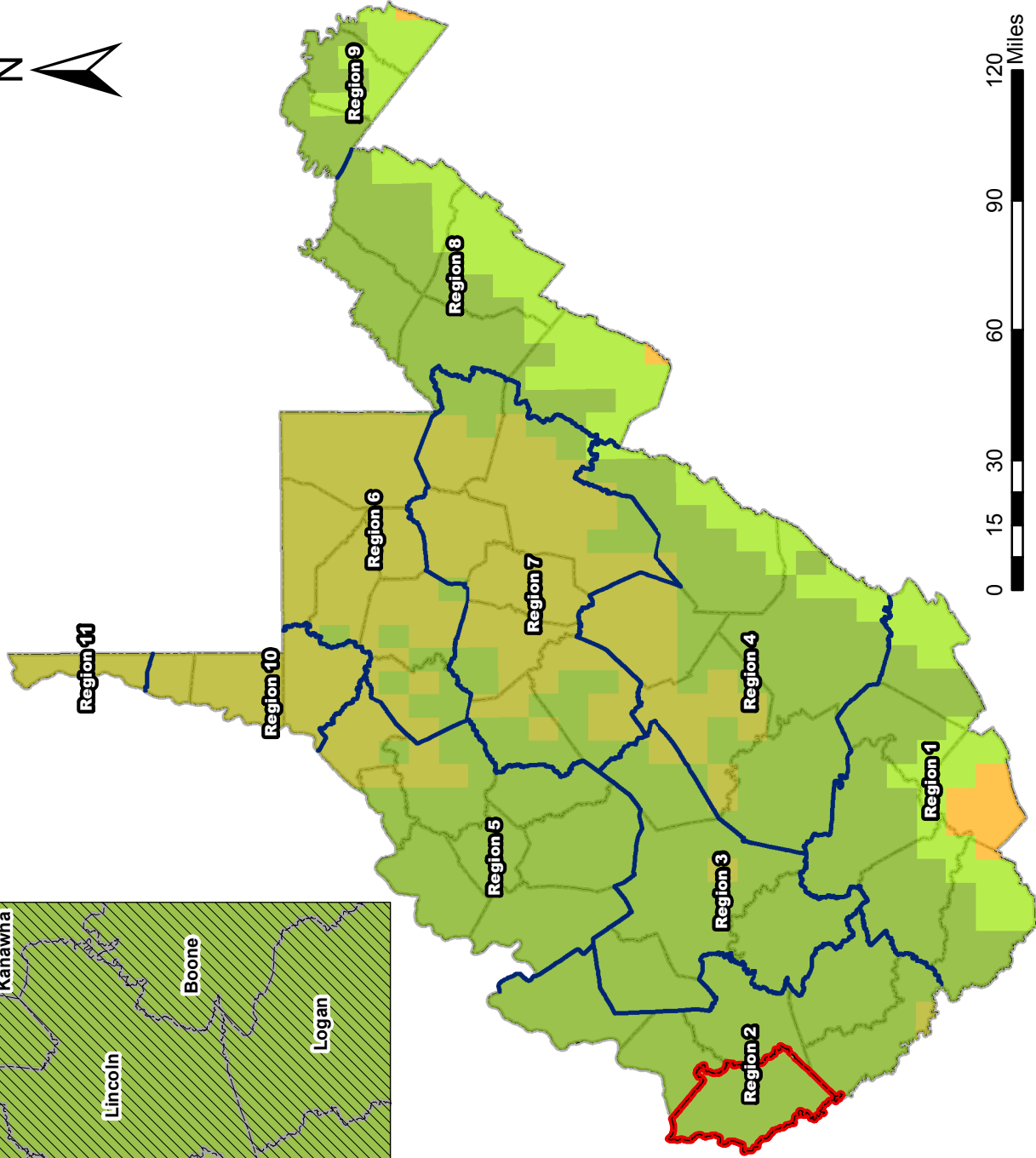
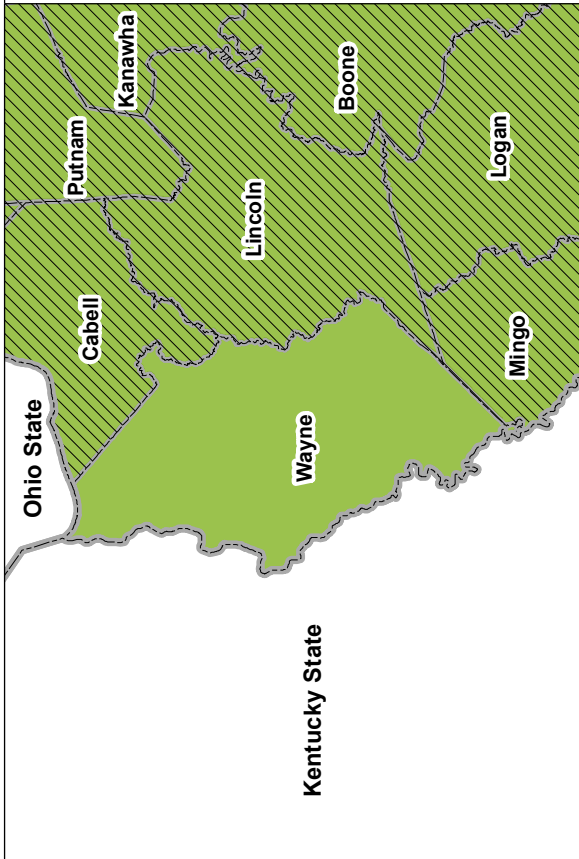
Source: National Renewable Energy Laboratory 2009

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Solar - Renewable Energy

Wayne County



— Planning Regions Line

(kWh/m²/day)

4.2 - 4.4

4.0 - 4.1

3.7 - 3.9

3.4 - 3.6

□ County Boundaries



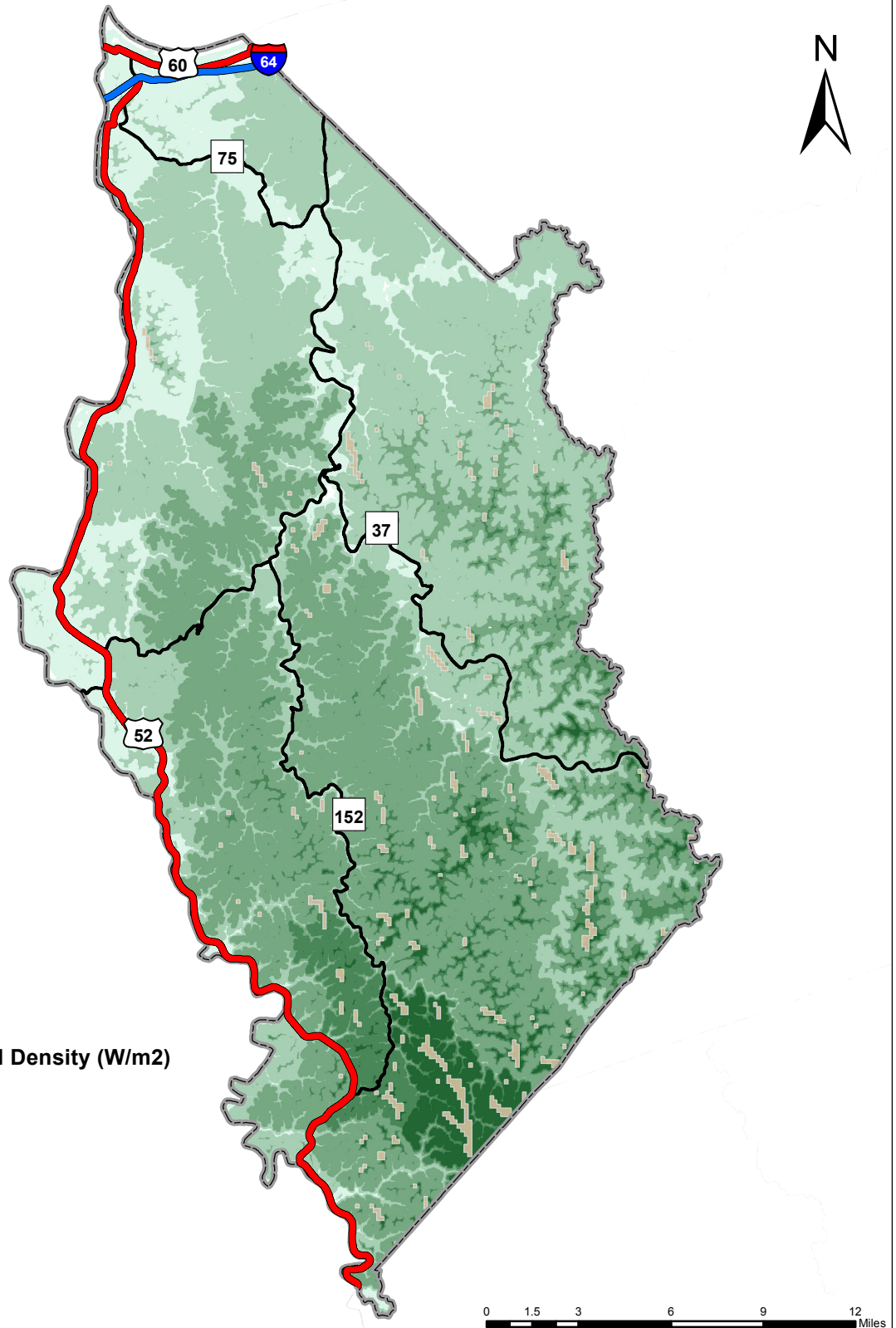
Source: National Renewable Energy Laboratory 2012

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Renewable Energy-Wind

Wayne County



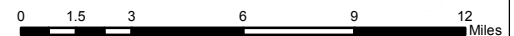
Elevation (Feet)

- 520 - 720
- 721 - 880
- 881 - 1000
- 1001 - 1100
- 1101 - 1500

- Interstate
- US Routes
- WV Routes

Wind Power Class Potential Density (W/m²)

- 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 Wayne. 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 43) showcases the geographies separated by utilization.

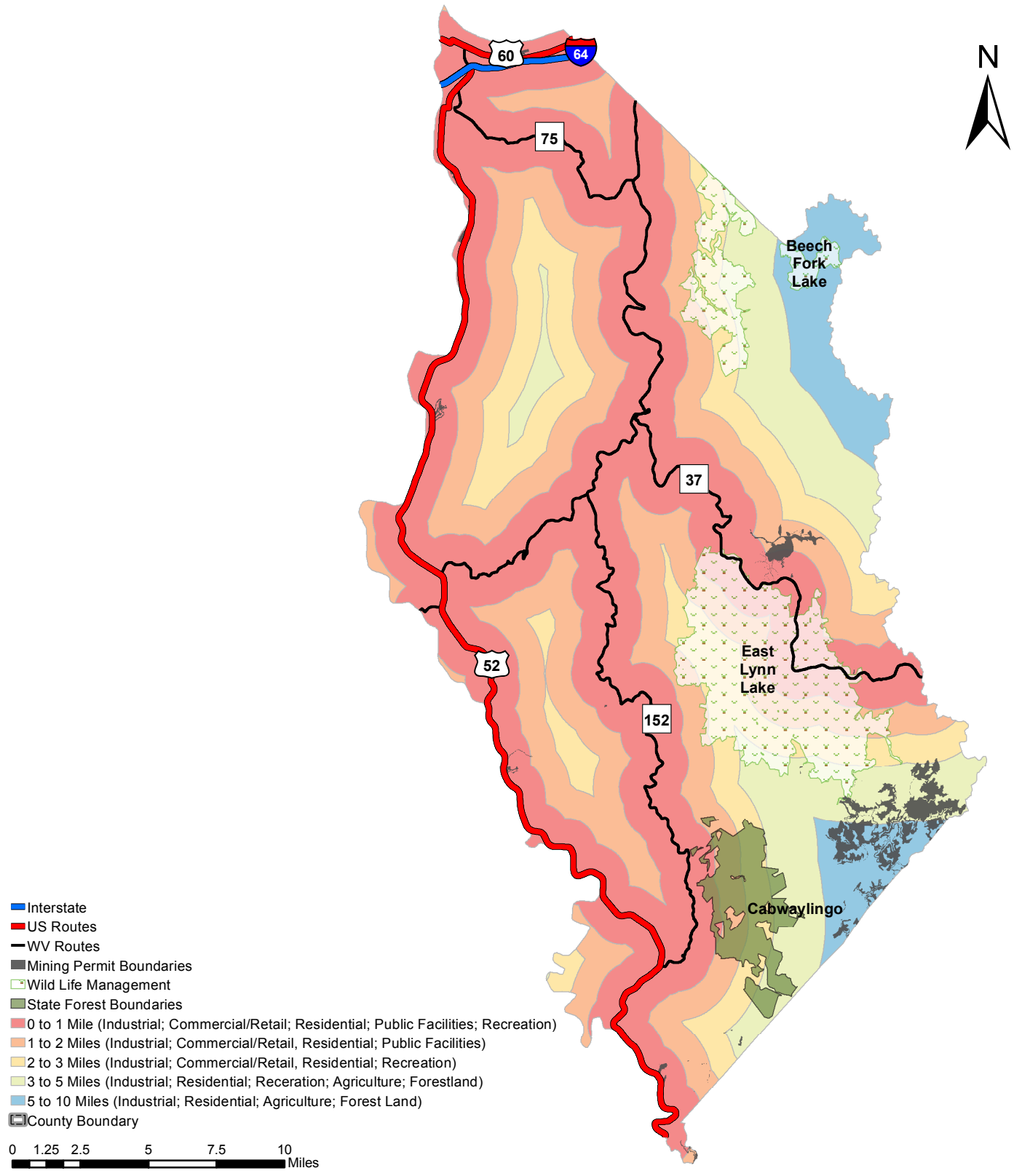
Table 2: Smart Planning Utilizations

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

Wayne County



Source: Rahall Transportation Institute 2013

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V. Site Evaluation

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

Initial Data Collection:

The consulting team collected all available data on surface mines sites located in Wayne 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.

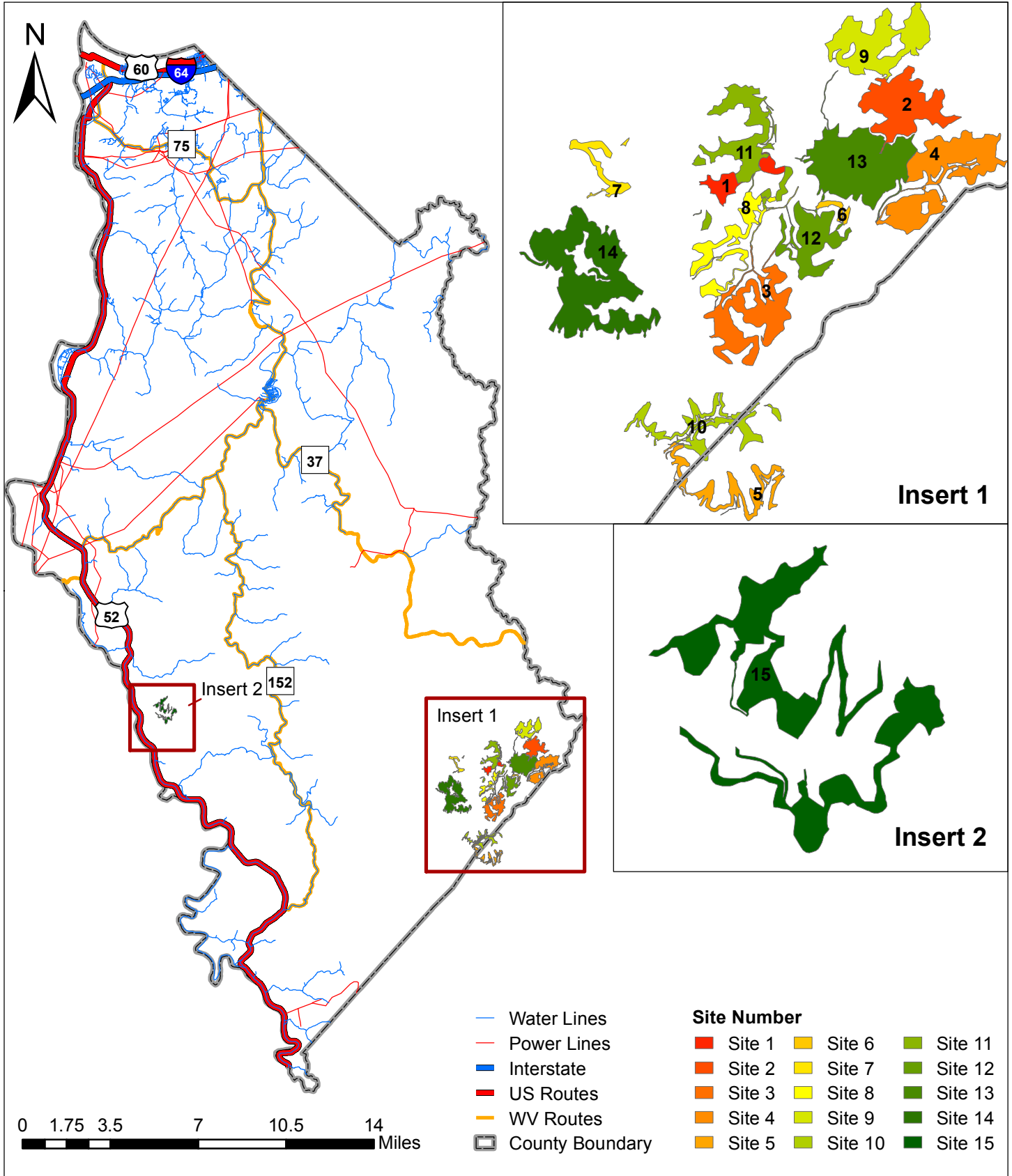
Some mine sites are active sites where mining is currently being conducted and other sites are in various phases of bond. The potential mining site for development is the one that is not complete released or still active. There are 15 potential mining sites for development in Wayne County, which are included in the following table and in Map 44.

Table 3: Wayne County Potential Surface Mine Sites for Development

Site No.	Permittee	Permit_ID	Facility Name	Acres	Expiration Date	Nearest Post Office
1	Argus Energy Wv Llc	S500592	Queens Fork No. 2 Surface Mine	68.1	10/16/97	Wilsondale
2	Argus Energy Wv Llc	S501895	Rollem Fork #3	274.99	1/5/01	Cove Gap
3	Argus Energy Wv Llc	S502197	Parker Branch	112.86	11/21/17	Wilsondale
4	Argus Energy Wv Llc	S501194	Rollem Fork #2	377.3	1/11/05	Wilsondale
5	Argus Energy Wv Llc	S501299	Laurel Branch Surface Mine	130.78	8/5/15	Wilsondale

Site No.	Permittee	Permit_ID	Facility Name	Acres	Expiration Date	Nearest Post Office
6	Argus Energy Wv Llc	S501504	Kiah Creek Coalburg Surface Mi	19.49	1/13/16	Cove Gap
7	Argus Energy Wv Llc	S501589	Devilstrace Surface Mine	68.4	8/11/99	Dunlow
8	Argus Energy Wv Llc	S502489	Unknown	146.57	12/14/14	Dunlow
9	Argus Energy Wv Llc	S502997	Rollem Fork No. 4 Surface Mine	271.68	11/17/17	Cove Gap
10	Argus Energy Wv Llc	S503996	Wiley Br Surface Mine	162.89	10/21/17	Unknown
11	Argus Energy Wv Llc	S504290	Queens Fork Surface Mine	243.09	4/10/01	Wilsondale
12	Argus Energy Wv Llc	S506389	Left Fork of Parker Branch Mine	198.34	9/29/15	Harts
13	Argus Energy Wv Llc	S508191	Rollem Fork No. 1 Surface Mine	517.89	7/6/02	Cove Gap
14	Argus Energy Wv Llc	S508487	Unknown	335.25	2/24/98	Dunlow
15	Meadow Fork Mining Co Llc	S502708	Powdermill Branch Surface Mine	124	1/18/17	Fort Gay

Fifteen Mining Sites Wayne County



Source: Rahall Transportation Institute Analysis 2013

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Site Analysis (Distance Analysis)

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

- Road-path Distances:
 - Distance to nearest roadway (Interstate, Existing Highway, Proposed Highway...)
 - Distance to major airports (Tri-State, Yeager)
 - Distance to Intermodal Terminal Facility and Huntington Port
 - Distance to nearest Sewer/ Solid Waste Treatment Facility

- Euclidean Distances:
 - Distance to Water Lines, Sewer Lines, Power Lines and Broadband
 - Distance to Gas Pipe and Oil Pipe
 - Distance to Railroad, National Waterway Network

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

Table 4: Assessment of Distances

Site No.	Permit_ID	Interstate (IS)	Name - IS	Existing Highway (EH)	Name - EH	Paved Road	Paved Road Name	Proposed Highway
1	S500592	39.35	I64	9.83	S10	0.20	Kiah Creek Road	34.02
2	S501895	38.89	I64	6.54	S10	0.23	Trough Fork	37.40
3	S502197	40.95	I64	9.79	S10	0.77	Kiah Creek Road	33.59
4	S501194	42.08	I64	8.78	S10	0.83	Kiah Creek Road	32.59
5	S501299	46.45	I64	11.72	S10	0.12	LAUREL BRANCH	26.70
6	S501504	40.50	I64	8.74	S10	0.05	Kiah Creek Road	32.53
7	S501589	41.15	I64	10.54	S152	0.46	Twelvepole Creek	34.50

Site No.	Permit_ID	Interstate (IS)	Name - IS	Existing Highway (EH)	Name - EH	Paved Road	Paved Road Name	Proposed Highway
8	S502489	47.28	I64	10.85	S152	0.48	Cow Creek	31.67
9	S502997	38.30	I64	6.64	S10	0.01	Trough Fork	36.83
10	S503996	46.80	I64	12.08	S10	0.70	LAUREL BRANCH	27.50
11	S504290	39.65	I64	10.13	S10	0.62	Kiah Creek Road	34.60
12	S506389	40.68	I64	9.30	S10	0.39	Kiah Creek Road	33.09
13	S508191	41.15	I64	8.78	S10	0.37	Kiah Creek Road	32.57
14	S508487	43.06	I64	9.07	S152	0.66	Twelvepole Creek	33.03
15	S502708	28.95	I64	1.17	US-52	0.10	Montgomery Ridge	34.35

Table 5: Distances from Sites to Major Airports

Site No.	Permit_ID	Permittee	Tri-State	Yeager
1	S500592	Argus Energy Wv Llc	46.70	64.63
2	S501895	Argus Energy Wv Llc	46.24	61.35
3	S502197	Argus Energy Wv Llc	48.30	66.23
4	S501194	Argus Energy Wv Llc	49.43	66.21
5	S501299	Argus Energy Wv Llc	52.33	68.17
6	S501504	Argus Energy Wv Llc	47.85	65.79
7	S501589	Argus Energy Wv Llc	48.50	66.42
8	S502489	Argus Energy Wv Llc	49.97	72.54
9	S502997	Argus Energy Wv Llc	45.65	61.44
10	S503996	Argus Energy Wv Llc	53.14	68.54

Site No.	Permit ID	Permittee	Tri-State	Yeager
11	S504290	Argus Energy Wv Llc	47.01	64.93
12	S506389	Argus Energy Wv Llc	48.03	65.98
13	S508191	Argus Energy Wv Llc	48.51	66.20
14	S508487	Argus Energy Wv Llc	47.29	68.33
15	S502708	Meadow Fork Mining Co Llc	31.74	81.08

Table 6: Shortest Distances from Sites to Other Transportation Methods

Rank	Permit_ID	Railroad (RR)	Owner (RR)	Intermodal Terminal Facility (IF)	Name - IF	National Waterway Network (Big Sandy Rivers)	Huntington Port
1	S500592	6.33	CSXT	40.58	Pen Coal Corp.	11.66	43.69
2	S501895	4.91	CSXT	40.11	Pen Coal Corp.	13.13	43.22
3	S502197	6.74	CSXT	42.17	Pen Coal Corp.	11.30	45.28
4	S501194	4.58	CSXT	43.30	Pen Coal Corp.	13.43	46.42
5	S501299	7.75	CSXT	45.38	Pen Coal Corp.	10.85	50.78
6	S501504	5.79	CSXT	41.72	Pen Coal Corp.	12.22	44.84
7	S501589	7.82	CSXT	42.37	Pen Coal Corp.	10.21	45.49
8	S502489	7.05	CSXT	43.02	Pen Coal Corp.	11.03	51.61
9	S502997	5.26	CSXT	39.53	Pen Coal Corp.	12.85	42.64
10	S503996	7.63	CSXT	46.19	Pen Coal Corp.	10.99	51.14
11	S504290	6.86	CSXT	40.88	Pen Coal Corp.	11.15	43.99
12	S506389	5.95	CSXT	41.91	Pen Coal Corp.	12.10	45.02
13	S508191	5.31	CSXT	42.38	Pen Coal Corp.	12.67	45.49
14	S508487	8.25	CSXT	41.13	Pen Coal Corp.	9.75	47.40
15	S502708	0.87	NS	24.06	Pen Coal Corp.	0.92	37.74

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

Site No.	Permit ID	Sewer Lines	Public Utility - SL	Water Lines	Public Utility - WL
1	S500592	14.73	Town of Wayne	4.48	Mingo County Public Service District
2	S501895	14.69	Town of Wayne	3.96	Branchland-Midkiff Public Service District
3	S502197	13.92	Town of Wayne	3.66	Mingo County Public Service District
4	S501194	15.48	Town of Wayne	4.44	Branchland-Midkiff Public Service District
5	S501299	12.08	Town of Wayne	1.21	Mingo County Public Service District
6	S501504	14.81	Town of Wayne	4.11	Mingo County Public Service District
7	S501589	14.03	Town of Wayne	4.91	Mingo County Public Service District
8	S502489	13.52	Town of Wayne	3.36	Mingo County Public Service District
9	S502997	14.45	Town of Wayne	3.85	Branchland-Midkiff Public Service District
10	S503996	12.35	Town of Wayne	1.82	Mingo County Public Service District
11	S504290	14.55	Town of Wayne	4.71	Mingo County Public Service District
12	S506389	14.48	Town of Wayne	3.72	Mingo County Public Service District
13	S508191	15.37	Town of Wayne	4.56	Mingo County Public Service District
14	S508487	12.99	Town of Wayne	4.00	Mingo County Public Service District
15	S502708	12.05	Town of Wayne	0.85	Lavalette Public Service District

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

Site No.	Permit_ID	Broadband	Provider	Power Lines	Type	Size_kV
1	S500592	0.23	Citizens Telecommunications Company of West Virginia	9.04	Sub-Transmission	Unknown
2	S501895	0.19	Citizens Telecommunications Company of West Virginia	8.53	Transmission	115-138
3	S502197	0.68	Citizens Telecommunications Company of West Virginia	8.78	Sub-Transmission	Unknown
4	S501194	1.18	Citizens Telecommunications Company of West Virginia	9.43	Transmission	115-138
5	S501299	1.94	Citizens Telecommunications Company of West Virginia	6.48	Sub-Transmission	Unknown
6	S501504	0.98	Citizens Telecommunications Company of West Virginia	9.49	Sub-Transmission	Unknown
7	S501589	0.11	Citizens Telecommunications Company of West Virginia	8.31	Sub-Transmission	Unknown
8	S502489	0.97	Citizens Telecommunications Company of West Virginia	8.39	Sub-Transmission	Unknown
9	S502997	0.11	Citizens Telecommunications Company of West Virginia	8.21	Transmission	115-138

Site No.	Permit_ID	Broadband	Provider	Power Lines	Type	Size_kV
10	S503996	1.36	Citizens Telecommunications Company of West Virginia	6.94	Sub-Transmission	Unknown
11	S504290	0.01	Citizens Telecommunications Company of West Virginia	8.65	Sub-Transmission	Unknown
12	S506389	1.17	Citizens Telecommunications Company of West Virginia	9.12	Sub-Transmission	Unknown
13	S508191	0.91	Citizens Telecommunications Company of West Virginia	9.23	Transmission	115-138
14	S508487	0.42	Citizens Telecommunications Company of West Virginia	8.37	Sub-Transmission	Unknown
15	S502708	0.10	Cebridge Acquisition LLC	1.11	Sub-Transmission	Unknown

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

Site No.	Permit_ID	Sewer Treatment (ST)	Facility Name (ST)	Solid Waste Treatment (SWT)	Facility Name (SWT)
1	S500592	32.11	Mingo County Transfer	6.14	A,B,C,D, EAST LYNN UPPER EF
2	S501895	35.48	Mingo County Transfer	5.68	A,B,C,D, EAST LYNN UPPER EF
3	S502197	31.68	Mingo County Transfer	7.74	A,B,C,D, EAST LYNN UPPER EF
4	S501194	30.68	Mingo County Transfer	8.87	A,B,C,D, EAST LYNN UPPER EF
5	S501299	24.81	Mingo County Transfer	11.79	Hugh Dingess Elementary School

Site No.	Permit_ID	Sewer Treatment (ST)	Facility Name (ST)	Solid Waste Treatment (SWT)	Facility Name (SWT)
6	S501504	30.63	Mingo County Transfer	7.29	A,B,C,D, EAST LYNN UPPER EF
7	S501589	32.67	Mingo County Transfer	7.94	A,B,C,D, EAST LYNN UPPER EF
8	S502489	29.79	Mingo County Transfer	11.09	Community Bldg.
9	S502997	34.90	Mingo County Transfer	5.10	A,B,C,D, EAST LYNN UPPER EF
10	S503996	25.63	Mingo County Transfer	12.61	Hugh Dingess Elementary School
11	S504290	32.69	Mingo County Transfer	6.45	A,B,C,D, EAST LYNN UPPER EF
12	S506389	31.19	Mingo County Transfer	7.47	A,B,C,D, EAST LYNN UPPER EF
13	S508191	30.67	Mingo County Transfer	7.95	A,B,C,D, EAST LYNN UPPER EF
14	S508487	31.19	Mingo County Transfer	9.31	Community Bldg.
15	S502708	32.17	Mingo County Transfer	4.40	Tolsia High School

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

Site No.	Permit_ID	Gas Pipe (GP)	Company Name (GP)	Oil Pipe (OP)	Company Name (OP)
1	S500592	5.43	Columbia Gas Transmission Corp.	1.14	CL
2	S501895	6.34	Columbia Gas Transmission Corp.	0.46	CL
3	S502197	4.59	Columbia Gas Transmission Corp.	0.69	CL
4	S501194	5.65	Columbia Gas Transmission Corp.	0.49	CL
5	S501299	2.12	Columbia Gas Transmission Corp.	0.44	CL
6	S501504	5.11	Columbia Gas Transmission Corp.	0.40	CL
7	S501589	5.05	Columbia Gas Transmission Corp.	0.10	CL
8	S502489	4.26	Columbia Gas Transmission Corp.	0.71	CL

Site No.	Permit_ID	Gas Pipe (GP)	Company Name (GP)	Oil Pipe (OP)	Company Name (OP)
9	S502997	6.57	Columbia Gas Transmission Corp.	0.90	CL
10	S503996	2.70	Columbia Gas Transmission Corp.	0.08	CL
11	S504290	5.61	Columbia Gas Transmission Corp.	0.73	CL
12	S506389	4.72	Columbia Gas Transmission Corp.	0.27	CL
13	S508191	5.59	Columbia Gas Transmission Corp.	0.24	CL
14	S508487	4.79	Columbia Gas Transmission Corp.	0.69	CL
15	S502708	3.70	Columbia Gas Transmission Corp.	2.87	CL

Suitability Model

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

Criteria are chosen and weighted based on published Land Use Master Plans (LUMPs) for several counties in West Virginia, our own research on the existing conditions in Wayne County and expert advice about important factors to site development.¹¹ Then, scores for each site are given by comparing the closest distance from the site to all factors within given distance thresholds. There are three sets of scores in this suitability model: **absolute scores**, **relative scores** and the **total score**.

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

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

¹¹ Joseph, M. (2006). A Decision-Support Model of Land Suitability Analysis for the Ohio Lake Erie Balanced Growth Program. EcoCity Cleveland.

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

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

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

1. Weighting

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

Table 11: Weighting Sites Selection Criteria

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

2. Scoring

2.1 Absolute Scores:

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

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

Table 12: Absolute Scoring System

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

2.2 Relative Scores:

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

Table 13: Relative Scoring System

		Threshold (Distances in miles)		Min - Q1		Q1 - Q2		Q2 - Q3		Q3 – Max	
		Relative Score		10		7.5		5		2.5	
No.	Criteria	Min	Q1	Q2	Q3	Max					
1	Interstate	1.17	12.08	8.74	9.30	10.54					
2	Existing Highway	26.70	37.40	32.53	33.09	34.50					
3	Proposed Highway	24.06	46.19	40.58	41.91	43.02					
4	Yeager Airport	28.95	47.28	39.35	40.95	43.06					
5	Tri-State Airport	37.74	51.61	43.69	45.28	47.40					
6	National Waterway Network Ports	24.81	35.48	30.63	31.19	32.67					
7	Sewer Treatment Facilities	4.40	12.61	6.14	7.74	9.31					
8	Solid Waste Treatment Facilities	31.74	53.14	46.70	48.03	49.43					
9	National Waterway Network	61.35	81.08	64.93	66.21	68.33					
10	Intermodal Terminal Facilities	0.01	1.94	0.11	0.68	1.17					
11	Sewer Lines	2.12	6.57	4.26	5.05	5.61					
12	Railroads	0.92	13.43	10.85	11.30	12.67					
13	Water Lines	1.11	9.49	8.21	8.53	9.12					
14	Power Lines	0.08	2.87	0.27	0.49	0.73					
15	Gas Pipes	0.87	8.25	5.26	6.33	7.63					
16	Pipe Lines	12.05	15.48	12.99	14.45	14.73					
17	Broadband	0.85	4.91	3.36	3.96	4.48					

3. Wayne County’s Suitability Model:

Table 14 shows the total scores of all studied sites in Wayne County. Site No-15 (Permit ID = S502708) has the highest score of 685.75. The sites with higher total scores suggest better opportunities for development. Results in Table 14 are also plotted in the bar chart (Figure 15) for better visualization. Among 15 potential development sites of Wayne County, it is easy to notice the top five most suitable sites for investment. All the sites are also mapped in Map 44.

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.

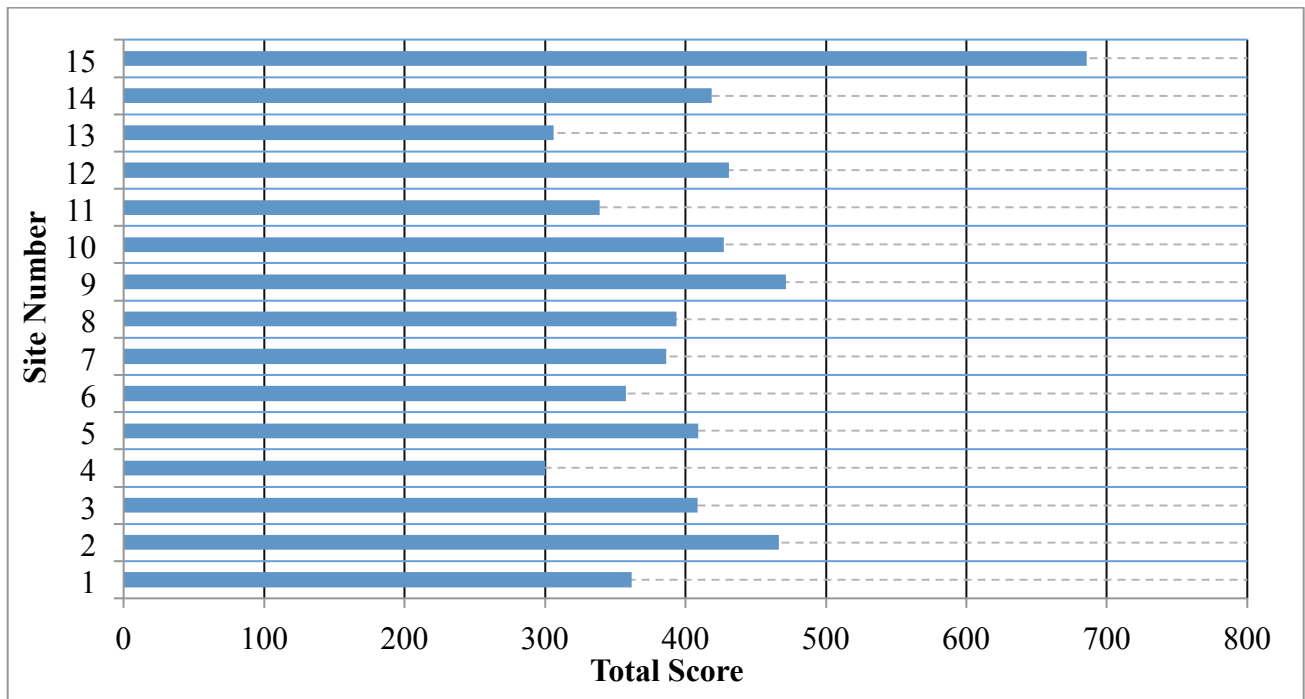
Besides a distance analysis, a suitability model for Wayne is supported by demographic data as well as two additional analyses, which are retail location density and workforce analysis (shown on Table 15 and Map 45 below). The best decision will be made with careful consideration of the suitability analysis as well as the demographic and economic information.

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

Site No.	Permittee	Permit_ID	Score
1	Argus Energy Wv Llc	S500592	361.75
2	Argus Energy Wv Llc	S501895	466.5
3	Argus Energy Wv Llc	S502197	408.75
4	Argus Energy Wv Llc	S501194	300.25
5	Argus Energy Wv Llc	S501299	409.25
6	Argus Energy Wv Llc	S501504	357.5
7	Argus Energy Wv Llc	S501589	386.25
8	Argus Energy Wv Llc	S502489	393.75
9	Argus Energy Wv Llc	S502997	471.5

Site No.	Permittee	Permit_ID	Score
10	Argus Energy Wv Llc	S503996	427.25
11	Argus Energy Wv Llc	S504290	339
12	Argus Energy Wv Llc	S506389	431
13	Argus Energy Wv Llc	S508191	306
14	Argus Energy Wv Llc	S508487	418.5
15	Meadow Fork Mining Co Llc	S502708	685.75

Figure 15: Wayne 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.¹² 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 15: Number of employment and unemployment within radius of 5, 10 and 15 miles from the site

Site No.	Permit_ID	Emp_05	Unemp_05	Emp_10	Unemp_10	Emp_15	Unemp_15
1	S500592	510	84	1523	229	3339	640
2	S501895	399	65	1302	192	3100	560
3	S502197	501	83	1513	230	3184	613
4	S501194	333	56	1168	176	2788	489
5	S501299	341	58	1314	205	2615	494
6	S501504	435	73	1372	204	3086	574
7	S501589	664	106	1868	308	3719	749
8	S502489	504	84	1535	235	3148	611
9	S502997	439	71	1387	202	3283	605
10	S503996	397	67	1404	218	2772	531
11	S504290	571	92	1651	256	3516	690
12	S506389	427	71	1361	203	3015	562
13	S508191	411	69	1323	196	3058	559
14	S508487	623	101	1831	300	3478	702
15	S502708	797	286	2659	649	5656	1047

¹² 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>.

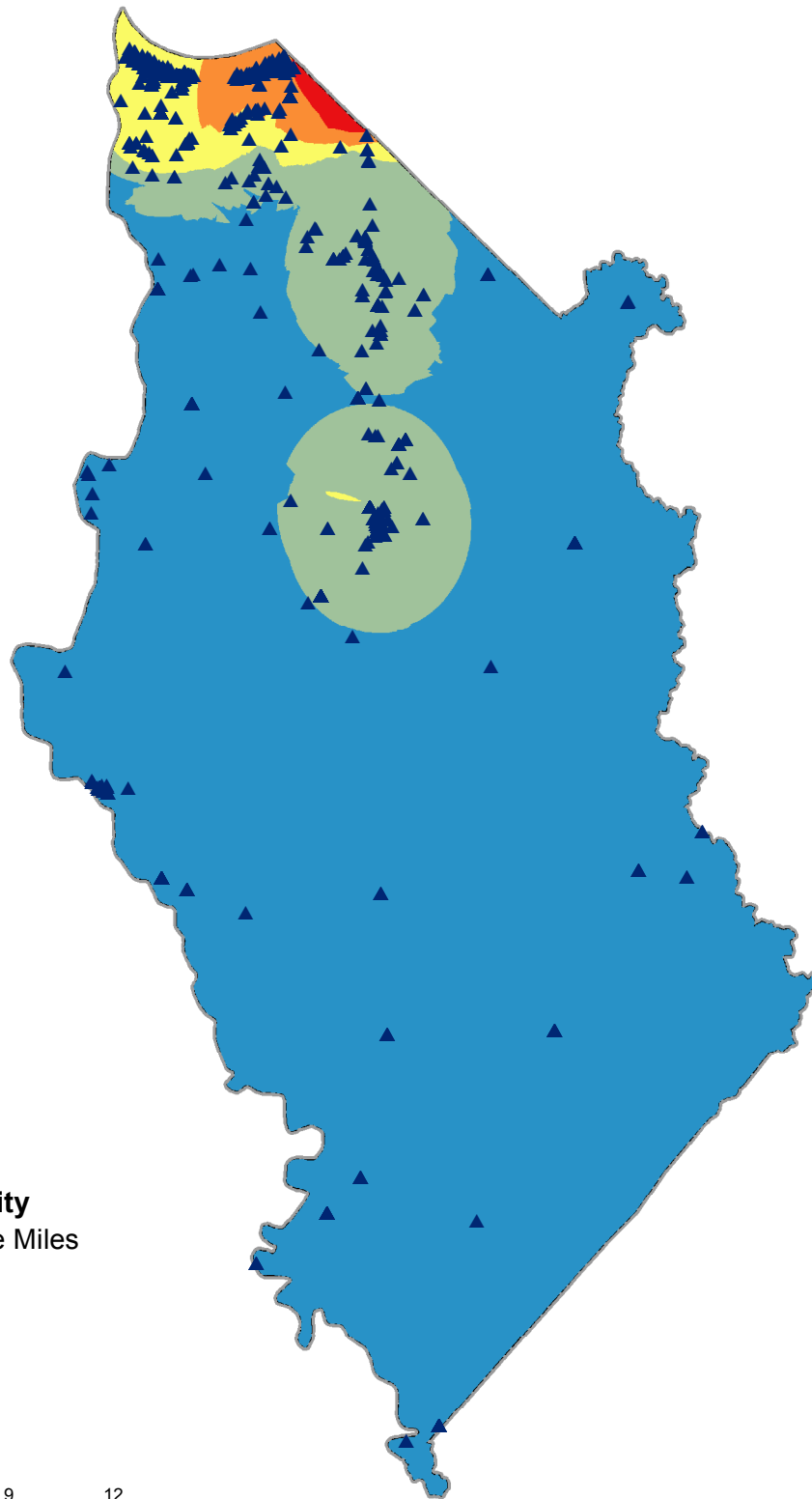
Retail Location Analysis

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 45). 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.

A map of brownfield sites was also requested by Wayne County. Brownfield sites are current and former industrial sites that can be reused once cleared of potentially hazardous wastes. West Virginia has many of these sites all over the state. Wayne County currently has no brownfield sites (Map 46).

Retail Location Density

Wayne County



▲ Retails Location

Retail Locations Density

Search Area = 25 Square Miles

■ 0 < Retail Density < 3

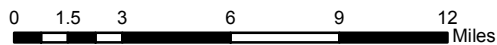
■ 3 < Retail Density < 8

■ 8 < Retail Density < 14

■ 14 < Retail Density < 26

■ 26 < Retail Density < 52

▭ County Boundary

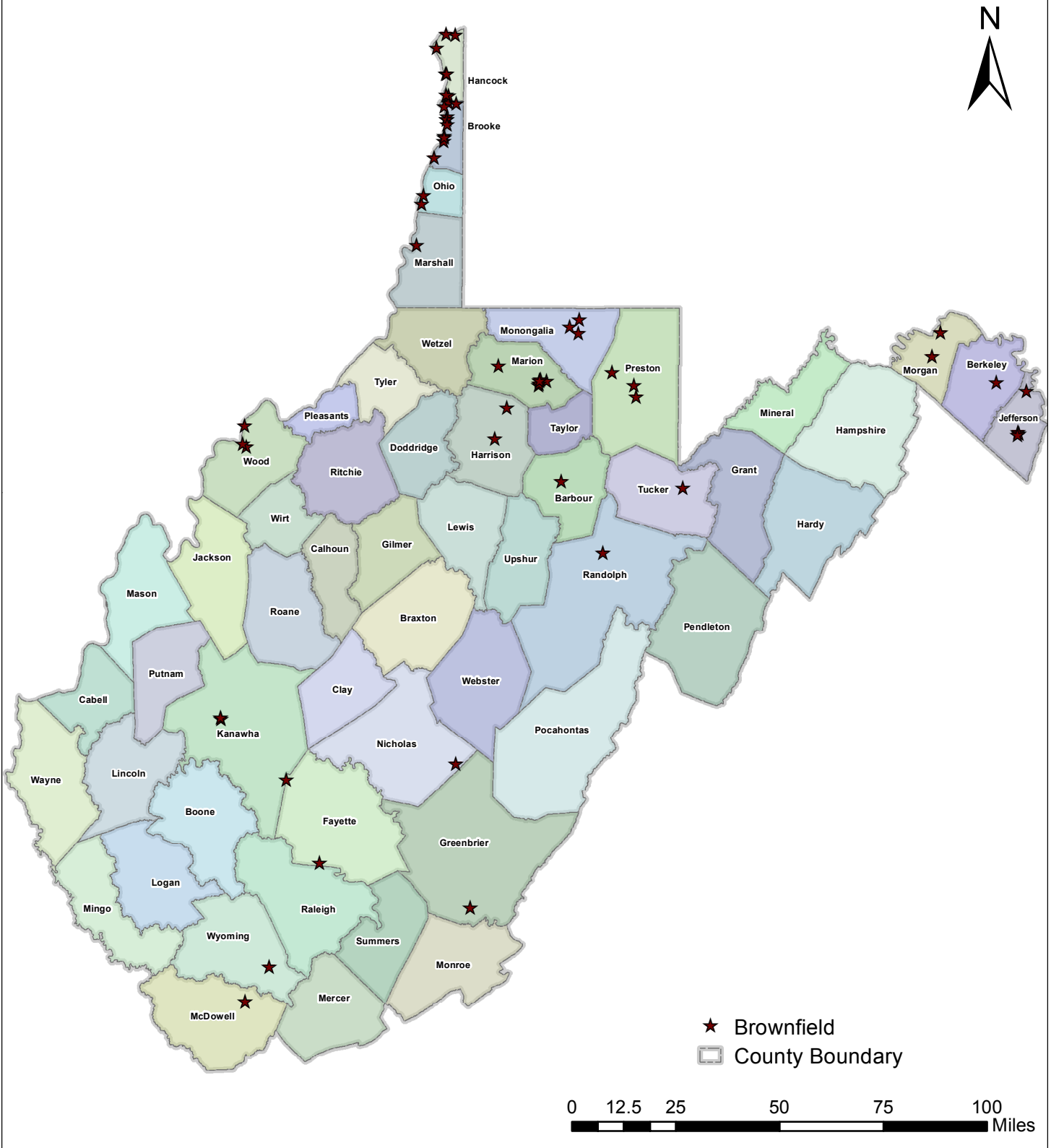


Source: ESRI 2011

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West Virginia Brownfields



Source: West Virginia Brownfields Assistance Centers 2013

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V. Conclusion

Wayne County has managed to grow in several key indicators over the past decade, including in total wages and educational metrics. However, the Government services sector dominates the economy, with Natural Resources and Mining and Trade, Transportation, and Utilities following behind, a situation common in many coalfield counties. Wage and employment growth have shown upward trends, and education statistics indicate that Wayne County deems education an important investment, but the population has fallen and is projected to continue falling, weakening potential employment and financial strength. Wayne County has several sites that are highly suitable for post-mine land use development, and these resources should be utilized after analyzing this document.

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 Wayne County to recover and eventually thrive.

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