Kentucky Coal Facts

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Produced by the

Kentucky Energy and Environment Cabinet

Department for Energy Development and Independence

In Partnership with the

Kentucky Coal Association

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Cover photo courtesy of the Kentucky Coal Association.

Executive Summary

Overview

The coal mined in the Commonwealth remains a significant facet of the Kentucky economy. Ranking third in the nation, Kentucky produced 61.4 million tons of coal in 2015. There were 9,557 people employed directly at Kentucky's coal mines on average during 2015. Just over a third of the coal mined in the Commonwealth in 2015 was consumed in Kentucky, predominantly by electric utilities. Externally, Kentucky's coal was mostly delivered to power plants in the southeastern United States.

Production

In 2015, Kentucky coal production totaled 61.4 million tons, a decline of 20.8 percent since 2014. This is the lowest annual production since 1954. Regionally, the eastern Kentucky coalfield experienced a 25.2 percent decline in production, while western Kentucky coal production decreased by 16.6 percent. Eastern Kentucky coal production was just over 28 million tons, just over half of which came from underground mining operations. Western Kentucky produced 33.3 million tons of coal with the vast majority coming from underground mines. The leading coal producing county in Kentucky for 2015 was Union County, mining over 9 million tons of coal or 14.8 percent of state-wide production. Pike County, in far eastern Kentucky, produced the second most coal during the year, just outpacing Hopkins, Ohio, and Perry Counties. Proportionally, Clay, Magoffin, and Letcher Counties experienced the largest coal production declines, dropping 95, 79, and 68 percent, respectively.

Employment

Kentucky is home to the nation's second largest number of coal miners, trailing only West Virginia. Coal mines in Kentucky employed 9,557 persons on average in 2015, decreasing 18 percent from 2014. The largest subsection of Kentucky coal mine employment was underground mining which employed 5,461 individuals in 2015. Surface miners numbered 2,464, while prep plant workers and mine site office employees were 1,289 and 343, respectively. Despite being responsible for only 46 percent of the state's coal production, eastern Kentucky accounted for 62 percent of Kentucky's coal employment. Kentucky's eastern coalfields employed 5,947, while western Kentucky employed 3,610 in 2015. Pike County had the largest number of direct coal mining jobs in the state at 1,591. Perry County employed 966 people at coal mines and Hopkins County employed 874.

Market

During 2015, Kentucky coal was delivered to 15 different states and three countries. Around 34.5 percent of the coal mined in Kentucky was consumed in-state. While 61 percent of the coal mined in western Kentucky was consumed in-state, only 8 percent of the coal mined in eastern Kentucky was consumed in-state. The largest markets for Kentucky coal outside of the Commonwealth were other states in the southeast portion of the country. Florida received 11.6 percent of Kentucky's coal deliveries in 2015, with most of the shipments originating in western Kentucky. South Carolina consumed 10.2 percent of Kentucky's coal deliveries, with all shipments coming from eastern Kentucky. The vast majority of Kentucky's coal continues to be used to generate electricity. Nearly all of western Kentucky's coal and 79 percent of eastern Kentucky's coal are used to generate electric power. As coal-fired power plants have closed or have undergone fuel conversions to natural gas in the last few years, the demand for Kentucky coal has been negatively impacted.

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In order to provide the public with timely access to these data, this report uses the best-available estimate for each factor at the time of publication. However, as a result of data revisions, confidentiality, rounding, and reporting errors, the table values may not precisely equal the sum of the included components and certain indicators may be subject to change. Please direct all data-related inquiries to Bryon Ellis (Bryon.Ellis@ky.gov) or Greg Bone (Greg.Bone@ky.gov) or by calling the Kentucky Department for Energy Development and Independence at 502-782-7245.

History of Coal in Kentucky

Coal has been commercially mined in Kentucky for over two centuries. In 1750, Dr. Thomas Walker was the first known person to discover and use coal in what would later become Kentucky. The earliest-known commercial coal production was 20 tons in 1790 in Lee County—two years before the Commonwealth of Kentucky became a state. Although small quantities of coal would continue to be mined across the state, it was not until 1855 that annual production would exceed one hundred thousand tons. The Civil War briefly diverted coal production from Kentucky to other coalfields in Pennsylvania, Maryland, Ohio, and Illinois. However, after a near-stoppage during the Civil War, coal mining resumed and production exceeded one million tons for the first time in 1879.

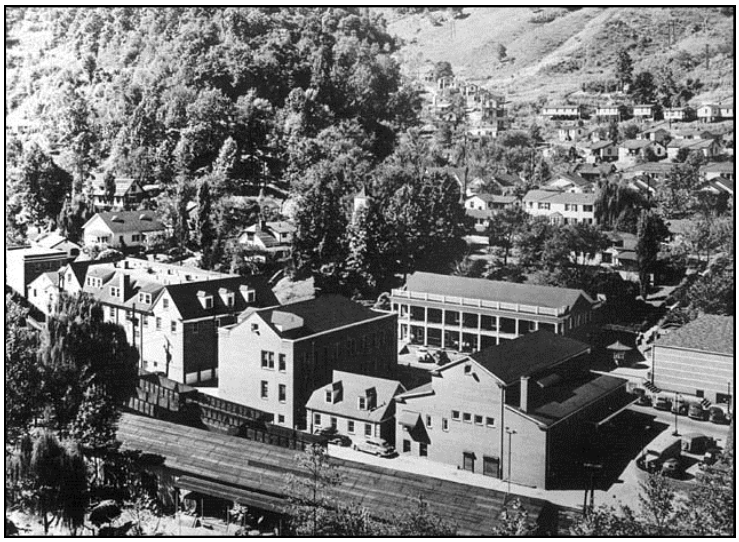


Photo: Aerial view of Wheelright, Floyd County, 1946. The town was established by the Elk Horn Coal Company in 1916. In view are the downtown business area and portions of the company housing. Russell Lee Photographic Collection, University of Kentucky Special Collections.

As the American economy grew in the late 19th and early 20th centuries, so too did demand for Kentucky coal. From the 1870s to the end of the century, railroads were built in both the eastern and western Kentucky coalfields, which significantly improved the efficiency of producers to deliver coal to urban and industrial consumers and opened up areas to development. The expansion of railroads across the United States also increased demand for coal; Kentucky's deposits of bituminous coal were used to power steam locomotive engines and used in iron and steel mills to produce the metals the railroads and other industries required. Coal's central role in the railroad industry would continue until the 1930s, when railroads were increasingly fueled by diesel.

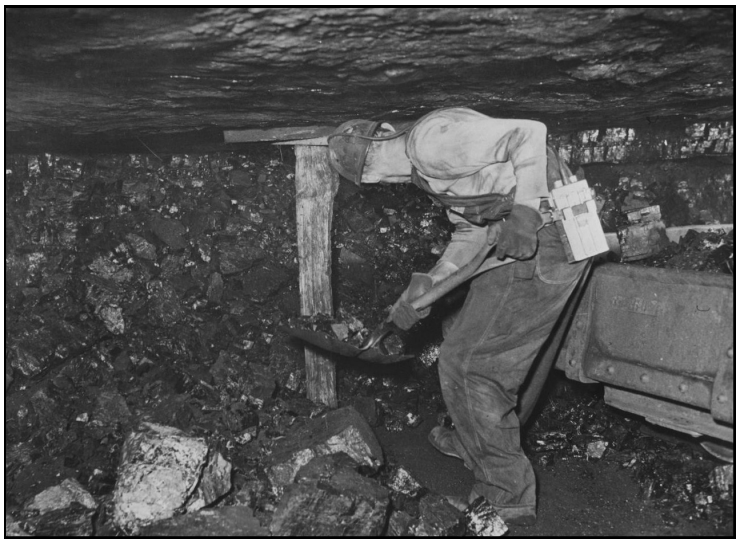


Photo: Miner Harry Fain loading coal that has just been blasted from the face of the mine into cart at mine in Wheelright, Floyd County, 1946. Russell Lee Photographic Collection, University of Kentucky Special Collections.

The industrialization of the early 20th Century brought the expansion of the eastern Kentucky coal industry, as bituminous coal became the primary energy source for the continually-growing cities throughout the Midwest. The Appalachian Mountains divided the anthracite cities of New York, Philadelphia, and Boston, and bituminous-dependent cities west of the mountains, including Pittsburgh, Chicago, and Cincinnati. This industrialization resulted in the United States having the highest economic growth rate in the world during that period.

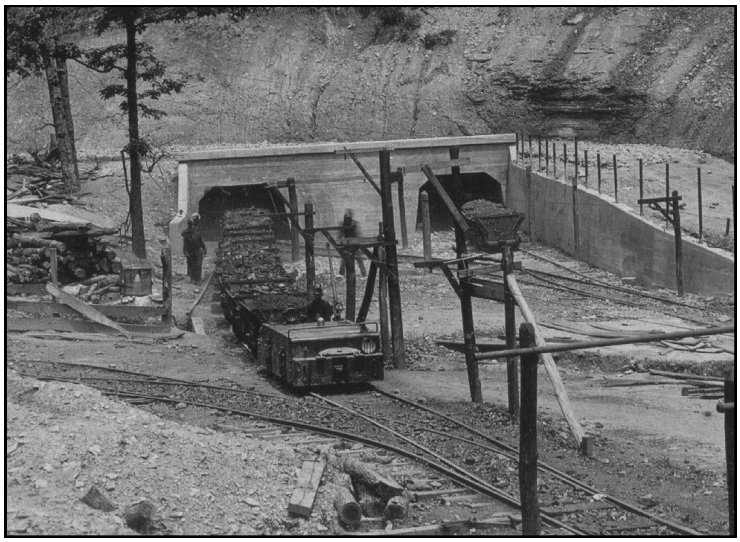


Photo: Loaded coal cart exiting mouth of Mine 207, Jenkins, Kentucky Photographic Collection, University of Kentucky Special Collections.

History of Coal in Kentucky

Photo: Main Street of coal company town Wheelright, Floyd County, 1946. Russell Lee Photographic Collection, University of Kentucky Special Collections.

Numerous towns and coal camps, such as those in Letcher and Harlan counties, grew along the railways that crisscrossed eastern Kentucky. Many miners came from within the region, as subsistence farming gave way to the industrial age, but much of the growing population included immigrants searching for a better life from southern and eastern Europe as well as African-Americans from the southern United States.[1]

1. Estep, Bill. 100 years of coal mining in Harlan County.

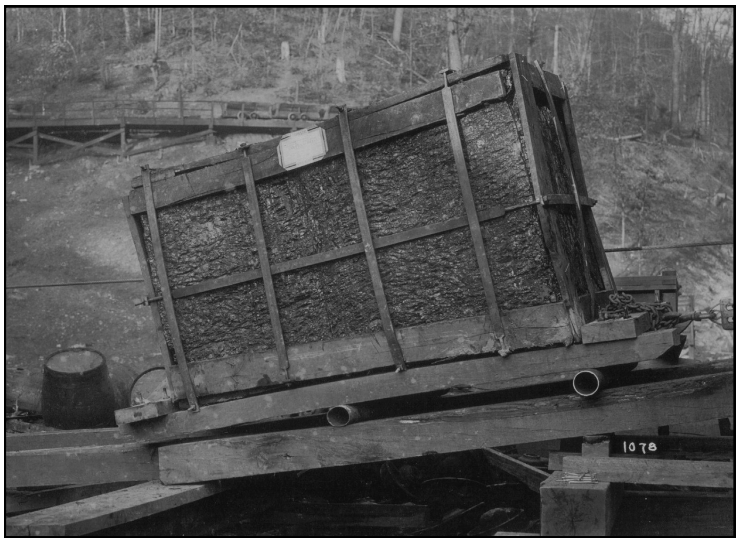


Photo: Large lump of coal being loaded for transport to the Panama-Pacific International Exposition, a world's fair held in San Francisco in 1915 to celebrate opening of the Panama Canal. Jenkins, Kentucky Photographic Collection, University of Kentucky Special Collections.

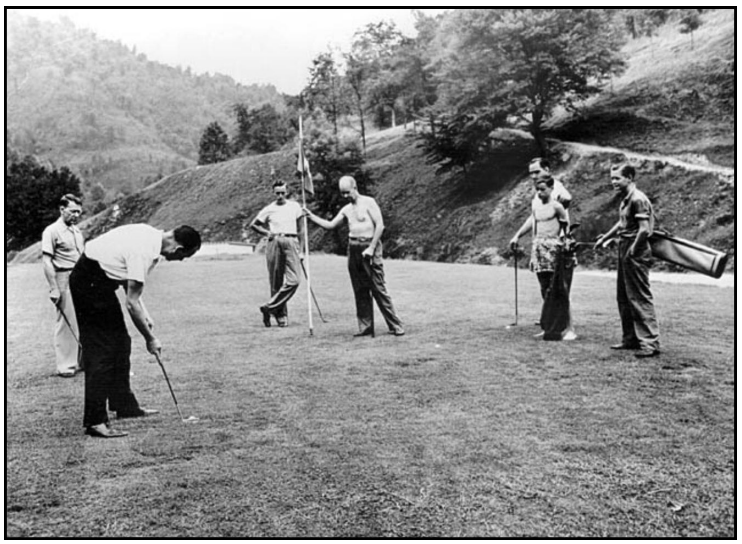


Photo: Coal miners play golf at the company golf course in Wheelright, Floyd County, 1946. Russell Lee Photographic Collection, University of Kentucky Special Collections.

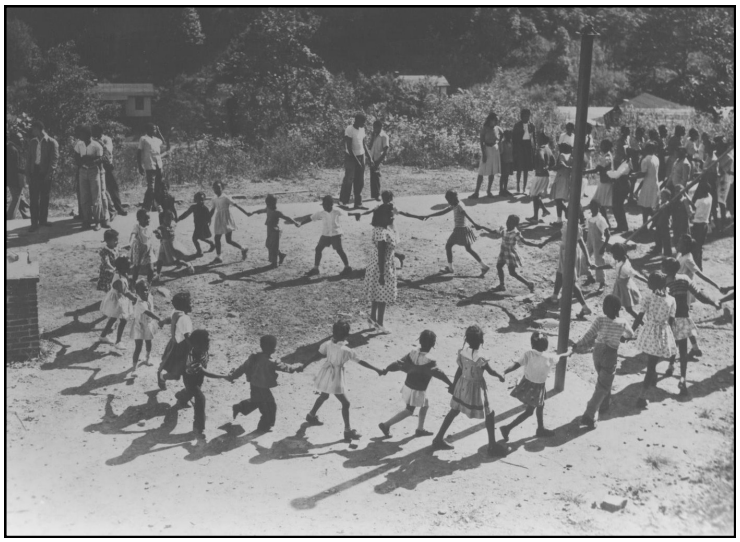
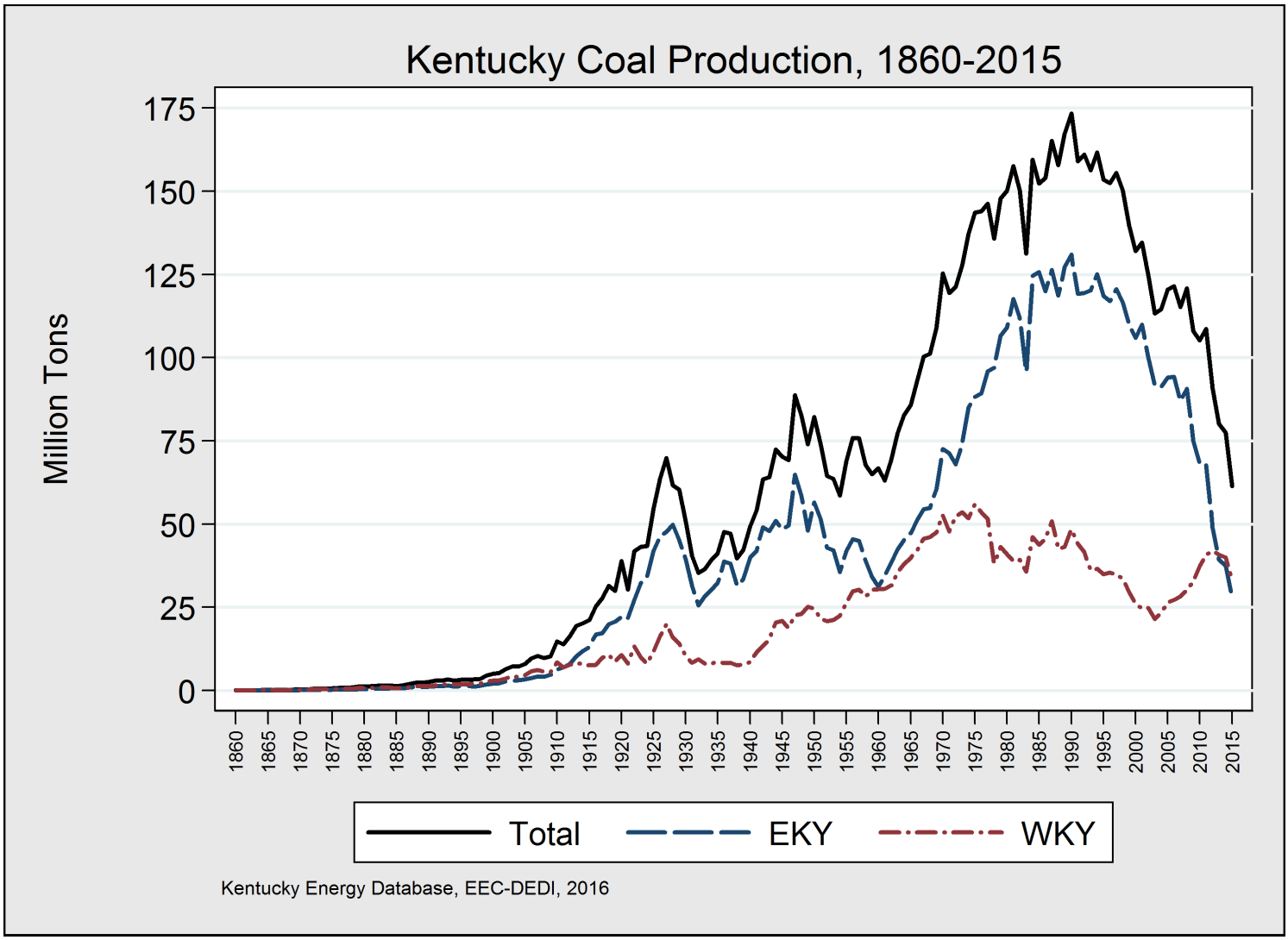


Photo: Children playing during recess at segregated school at coal camp in Wheelright, Floyd County, 1946. Russell Lee Photographic Collection, University of Kentucky Special Collections.

Segregation, backed by state law, was pervasive within the coal camps well into the early 20th century, with some communities segregated between new immigrants, African-Americans, and whites. Other camps segregated the communities while integrating the mines.

All photographs from the University of Kentucky Special Collections may be found at http://exploreuk.uky.edu/

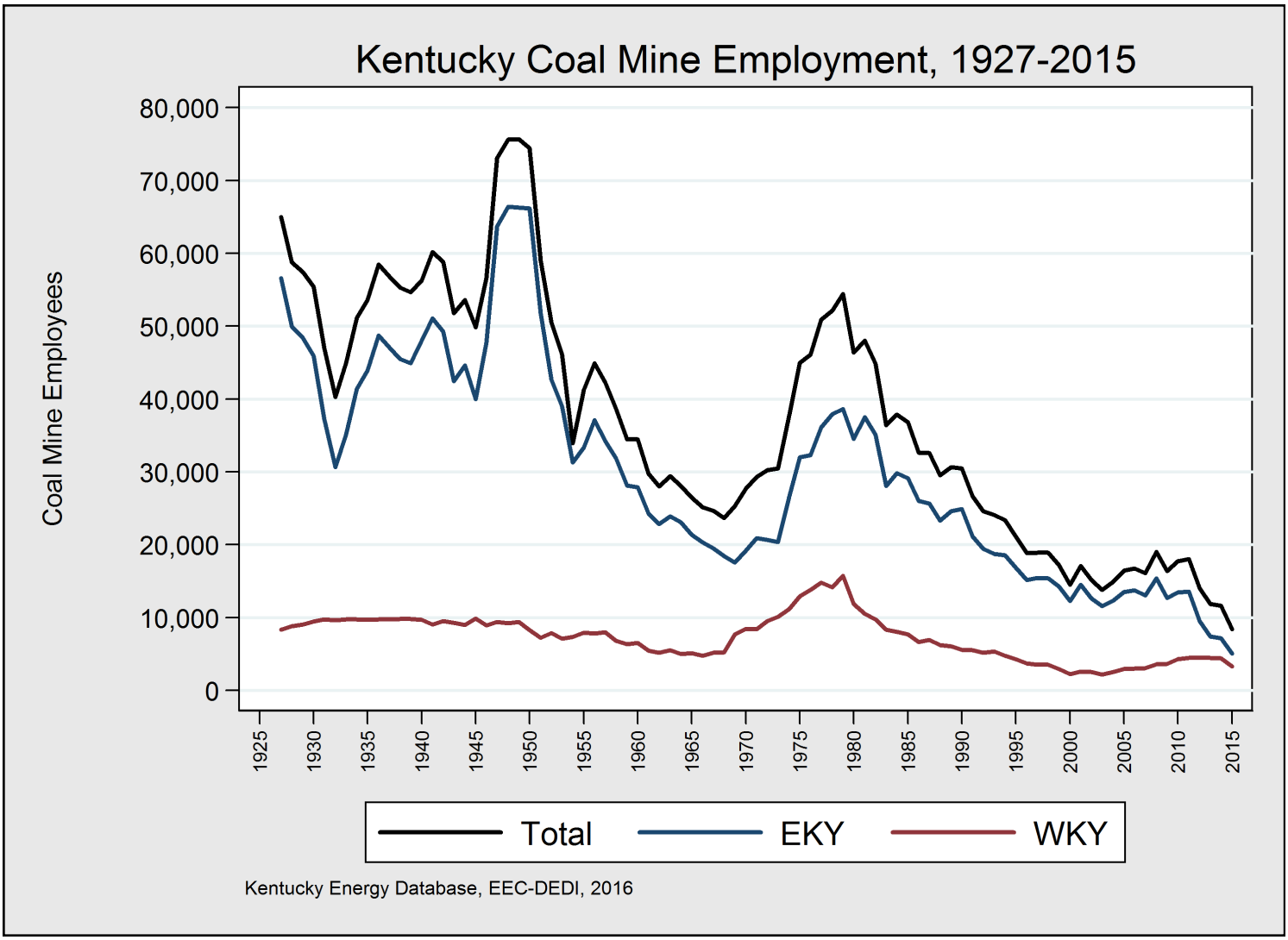
History of Coal in Kentucky



Kentucky Energy Database, EEC-DEDI, 2016

In 1917, the United States formally declared war on Germany. President Woodrow Wilson, desperately in need of coal to produce guns, munitions, and ships, created the United States Fuel Administration to encourage increased coal production. Kentucky coal production continued to rise with the economic growth of the post-World War I expansion until the Great Depression beginning in 1929. In the 1940s, coal production increased once again as the nation armed for war. In the 1940s through 1970s, bituminous coal began to be phased out of the railroad industry, but was increasingly utilized for electricity generation. To meet rising electricity demand, large-scale surface mining operations began in western Kentucky that led to rapid expansion of production. In the 1970s, significant surface mining operations also began in the Appalachian Mountains of eastern Kentucky, and accounted for half of the production. Wyoming, with thick seams of low sulfur Powder River Basin coal, displaced Kentucky as the United States' leading coal producer in 1988. Kentucky coal production peaked in 1990 at over 173 million tons and has declined thereafter. West Virginia overtook Kentucky as the second-largest coal producer in 1994. During the 1990s and 2000s, eastern Kentucky production experienced steady declines. Though declining in the 1990s, western Kentucky production increased through the 2000s. In more recent years, production has fallen in both of Kentucky's coalfields, but the dramatic decline in eastern Kentucky has been unprecedented.

History of Coal in Kentucky



The earliest official statistic on record for statewide coal mine employment is from 1927 when 64,969 "men" working at 622 mines produced 69.9 million tons. Known Kentucky coal mine employment peaked in 1948 after the Second World War at 75,633, with 66,410 in eastern Kentucky and 9,223 in western Kentucky. Coal mine employment has declined over the past century due primarily to automation and mechanization of mining processes, which have improved mining productivity—the amount of coal produced per labor hour. Since the year 2000, however, diminishing reserves of thick and easily accessible coal seams in eastern Kentucky have made coal more difficult, labor -intensive, and costly to mine, which has resulted in reductions in price competiveness of Kentucky coal in comparison to coal from other regions and alternative sources of energy. Kentucky coal has been under increased competition from cheaper Powder River Basin coal since the 1980s and from natural gas produced through advances in hydrologic fracturing and horizontal drilling since the 2010s. Federal environmental regulations targeting mercury, sulfur dioxide, nitrogen oxide, and recently carbon dioxide, have further impeded the market competiveness of coal for domestic electricity generation versus alternative energy sources.

Photo: Shipment of coal from a new mine in Floyd County, 1941. Goodman-Paxton Photographic Collection, University of Kentucky Special Collections.

History of Coal in Kentucky

1000 Although the first use of coal in Kentucky is unknown, Hopi Indians, living in what is now Arizona, are known to have used coal to bake pottery made from clay more than 1,000 years ago.

1673 Among the first known instances of European settlers finding coal in the United States – Louis Jolliet and Father Jacques Marquette encounter "charbon de terra" (coal) at a point on the Illinois River during their expedition on the Mississippi River.

1701 Coal is found near what is now Richmond, Virginia.

1748 First recorded United States coal production occurs near Richmond, Virginia.

1750 Dr. Thomas Walker was the first known person to discover and use coal in what would later become Kentucky.

1755 Lewis Evan's map is made; showing coal in what is now the Greenup County and Boyd County area of Kentucky.

1758 First known commercial U.S. coal shipment occurs.

1790 First recorded Kentucky commercial coal production begins in what would later become Lee County, with annual production of 20 tons, two years before the Commonwealth of Kentucky became a state.

1792 The Commonwealth of Kentucky became the 15th state to join the United States.

1800 Kentucky produces over 100 tons of coal for the first time.

1813 Kentucky produces over 1,000 tons for the first time.

1825 First recorded western Kentucky coal production begins in newly-founded Daviess County, Kentucky with annual production of 3,000 tons.

1828 Kentucky produces over 10,000 tons of coal for the first time.

1838 At the request of the General Assembly, W. W. Mather conducts the first geological survey of Kentucky.

1848 First coal miner's union is formed in Schuylkill County, Pennsylvania.

1854 David Dale Owen establishes the Kentucky Geological Survey (KGS).

1855 Kentucky produces over 100,000 tons for the first time.

1861- Kentucky coal production collapses with the onset of the Civil War.

1865

1870 St. Louis & Southern Railroad is completed from Henderson to Earlington, Kentucky.

1872 Hopkins County is the first Kentucky county to mine over 100,000 tons in a single year.
First train off the Big Sandy Railroad.

1877 Coal is mined with a steam-powered shovel.

1879 Kentucky produces over 1 million tons for the first time.

1880 Mechanical stokers are introduced.
First coke ovens used in western Kentucky.
First train from Williamson, West Virginia, to Pike County, Kentucky.
Coal mining machines come into general use to undercut coal beds.

1890 Hopkins County in western Kentucky is the leading coal producer in the state for 18 straight years.
N&W Railroad's first mine at Goody in Pike County.
Miner Pay Law enacted.
United Mine Workers of America formed.
5,000 kilowatt steam turbine generates electricity.

1891 First federal law regarding mine safety is enacted, establishing minimum ventilation requirements at underground mines and prohibiting the employment of children less than 12 years of age.

1899 Hopkins County is the first Kentucky county to mine over 1 million tons of coal in a single year.

1900 Edgewater Coal Company has its first production in Pike County.
First train off the Lexington and Eastern Railroad.

1907 Kentucky produces over 10 million tons of coal for the first time.

1910 United States Bureau of Mines is established, charged with conducting research to reduce coal mining accidents.
First train travels on the Cumberland Valley Railroad.
Pike-Floyd Coal Company has its first production at Betsy Layne.

History of Coal in Kentucky

1911 **Coal production in eastern Kentucky exceeds 6.9 million tons, displacing western Kentucky as Kentucky's leading coalfield.**

1914 World War I increases demand for coal; Kentucky produces 20.3 million tons.
Short-flame or "permissible" explosives developed.

1916 Child Labor Act is passed, prohibiting the interstate sale of minerals extracted by miners under the age of 16.

1918 First pulverized coal fired generator is used in electric power plants.

1920 Federal Mineral Leasing Act becomes law, creating a system of leasing and development for mining on federally owned land.

1923 **All-time high U.S. employment of 704,793 bituminous coal and lignite miners is recorded.**
First dragline excavators built especially for surface mining are introduced.

1925 **Harlan County produces 11.8 million tons of coal, becoming the first Kentucky county to produce more than 10 million tons in a single year.**

1927 **Kentucky coal mines employ 64,969 miners, the earliest known official employment statistic.**
Kentucky coal production reaches 69.9 million tons.

1931 Great Depression reduces demand for coal; Kentucky produces 40.4 million tons.

1932 Walking dragline excavators are developed.

1933 Congress creates the Tennessee Valley Authority (TVA).

1935 Congress passes the Rural Electrification Act to promote electricity distribution across the United States.

1940 Auger surface mining is introduced.

1941 United States Bureau of Mines is granted inspection authority.

1942 Republic Steel Company has its first production in Road Creek, Kentucky.
Kentucky Water Contamination Legislation is enacted.

1944 World War II increases demand for coal; Kentucky produces 72.4 million tons.

1947 Kentucky Coal Association is founded.
First federal regulation for mine safety is enacted.

1949 **Kentucky coal mines employ 75,707 miners—the highest number ever recorded.**

1950 Post-War Marshall Plan increases demand for coal; Kentucky produces 82.2 million tons.

1952 Federal Coal Mine Safety Act is passed, allowing annual inspections in underground mines and civil penalties against mine operators for noncompliance with withdrawal orders or refusing access to inspectors of mines.

1956 Fish and Wildlife Coordination Act becomes law, requiring federal agencies to determine how proposed mines could affect bodies of water.
Railroads begin converting from coal to diesel fuel.
Roof bolting introduced in underground mines.

1960 Railroads begin using unit coal trains, enabling transportation of larger volumes with increased efficiency.
First longwall mining with powered roof supports.
Kentucky Surface Mining Legislation is enacted.

1961 **Muhlenberg County replaces Hopkins County as the leading coal-producing county.**

1966 Congress extends coverage of 1952 Federal Coal Mine Safety Act to all underground mines.
National Historic Preservation Act becomes law, governing the preservation of historic properties.
C&O Railroad to John's Creek is constructed in Pike County.

1967 **Kentucky produces over 100 million tons for the first time.**

1969 Federal Coal Mine Health and Safety Act enacted, creating what would become the Mine Safety and Health Administration (MSHA). The law requires two annual inspections of every surface mine, four at every underground mine; establishes mandatory monetary fines for all violations and criminal penalties for "knowing and willful" violations; requires more stringent health and safety standards; and provides compensation for miners disabled as a result of pneumoconiosis, or black lung.

1970 Federal Clean Air Act is passed, which regulates the discharge of pollutants into the air.

History of Coal in Kentucky

1970 The Hurricane Creek Mine Disaster occurs, in which 38 miners are killed in Leslie County, following a mine explosion—the deadliest mine disaster since the implementation of the Coal Mine Health and Safety Act of 1969.

Surface mines in Muhlenberg County produce nearly 21.5 million tons of coal, more surface production than any county in Kentucky history.

1971 **Kentucky becomes the leading coal producer in the United States, with surface mines in Muhlenberg County leading the state.**

Surface production becomes Kentucky's primary means of coal production, led by large surface mines in Muhlenberg County in western Kentucky.

1972 Kentucky Coal Severance Tax is established.

Clean Water Act is passed, regulating the discharge of pollutants into water sources.

1973 Endangered Species Act becomes law, which governs the protection of endangered species.

Brookside Strike occurs, during which 180 miners in Harlan County strike, demanding safer working conditions, higher wages, and amended labor practices.

OPEC (Oil Producing and Exporting Countries) oil embargo—coal production and prices rise.

1976 Federal Coal Leasing Amendments Act enacted, requiring all public lands available for coal leasing to be leased competitively.

15 coal miners and 11 rescue workers die in Scotia Mine accident in Letcher County.

1977 Federal Surface Mine Control and Reclamation Act is passed, regulating active mines and creating the Office of Surface Mining to oversee reclamation efforts for reclaiming closed mine lands.

Mine Safety and Health Act (Mine Act) is enacted, amending Coal Mine Safety and Health Act of 1969 to consolidate all coal and non-coal mine safety and health regulations into one regulatory body. The act amends miner protections and transferred authority for overseeing mine health and safety from the Department of Labor to the Mine Safety and Health Administration (MSHA).

Pike County in eastern Kentucky replaces Muhlenberg County in western Kentucky as the leading coal-producing county.

1979 **Underground mining again becomes Kentucky's primary means of coal production.**

1980 Congress enacts the National Acid Precipitation Assessment Program (NAPAP) Study, a 10-year research program, which invests $550 million for the study of acid rain.

Industries spend over $1 billion on air pollution control equipment during 1980.

1983 United States Clean Coal Technology Demonstration Program establishes $2.5 billion in federal matching funds committed to develop and demonstrate improved clean coal technologies.

1986 Clean Coal Technology Act is passed, intended to construct new coal generation technologies at scale.

1988 **Wyoming overtakes Kentucky as the leading coal producer in the United States.**

Kentucky Supreme Court rules that the unmined minerals tax on coal is subject to the same state and local property tax rates as other real estate.

1990 United States Clean Air Act Amendments of 1990 are passed, establishing emissions limits for sulfur dioxide and nitrous oxide from coal-fired power plants.

Kentucky coal production peaks at over 173 million tons. Eastern Kentucky production peaks at nearly 131 million tons.

United States coal production exceeds 1 billion tons.

1992 United States Energy Policy Act of 1992 is passed.

1994 **West Virginia overtakes Kentucky as the second-highest coal producer in the United States.**

Workers' Comp Reform Laws are passed in Kentucky.

1996 Energy Policy Act goes into effect, increasing competition in utility markets among fuel providers.

Coal production in Pike County peaks at nearly 36 million tons of coal in a single year, more than any county in Kentucky history.

History of Coal in Kentucky

1997 The Kentucky Fish and Wildlife Commission votes to reintroduce elk into 14 eastern Kentucky counties on post-mined lands, citing mountaintop mining areas and old mine benches as good elk habitat.

1998 Federal synthetic fuel tax credit for use of coal fines begins.

2005 East Kentucky Power Cooperative's Gilbert coal-fueled fluidized-bed power plant begins operation.

Energy Policy Act of 2005 passed, which promotes the use of Clean Coal Technologies.

EPA adopts Clean Air Mercury Rule (CAMR) to reduce power plant mercury emissions to 15 tons by 2018.

2006 An explosion in Darby Mine No. 1 in Harlan County kills five miners—three from carbon monoxide poisoning and two from the initial blast.

Kentucky Energy Security National Leadership Act is passed, which calls for strategy for producing fuels from Kentucky coal.

Kentucky Coal Academy founded to train new coal miners.

Kentucky becomes the first state to adopt a drug-testing program for certification of coal miners.

Congress passes Mine Improvement & New Emergency Response Act (MINER Act), requiring mine-specific emergency response plans in underground mines, amending regulations for mine rescue, requiring rapid notification of mine accidents, and increasing civil penalties for mine violations.

2007 First year with no underground coal mining fatalities in Kentucky since records began.

Kentucky House Bill I is enacted, providing incentives for development in Kentucky of industries for producing transportation fuels and synthetic natural gas by gasification of coal.

United States Air Force flies aircraft on a blend of jet fuel containing gasified coal.

2010 Kentucky's most efficient coal-fired power plant, an Advanced Super Critical Pulverized Power Plant, begins operation in Trimble County.

2012 **Union County in western Kentucky replaces Pike County as Kentucky's leading coal-producing county.**

2013 **Coal production in western Kentucky exceeds coal production in eastern Kentucky for the first time since 1911.**

2015 **American Electric Power shuts down Big Sandy's coal-fired Unit 2 which had been in operation since 1969. Additional closures of coal-fired units at Robert Reid, Green River, and Cane Run power plants.**

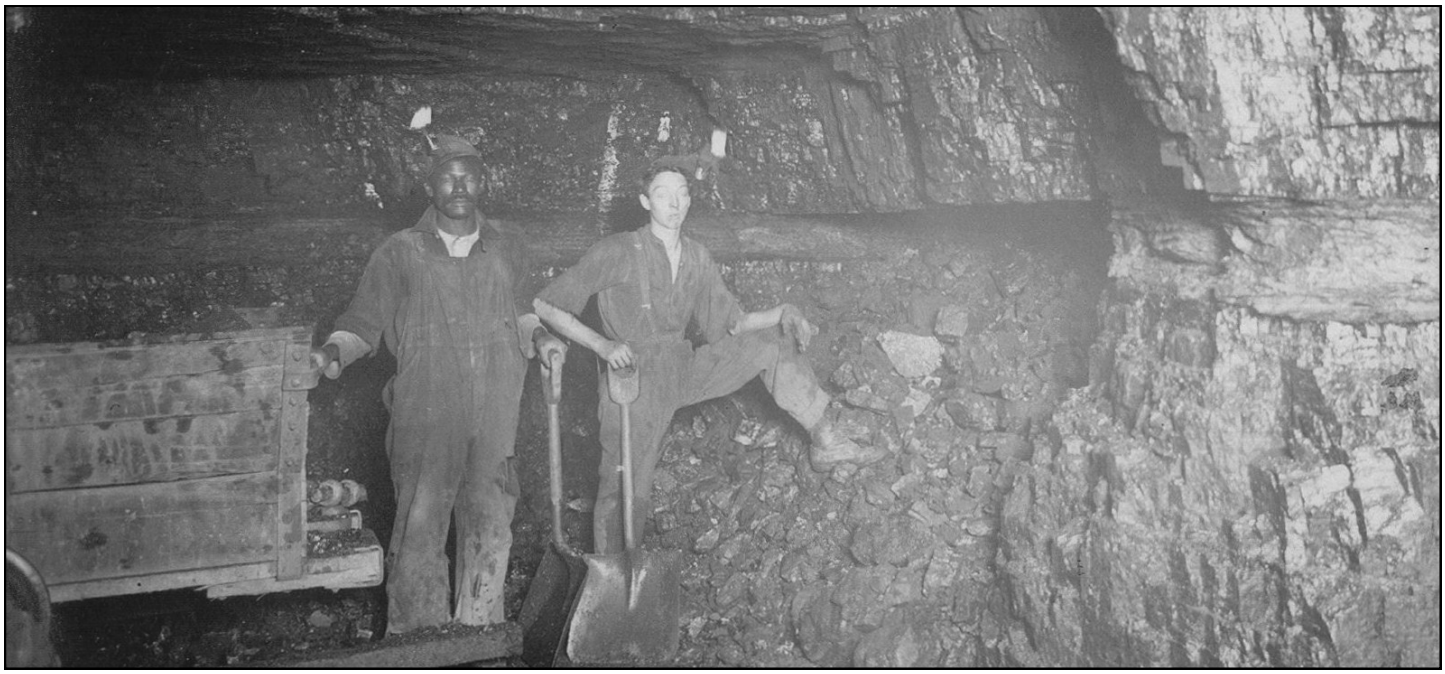
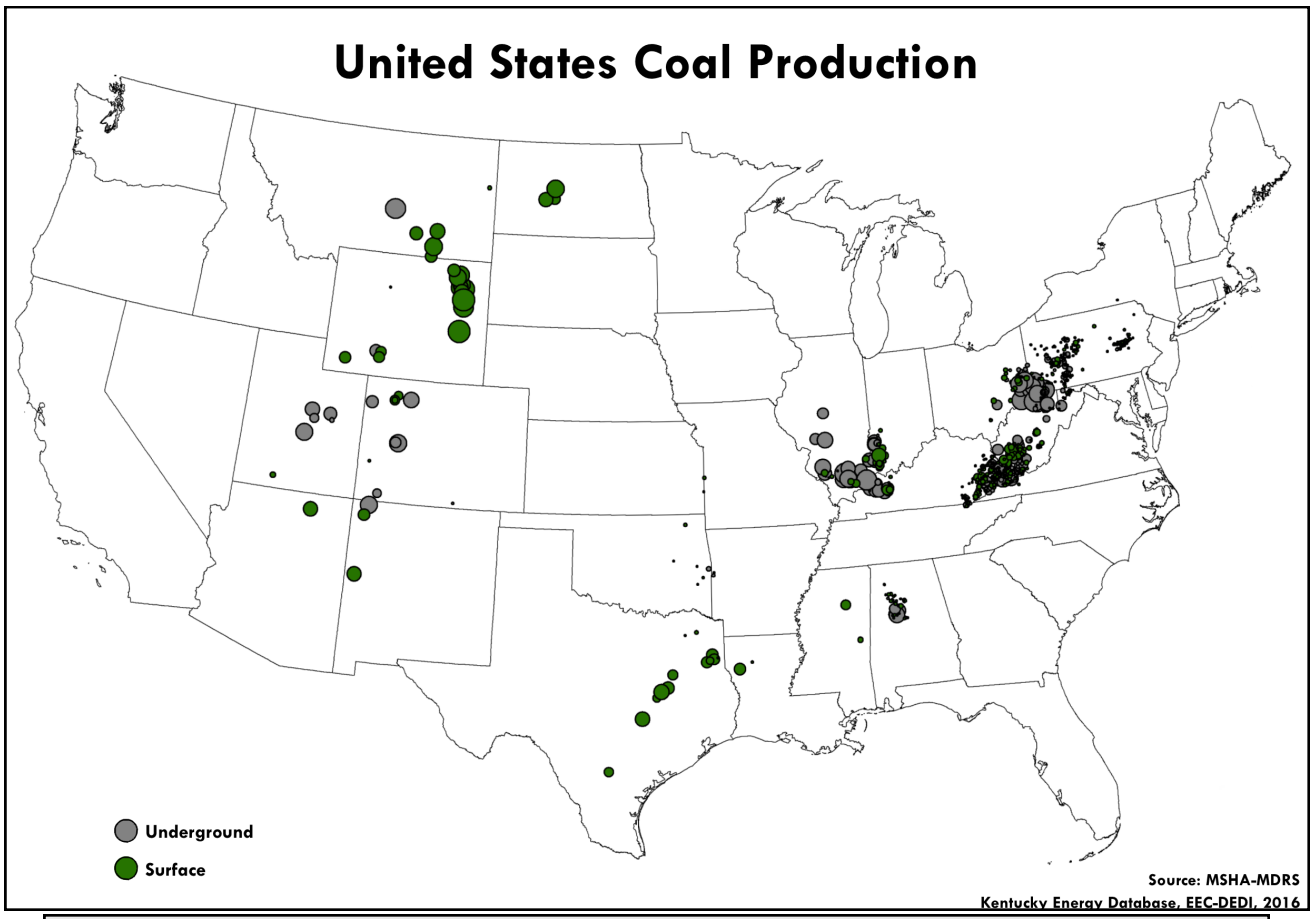
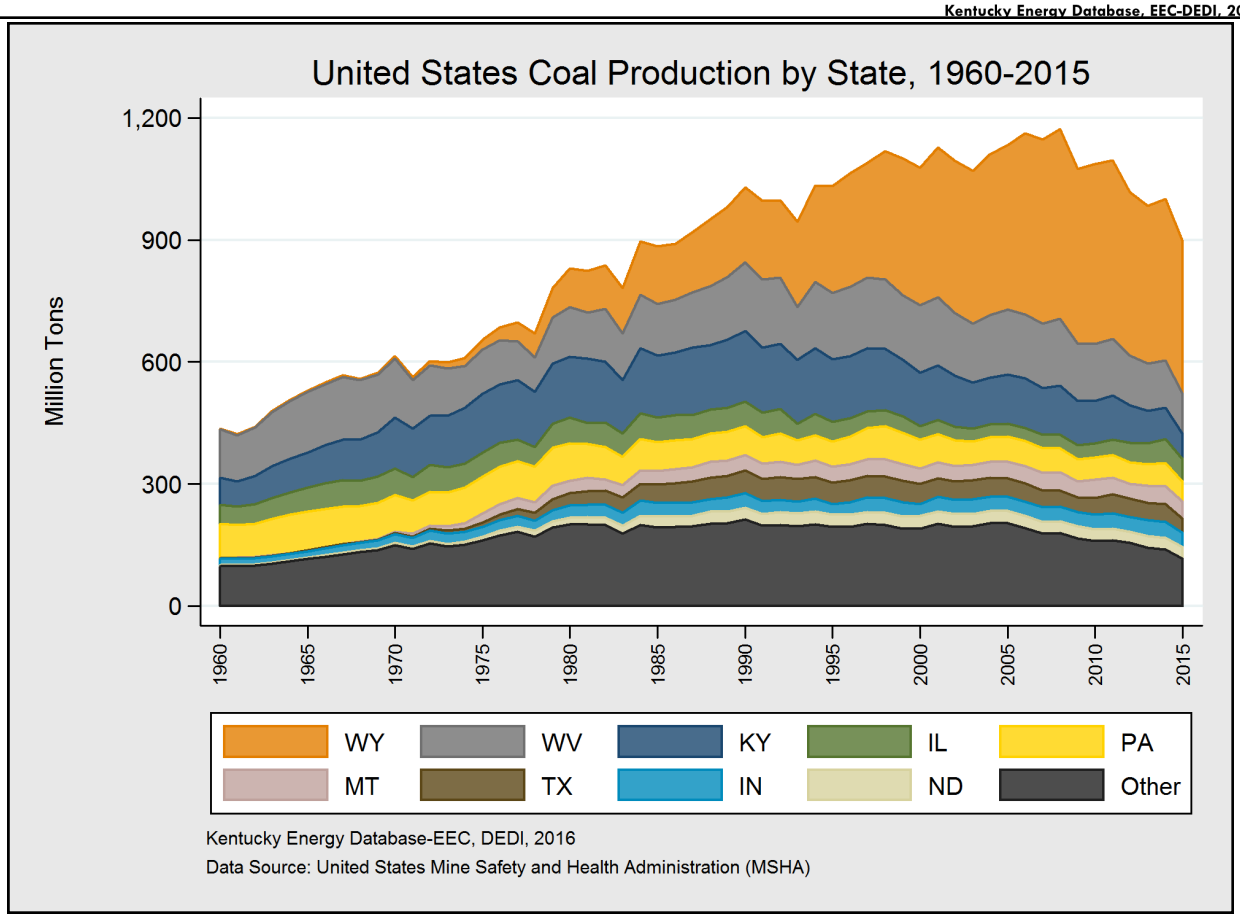


Photo: Coal miners in Mine 205, Jenkins, Kentucky Photographic Collection, University of Kentucky Special Collections.

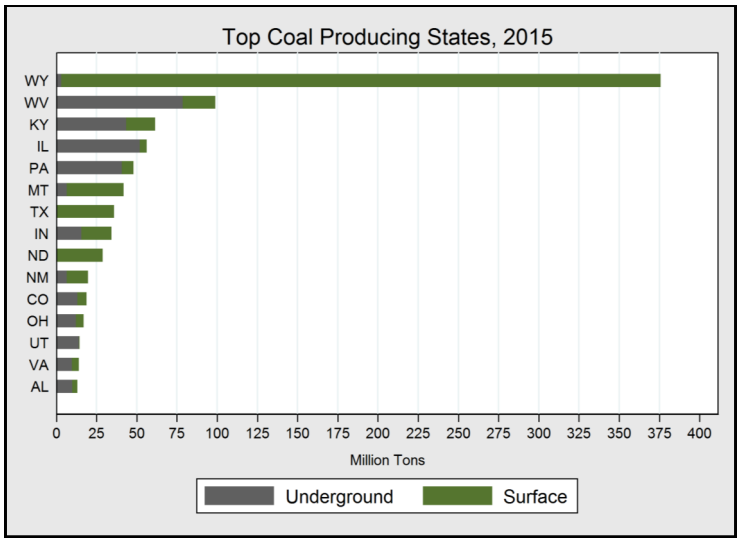
http://exploreuk.uky.edu/

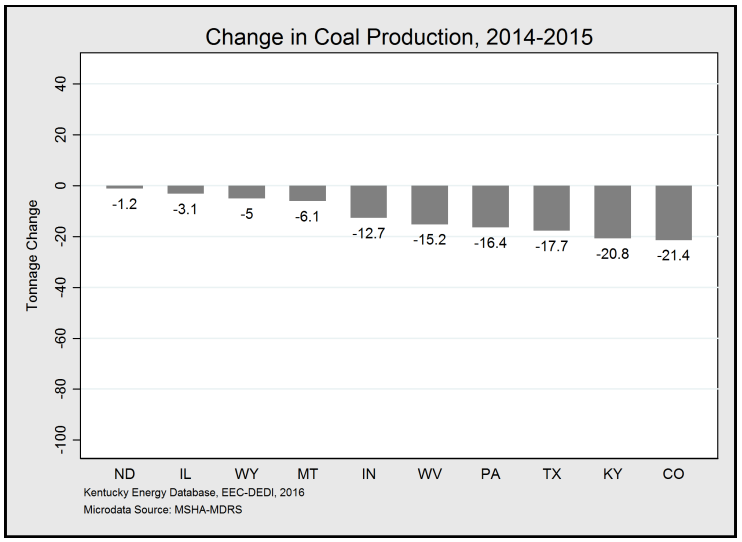
United States Coal Production





United States Coal Production





U.S. Coal Production by State, 2015			
State	Thousand Tons	1 Year Change	Percent
United States	896, 935	-10.3%	100%
Wyoming	375,773	-5.0%	41.9%
West Virginia	98,921	-15.2%	11.0%
Kentucky	61,414	-20.8%	6.8%
Illinois	56,227	-3.1%	6.3%
Pennsylvania	47,890	-16.4%	5.3%
Montana	41,864	-6.1%	4.7%
Texas	35,918	-17.7%	4.0%
Indiana	34,295	-12.7%	3.8%
North Dakota	28,802	-1.2%	3.2%
New Mexico	19,679	-10.4%	2.2%
Colorado	18,879	-21.4%	2.1%
Ohio	17,041	-23.4%	1.9%
Utah	14,419	-19.6%	1.6%
Virginia	14,036	-9.9%	1.6%
Alabama	13,193	-19.4%	1.5%
Arizona	6,805	-15.5%	0.8%
Louisiana	3,439	32.0%	0.4%
Mississippi	3,143	-15.9%	0.4%
Maryland	1,915	-3.2%	0.2%
Alaska	1,177	-21.6%	0.1%
Tennessee	897	5.6%	0.1%
Oklahoma	780	-13.7%	0.1%
Kansas	199	+200.2%	<0.1%
Missouri	138	-61.9%	<0.1%
Arkansas	91	-2.7%	<0.1%

Coal production in the United States decreased in 2015 by 10.3 percent compared to 2014 with more than 896 million tons mined. Since 2008—the year with the highest coal production in the United States—total coal production has declined by 276 million tons, or 24 percent, as shown above.

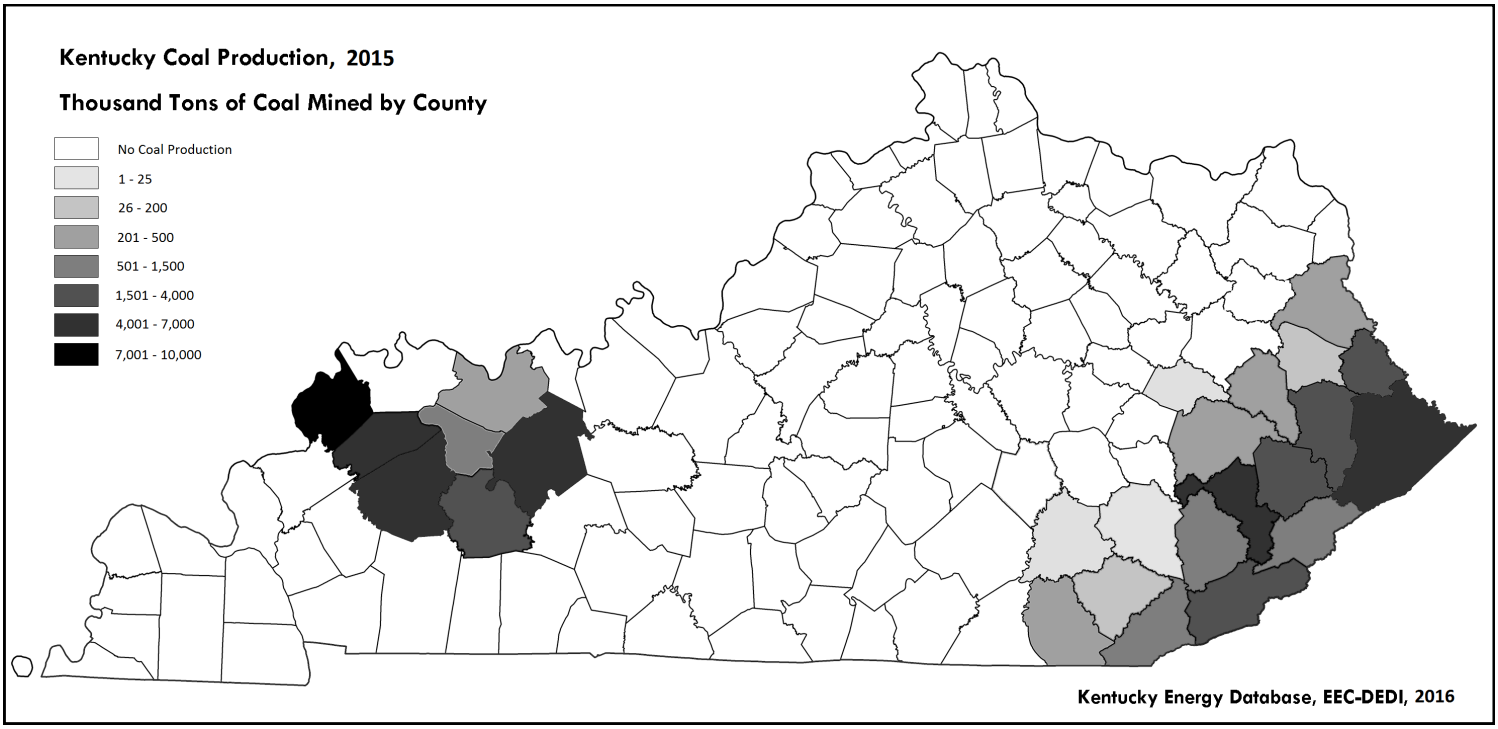
In 2015, coal mines in Wyoming accounted for approximately 41 percent of national production with 375 million tons of Powder River Basin coal. Wyoming has produced more coal annually than any other state since overtaking the top producer at the time, Kentucky, in 1988.

The second-largest coal producer during 2015, West Virginia, accounted for 11 percent of national production and supplied consumers with 98 million tons of low-sulfur, Central Appalachian Basin coal. West Virginia overtook Kentucky as the second-largest producer in 1994.

Kentucky, currently the third-largest producer, with almost seven percent of national production in 2015, provided coal from deposits of the Central Appalachian Basin in the eastern portion of the state and the Illinois Basin in the western portion of the state. Coal production in Kentucky decreased by 20.8 percent in 2015 to 61 million tons. Peak coal production in Kentucky was reached in 1990 when the Commonwealth mined 173.3 million tons of coal, and has decreased by 65 percent since.

Illinois was the fourth-largest coal producer in 2015 with 56 million tons of coal mined. Illinois coal production has decreased by 3 percent compared to 2014.

Kentucky Coal Production



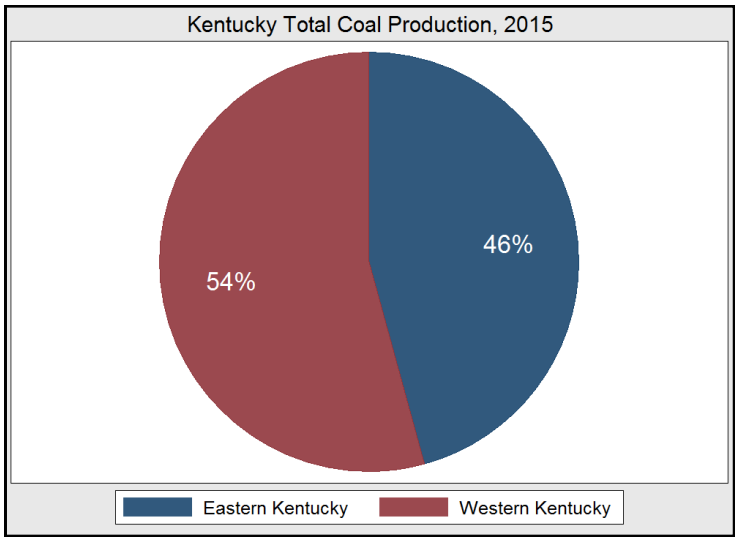
County	Tons	1 Year Change	Percentage
Total	61,414,340	-20.8%	100%
Union	9,114,413	-29.77%	14.84%
Pike	6,926,940	-33.69%	11.28%
Hopkins	6,844,611	-15.3%	11.14%
Ohio	6,748,636	-19.05%	10.99%
Perry	6,652,760	-11.01%	10.83%
Webster	5,871,014	-8.24%	9.56%
Harlan	3,827,478	-20.08%	6.23%
Muhlenberg	3,567,732	-1.60%	5.81%
Floyd	2,148,884	-15.0%	3.50%
Knott	2,132,915	7.18%	3.47%
Martin	1,578,349	-22.76%	2.57%
Leslie	1,437,000	+2.40%	2.34%

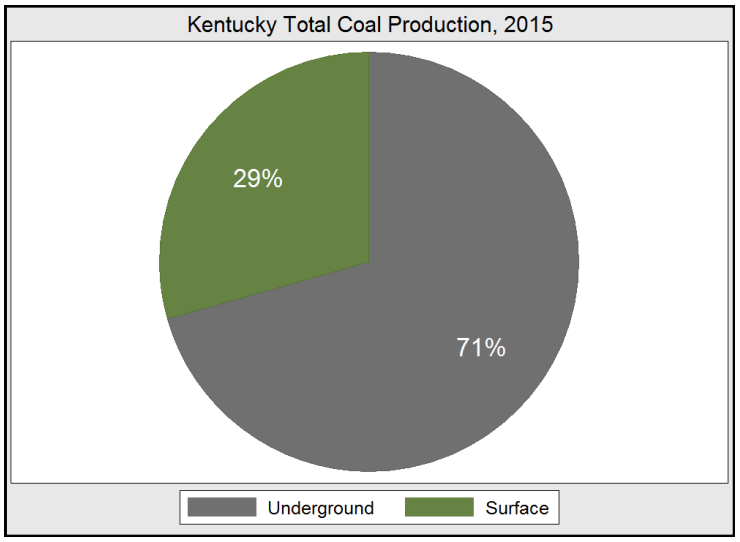
County	Tons	1 Year Change	Percentage
Bell	1,382,103	-2.54%	2.25%
McLean	842,924	+281.57%	1.37%
Letcher	523,160	-68.27%	0.85%
Lawrence	373,375	-52.36%	0.61%
Daviess	334,672	+3.36%	0.54%
Magoffin	258,351	-78.58%	0.42%
Whitley	253,477	-33.58%	0.41%
Breathitt	251,064	-55.55%	0.41%
Knox	180,748	-54.13%	0.29%
Johnson	122,108	-39.95%	0.20%
Wolfe	24,444	+57.3%	0.04%
Laurel	8,668	-28.86%	<0.01%
Clay	8,514	-95.12%	<0.01%

During 2015, coal production in the Commonwealth decreased to 61.4 million tons, the lowest level of recorded annual production since 1954. In 2015, Union County remained the top producer of coal in Kentucky. Pike County, the largest producer from 1978 to 2011, led production in eastern Kentucky.

In Kentucky, coal mining is divided between two different geologic basins—the Central Appalachian Basin of eastern Kentucky and the Illinois Basin of western Kentucky. Kentucky is the only major coal exporting state to span two geologic basins, and the chemical composition and accessibility of the coal from each is distinct. Eastern Kentucky has recorded coal mining since as early as 1790 and western Kentucky is known to have had mining operations in 1820. The coalfield of eastern Kentucky has coal with a relatively higher heat content and lower sulfur content than western Kentucky. Eastern Kentucky coal is also more difficult to mine. As a result of differences regarding the extractability and quality of the coal, eastern Kentucky coal is overall more expensive than western Kentucky coal. The difference in the delivered price of coal between the two coalfields is a result of numerous factors that affect both the supply of and demand for coal, including transportation costs, the ease of accessing coal and the subsequent mining techniques employed, and the chemical properties and heat content of the coal.

Kentucky Coal Production



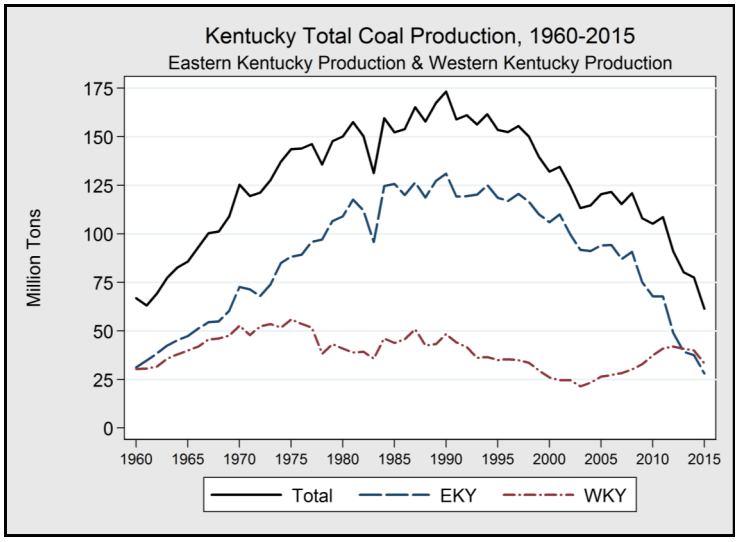


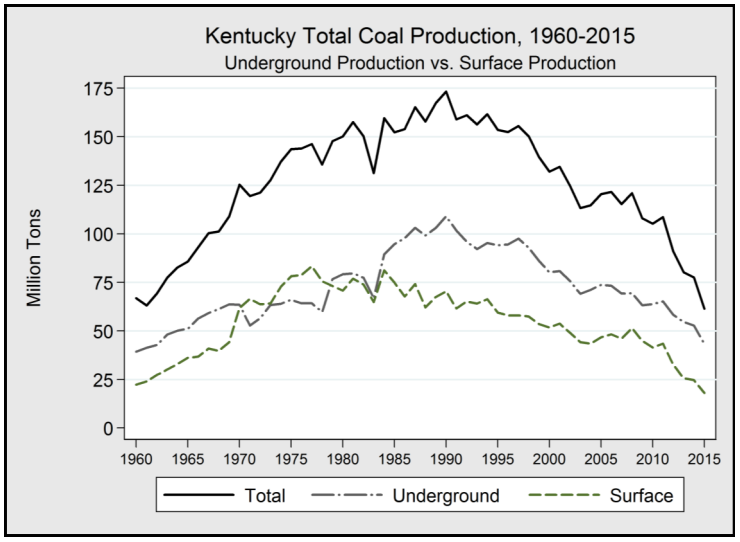
Region	2015 Tonnage	Annual Change
Total	61,414,340	-20.8%
Western Kentucky	33,324,002	-16.6%
Eastern Kentucky	28,090,338	-25.2%

Mine Type	2015 Tonnage	Annual Change
Total	61,414,340	-20.8%
Underground	43,379,484	-17.9%
Surface	18,034,856	-27.0%

Kentucky coal mines produced 61.4 million tons in 2015, a decrease of 20.7 percent from 2014. Production declined in both the eastern and western coalfields in 2015.

The majority of Kentucky coal production has been from underground operations since 1979, following the passage of the Surface Mine Control and Reclamation Act of 1977.

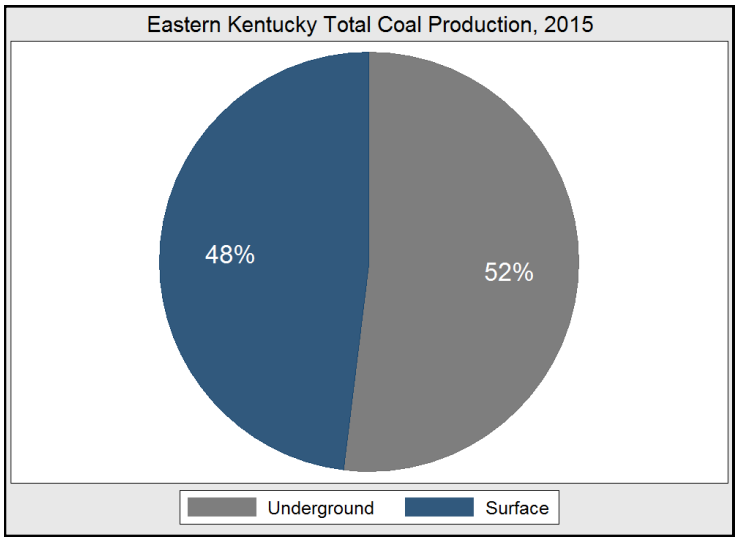


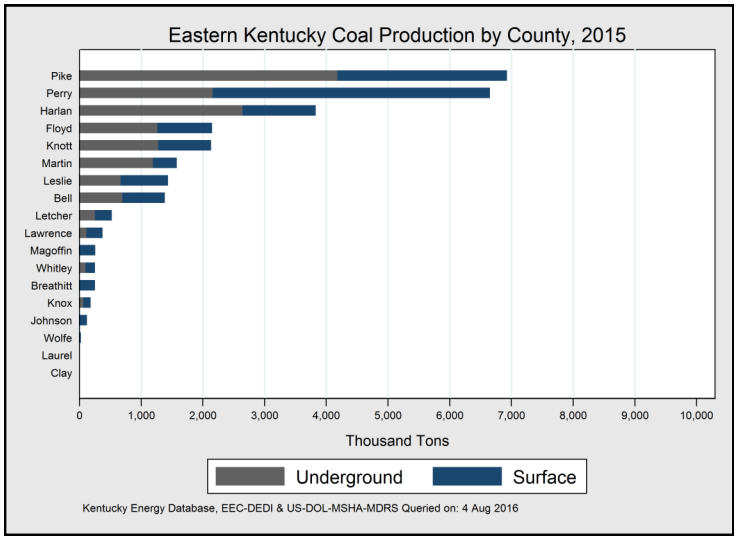


Eastern Kentucky had been the top-producing region in Kentucky since 1912, when eastern Kentucky overtook western Kentucky. However, western Kentucky coal mines have produced the majority of coal in the Commonwealth since the third quarter of 2013 and were the main source of Kentucky coal from 1886 to 1911.

Underground coal mines produced 43.4 million tons of coal, or 71 percent of total Kentucky production in 2015, a decrease of 17.9 percent from 2014. Surface mining operations, which mined 18 million tons of coal, decreased production by 27 percent since 2014. Production declines in both surface and underground mining since 1990 have been concentrated in the eastern coalfield.

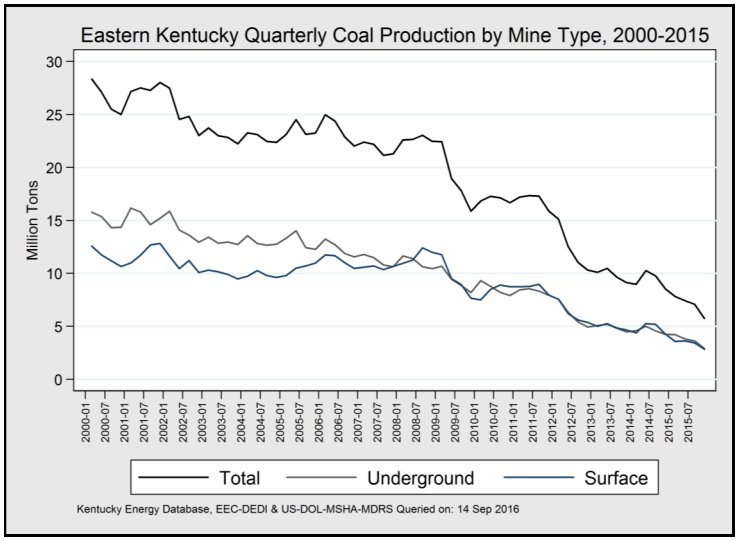
Eastern Kentucky Coal Production





Mine Type	2015 Tonnage	Annual Change
Total	28,090,338	-25.2%
Surface	13,491,272	-29.4%
Underground	14,599,066	-20.7%

Eastern Kentucky coal production decreased in 2015 by 25.2 percent to 28 million tons of coal—48 percent from surface mines and 52 percent from underground mines.

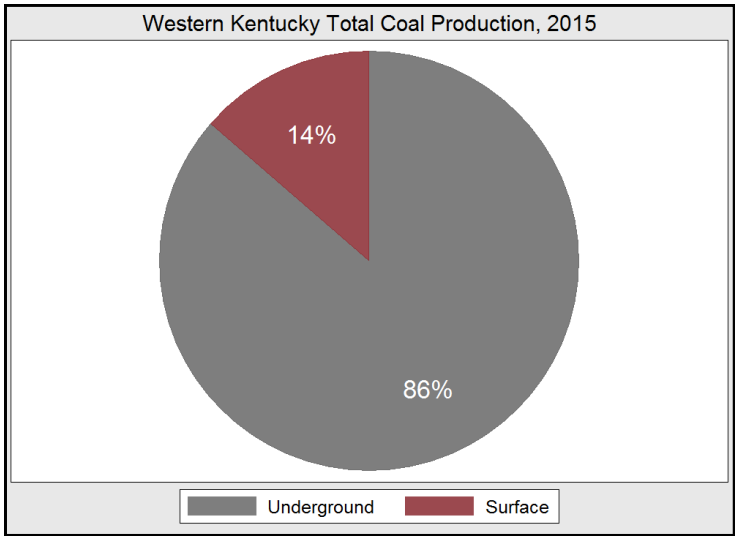


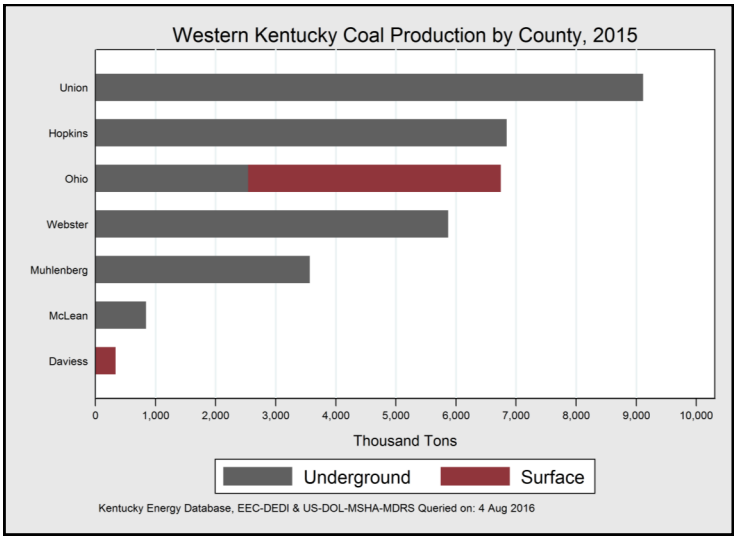
Eastern County	2015 Tonnage	Annual Change
Pike	6,926,940	-33.70%
Perry	6,652,760	-11.00%
Harlan	3,827,478	-20.10%
Floyd	2,148,884	-15.00%
Knott	2,132,915	7.20%
Martin	1,578,349	-22.80%
Leslie	1,437,000	2.40%
Bell	1,382,103	-2.50%
Letcher	523,160	-68.30%
Lawrence	373,375	-52.40%
Magoffin	258,351	-78.60%
Whitley	253,477	-33.60%
Breathitt	251,064	-55.50%
Knox	180,748	-54.10%
Johnson	122,108	-40.00%
Wolfe	24,444	57.30%
Laurel	8,668	-28.90%
Clay	8,514	-95.10%

Production decreased at both surface and underground mining operations in 2015 by 29.4 and 20.7 percent, respectively. Eastern Kentucky coal production has decreased by 74 percent since 2000 and by 79 percent since peak Kentucky production in 1990.

Pike County produced more coal than any county in eastern Kentucky and was the second-largest producing county overall, mining just over 6.9 million tons during 2015. Perry County was just behind Pike County in production for 2015 yielding almost 6.7 million tons. There was a larger drop off to the third-highest producer, Harlan County, which produced 3.8 million tons in 2015.

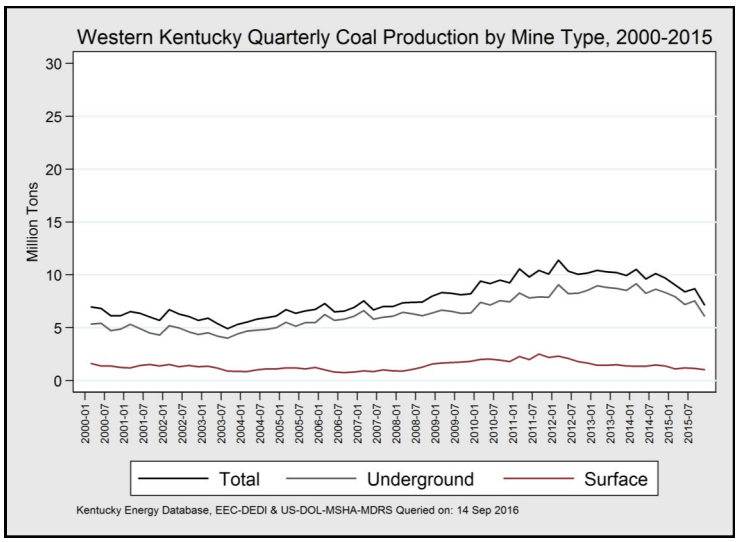
Western Kentucky Coal Production





Mine Type	2015 Tonnage	Annual Change
Total	33,324,002	-16.6%
Underground	28,780,419	-16.3%
Surface	4,543,583	-18.5%

Western Kentucky mined 33.3 million tons in 2015, a decrease of 16.6 percent from the year prior. 86 percent of regional coal production was from underground mines.



Underground mining in western Kentucky decreased by 16.6 percent in 2015, while surface mining decreased by 18.5 percent. Western Kentucky annual coal production has decreased by 31.2 percent since 1990, but has increased by 27.9 percent since 2000.

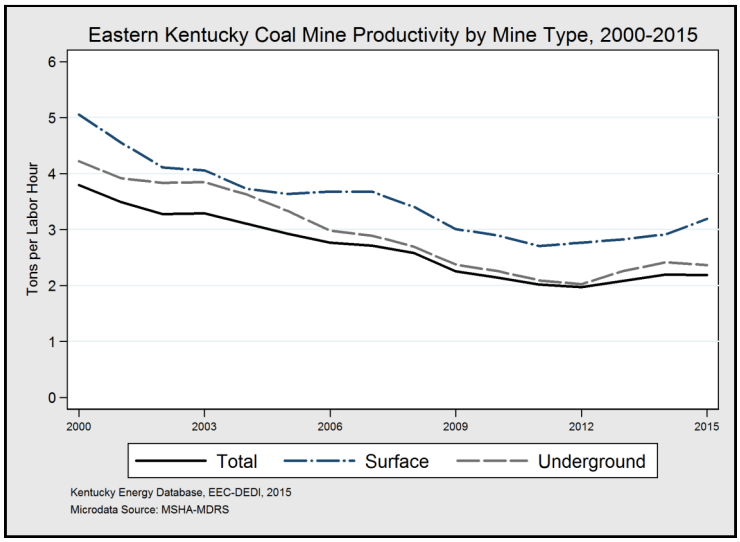
Western County	2015 Tonnage	Annual Change
Union	9,114,413	-29.77%
Hopkins	6,844,611	-15.30%
Ohio	6,748,636	-19.05%
Webster	5,871,014	-8.24%
Muhlenberg	3,567,732	-1.60%
McLean	842,924	281.57%
Daviess	334,672	3.36%

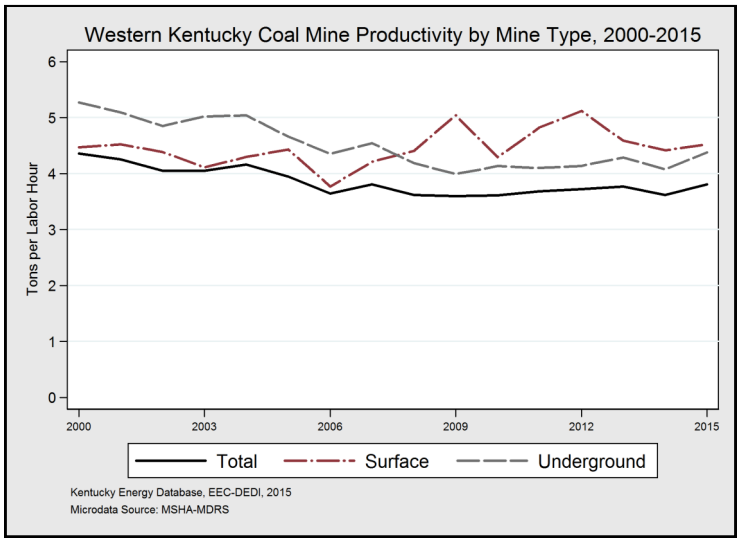
Union County remained Kentucky's leading coal producing county, mining 9.1 million tons during 2015, though production in the county decreased by nearly 30 percent from the year prior.

Most western Kentucky mining since 1985 has been underground. As a result of the topography and basinal structure of the Illinois Basin, surface coal production is relatively more accessible on the edges of the coalfield, further from the Ohio River, where much of the economically viable coal has been extracted in years past. The topography, in part, explains the relative increase in underground mining in the region since 1983 and the relative decrease in surface mining since peak regional surface production in 1972.

The majority of western Kentucky coal production was excavated by surface mining until 1985. In fact, Muhlenberg County was the Commonwealth's leading coal producer from 1961 to 1978, predominantly through the utilization of surface mining techniques.

Coal Mine Productivity





Region	Mine Type	Tons/Hour
Eastern Kentucky	All*	2.19
	Underground	2.37
	Surface	3.19

Region	Mine Type	Tons/Hour
Western Kentucky	All*	3.81
	Underground	4.38
	Surface	4.52

Total Labor Hours*	Underground	Surface
12,830,969	6,161,619	4,229,662

Total Labor Hours*	Underground	Surface
8,743,132	6,569,941	1,004,381

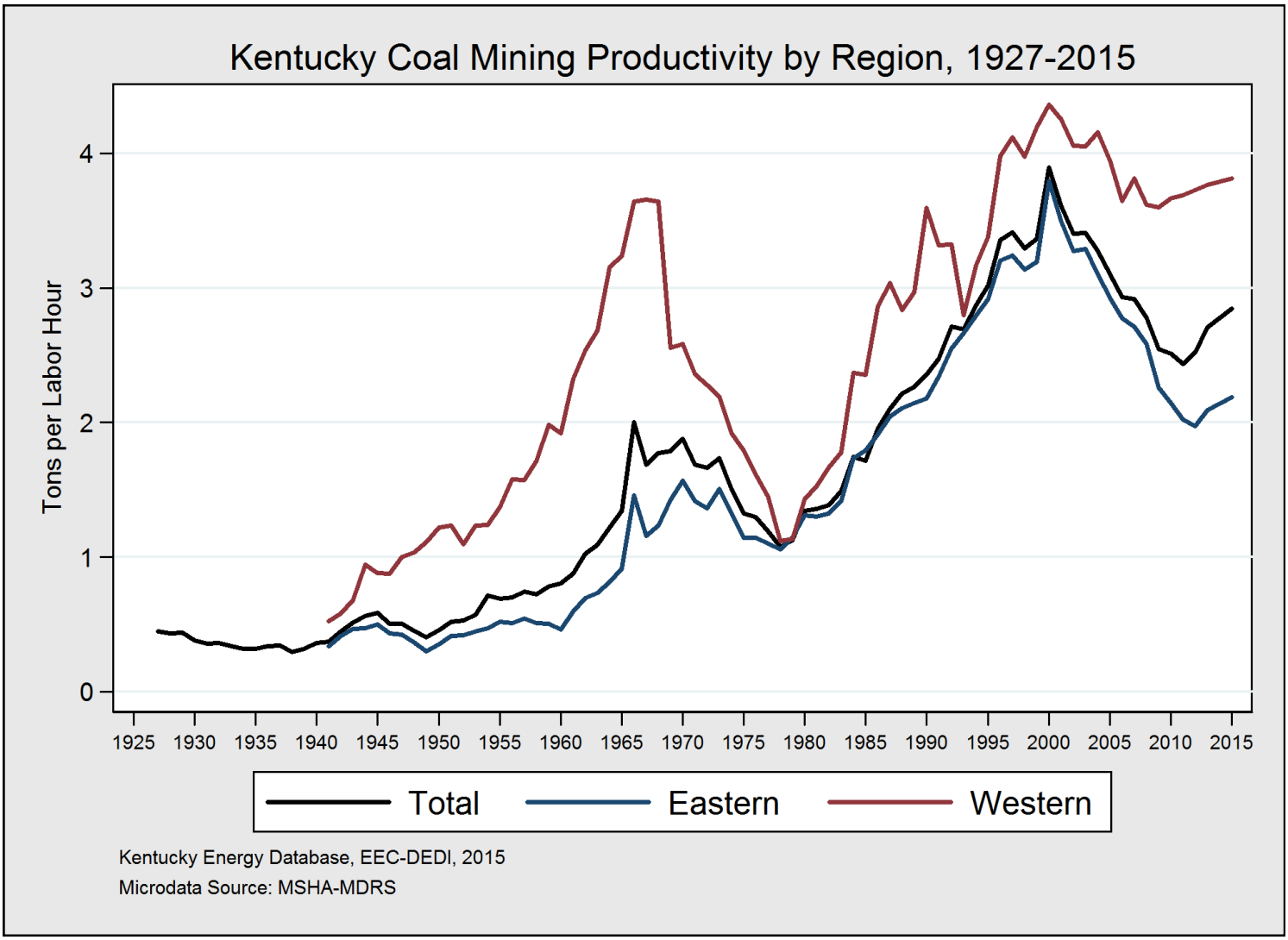
Source: U.S. Department of Labor, Mine Safety and Health Administration, "Quarterly Mine Employment and Coal Production Report" (MSHA Form 7000-02). ***Coal mine productivity is defined as total coal production (tons) divided by total employee labor hours. Total labor hours include the combination by mine site of direct miner hours, preparation plant hours, and on-site office employee hours.**

Coal mining productivity throughout Kentucky declined from 2000 to 2012, but has since steadied in western Kentucky and increased in eastern Kentucky. Western Kentucky productivity levels have been relatively consistent since 2000 compared to eastern Kentucky. These productivity differences arise largely as a result of different geologic and hydrologic conditions as well as the methods of coal production employed.

At an average of 2.19 tons per labor hour in 2015, productivity in the eastern coalfield was relatively unchanged from 2014. However, productivity is up 10.8 percent from 2012 as higher cost producers have exited the market. Over a longer time frame, productivity is down 43 percent from the year 2000, when production was 3.8 tons per labor hour. Surface mines in eastern Kentucky remained the more efficient method of coal mining in the region.

At 3.81 tons per labor hour in 2015, average coal mining productivity in western Kentucky was 74 percent higher than eastern Kentucky. While surface mines produced at a rate of 4.5 tons per hour in 2015, surface mine production accounted for only 14 percent of regional production. Therefore, western Kentucky productivity was most influenced by underground operations, which produced at 4.38 tons per labor hour. Surface productivity in western Kentucky increased by two percent in 2015 and underground productivity increased by seven percent since 2014. Total coal mine productivity in western Kentucky has fallen by almost 13 percent since 2000. Increases in preparation plant and office employment since 2000 have decreased total productivity numbers in the region.

Coal Mine Productivity



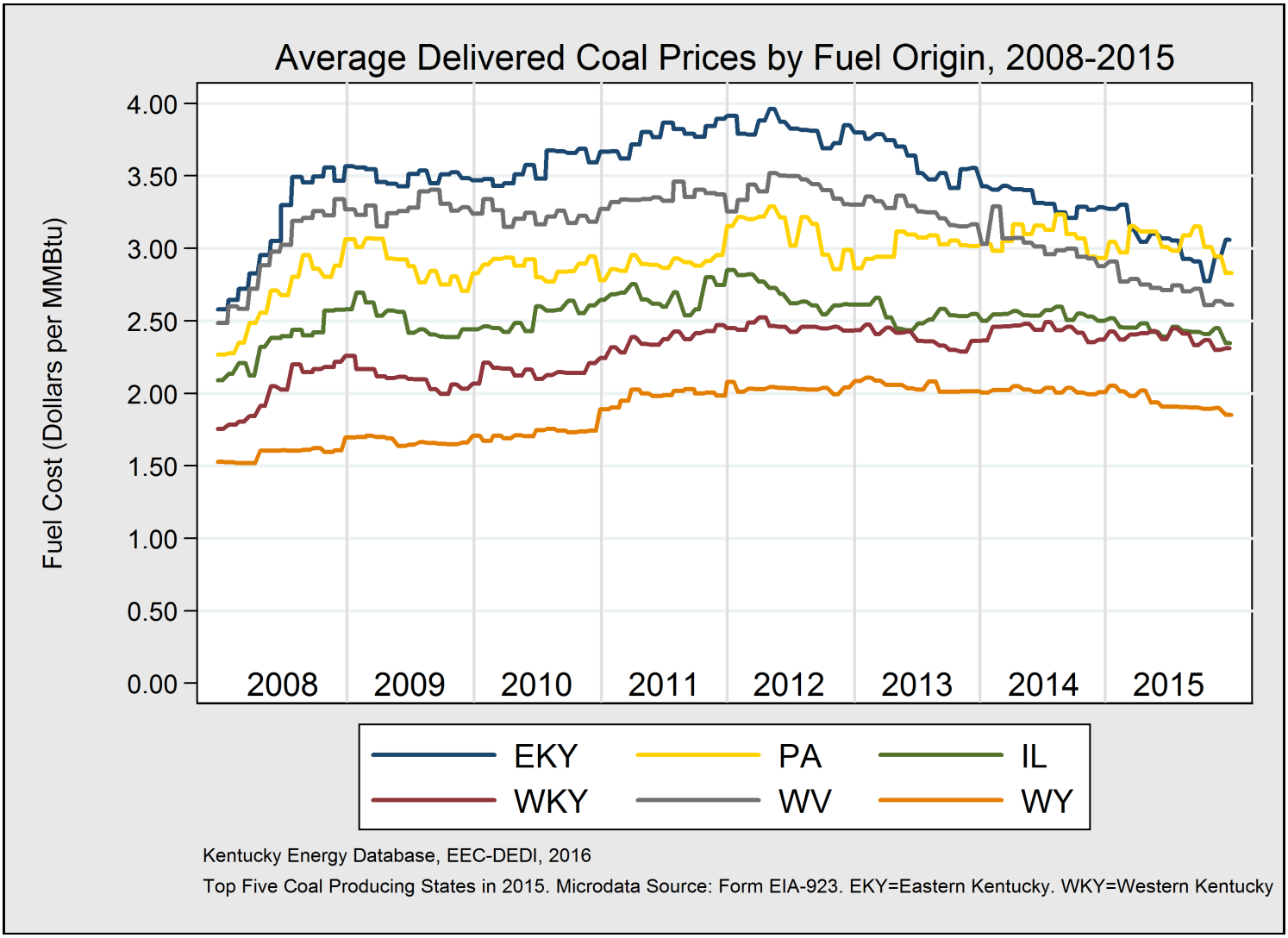
Coal mining productivity increased alongside greater adoption of mechanization from the 1940s to 2000. As coal resources became more scarce after 2000, productivity declined for over a decade. Recent increases in productivity in eastern Kentucky are the result of adverse economic conditions that have forced less productive mines to close.

The initial rise in western Kentucky productivity between 1940 and 1966 resulted from the two highest-producing counties in the region—Hopkins and Muhlenberg. The region's increasing productivity began in Hopkins County in the 1940s, but increased in tandem with surface mining production in Muhlenberg County through the 1950s and 1960s. As coal production in Muhlenberg County began to decline in the late 1960s and early 1970s, regional productivity also decreased. Western Kentucky's increased coal mining productivity after 1980 resulted from increased production and decreased employment in both surface and underground mining operations throughout the region.

In eastern Kentucky, historical productivity has risen and fallen alongside underground mining production. Though surface mining operations took longer to take hold in eastern Kentucky relative to western Kentucky, by 1977 surface operations were widespread and kept a steady rate of production until 2008. Underground mining operations increased in production and productivity from the 1970s to 1990 and declined until 2012, when productivity increased again.

Historical productivity, shown above, was determined by dividing regional coal production by the estimated number of labor hours. From 2000-2015, miner hours are known, and before 2000, they have been estimated. In the years prior to 2000, hours are the equivalent of coal mine employment times 2,412, which was the average number of hours worked annually by coal miners in Kentucky from 2000 to 2015.

Coal Price by Producer State



Kentucky Energy Database, EEC-DEDI, 2016

Top Five Coal Producing States in 2015. Microdata Source: Form EIA-923. EKY=Eastern Kentucky. WKY=Western Kentucky

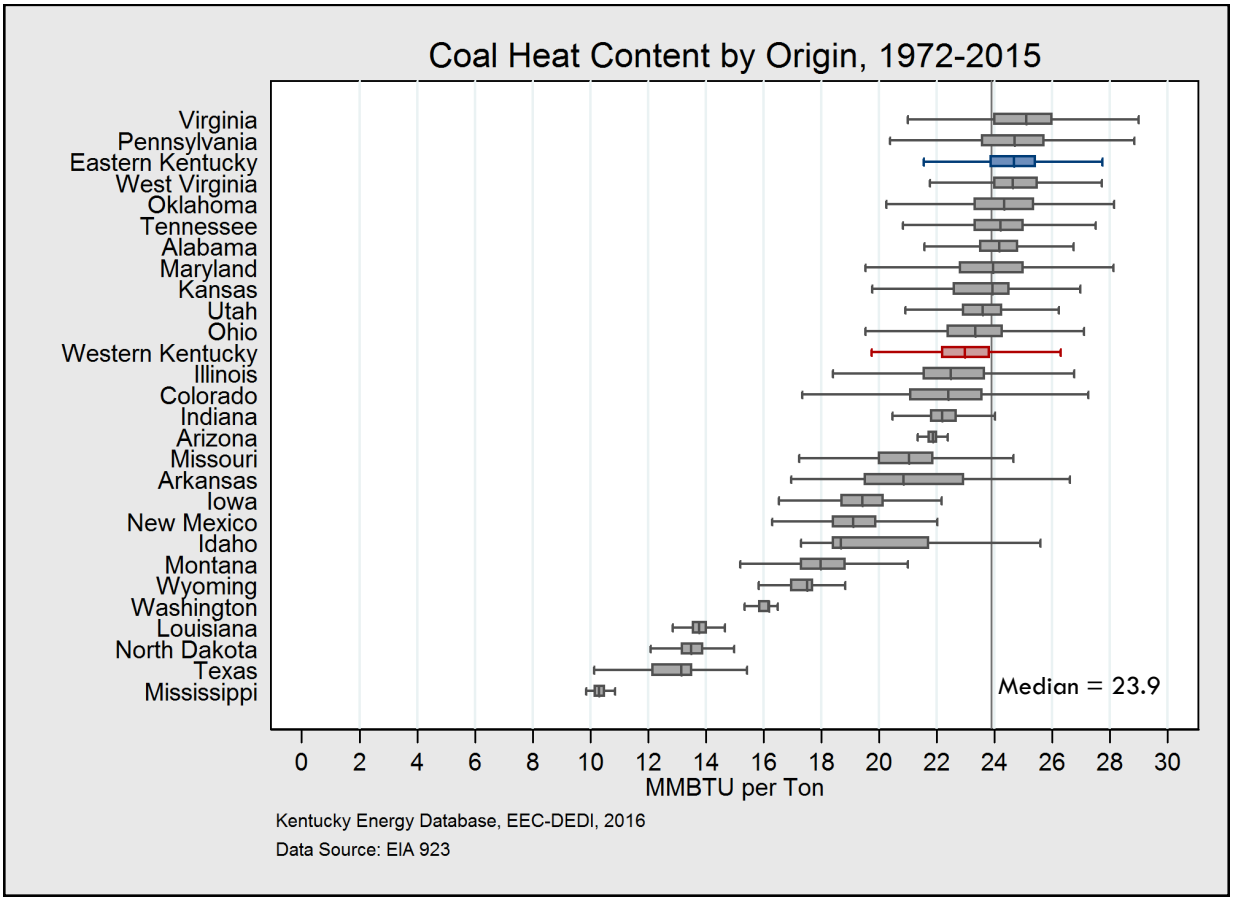
Origin	2015 $ per MMBtu	1 Year Change
Eastern Kentucky	3.02	-8.5%
Pennsylvania	2.86	-10.6%
West Virginia	2.69	-9.7%
Illinois	2.31	-0.9%
Western Kentucky	2.31	-1.7%
Wyoming	1.97	-2.5%

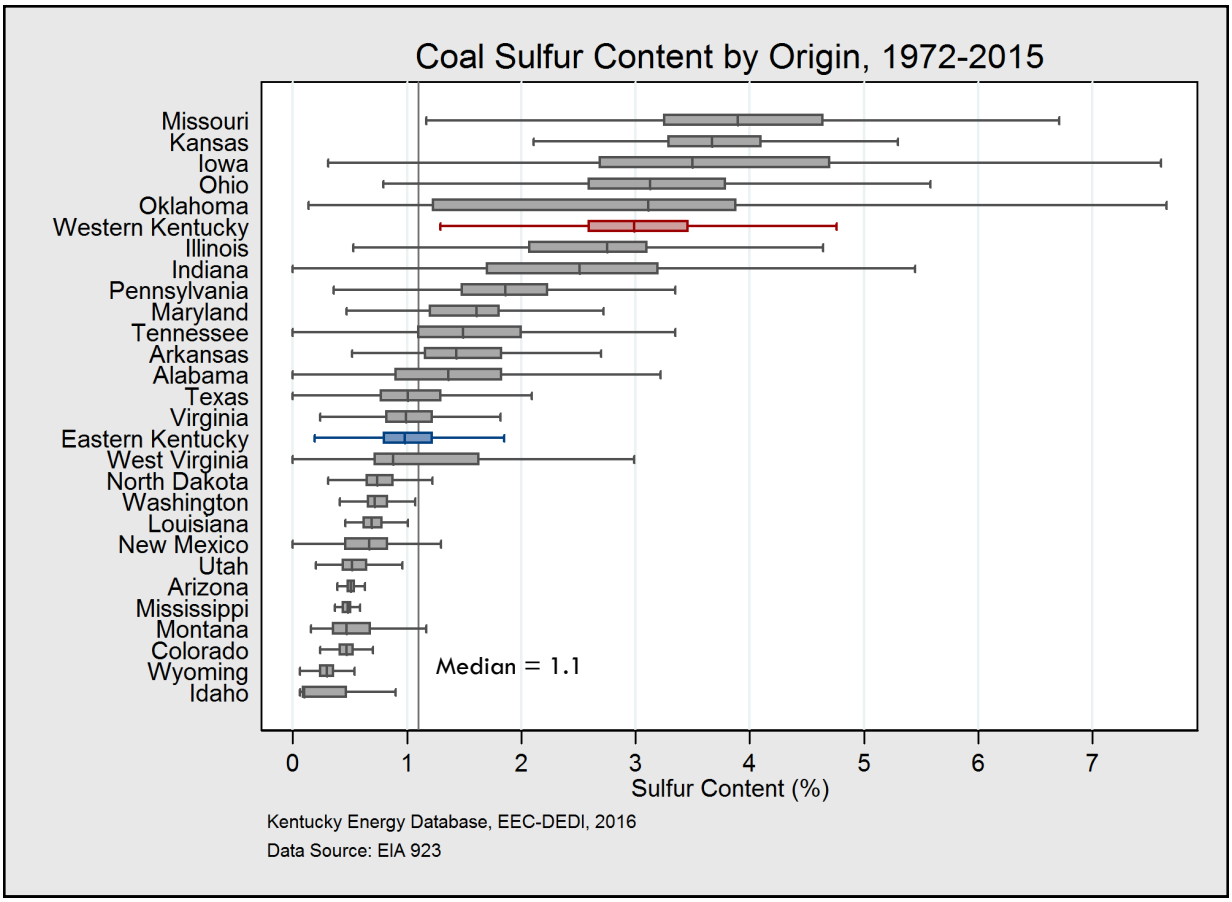
In 2015, Wyoming, West Virginia, Kentucky, Pennsylvania, and Illinois produced 71.3 percent of coal mined in the United States. A group of 20 states accounted for the remaining 28.7 percent of coal production; yet, no single state within this group represented more than five percent of national production.

Of the five largest coal-producing states in 2015, coal mined in eastern Kentucky was, on average, the most expensive coal delivered to electric utilities in the United States. Pennsylvania and West Virginia, which also produce bituminous coal from the Central Appalachian Basin, supplied the second and third-most expensive coal to electric power facilities. Wyoming, which was the nation's largest producer of coal in 2015 and mines sub-bituminous coal in the Powder River Basin, offered the least expensive coal among major producers, on average, to power plants during the year.

Factors such as market demand, coal mine productivity, heat content, sulfur content, spot pricing, and transportation costs all combine to affect the delivered cost of any shipment of coal.

Coal Properties by Producer State





Coal Properties by Producer State

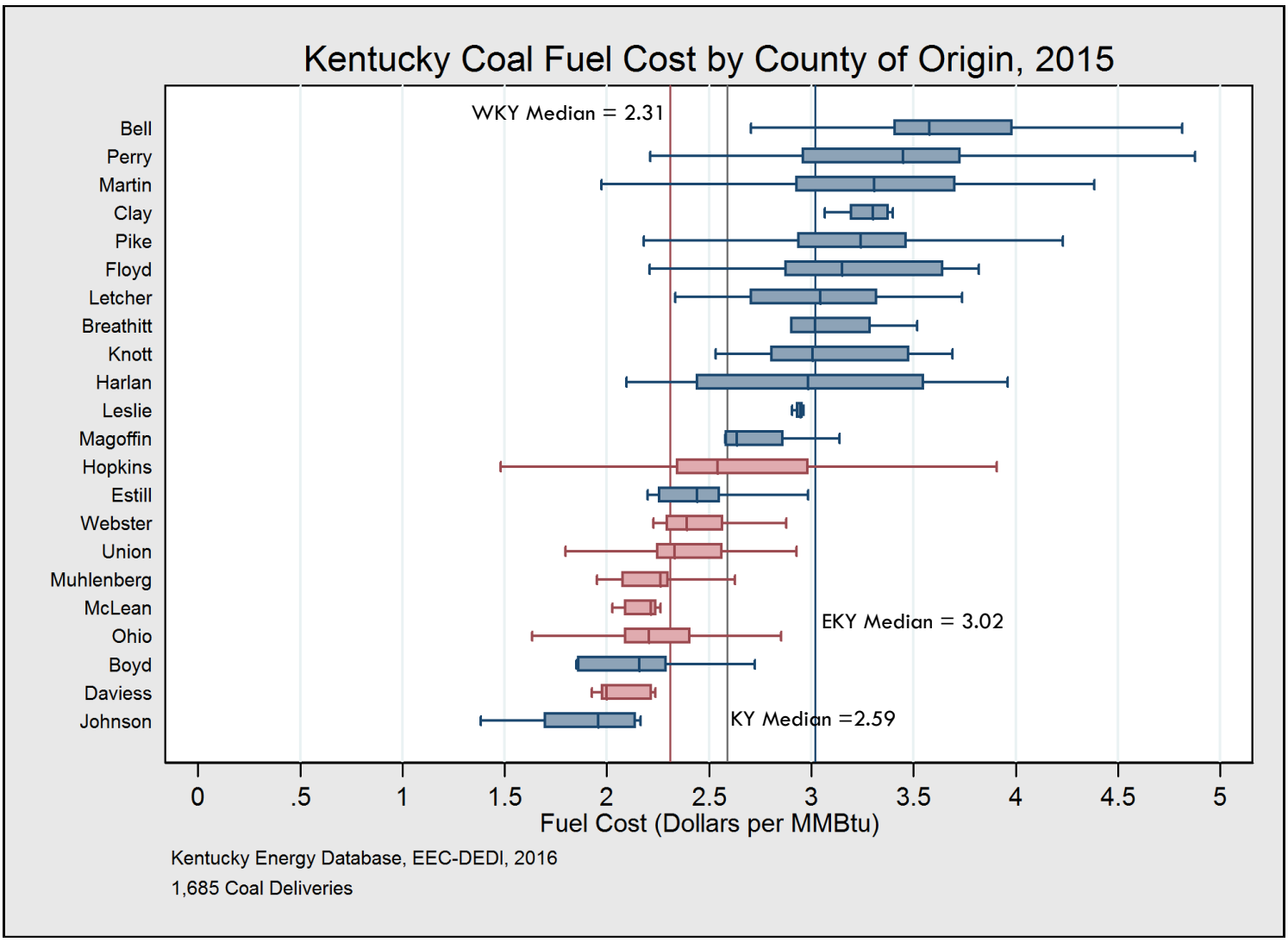
State	Mean Heat Content (MMBtu per Ton)	Median Sulfur Content (%)	Median Ash Content (%)	2015 Mean Delivered Price ($ per MMBtu)	2015 Median Delivered Price ($ per Ton)
Alabama	24.16	1.36	12.80	3.65	86.50
Arizona	21.88	0.51	9.90	2.13	45.94
Arkansas	20.86	1.43	23.80	—	—
Colorado	22.40	0.47	9.00	2.32	51.28
Eastern Kentucky	24.67	0.98	10.30	3.02	74.84
Illinois	22.48	2.75	9.10	2.31	53.50
Indiana	22.18	2.51	9.20	2.27	52.05
Kansas	23.93	3.67	12.90	2.48	54.31
Louisiana	13.78	0.69	13.40	3.45	47.99
Maryland	23.95	1.61	14.70	2.32	53.89
Mississippi	10.31	0.48	15.10	—	—
Missouri	21.04	3.9	13.30	2.50	54.32
Montana	17.98	0.47	6.50	2.04	35.25
New Mexico	19.12	0.67	15.50	1.98	36.58
North Dakota	13.49	0.74	8.40	1.53	20.97
Ohio	23.34	3.13	11.80	1.91	46.71
Oklahoma	24.34	3.11	11.74	—	—
Pennsylvania	24.71	1.86	12.40	2.86	74.10
Tennessee	24.20	1.49	12.40	3.68	95.03
Texas	13.16	1.01	16.20	2.83	33.50
Utah	23.60	0.52	9.70	1.88	43.82
Virginia	25.11	0.99	11.12	3.05	74.89
Washington	16.20	0.72	15.00	—	—
West Virginia	24.64	0.88	11.50	2.69	64.97
Western Kentucky	22.97	2.99	11.00	2.31	53.24
Wyoming	17.51	0.3	5.10	1.97	34.22

Steam Coal Properties

Coal from different states and coalfields across the country have distinct characteristics. For example, eastern Kentucky coal has one of the highest average heat contents in the United States. This table and previous graphics show the average chemical and cost properties for Kentucky coal, separated by region, relative to all other major sources of coal consumed in the United States. The properties were calculated from federal fuel shipment receipts as reported by electric utilities across the United States on EIA Form 923 and FERC Form 423.

The preceding and subsequent box and whisker plots summarize the range of heat content or sulfur content of coal by state or country. The box represents the range of observations within the 25th and 75th percentiles, or 50 percent of the data. The median value is marked in the center of the box with a vertical line. The whiskers, the horizontal lines extending from each box, illustrate the range of approximately 99.7 percent of the data, or ± 2.698 standard deviations from the median.

Coal Price by Kentucky County

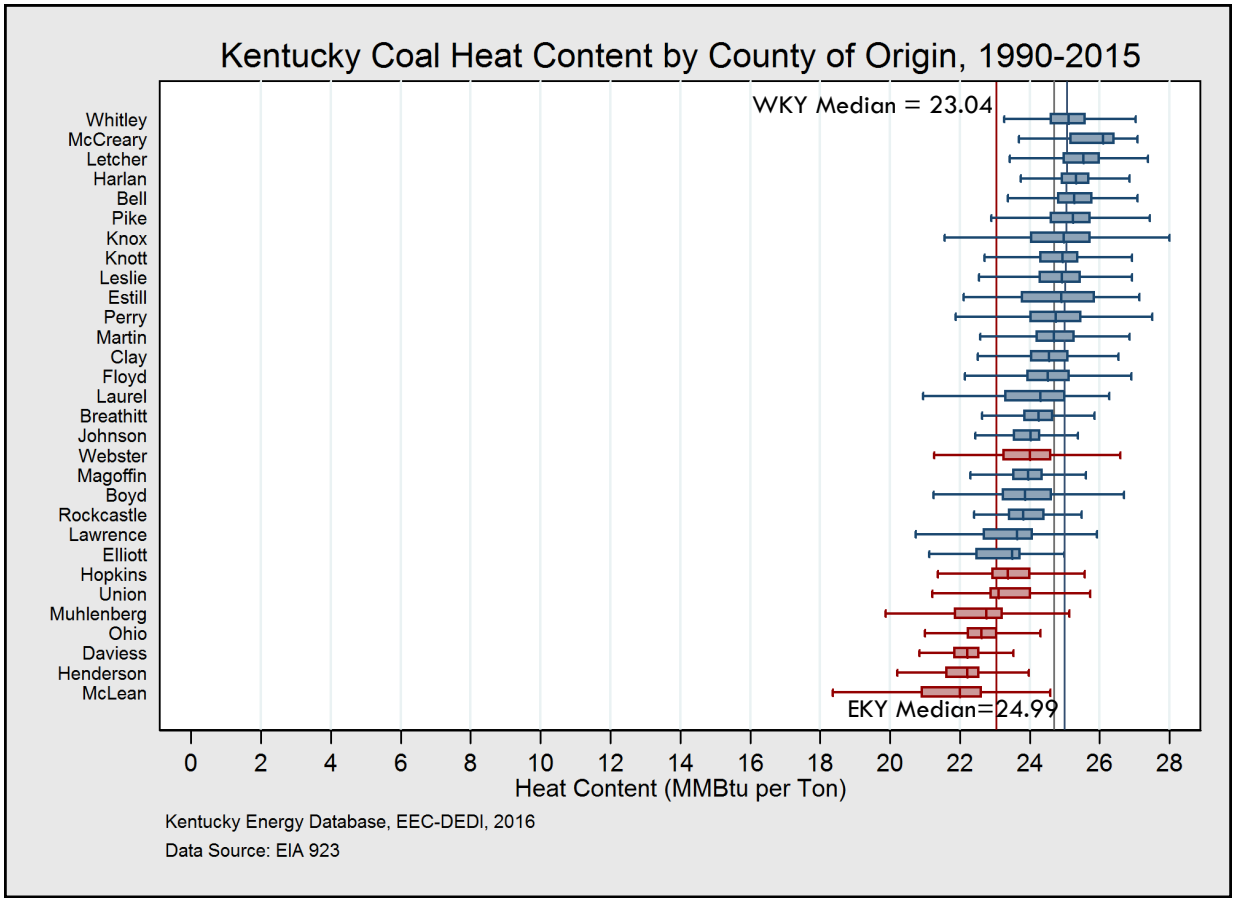


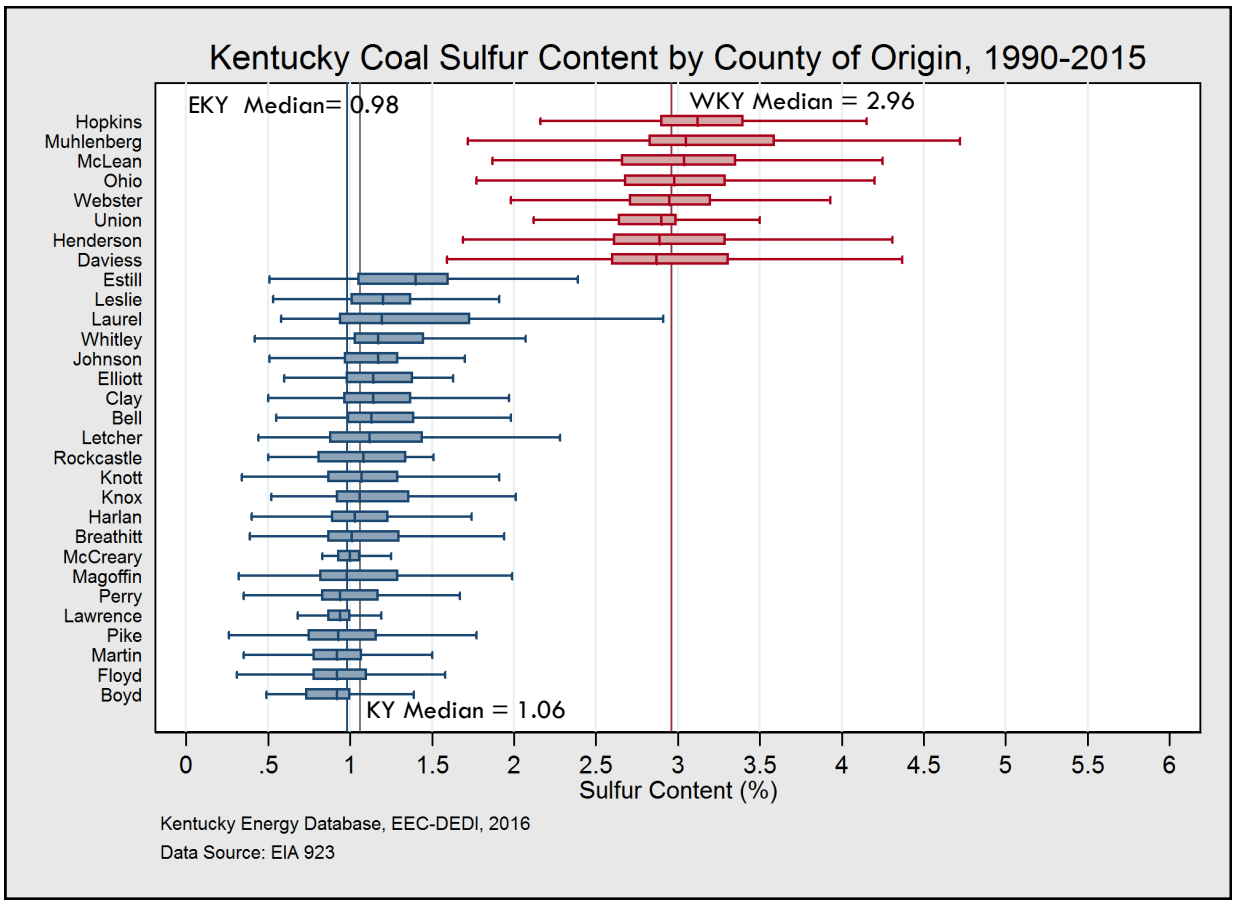
The above chart summarizes the range of delivered prices for coal by coal mining county. The whiskers (horizontal lines) on each plot denote the minimum and maximum prices for each county, while the box component represents the 25th percentile through the 75th percentile of price values (or 50 percent of the data). The vertical line within the box component marks the median delivered price.

Eastern Kentucky Coal Prices, 2015			Western Kentucky Coal Prices, 2015		
Range	County	Median (Dollars per MMBtu)	Range	County	Median (Dollars per MMBtu)
Max	Bell	3.58	Max	Hopkins	2.54
Average	All	3.02	Average	All	2.31
Min	Johnson	1.96	Min	Daviess	2.00

Overall, the median delivery price of coal mined in eastern Kentucky counties is higher than that of coal mined in western Kentucky counties. The range of prices within a county as well as the difference in prices between counties are a function of several factors such as mine productivity, coal sulfur content, coal heat content (Btu content), coal ash content, terms of a delivery contract, and the transportation costs connected to delivery. Ultimately, the interaction of all these major variables affects the delivery price of any coal available on the market.

Kentucky Steam Coal Properties





Kentucky Steam Coal Properties

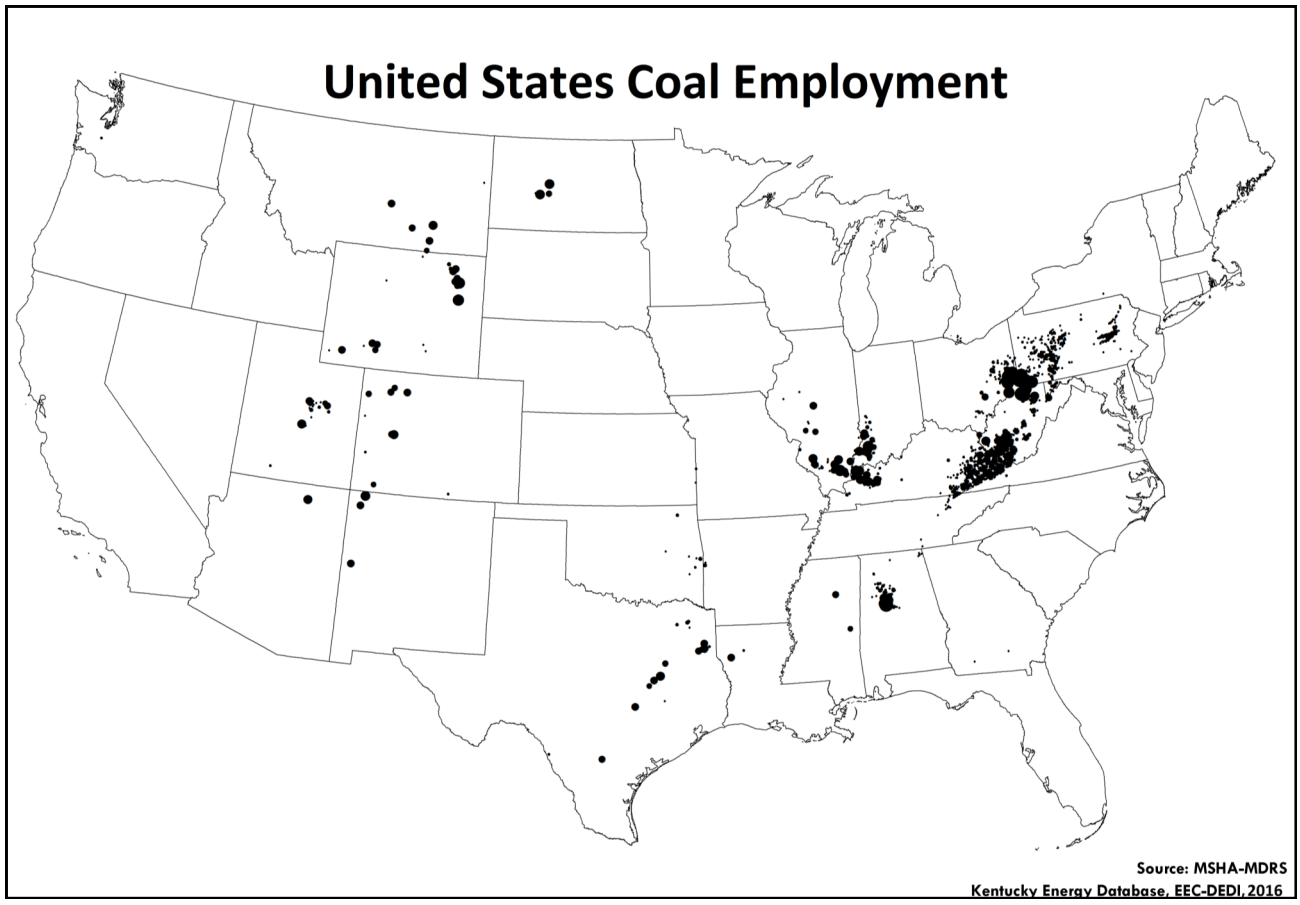
Region	Median Heat Content (MMBtu per Ton)	Median Sulfur Content (%)	Median Ash Content (%)	2015 Median Delivered Price ($ per MMBtu)	2015 Median Delivered Price ($ per Ton)
Kentucky	**24.70**	**1.06**	**10.50**	**2.58**	**61.74**
Eastern Kentucky	**24.99**	**0.98**	**10.30**	**3.02**	**74.84**
Bell	25.27	1.13	8.86	3.58	92.08
Boyd	23.86	0.92	11.40	2.16	51.95
Breathitt	24.26	1.01	10.30	3.02	71.06
Clay	24.55	1.14	10.60	3.30	75.15
Estill	24.91	1.40	10.45	2.44	57.51
Floyd	24.51	0.92	10.50	3.15	75.71
Harlan	25.33	1.03	9.20	2.98	78.53
Johnson	24.03	1.17	10.60	1.96	46.45
Knott	24.94	1.07	10.00	3.01	72.94
Knox	24.98	1.06	9.60	—	—
Laurel	24.30	1.20	10.70	—	—
Lawrence	23.64	0.94	11.90	—	—
Leslie	24.91	1.20	9.80	2.95	72.53
Letcher	25.53	1.12	8.70	3.04	75.72
Magoffin	23.96	0.98	11.50	2.64	66.02
Martin	24.69	0.92	9.70	3.31	81.42
McCreary	26.09	1.00	5.59	—	—
Perry	24.75	0.94	10.12	3.45	84.30
Pike	25.23	0.93	9.54	3.24	79.13
Rockcastle	23.81	1.08	10.80	—	—
Whitley	25.12	1.17	7.90	—	—
Western Kentucky	**23.04**	**2.96**	**11.00**	**2.31**	**53.24**
Daviess	22.22	2.87	9.70	2.00	45.00
Henderson	22.21	2.89	9.50	—	—
Hopkins	23.37	3.12	10.20	2.54	61.84
McLean	22.00	3.04	11.90	2.22	50.07
Muhlenberg	22.75	3.05	10.50	2.26	52.51
Ohio	22.62	2.98	9.80	2.21	50.72
Union	23.10	2.90	8.60	2.33	53.57
Webster	24.00	2.95	10.00	2.39	57.20

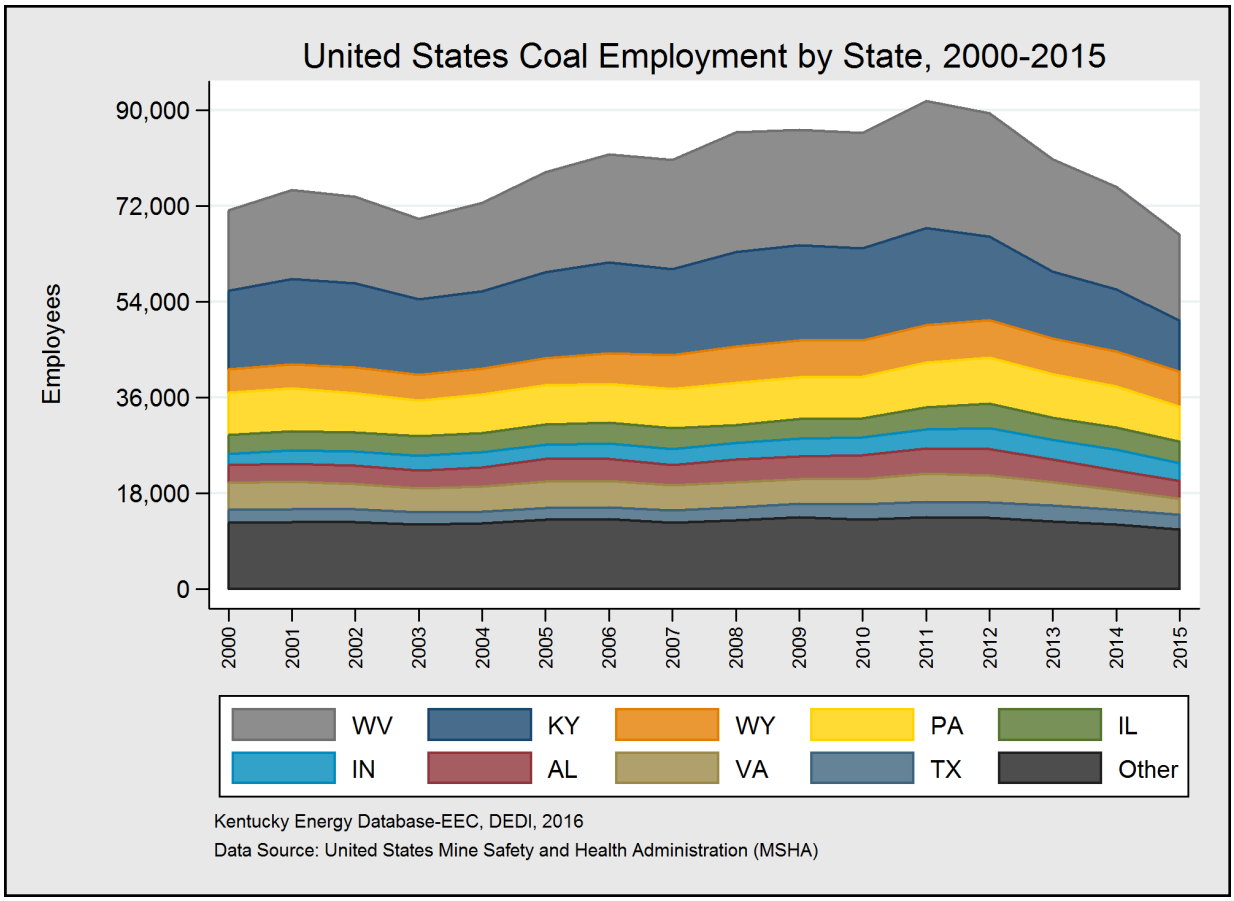
Kentucky Steam Coal Chemical Properties

In Kentucky, coal mining is divided between two distinct geologic basins: The Central Appalachian Basin of eastern Kentucky, and the Illinois Basin of western Kentucky. This table and previous graphics display the median chemical and cost properties for Kentucky steam coal by county as reported by electric generating stations across the United States. Relative to western Kentucky, coal mined in eastern Kentucky between 2008 and 2015 had a nine percent higher heat content per ton, 67 percent less sulfur, and in 2015, nominal delivered costs that were 31 percent higher per MMBtu. Since the Clean Air Act Amendments of 1990, demand for eastern Kentucky coal has been, in part, driven by demand for lower sulfur coal that reduces the emission of sulfur dioxides. However, in order to comply with increasingly stringent sulfur dioxide limits, many coal-fired power plants have elected to install desulfurization equipment that enables them to burn higher sulfur and lower cost coal such as the coal mined in western Kentucky.

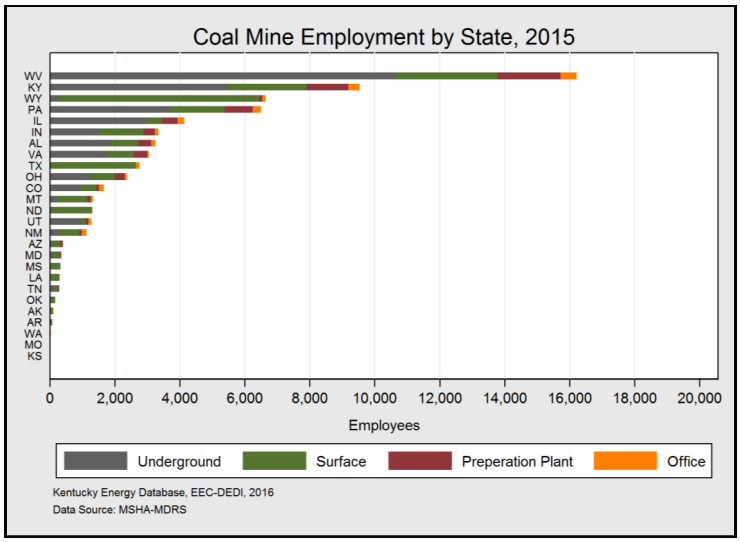
The preceding box and whisker plots summarize the range of heat or sulfur content of coal by county. The whiskers denote the minimum and maximum values for each county, while the box component represents the 25th percentile through the 75th percentile of values (or 50 percent of the data). The vertical line within the box component marks the median value.

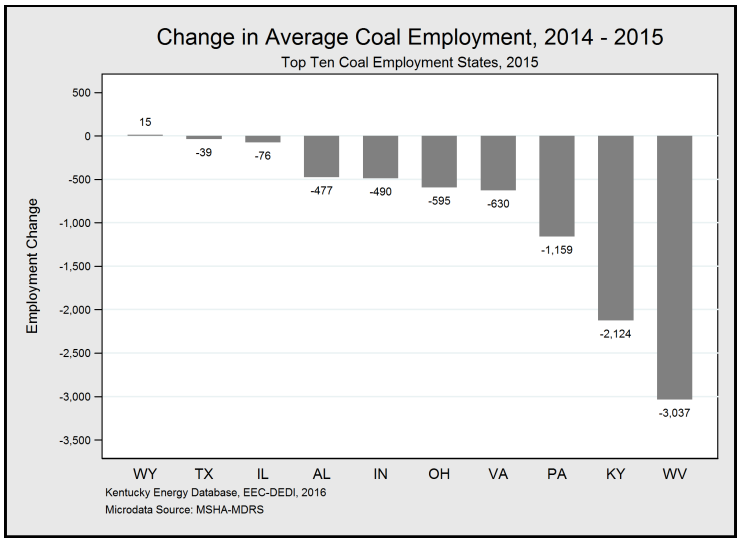
United States Coal Employment





Coal Mine Employment by State





U.S Coal Employment by State, 2015				
State	Rank	Employment	1 Year Change	Percent
United States	-	66,645	-11.8%	100.0%
West Virginia	1	16,206	-15.8%	24.3%
Kentucky	2	9,557	-18.0%	14.3%
Wyoming	3	6,642	0.2%	10.0%
Pennsylvania	4	6,499	-15.1%	9.8%
Illinois	5	4,139	-1.8%	6.2%
Indiana	6	3,348	-12.8%	5.0%
Alabama	7	3,257	-12.8%	4.9%
Virginia	8	3,053	-17.1%	4.6%
Texas	9	2,762	-1.4%	4.1%
Ohio	10	2,357	-20.2%	3.5%
Colorado	11	1,665	-10.1%	2.5%
Montana	12	1,329	0.9%	2.0%
North Dakota	13	1,313	1.7%	2.0%
Utah	14	1,281	-9.0%	1.9%
New Mexico	15	1,131	-3.6%	1.7%
Arizona	16	403	4.3%	0.6%
Maryland	17	363	-8.9%	0.5%
Mississippi	18	329	1.9%	0.5%
Louisiana	19	306	2.7%	0.5%
Tennessee	20	289	19.7%	0.4%
Oklahoma	21	162	-10.2%	0.2%
Alaska	22	114	-6.0%	0.2%
Arkansas	23	78	-6.3%	0.1%
Washington	24	35	15.7%	0.1%
Missouri	25	15	-25.0%	<0.1%
Kansas	26	12	53.8%	<0.1%

Average coal employment in the United States decreased in 2015 by 11.8 percent compared to 2014, with 66,616 full-time workers employed. Since 2011, the year with the highest total coal employment in the last decade and a half, total coal employment has declined by 25,104 jobs, or 27.4 percent.

The largest coal employer during 2015 again was West Virginia, accounting for nearly a quarter of national direct-coal employment, with 16,206 workers. West Virginia has lost 7,725 coal mining jobs since 2011, a decline of 32.3 percent.

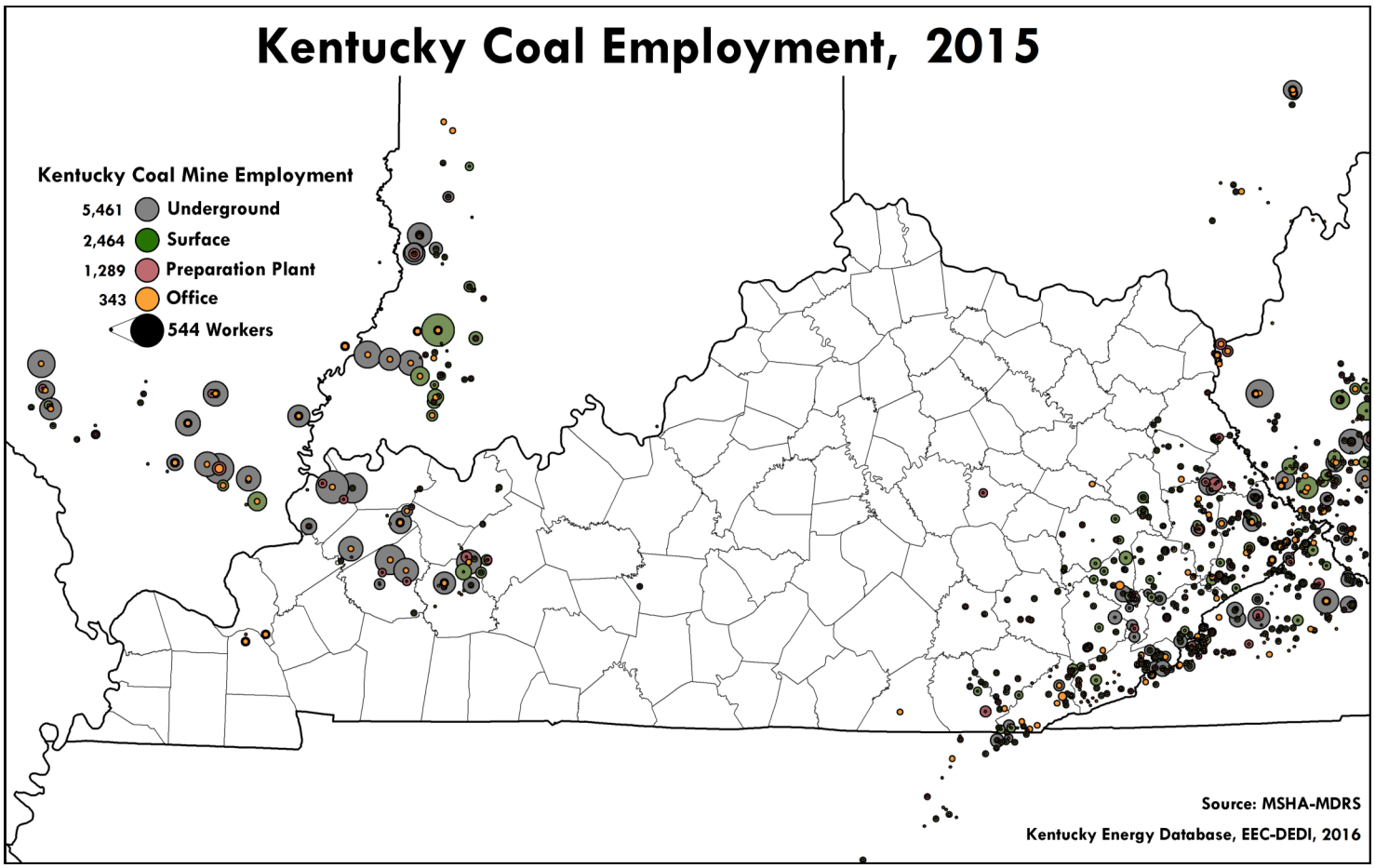
Kentucky has the second-highest number of coal workers, with 14.3 percent of national employment in 2015. Average coal employment in Kentucky decreased by 18 percent in 2015 to 9,557 workers.

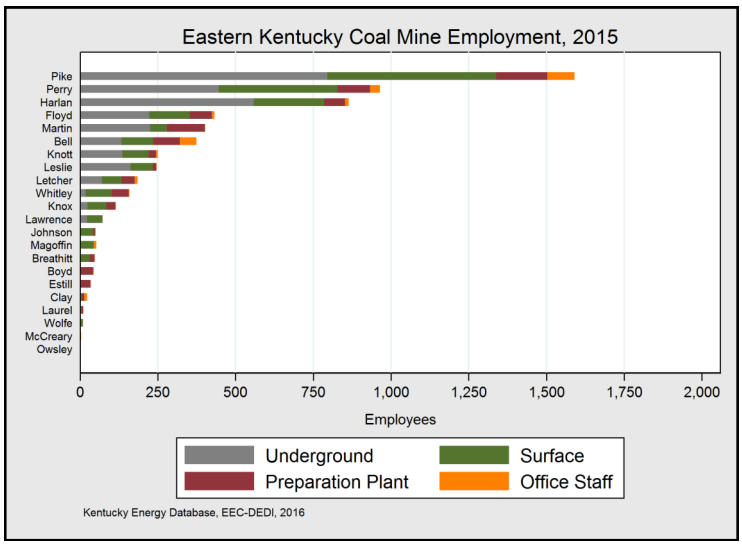
Wyoming, the third-highest coal employment state in 2015 despite producing over 40 percent of the coal in the United States, had 6,642 direct coal employment jobs. Wyoming coal employment has decreased by 5.6 percent since 2011.

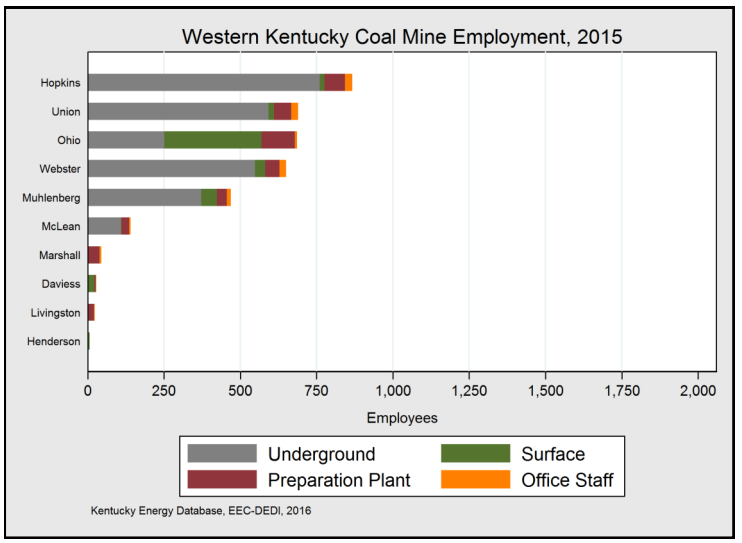
Pennsylvania was home to the fourth-most direct coal employees in the country with 6,499 in 2015. This is a decline of 22.8 percent since 2011.

**Note: The employment figures in this document (including 1 year percent change) are annual averages. This is a methodological change from previous versions of this publication in which the employment figures from the final quarter of each year were used.*

Kentucky Coal Mine Employment







**Note: The direct mining employment classification includes persons employed at a Kentucky coal mine and/or registered MSHA permitted mine sites, but does not include direct employment involving coal transportation by trucks, trains, barges, nor the administrative and professional employees of coal companies located in Kentucky metropolitan areas such as Lexington and Louisville. These employment figures also do not include the many private services or indirect employment induced by the economic activity of coal extraction, preparation, and sales.*

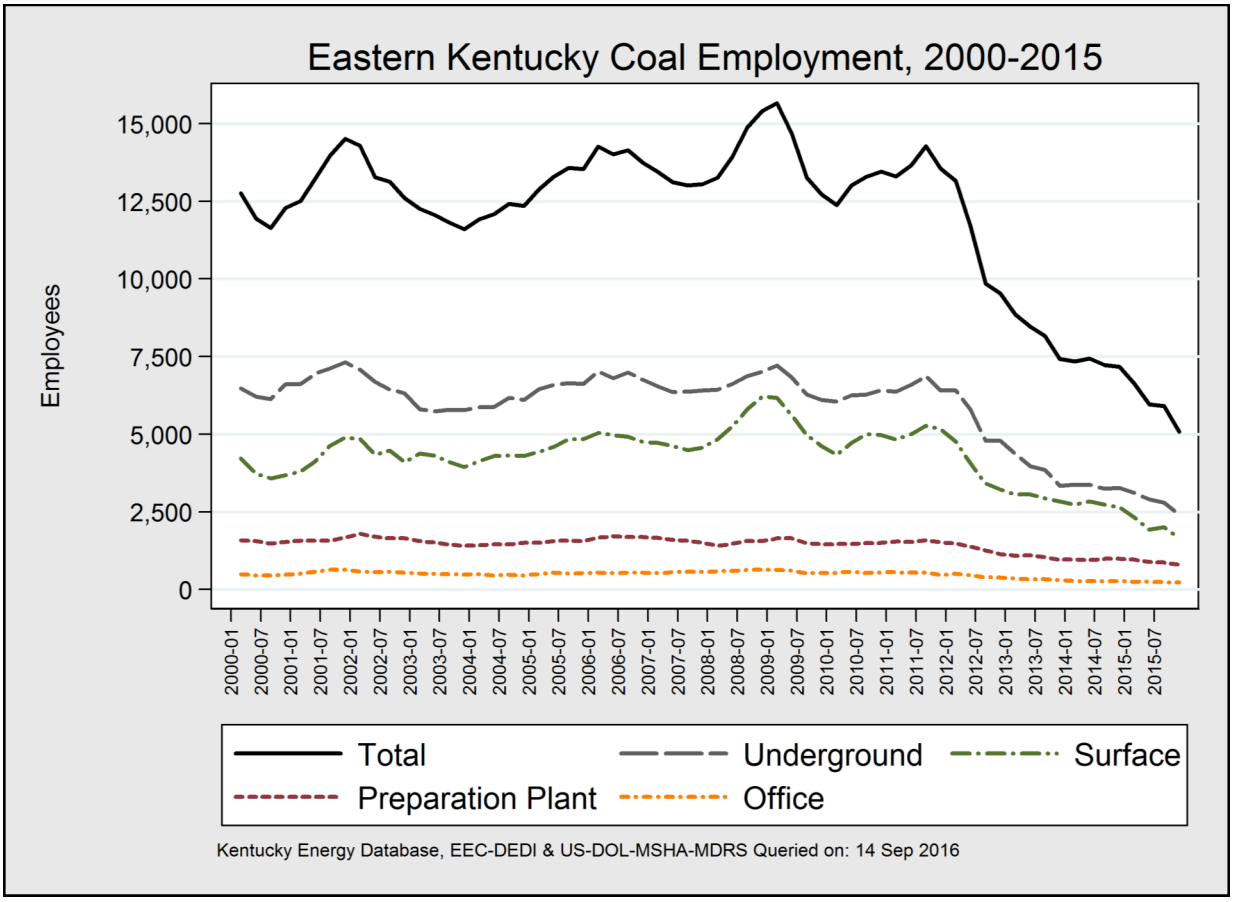
Kentucky Coal Mine Employment

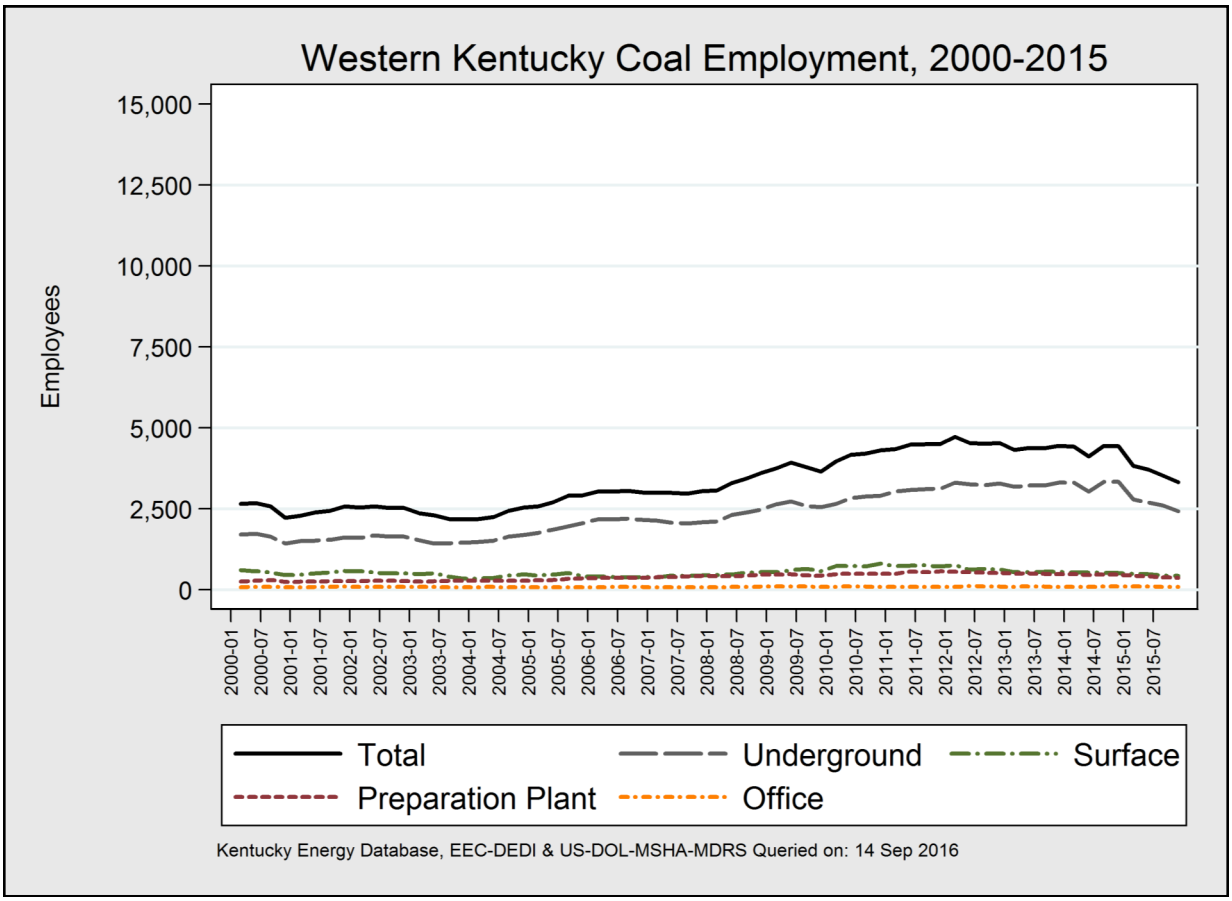
Region and County	Direct Employment at Coal Mines	Underground Miners	Surface Miners	Preparation Plant Workers	Mine Office Staff	Percent of Total Employment
Kentucky	**9,557**	**5,461**	**2,464**	**1,289**	**343**	**0.5%**
Eastern Kentucky	**5,947**	**2,820**	**1,998**	**886**	**243**	**3.6%**
Pike	1,591	796	543	165	87	8.4%
Perry	966	447	382	104	33	11.7%
Harlan	867	560	228	67	12	12.8%
Floyd	432	223	130	70	9	4.1%
Martin	401	225	54	122	-	13.4%
Bell	376	134	104	85	53	4.6%
Knott	252	137	85	24	6	5.7%
Leslie	245	162	71	12	-	9.2%
Letcher	185	70	64	41	10	3.0%
Whitley	160	18	85	55	2	1.3%
Knox	116	25	59	31	1	1.3%
Lawrence	73	23	50	-	-	1.6%
Magoffin	52	-	44	-	8	1.7%
Johnson	51	-	43	6	2	0.7%
Breathitt	48	-	31	16	1	1.3%
Boyd	44	-	-	41	3	0.3%
Estill	36	-	-	34	2	0.7%
Clay	24	-	7	8	9	0.5%
Laurel	11	-	6	4	1	0.1%
Wolfe	10	-	9	-	1	0.6%
McCreary	4	-	-	1	3	0.1%
Owsley	3	-	3	-	-	0.3%
Western Kentucky	**3,610**	**2,641**	**466**	**403**	**100**	**2.7%**
Hopkins	874	767	16	68	23	4.8%
Union	689	593	18	56	22	12.0%
Ohio	686	251	318	109	8	7.9%
Webster	650	548	34	47	21	11.3%
Muhlenberg	469	372	51	33	13	4.3%
McLean	142	110	1	26	5	3.6%
Marshall	44	-	-	39	5	0.3%
Daviess	28	-	23	4	1	0.1%
Livingston	23	-	-	21	2	0.7%
Henderson	5	-	5	-	-	<0.1%

†Sources: MSHA Mine Data Retrieval System (MSHA-MDRS) and Bureau of Labor Statistics (BLS) *Local Area Unemployment Statistics, 2015.*

**Note: The employment figures in this document (including 1 year percent change) are annual averages. This is a methodological change from previous versions of this publication in which the employment figures from the final quarter of each year were used.*

Kentucky Coal Mine Employment





Coal Mine Safety and Training

Basic Regulations and Overview

Safety and health standards are regulated by the federal Mine Safety and Health Administration (MSHA) and the Kentucky Division of Mine Safety.

All surface and underground mines are inspected. Larger mines may have inspectors at the mine site every day. All certifications and mining specialties, as established by the Kentucky Mining Board, must be signed by the Director (KDMS) verifying the holder has completed the requirements for certification. All coal miners must be drug tested prior to being issued any new certification.

Training for Surface Miners

New miners must have 24 hours of training and pass a written exam before being eligible for employment at a surface mine. Workers at prep plants, rail sidings, and river terminals must also meet these training requirements. The inexperienced miner must work a minimum of 45 days at a surface mine before becoming a certified experienced miner. After the initial training, each surface mine employee is required to receive eight hours of retraining annually.

To obtain a Surface Mine Foreman Certification, a miner must have three years of surface mining experience achieved after age 18. To obtain certification, a surface mine foreman must specialize in either coal extraction or post mining activities (coal preparation or coal handling). The applicant must have at least one year of practical experience in the specialty category. To become a blaster in a surface coal mine, the applicant must attend 30 hours of training and pass both a licensing and certification test. Two years of additional work experience under a licensed blaster is required.

Training for Underground Miners

New miners are required to have a minimum of 40 hours of training and pass a written exam prior to starting work as an inexperienced miner. A newly hired (inexperienced) underground miner must receive eight hours of mine site-specific training prior to working in an underground mine; for an experienced miner the mine-site specific training is as needed. An inexperienced miner must work a minimum of 45 days in an underground mine before becoming a certified experienced miner.

A minimum of 16 hours of annual retraining is required to maintain the miner certification and continue to work at an underground mine.

To receive an Underground Mine Foreman Certification, a miner must have five years of practical underground coal mining experience gained after age 18, with at least one year at the face of an active working section of a coal mine. An Assistant Mine Foreman Certification requires three years practical experience.

Each miner receives new work assignment training (Task Training) to become certified for each new job classification.

To maintain their certification, and qualifications, certified electrical workers must satisfactorily complete annual electrical retraining classes.

Only certified shot-firers can detonate explosives within a mine.

Underground Miner Classifications and Training	
Experience Required	Mining Position
5 Years	Electrical Inspector* Mine Inspector/Mine Safety Analyst* Mine Foreman* Electrical Instructor*
3 Years	Asst. Mine Foreman* Instructor
1 Year	Electrical Worker* Hoisting Engineer* Solid Blasting
45 days	Shot Firer* Certified Miners
Special Training	
MET	Mine Emergency Technician
EMT	Emergency Medical Technician

Source: Kentucky Division of Mine Safety (KDMS).

NOTE: More than 20,000 persons are trained or retrained annually for one or more surface and/or underground miner classification by the KDMS to maintain the Kentucky miner workforce.

*Tests are required in addition to years of experience.

Economic Impact of Kentucky Coal

Impact Type	2015 Employment	2015 Total Wages & Benefits	2015 Annual Average Wage and Salary Plus Benefits	2015 Gross Domestic Product
Direct Effect	8,700	$764,000,000	$87,816	$2,862,000,000
Indirect Effect	7,096	$374,400,400	$52,761	$635,000,000
Induced Effect	5,603	$212,000,000	$37,840	$375,000,000
Total Effect	**21,399**	**$1,350,400,000**	**$63,106**	**$3,872,000,000**

Direct Benefits

The Kentucky coal industry provides direct benefits to the Commonwealth in terms of revenue, jobs, and wages to miners. Some of the direct economic benefits of Kentucky coal production in 2015 are as follows:

- Kentucky coal accounted for $2,682,000,000 of the state's gross domestic product.
- The Kentucky coal industry employed 8,700 miners, and paid an average wage of $87,816.
- $764,000,000 in total wages and benefits were paid by the Kentucky coal industry.

**Note: This analysis reports a different direct coal employment figure for Kentucky than the rest of this publication. The discrepancy is the result of the use of different data sources and methodologies.*

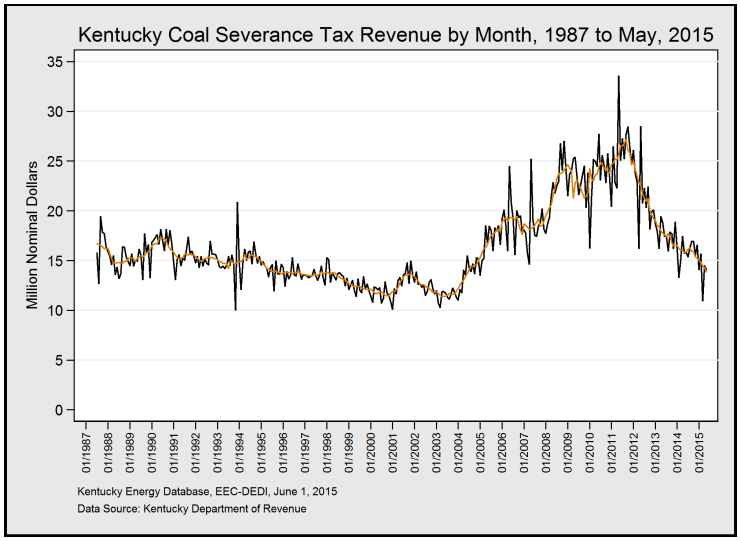
Induced and Indirect Benefits

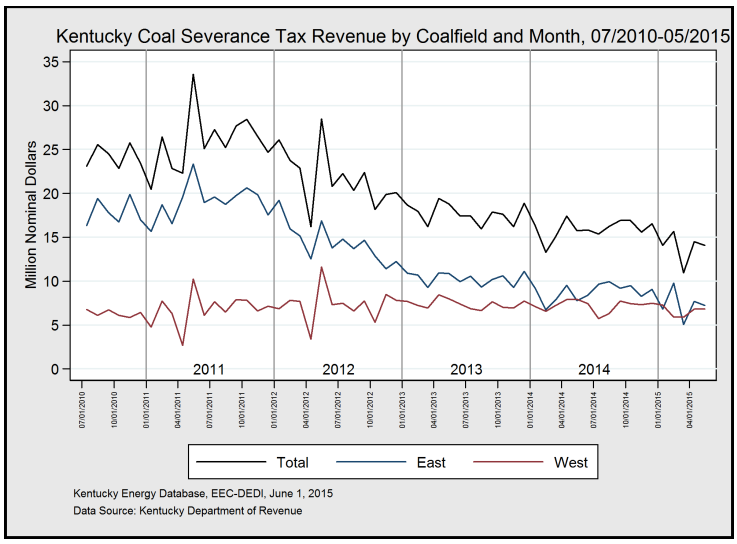
The coal industry also provides other economic benefits to Kentucky in addition to the direct benefits mentioned above. Much of the $2.86 billion of income flowing into the Kentucky coal industry from coal sales is re-spent in the local economy creating a multiplier effect of other induced and indirect benefits. It is estimated that an additional $1 billion of spending was induced by coal production. In addition to the 8,700 employees working directly for the coal industry in Kentucky, a total of 12,699 other employment opportunities were created in Kentucky as a result of the money spent by coal companies and their employees.

It should be noted that induced and indirect benefits reach beyond coal producing counties. This estimate indicates that the Kentucky coal industry accounts for $141,000,000 in gross domestic product in the Kentucky counties that do not produce coal. These benefits also include 1,499 jobs that pay $84,000,000 in total wages and benefits.

**Note: This economic impact analysis was conducted by Phil Flynn, economist at the Kentucky Cabinet for Economic Development, using direct data from The Kentucky Education and Workforce Development Cabinet, Bureau of Labor Statistics (Quarterly Census of Employment and Wages), and the United States Bureau of Economic Analysis. The report can be found here.*

Kentucky Coal Severance Receipts





Region	CY 2014 Receipts	1 Year Change
Total	$191,291,869.26	-10.0%
Eastern Kentucky	$104,544,086.10	-15.6%
Western Kentucky	$86,747,783.16	-2.1%

Slowing coal production in eastern Kentucky drove down total 2014 Kentucky severance tax receipts to 191.3 million dollars, which is a decrease of 9.69 percent from 212 million dollars in 2013 and of 38.4 percent from 310.5 million dollars in 2011. Eastern Kentucky coal severance tax receipts decreased by 15.6 percent during 2014 while western Kentucky receipts declined by 2.1 percent. The closure of coal-fired power plants across the southeastern United States has significantly reduced demand for Kentucky coal, which has lowered exports, created surplus coal stockpiles, and lowered the average price that Kentucky coal could be sold for. Coal-fired power plant closures are anticipated across the United States between calendar years 2014 to 2018 in response to changes in federal environmental regulation, energy policies in other states, low electricity demand growth, as well as lower cost alternatives, including natural gas. These power plant closures can be expected to place additional downward pressure on coal demand, prices, and thus coal severance tax revenue.

Coal Severance Tax Calculation

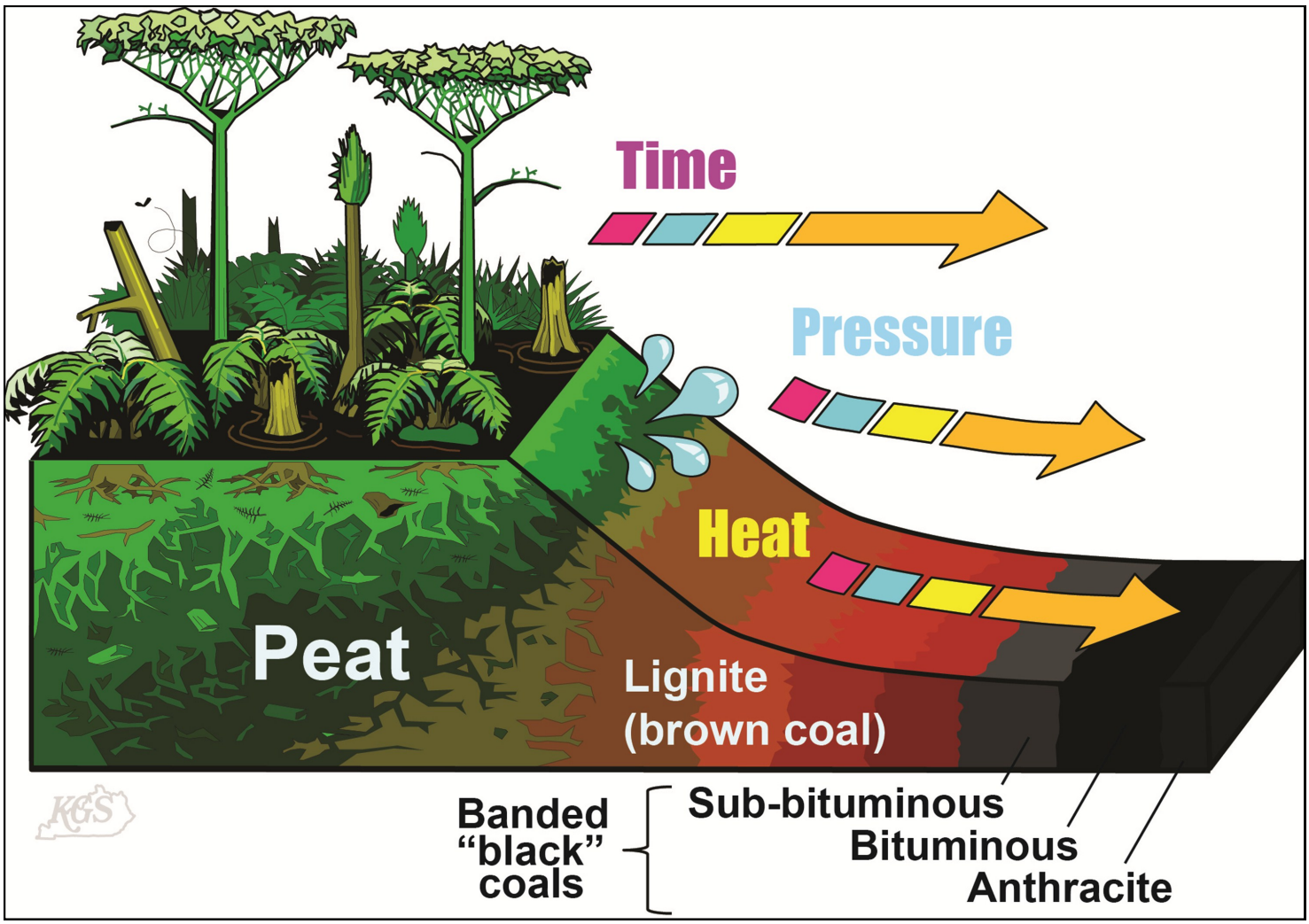
A tax of 4.5 percent is levied on the sale price of every ton of coal mined in Kentucky. For example, if a ton of coal mined in Kentucky sells for $50, then the coal severance tax revenue for the Commonwealth from this sale will be $2.25.

(1 Ton X $50 X 0.045 = $2.25). Coal severance tax revenues vary from month to month with coal production and the value of the coal produced, as illustrated in the graphic above.

Coal Severance Tax Programs and Outlays

Severance tax revenue generated through the production of coal is distributed to several state budgetary programs including the Kentucky General Fund, the Local Government Economic Assistance Fund (LGEAF), and the Local Government Economic Development Fund (LGEDF).

Coal Formation and Properties



Formation of Coal

Coal forms from organic material that is buried and subsequently altered by a combination of time, pressure, and heat in a process called coalification. The process starts with peat that is formed from vegetation in waterlogged wetlands sometimes called mires. Stagnating water in mires creates anaerobic (low-oxygen) conditions that allow plant debris to be preserved. Coalification requires the peat to be buried by sediment, expelling the water and compacting what remains. Continual pressure and heat over time change the chemical composition and increase the rank, or energy potential, of the coal.

Coal in Kentucky

Significant coal deposits are located in 57 of Kentucky's 120 counties—20 counties in the western coalfield and 37 in the eastern coalfield. Coal may be extracted from approximately 45 different seams of varying thickness in eastern Kentucky and from about 10 seams in western Kentucky. Coal resources, the amounts of coal estimated to be in the ground, are classified by rank, the thickness of rock overlying the coal, and the thickness of the coal bed. All of the mineable coal in Kentucky is bituminous in rank and contains less than 15 percent ash content after processing. Eastern Kentucky coal is typically lower in sulfur (less than two percent) than western Kentucky coal (greater than two percent). The economically important coal beds found in Kentucky formed from plants living during the Pennsylvanian period, which lasted between 320 and 280 million years ago. During this period, Kentucky existed near the equator and possessed large forests that were intermittently covered by shallow seas, slowly generating the peat that became coal. Lignites occur in the Jackson Purchase area, but these are not economic to mine. Kentucky lignites formed during the Eocene Epoch, between 60 and 50 million years ago.

Coal Formation and Properties

Coal Rank and Grade

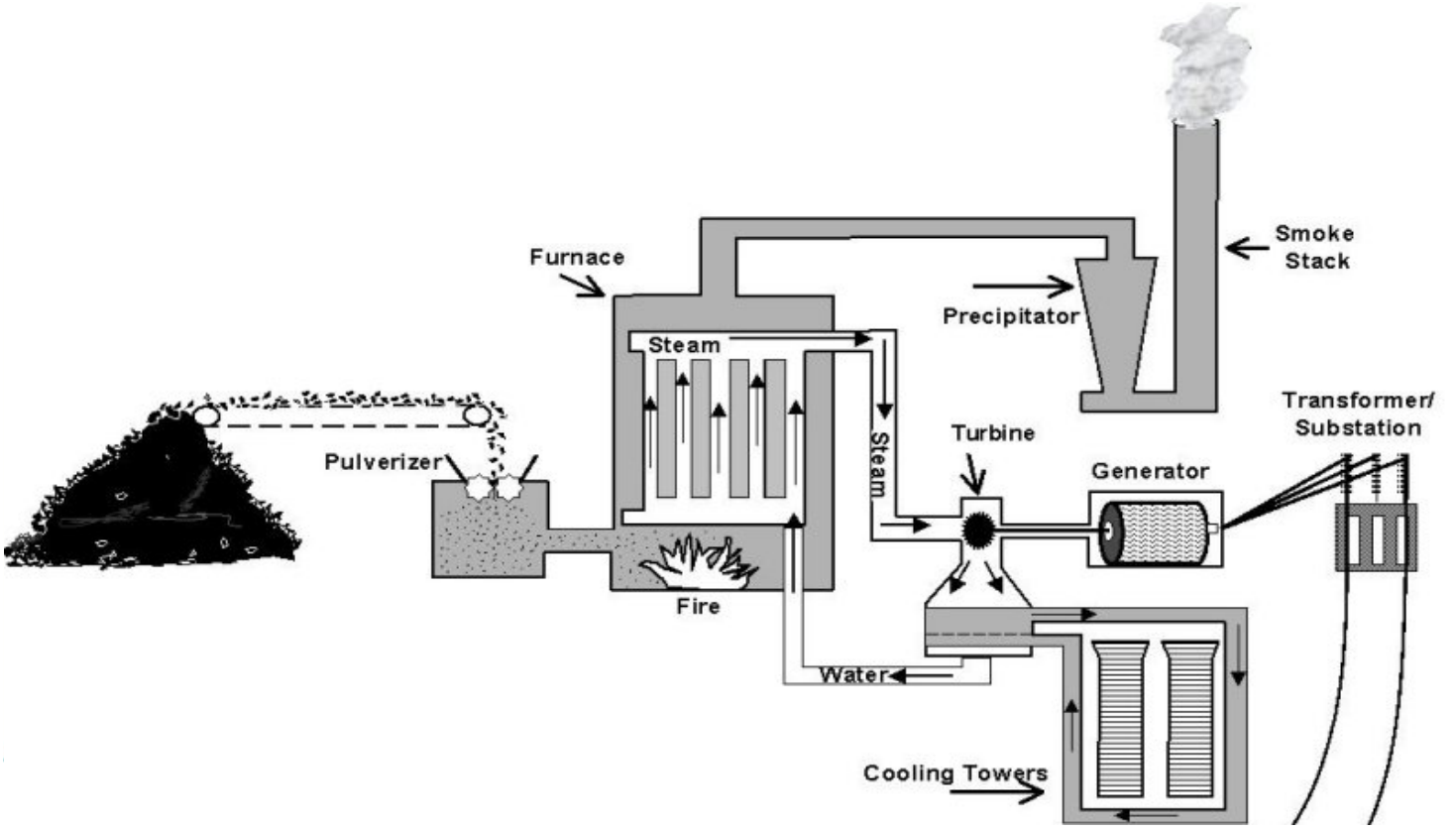
Coal is generally classified in terms of rank and grade. While no two coal deposits are the same in terms of chemical composition, coal generally consists of varying levels of carbon, oxygen, hydrogen, nitrogen, sulfur, ash, moisture content, and mineral material (silicon, aluminum, iron, calcium, and others). Rank refers to the level of metamorphism, or alteration, the organic material in the original peat was subjected to after burial. Rank increases alongside increased levels of fixed carbon and heat content and decreased levels of moisture and volatile matter. Low-rank coal is called lignite. Higher rank coal is classified as either sub-bituminous, bituminous, or anthracite, depending on their calorific value (Btu content) and (in higher rank coal) fixed carbon and volatile matter contents. Grade refers to the amount and type of impurities in coal, specifically ash and sulfur. The rank and grade of a coal deposit partly determine its potential uses and marketability.

Steam Coal

Steam coal, or thermal coal, is coal used by electric utilities to burn in large furnaces and generate electricity. Typically, coal is pulverized (to ensure carbon molecules are able to react with oxygen during combustion), blown into a boiler unit, and combusted at high temperatures. This combustion produces extremely hot, highly pressured steam that spins turbines to produce electricity. The vast majority of the coal mined in Kentucky is sold as steam coal.

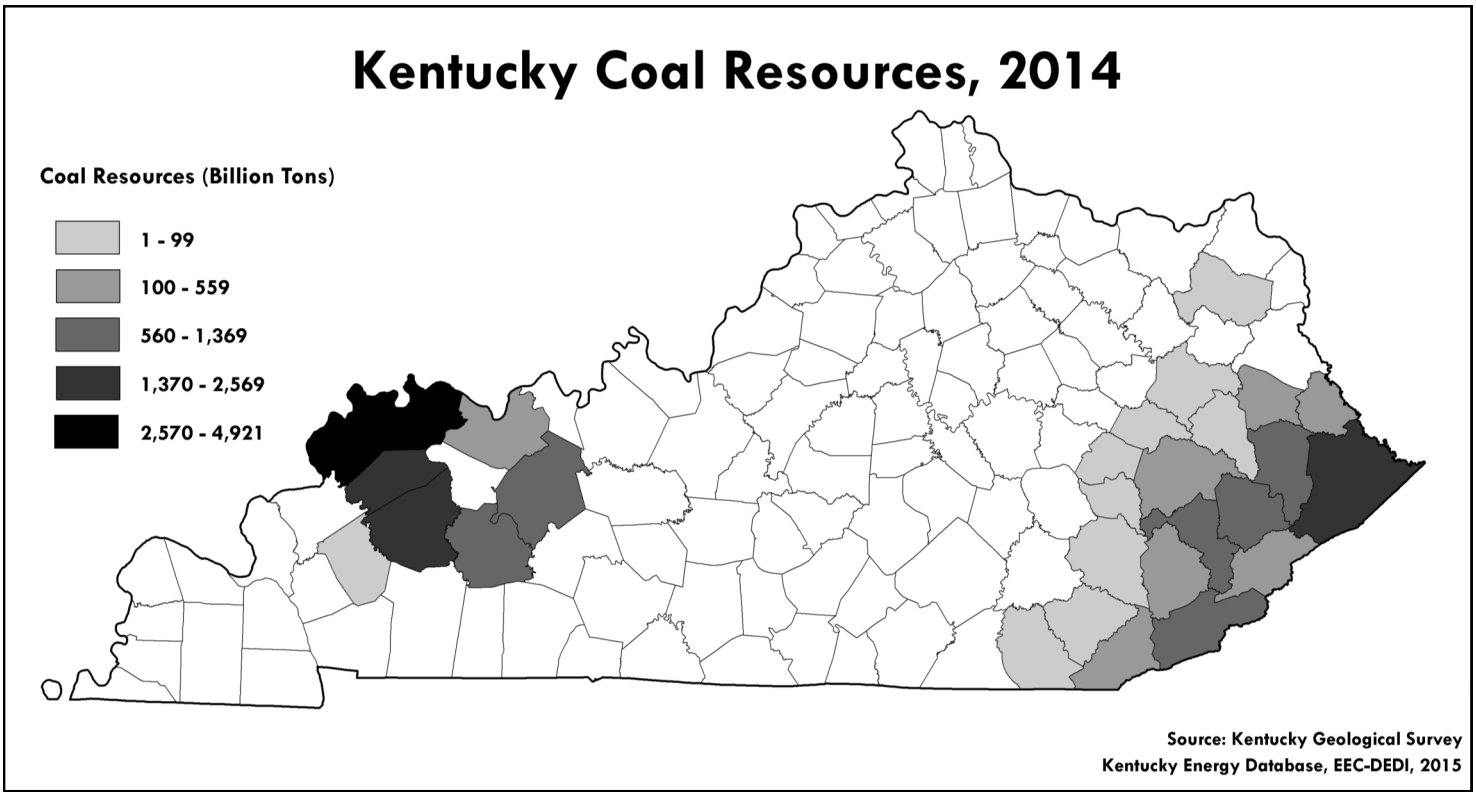
Metallurgical Coal

Metallurgical coal is used by the steel industry to produce "coke", a necessary component of steel production. Coke is a carbon-rich material produced by heating coal to very high temperatures in an oxygen deprived furnace. In this process, volatile components of the coal are driven off, concentrating the carbon portion of the coal. Metallurgical coal must contain very low amounts of both ash (less than 10 percent) and sulfur (less than one percent), and have acceptable amounts of both "reactive" and "inert" organic components. A small proportion of Kentucky coal has hybrid steam and metallurgical properties and can be used in a "cokeless" pulverized coal injection steel-making process.



Kentucky Geological Survey. Coal Information. Retrieved from KGS website: www.uky.edu/KGS/coal/coal_information.htm

Kentucky Coal Resources



Previous versions of the Coal Facts publication have reported coal resource information derived from estimates conducted in the 1970s and early 1980s by the Kentucky Geological Survey. These estimates were done at the peak of Kentucky coal production and focused on identifying all existing coal resources, even those that were not technically or economically mineable. These estimates tabulated over 105 billion tons of original resources. Beginning in 1995, a new assessment program began using updated methodology and newly acquired resource data. This USGS program, named National Coal Resource Assessment, focused only on the productive mineable beds across the nation.

Sixteen coal beds in Kentucky's two coal basins have been assessed using the new methodology, encompassing the majority of productive coal for the state. Although a small number of additional coal beds still need to be assessed, the KGS believes these data are the best available information for evaluating remaining resources. The remaining resources were tabulated using available mined-out areas as of 2014. The remaining resources should be considered an absolute maximum available resource, because a portion of this coal may not be technically or economically feasible to develop.

Coal seams that are considered able to be mined are part of the Demonstrated Reserve Base (DRB). Coal less than 28 inches in thickness is not considered to be mineable according to the U.S. DOE Energy Information Administration methodology, and that is generally consistent with mining practices in Kentucky. The estimates of original resources in this volume do include coal between 14 and 28 inches, but report remaining resources both with and without those tonnages.

The Eastern Kentucky Coalfield covers 10,500 square miles in 30 counties. Eleven major coal beds have been assessed having about 44.4 billion tons of original resources. Remaining resources greater than 28 inches thick for these beds in 2014 were 7.4 billion tons.

The Western Kentucky Coalfield covers 6,400 square miles in 11 counties. Five major coal beds have been assessed having about 29 billion tons of original resources. Remaining resources greater than 28 inches thick for these beds in 2014 were 17.1 billion tons.

Kentucky Coal Resources

Eastern Kentucky Resources by County, 2014			
County	Original (>14")	Remaining (>14")	Remaining (>28")
EKY	44,484	18,211	7,418
Bell	1,212	603	358
Boyd	544	543	-
Breathitt	2,459	871	272
Carter	585	18	1
Clay	1,196	700	103
Elliott	489	225	-
Floyd	3,249	1,455	1,051
Greenup	429	202	-
Harlan	3,169	1,123	1,470
Jackson	6	6	-
Johnson	1,243	690	107
Knott	3,390	1,491	1070
Knox	1,016	578	78
Laurel	32	315	-
Lawrence	1,654	819	-
Lee	28	38	2
Leslie	2,993	1,850	326
Letcher	2,855	910	746
Lewis	0	0	-
Magoffin	1,644	1,005	134
Martin	1,996	1,180	295
McCreary	50	116	8
Menifee	4	3	-
Morgan	1,132	627	26
Owsley	452	394	29
Perry	2,874	1,543	874
Pike	8,946	209	310
Rowan	6	3	-
Whitley	473	520	146
Wolfe	358	174	12

Western Kentucky Resources by County, 2014			
County	Original (>14")	Remaining (>14")	Remaining (>28")
WKY	29,007	5,160	17,146
Butler	2	2	-
Caldwell	2	0	1
Crittenden	0	0	0
Daviess	967	377	332
Henderson	5,744	798	4,348
Hopkins	5,113	1,233	2,126
McLean	2,347	798	1,335
Muhlenberg	3,117	664	971
Ohio	1,509	357	671
Union	6,141	321	4,835
Webster	4,065	610	2,527

Eastern Kentucky Resources by Coal Bed, 2014		
Coal Bed	Original (>14")	Remaining (>28")
EKY	44,484	7,833
FCR	553	416
FCL	5,780	1,057
AMB	5,805	1,427
UE3B	8,049	426
UE3A	9,628	1,812
UE2	3,800	915
LEK	7,932	1,247
CLN*	512	275
GLM*	1,542	140
HGY*	585	79
SPD*	298	39

More than 80 coal beds have been identified in eastern Kentucky, but most of the important resources are associated with about 25 beds.

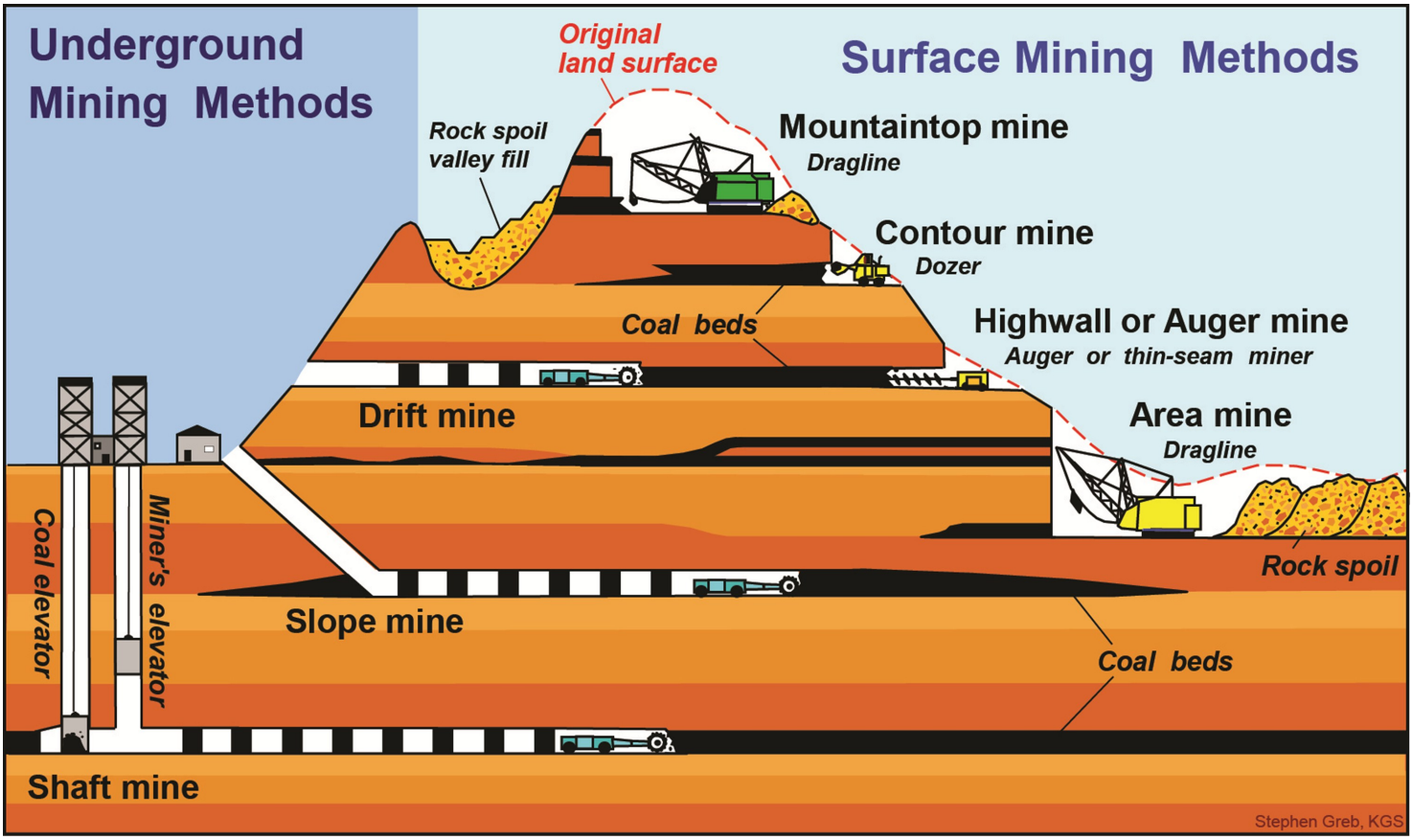
*This estimate is limited to Pike County.

Western Kentucky Resources by Coal Bed, 2014		
Coal Bed	Original (>14")	Remaining (>28")
WKY	29,007	17,146
W13	3,933	2,491
W11	4,964	2,327
WK9	10,216	6,756
WK7	3,080	1,456
WK6	6,814	4,116

As many as 35 coal beds have been identified in western Kentucky, but most of the measured resources are associated with only seven of them. Most of the active mining is restricted to three of those – the Baker (no. 13), Herrin (no. 11), and Springfield (no. 9) coal. Approximately five billion tons of coal have been mined or lost in mining from these beds through 2014 comprising 18 percent of original resources.

Kentucky Geological Survey. Kentucky Coal Resource Information: http://kgs.uky.edu/kgsmap/kcrim/

Types of Coal Mining



Several different mining methods are used in the Commonwealth to access coal deposits in the Central Appalachian Basin of eastern Kentucky and the Illinois Basin of western Kentucky. The chosen mining approach, or combination of mining approaches, at a given mine site largely results from local geography, hydrology, and the amount of soil and rock overburden above a coal seam. Coal mines are generally divided between surface operations and underground operations, though there are several sub-categories that describe exact mining approaches and mine permitting conditions. Mining techniques continue to change as a result of technological changes in order to ensure improved productivity, health and safety, and to reduce the environmental impact.

Underground mine operations accounted for 69 percent of coal production in Kentucky in 2015, with room and pillar systems being the most common mining method. Surface mines accounted for 31 percent of statewide production. Whereas drift, contour, and auger mining are more common in eastern Kentucky, slope and shaft mining are more common in the western Kentucky coalfield. Throughout most of history, underground mines have provided the majority of employment and coal production in the Commonwealth. During 2015, combined coal production from underground operations and surface operations was more than 61 million tons with a slight majority of production in western Kentucky.

Kentucky Coal Production by Mining Method, 2015*

Mine Type	Auger	Refuse Pile	Dredge	Strip/Quarry/Open Pit	Underground	Total
State	1,008,520	-	4,255	17,013,427	43,388,138	61,414,340
WKY	-	-	-	4,543,583	28,780,419	33,324,002
EKY	1,008,520	-	4,255	12,469,844	14,607,719	28,090,338

*Source: U.S. Department of Labor, Mine Safety and Health Administration, "Quarterly Mine Employment and Coal Production Report" (MSHA Form 7000-02). The above table summarizes the five types of mining methods—as categorized by MSHA—that registered coal production in Kentucky during 2015.

Types of Coal Mining

A continuous-mining machine

An excavator loading coal into a haul truck

Underground Mining: Underground mining techniques differ in terms of the mode of access and the mining method. Drifts, slopes, and shafts are among the modes of accessing a coal bed at depth. Once accessed, the coal is removed in underground mines by either room and pillar mining or longwall mining.

Room and pillar mining is the most common underground mining method in Kentucky. "Rooms" refer to the areas where coal is mined and the "pillars" are the coal left behind to support the roof. The coal can be extracted by either a continuous miner (shown above) or by conventional means in which the coal is cut, drilled, blasted, and loaded onto shuttle cars. Room and pillar mining reduces the amount of recoverable coal, since much of the coal is left underground to serve as the pillars.

Longwall mining utilizes a longwall mining machine to cut parallel to the face of the coal in long tunnels without the need for pillars. During mining, temporary roof supports allow the mining to take place and the unsupported roof behind the longwall machine is then allowed to collapse naturally, leaving large cavities in the working mine.

Surface Mining: Surface mining occurs when the earth above the coal seam (called overburden) is removed to access the coal bed. Surface mining operations include "strip mines", like area and contour mines, auger, and excavations like quarries or open pits.

Area mining is a mining method where miners remove shallow coal over a broad area typically where the land is fairly flat. Dragline shovels are often utilized to remove the materials overlying the coal and place the materials in previously mined pits. Often, area mines access multiple coal seams within the same pit.

Contour mining occurs on hillsides. A wedge of overburden is removed along the coal outcrop on the side of a hill, forming a shelf, or bench, at the level of the coal. Contour mining is often followed by auger or highwall mining to extract coal from further within the coal seam without needing to remove the overburden—a hybrid mining technique.

Auger mining operates on surface-mine benches, before they are covered up by previously removed overburden. Auger mining targets the coal in the hillside that can't be reached by contour mining because of the overburden thickness and uses a large drill to cut horizontally into the hillside and remove coal. Similarly, highwall mining is a remote, unmanned method of underground coal extraction where a mining machine is advanced from the surface up to 1,000 feet underground in cuts that are 10 to12 feet wide.

Other Types of Mining: Coal is sometimes recovered from the wastes of other mining operations. Culm banks are refuse piles of fine coal material accumulated at coal preparation plants. In Kentucky, coal is washed, or "prepped," to remove ash and sulfur. These wastes are stored in settling ponds and can be reprocessed for energy products. Waste coal fines can also be recovered from rivers or streams by dredging.

Mines and Licensing

Number of Kentucky Mine Licenses, 1985-2015					
Mine Type	Underground		Surface		State
Year	EKY	WKY	EKY	WKY	Total
1985	1,153	31	1,548	139	2,871
1990	799	27	860	83	1,769
1995	456	28	665	48	1,197
2000	309	14	256	26	605
2001	359	16	336	26	737
2002	300	18	310	20	648
2003	268	17	240	16	541
2004	282	14	298	14	608
2005	278	16	281	19	594
2006	287	15	329	16	647
2007	239	15	282	14	550
2008	263	11	338	14	626
2009	233	12	329	18	592
2010	207	12	281	13	513
2011	200	14	305	11	530
2012	184	14	268	10	476
2013	132	12	215	10	369
2014	223	13	123	6	365
2015	104	13	158	7	282

Source: Kentucky Division of Mines & Minerals, Annual Reports, 1960-2002; Kentucky Department of Natural Resources, Division of Mine Safety, Annual Reports, 2003-2014. (The number of actual mines is smaller than the final number of mine licenses issued each year. For example, a new license is required when a company name or ownership changes.)

Number of Kentucky Coal Mines, 1985-2015					
Mine Type	Underground		Surface		State
Year	EKY	WKY	EKY	WKY	Total
1985	897	24	836	101	1,858
1990	601	26	301	59	987
1995	339	22	201	36	598
2000	234	12	148	14	408
2001	253	11	187	16	467
2002	219	14	180	14	427
2003	201	12	174	13	400
2004	212	11	185	11	419
2005	211	13	193	15	432
2006	214	13	202	13	442
2007	191	10	203	13	417
2008	205	11	241	12	469
2009	186	12	239	12	449
2010	161	13	214	15	403
2011	153	13	218	13	397
2012	130	13	213	13	369
2013	82	12	173	12	279
2014	85	13	154	9	261
2015	104	13	153	6	276

Source: U.S. DOE-Energy Information Administration, Coal Production, 1984-1992; U.S. DOE-Energy Information Administration Coal Industry Annual, 1993-2009; U.S. Department of Labor, Mine Safety and Health Administration, "Quarterly Mine Employment and Coal Production Report" (MSHA Form 7000-02), 2010-2014.

Mines and Licensing

Kentucky Coal Production and Active Mine Counts by County and Mine Type, 2015						
Location	Underground		Surface		Total	
Area/County	Active	Production	Active	Production	Active	Production
Statewide	117	43,379,485	159	18,034,855	276	61,414,340
EKY	104	14,599,066	153	13,491,272	257	28,090,338
Pike	35	4,178,882	42	2,748,058	77	6,926,940
Perry	8	2,156,038	14	4,496,722	22	6,652,760
Harlan	23	2,640,190	16	1,187,288	39	3,827,478
Floyd	10	1,262,296	8	886,588	18	2,148,884
Martin	1	1,191,565	3	386,784	4	1,578,349
Knott	2	1,277,470	7	855,445	9	2,132,915
Letcher	12	252,243	9	270,917	21	523,160
Bell	4	693,046	11	689,057	15	1,382,103
Leslie	3	667,921	2	769,079	5	1,437,000
Magoffin	-	-	5	258,351	5	258,351
Lawrence	1	115,393	5	257,982	6	373,375
Breathitt	-	-	1	251,064	1	251,064
Knox	4	63,537	5	117,211	9	180,748
Whitley	-	100,485	15	152,992	15	253,477
Johnson	1	-	8	122,108	9	122,108
Clay	-	-	-	8,514	-	8,514
Wolfe	-	-	1	24,444	1	24,444
Laurel	-	-	-	8,668	-	8,668
Elliot	-	-	1	-	1	-
WKY	13	28,780,419	6	4,543,583	19	33,324,002
Union	3	9,114,413	1	-	4	9,114,413
Ohio	2	2,539,725	4	4,208,911	6	6,748,636
Hopkins	2	6,844,611	-	-	2	6,844,611
Webster	2	5,871,014	-	-	2	5,871,014
Muhlenberg	3	3,567,732	-	-	3	3,567,732
Daviess	-	-	1	334,672	1	334,672
McLean	1	842,924	-	-	1	842,924

Source: U.S. Department of Labor, Mine Safety and Health Administration, "Quarterly Mine Employment and Coal Production Report" (MSHA Form 7000-02).

Nearly 60 percent of active coal mines in eastern Kentucky in 2015 were broadly defined as surface operations. However, the combined annual production of eastern Kentucky surface mines was slightly lower than underground production: 13.5 million tons compared to 14.6 million tons. During 2015, there were 19 counties in the eastern coalfield that had active mine sites and licenses.

There were twice as many active underground mines as surface mines in western Kentucky in 2015, and 86 percent of regional production was from underground operations. During the year, seven counties in the region registered coal production. Mines in western Kentucky tend to be more productive than eastern mines: eastern mines averaged 3.81 tons per labor hour vs. 2.19 tons per labor hour in the western region.

Mine Reclamation

Kentucky Mine Reclamation Status and Primacy Bond Releases, 1990-2015									
Status	Phase I			Phase II			Phase III		
Year	Releases	Acres	Bond Amount	Releases	Acres	Bond Amount	Releases	Acres	Bond Amount
1990	533	15,383	$ 28,108,146	260	7,298	$ 6,221,870	51	1,697	$ 1,569,147
1991	626	14,642	$ 28,373,662	428	12,667	$ 11,200,897	130	2,958	$ 6,890,877
1992	670	18,278	$ 33,822,612	477	13,338	$ 11,489,035	255	8,101	$ 6,811,872
1993	498	13,893	$ 25,386,134	416	12,661	$ 11,242,965	448	15,986	$ 8,629,089
1994	452	15,933	$ 27,423,038	319	10,828	$ 9,768,647	406	14,098	$ 8,709,946
1995	525	16,650	$ 32,343,224	427	13,141	$ 12,399,017	517	18,419	$ 16,338,524
1996	619	23,968	$ 47,602,996	419	14,784	$ 17,378,599	784	27,018	$ 22,365,232
1997	393	13,179	$ 23,571,000	373	13,323	$ 13,463,098	806	30,768	$ 29,923,783
1998	351	12,646	$ 28,589,902	255	8,104	$ 9,370,064	747	21,387	$ 18,859,893
1999	357	11,259	$ 20,644,178	192	5,971	$ 6,719,383	602	19,774	$ 23,043,414
2000	285	10,237	$ 18,529,971	206	6,380	$ 9,449,942	587	20,678	$ 17,215,050
2001	268	9,837	$ 13,321,034	175	7,963	$ 12,064,790	439	13,274	$ 14,176,508
2002	398	14,380	$ 19,236,198	142	5,929	$ 6,130,207	449	15,384	$ 16,013,176
2003	396	12,296	$ 16,879,563	143	5,855	$ 5,424,044	367	10,462	$ 11,291,162
2004	328	11,974	$ 18,229,856	136	3,941	$ 3,581,106	412	10,772	$ 13,163,416
2005	243	9,325	$ 15,142,951	151	5,336	$ 4,535,338	333	12,922	$ 12,687,628
2006	428	15,558	$ 24,028,630	113	4,724	$ 8,563,414	259	7,823	$ 9,135,598
2007	276	11,578	$ 15,743,391	213	5,920	$ 27,299,927	298	8,875	$ 10,958,667
2008	286	11,015	$ 18,958,373	155	6,620	$ 5,512,376	316	9,139	$ 11,283,135
2009	249	9,685	$ 16,916,494	167	12,462	$ 9,730,824	292	8,151	$ 9,795,266
2010	365	12,325	$ 20,912,926	225	11,538	$ 13,797,106	306	10,449	$ 8,559,124
2011	425	9,991	$ 18,364,773	189	7,180	$ 8,219,910	222	8,645	$ 6,886,853
2012	434	13,187	$ 24,863,908	146	5,892	$ 6,397,545	427	15,356	$ 14,060,545
2013	801	29,745	$ 42,247,303	199	6,375	$ 8,900,948	422	15,301	$ 15,886,028
2014	591	2,845	$ 25,463,830	147	183	$ 5,342,383	446	12,132	$ 12,453,471
2015	492	14,587	$ 31,865,431	196	5,623	$ 8,098,831	541	14,954	$ 13,422,994
Total	11,289	354,396	$ 636,569,524	6,269	214,036	$ 252,302,266	10,862	354,523	$ 340,130,398

In accordance with the federal Surface Mining Control and Reclamation Act of 1977 (SMCRA), mined land must be returned to its approximate original contour, with the exception of mountaintop mining operations. Stringent regulations govern the design, operation, and environmental impact of every mine. Mining and reclamation sites are inspected on a regular basis by state inspectors. Federal inspectors also conduct random oversight inspections.

Before surface mining begins, Kentucky coal operators must post bonds to ensure the costs of reclamation are available should a coal mine operator go out of business. Under Kentucky's 1984 Permanent Program or "Primacy Program", bonds are not fully released until a coal operator has demonstrated five years of consecutive successful reclamation. The bonds assure timely and successful reclamation. Mining reclamation bonds are released in the following phases:

Kentucky Mine Reclamation Phases and Criteria			
Bond Release	Reclamation Release Type	Percent Released	Time/Phase Requirements
Phase I	Grading, Drainage, Seeding	60%	Complete Landscaping
Phase II	Vegetation	25%	Two Years of Successful Reclamation
Phase III	Final	15%	Five Consecutive Years of Successful Reclamation

Mine Reclamation

Abandoned Mine Land Reclamation Fund (Millions), 1985—2015				
Year	Kentucky Collection	Kentucky State Share	AML Grant Disbursement	State Share Balance
1985	$36.91	$17.30	$32.30	$31.40
1990	$38.40	$19.41	$6.40	$43.30
1995	$35.49	$17.61	$15.50	$77.10
1996	$33.98	$16.90	$16.00	$83.60
1997	$34.66	$17.24	$16.10	$90.10
1998	$35.04	$17.45	$15.70	$97.40
1999	$32.38	$16.15	$16.50	$103.40
2000	$30.49	$15.19	$17.00	$108.00
2001	$29.42	$14.71	$18.80	$111.90
2002	$30.16	$15.03	$16.70	$116.90
2003	$26.71	$13.35	$16.40	$120.50
2004	$26.38	$13.19	$16.00	$124.40
2005	$26.00	$13.00	$15.00	$124.40
2006	$26.20	$13.10	$13.80	$128.80
2007	$27.68	$13.84	$13.80	$134.80
2008	$26.00	$13.00	$30.80	$136.60
2009	$24.60	$12.30	$31.10	$117.10
2010	$23.00	$11.50	$37.50	$97.60
2011	$20.25	$10.13	$37.72	$78.74
2012	$22.20	$11.10	$46.99	$58.56
2013	$19.14	$9.57	$42.43*	$39.04
2014	$13.66	$6.83	$39.45*	$0.00
2015	$13.06	$6.53	$18.20*	$0.00
Total	$631.81	$314.43	$530.19	$2,023.64

Abandoned Mine Land (AML) Reclamation

The federal Surface Mining Control and Reclamation Act of 1977 (SMCRA) established authority for the AML Fund. Production fees of $0.28 per ton for surface-mined coal and $0.12 per ton for underground-mined coal are collected from coal producers at all active coal mining operations. These funds are used to reclaim pre-SMCRA sites left abandoned, un-reclaimed, or insufficiently reclaimed, as well as certain sites under interim programs (1977-1982).

In 2006, Congress passed amendments to SMCRA that provided for mandatory distribution of all unappropriated state share balances over a seven-year period and increased grant funding to states like Kentucky with many high-priority AML problems remaining on inventory. Following these amendments, there was an increase in the Kentucky AML Grant. The July 2014 grant contained the last of the seven equal payments of the unappropriated state share balance. The AML program's federal grant funding is set to expire in 2021, unless Congress acts to extend the program.

*$2.28, $2.84, and $1.43 million were sequestered in 2013, 2014 and 2015, respectively from AML Grant Disbursement.

Abandoned Mine Land Reclamation Accomplishments Through 2015	
153 Water Line Projects	2,676 Mine Portal Closures
Over 36,729 Linear Feet of High Wall Eliminated	221 Vertical Shafts Sealed
Over 285 Hazardous Structures Removed	47.8 Miles of Stream Restoration
Over 2,530 Acres Landslide Projects Stabilized	290.2 Acres of Mine Fires Controlled
$566 Million in Construction Expenditures	107,515 Acres Reclaimed (GPRA Acres)

Post-Mining Land Use

Regional Airports	
Big Sandy Regional Airport	Martin
Hatcher Field Airport	Pike
Carroll Field Airport	Breathitt
Ford Airport	Perry
Ohio County Airport	Ohio
Correctional Facilities	
Federal Correctional Institute	Clay, Martin
East Kentucky Correctional Complex	Morgan
Otter Creek Correctional Center	Floyd
Juvenile Boot Camp	Breathitt
Government Facilities	
Earle C. Clements Job Corps Ctr.	Muhlenberg
Army National Guard Training Ctr.	Muhlenberg
U.S. Postal Service	Laurel
County Park	Ohio
Madisonville South By-Pass	Hopkins
Solid Waste Landfills	Daviess, Greenup, Ohio, Hopkins, Perry, Lee
Hazard Armory	Perry
Jail and State Police Barracks	Perry
Veterans' Nursing Home	Perry
Fish and Wildlife	
Duck Refuge Areas	Ohio, Perry, Breathitt, Knott, Martin, Muhlenberg
Catfish Farming	McLean
Wildlife Management Area	Muhlenberg, Ohio, Perry
Wetland Development	Muhlenberg

Several old coal haul rails have been removed to make walking trails in Hopkins, Muhlenberg, Union, and Webster counties. These efforts are also known as “Rails-to-Trails”.

Farms	
Starfire Project	Perry
MAPCO / Morehead Agriculture Ctr.	Martin
Martin County Coal Corp. Farm	Martin
D&R Brangus Farm	Perry
Hog Farm	Hopkins, Knox
Avian Farms	Wayne
Agricultural Projects / Sites	Daviess, Pike
Chicken / Broiler Houses	Hopkins, McLean, Muhlenberg, Webster
Livestock Feed	Greenup, Harlan, Lee, Johnson, Wolfe, Whitley

Free-ranging elk were re-introduced to the mountains of eastern Kentucky, with reclaimed mountaintop removal areas, old reclaimed mine benches, and hardwood forests serving as their home once again. The first hunter in more than 150 years to legally harvest an elk in Kentucky did so in 2001.

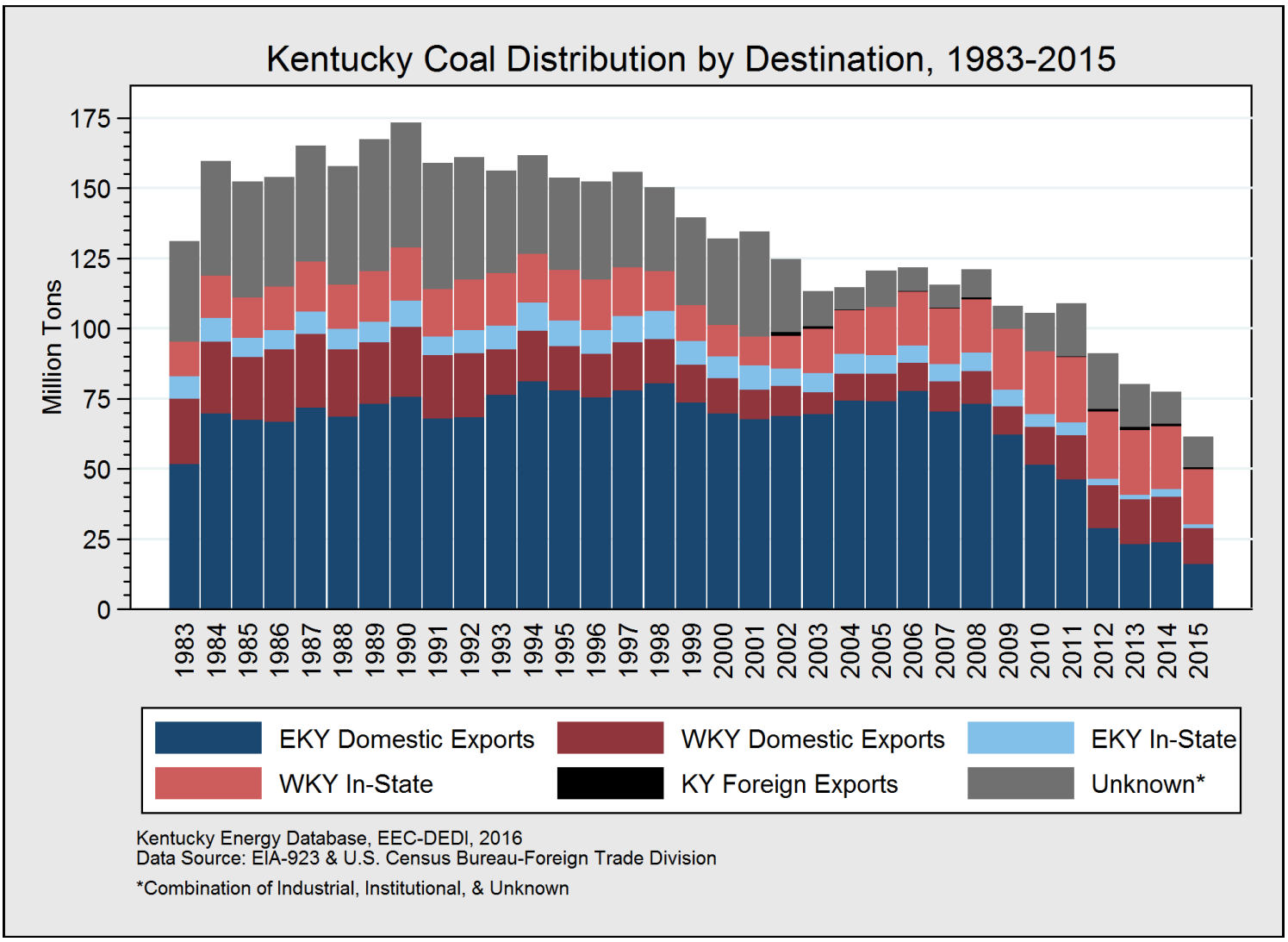
Source: Kentucky Coal Association.

Post-Mining Land Use

Sports and Recreational Facilities	
Baseball Fields	Boyd
Coal Hollow Park	Floyd
Elkhorn Educational Recreation Park	Floyd
Golf Courses	Clay, Laurel, Letcher, Floyd, McLean
Recreational Area	Lee, Greenup
Red Fox Resort	Knott
Stonecrest Golf Course	Floyd
Wayland Park	Floyd
Golf (drive and putt)	Webster
Recreational Area and Fishing Lake	Pike
Athletic Facilities	Letcher
Fairgrounds	Morgan
Riding Stables and Trails	Muhlenberg
Campground	Hopkins
Hunting Reserve	Webster
Mine 18 Blue Heron	McCreary
Portal 31	Harlan
Structural Building Sites	
High Schools	Pike
Elementary School	Boyd
Flea Market	Perry
Athletic Complexes	Letcher, Pike
Appalachian Regional Hospital	Perry
Housing Developments	Bell, Boyd, Clay, Floyd, Greenup, Harlan, Johnson, Martin
Church, Daycare	Laurel, Perry
Mobile Home Sales	Laurel
Shopping Centers	Breathitt, Clay, Knox, Laurel, Leslie, Letcher, Pike
Car / Truck / Equipment Sales	Perry
Motel / Hotel	Laurel, Perry
Office Complex	Boyd, Greenup, Morgan, Martin, Perry, Pike
Storage Rental Facility	Hopkins, Perry
Off Track Betting	Perry
Telecommunications Call Center	Perry

Industrial / Commercial	
Electrical Construction Office and Shop	Hopkins
Electric Utility Operations Center	Hopkins
Industrial Scrubber Sludge Disposal	Ohio, Daviess, Webster
Explosive Manufacturing	Muhlenberg
Apparel Manufacturing	Perry, Boyd
Mine Shops / Welding / Machine / Equipment	Johnson, Hopkins, Knox, Muhlenberg, Ohio, Union
Trucking Company	Muhlenberg, Boyd
Truck / Equipment Sales	Butler
Explosive Company	Perry, Hopkins
Farm Equipment	Hopkins
Sawmill / Logs / Lumber	Bell, Butler, Clay, Jackson, Laurel, Pike, Whitley, Wolfe
Recycling Facility	Letcher
Blacktop / Concrete Facilities	Laurel, Perry
Oil / Gas Facilities	Clay, Lee, Elliott
Cabinet Factory	Perry
Clay-Leslie Regional Industrial Park	Clay, Leslie
Coalfields Regional Industrial Park	Breathitt, Harlan, Leslie, Perry
Corbin Tri-County Industrial Park	Knox
East Park Regional Industrial Park	Boyd, Carter, Elliott, Greenup, Lawrence
Equipment Rental / Sales	Boyd
Gateway Regional Business Park	Floyd, Knott, Letcher, Pike
Honey Branch Regional Business Park	Floyd, Johnson, Magoffin, Martin, Pike
Little Goose Industrial Site	Clay
Maggie Mountain Industrial Park	Floyd
Paul Coffey Industrial Park	Boyd
Pine Mountain Regional Business Park	Bell, Harlan, Knox, Letcher, Whitley
Retail Outfitters	Clay
Tooling Company	Clay
Uniform Rental Services	Carter
Utility	Boyd, Knott, Perry
Wireless Communications	Carter
Plastic Injection Molding Company	Perry
Mine / Electronics Supply	Martin
Industrial Parkway	Greenup
United Parcel Services	Perry, Boyd
Unified Power Distribution	Martin

Kentucky Coal Distribution



†Labels "Out-of-State" and "Domestic Export" represent shipments of coal to consumers within the United States, but outside of Kentucky.

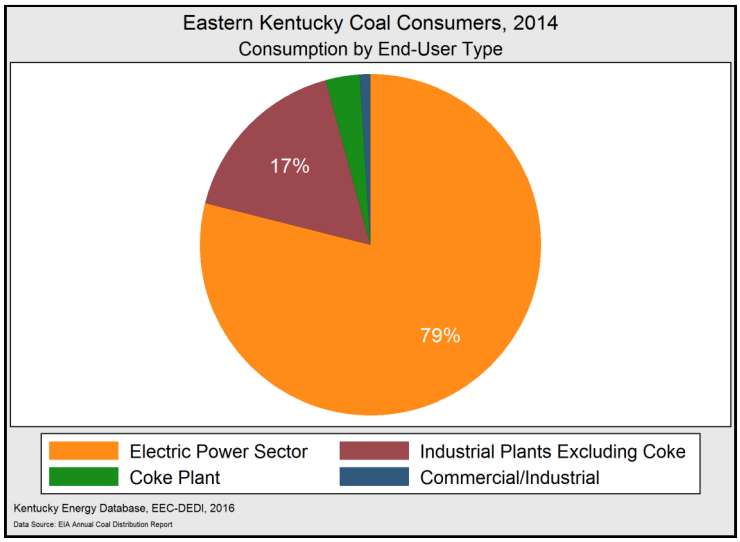
KY Coal Distribution by Destination, 2015		
Coal and Destination	Thousand Tons	Percentage
Total Production	61,414	100.0%
WKY In-State	19,809	32.3%
EKY Out-of-State†	16,003	26.1%
WKY Out-of-State†	12,736	20.7%
Industrial/Unknown	10,885	17.7%
EKY In-State	1,376	2.2%
Foreign Exports	605	1.0%

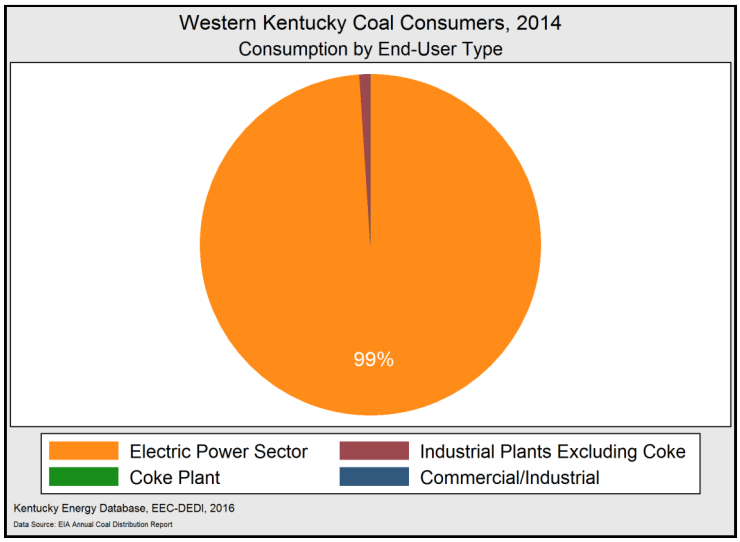
A difference of around 11 million tons exists between total production and total distribution in the table above—a product of coal stockpiling, lags in data reporting, calendar year parameters, comparison of statistics across multiple data sources, and reporting errors.

The annual distribution of coal mined in Kentucky is a combination of in-state consumers, out-of-state power plants, factories, and foreign exports. Demand from out-of-state consumers has consistently been the largest component of Kentucky coal deliveries for several decades.

Eastern Kentucky coal has predominantly been sold to states in the southeastern United States. Conversely, western Kentucky coal has mostly been mined for in-state consumption. Kentucky remains the single-largest consumer of Kentucky coal. As other states have decreased their consumption of coal from the Commonwealth, the percentage of Kentucky coal consumed in-state has increased. Known foreign exports of Kentucky coal in 2015 were 605 thousand tons, or 1.0 percent of known coal deliveries.

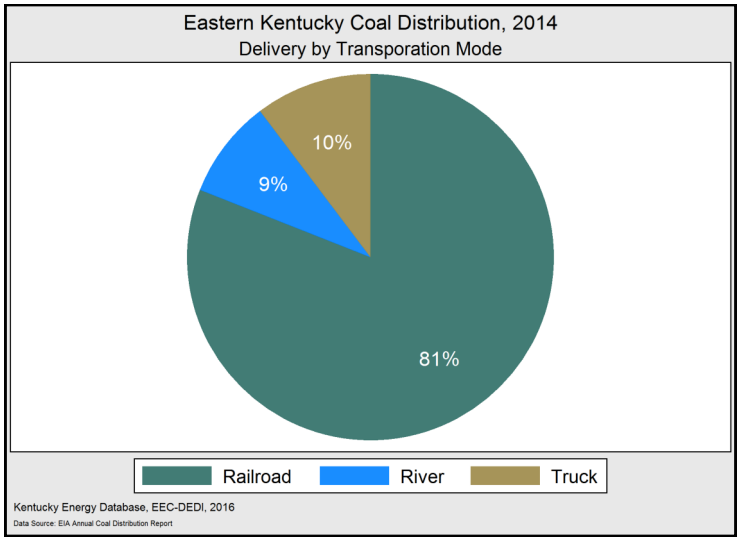
Kentucky Coal Distribution

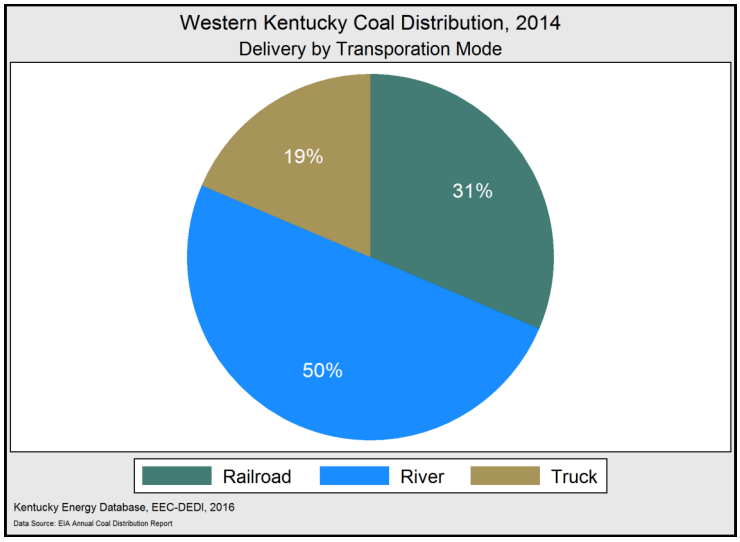




End-User	Tons	Percentage
Total	30,126,267	100%
Electric Power	23,785,996	79.0%
Industrial	5,067,262	16.8%
Coke	976,365	3.2%
Commercial	296,644	1.0%

End-User	Tons	Percentage
Total	39,671,703	100%
Electric Power	39,269,440	99.0%
Industrial	390,292	<1.0%
Coke	0	0.0%
Commercial	11,971	<1.0%

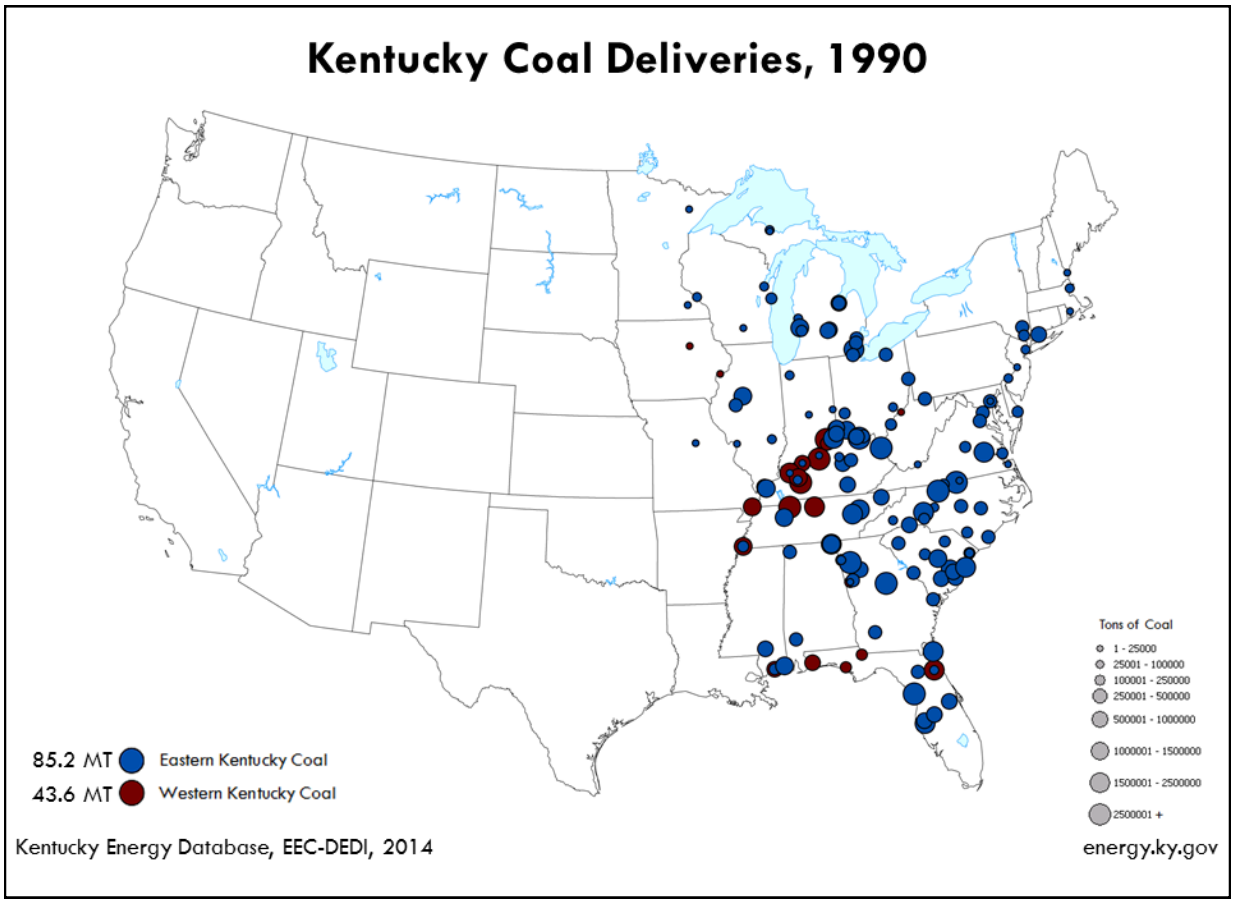


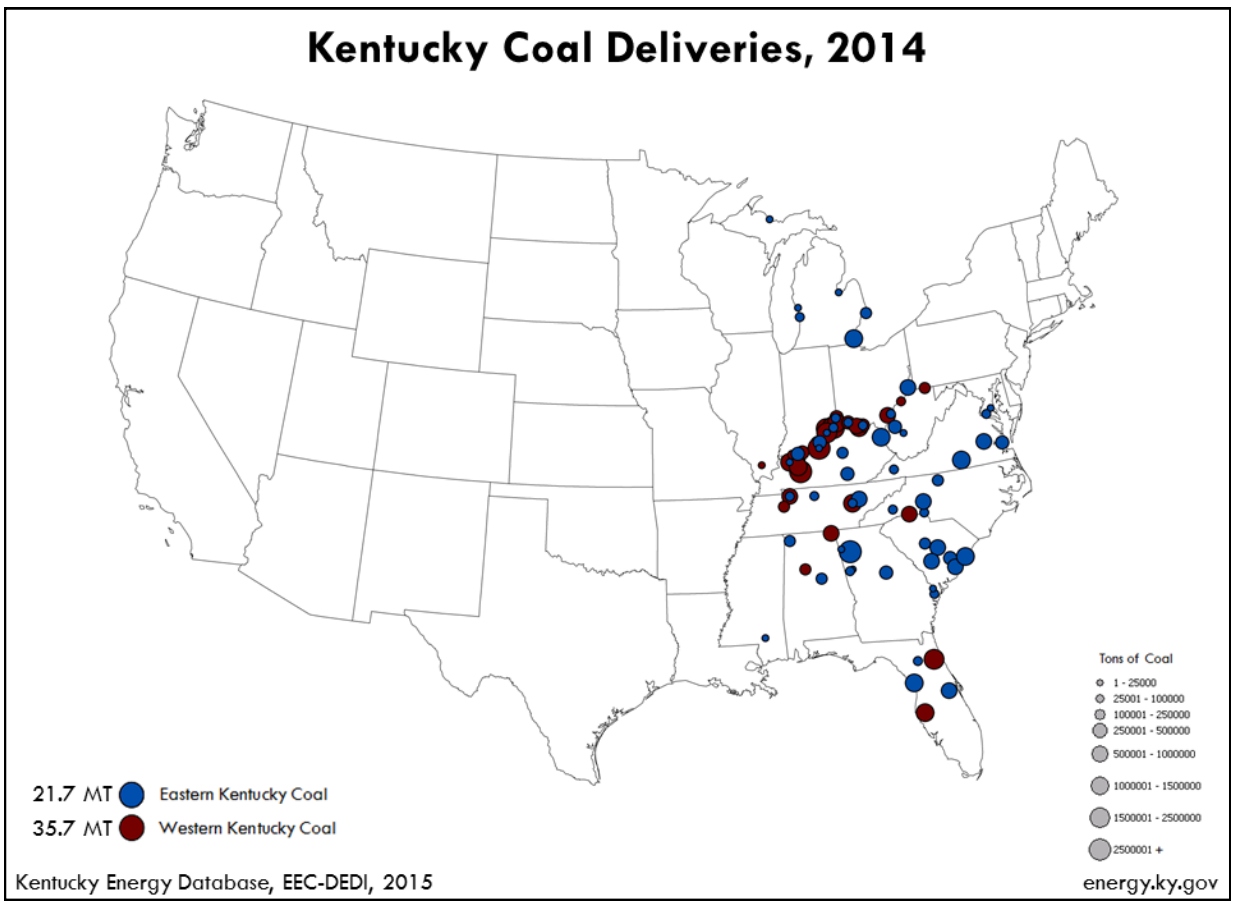


The vast majority of coal shipped from eastern Kentucky in 2014 was delivered to electric power plants in the United States. Industrial facilities were the next largest consumer of eastern Kentucky coal—16.8 percent of demand for the commodity. Coke plant deliveries reached nearly one million tons in 2014. Demand from commercial consumers accounted for one percent of eastern Kentucky coal distribution during the year. Of the coal deliveries originating in eastern Kentucky, 81 percent were distributed via rail car. The remaining loads were carried by river barge or truck.

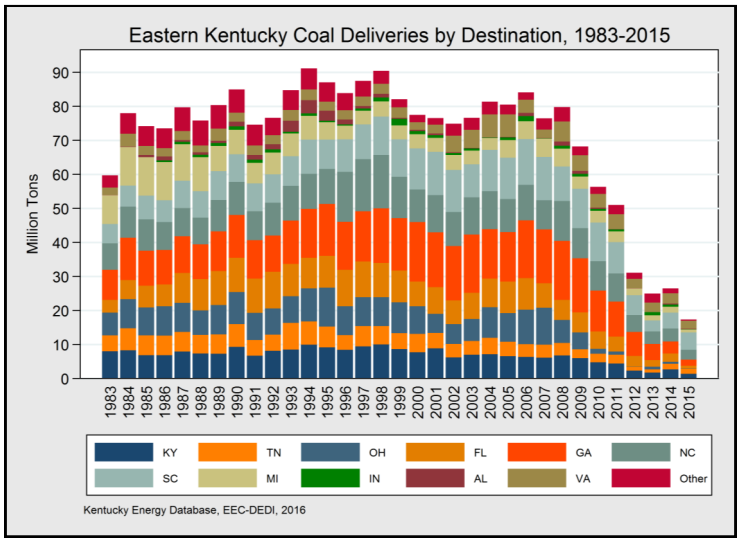
Given the accessibility of river ports in western Kentucky, half of the region's coal was distributed via barges in 2014. Just under a third of western Kentucky coal was transported by rail during the same year, and 19 percent was delivered by truck. In 2014, electric power plants represented 99 percent of the demand for western Kentucky coal.

Kentucky Coal Consumers, 1990-2014



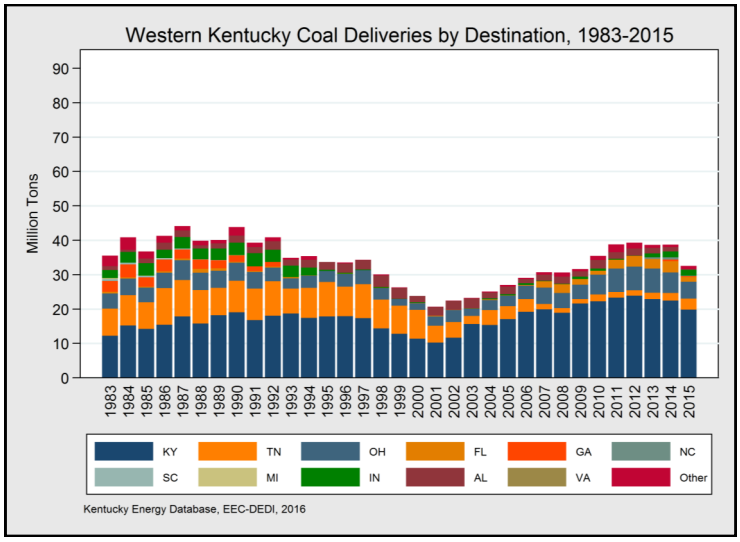


Kentucky Coal Deliveries, 2015



Known shipments of steam coal from eastern Kentucky to power plants within the United States decreased by 34 perecent in 2015, from 24.8 to 17.4 million tons. The largest markets for eastern Kentucky coal are traditionally located in the southeast, and were led by South Carolina, North Carolina, and Virginia during the year. Overall, coal mined in the region was shipped to 15 different states in 2015.

Eastern Kentucky Coal Deliveries, 2015		
Destination	Thousand Tons	Percentage
Total	17,394	100%
South Carolina	5,085	29%
North Carolina	2,898	17%
Virginia	2,341	13%
Georgia	1,790	10%
Tennessee	1,462	8%
Kentucky	1,377	8%
Florida	852	5%
Michigan	846	5%
West Virginia	314	2%
Alabama	151	1%
Indiana	99	1%
Ohio	75	1%
Mississippi	60	<1%
New York	16	<1%
Maryland	13	<1%



Known shipments of steam coal from western Kentucky to power plants within the United States decreased by 16 percent in 2015, from 38.7 to 32.5 million tons. The largest market for western Kentucky coal is consistently Kentucky, which represented 61 percent of western Kentucky coal deliveries during the year. Overall, coal mined in western Kentucky was shipped to 10 different states in 2015. Western Kentucky shipped 5.6 million more tons than in 2005, or an increase of 21 percent.

Western Kentucky Coal Deliveries, 2015		
Destination	Thousand Tons	Percentage
Total	32,531	100%
Kentucky	19,809	61%
Florida	4,956	15%
Tennessee	3,183	10%
Indiana	1,748	5%
Ohio	1,405	4%
West Virginia	732	2%
Alabama	213	1%
Georgia	201	1%
Mississippi	177	1%
North Carolina	107	<1%

Kentucky Coal Deliveries, 2015		
Origin	Thousand Tons	1 Year Change
Total	49,924	-24%
WKY	32,531	-16%
EKY	17,394	-34%

Total Kentucky coal deliveries have decreased by an average of 8.9 million tons, or by 14 percent every year since 2005, primarily because of reduced shipments from eastern Kentucky.

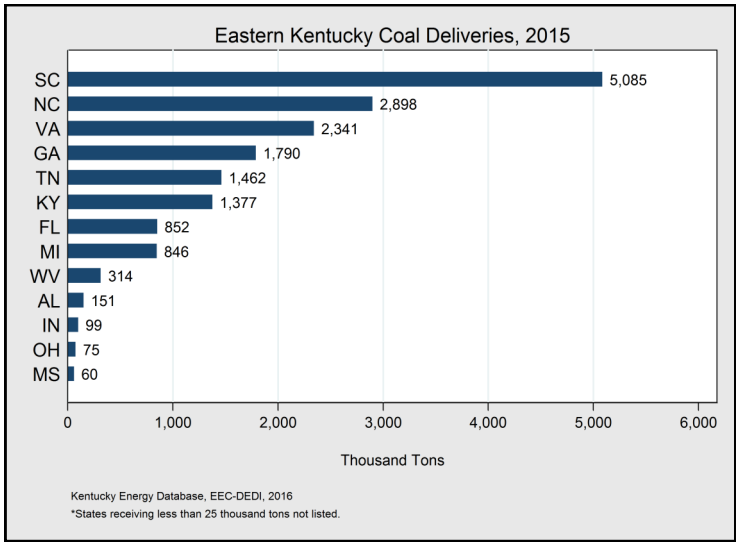
Eastern Kentucky Coal Deliveries

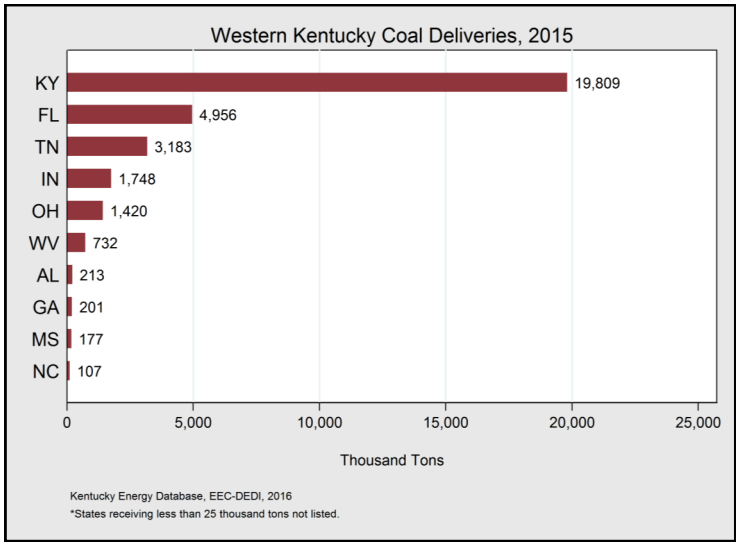
Eastern Kentucky Coal Deliveries to Electric Power Plants, 2015					
Rank	Plant ID	Power Plant Name	State	Annual Deliveries (Tons)	1 Year Change
1	6249	Winyah	SC	1,947,944	+53%
2	703	Bowen	GA	1,651,133	-37%
3	7213	Clover	VA	901,110	-22%
4	130	Cross	SC	888,036	+188%
5	2721	James E. Rogers Energy Complex	NC	850,234	-5%
6	3298	Williams	SC	801,483	-20%
7	2712	Roxboro	NC	794,464	-15%
8	50481	Tennessee Eastman Operations	TN	782,085	-9%
9	3797	Chesterfield	VA	777,672	+5%
10	1353	Big Sandy†	KY	756,497	-45%
11	1733	Monroe	MI	658,016	-49%
12	7210	Cope	SC	570,133	-30%
13	3297	Wateree	SC	549,283	-35%
14	3396	Bull Run	TN	527,480	-19%
15	628	Crystal River†	FL	354,529	-69%
16	8042	Belews Creek	NC	341,498	+199%
17	2718	G G Allen	NC	326,832	+235%
18	2727	Marshall	NC	320,255	-47%
19	50900	Covington Facility	VA	318,352	-4%
20	1384	Cooper	KY	266,698	-44%
21	6250	Mayo	NC	241,427	+36%
22	54081	Spruance Genco LLC	VA	232,305	+5%
23	10672	Cedar Bay Generating Company LP†	FL	225,395	-53%
24	3948	Mitchell	WV	194,043	-71%
25	7737	Kapstone	SC	192,808	+57%
26	663	Deerhaven Generating Station†	FL	174,536	+106%
27	3399	Cumberland	TN	152,544	+136%
28	1740	River Rouge	MI	151,732	+85%
29	47	Colbert†	AL	150,634	+3%
30	6018	East Bend	KY	127,311	—
31	1355	E W Brown	KY	113,248	-55%
32	6041	H L Spurlock	KY	99,175	—
33	50976	Indiantown Cogeneration LP	FL	97,437	—
34	3935	John E Amos	WV	92,310	-79%
35	52151	International Paper Eastover Facility	SC	91,027	+12%
36	3809	Yorktown†	VA	82,992	-73%
37	54101	Georgia-Pacific Cedar Springs†	GA	63,873	-40%
38	6061	R D Morrow	MS	59,608	+173%
39	2872	Muskingum River†	OH	49,522	-91%
40	6166	Rockport	IN	45,334	-83%
41	1008	R Gallagher	IN	38,107	-86%
42	3287	McMeekin†	SC	33,240	-82%
43	50398	International Paper Savanna Mill	GA	30,495	-85%
44	3938	Philip Sporn†	WV	26,894	-71%

Eastern Kentucky Coal Deliveries

Eastern Kentucky Coal Deliveries to Electric Power Plants, 2015					
Rank	Plant ID	Power Plant Name	State	Annual Deliveries (Tons)	1 Year Change
45	709	Harllee Branch†	GA	25,826	-93%
46	6019	W H Zimmer	OH	25,795	-53%
47	2706	Asheville†	NC	23,513	-74%
48	10017	West Point Mill	VA	19,533	-22%
49	10025	RED-Rochester, LLC	NY	16,388	-71%
50	988	Tanners Creek†	IN	15,607	-81%
51	6031	Killen Station	OH	14,874	-46%
52	1720	J C Weadock†	MI	14,204	+19%
53	1385	Dale†	KY	13,876	—
54	1554	Herbert A Wagner†	MD	12,652	—
55	708	Hammond	GA	12,325	-3%
56	1710	J H Campbell	MI	11,754	-67%
57	54087	International Paper Georgetown Mill	SC	11,178	-1%
58	10208	Escanaba Mill	MI	10,716	-59%
59	52007	Mecklenburg Power Station	VA	9,272	—
60	54358	International Paper Augusta Mill	GA	6,301	-70%
61	6264	Mountaineer	WV	720	—
62	56808	Virginia City Hybrid Energy Center	VA	134	-86%

† Announced conversion of generating units to natural gas, partial closure, or full closure of power plant, 2015-2022.





The Winyah power plant in South Carolina was the single largest consumer of coal from eastern Kentucky in 2015, receiving 1.9 million tons. The Commonwealth's largest consumer of eastern Kentucky coal in 2015 was the Big Sandy power plant, which has retired its coal burning unit as of May 2015.

The three largest consumers of western Kentucky coal in 2015 were power plants in the state: Paradise, Mill Creek, and Ghent. Combined, these three plants consumed over 11 million tons of western Kentucky coal.

Western Kentucky Coal Deliveries

Western Kentucky Coal Deliveries to Electric Power Plants, 2015					
Rank	Plant ID	Power Plant Name	State	Annual Deliveries (Tons)	1 Year Change
1	1378	Paradise†	KY	4,671,495	-14%
2	1364	Mill Creek	KY	3,354,774	+17%
3	1356	Ghent	KY	3,142,315	-13%
4	136	Seminole	FL	2,939,625	+21%
5	6071	Trimble County	KY	2,457,448	+47%
6	8837	Calvert City	TN	2,009,360	—
7	983	Clifty Creek	IN	1,709,651	+2%
8	6823	D B Wilson	KY	1,330,606	+2%
9	6018	East Bend	KY	1,256,720	+13%
10	1374	Elmer Smith	KY	945,861	-1%
11	8827	IMT Transfer	FL	871,740	-27%
12	6639	R D Green	KY	835,737	-25%
13	1382	HMP&L Station Two Henderson	KY	828,491	-23%
14	3407	Kingston	TN	805,112	-21%
15	8816	Davant Transfer	FL	692,812	-36%
16	8848	Ceredo	WV	671,745	+53%
17	6041	H L Spurlock	KY	480,854	-51%
18	2850	J M Stuart	OH	428,771	-68%
19	2832	Miami Fort†	OH	420,798	+15%
20	3399	Cumberland	TN	333,404	-67%
21	1363	Cane Run†	KY	293,861	-74%
22	6031	Killen Station	OH	278,445	-22%
23	628	Crystal River†	FL	234,806	+1131%
24	645	Big Bend	FL	216,777	-83%
25	6019	W H Zimmer	OH	213,503	-52%
26	1355	E W Brown	KY	210,692	+27%
27	703	Bowen	GA	200,941	-59%
28	8851	Associated Terminals	MS	176,530	+28%
29	50	Widows Creek†	AL	127,506	-85%
30	2721	James E. Rogers Energy Complex	NC	106,477	-82%
31	26	E C Gaston	AL	74,056	-49%
32	8102	General James M Gavin	OH	63,498	-90%
33	3947	Kammer†	WV	52,329	+886%
34	8834	GRT Terminal	TN	34,701	—
35	1008	R Gallagher	IN	22,721	—
36	6705	Warrick	IN	15,960	-70%
37	47	Colbert†	AL	11,932	-91%
38	6264	Mountaineer	WV	7,485	-14%
39	2727	Marshall	NC	118	-98%

† Announced conversion of generating units to natural gas, partial closure, or full closure of power plant, 2015-2022.

International Exports

United States Coal Exports by Export State, 2015		
State	Thousand Tons	Percentage
Total	67,480	100%
West Virginia	20,510	30.4%
Pennsylvania	15,305	22.7%
Alabama	8,347	12.4%
Virginia	7,934	11.8%
Louisiana	3,971	5.9%
Illinois	3,519	5.2%
Missouri	2,182	3.2%
Utah	2,082	3.1%
New York	970	1.4%
California	881	1.3%
Kentucky	605	0.9%
Maryland	403	0.6%
Ohio	349	0.5%
Connecticut	182	0.3%
Texas	112	0.2%
Wisconsin	50	0.1%
Florida	44	0.1%
Tennessee	18	<0.1%
Indiana	16	<0.1%

Data Source: U.S. Census Bureau, Foreign Trade Division

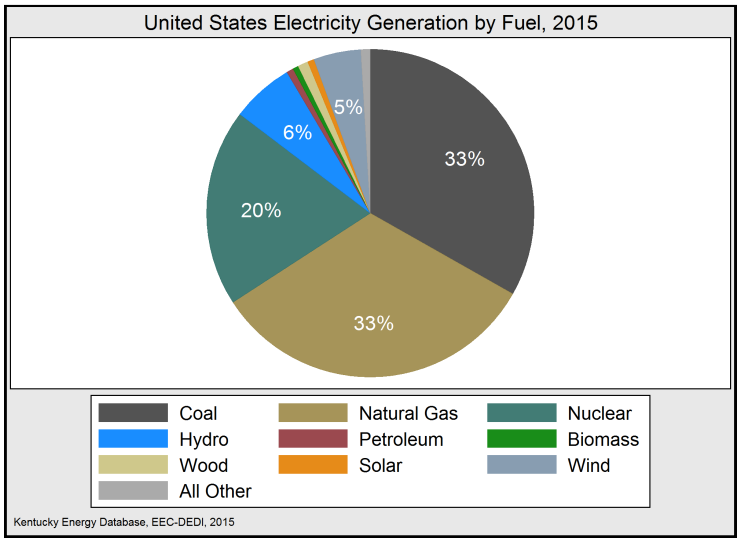
United States Coal Exports by Destination, 2015		
Country	Thousand Dollars	Percentage
Total*	$5,416,588	100%
Netherlands	$840,577	15.5%
Brazil	$548,049	10.1%
Canada	$474,188	8.8%
India	$455,077	8.4%
Japan	$334,431	6.2%
United Kingdom	$308,442	5.7%
Ukraine	$284,446	5.3%
Germany	$275,816	5.1%
Italy	$274,916	5.1%
Mexico	$244,386	4.5%
South Korea	$237,721	4.4%
Turkey	$176,985	3.3%
Croatia	$148,647	2.7%
Spain	$119,092	2.2%
France	$115,469	2.1%
Belgium	$108,082	2.0%
Sweden	$62,547	1.2%
Poland	$54,215	1.0%
Austria	$38,976	0.7%

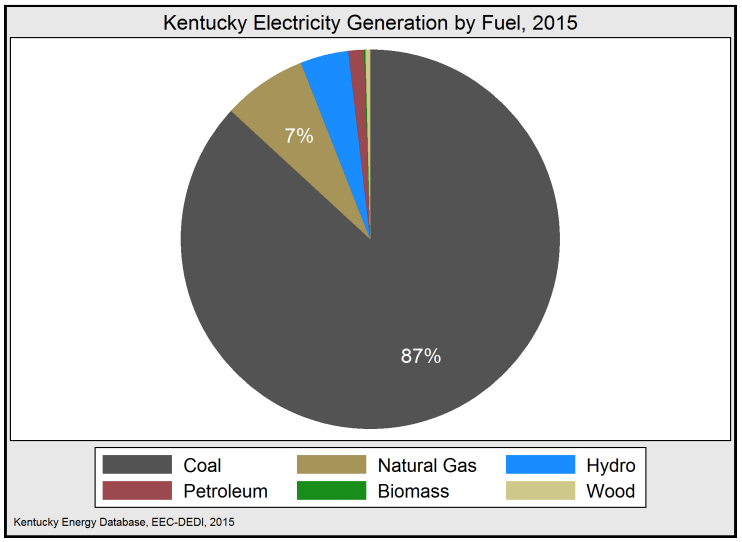
** Exports of less than $38.5 million have not been listed.*

Known shipments of bituminous coal from the United States fell by 24.8 percent in 2015 to 67.5 million tons. However, this is an increase from 2002 when only 35 million tons were exported. Kentucky exported 605 thousand tons of coal to three countries in 2015, down 35.6 percent from 2014. The federally available data are complicated by the confusion of export terminals and mining areas. For example, California is ranked tenth above in bituminous coal exports, yet produces no coal.

The United States exported coal to 56 countries in 2015, with the 19 countries displayed accounting for 94.2 percent of the total. Declining by 34.1 percent since 2014, the United States exported $5.4 billion of coal in 2015. The Netherlands and Brazil were again the largest consumers of American coal exports, receiving 15.5 percent and 10.1 percent of total exports, respectively. Canada, which was the leading destination for U.S. coal exports a decade ago, ranked third in 2015.

Electricity Generation

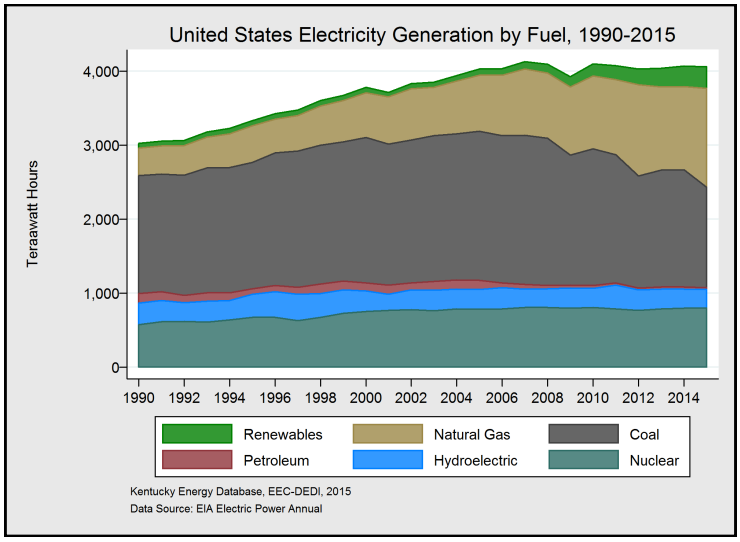


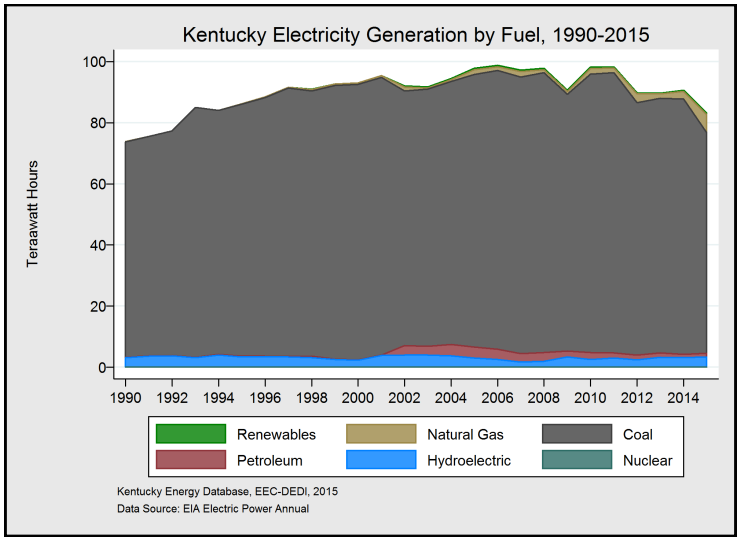


Fuel Type*	Gigawatt Hours	1 Year Change
Total	4,087,382	-0.1%
Coal	1,356,057	-15%
Natural Gas	1,335,068	+19%
Nuclear	797,178	+0.01%
Hydro	251,169	-3%
Wind	190,927	+5%

*Only top five sources listed

Fuel Type*	Gigawatt Hours	Annual Change
Total	83,232	-8%
Coal	72,245	-14%
Natural Gas	5,985	+142%
Hydro	3,420	+11%
Petroleum	1,092	-6%
Wood and Biomass	344	-5%

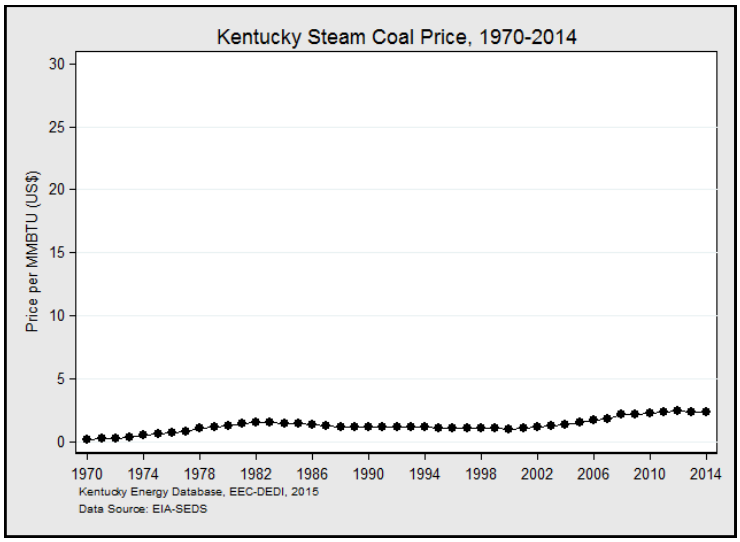




Coal remained the largest fuel source for electricity in the United States in 2015, followed by natural gas, and nuclear power. These three largest generation types are 86 percent of the United States' electricity portfolio. For the last five years, renewables and natural gas facilities have been the fastest growing sources of electricity generation in the United States while coal-fired generation has decreased, from 45 percent of total United States electricity generation to 33 percent of the total portfolio.

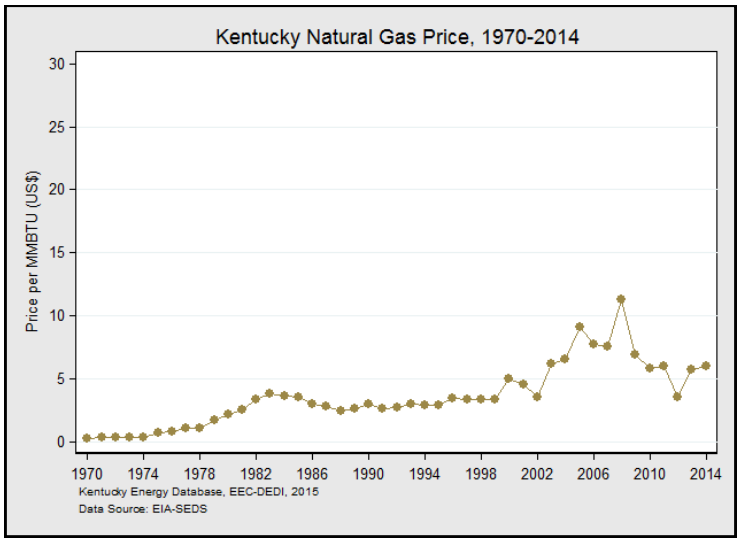
Of the electricity generated in Kentucky in 2015, 87 percent was derived from coal. Coal-fired generation decreased from the year before and remained the main electricity generating fuel. Natural gas facilities became the second-largest source of electricity with the addition of Kentucky's first natural gas-fired base load generator. Hydroelectric power produced the third most of all fuels. Due to existing coal resources and power plant infrastructure Kentucky has consistently used coal to meet the vast majority of electricity demand within the Commonwealth.

Why Kentucky Uses Coal



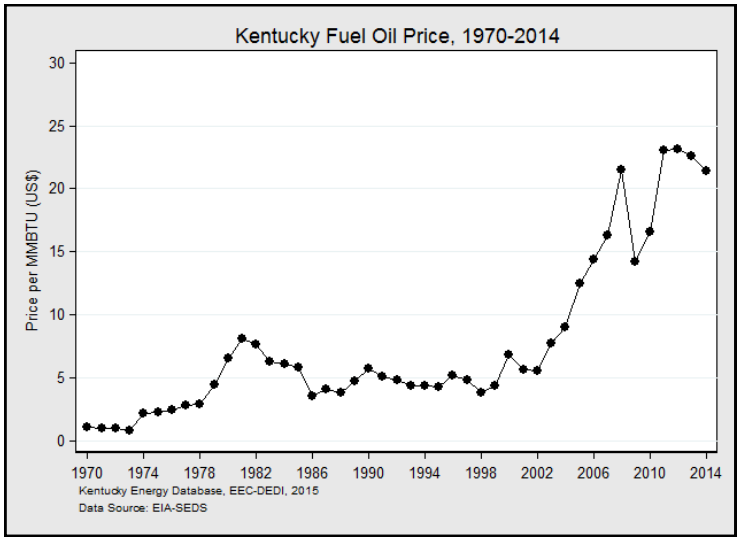
Fuel Type	($US)/MMBtu	($US)/Ton
Coal	2.34	52.62

The price of coal has remained low and stable for decades. The price of coal used for electricity generation in 2014 was $2.34 per MMBtu—a .8 percent decrease from the year prior. Coal is beneficial because of its ability to be stockpiled and used at any time while natural gas and renewables cannot.



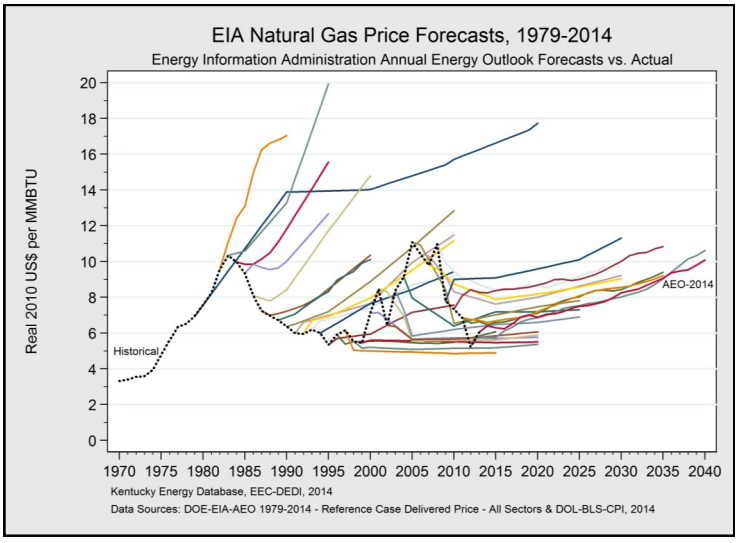
Fuel Type	($US)/MMBtu	($US)/Mcf
Natural Gas	6.02	5.16

The average price of natural gas used in electricity generation in Kentucky in 2014 was $6.02 per million Btu, a 12 percent decrease from 2013. Natural gas prices have decreased substantially in recent years following the spread of horizontal drilling and hydraulic fracturing, but remain more expensive than coal on a unit of heat basis.



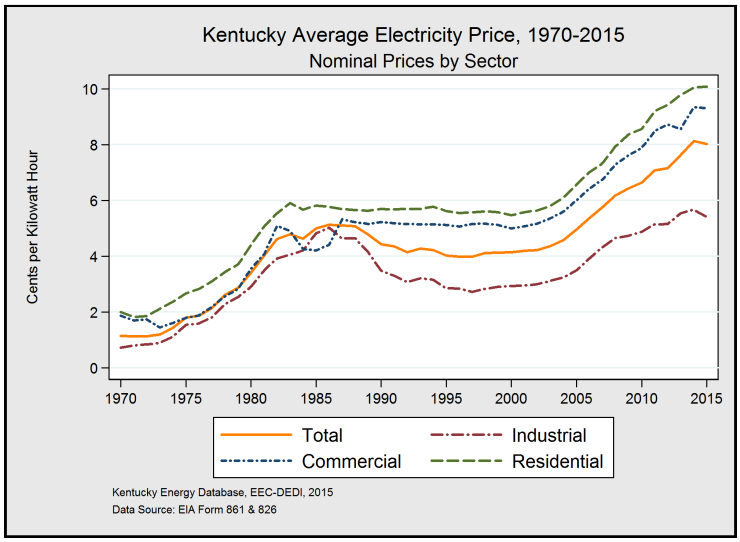
Fuel Type	($US)/MMBtu
Distillate Fuel Oil	21.42

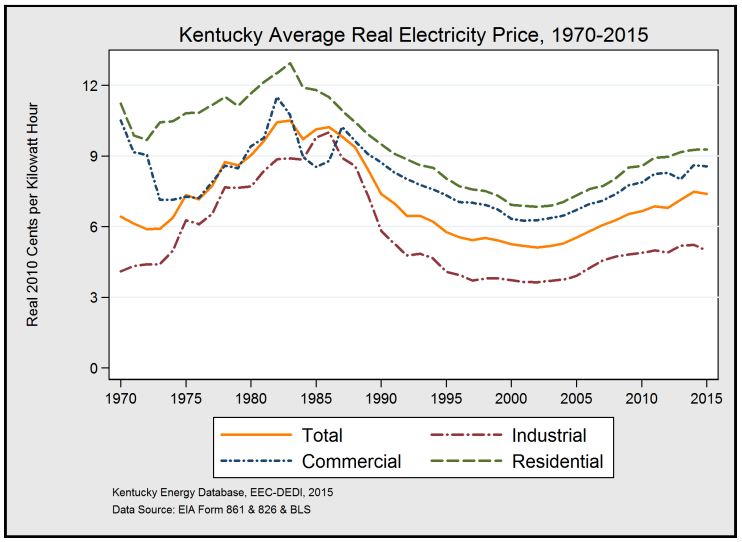
The average price of fuel oil, used in electricity generation, in 2014, was $21.42 per MMBtu in Kentucky, a 5.3 percent decrease from 2013. Petroleum generators in Kentucky are used primarily for peak-load generation, but are a relatively small source of electricity generation, overall—averaging 1.5 percent of generation since 1990.



Natural gas prices have proven difficult to predict historically. The above graph displays the historical natural gas price (in black) and the yearly natural gas price forecast by the Energy Information Administration.

Kentucky Electricity Prices



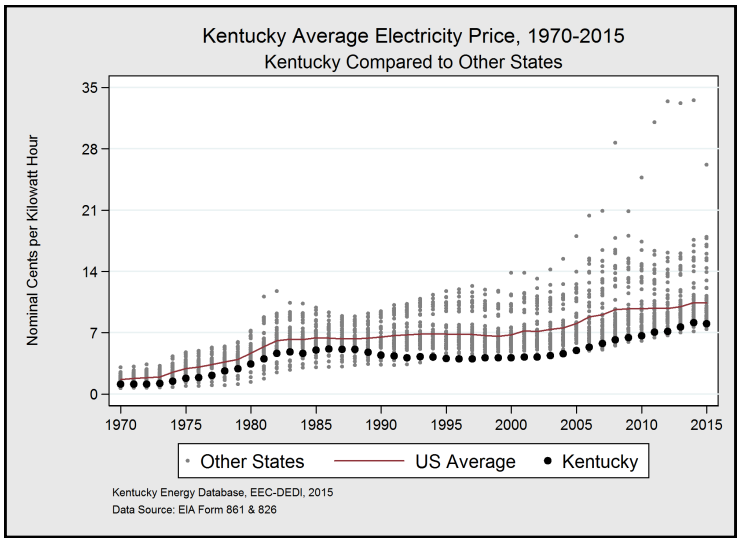


Sector	Nominal Cents/kWh	Since 2010
Average	8.03¢	+21%
Residential	10.08¢	+18%
Commercial	9.31¢	+18%
Industrial	5.41¢	+11%

Sector	Real* Cents/kWh	Since 2010*
Average	7.39¢	+11%
Residential	9.28¢	+8%
Commercial	8.56¢	+9%
Industrial	4.98¢	+2%

*Real 2010 $US

In 2015, the average price of electricity across economic sectors in Kentucky was 8.03¢ per kilowatt-hour, making Kentucky's electricity rates the fifth lowest in the country and the lowest east of the Mississippi River. The residential sector paid the highest price for electricity at 10.08¢ per kilowatt-hour, followed by the commercial sector at 9.31¢ per kilowatt-hour, and the industrial sector at 5.41¢ per kilowatt-hour, fifth lowest in the country. Since 2010, the average price of electricity in Kentucky has risen by 21 percent.



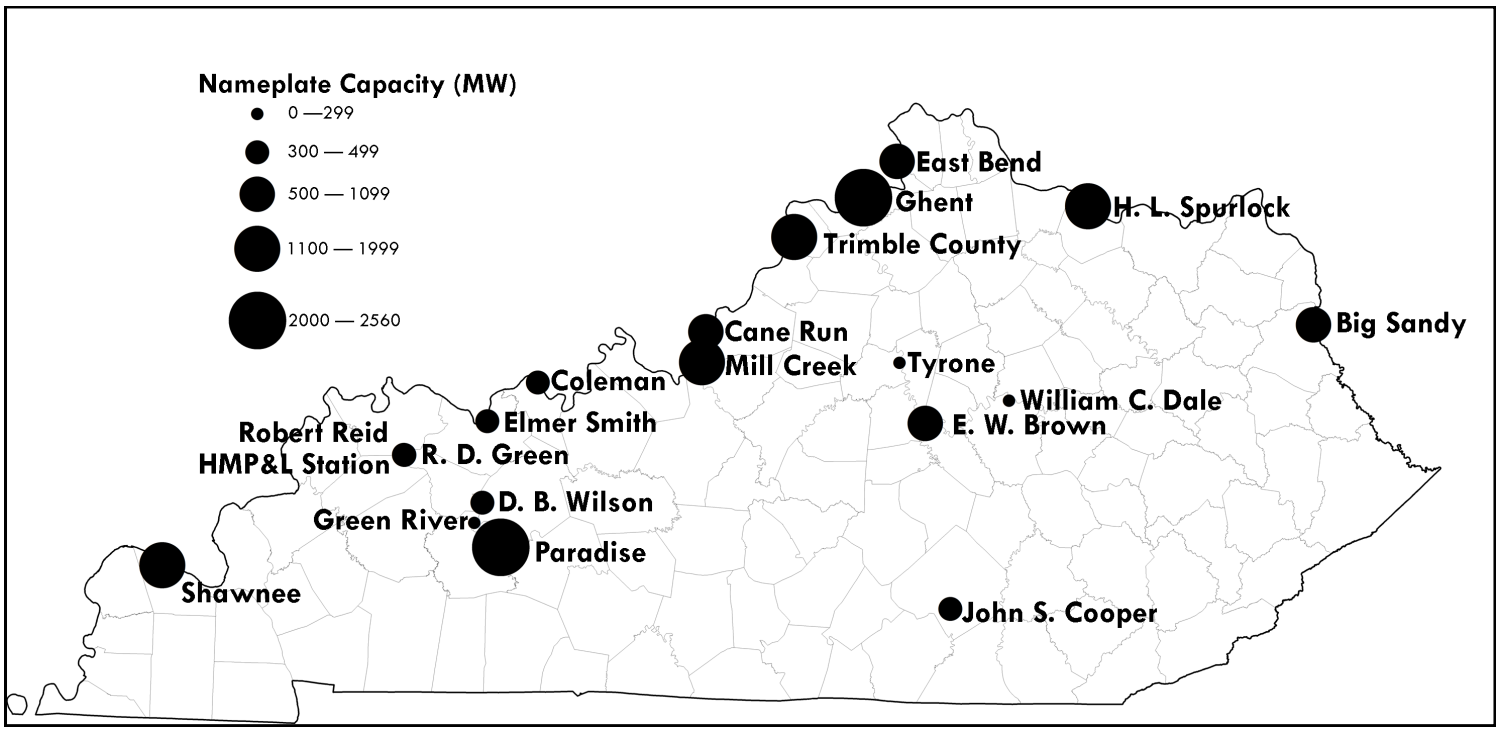
Adjusting for inflation, the trends of electricity prices in Kentucky between 1970 and 2015 are notably different from the adjacent, nominal graphic. In inflation-adjusted 2010 dollars, the price of electricity in Kentucky actually decreased from 1980 through 2002, and again in 2015. However, the real price of electricity in Kentucky in inflation-adjusted dollars increased between 2002 and 2014. This period of 14 consecutive years of real price increases is contrary to the trend of the 20 years between 1982 and 2002. A major factor driving real electricity prices in Kentucky between 2002 and 2014 had been the rising price of steam coal used by electric utilities, though the trend reversed in 2015.

Since 1970, the average price of electricity in Kentucky has been among the lowest in the United States and well below the national average. During this period, Kentucky electricity prices have always been among the eighth lowest. Though the state with the lowest average price of electricity fluctuates year to year, states with very large coal generation portfolios or large hydroelectric portfolios have traditionally maintained the lowest prices of electricity in the United States.

Price of Electricity by State, 2015

Rank	State	Primary Generation Source	Percentage Coal	2015 Average Price (Cents per kWh)	2015 Industrial Price (Cents per kWh)	Inflation Adjusted Avg. Price
1	Washington	Hydroelectric	5%	7.41	4.42	3%
2	Louisiana	Natural Gas	14%	7.64	5.38	-7%
3	Oklahoma	Natural Gas	33%	7.83	5.23	-4%
4	Wyoming	Coal	88%	7.95	6.74	21%
5	Kentucky	Coal	87%	8.03	5.41	11%
6	West Virginia	Coal	94%	8.12	6.11	2%
7	Idaho	Hydroelectric	0%	8.12	6.62	4%
8	Arkansas	Coal	39%	8.15	6.13	-1%
9	Iowa	Coal	53%	8.47	5.95	7%
10	Utah	Coal	76%	8.61	6.23	15%
11	Texas	Natural Gas	27%	8.63	5.58	-13%
12	Indiana	Coal	75%	8.79	6.66	-6%
13	Oregon	Hydroelectric	4%	8.82	6.06	7%
14	North Dakota	Coal	75%	8.85	8.26	-14%
15	Montana	Coal	55%	8.93	5.22	6%
16	Nebraska	Coal	61%	9.04	7.55	-1%
17	Illinois	Nuclear	38%	9.28	6.35	14%
18	Missouri	Coal	78%	9.30	6.22	5%
19	South Dakota	Hydroelectric	15%	9.31	7.27	10%
20	Virginia	Natural Gas	21%	9.31	6.96	0%
21	Tennessee	Coal	41%	9.35	6.30	1%
22	North Carolina	Nuclear	31%	9.36	6.40	-9%
23	Alabama	Natural Gas	27%	9.37	6.09	13%
24	South Carolina	Nuclear	23%	9.48	5.98	16%
25	Nevada	Natural Gas	7%	9.48	6.74	3%
26	Georgia	Natural Gas	29%	9.52	5.73	-1%
27	Mississippi	Natural Gas	10%	9.55	6.64	10%
28	New Mexico	Coal	62%	9.68	6.17	-12%
29	Minnesota	Coal	44%	9.69	7.13	7%
30	Colorado	Coal	60%	9.78	7.08	-1%
31	Ohio	Coal	59%	9.90	6.88	0%
32	Kansas	Coal	54%	10.06	7.37	12%
33	Arizona	Coal	32%	10.40	6.26	7%
34	Pennsylvania	Nuclear	30%	10.41	7.24	-6%
	United States	Coal	33%	10.42	6.89	-2%
35	Florida	Natural Gas	18%	10.65	8.30	-7%
36	Michigan	Coal	46%	10.84	7.16	2%
37	Wisconsin	Coal	56%	10.93	7.77	1%
38	Delaware	Natural Gas	8%	11.21	8.24	-17%
	District of Columbia	Natural Gas	0%	12.08	8.83	-14%
39	Maryland	Nuclear	38%	12.14	8.64	-12%
40	Maine	Hydroelectric	1%	12.97	9.06	9%
41	New Jersey	Natural Gas	2%	13.93	10.89	-1%
42	Vermont	Hydroelectric	0%	14.36	10.13	-1%
43	New York	Natural Gas	2%	15.28	6.37	9%
44	California	Natural Gas	0%	15.50	12.33	10%
45	New Hampshire	Nuclear	5%	16.03	12.74	11%
46	Massachusetts	Natural Gas	7%	16.86	13.29	-7%
47	Rhode Island	Natural Gas	0%	17.05	13.90	11%
48	Connecticut	Nuclear	2%	17.76	12.98	-6%
49	Alaska	Natural Gas	11%	17.94	14.85	0%
50	Hawaii	Petroleum	14%	26.17	23.06	-2%

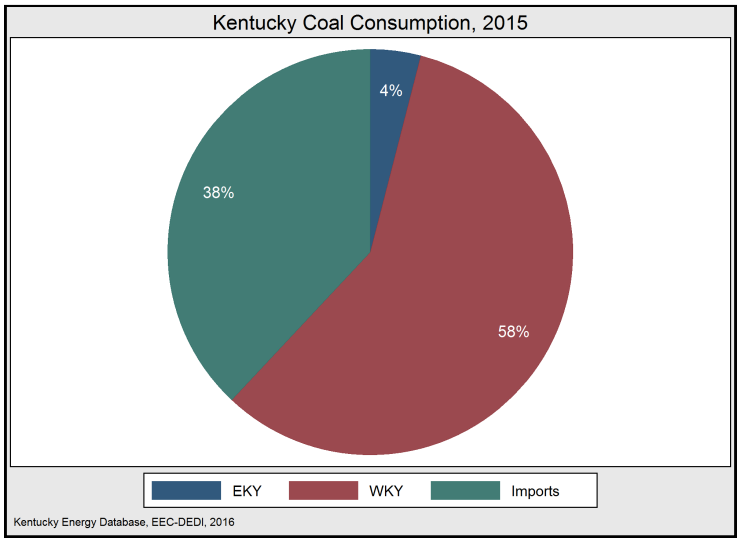
Coal-fired Power Plants in Kentucky

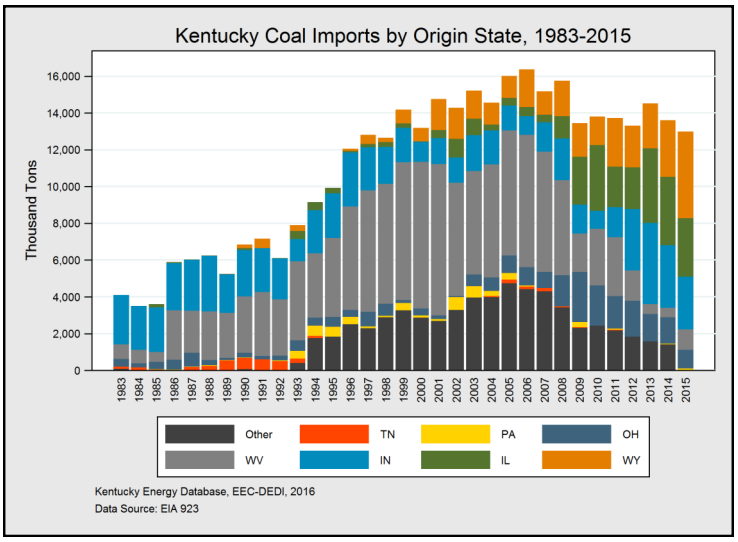


Power Plant	Nameplate Capacity (MW)	Years of Operation	Electric Utility/Operator	County	Phone
Coleman†	455	1969-2014	Big Rivers Electric Corp.	Hancock	(270) 844-6153
D. B. Wilson	420	1984-Present	Big Rivers Electric Corp.	Ohio	(270) 844-6154
R. D. Green	464	1979-Present	Big Rivers Electric Corp.	Webster	(270) 844-6155
Robert Reid†	65	1966-2015	Big Rivers Electric Corp.	Webster	(270) 844-6157
East Bend	669	1981-Present	Duke Energy	Boone	(513) 467-4830
H. L. Spurlock	1,609	1977-Present	East Kentucky Power Co-op	Mason	(859) 745-9452
John S. Cooper	344	1965-Present	East Kentucky Power Co-op	Pulaski	(859) 745-9450
William C. Dale†	216	1954-2016	East Kentucky Power Co-op	Clark	(859) 745-9451
HMP&L Station	312	1973-Present	Henderson Municipal	Webster	(270) 844-6156
Big Sandy†	1,076	1963-2015	Kentucky Power Company (AEP)	Lawrence	(606) 686-1403
E. W. Brown	739	1957-Present	Kentucky Utilities Company	Mercer	(859) 367-1105
Ghent	2,226	1974-Present	Kentucky Utilities Company	Carroll	(859) 367-1106
Green River†	114	1950-2015	Kentucky Utilities Company	Muhlenberg	(859) 367-1107
Tyrone†	71	1953-2012	Kentucky Utilities Company	Woodford	(859) 367-1109
Cane Run†	645	1962-2015	Louisville Gas & Electric Co.	Jefferson	(502) 627-2713
Mill Creek	1,717	1972-Present	Louisville Gas & Electric Co.	Jefferson	(502) 627-2714
Trimble County	1,243	1990-Present	Louisville Gas & Electric Co.	Trimble	(502) 627-2715
Elmer Smith	445	1964-Present	Owensboro Municipal	Henderson	(270) 926-3200
Paradise†	2,558	1970-Present	Tennessee Valley Authority	Muhlenberg	(270) 476-3301
Shawnee	1,750	1953-Present	Tennessee Valley Authority	McCracken	(270) 575-8162

† Facility has been retired, partially retired, is idled, or is in the process of conversion to natural gas-fueled units.

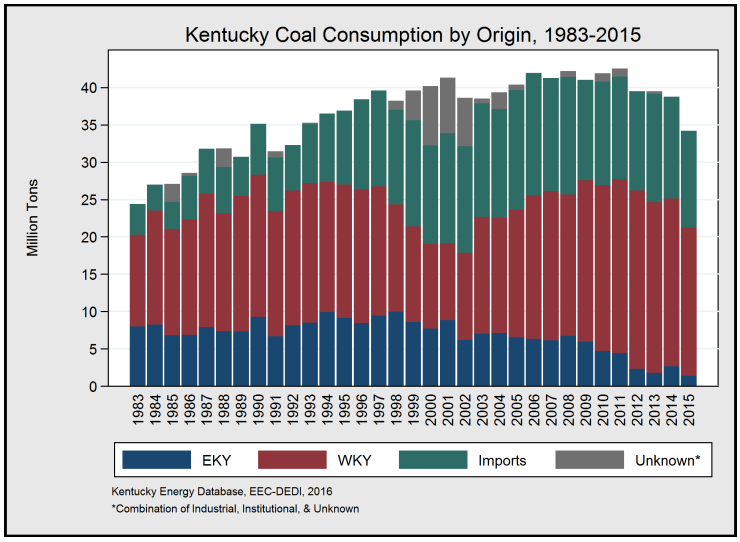
Kentucky Coal Consumption





Origin of Coal	Thousand Tons	1 Year Change
Total	34,177	-12%
Western Kentucky	19,809	-12%
Imports	12,991	-5%
Eastern Kentucky	1,377	-48%

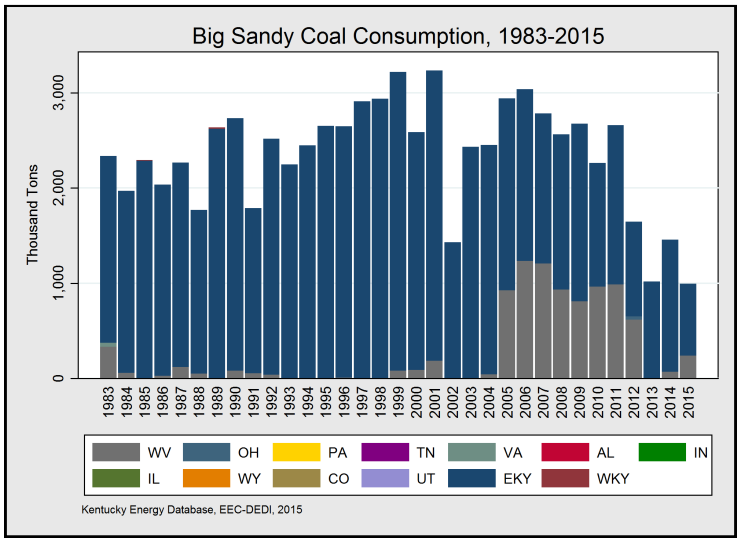
Imported Coal	Thousand Tons	1 Year Change
Total Imports	12,991	-5%
Wyoming	4,715	+53%
Illinois	3,180	-15%
Indiana	2,875	-15%
West Virginia	1,115	+120%
Ohio	1,008	-30%
Pennsylvania	98	+92%
Tennessee	<1	-97%

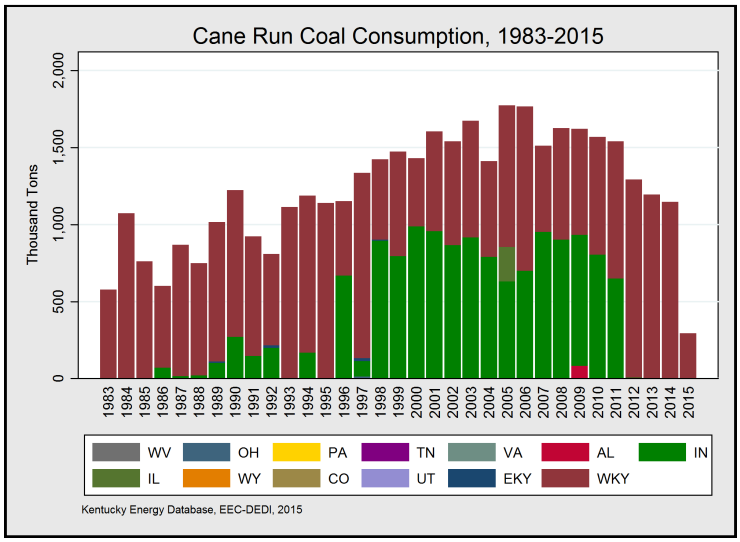


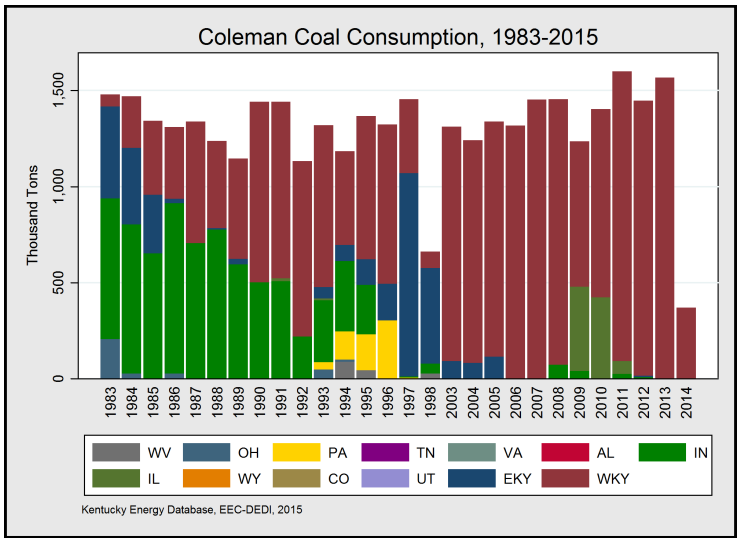
Coal consumption in Kentucky decreased by 12 percent in 2015 to 34.2 million tons. Coal mined in western Kentucky was by far the largest source of coal used within the Commonwealth, representing 58 percent of coal consumption. Conversely, coal from eastern Kentucky accounted for 4 percent of the coal consumed in Kentucky in 2015. Kentucky imported coal from 7 different states during 2015, totaling 13 million tons, or 38 percent of coal consumption.

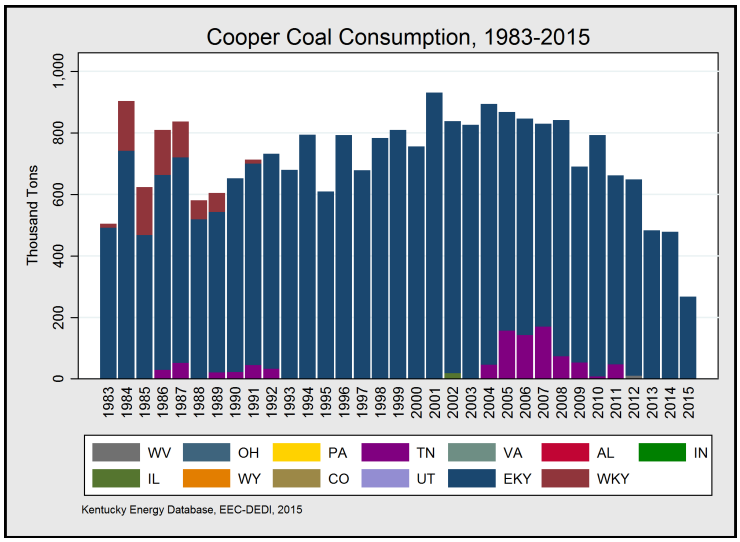
Several factors affect the use of imported coal in Kentucky including the price, delivery cost, heat content, and the sulfur content of a particular coal. For electrical power generation, utilities must balance the economic and environmental costs of these factors when purchasing coal. As a result, electric utilities, municipalities, and power producers often blend coal from a variety of sources to maintain a diversified, cost-effective fuel resource while complying with environmental regulations. Since 1990, electric utilities in Kentucky have increasingly used coal containing relatively higher sulfur content, a trend accelerated through the installation of sulfur dioxide scrubbers on many coal-fired generators throughout the state. Nationally, many other electric utilities have elected to install similar environmental control systems, thereby altering traditional coal sourcing requirements. The net result of these recent decisions in Kentucky has meant an increasing reliance on western Kentucky coal supplies, and a diminishing demand for eastern Kentucky coal. The relatively low price of coal from several western states has also increased imports for electric power generation.

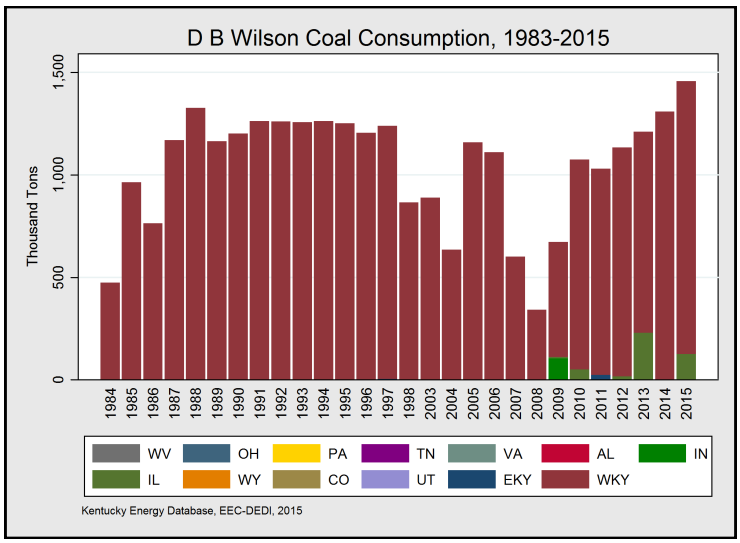
Kentucky In-State Coal Consumption

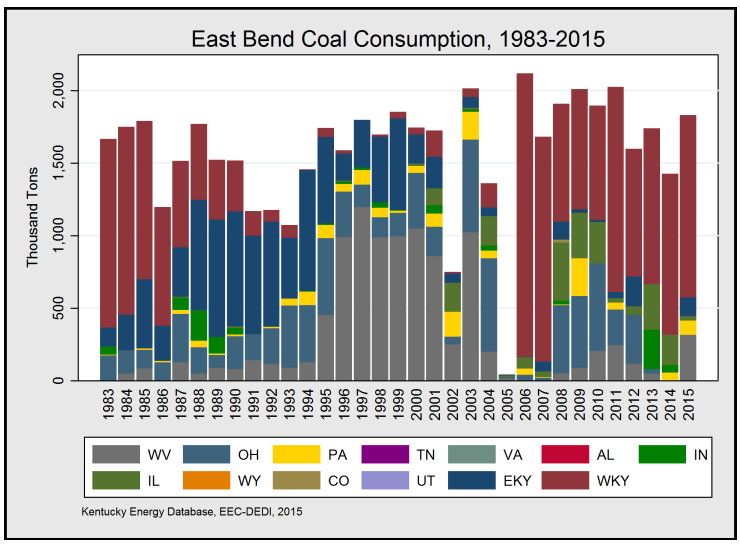




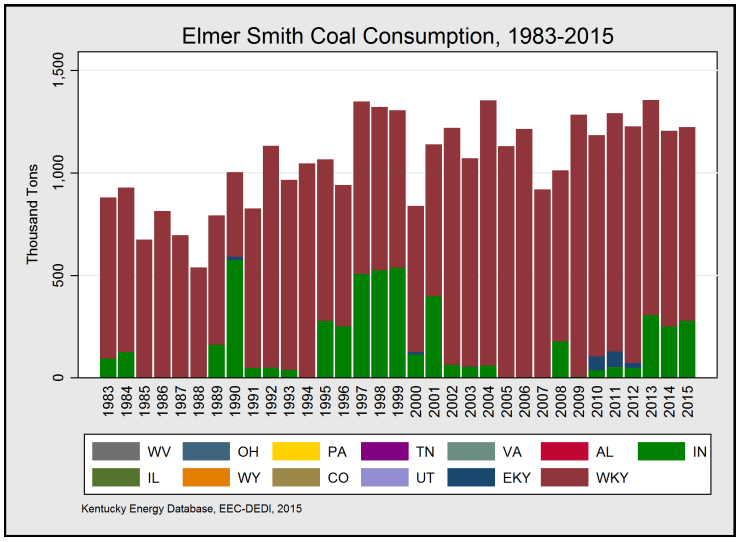


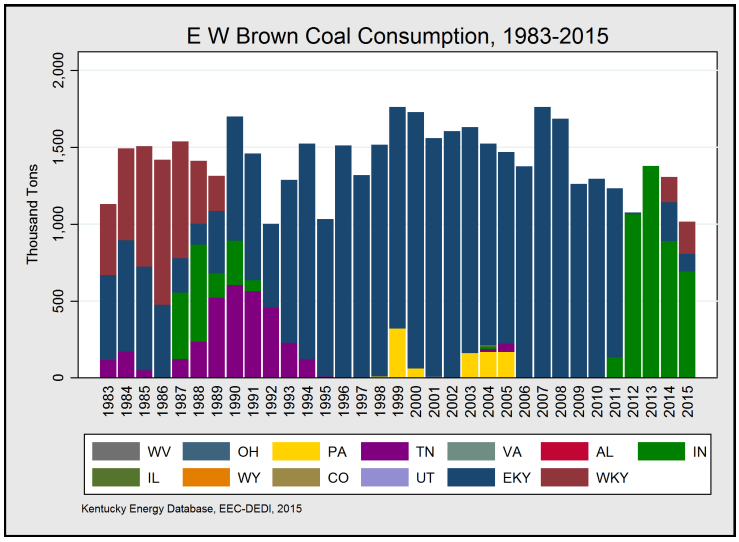


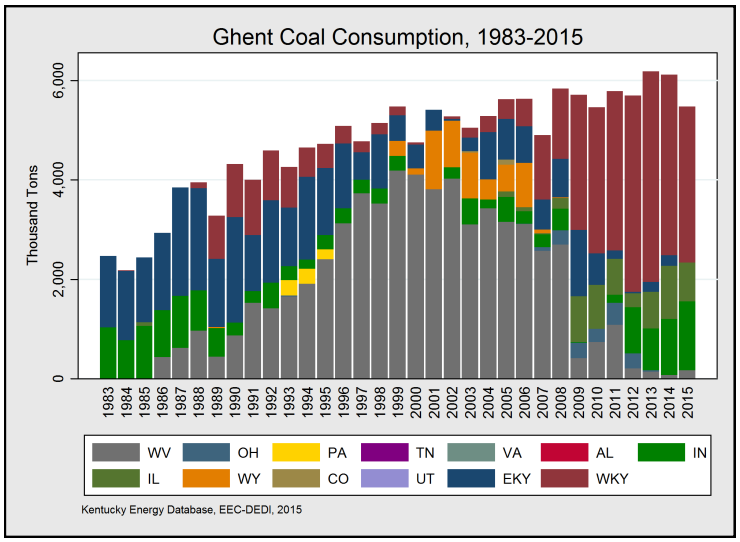


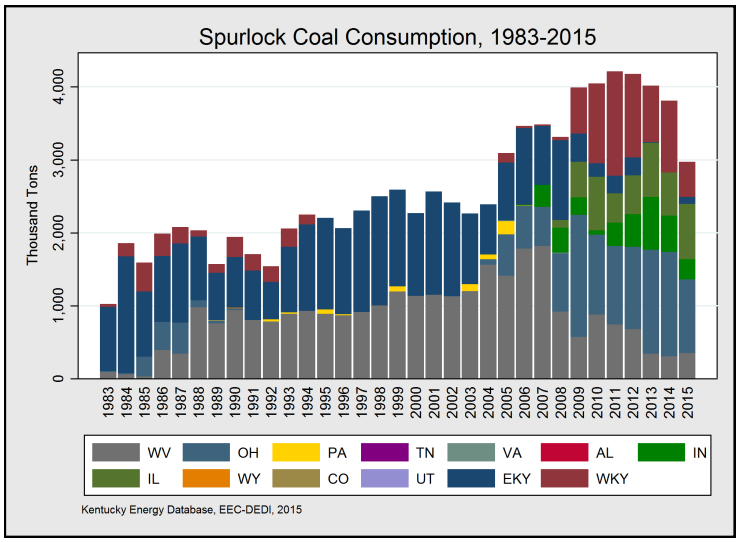


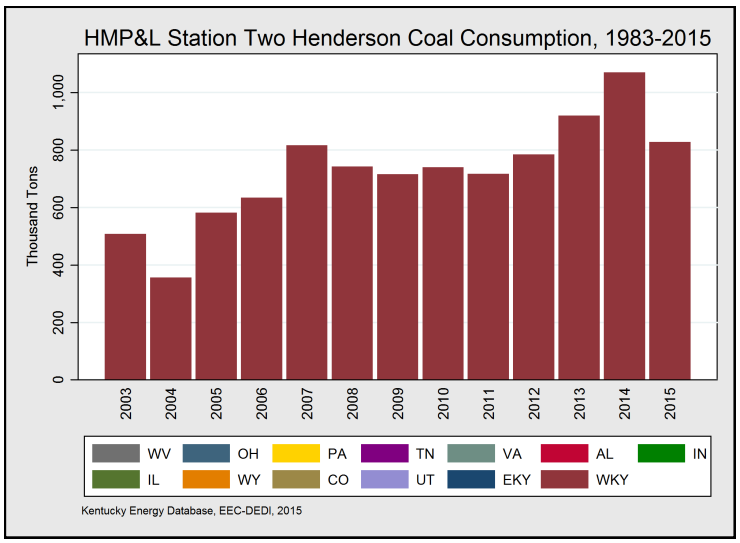
Kentucky In-State Coal Consumption

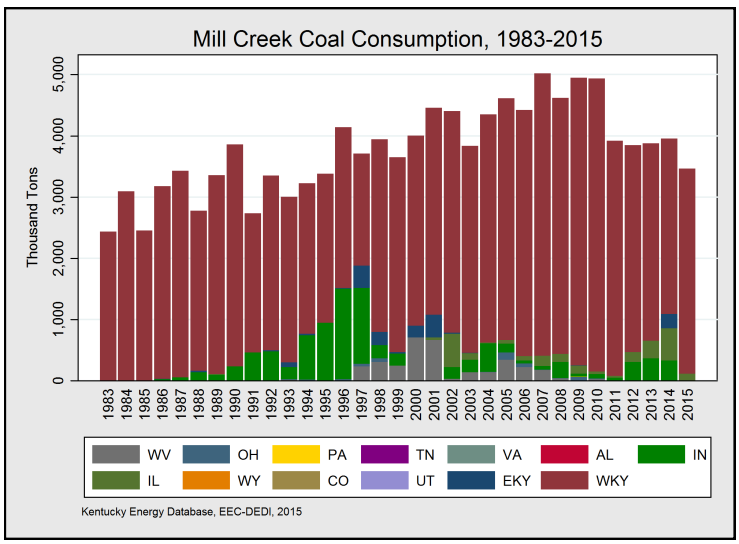




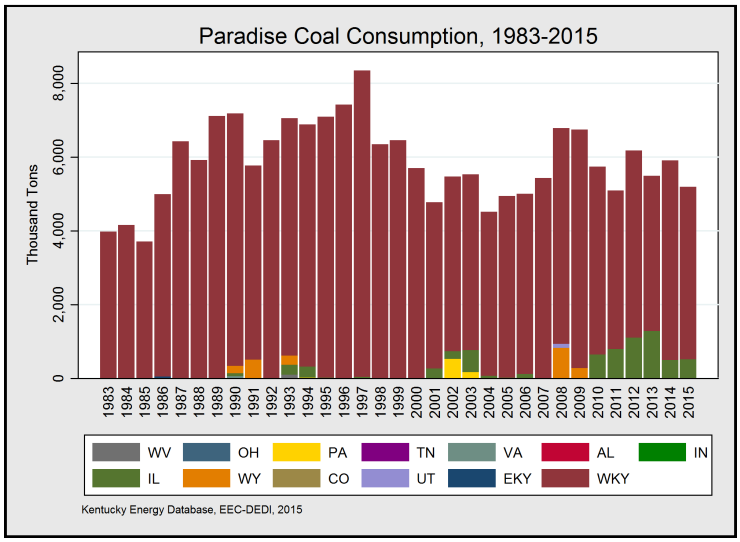


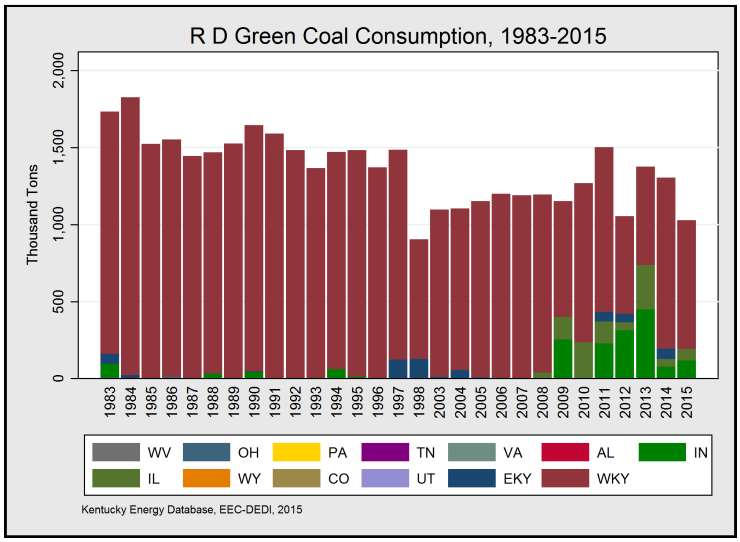


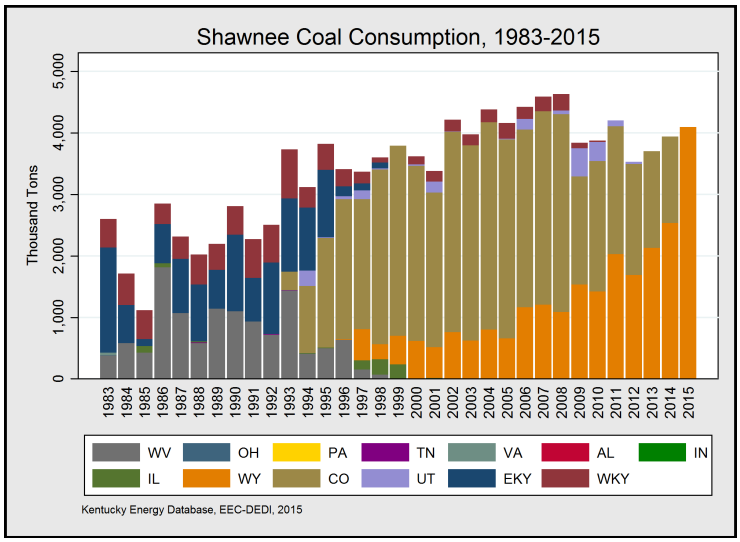


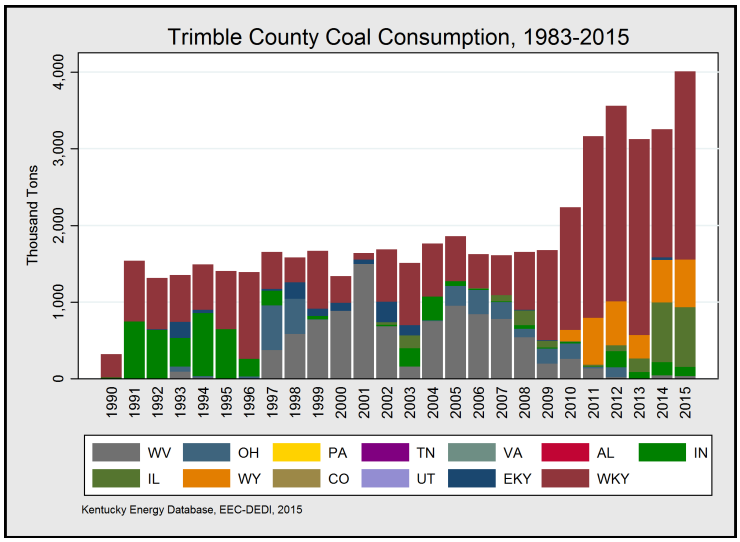


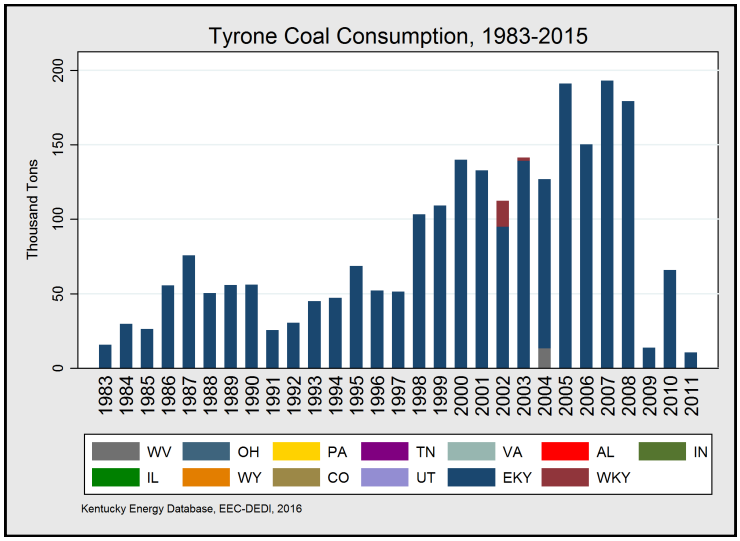
Kentucky In-State Coal Consumption

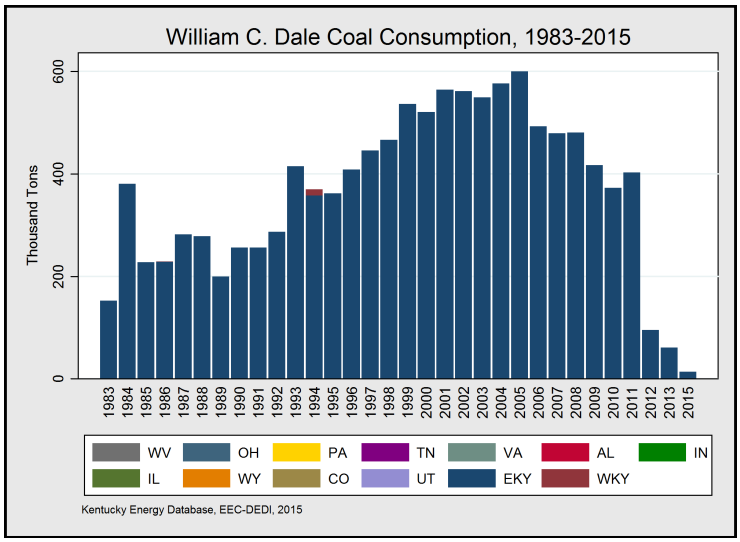




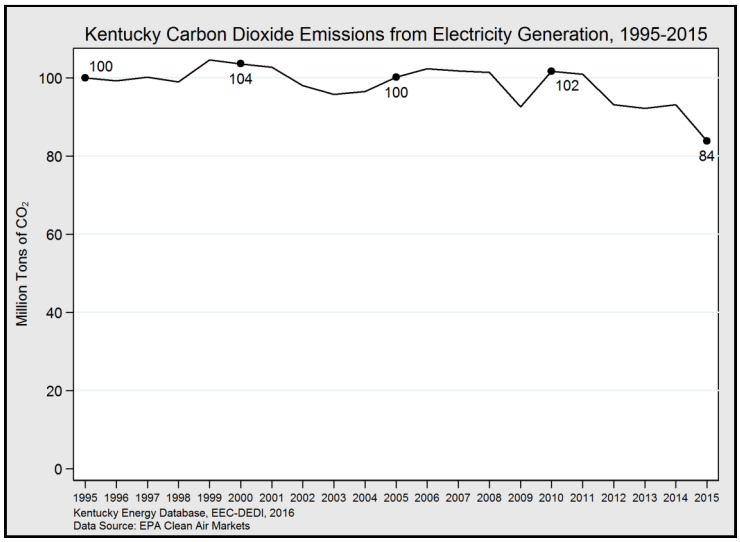


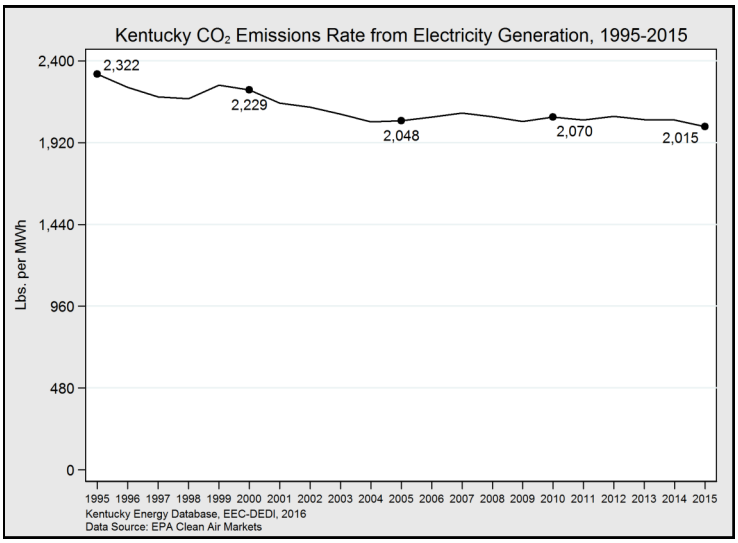






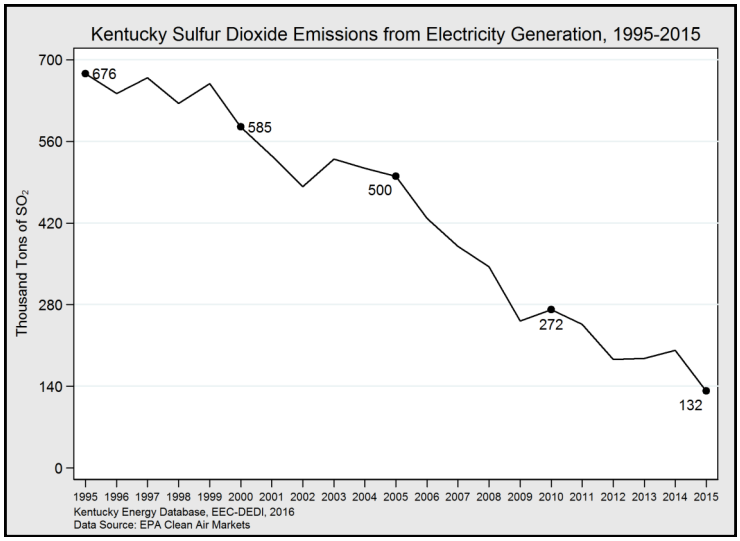
Kentucky Electric Power Emissions



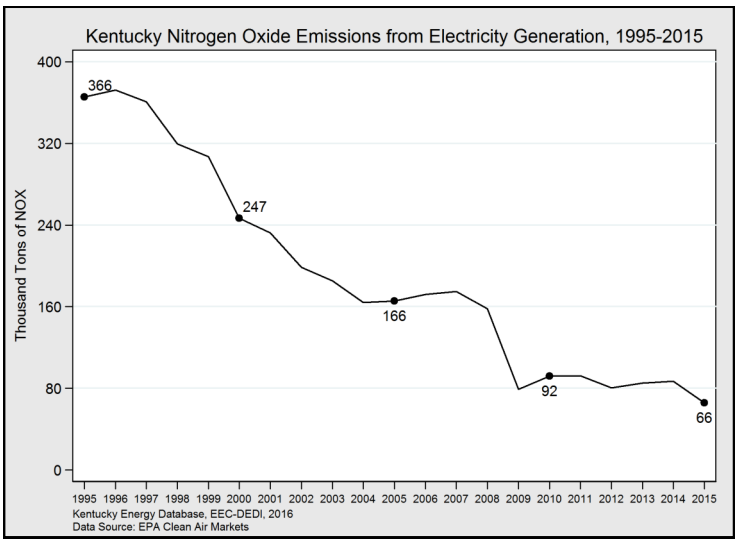


Emission	Tons	Since 1995
Carbon Dioxide	83,848,112	-16.0%
Sulfur Dioxide	131,697	-80.5%
Nitrogen Oxide	65,755	-82.0%

In 2015, power plants in Kentucky emitted 83 million short tons of carbon dioxide, a decrease of 10 percent from 2014. On a lbs/MWh basis, power plants have emitted almost 18 percent less carbon since 1995.



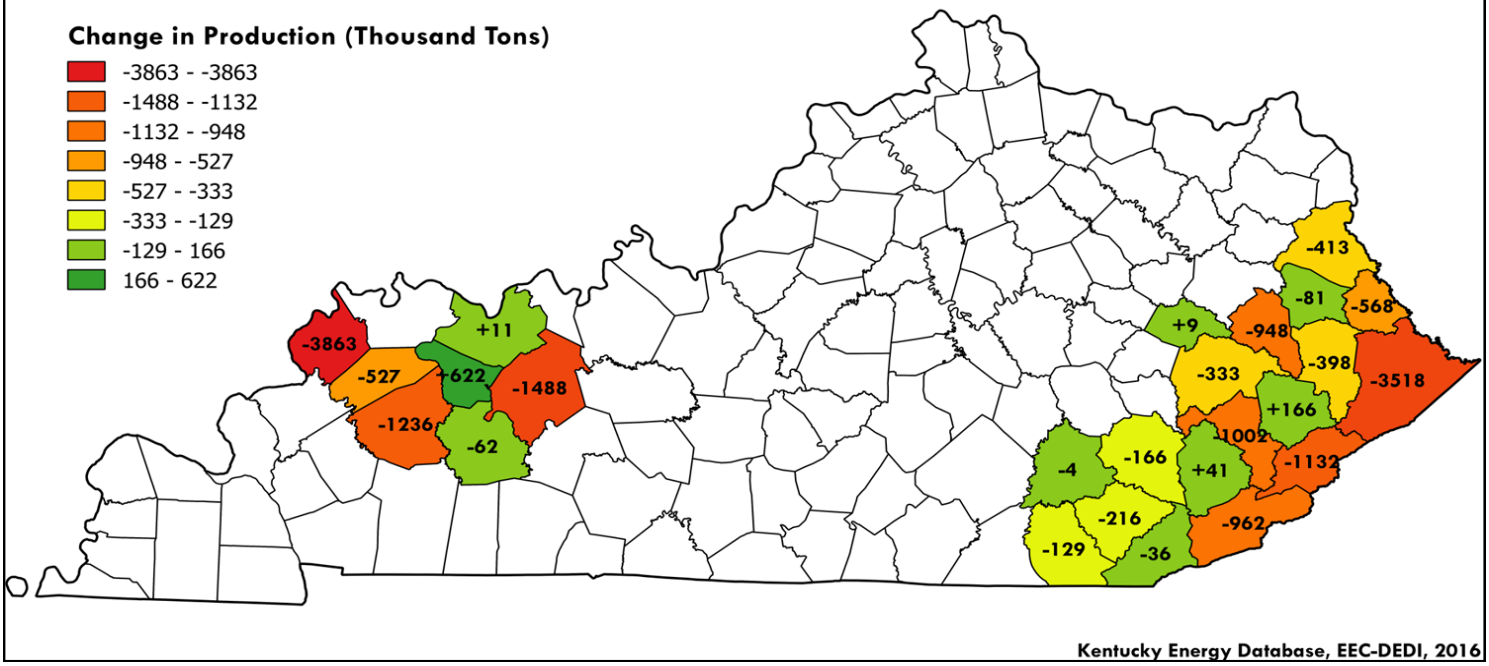
Sulfur dioxide (SO_2) is a highly reactive gas and major pollutant that is monitored and regulated by the state and federal government due to its connection to acid rain, incidence of asthma, and other respiratory problems. In 2015, the electric power sector of Kentucky emitted 131,697 tons of sulfur dioxide, an 80.5 percent decrease from 1995.



Nitrogen oxides (NO_x) are a group of highly reactive regulated pollutants: Nitric Oxide (NO), Nitrogen Dioxide (NO_2), and Nitrous oxide (N_2O). Nitrogen oxide, which is displayed here, has been shown to cause acid rain and exacerbate respiratory disease, while nitrous oxide, or laughing gas, is a greenhouse gas 312 times more potent than carbon dioxide. In 2015, the electric power sector of Kentucky emitted 65,755 tons of nitrogen oxide, a decrease of 82 percent from 1995.

Coal Production by County, 2015

Kentucky Coal Production Change, Q4-2014 to Q4-2015



Western Kentucky Coal Production by County, 2015			
Rank	County	Production (Tons)	1 Year Change
1	Union	9,114,413	-29.77%
3	Hopkins	6,844,611	-15.30%
4	Ohio	6,748,636	-19.05%
6	Webster	5,871,014	-8.24%
8	Muhlenberg	3,567,732	-1.60%
14	McLean	842,924	+281.57%
17	Daviess	334,672	+3.36%

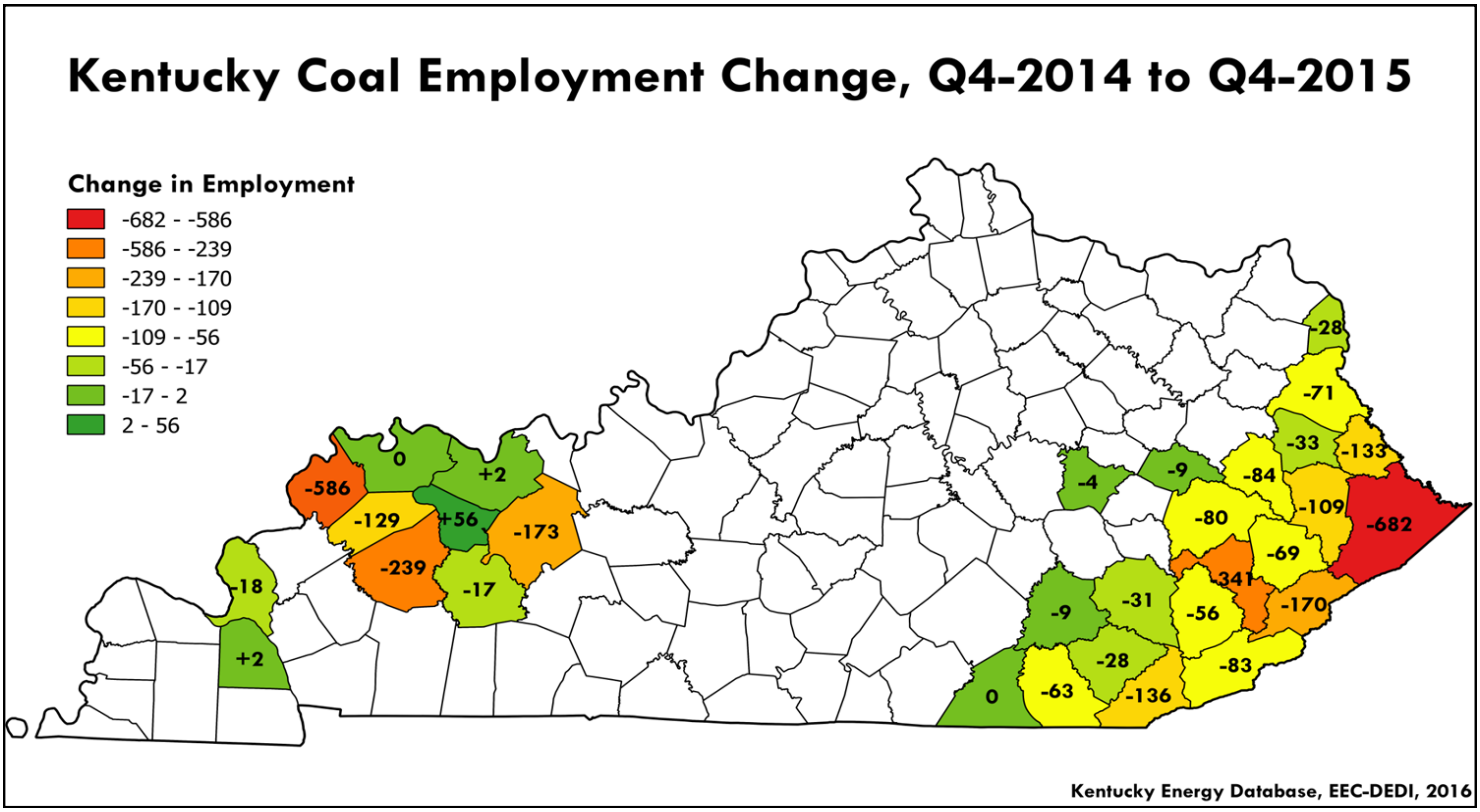
During 2015, there were 25 counties in Kentucky that registered coal production—seven in the western coalfield and 18 in the eastern coalfield.

56 of Kentucky's 120 counties have at some time registered some coal production since coal mining records began tracking coal mining in 1790, but within the past five years, just 35 counties have had coal mining operations.

Eastern Kentucky Coal Production by County, 2015			
Rank	County	Production (Tons)	1 Year Change
2	Pike	6,926,940	-33.69%
5	Perry	6,652,760	-11.01%
7	Harlan	3,827,478	-20.08%
9	Floyd	2,148,884	-15.00%
10	Knott	2,132,915	+7.18%
11	Martin	1,578,349	-22.76%
12	Leslie	1,437,000	+2.40%
13	Bell	1,382,103	-2.54%
15	Letcher	523,160	-68.30%
16	Lawrence	373,375	-52.36%
18	Magoffin	258,351	-78.58%
19	Whitley	253,477	-33.58%
20	Breathitt	251,064	-55.55%
21	Knox	180,748	-54.13%
22	Johnson	122,108	-39.95%
23	Wolfe	24,444	+57.30%
24	Laurel	8,668	-28.86%
25	Clay	8,514	-95.12%

Note: In the following county profiles, some pie graphs may not sum to 100 percent due to rounding error. In all instances the margin of error is less than or equal to 1 percent.

Coal Employment by County, 2015



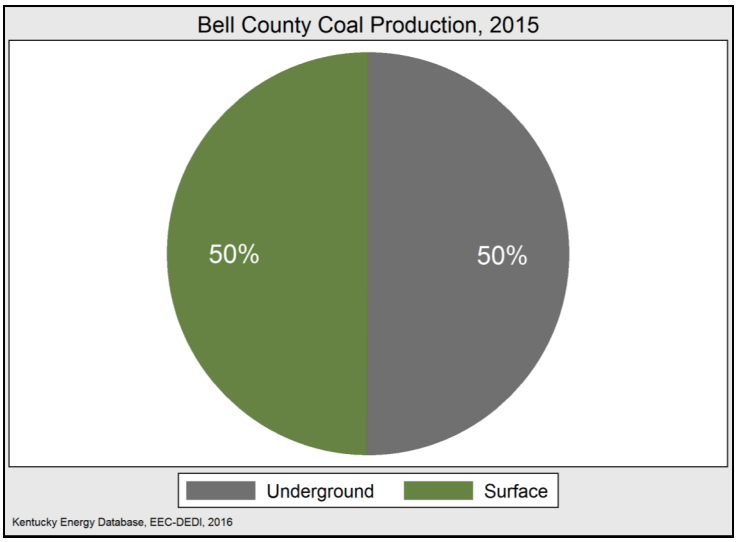
Western Kentucky Coal Employment by County, 2015			
Rank	County	Employment	1 Year Change
3	Hopkins	874	-10.83%
5	Union	689	-44.48%
6	Ohio	686	-15.41%
7	Webster	650	-4.27%
8	Muhlenberg	469	+1.08%
16	McLean	142	+86.84%
22	Marshall	44	+0.0%
25	Daviess	28	-17.39%
27	Livingston	23	-41.03%
30	Henderson	5	-33.06%

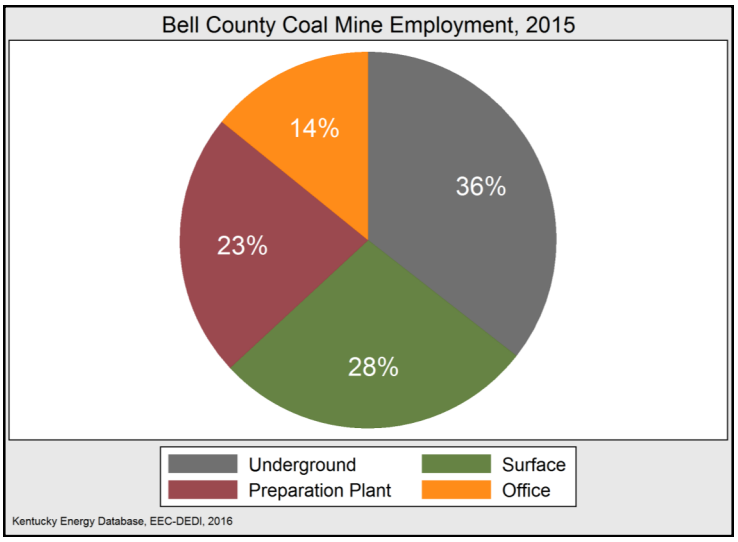
32 counties registered coal employment during 2015 with 10 counties registering in western Kentucky and 22 in the east. The discrepancy in counties with coal employment and production results from five counties with preparation plants but no active mining. The following counties recorded coal-related labor hours, such as coal processing, in 2015, but produced no coal: Boyd, Estill, Livingston, Marshall, and McCreary.

**Note: The employment figures in this document (including 1 year percent change) are annual averages. This is a methodological change from previous versions of this publication in which the employment figures from the final quarter of each year were used.*

Eastern Kentucky Coal Employment by County, 2015			
Rank	County	Employment	1 Year Change
1	Pike	1,591	-16.45%
2	Perry	966	-12.43%
4	Harlan	867	-13.36%
9	Floyd	432	-13.89%
10	Martin	401	-15.01%
11	Bell	376	-7.92%
12	Knott	252	-18.92%
13	Leslie	245	-15.52%
14	Letcher	185	-50.9%
15	Whitley	160	-3.64%
17	Knox	116	-27.38%
18	Lawrence	73	-45.36%
19	Magoffin	52	-65.56%
20	Johnson	51	-35.54%
21	Breathitt	48	-45.07%
23	Boyd	44	-31.65%
24	Estill	36	+12.5%
26	Clay	24	-56.97%
28	Laurel	11	-16.23%
29	Wolfe	10	+0.00%
31	McCreary	4	+0.00%
32	Owsley	3	+0.00%

Bell County

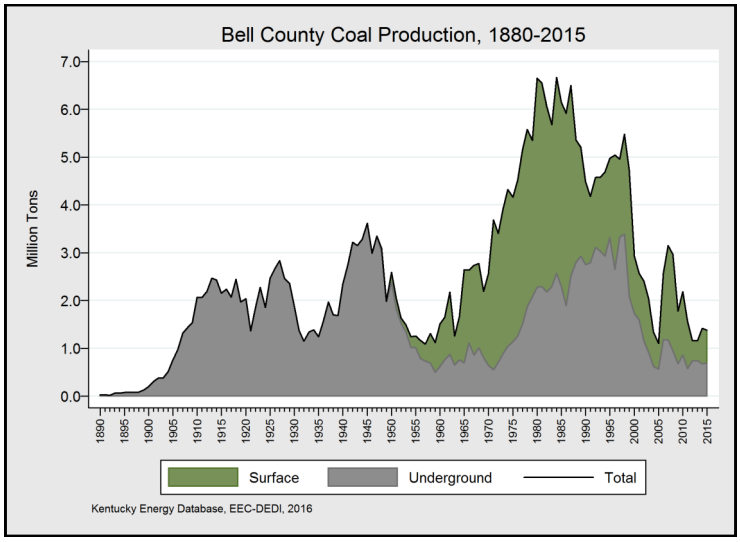


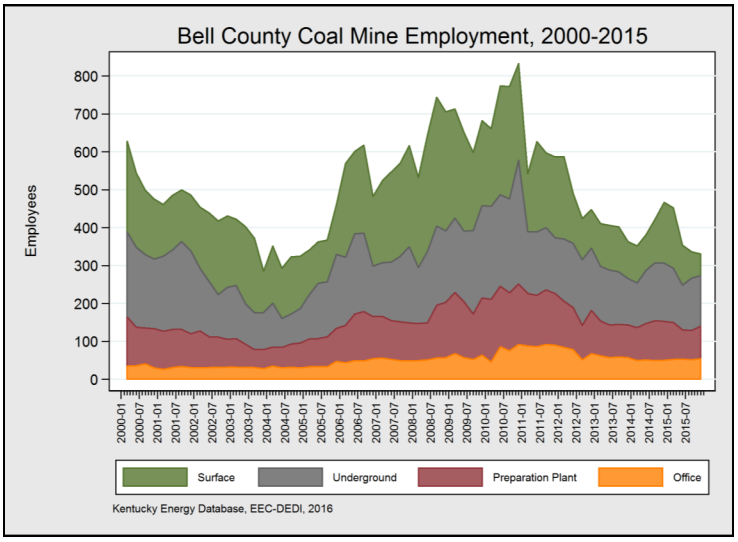


Production Method	Mines	Production	Annual Change
Total	15	1,382,103	-2.54%
Surface	11	689,057	-6.87%
Underground	4	693,046	+2.19%

On-Site Activity	Employment	Annual Change
Total	376	-7.92%
Surface	104	-11.21%
Underground	134	-5.91%
Preparation Plant	85	-12.22%
Office	53	+5.36%

In 2015, 15 coal mines produced 1.38 million tons of coal in Bell County. Over half of that coal came from underground mining operations.

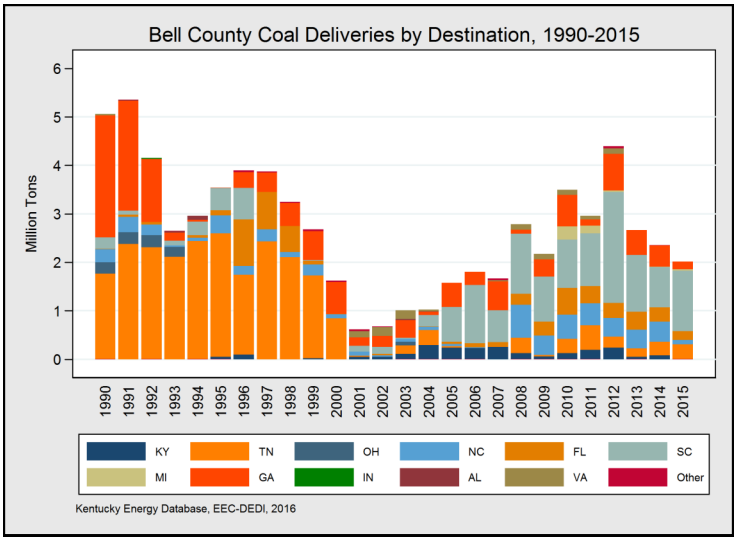


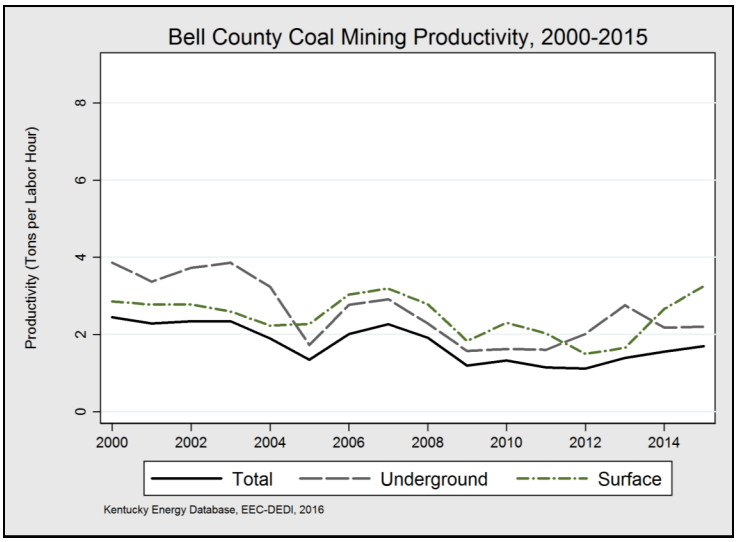


In 2015, Bell County coal production decreased by 2.54 percent. Surface mining production fell by 6.87 percent, while underground operations increased production by 2.19 percent in 2015. Coal has been mined in Bell County since 1879 when the first 272 tons of coal were extracted. Between 1879 and 2015, more than 317 million tons of coal have been extracted in Bell County. Coal production has declined by 79.25 percent since peaking in 1984 at 6.65 million tons.

Coal mines and preparation plants in Bell County employed an average of 376 full-time employees in 2015, a decrease of 7.92 percent from 2014. There were 134 underground miners in 2015, a decrease of 5.91 percent, and 104 surface miners, a decline of 11.21 percent. Coal mine employment in Bell County peaked in 1948 at 4,806 employees. The 376 employees in 2015 show a 92.18 percent decrease in employment since that point.

Bell County





State and Power Plant	Deliveries (Tons)	Percentage
Total	**2,014,243**	**100%**
South Carolina	**1,244,394**	**61.8%**
Winyah	382,368	19.0%
Williams	381,613	18.9%
Cross	349,843	17.4%
Wateree	78,535	3.9%
Cope	52,035	2.6%
Tennessee	**302,151**	**15.0%**
Tennessee Eastman	290,360	14.4%
Bull Run	11,791	0.6%
Florida	**182,920**	**9.1%**
Cedar Bay Generating Company LP†	149,998	7.4%
Crystal River†	32,922	1.6%
Georgia	**155,477**	**7.7%**
Bowen	155,477	7.7%
North Carolina	**88,013**	**4.4%**
James E. Rogers Energy Complex	50,715	2.5%
Marshall	37,298	1.9%
Michigan	**34,305**	**1.7%**
Monroe	34,305	1.7%
Kentucky	**6,983**	**0.3%**
Cooper	6,983	0.3%

Chemical Composition and Cost

Coal mined in Bell County had a median sulfur content of 0.99 percent, a median ash content of 8.1 percent, and a median heat content of 25.44 MMBtu per ton. The median delivered price per ton was $92.08. The median delivered price per MMBtu of Bell County coal was $3.58.

Bell County Coal Market

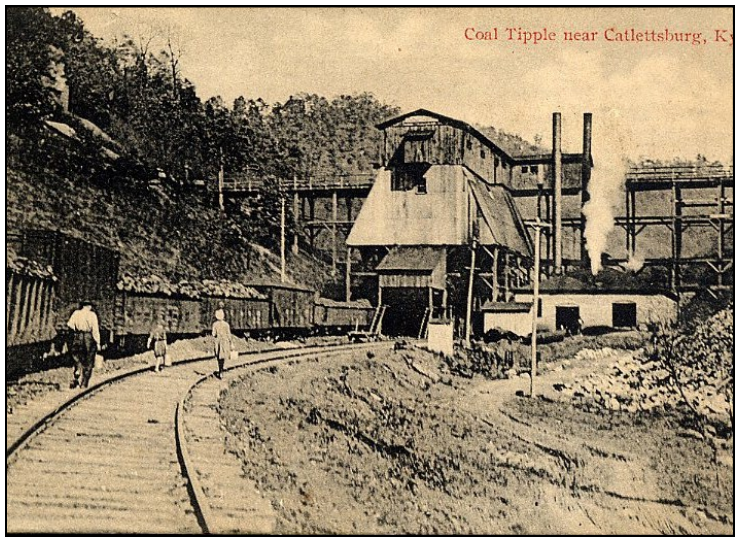
South Carolina was once again the largest market for Bell County coal, where five power plants received over 1.2 million tons in 2015, or 61.8 percent of total Bell County shipments. In 2015, Bell County sent coal to two power plants in Tennessee, totaling 302,151 tons. Overall, coal shipments decreased by 4.75 percent from 2014.

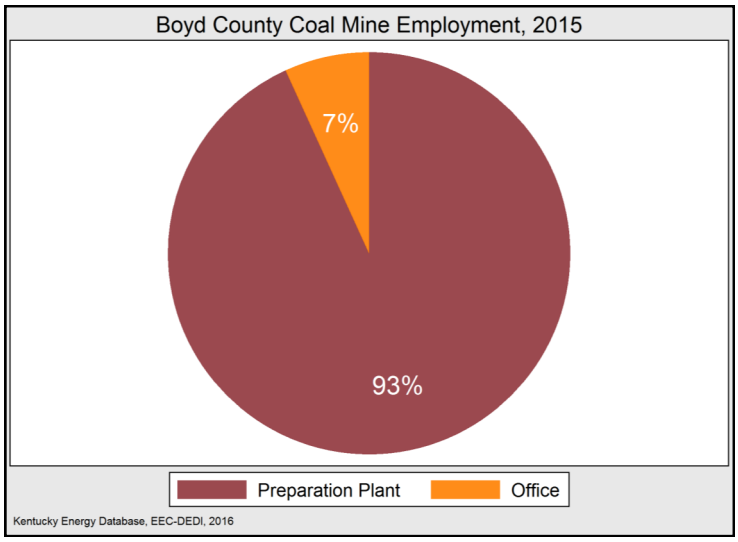
Bell County Coal Mining Productivity

Bell County productivity, the amount of coal produced per labor hour, has steadily increased since 2012 as the less competitive and more costly coal mines in the county have closed. The largest increase in productivity has been at surface mines, where productivity has increased from 1.65 tons per labor hour in 2013 to 3.25 tons per labor hour in 2015.

† The closure, or partial closure, of this power plant has been announced for 2015-2022.

Boyd County

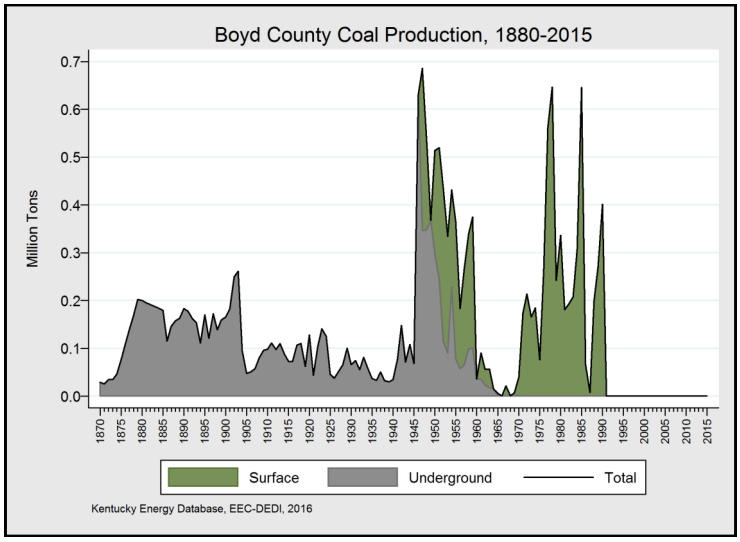


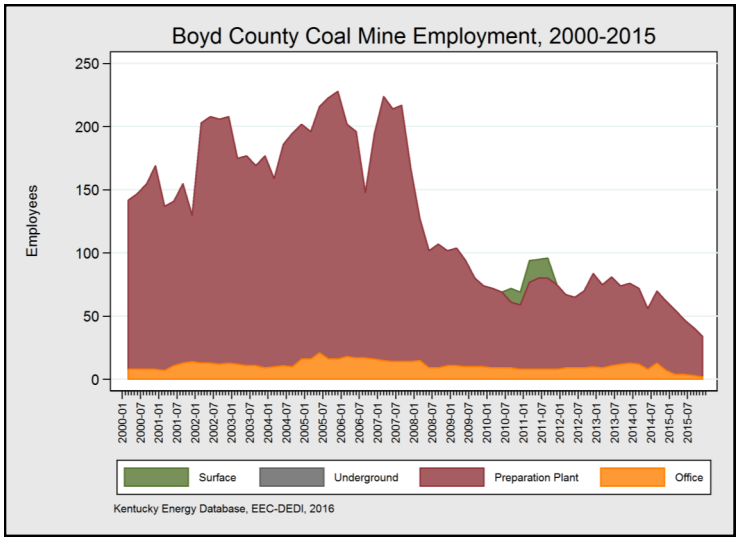


The motto of Boyd County is "Where Coal Meets Iron." The area that would become Boyd County was ideally located for both coal and iron production to begin in the 1830's with access to the eastern coalfield, the Ohio River, and major railroads. *Pictured above: a postcard of a coal tipple in Boyd County near Catlettsburg. Tipples are used to load extracted coal from the mines onto train cars. Mine cars literally tip their coal into railroad hopper cars.*

On-Site Activity	Employment	Annual Change
Total	44	-31.65%
Preparation Plant	41	-25.32%
Office	3	-67.38%

Given the absence of production since 1990, preparation plants and terminals have been the largest source of direct coal industry employment in Boyd County over the last two and a half decades.

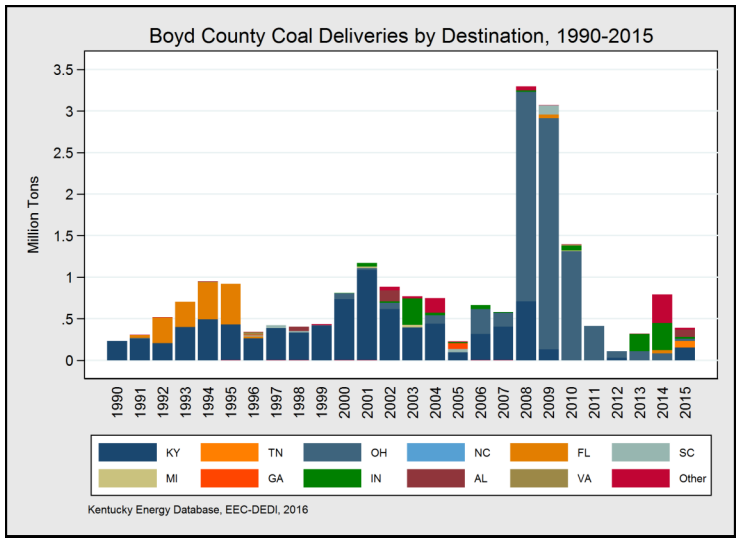




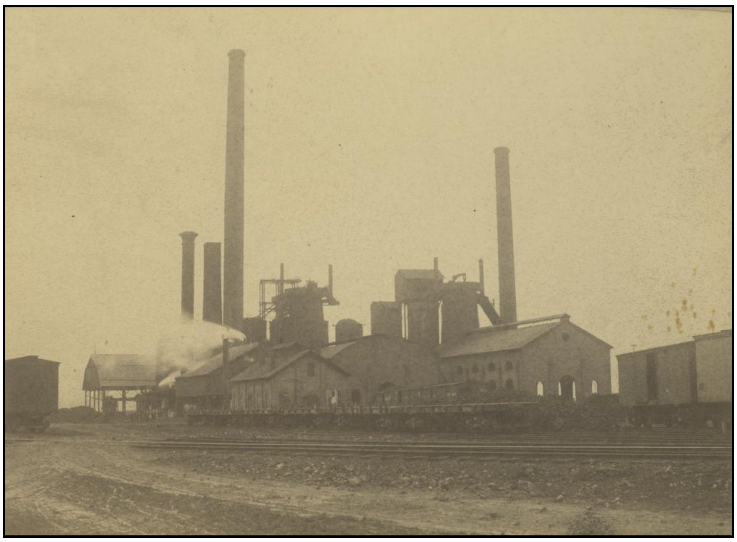
Although Boyd County has not mined coal since 1990, more than 19.9 million tons have been mined since 1838. Prior to becoming a county, the area that would become Boyd County produced roughly 1,000 tons a year from 1838 to 1860, which was used to power local iron furnaces. After production stopped during the Civil War, coal production increased to 200,000 tons annually by 1879. Production peaked after World War II in 1947 at 686,145 tons. Large scale surface production began in 1970 and peaked in 1985 at 645,885 tons.

To this day, Boyd County continues to process and export coal, although significantly less than a decade ago. There were an average of 44 employees operating coal preparation plants in 2015, a decrease of 25.32 percent from 2014. Additionally, an average of 3 individuals were employed in coal offices in 2015. Steel production continued in Boyd County through 2015.

Boyd County



State and Power Plant	Deliveries (Tons)	Percentage
Total	**417,789**	**100%**
Kentucky	**179,567**	**43.0%**
East Bend	127,311	30.5%
Big Sandy†	52,256	12.5%
Alabama	**88,990**	**21.3%**
Colbert†	88,990	21.3%
Tennessee	**78,027**	**18.7%**
Cumberland	78,027	18.7%
Ohio	**25,795**	**6.2%**
W H Zimmer	25,795	6.2%
West Virginia	**23,280**	**5.6%**
Ceredo	23,280	5.6%
Indiana	**22,130**	**5.3%**
R Gallagher	22,130	5.3%



Picture: Ashland Coal and Iron Company's Furnace circa late 19th Century.

Boyd County Coal Market

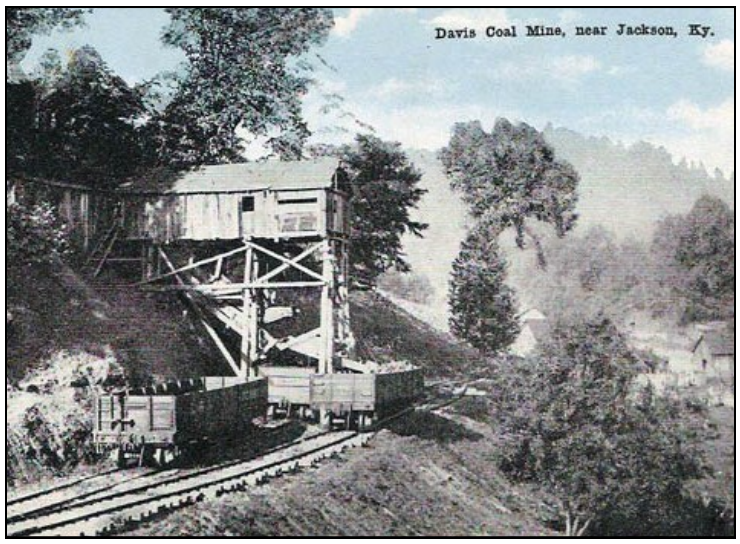
Though Boyd County no-longer mines coal, it did prepare and ship coal from surrounding counties to buyers outside of Kentucky. Coal shipments from the county totaled 417,789 tons in 2015. Of the coal shipped from Boyd County during 2015, 30.5 percent went to East Bend power plant in Boone County, Kentucky and 21.3 percent went to Colbert power plant in Cherokee, Alabama.

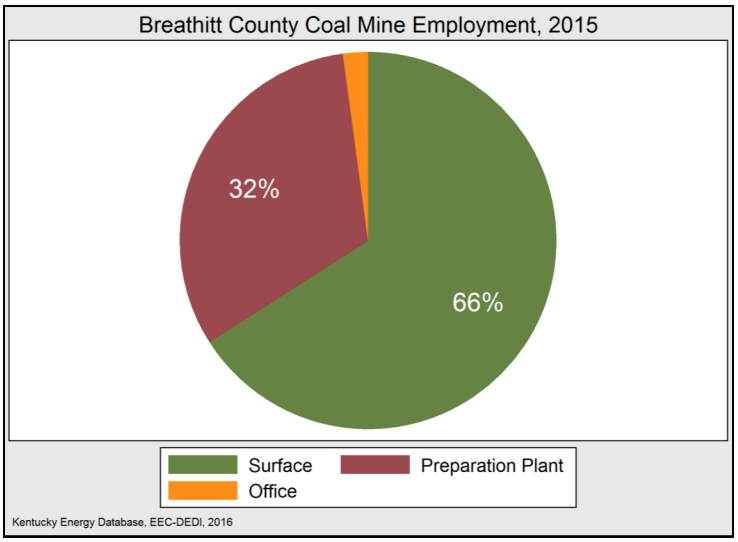
Chemical Composition and Cost

On average, coal exported from Boyd County had a median sulfur content of 0.95 percent, a median ash content of 10.74 percent, and a median heat content of 23.87 MMBtu per ton. The average delivered price per ton for Boyd County coal in 2015 was $51.95. The median price per MMBtu of Boyd County coal was $2.16.

† The closure, or partial closure, of this power plant has been announced for 2015-2022.

Breathitt County

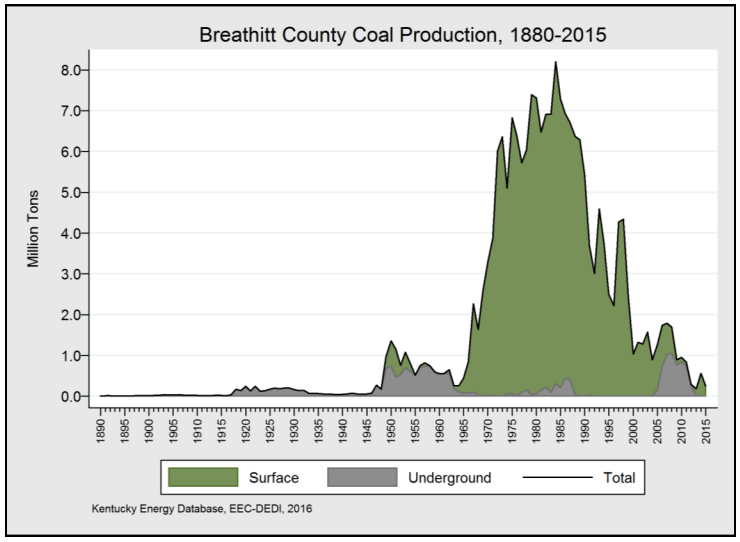


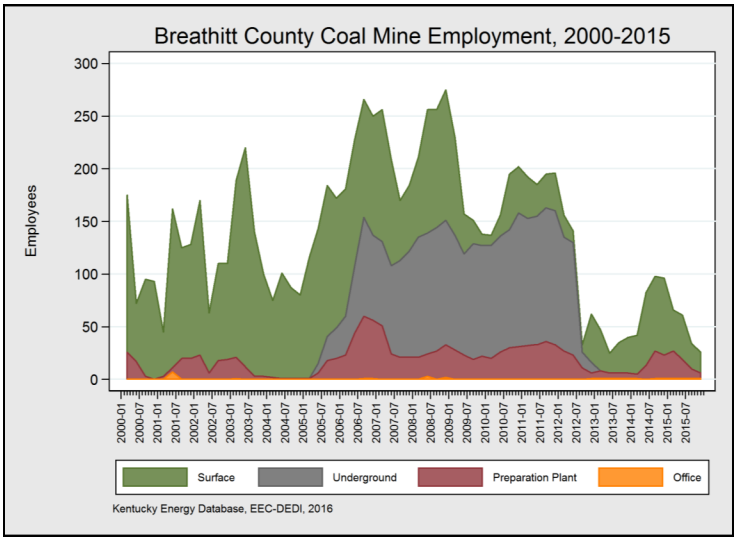


Production Method	Mines	Production	Annual Change
Total	1	251,064	-55.55%
Surface	1	251,064	-55.55%

On-Site Activity	Employment	Annual Change
Total	48	-45.07%
Surface	31	-51.42%
Preparation Plant	16	-18.70%
Office	1	0%

1 mine in Breathitt County produced 251,064 tons of coal in 2015, a decline of 55 percent. *Pictured above: Davis Coal Mine tipple near Jackson in Breathitt County.*

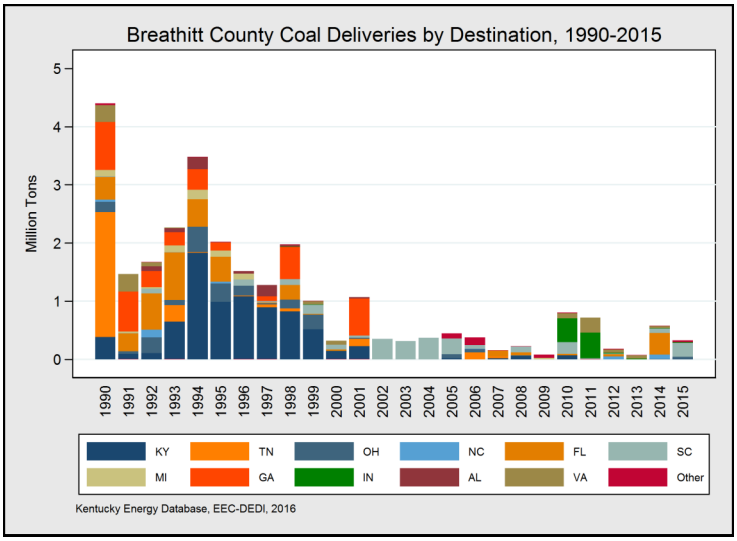


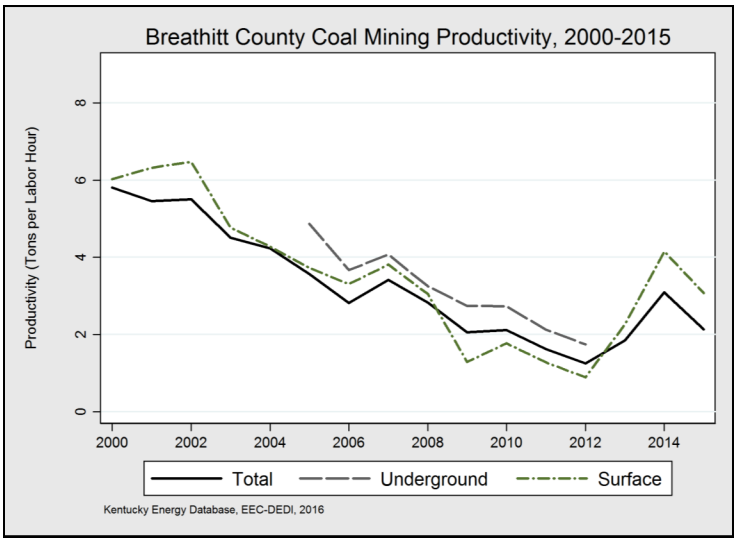


Coal production in Breathitt County decreased by over half in 2015 compared to 2014, falling from 564,817 tons to 251,064 tons. This was less than 1 percent of statewide production for the year. The first recorded coal production in Breathitt County was 200 tons in 1837. During 178 years of coal mining, 203 million tons of coal have been extracted from the county. Surface operations excavated most of the coal from the county from 1964 to 2007. Coal production peaked at 8.2 million tons in 1984 and has declined by 96.94 percent thereafter.

Breathitt County coal mines and preparation plants employed an average of 48 on-site employees in 2015, a decrease of 45 percent from 2015. The majority of these jobs were held by 31 surface miners. Preparation plant employment averaged 16 and office employment averaged 1 during 2015. Underground mining in Breathitt County stopped in 2013. County level coal mine employment peaked at 1,163 in 1950 and has declined by 95.96 percent through 2015.

Breathitt County





State and Power Plant	Deliveries (Tons)	Percentage
Total	**322,382**	**100%**
South Carolina	**239,206**	**74.2%**
Winyah	177,410	55.0%
Cross	50,618	15.7%
International Paper Georgetown Mill	11,178	3.5%
Ohio	**39,113**	**12.1%**
General James M Gavin	32,223	10.0%
Muskingum River†	6,890	2.1%
West Virginia	**26,555**	**8.2%**
Kammer†	26,555	8.2%
Indiana	**12,807**	**4.0%**
Tanners Creek†	7,920	2.5%
Rockport	4,887	1.5%
Kentucky	**4,701**	**1.5%**
William C. Dale	3,050	0.9%
R D Green	1,651	0.5%

Breathitt County Coal Market

In 2015, Breathitt County coal deliveries declined by just over 40 percent from 2014 levels, falling from 544,060 tons to 322,382 tons. Nearly all of Breathitt County coal was exported to states other than Kentucky in 2015. South Carolina received 74.2 percent of Breathitt County's production, the majority of which went to Winyah power plant. Ohio, West Virginia, and Indiana received 12.1, 8.2, and 4.0 percent of Breathitt County coal respectively in 2015.

Breathitt County Coal Mining Productivity

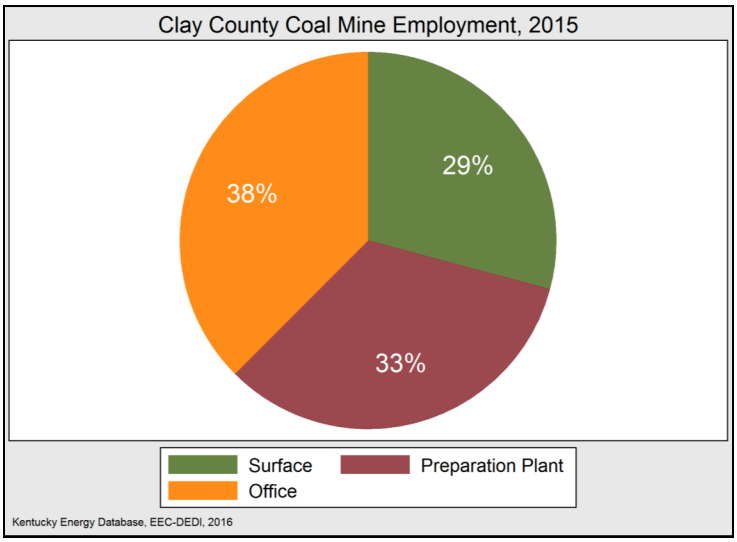
Breathitt County's productivity in 2015, including labor hours at the county's preparation plants, decreased to 2.44 tons per labor hour from 3.09 tons per labor hour in 2014. County productivity has decreased by more than 57 percent from the year 2000. The county's surface mines alone averaged 3.61 tons per labor hour.

Chemical Composition and Cost

Coal mined in Breathitt County had a median sulfur content of 1.22 percent, a median ash content of 10 percent, and a median heat content of 24.01 MMBtu per ton. Breathitt County coal had median delivered price per ton of $71.06. Breathitt County coal had a median of $3.15 per MMBtu.

† The closure, or partial closure, of this power plant has been announced for 2015-2022.

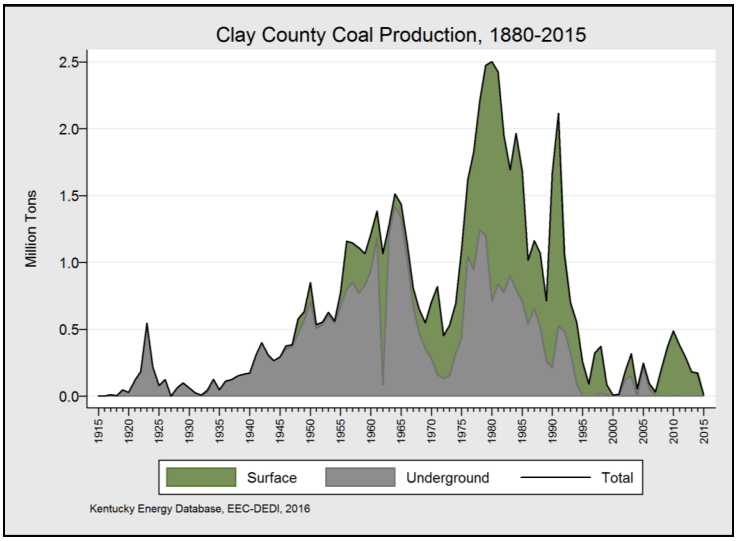
Clay County

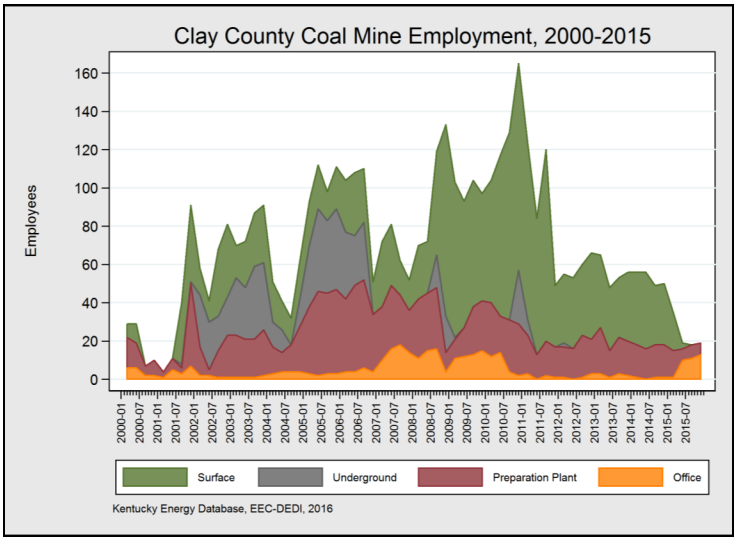


Production Method	Mines	Production	Annual Change
Total	0	8,514	-95.12%
Surface	0	8,514	-95.12%

On-Site Activity	Employment	Annual Change
Total	24	-56.97%
Surface	7	-79.77%
Preparation Plant	8	-51.78%
Office	9	+1,062.5%

The last active coal mine in Clay County mined 8,514 tons of coal in 2015. *Pictured above: a Clay County coal tipple and railroad in 1969, courtesy of the University of Kentucky Libraries.*

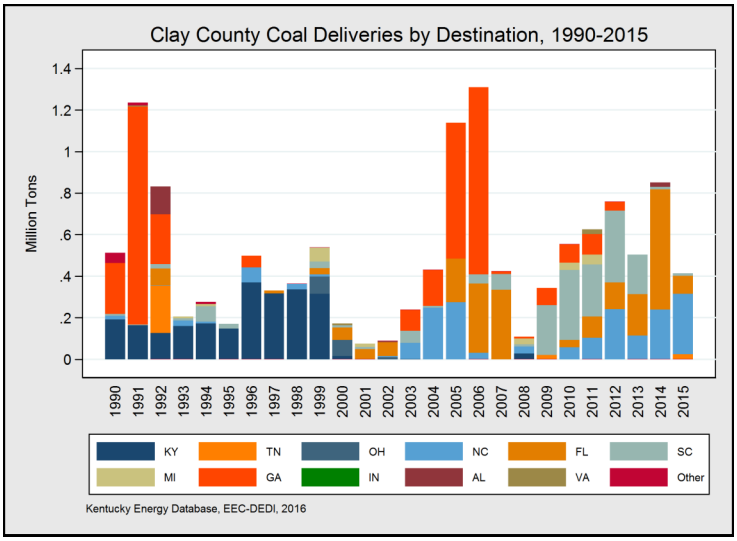


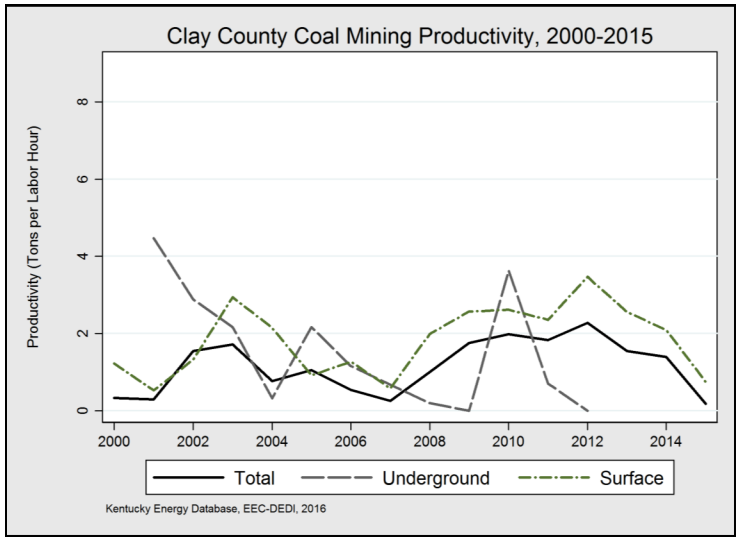


Clay County produced 8,514 tons of coal in 2015, a decrease of 95.12 percent from 2014. Clay County has mined coal since 1829, but production did not exceed 10,000 tons annually until 1917. Production peaked at 2.5 million tons in 1980 and has declined by 99.66 percent through 2015. All of the coal mined in Clay County in recent years has come from surface mines.

Clay County coal mines employed an average of 24 on-site employees in 2015, a decrease of 56.97 percent from 2014. The jobs were dispersed fairly equal among surface mining, preparation plant operation, and office employment. Surface mining employed 7 workers, while coal preparation plants employed 8 and 9 people worked in an on-site office. From 1950 to 1987, 1,200 coal miners were employed in Clay County, on average. Coal mining employment has decreased by 99 percent since peaking at 2,411 in 1984.

Clay County





State and Power Plant	Deliveries (Tons)	Percentage
Total	**413,549**	**100%**
North Carolina	**291,880**	**70.6%**
James E. Rogers Energy Complex	279,169	67.5%
Marshall	12,711	3.1%
Florida	**85,700**	**20.7%**
Cedar Bay Generating Company LP†	50,972	12.3%
Crystal River†	34,728	8.4%
Tennessee	**23,132**	**5.6%**
Bull Run	23,132	5.6%
South Carolina	**12,837**	**3.1%**
Wateree	12,837	3.1%

Clay County Coal Market

Clay County coal deliveries declined by 54 percent in 2015, falling from 900,087 tons in 2014 to 413,549 tons. Just over 70 percent of Clay County's coal exports were shipped to North Carolina, with the vast majority going to the James E. Rogers Energy Complex. Florida was also a large consumer of Clay County coal. However, both power plants that consumed Clay County coal are slated for either full closure (Cedar Bay) or partial closure (Crystal River) by the end of 2018.

Clay County Coal Mining Productivity

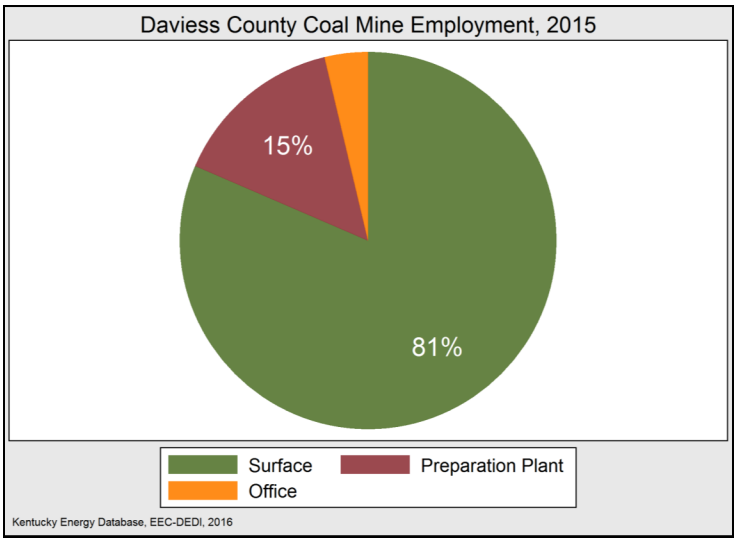
Clay County's overall coal mining productivity in 2015 was 0.30 tons per labor hour, a decrease of 86.78 percent from 2012. Clay County surface mines alone yielded 0.75 tons per labor hour, down from 2.09 tons per labor hour the year before.

Chemical Composition and Cost

On average, coal mined in Clay County had a median sulfur content of 1.04 percent, a median ash content of 10.8 percent, and a median heat content of 24.48 MMBtu per ton. The median delivered price per ton for Clay County coal in 2015 was $75.15. The delivered price per MMBtu of coal from Clay County had a median of $3.30.

† The closure, or partial closure, of this power plant has been announced for 2015-2022.

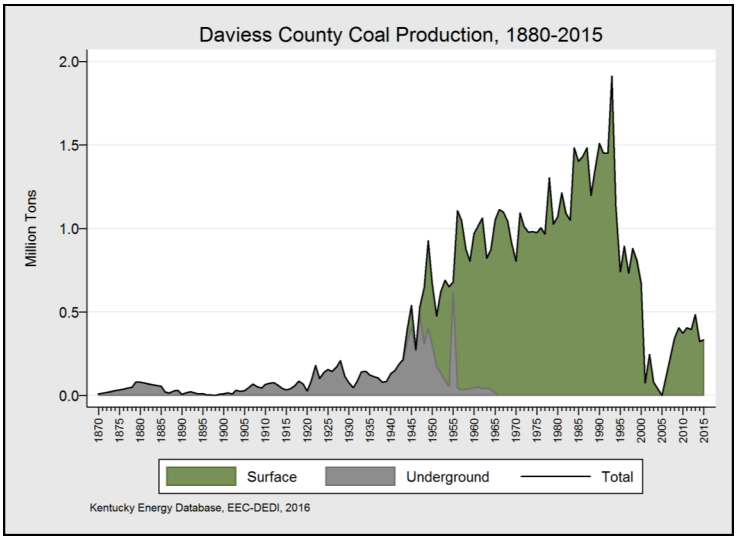
Daviess County

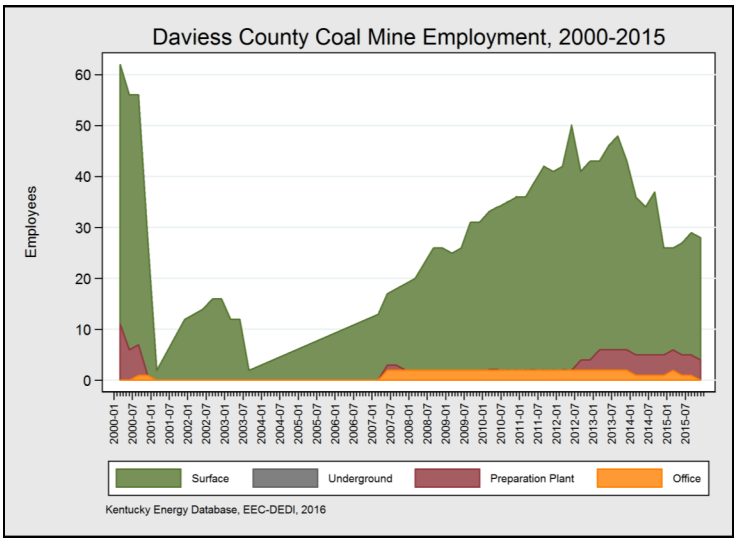


Production Method	Mines	Production	Annual Change
Total	1	334,672	+3.36%
Surface	1	334,672	+3.36%

On-Site Activity	Employment	Annual Change
Total	28	-17.39%
Surface	23	-20.35%
Preparation Plant	4	0.0%
Office	1	0.0%

Daviess County mined 334,672 tons of coal in 2015, a slight increase from 2014. *Pictured above: Owensboro coal dock circa 1985 from the Kentucky Energy and Environment Cabinet archives.*

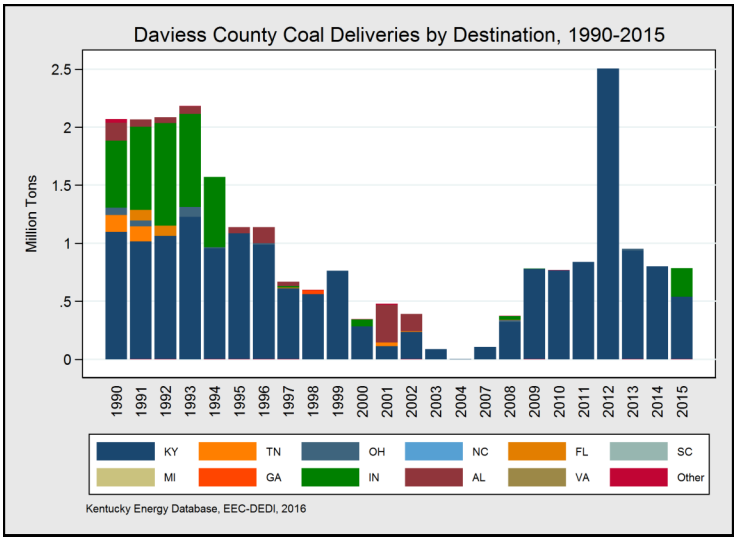


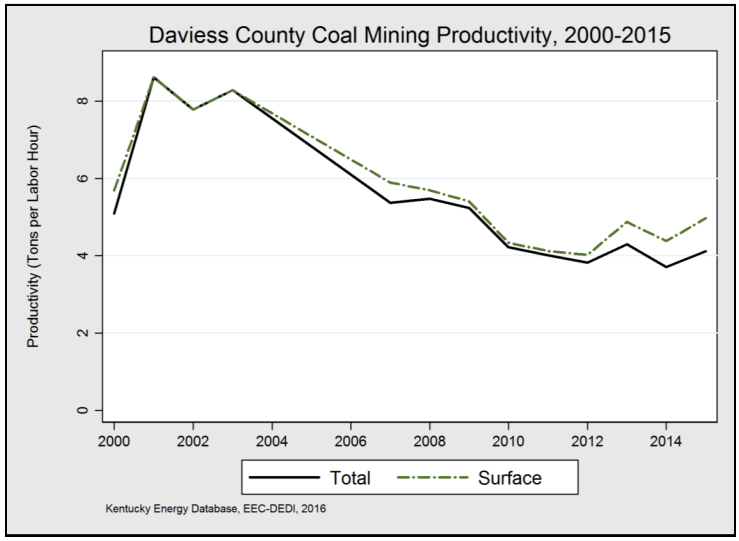


Underground coal mining began in Daviess County in 1825 at 3,000 tons and peaked in 1955 at 615,873 tons. Since 1966, all of the coal mined in Daviess County has come from surface mines. Coal production in Daviess County peaked at 1.9 million tons in 1993 and declined by 82.39 percent through 2015. Coal production stopped in 2004 but resumed in 2007.

In January 2015, there was one surface mine producing coal. The North Knottsville Mine continued producing through the end of 2015. On average, there were 28 persons employed in coal production in Daviess County, 23 miners, 4 preparation plant operators, and 1 in an on-site office in 2015. During peak production in 1991-1992, there were up to 342 persons employed at coal mines in Daviess County.

Daviess County





State and Power Plant	Deliveries (Tons)	Percentage
Total	**784,516**	**100%**
Kentucky	**537,717**	**68.5%**
Elmer Smith	388,212	49.5%
D B Wilson	143,206	18.3%
Ghent	3,205	0.4%
R D Green	3,094	0.4%
Indiana	**246,799**	**31.5%**
Clifty Creek	246,799	31.5%

Daviess County Coal Market

In 2015, consumption of Daviess County coal was divided among Kentucky and Indiana at 68.5 and 31.5 percent, respectively. In all, four different power plants in Kentucky received a total of 537,717 tons of steam coal from Daviess County during 2015. Shipments of coal from Daviess County decreased by 1.8 percent from 2014. Elmer Smith, operated by Owensboro Municipal Utilities and within Daviess County, received 49.5 percent of known coal shipments from the county in 2015. Clifty Creek power plant in Madison, Indiana consumed all of that state's Daviess County coal.

Chemical Composition and Cost

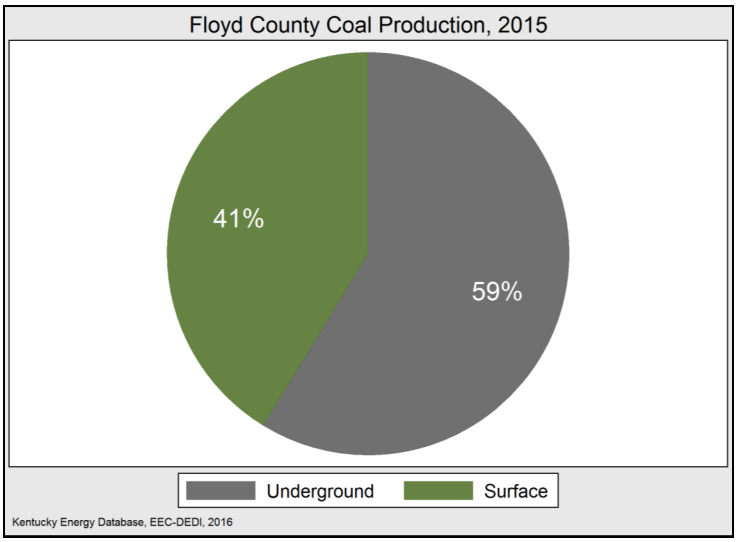
On average, coal mined in Daviess County had a median sulfur content of 2.33 percent, a median ash content of 8.7 percent, and a median heat content of 22.13 MMBtu per ton. The average delivered price per ton for Daviess County coal in 2015 was $45.00. The delivered price per MMBtu of coal from Daviess County had a median of $2.00 per MMBtu. Since there is only one-remaining coal producer in Daviess County, other financial data derived from confidential taxpayer information—including average mine mouth price, processing costs, shipping costs, total value, and total taxes paid—cannot be disclosed pursuant to KRS-131.190.

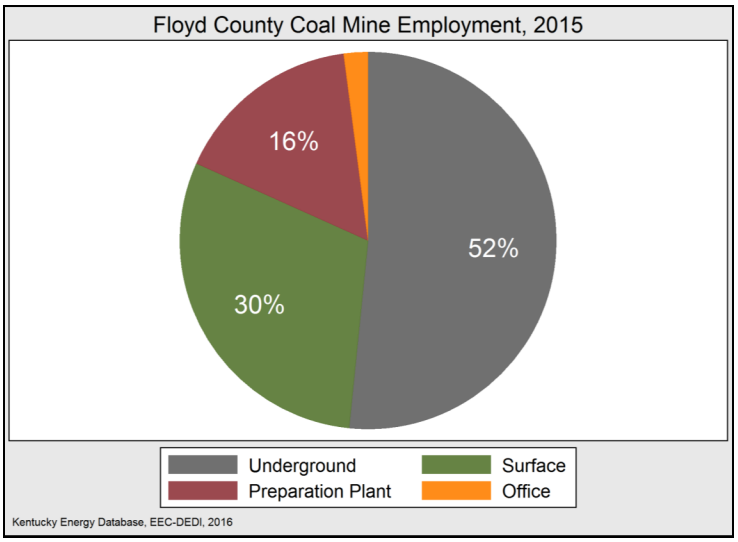
Daviess County Coal Mining Productivity

Daviess County had the second-highest mine productivity in the Commonwealth in 2015. Overall productivity increased in 2015 to 4.68 tons per labor hour from 3.71 tons per labor hour in 2014. Similarly, surface productivity increased to 5.78 tons per labor hour compared to 4.38 tons per labor hour in 2014.

† The closure, or partial closure, of this power plant has been announced for 2015-2022.

Floyd County

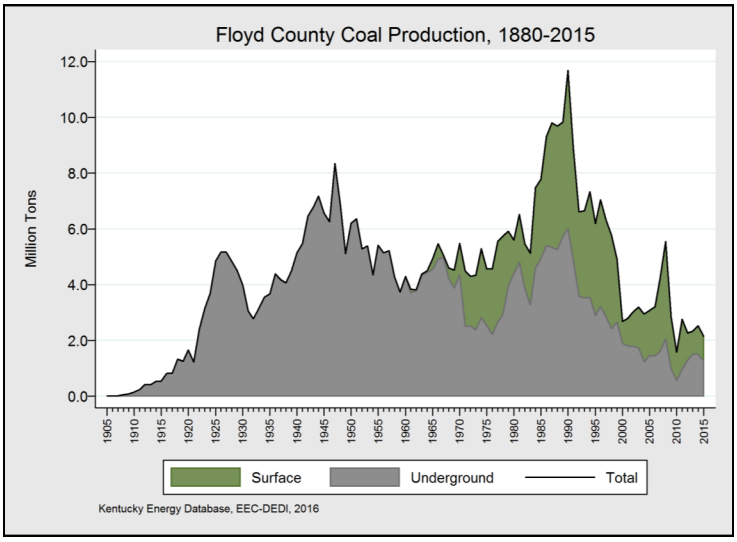


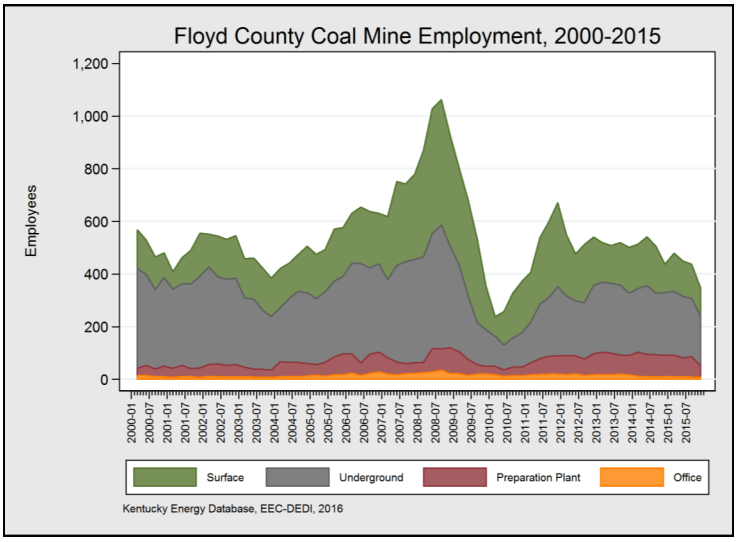


Production Method	Mines	Production	Annual Change
Total	18	2,148,884	-15.0%
Underground	10	1,262,296	-16.26%
Surface	8	886,588	-13.15%

On-Site Activity	Employment	Annual Change
Total	432	-13.89%
Underground	223	-8.84%
Surface	130	-19.94%
Preparation Plant	70	-19.03%
Office	9	-13.34%

The 18 active coal mines in Floyd County in 2015 produced 2.1 million tons of coal. Underground mines produced 58.7 percent of county production that year.

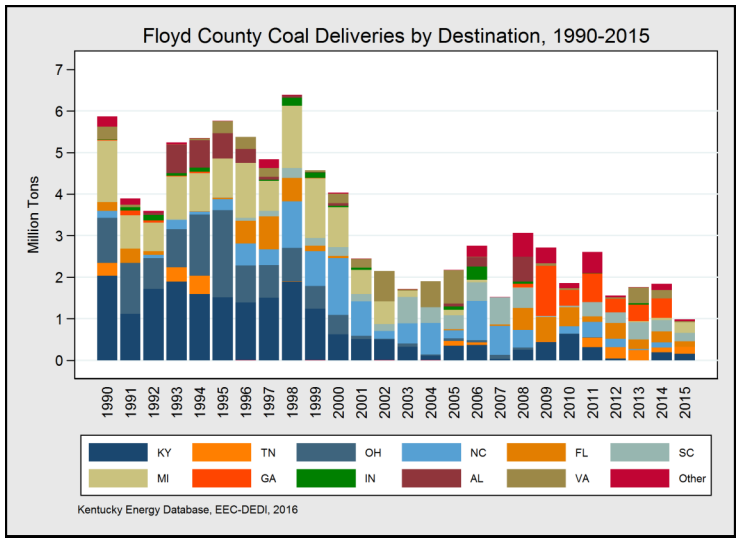


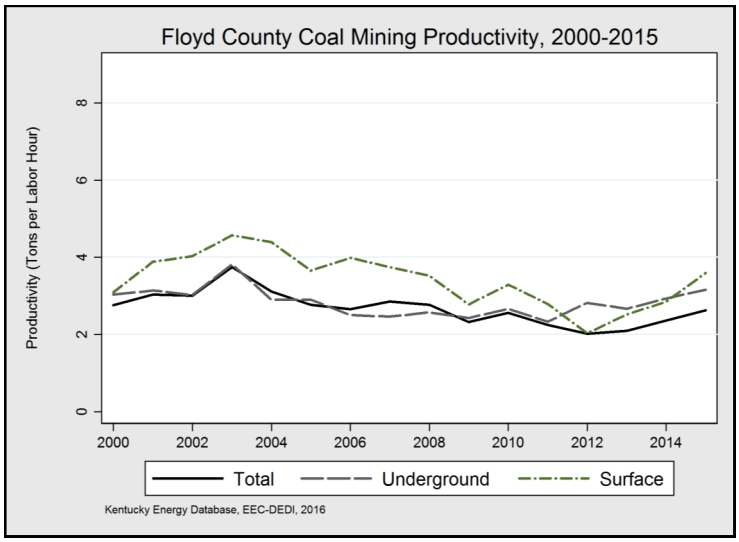


Coal production in Floyd County began in 1889 with 2,236 tons. Between 1889 and 2015, 486 million tons of coal have been extracted in Floyd County, which is 4.23 percent of all coal ever produced in Kentucky. The production time series above shows that Floyd County responded to calls for increased coal production during the first and second world wars. Production peaked at 11.7 million tons in 1990 and has declined by 81.63 percent thereafter.

Coal mines and preparation plants in Floyd County employed 432 persons on-site in 2015, which was a decrease of 13.89 percent from 2014. Underground mines were the largest source of direct coal mine employment in 2015 with 223 jobs, followed by surface mines at 130 jobs, coal preparation plants at 70 jobs, and offices at 9 jobs.

Floyd County





State and Power Plant	Deliveries (Tons)	Percentage
Total	**1,087,320**	**100%**
Michigan	**261,098**	**24.0%**
Monroe	221,286	20.4%
River Rouge	25,608	2.4%
J C Weadock†	14,204	1.3%
Kentucky	**259,621**	**23.9%**
Big Sandy†	259,621	23.9%
South Carolina	**204,574**	**18.8%**
Kapstone	192,808	17.7%
Cope	11,766	1.1%
Tennessee	**168,152**	**15.5%**
Tennessee Eastman Operations	98,756	9.1%
Bull Run	69,396	6.4%
Florida	**126,104**	**11.6%**
Crystal River†	126,104	11.6%
West Virginia	**46,614**	**4.3%**
Mitchell	46,614	4.3%
Virginia	**21,157**	**1.9%**
Spruance Genco LLC	21,157	1.9%

Floyd County Coal Market

Floyd County shipped coal to 7 states in total during 2015. Of the 1.08 million tons of steam coal exports tracked from Floyd County in 2015, Kentucky's Big Sandy power plant consumed 260 thousand tons, or 24.1 percent of known shipments. As of May 2016, Big Sandy power plant no longer uses coal as a fuel. The second largest consumer of Floyd County coal in 2015 was Monroe power plant in Michigan, receiving 221 thousand tons or 20.6 percent of Floyd County coal. Kapstone power plant in South Carolina, Floyd County coal's third largest consumer in 2015, consumed 192 thousand tons.

Floyd County Coal Mining Productivity

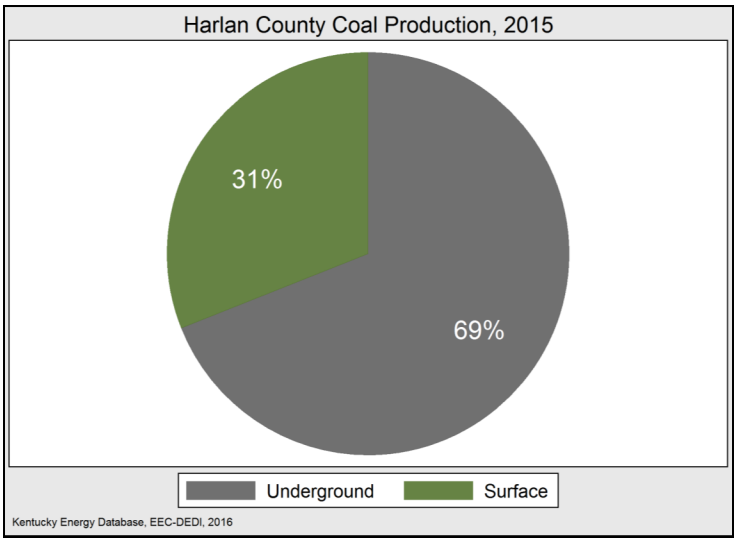
Floyd County mining productivity increased to 2.51 tons per labor hour in 2015. Underground operations averaged 3.06 tons per labor hour, while surface operations produced at a rate of 3.43 tons per labor hour.

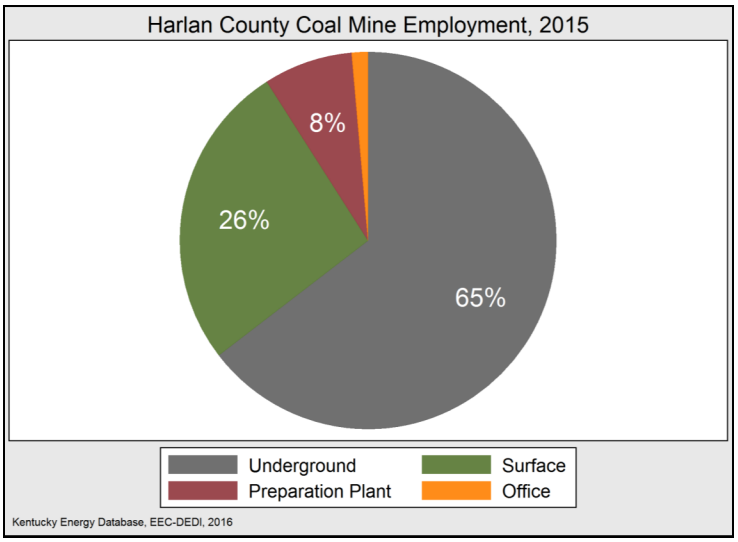
Chemical Composition and Cost

Coal mined in Floyd County had a median sulfur content of 0.96 percent, a median ash content of 8.2 percent, and a median heat content of 25.06 MMBtu per ton. These costs resulted in a median delivered price per ton of $75.71. The delivered price per MMBtu of coal from Floyd County had a median of $3.15 per MMBtu.

† The closure, or partial closure, of this power plant has been announced for 2015-2022.

Harlan County

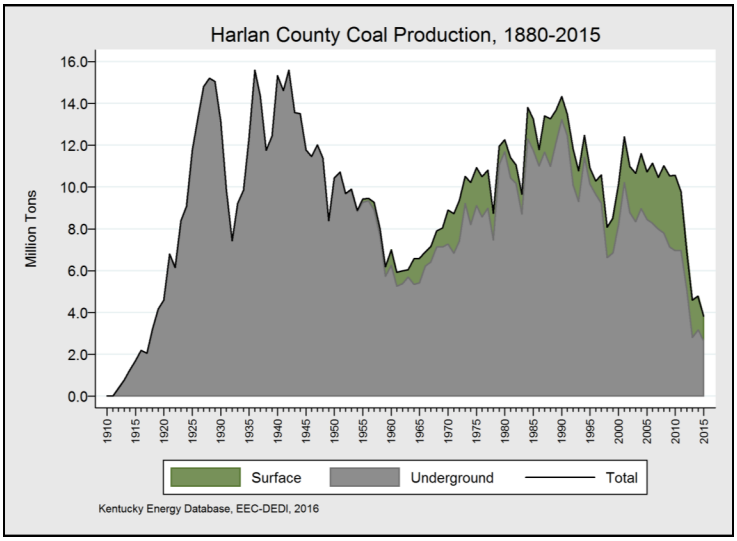


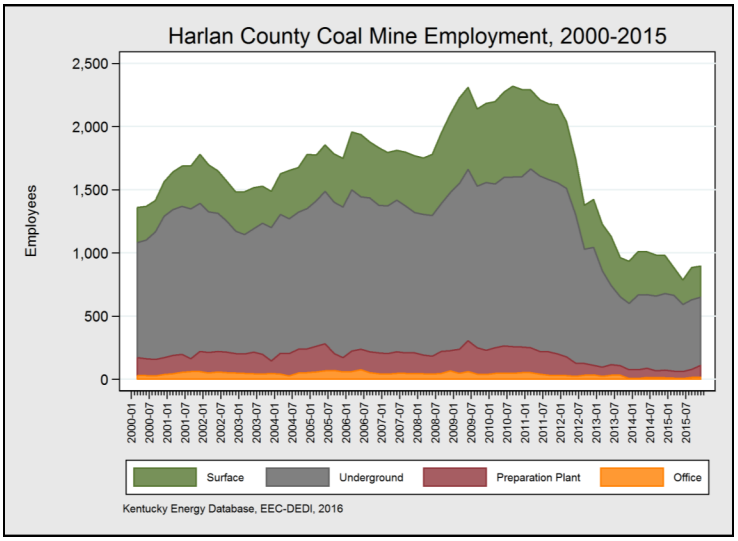


Production Method	Mines	Production	Annual Change
Total	39	3,827,478	-20.08%
Underground	23	2,640,190	-26.03%
Surface	16	1,187,288	-17.08%

On-Site Activity	Employment	Annual Change
Total	867	-13.36%
Underground	560	-5.69%
Surface	228	-30.69%
Preparation Plant	67	+5.24%
Office	12	0.0%

In 2015, Harlan County production decreased 20.08 percent to 3.8 million tons. Of that total, 69 percent came from underground operations and 31 percent from surface mines.

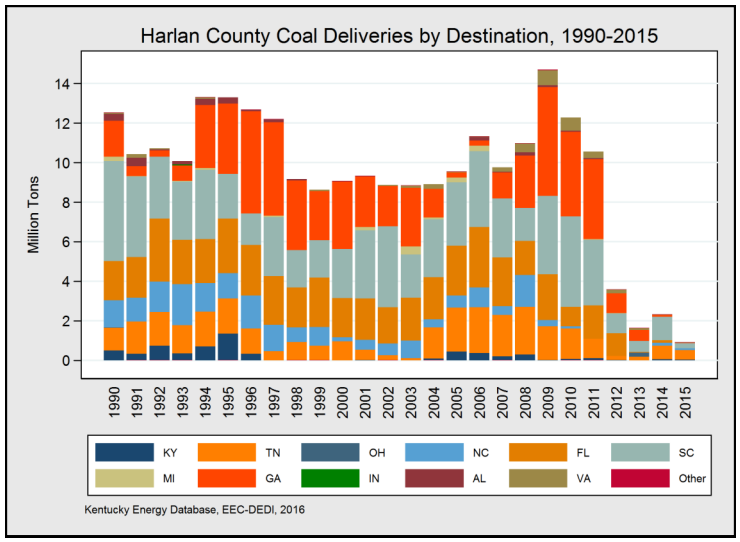


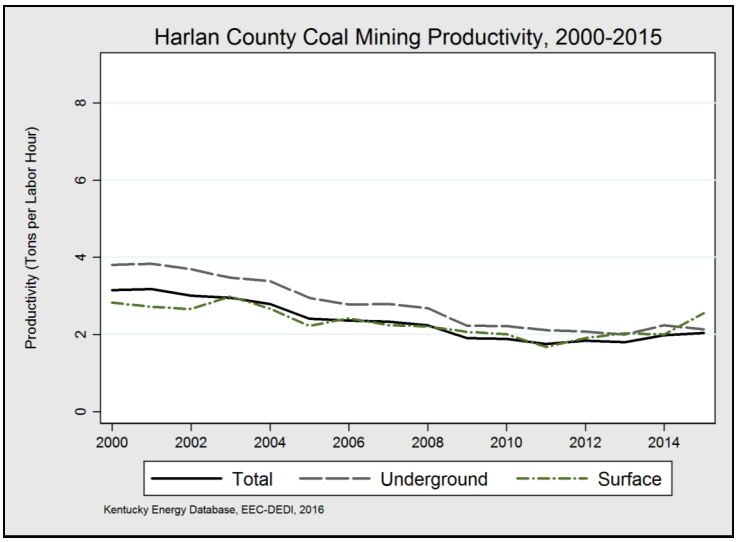


The earliest known commercial coal production in Harlan County was 4,100 tons in 1833. Coal production rose from 25,814 tons in 1910 to 15.2 million in 1929, which was 25 percent of total production in Kentucky that year. Coal production peaked at 15.6 million tons in 1942 during World War II. Mining in the county has been predominantly underground. Harlan County was the highest-producing county from 1923 to 1946, even during the miner strikes of 1930's. Historically, Harlan County has produced a billion tons of coal, the second-most of any Kentucky county.

On site employment in Harlan County decreased by 13.36 percent in 2015 to 867 employed, which was the fourth highest in the Commonwealth in 2015. Underground mines were the largest source of mining employment at 560 miners, followed by surface operations at 228 miners. Coal mine employment in Harlan County peaked at 16,795 in 1941, when 28 percent of all Kentucky coal miners worked in Harlan County, and has declined by 94.4 percent through 2015.

Harlan County





State and Power Plant	Deliveries (Tons)	Percentage
Total	**894,509**	**100%**
Tennessee	**472,540**	**52.8%**
Bull Run	305,539	34.2%
Tennessee Eastman Operations	167,001	18.7%
South Carolina	**257,167**	**28.7%**
International Paper Eastover Facility	91,027	10.2%
Wateree	76,354	8.5%
Cope	63,604	7.1%
Williams	26,182	2.9%
North Carolina	**89,801**	**10.0%**
James E. Rogers Energy Complex	89,801	10.0%
Kentucky	**36,858**	**4.1%**
E W Brown	21,594	2.4%
Cooper	8,176	0.9%
H L Spurlock	7,088	0.8%
Virginia	**19,533**	**2.2%**
West Point Mill	19,533	2.2%
Georgia	**18,610**	**2.1%**
Georgia-Pacific Cedar Springs†	18,610	2.1%

Harlan County Coal Market

Harlan County coal deliveries dropped by 61.33 percent from 2014 to 2015. The states of Tennessee and South Carolina respectively consumed 52.8 percent and 28.7 percent of the steam coal shipped from Harlan County in 2015. Bull Run power plant in Tennessee was the largest individual consumer of Harlan County coal, receiving 34.2 percent of all deliveries. Tennessee Eastman Operation power plant received 167 thousand tons or 18.7 percent of Harlan County coal.

Harlan County Coal Mining Productivity

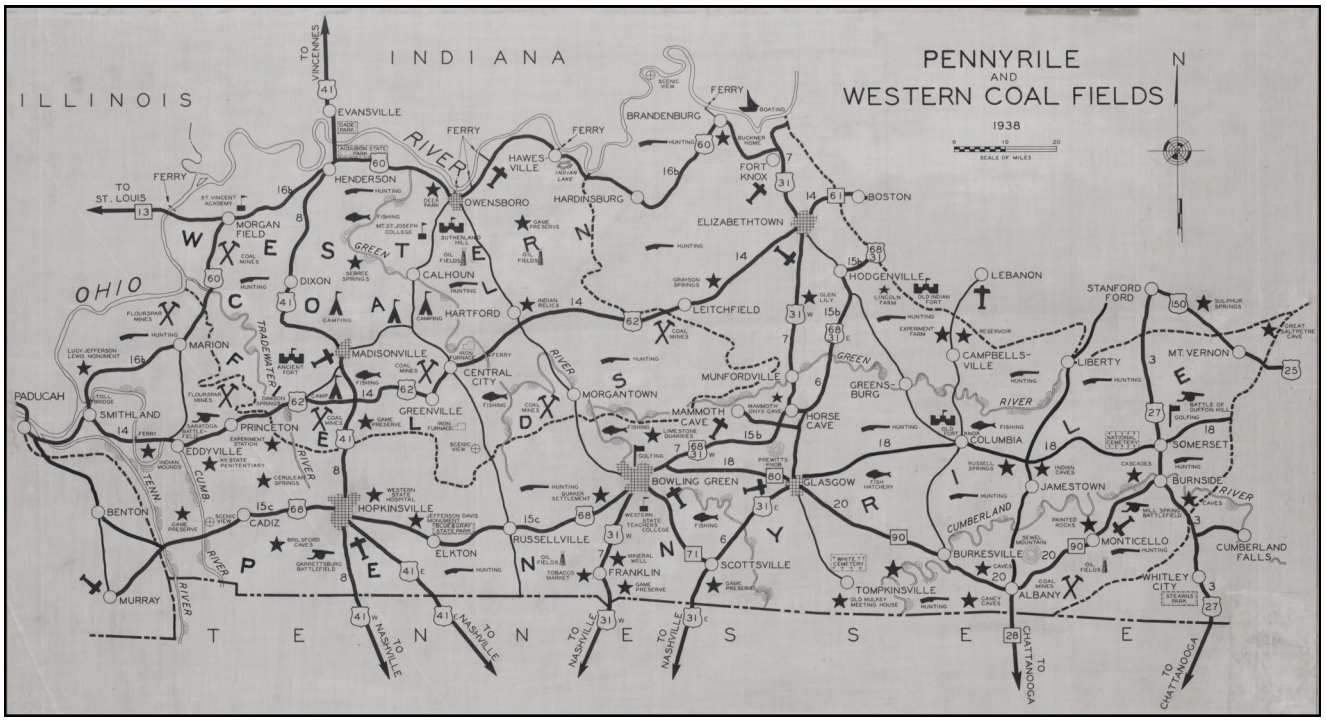
Harlan County's productivity in 2015 was 1.99 tons per labor hour, a decrease of 37 percent since the year 2000. Surface mines in Harlan County have not been as historically productive as the county's underground mines. In 2015, underground mines on average yielded 2.20 tons per labor hour while surface mines yielded 2.12 tons per labor hour.

Chemical Composition and Cost

Coal mined in Harlan County had a median sulfur content of 0.98 percent, a median ash content of 9.1 percent, and a median heat content of 25.38 MMBtu per ton. These costs resulted in a median delivered price per ton of $78.53. The delivered price per MMBtu of coal from Harlan County had a median of $2.98 per MMBtu.

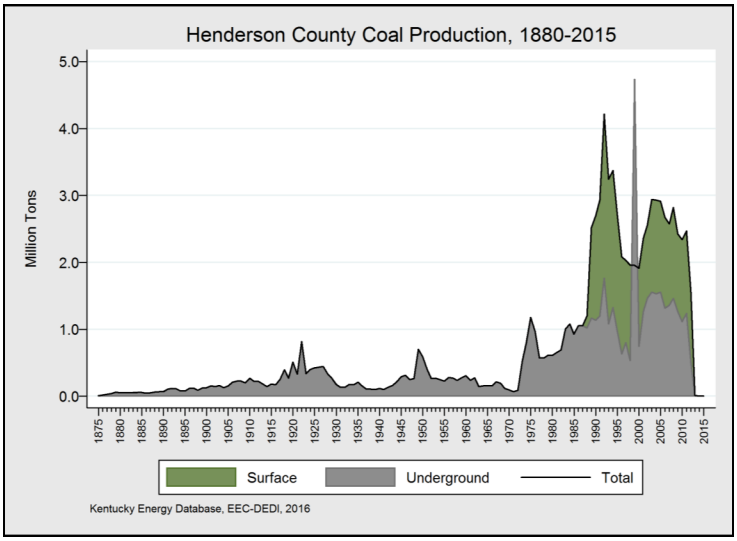
† The closure, or partial closure, of this power plant has been announced for 2015-2022.

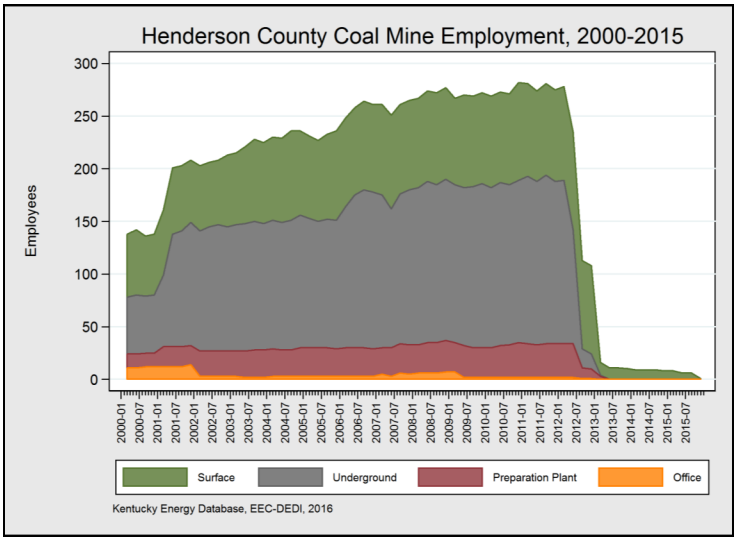
Henderson County



Pictured above: a map of the western Kentucky coalfield by the Work Projects Administration for the Commonwealth of Kentucky, 1939.

On-Site Activity	Employment	Annual Change
Total	5	-33.06%
Surface	5	-33.06%

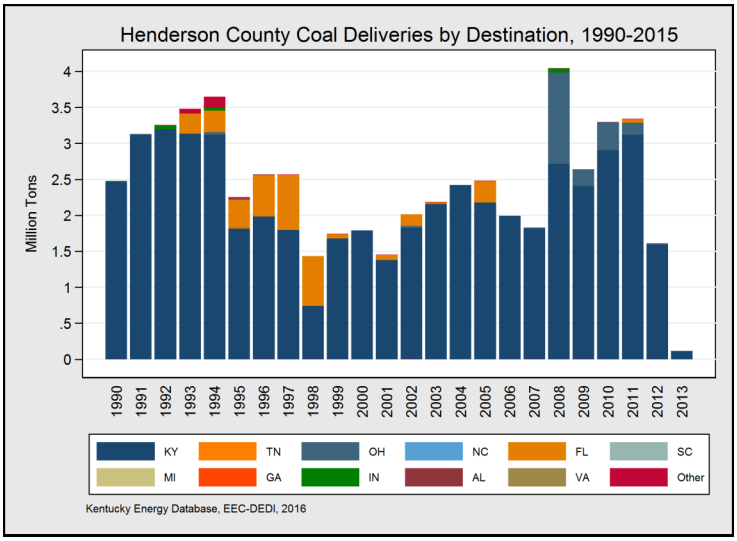


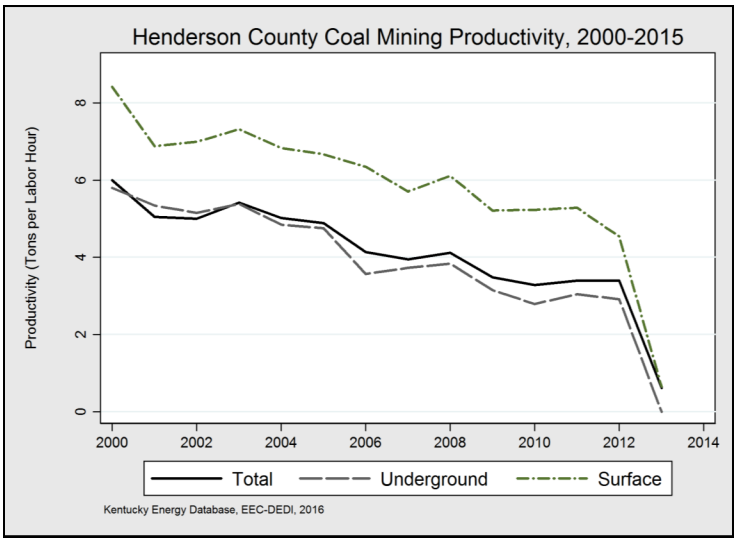


Henderson County failed to produce in coal in 2015 for the second year in a row. Henderson County produced 14 thousand tons of coal in 2013, which was less than one percent of total production across the Commonwealth and a decrease of over 99 percent from 2012. Most of Henderson County coal production had been from underground mines until 1988, when both types of mining began contributing to total production.

Coal mines in Henderson County employed an average of five persons full-time in 2015, all at surface operations. Total mining employment in the county decreased by 33.06 percent compared with 2014. From 2001 to 2012, underground mines were the largest source of coal mine employment in Henderson County. However, from 2012 through 2013, direct employment at underground mines, then surface mines, decreased drastically.

Henderson County





Henderson County Coal Market

Henderson County registered no coal shipments in 2014 or 2015. Elmer Smith Station, operated by Owensboro Municipal Utilities, was the only known recipient of Henderson County coal in 2013.

Chemical Composition and Cost

On average, coal mined in Henderson County since 1990 had a median sulfur content of 2.88 percent, a median ash content of 9.5 percent, and a median heat content of 22.18 MMBtu per ton. The average delivered price per ton for Henderson County coal in 2013 was $40.10, and ranged from $38.24 to $41.95 per ton. The delivered price per MMBtu of coal from Henderson County had a median of $1.92 per MMBtu.

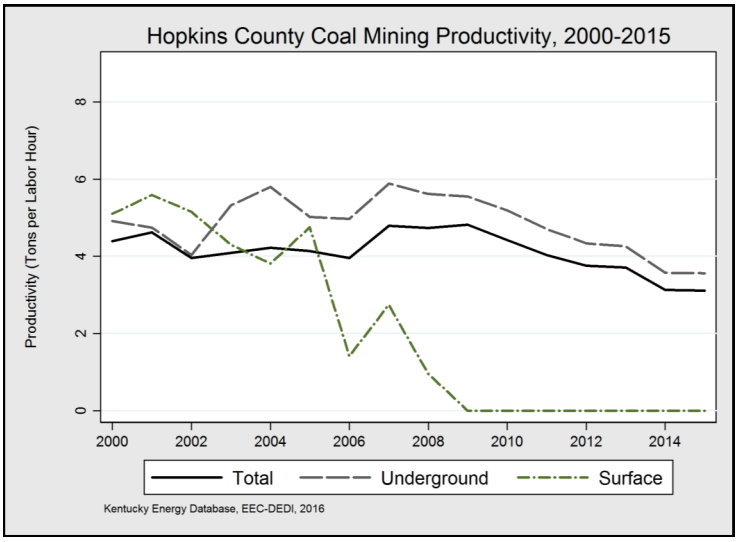
Coal Reserves

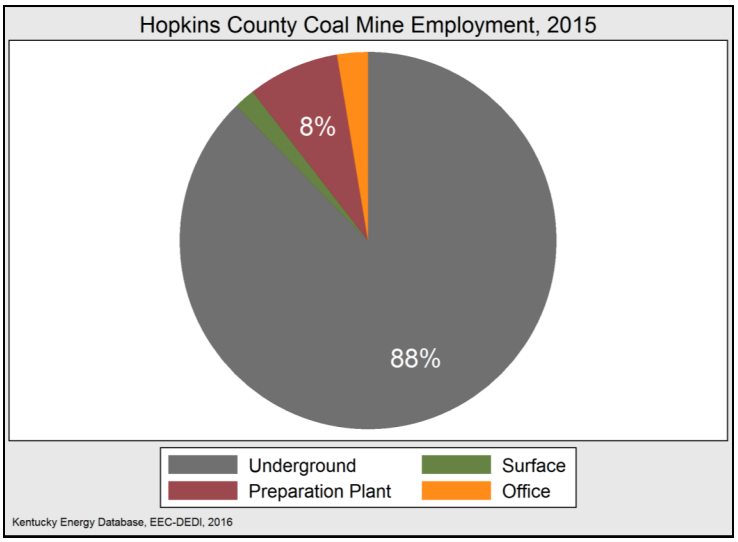
Despite having no coal production in 2015, Henderson County has the second most mineable coal of all Kentucky counties, according to the Kentucky Geological Survey. The county has 4,390 billion tons, or 17 percent of Kentucky's 25,343 billion tons in its Demonstrated Reserve Base.

Henderson County Coal Mining Productivity

Mining productivity in Henderson County averaged 0.62 tons per labor hour in 2013, a decrease of almost 82 percent from the year prior. The rapid drop of productivity in Henderson County is largely a result of the near complete stoppage of coal production in the county. From 2000 to 2013, Henderson County was typically among the top five most productive coal mining counties and was fifth-most productive in 2012 with 3.39 tons of coal mined per labor hour.

Hopkins County

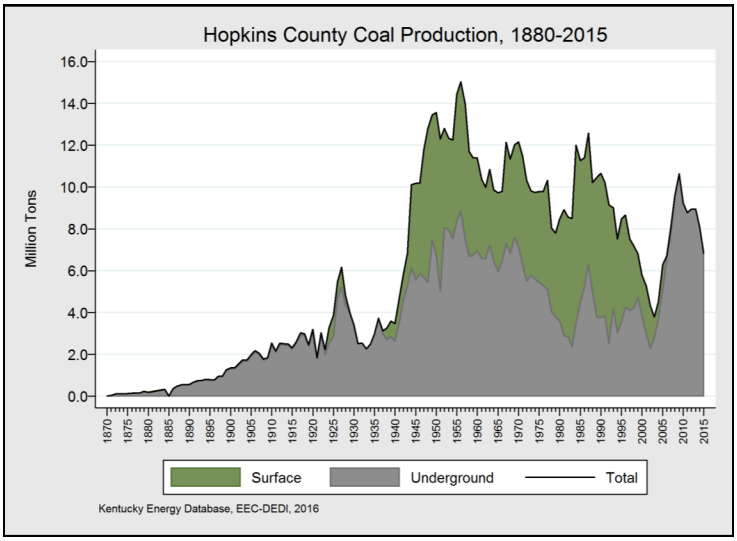


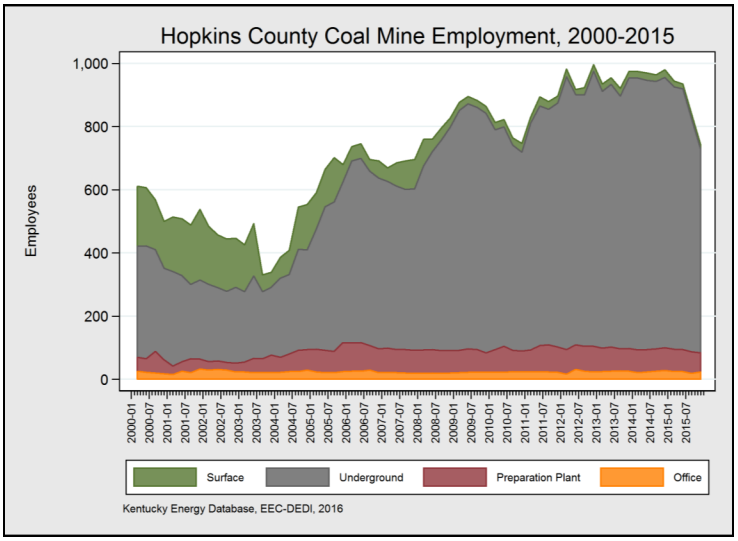


Production Method	Mines	Production	Annual Change
Total	2	6,844,611	-15.30%
Underground	2	6,844,611	-15.30%

Coal mines in Hopkins County produced 6.8 million tons of coal in 2015, the third highest of all counties in Kentucky in 2015.

On-Site Activity	Employment	Annual Change
Total	874	-10.83%
Underground	767	-10.20%
Preparation Plant	68	-4.93%
Office	23	-7.14%
Surface	16	-28.64%

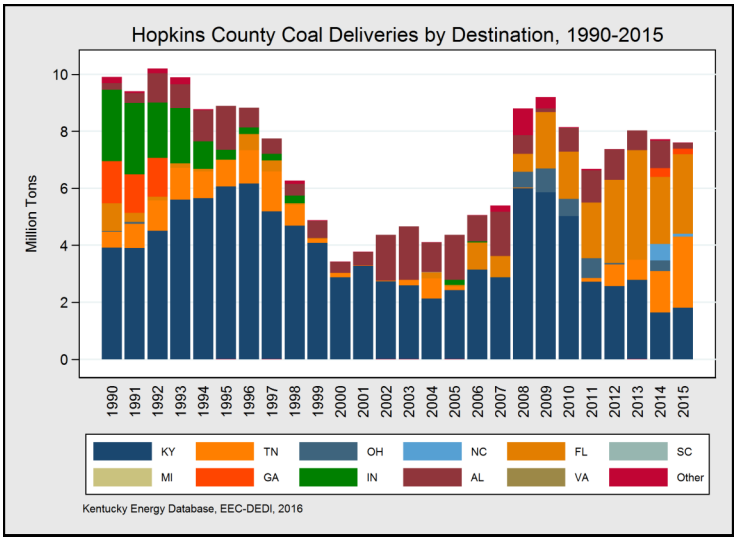




Historically, Hopkins County is the third largest coal-producing county in Kentucky, producing 852 million tons to date, or 8.83 percent of all coal produced in Kentucky. The earliest known coal production in Hopkins County was in 1866 with 500 tons. Coal production quickly increased to 100,000 tons in 1872, and one million tons by 1899. Production increased during both world wars. Hopkins County annual production peaked at 15 million in 1956 and has decreased 54.37 percent through 2015.

Coal mine employment in Hopkins County averaged 874 people in 2015, a decrease of 10.83 percent from 2014. The vast majority were employed at underground mines. Coal mine employment peaked in Hopkins County at over 4,236 miners in 1947 and has declined by 79.37 percent through 2015. Since reaching its lowest point of 339 miners in 2003, employment growth had been strong in Hopkins County until 2014.

Hopkins County



State and Power Plant	Deliveries (Tons)	Percentage
Total	**7,595,468**	**100%**
Florida	**2,787,221**	**36.7%**
Seminole	2,500,998	32.9%
Crystal River†	234,806	3.1%
Big Bend	51,417	0.7%
Tennessee	**2,493,267**	**32.8%**
Calvert City	1,988,610	26.2%
Kingston	469,956	6.2%
GRT Terminal	34,701	0.5%
Kentucky	**1,805,882**	**23.8%**
Paradise†	662,539	8.7%
Ghent	396,683	5.2%
HMP&L Station Two Henderson	343,142	4.5%
Mill Creek	239,297	3.2%
Trimble County	120,935	1.6%
E W Brown	33,583	0.4%
Cane Run†	9,703	0.1%

Hopkins County Coal Mining Productivity

Hopkins County total productivity was 2.97 tons of coal per labor hour in 2015, while underground productivity was 3.40 tons of coal per labor hour. Total coal mine productivity has declined by 39.71 percent since 2009. Underground miner productivity has declined by 42.28 percent since 2007.

Hopkins County Coal Market

Coal shipments from Hopkins County decreased by 1.6 percent from 2014 to 7.6 million tons in 2015. Florida and Tennessee were again the two largest consumers of Hopkins County coal, receiving 36.7 percent and 32.8 percent of the county's total in 2015. The remaining 23.8 percent of Hopkins County's shipments were divided among seven power plants in Kentucky. The Seminole Generating Station in Florida itself received 32.9 percent of coal shipped from Hopkins County during 2015. The power plant to consume the second most Hopkins County coal in 2015 was the Calvert City power plant in Tennessee, receiving 26.2 percent of the county's shipments.

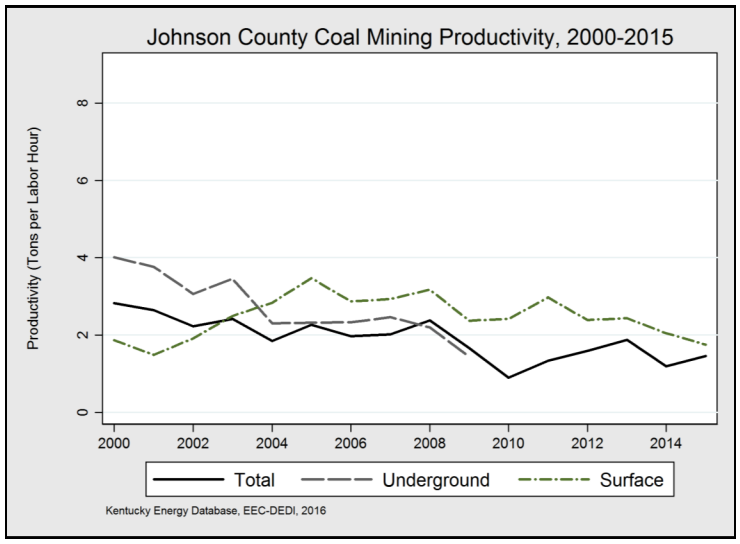
State and Power Plant	Deliveries (Tons)	Percentage
Alabama	**201,562**	**2.7%**
Widows Creek†	127,506	1.7%
E C Gaston	74,056	1.0%
Georgia	**200,941**	**2.6%**
Bowen	200,941	2.6%
North Carolina	**106,595**	**1.4%**
James E. Rogers Energy Complex	106,477	1.4%
Marshall	118	0.0%

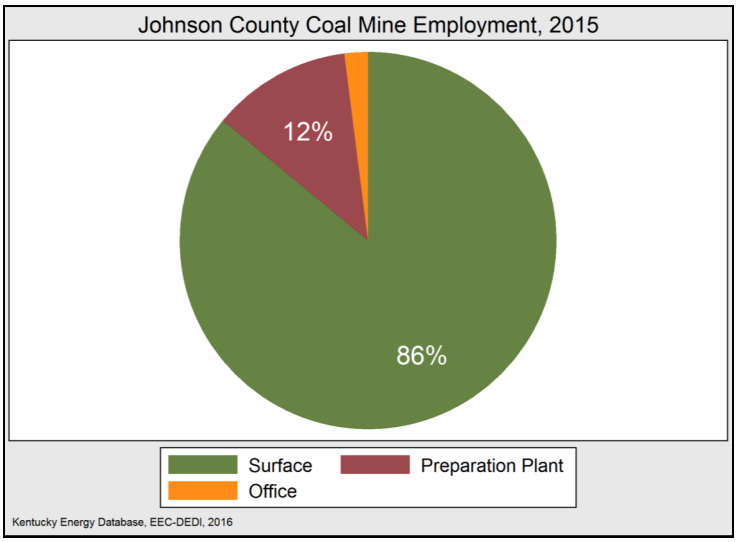
Chemical Composition and Cost

On average, coal mined in Hopkins County had a median sulfur content of 2.99 percent, a median ash content of 7.8 percent, and a median heat content of 24.30 MMBtu per ton. The average delivered price per ton for Hopkins County coal in 2015 was $61.84. The delivered price per MMBtu of coal from Hopkins County had a median of $2.54 per MMBtu. Other financial data for Hopkins County are confidential due to the small number of tax payers.

† The closure, or partial closure, of this power plant has been announced for 2015-2022.

Johnson County

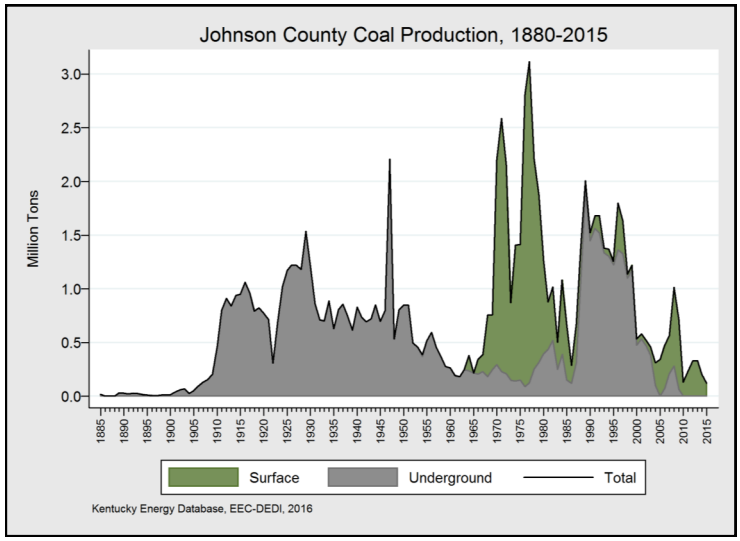


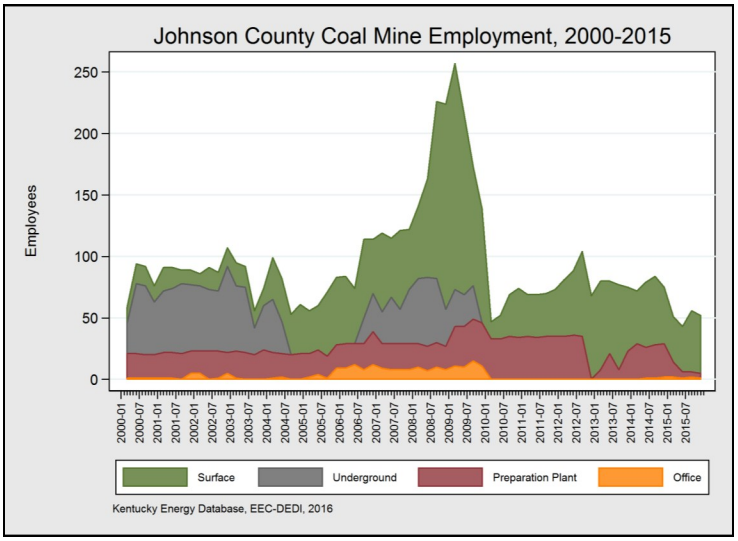


Production Method	Mines	Production	Annual Change
Total	9	122,108	-39.95%
Surface	8	122,108	-39.95%
Underground	1	0	+0.0%

On-Site Activity	Employment	Annual Change
Total	51	-35.54%
Surface	43	-15.01%
Preparation Plant	6	-76.85%
Office	2	0.0%

Johnson County mined 122 thousand tons of coal in 2015, a decline of 39.95 percent from 2014. All coal was produced by surface mining operations.

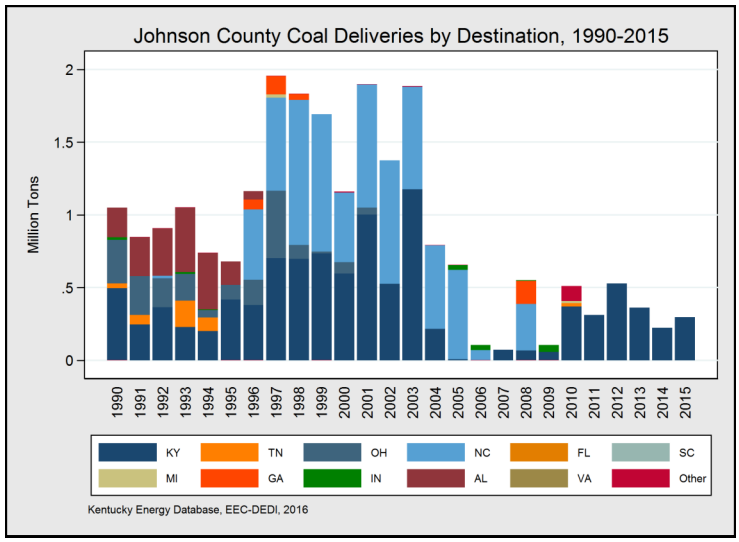




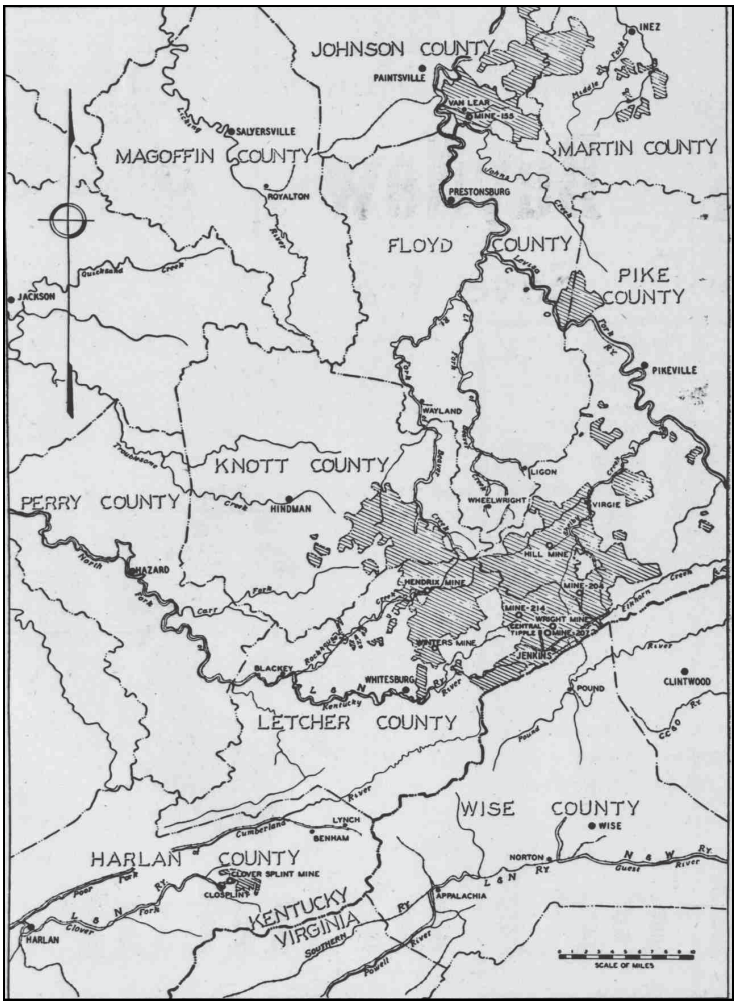
The earliest known commercial coal production in Johnson County was 169 tons in 1869. Underground coal production increased to one million tons by 1916 and peaked at 2.2 million tons in 1947. Total coal production peaked in 1977 at 3.1 million tons with most production coming from surface operations. From this point, Johnson County production has declined by 96.06 percent through 2015. In all, Johnson County has produced 97.3 million tons of coal since 1869.

In 1950, there were 2,465 people employed at coal mines in Johnson County. On average in 2015, there were only 51 people employed in coal production in Johnson County, a decrease of 98 percent since 1950. Surface mining employment was 43, while preparation plant and office employment were 6 and 2, respectively. Unless new markets are identified, the retirement of the Big Sandy's coal burning unit in May of 2015 will place significant negative pressure on demand for coal from Johnson County.

Johnson County



State and Power Plant	Deliveries (Tons)	Percentage
Total	**92,542**	**100.0%**
Kentucky	**92,542**	**100.0%**
Big Sandy†	92,542	100.0%



Picture: Properties Operated by Consolidation Coal Company, 1949 in The Mountain Eagle of Whitesburg, Kentucky. The above map displays mines in Johnson, Letcher, and Harlan counties and the mineral lands owned by the Consolidation Coal Company.

Johnson County Coal Market

The Big Sandy Power Plant in Louisa Kentucky, whose coal units are closing or converting to run on natural gas, has been the sole purchaser of Johnson County coal since 2011. In 2015, Big Sandy consumed 92,542 tons of Johnson County coal.

Johnson County Coal Mining Productivity

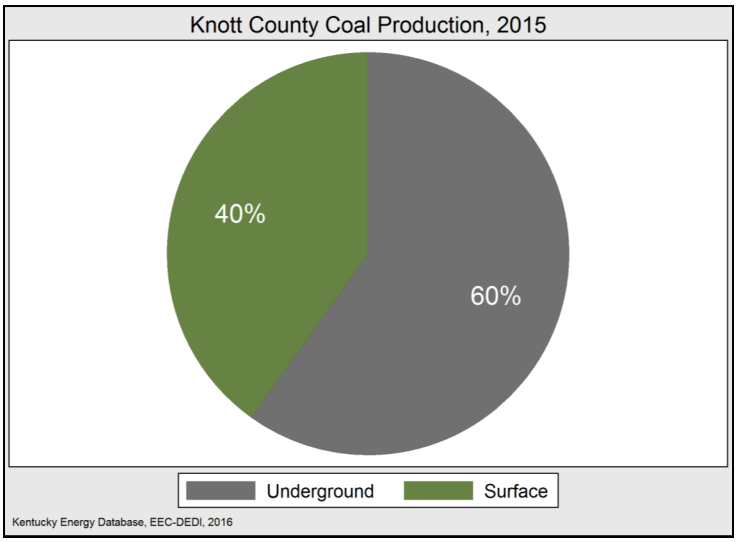
Johnson County's overall coal mining productivity in 2015 was 1.41 tons per labor hour, which is an increase of 15.6 percent from 2014. Johnson County surface mines alone yielded 1.77 tons per labor hour, down from 2.05 tons per labor hour the year before.

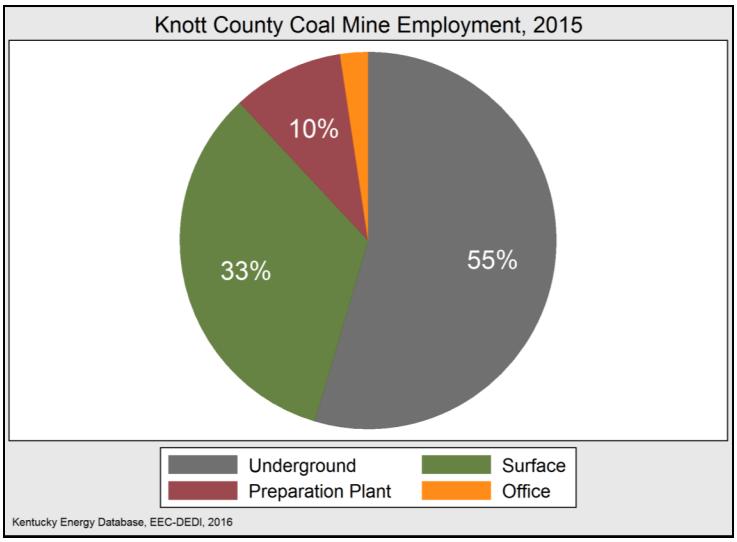
Chemical Composition and Cost

Coal mined in Johnson County had a median sulfur content of 0.95 percent, a median ash content of 9.61 percent, and a median heat content of 24.22 MMBtu per ton. These costs resulted in a median delivered price per ton of $46.45. The delivered price per MMBtu of coal from Johnson County had a median of $1.96 per MMBtu.

† The closure, or partial closure, of this power plant has been announced for 2015-2022.

Knott County

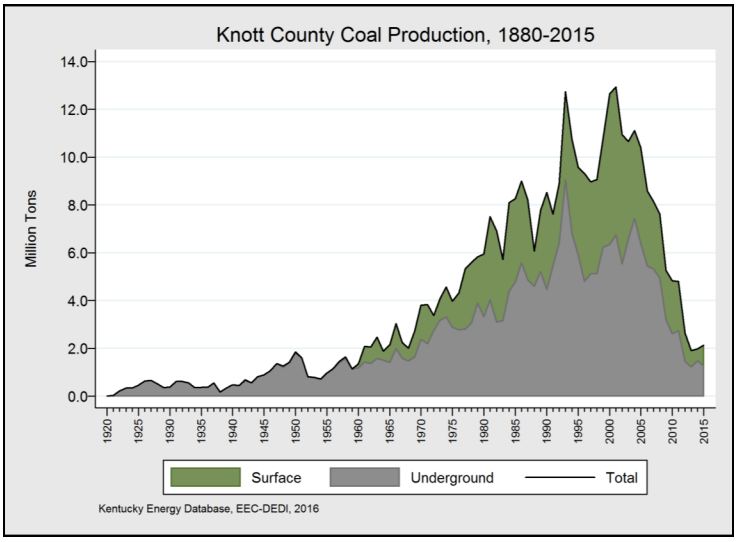


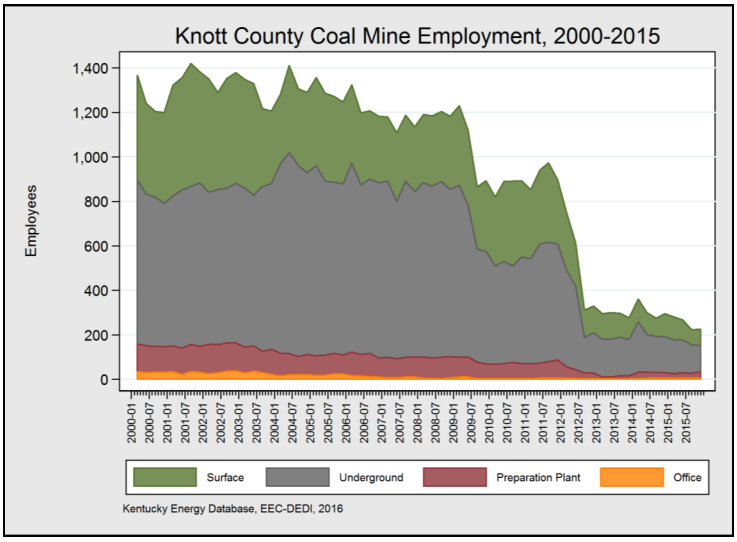


Production Method	Mines	Production	Annual Change
Total	9	2,132,915	+7.18%
Underground	2	1,277,470	-13.25%
Surface	7	855,445	+65.31%

On-Site Activity	Employment	Annual Change
Total	252	-18.92%
Underground	137	-24.12%
Surface	85	-12.14%
Preparation Plant	24	-11.78%
Office	6	0.0%

10 mines in Knott County increased coal production by 7.18 percent from 2014 to produce more than 2.1 million tons of coal in 2015.

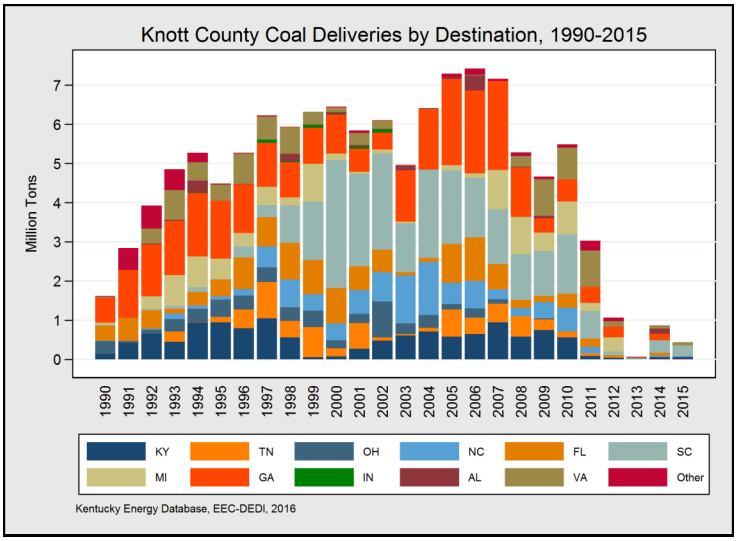


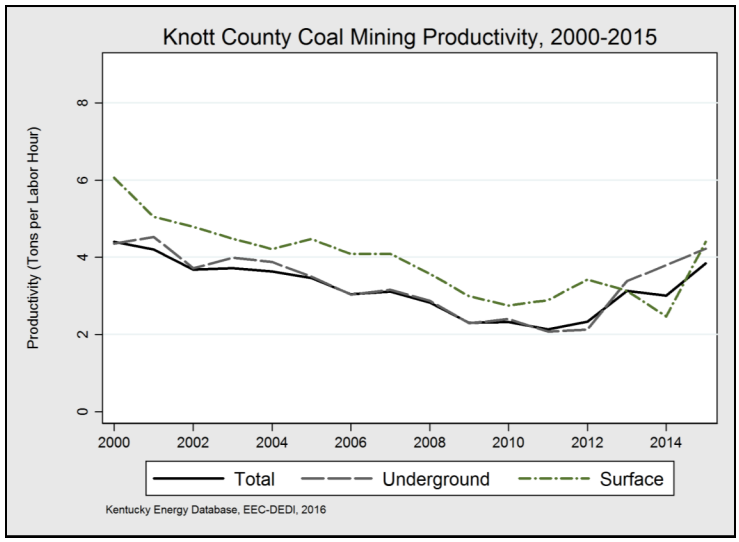


While the earliest-known coal production in Knott County was 1,158 tons in 1889, production did not begin in earnest in Knott County until 1921 when production increased from 34 thousand tons to one million in 1946 and peaked at 12.9 million in 2001. Coal production in Knott County has been on a steady trajectory of decline since 2001, decreasing by 83.47 percent through 2015. Historically, Knott County has produced 382 million tons of coal, which is just under four percent of all coal ever mined in Kentucky.

Coal mines in Knott County employed an average of 252 persons full-time in 2015. Coal mine employment in Knott County peaked at 1,817 in 1950, but as recently as 2004, there were over 1,412 coal miners in Knott County. The majority of coal miners in Knott County, 137 individuals in 2015, work underground. Surface mining, preparation plant operation, and office positions were the source of employment for 85, 24, and 6 people, respectively in 2015.

Knott County





State and Power Plant	Deliveries (Tons)	Percentage
Total	**452,062**	**100%**
South Carolina	**276,348**	**61.1%**
Winyah	149,804	33.1%
Cross	114,199	25.3%
Cope	12,345	2.7%
Virginia	**83,281**	**18.4%**
Chesterfield	83,281	18.4%
Kentucky	**68,554**	**15.2%**
Big Sandy†	54,918	12.1%
E W Brown	13,636	3.0%
North Carolina	**23,879**	**5.3%**
James E. Rogers Energy Complex	23,879	5.3%

Knott County Coal Market

Knott County shipped 452 thousand tons to four states in 2015, a marked decrease from 2014, when the county shipped 867 thousand tons. South Carolina consumed 61.1 percent of Knott County coal shipments in 2015, with its Winyah power plant consuming 33.1 percent of Knott County coal deliveries.

Knott County Coal Mining Productivity

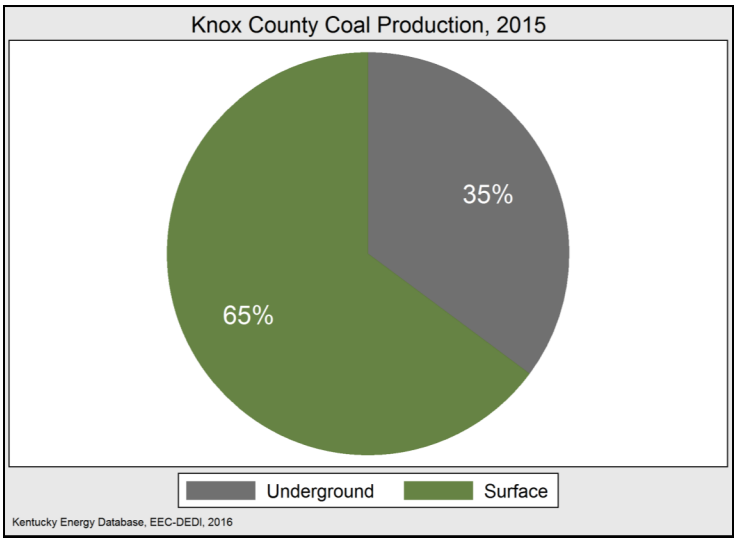
Knott County's productivity in 2015 was 3.72 tons per labor hour, an increase of 24.7 percent from 2014. Both underground and surface mines gained in productivity in 2015. Underground productivity increased to 4.23 tons per labor hour from 3.80 in 2014, while surface productivity increased to 3.71 tons per labor hour from 2.47 in 2014.

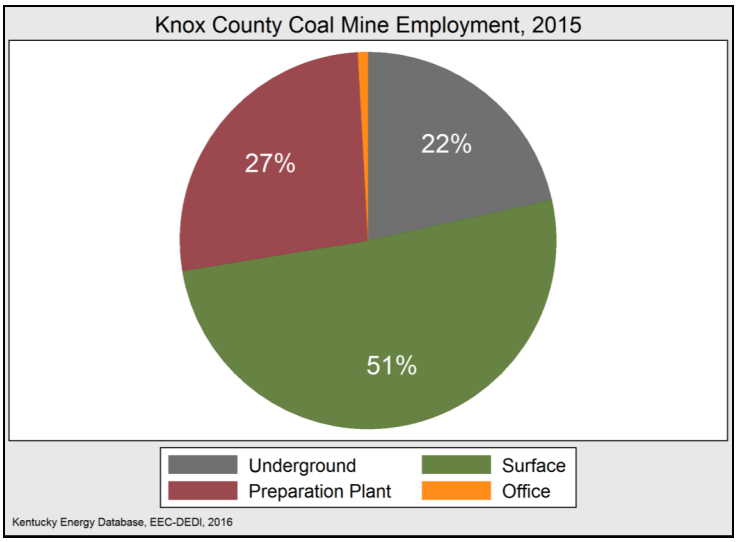
Chemical Composition and Cost

Coal mined in Knott County had a median sulfur content of 1.54 percent, a median ash content of 8.85 percent, and a median heat content of 24.84 MMBtu per ton. These costs resulted in a median delivered price per ton of $72.94. The delivered price per MMBtu of coal from Knott County had a median of $3.01 per MMBtu.

† The closure, or partial closure, of this power plant has been announced for 2015-2022.

Knox County

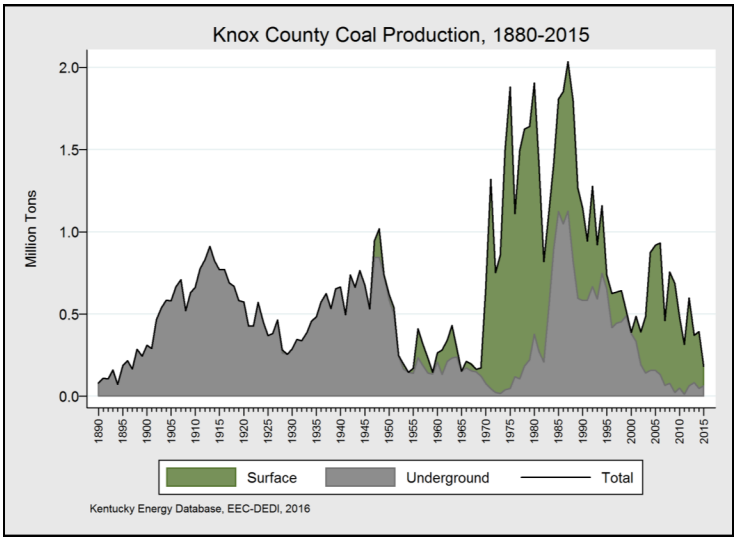


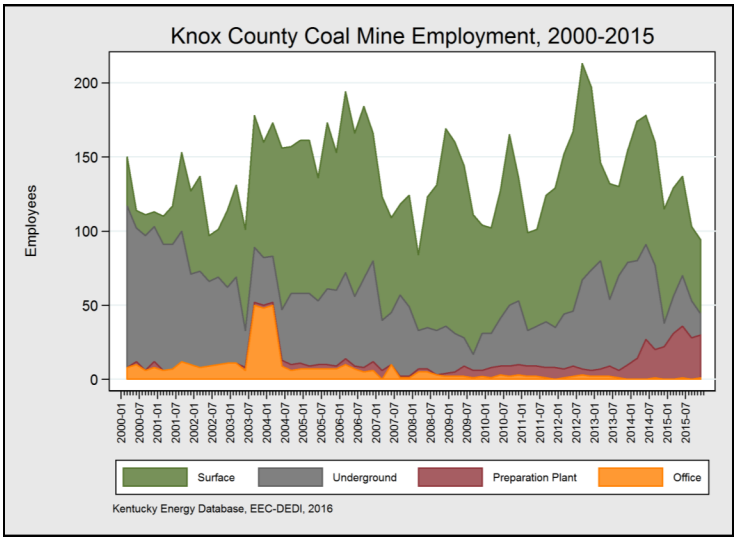


Production Method	Mines	Production	Annual Change
Total	9	180,748	-54.13%
Surface	5	117,211	-66.24%
Underground	4	63,537	+35.61%

On-Site Activity	Employment	Annual Change
Total	116	-27.38%
Surface	59	-30.82%
Underground	25	-51.72%
Preparation Plant	31	+50.00%
Office	1	+100.00%

Knox County produced 180,748 tons of coal in 2015, a decline of 54.13 percent from 2014. Around two-thirds of production came from surface mining operations.

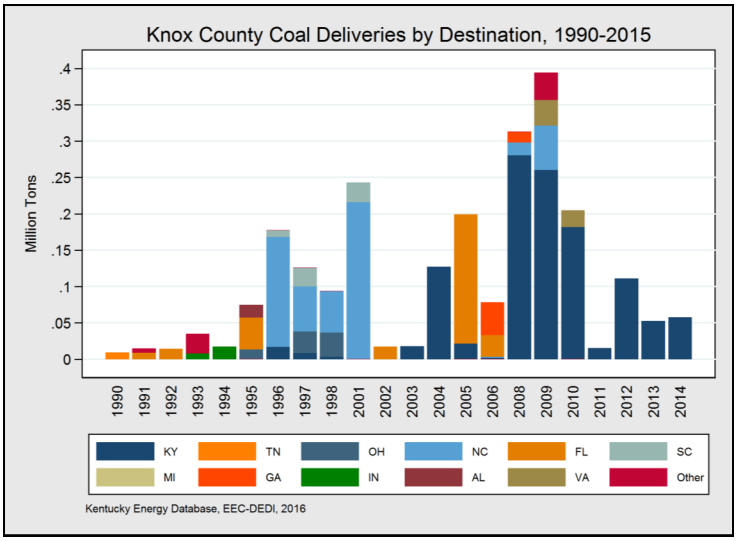


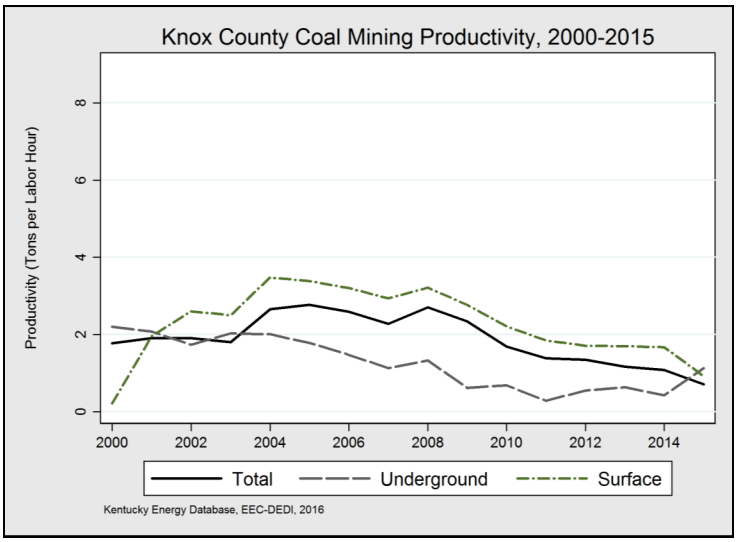


Coal production began in Knox County in 1890 with 80,105 tons and increased steadily to 912,589 tons in 1916. There were three periods of expansion contraction in Knox County coal production, which peaked in 1987 at two million tons and has declined by 91.12 percent through 2015. Since 2000, underground production's percentage of total production has eroded.

Knox County coal mines employed 116 on average in 2015, down 27.38 percent from 2014. Most coal miners in Knox County work in surface operations. The largest employers were Flat Creek mine and the Mountainside preparation plant. Coal mine employment in Knox County peaked in 1950 at 1,333 and has declined by 91.37 percent through 2015.

Knox County





Knox County Coal Market

The John S. Cooper Power Plant in Somerset, KY was the sole purchaser of Knox County coal from 2011 to 2014. Knox County did not have coal deliveries in 2015.

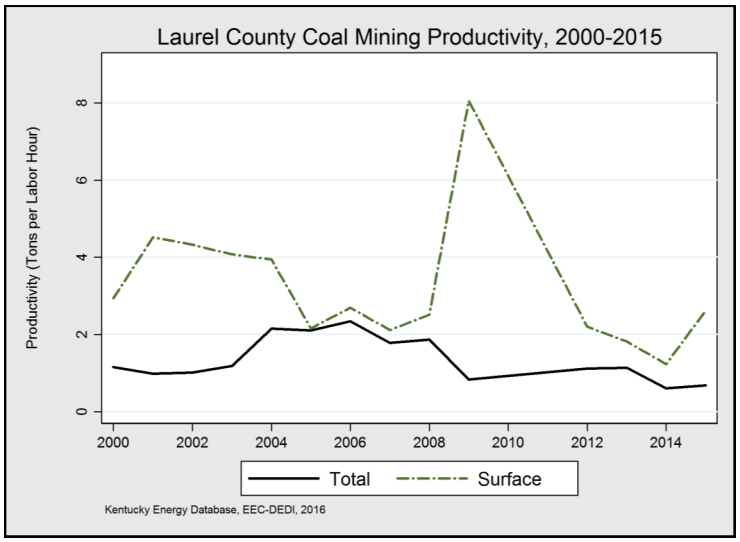
Knox County Coal Mining Productivity

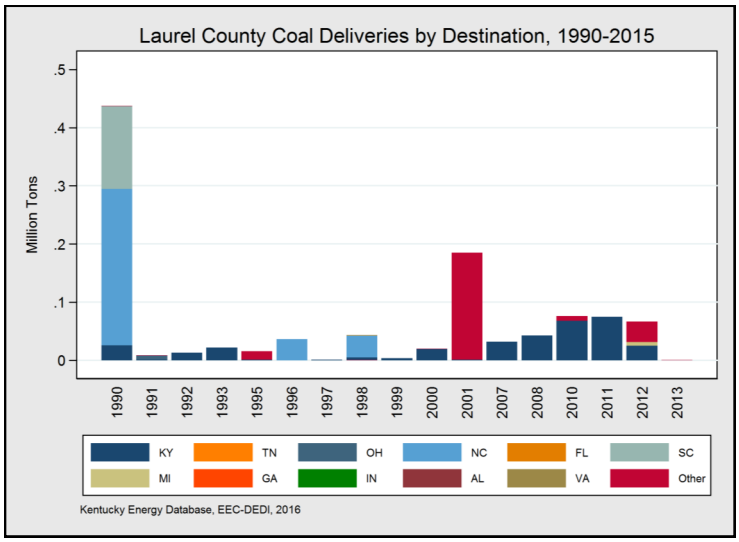
Knox County's overall coal mining productivity in 2014 was 0.79 tons per labor hour, which is a decrease of 22.55 percent from 2014. In 2015, surface mining operations in Knox county produced at a rate of 0.92 tons per labor hour while underground operations mined 1.30 tons per labor hour. This was the first time since 2001 that underground mines in Knox County had higher productivity than surface mines.

Chemical Composition

On average, coal mined in Knox County has a median sulfur content of 1.32 percent, a median ash content of 8.2 percent, and a median heat content of 24.87 MMBtu per ton.

Laurel County

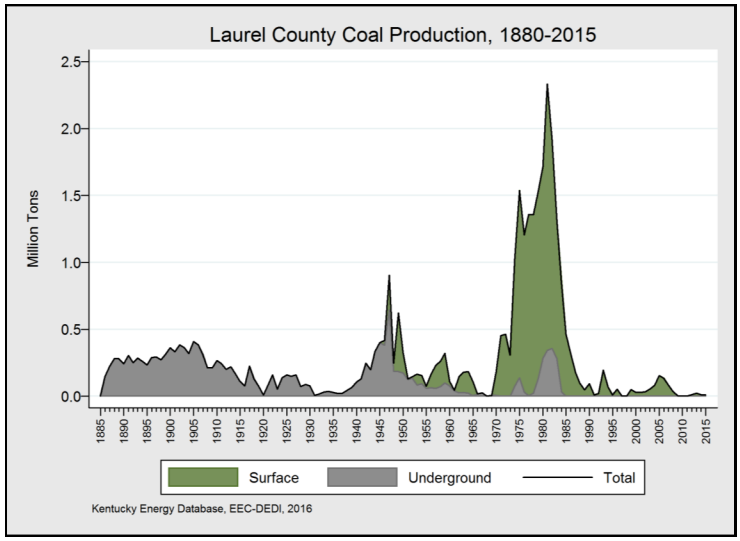


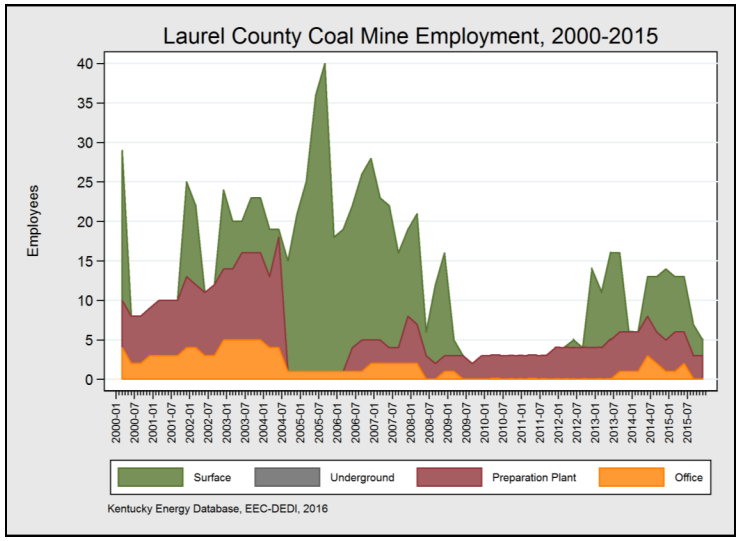


Production Method	Production	Annual Change
Total	8,668	-28.86%
Surface	8,668	-28.86%

Coal production stopped in Laurel County in 2010 and 2011, but small operations resumed in 2012. In 2015, the county produced 8,668 tons from surface mines.

On-Site Activity	Employment	Annual Change
Total	11	-16.23%
Surface	6	-25.93
Preparation Plant	4	0.0%
Office	1	0.0%

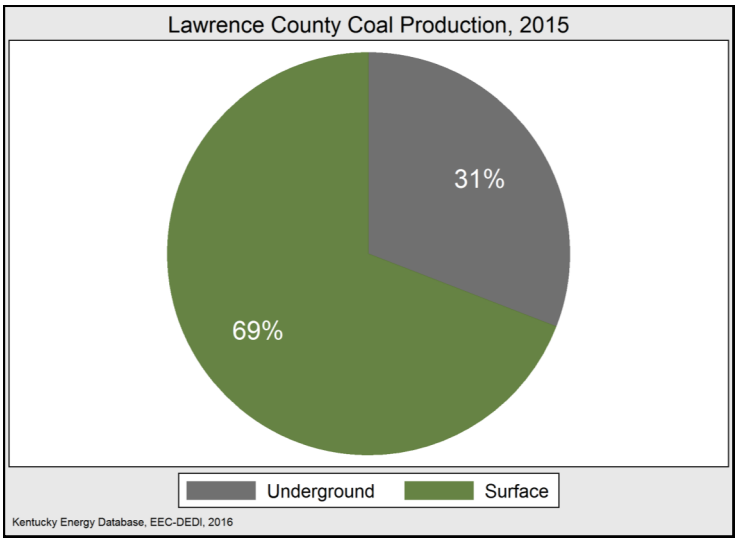


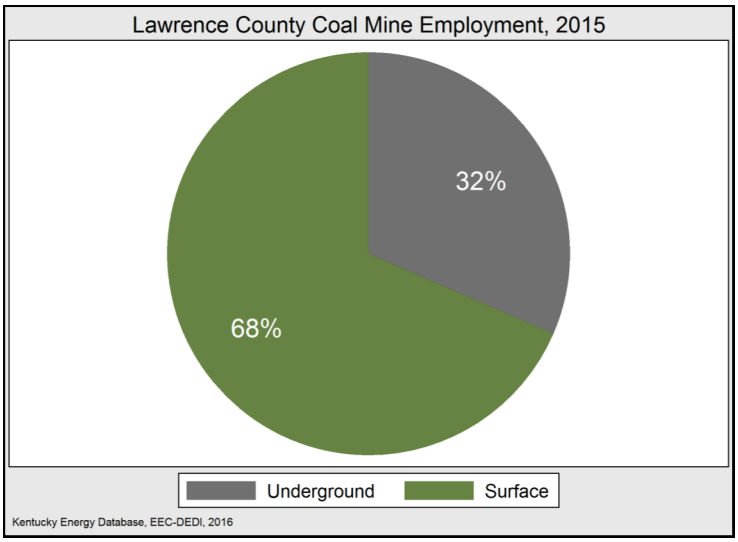


Coal production began in Laurel County in 1886 and peaked at 2.3 million tons in 1981. Since 1886, a total of 36.4 million tons of coal has been mined in Laurel County.

Surface mines in Laurel County employed a total of 6 coal miners on average in 2015. Additionally, 4 people were employed in the preparation plant and 1 in an office.

Lawrence County

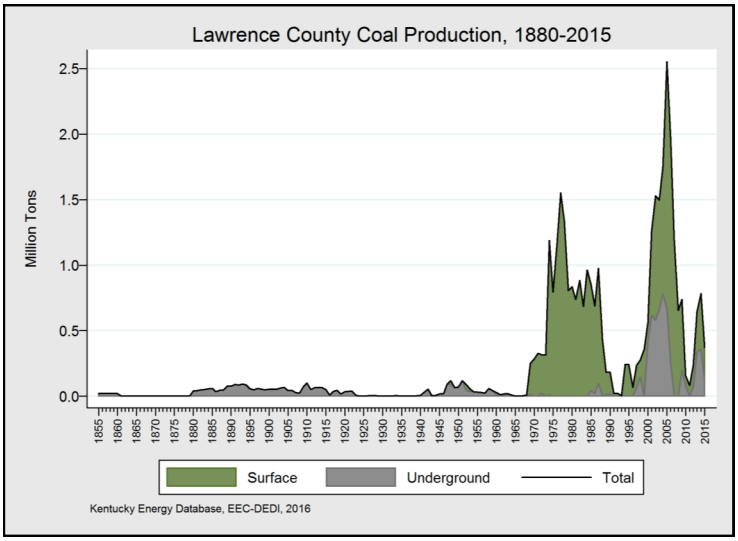


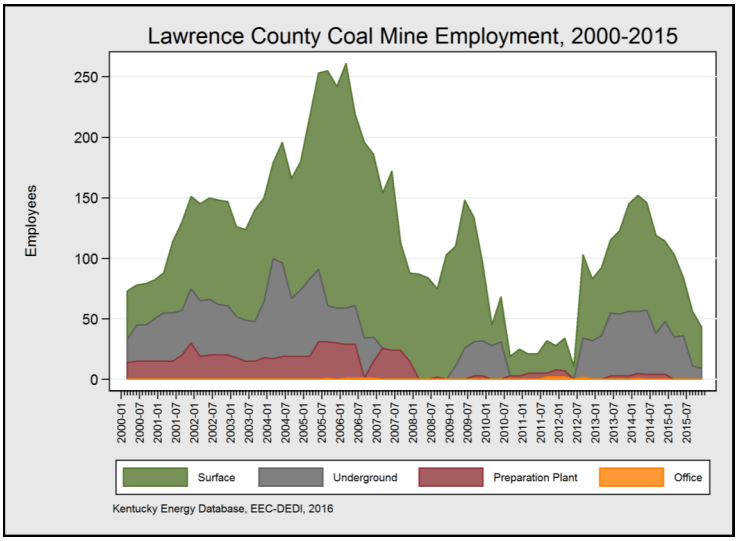


Production Method	Mines	Production	Annual Change
Total	6	373,375	-52.36%
Surface	5	257,982	-39.35%
Underground	1	115,393	-67.80%

On-Site Activity	Employment	Annual Change
Total	73	-45.36%
Surface	50	-40.20%
Underground	23	-50.00%
Preparation Plant	0	-100.00%

In 2015, Lawrence County mined 373,375 tons of coal, a decrease of 52.36 percent compared to 2014. Nearly 70 percent of production was from surface mining operations.

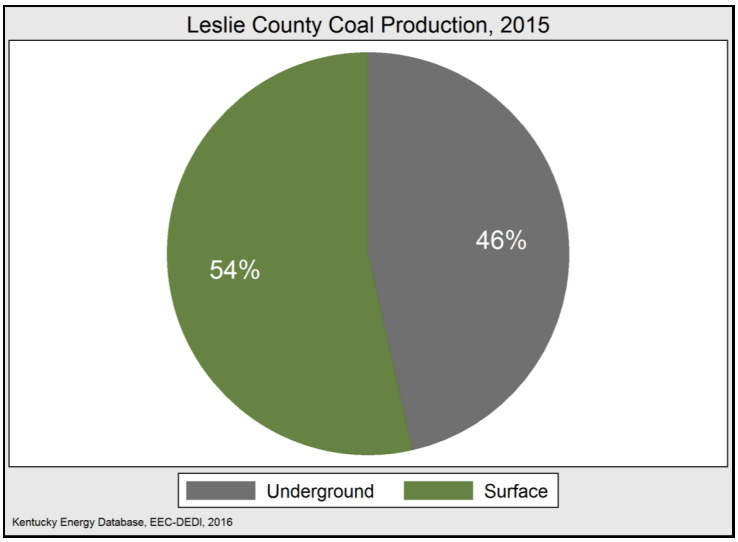


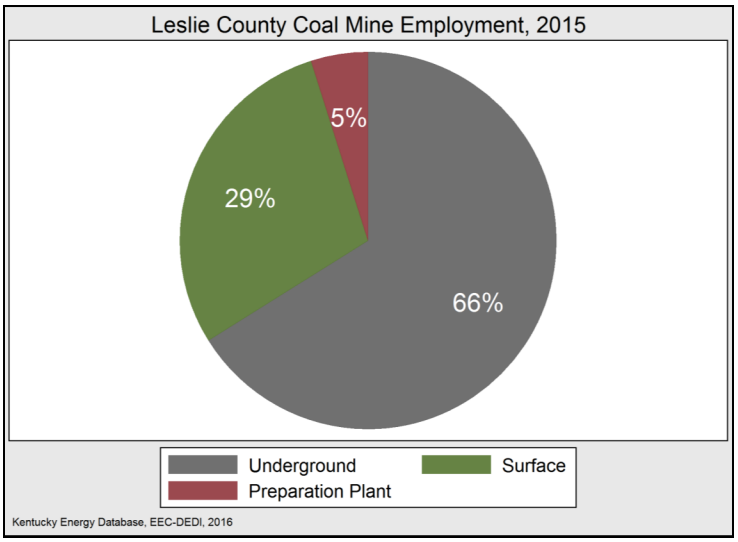


In 1838, the first commercial coal mine in Lawrence County produced 200 tons of coal. While very small underground mines in the county continued to produce coal throughout the 19th century, it was not until 1894 that the cumulative sum of coal mined in the county would reach one million tons. Annual coal production reached one million tons in 1974 with the advent of large-scale surface mining. Coal production peaked in 2005 at 2.6 million tons and has declined 85.64 percent from that point through 2015.

Coal mine employment in Lawrence County decreased by 45.36 percent in 2015 to 73 full-time workers, including 50 surface and 23 underground miners. While average productivity at underground mines in Lawrence County was 1.91 tons per labor hour in 2015, productivity at surface mining operations was 1.83 tons per labor hour, and productivity at underground mines was 2.06 tons per labor hour.

Leslie County

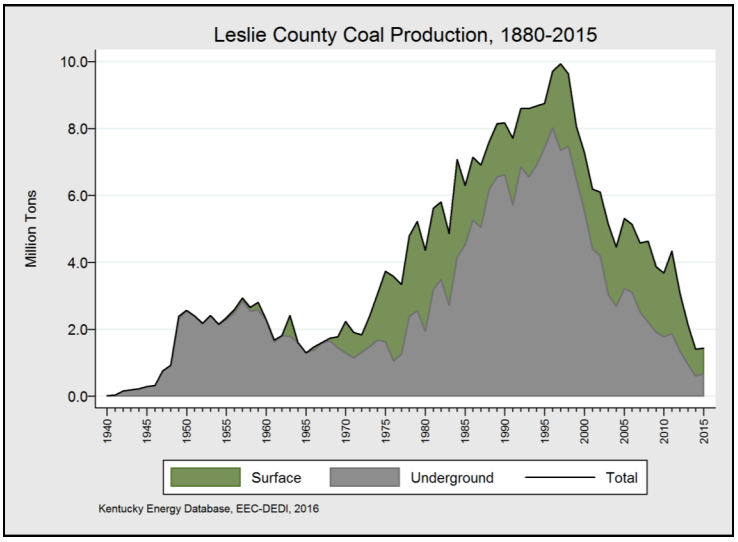


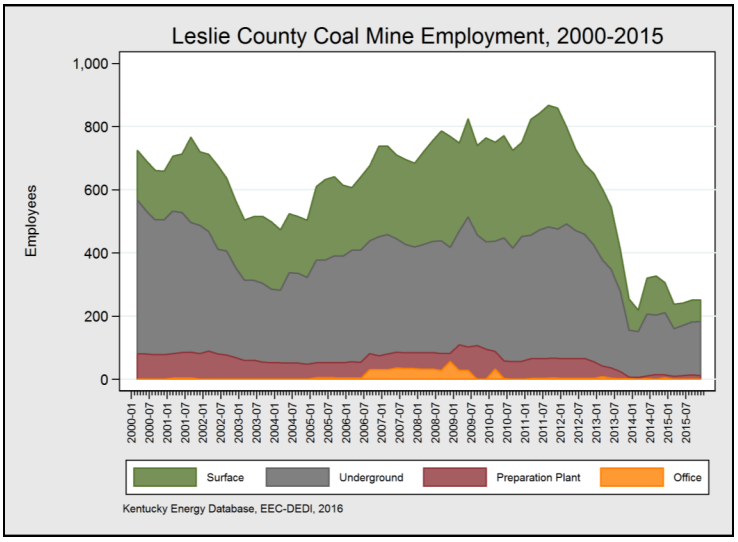


Production Method	Mines	Production	Annual Change
Total	5	1,437,000	+2.4%
Surface	2	769,079	-3.1%
Underground	3	667,921	+9.6%

5 coal mines in Leslie county produced 1.4 million tons of coal in 2015. This is a 2.4 percent increase from 2014.

On-Site Activity	Employment	Annual Change
Total	245	-15.52%
Underground	162	-10.00%
Surface	71	-28.28%
Preparation Plant	12	+33.33%
Office	0	-100.0%

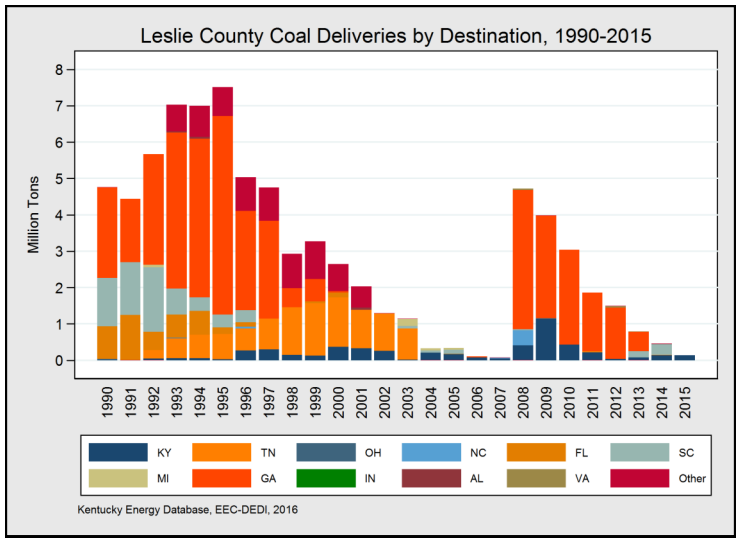


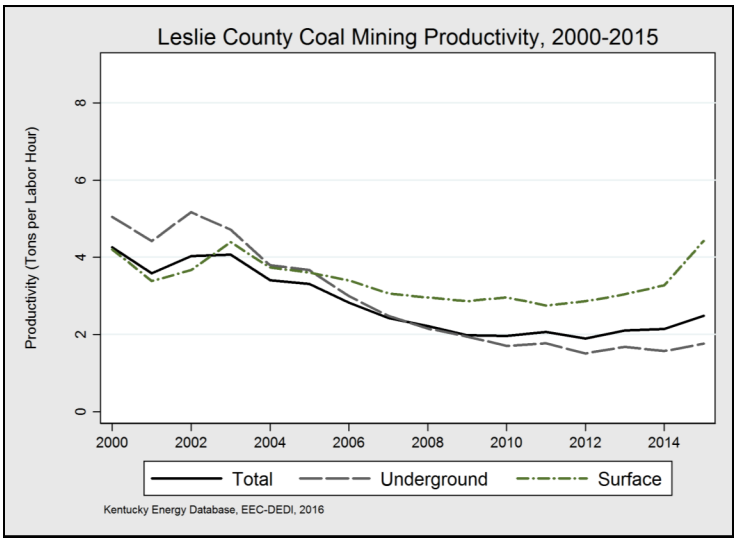


Leslie County did not begin commercial coal production until 1933 with 840 tons, much later than most coal producing counties. During this relatively short coal-mining history, Leslie County has produced more than 300 million tons of coal, or three percent of all coal ever mined in Kentucky. While 46 percent of the county's production in 2015 was from surface mining, most of the county's historical production was from underground operations.

Coal mine employment in Leslie County decreased by 15 percent in 2015 to 246. Most coal miners in 2015, 66 percent, worked in underground coal mines. Coal mine employment in Leslie County peaked at 2,267 in 1957, which was equivalent to 20 percent of the entire county population. Coal mine employment has declined by 89 percent through 2015.

Leslie County





State and Power Plant	Deliveries (Tons)	Percentage
Total	**135,995**	**100.0%**
Kentucky	**135,995**	**100.0%**
Cooper	126,844	93.3%
H L Spurlock	9,151	6.7%

Leslie County Coal Market

135 thousand tons of coal mined in Leslie County was delivered to the Cooper and H.L. Spurlock power plants in Kentucky in 2015. A decrease of 65 percent from 2014.

Leslie County Coal Mining Productivity

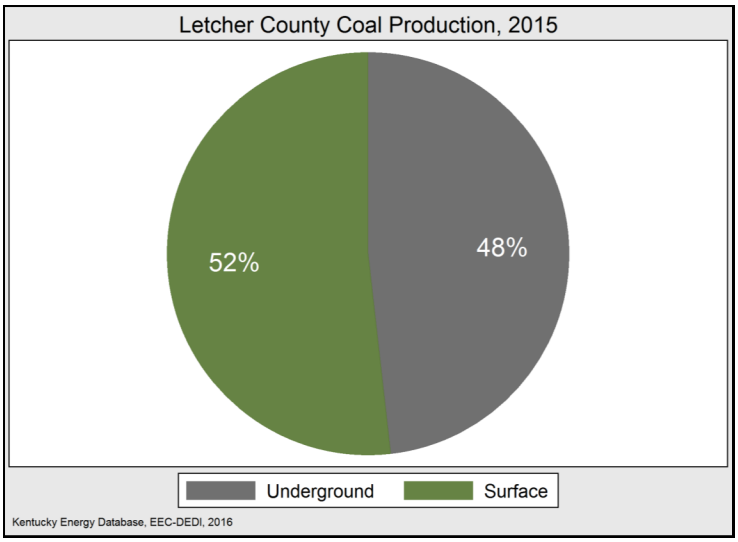
Average mine productivity in Leslie County was 2.48 tons per labor hour in 2015. Overall, county-level productivity was boosted by surface operations, which has been rising since 2011, and averaged 4.43 tons per labor hour. In 2015, underground mines yielded 1.79 tons per labor hour, an increase from 1.56 the year before.

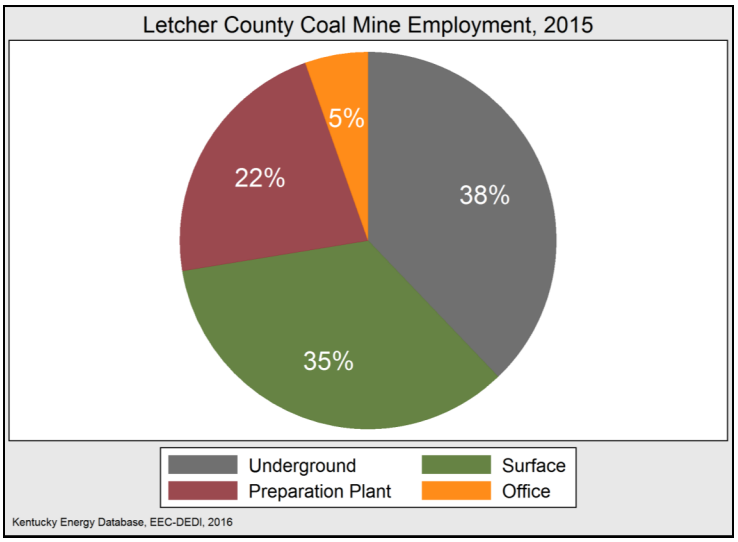
Chemical Composition and Cost

Coal mined in Leslie County had a median sulfur content of 1.43 percent, a median ash content of 10 percent, and a median heat content of 24.85 MMBtu per ton. These costs resulted in a median delivered price per ton of $72.53. The delivered price per MMBtu of coal from Leslie County had a median of $2.95 per MMBtu.

† The closure, or partial closure, of this power plant has been announced for 2015-2022.

Letcher County

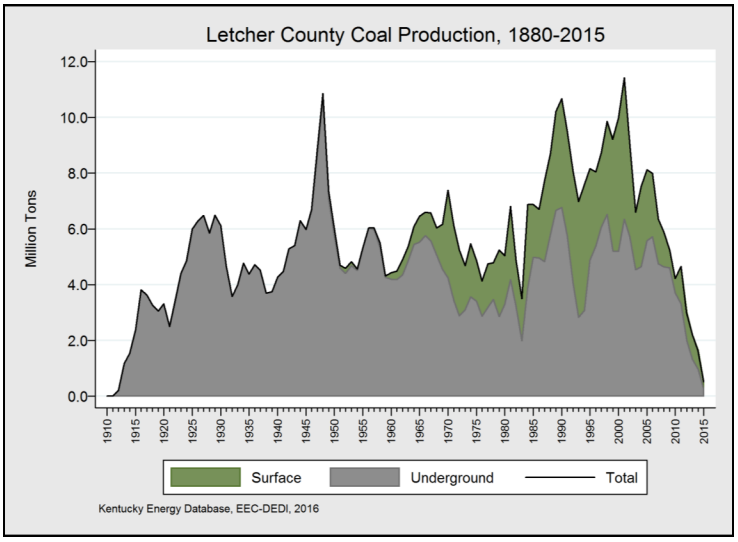


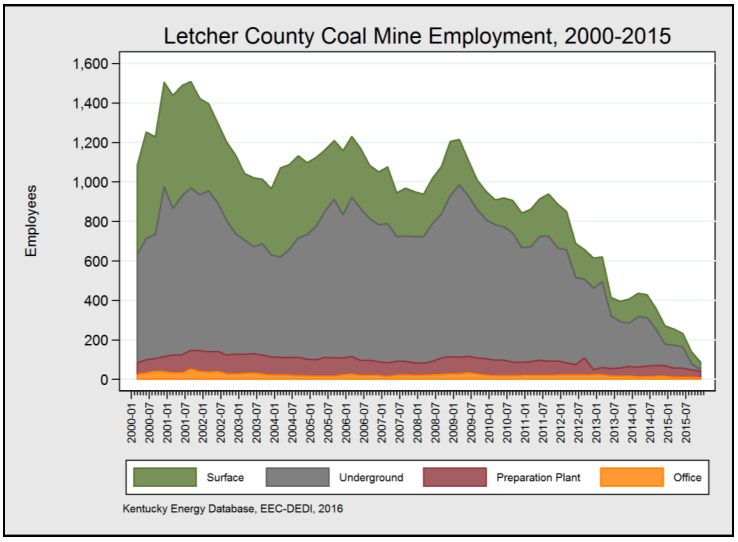


Production Method	Mines	Production	Annual Change
Total	21	523,160	-68.3%
Underground	12	252,243	-60.5%
Surface	9	270,917	-73.8%

On-Site Activity	Employment	Annual Change
Total	185	-50.9%
Underground	70	-65.5%
Surface	64	-41.3%
Preparation Plant	41	-24.1%
Office	10	-28.6%

18 mines in Letcher county produced 523 thousand tons of coal in 2015. A decrease of 68 percent of 2014.

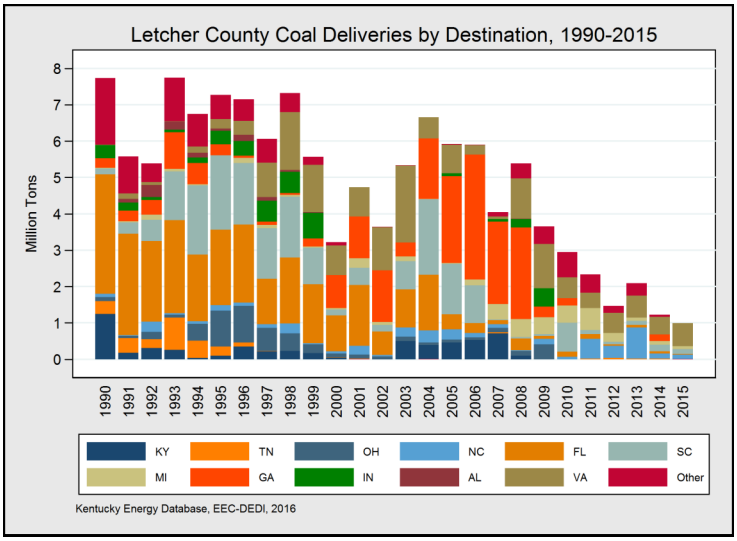


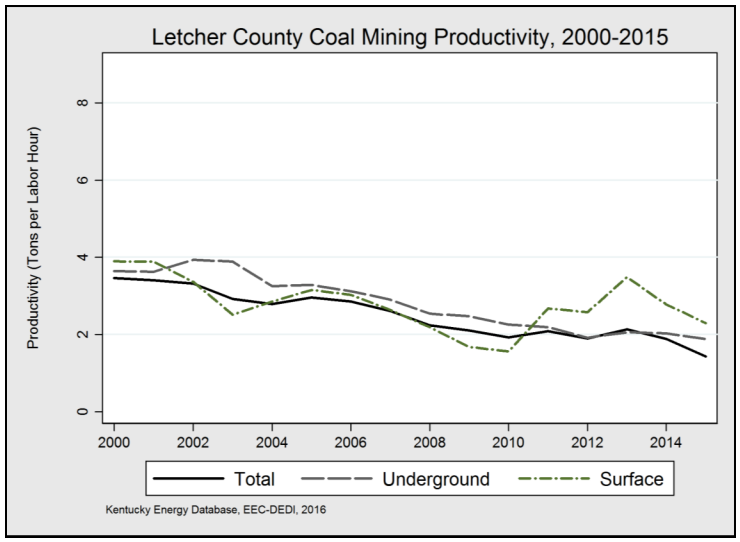


Coal production began in 1889 in Letcher County with 1,573 tons. In the 125 years since 1889, Letcher County has produced more than 588 million tons of coal, six percent of all coal ever mined in Kentucky. In 2015, coal production in Letcher County declined to 523 thousand tons, a decrease of 68 percent since 2014, and a decrease of 95 percent since peak production in 2001 at 11.4 million tons. Historically, production in Letcher County primarily came from underground coal mines. However, production now comes evenly from both underground and surface mines.

Coal mine operations in Letcher County employed an average of 185 people full-time throughout 2015, an average loss of 50 percent of all mining jobs compared to the year prior. Just over half of these workers worked underground. Coal mine employment has declined by 87 percent since the year 2000, when employment reached 1,505. Coal mine employment peaked in 1949 at 9,114 full time miners in Letcher County, which was equivalent to almost one-quarter of the county's population at that time.

Letcher County





State and Power Plant	Deliveries (Tons)	Percentage
Total	**994,034**	**100%**
Virginia	**632,594**	**63.6%**
Covington Facility	318,352	32.0%
Chesterfield	314,242	31.6%
South Carolina	**126,159**	**12.7%**
Cope	100,927	10.2%
Williams	25,232	2.5%
North Carolina	**125,906**	**12.7%**
James E. Rogers Energy Complex	113,278	11.4%
Marshall	12,628	1.3%
Michigan	**86,451**	**8.7%**
River Rouge	74,697	7.5%
J H Campbell	11,754	1.2%
Florida	**22,924**	**2.3%**
Crystal River†	22,924	2.3%

Letcher County Coal Market

Nearly 1 million tons of coal mined in Letcher County was shipped to power plants in five different states during 2015. Virginia and South Carolina were the two largest markets for Letcher County coal in 2015, consuming over 75 percent of coal from the county.

Letcher County Coal Mining Productivity

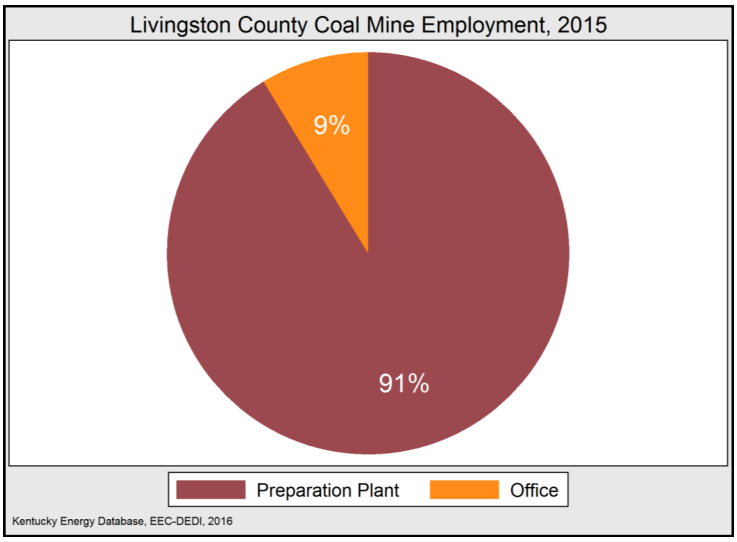
Average coal mine productivity in Letcher County was 1.42 tons per hour in 2015. While underground operations had productivity of 1.99 tons per hour and represented 51 percent of county production, surface operations were more efficient at 2.48 tons per hour.

Chemical Composition and Cost

Letcher County produces very high quality coal. Coal mined in Letcher County had a median sulfur content of 1.85 percent, a median ash content of 8.3 percent, and a median heat content of 26 MMBtu per ton. These costs resulted in a median delivered price per ton of $75.72. The median delivered price per MMBtu was $3.04 per MMBtu.

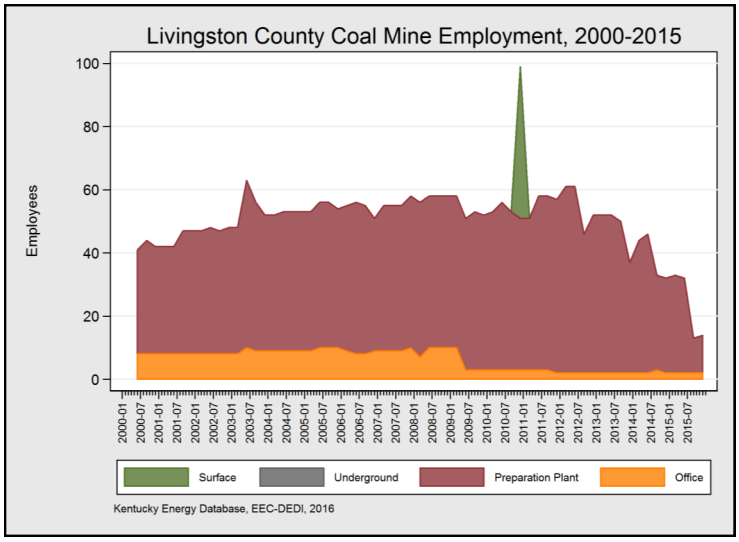
† The closure, or partial closure, of this power plant has been announced for 2015-2022.

Livingston County



Pictured above: The Grand River Terminal in Livingston County

On-Site Activity	Employment	Annual Change
Total	23	-41.03%
Preparation Plant	21	-43.2%
Office	2	0%

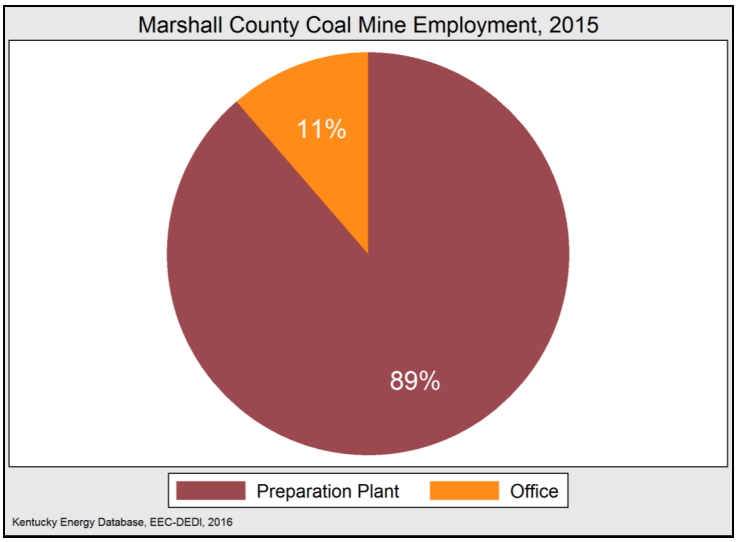


Livingston County Coal Shipments

Although Livingston County—in western Kentucky northeast of Paducah—has never registered coal production, its location on Kentucky Lake and near the Ohio River southwest of many of Kentucky's coal producing counties make it a good location to process and ship coal. During 2015, coal preparation and transportation facilities in Livingston County supported 23 full-time employees. 21 of these individuals operated coal preparation plants, cleaning and loading coal for delivery to electric utilities. Two people were employed in office capacities, in direct support of preparation plants.

Marshall County

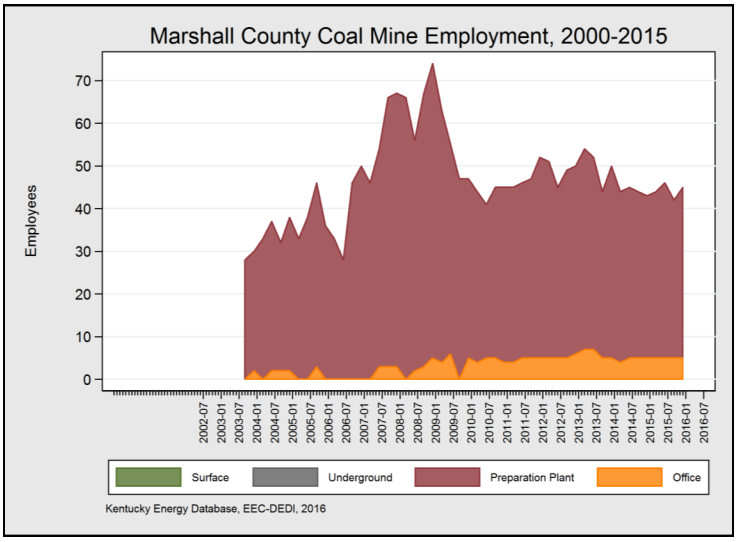
Pictured above: The Calvert City Terminal in Marshall County.



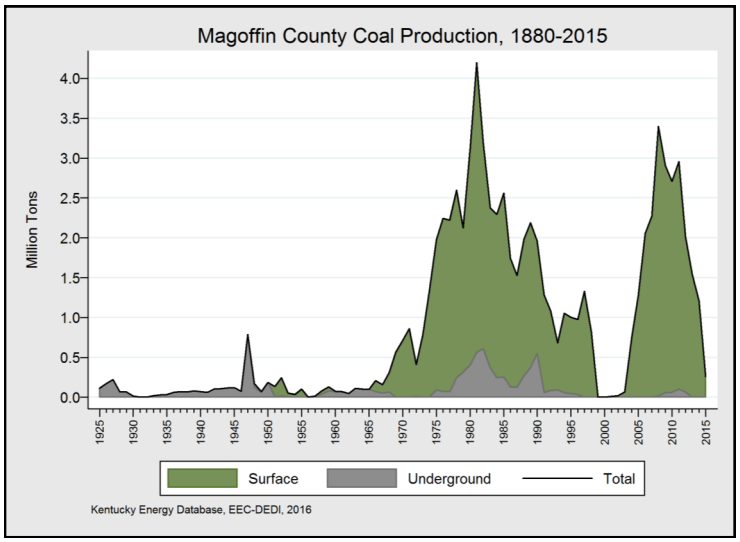
On-Site Activity	Employment	Annual Change
Total	44	+0.0%
Preparation Plant	39	+0.0%
Office	5	+0.0%

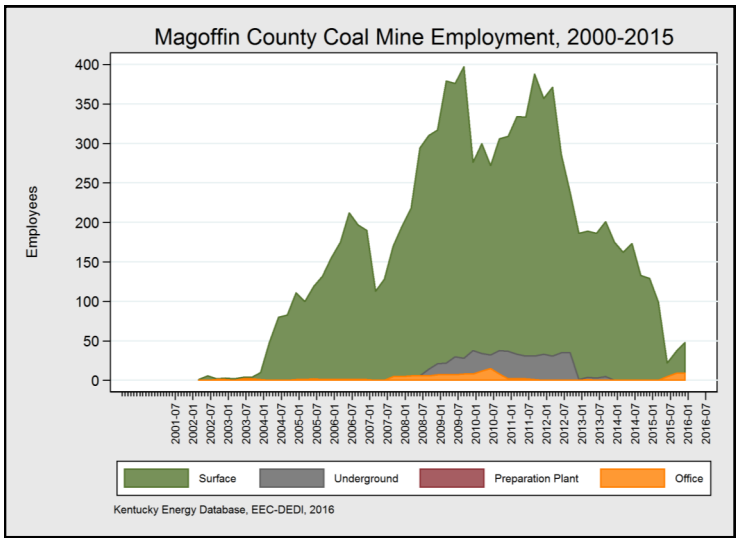
Marshall County Coal Mining Employment

Marshall County, in western Kentucky, has never mined coal. However, the coal mining operations in Marshall County on the Ohio River near Calvert City do prepare and ship coal from neighboring coal-producing counties. During 2015, coal preparation and transportation facilities in Marshall County supported 44 full-time employees. 39 of these individuals operated coal preparation plants, cleaning and loading coal for delivery to electric utilities. Around five people were employed in office capacities, in direct support of preparation plants.



Magoffin County





Production Method	Mines	Production	Annual Change
Total	5	258,351	-78.58%
Surface	5	258,351	-78.58%

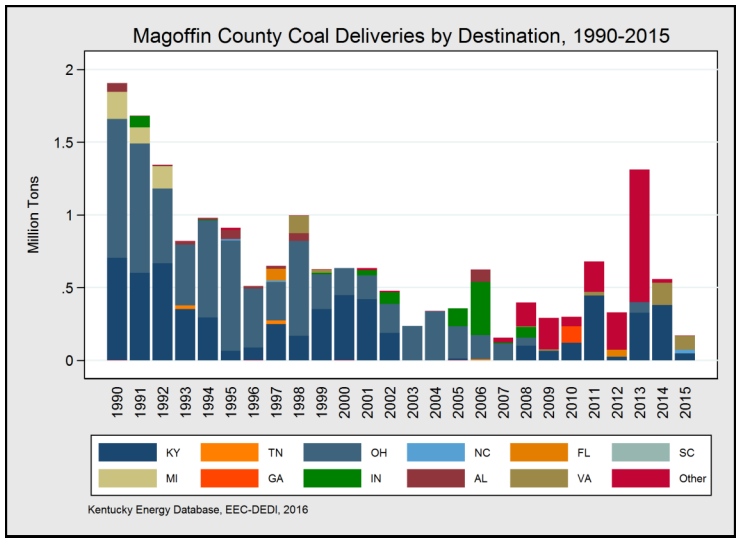
On-Site Activity	Employment	Annual Change
Total	52	-65.56%
Surface	44	-70.86%
Office	8	+100%

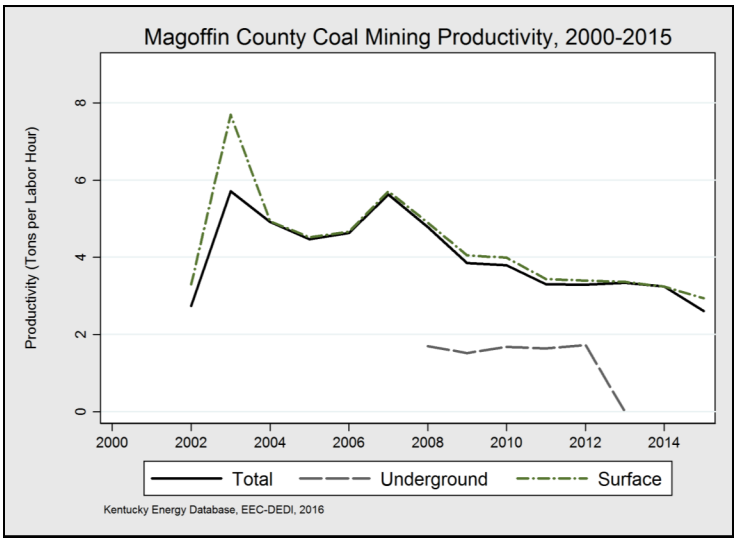
Magoffin County, in eastern Kentucky, has continued to have vast fluctuations in its coal mine production and employment since the 1960s. The first-recorded commercial coal production in Magoffin County was 5,404 tons in 1889. In the 125 years since, Magoffin County has recorded nearly 80 million tons of coal. Throughout its history, coal production in Magoffin County has fluctuated substantially, with coal production decreasing from peak production of 4.2 million tons in 1981 to zero by 1999 and recovering to 3.4 million by 2008. In 2015, the mines in Magoffin County mined 258 thousand tons of coal, a decrease of 78 percent from 2015.

In the year 2000, many areas of Magoffin County were considered mined-out, and no longer supported productive mine operations. However, a substantial increase in the market price of coal starting in 2002 changed the economics of mining in Magoffin County, and new mines were developed on less productive seams. As coal prices have declined, so too has production and employment. In 2015, there were 44 production workers, a decrease of 70 percent from the year prior.

Pictured: Former Kentucky Coal Facts authors Aron Patrick and Adam Blandford exploring a Kentucky coal mine 900 feet underground.

Magoffin County





State and Power Plant	Deliveries (Tons)	Percentage
Total	**166,626**	**100%**
Virginia	**95,111**	**57.1%**
Chesterfield	95,111	57.1%
Kentucky	**46,382**	**27.8%**
Big Sandy	46,382	27.8%
North Carolina	**25,133**	**15.1%**
James E. Rogers	25,133	15.1%

Magoffin County Coal Market

Coal deliveries from Magoffin County decreased by 63 percent in 2015, relative to the year prior. In 2013, Magoffin County registered its highest level of coal shipments during the last five years, but because most coal shipments went to the Mitchell Power Plant in West Virginia, the majority of coal demand was lost when the plant drastically decreased coal shipments from the county in 2014. The majority of coal from Magoffin County was shipped to the Chesterfield Power Plant in Virginia in 2015.

Magoffin County Coal Mining Productivity

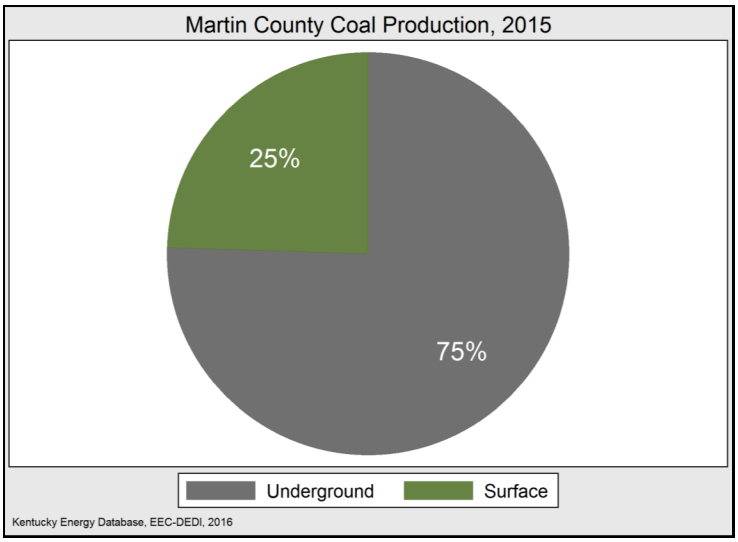
At 2.61 tons per labor hour, average coal mine productivity in Magoffin County was the tenth highest in Kentucky and the fourth highest of any county in eastern Kentucky in 2015. This level of productivity was influenced entirely by surface mine operations, which represented all coal production in Magoffin County in 2015. Production in the county decreased from 3.23 tons per labor hour in 2014.

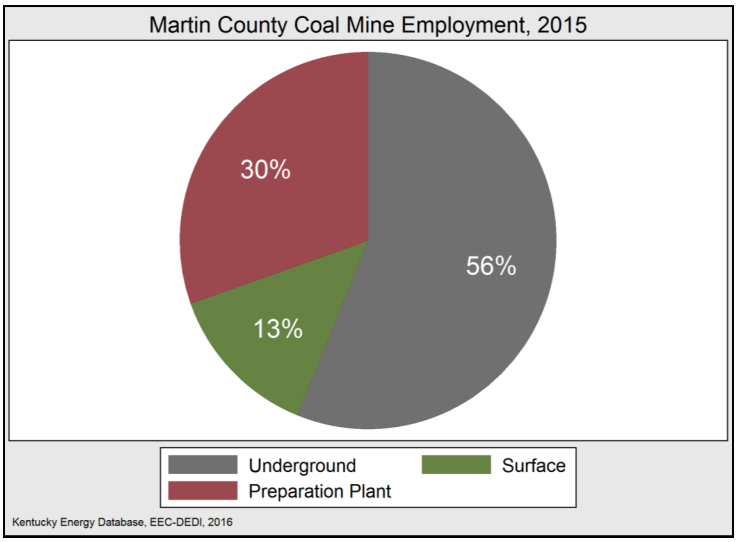
Chemical Composition and Cost

On average, coal mined in Magoffin County had a median sulfur content of 0.92 percent, a median ash content of 10.3 percent, and a median heat content of 24.44 MMBtu per ton. The average delivered price per ton for Magoffin County coal in 2015 was $66.02 The delivered price per MMBtu of coal from Magoffin County had a median of $2.64 per MMBtu.

† The closure, or partial closure, of this power plant has been announced for 2015-2022.

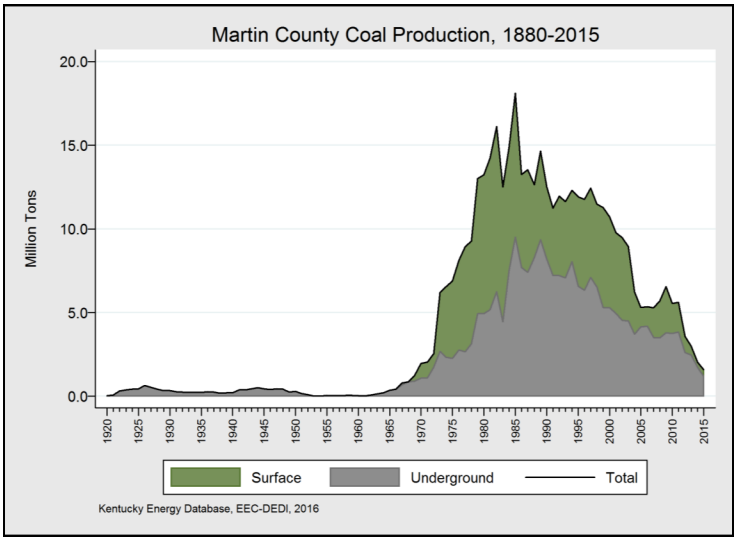
Martin County

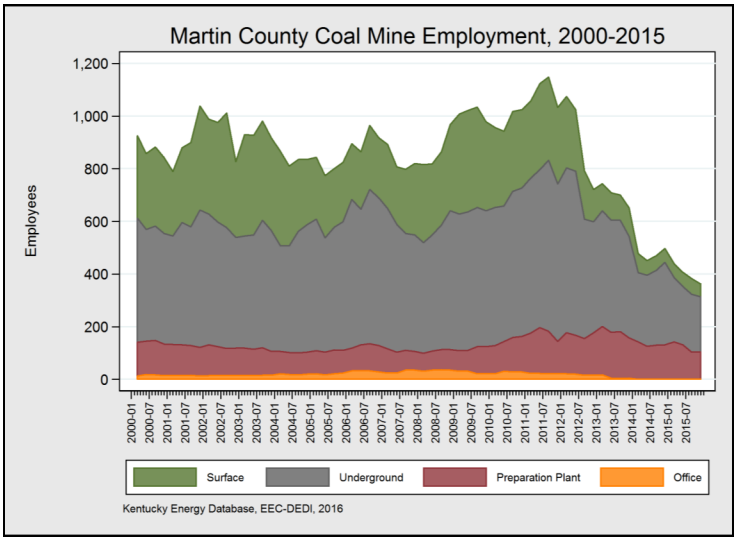




Production Method	Mines	Production	Annual Change
Total	4	1,578,349	-22.76%
Underground	1	1,191,565	+22.85%
Surface	3	386,784	-31.07%

On-Site Activity	Employment	Annual Change
Total	401	-15.01%
Underground	225	-20.21%
Preparation Plant	122	-7.58%
Surface	54	-6.90%
Office	0	-100.0%

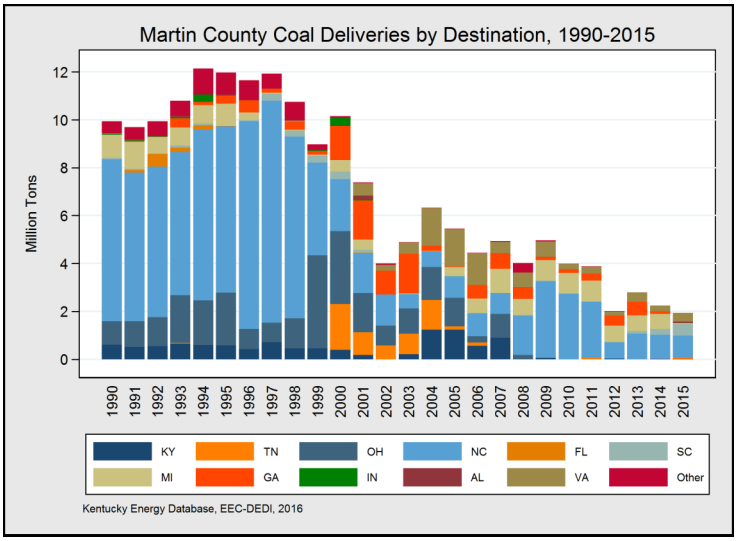


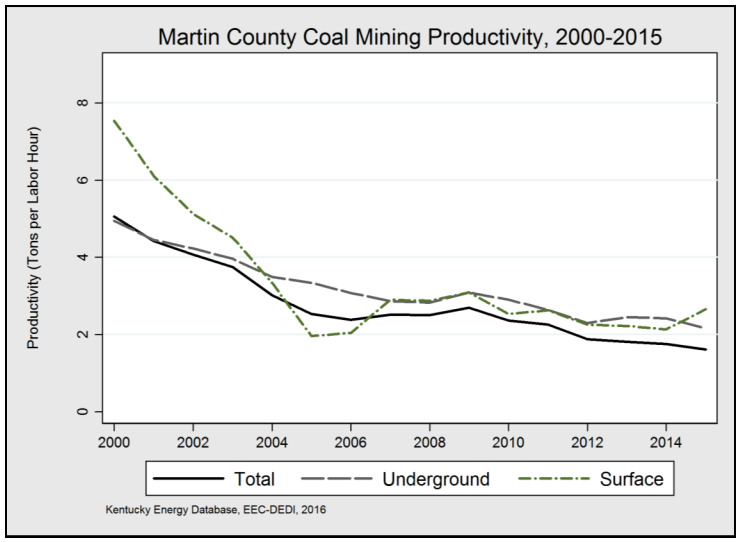


Coal production in Martin County was recorded as early as 1879 at 56 tons. It was not until the First World War that production would be recorded annually when Martin County mined 56,091 tons in 1918. In 1969, the county produced over one million tons for the first time and coal production began to rapidly increase, peaking in 1985 at 18 million tons. Coal production has declined by 91 percent through 2015.

Coal mines in Martin County employed, on average, 401 people full-time through 2015, a decrease of 43 percent from 2013 and of 63 percent from 2011. The majority of coal miners in Martin County have been employed in underground operations. Additionally, 122 people worked in coal preparation plants, 54 people worked in surface mining operations, and one individual supported mine operations in office capacities.

Martin County





State and Power Plant	Deliveries (Tons)	Percentage
Total	**1,939,489**	**100%**
North Carolina	**916,566**	**47.3%**
Roxboro	666,112	34.3%
G G Allen	121,369	6.3%
Belews Creek	69,369	3.6%
Marshall	59,716	3.1%
South Carolina	**474,557**	**24.5%**
Williams	226,424	11.7%
Cope	214,893	11.1%
McMeekin†	33,240	1.7%
Virginia	**367,989**	**19.0%**
Clover	367,989	19.0%
Tennessee	**74,517**	**3.8%**
Cumberland	74,517	3.8%
Alabama	**61,644**	**3.2%**
Colbert†	61,644	3.2%
Mchigan	**44,216**	**2.3%**
Monroe	44,216	2.3%

Martin County Coal Market

Steam coal shipments from Martin County decreased by 15 percent between 2014 and 2015. In total, 1.9 million tons of coal mined in Martin County was shipped to power plants in 2015. Seventy one percent of those shipments were to power plants in North Carolina and South Carolina.

Martin County Coal Mining Productivity

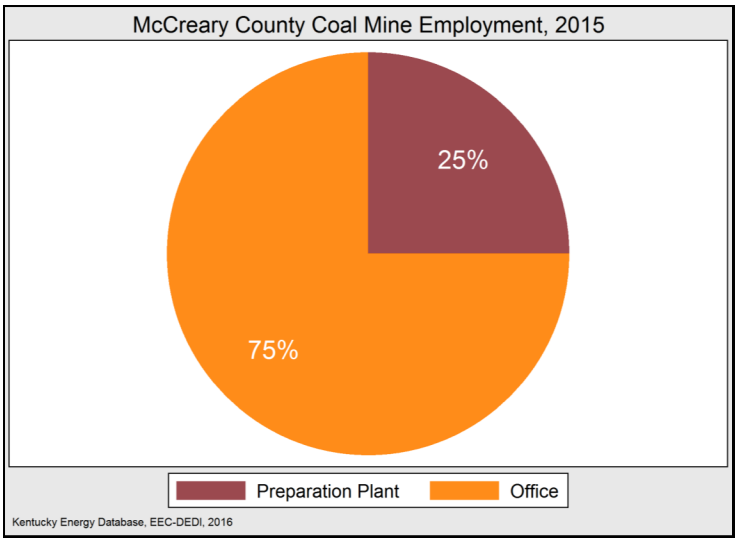
Since 2000, Martin County coal mine productivity has declined steadily, which has increased the costs of coal production, and decreased cost-competiveness versus alternative sources of energy. Martin County's productivity in 2015 was 1.61 tons per labor hour, a decrease of greater than 68 percent from the year 2000. In 2015, underground mines in Martin County were more productive than surface mines—2.16 tons per hour compared to 2.11 tons per hour. However, the productivity of surface mines in Martin County has fluctuated substantially over time, compared to the relative stability of underground operations.

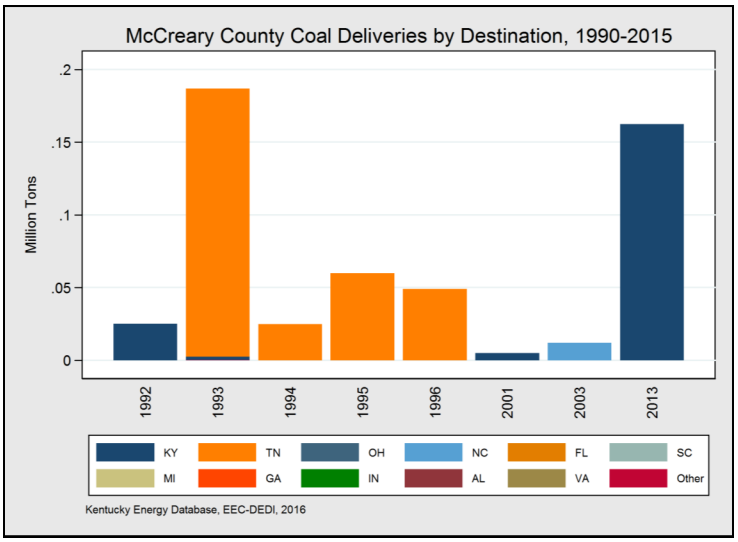
Chemical Composition and Cost

Martin County produces some of highest-grade coal in Kentucky, third to Bell and Knox counties. Coal mined in Martin County had a median sulfur content of 0.79 percent, a median ash content of 8.1 percent, and a median heat content of 24.81 MMBtu per ton. Martin County Coal had a median delivered price per ton of $81.42. The delivered price per MMBtu of coal from Martin County had a median of $3.31 per MMBtu.

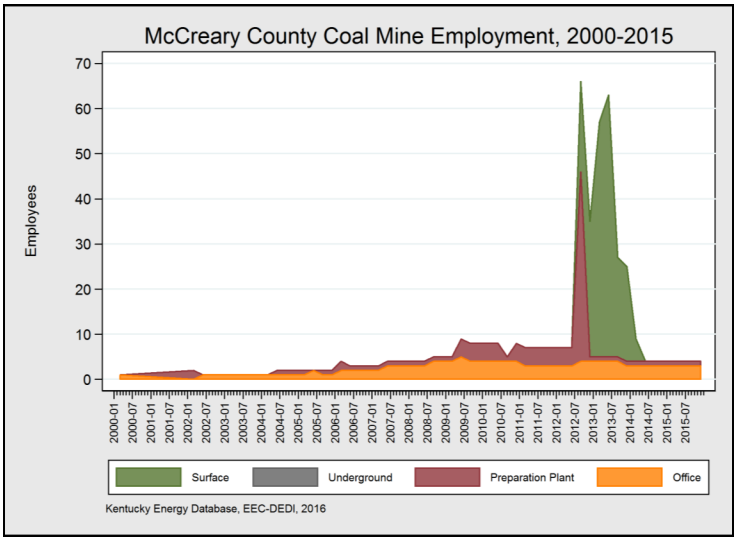
† The closure, or partial closure, of this power plant has been announced for 2015-2022.

McCreary County





On-Site Activity	Employment	Annual Change
Total	4	+0%
Office	3	+0%
Preparation Plant	1	+0%
Surface	0	-100%



Though there was no coal production in McCreary County in 2015, three office workers and one preparation plant worker were employed in the county. In 2013, 21 surface miners worked in the county, but operations ceased by July of 2014.

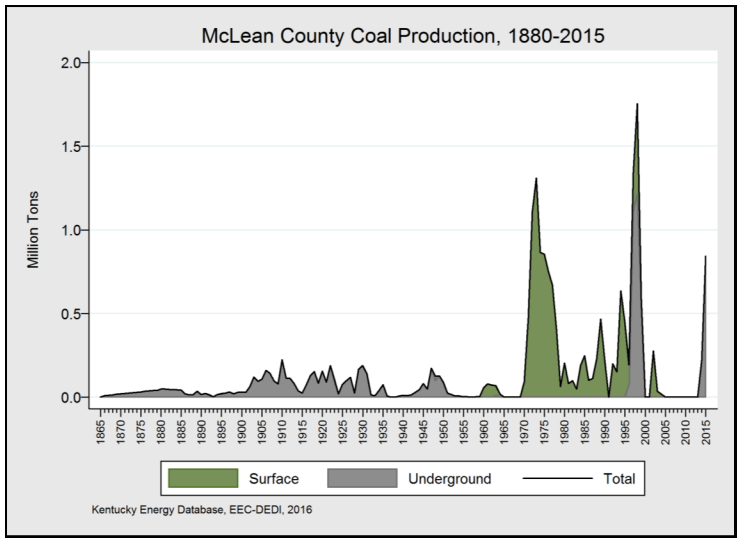
McCreary County Coal Market

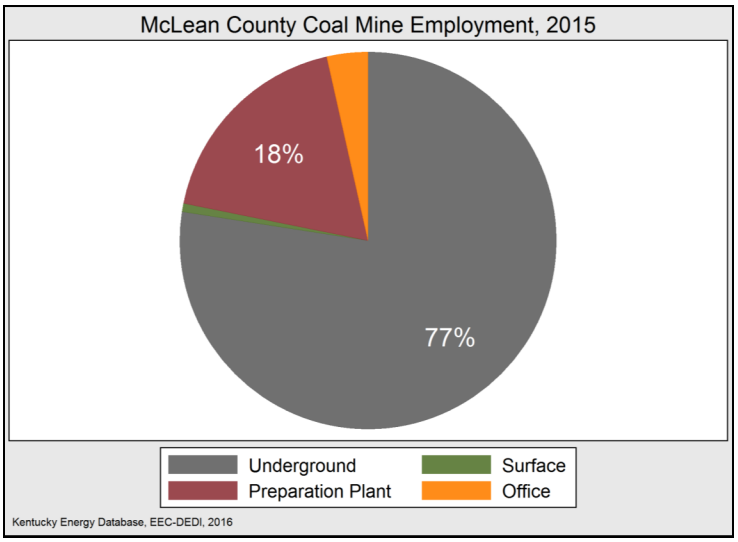
The John S. Cooper Plant in Pulaski County Kentucky received 12 shipments totaling 79 thousand tons of coal in 2013 from McCreary County. The plant was the last plant that recorded coal shipments from the county and the only receiver of coal from the county in the last decade.

Chemical Composition and Cost

Coal mined in McCreary County since 1990 had a median sulfur content of 1.01 percent, a median ash content of 5.6 percent, and a median heat content of 26.09 MMBtu per ton. The average delivered price per ton for McCreary County coal in 2013 was $53.39, and ranged from $48.51 to $54.97 per ton. The delivered price per MMBtu of coal from McCreary County had a median cost of $2.14 per MMBtu and ranged from $2.03 to $2.19 per MMBtu.

McLean County





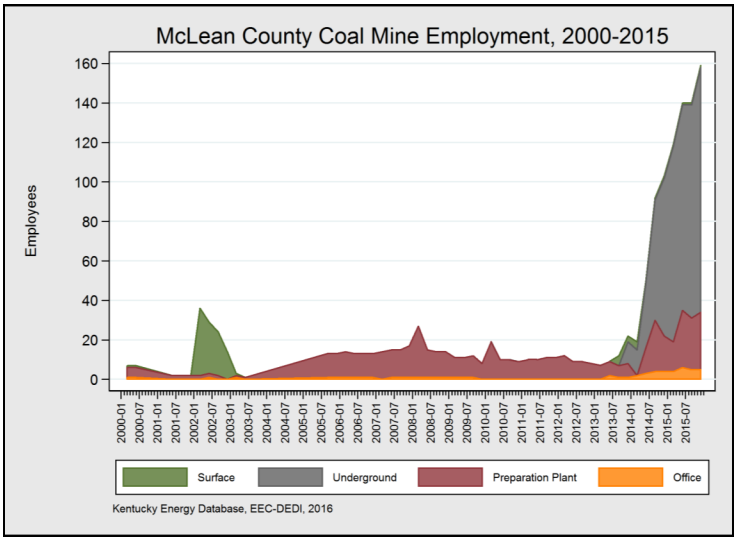
Production Method	Mines	Production	Annual Change
Total	1	842,924	+281.57%
Underground	1	842,924	+281.57%

McLean County produced 842,924 tons of coal in 2015 from underground mining operations at the Riveredge Mine.

On-Site Activity	Employment	Annual Change
Total	142	+86.84%
Underground	110	+111.54%
Preparation Plant	26	+30.0%
Surface	1	+0.0%
Office	5	+66.67%

State and Power Plant	Deliveries (Tons)	Percentage
Total	**807,116**	**100.0%**
Kentucky	**807,116**	**100.0%**
Ghent	580,770	72.0%
Trimble County	121,085	15.0%
R D Green	61,521	7.6%
D B Wilson	43,740	5.4%

Each ton of coal mined in McLean County in 2015 was delivered to power plants in Kentucky. The largest consumer of McLean County coal among those plants was LG&E's Ghent Generating Station which received 580,770 tons.

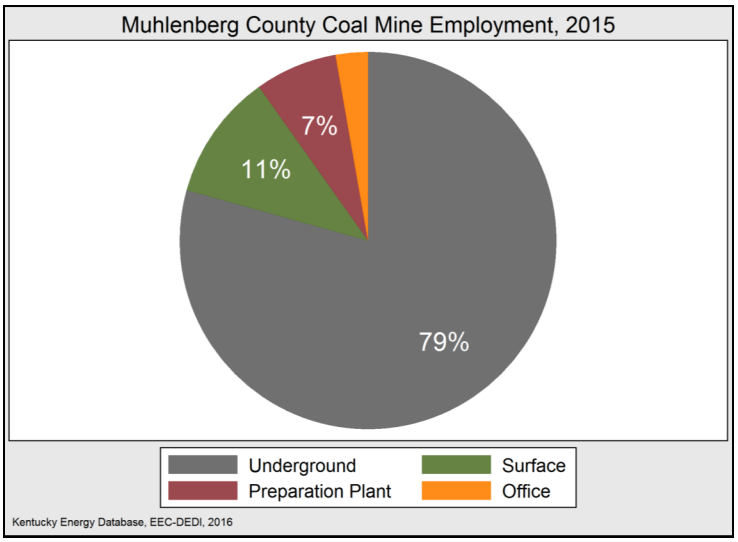


Although McLean County began mining coal in 1825, which has continued until this day with few exceptions. No coal was produced in McLean County during the decade between 2004-2013, and while coal was not mined during this period, preparation plants continued to operate in the county.

Coal mines and preparation plants in McLean County employed, on average, 142 people in 2015, including 110 underground miners, 26 preparation plant workers, 1 surface miner, and 5 people employed full time in an on-site office. The Riveredge Mine is the only producing mine in McLean County.

† The closure, or partial closure, of this power plant has been announced for 2015-2022.

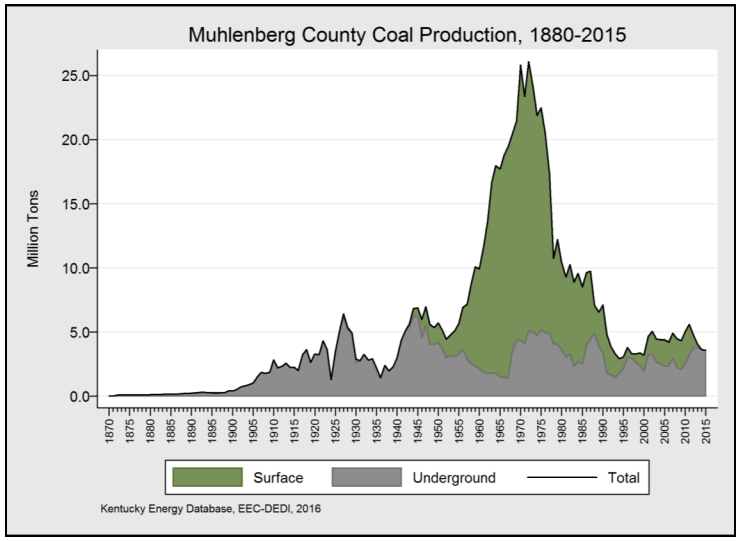
Muhlenberg County

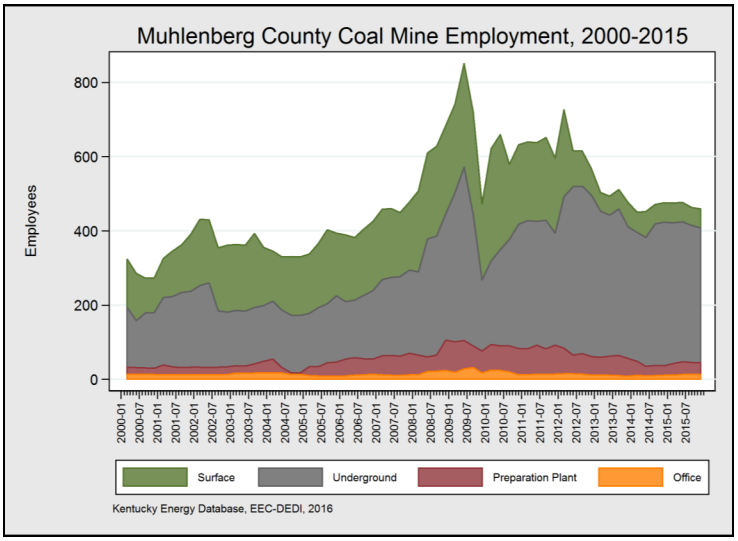


Production Method	Mines	Production	Annual Change
Total	3	3,567,732	-1.6%
Underground	3	3,567,732	-1.6%

On-Site Activity	Employment	Annual Change
Total	469	+1.08%
Underground	372	+1.09%
Surface	51	-10.53%
Preparation Plant	33	-13.79%
Office	13	+30.0%

Muhlenberg County decreased production by 1.6 percent in 2015 to 3.56 million tons of coal. *Pictured: Peabody's "Big Hog", a Marion 8800 dragline mining near Paradise in 1961.*

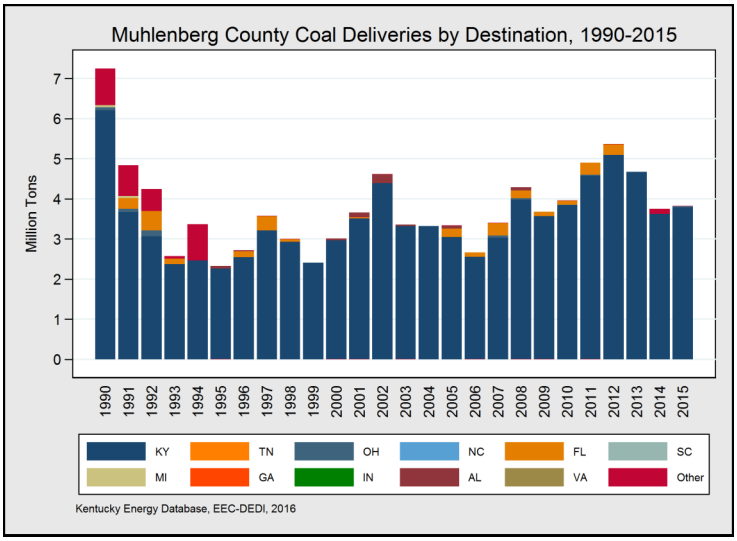


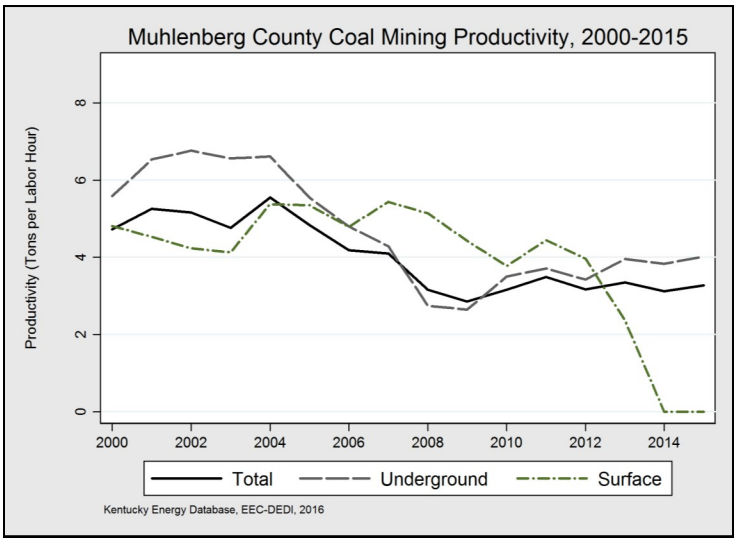


Muhlenberg County is situated on the Green River in western Kentucky and has been mining coal since the year 1820. Muhlenberg County was the largest producing county in Kentucky between 1908-1913 from underground mines, and 1961-1976 from surface mines. Coal production in Muhlenberg County peaked in 1972 at 26 million tons and has declined by 86 percent through 2015. To date, Muhlenberg County has produced 797 million tons, making it the 4th largest coal producing county in Kentucky.

In 1977, shortly after peak production, mines in Muhlenberg County employed 3,765 coal miners full time. In 2015, there were an average of 469 persons employed at coal production facilities. In 2015, Muhlenberg County employed 372 underground miners, 51 surface miners, and 33 people preparation plant employees. There were 13 people employed in full time office positions.

Muhlenberg County





State and Power Plant	Deliveries (Tons)	Percentage
Total	**3,815,031**	**100%**
Kentucky	**3,791,106**	**99.4%**
Paradise†	2,536,537	66.5%
D B Wilson	1,143,660	30.0%
Elmer Smith	79,115	2.1%
R D Green	31,794	0.8%
Ohio	**23,925**	**0.6%**
Miami Fort†	23,925	0.6%

Muhlenberg County Coal Market

Power plants in Kentucky consumed almost all of the coal shipped from Muhlenberg County in 2015, which has been the case since at least the 1960's. In fact, most of the coal is used in Muhlenberg County, which is home to the Paradise Fossil Plant. Paradise is the largest power plant in Kentucky, among the ten largest coal-fired plants in the United States, and the single-largest consumer of Kentucky coal globally. In 2016, the Tennessee Valley Authority will close two of three coal-fired units at Paradise, and begin generating power from a new natural gas combined cycle power plant being built on site. Paradise Fossil Plant alone, where units 1 and 2 will be retired in 2017, received 63 percent of Muhlenberg County's coal shipments. Muhlenberg County has always been among the main sources of coal shipped to Paradise Fossil Plant, situated adjacent to the former town of Paradise, Kentucky.

Muhlenberg County Coal Mining Productivity

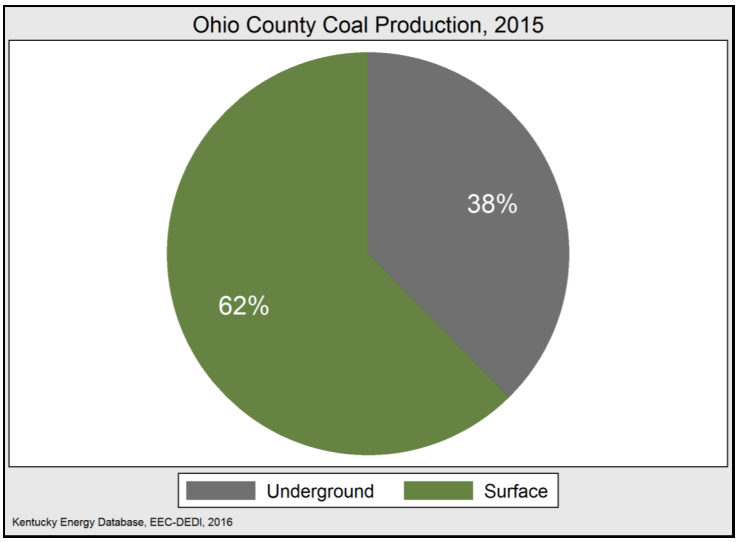
While average productivity at mines in Muhlenberg County was 3.27 tons per hour in 2015, productivity at underground mines was 4.06 tons per labor hour and surface mines was 0.03 tons per hour. This contrasts significantly from 2012, when underground mines yielded 3.42 tons per labor hour and surface mines produced at a rate of 4.12 tons per labor hour. Overall productivity for coal mine operations in Muhlenberg County during 2015 was seventh highest in Kentucky, and county level underground productivity ranked sixth in Kentucky.

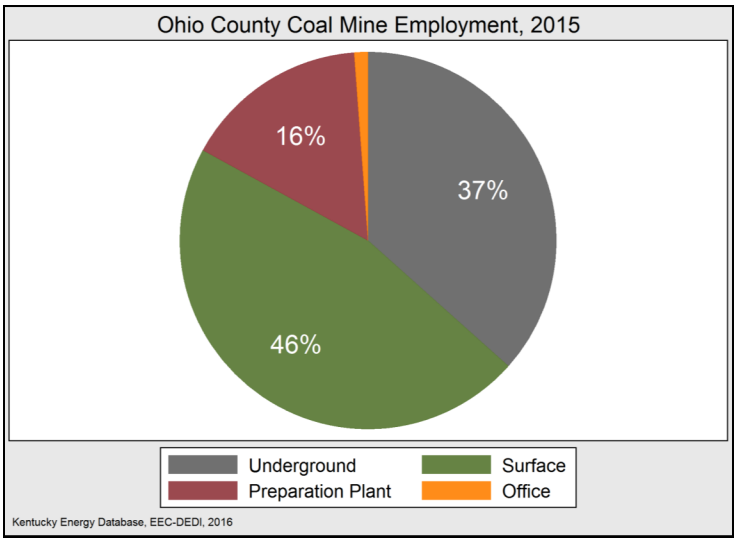
Chemical Composition and Cost

On average, coal mined in Muhlenberg County had a median sulfur content of 2.88 percent, a median ash content of 8.3 percent, and a median heat content of 23.42 MMBtu per ton. The average delivered price per ton for Muhlenberg County coal in 2015 was $52.51. The delivered price per MMBtu of coal from Muhlenberg County had a median of $2.26 per MMBtu.

† The closure, or partial closure, of this power plant has been announced for 2015-2022.

Ohio County

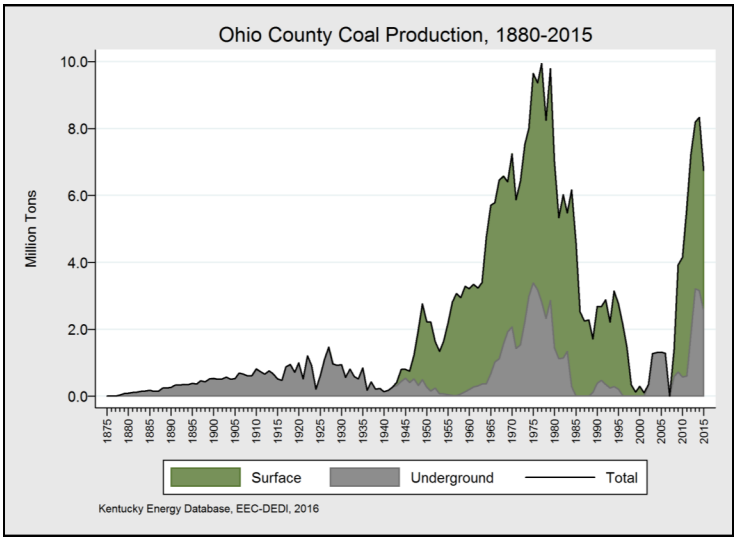


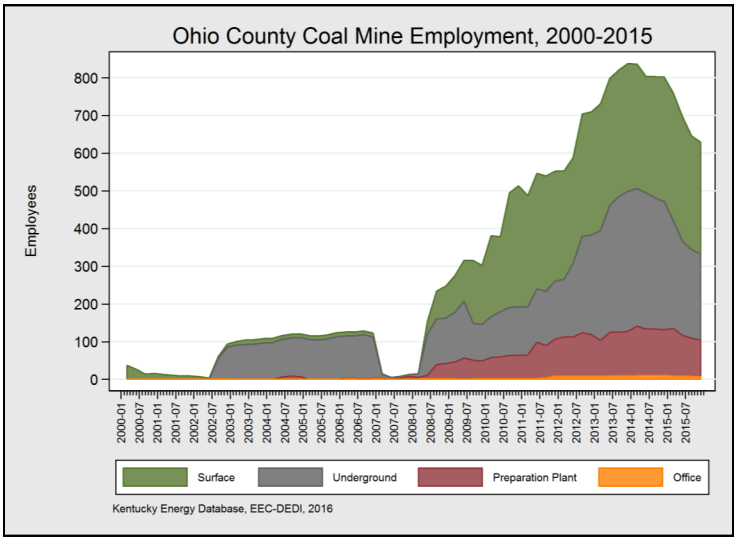


Production Method	Mines	Production	Annual Change
Total	6	6,748,636	-19.05%
Underground	2	2,539,725	-18.81%
Surface	4	4,208,911	-19.45%

On-Site Activity	Employment	Annual Change
Total	686	-15.41%
Underground	251	-28.90%
Surface	318	-1.55%
Preparation Plant	109	-12.8%
Office	8	-20.0%

In 2015, Ohio County mined more than 6.7 million tons of coal. In 2015, Ohio County was the 4th largest coal producing county in Kentucky.

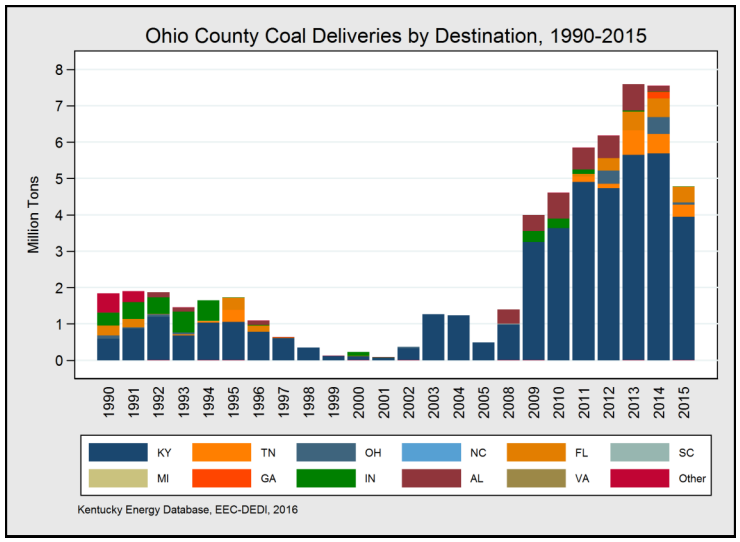


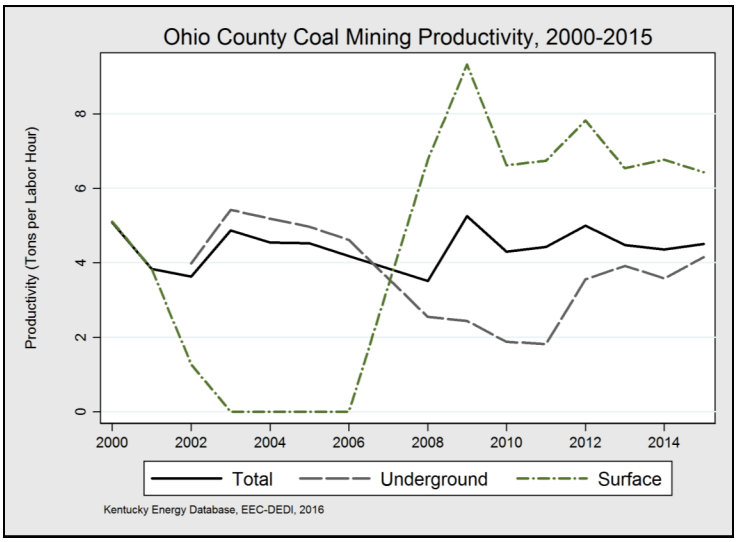


Ohio County coal production in 2015, at more than 6.7 million tons, is 32 percent lower than the levels of peak production of more than 9.9 million tons reached in 1977. Coal production has been recorded in Ohio County since 1865, and during 150 years of production, more than 311 million tons of coal have been extracted in Ohio County. The majority of mining production has been from surface operations since 1947 with the exception of 2001 through 2007.

Coal companies in Ohio County have, on average, employed 686 full time employees in 2015. Of the 686 employees, 251 worked in underground mines, 318 in surface mines, 109 in preparation plants, and 8 in on-site offices.

Ohio County





State and Power Plant	Deliveries (Tons)	Percentage
Total	**4,786,503**	**100%**
Kentucky	**3,935,592**	**82.2%**
Ghent	1,525,027	31.9%
Paradise†	512,398	10.7%
Elmer Smith	476,911	10.0%
Trimble County	409,535	8.6%
Mill Creek	298,002	6.2%
Cane Run†	284,158	5.9%
East Bend	215,716	4.5%
E W Brown	177,109	3.7%
H L Spurlock	36,736	0.8%
Florida	**430,594**	**9.0%**
Davant Transfer	265,234	5.5%
Big Bend	165,360	3.5%
Tennessee	**345,414**	**7.2%**
Kingston	335,037	7.0%
Calvert City	10,377	0.2%
Ohio	**58,943**	**1.2%**
W H Zimmer	58,943	1.2%
Indiana	**15,960**	**0.3%**
Warrick	15,960	0.3%

Ohio County Coal Market

More than 4.7 million tons of Ohio County coal were delivered to power plants in 2015. Ohio County coal shipments grew by four percent in 2014 and are five times 2008 levels. Kentucky received 82 percent of the market for Ohio County coal in 2015, and coal from the county was delivered to 9 different power plants across the state that year. Paradise and Cane Run—15 percent of Ohio County deliveries—are closing within the next two years.

Ohio County Coal Mining Productivity

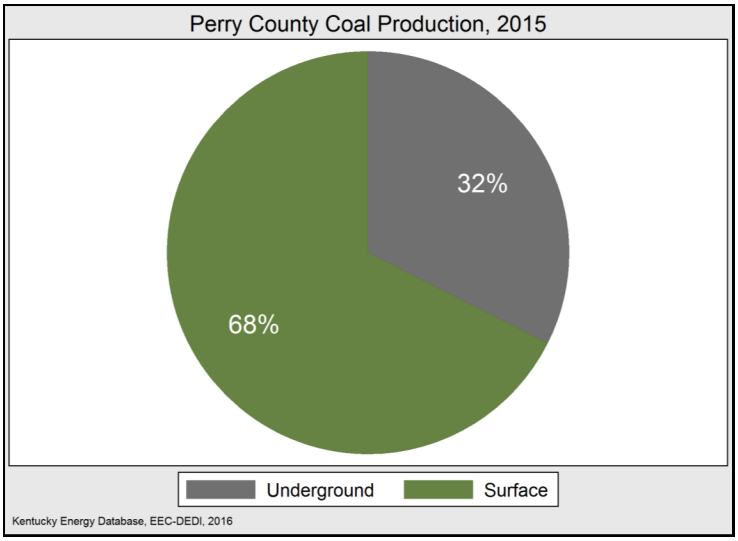
Of all coal mining counties in Kentucky in 2015, Ohio County in western Kentucky had the 2nd highest average productivity at 4.51 tons per labor hour. Surface operations, which represented 62 percent of annual production, achieved a statewide high of 6.62 tons per labor hour. Underground operations had an average productivity of 4.09 tons per hour—fourth most productive of Kentucky counties. Productivity has generally risen in tandem with increased production since 2006.

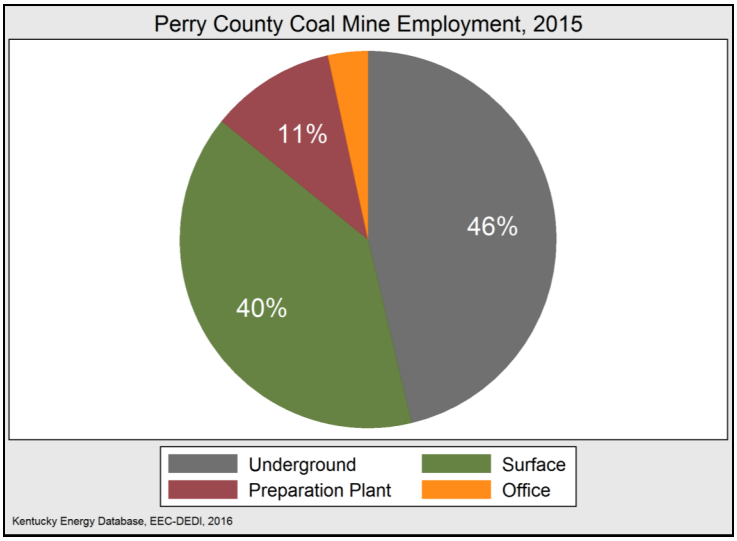
Chemical Composition and Cost

On average, coal mined in Ohio County had a median sulfur content of 3.08 percent, a median ash content of 10.5 percent, and a median heat content of 22.46 MMBtu per ton. The average delivered price per ton for Ohio County coal in 2015 was $50.72. The delivered price per MMBtu of coal from Ohio County had a median of $2.21 per MMBtu.

† The closure, or partial closure, of this power plant has been announced for 2015-2022.

Perry County

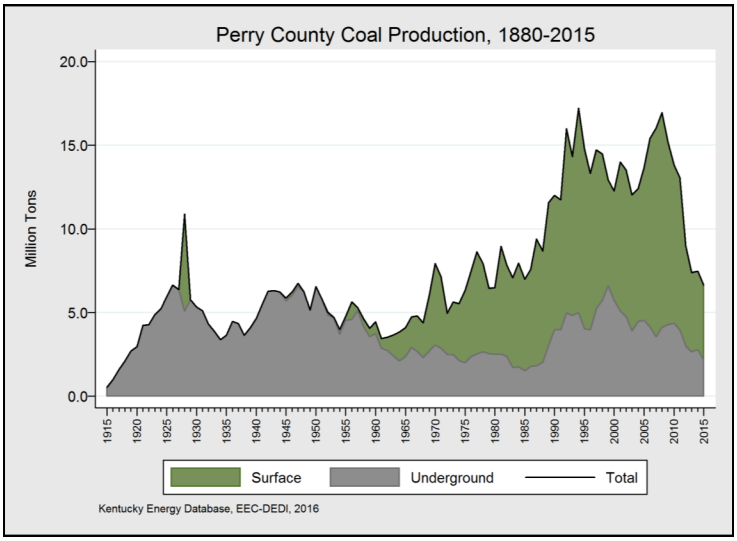


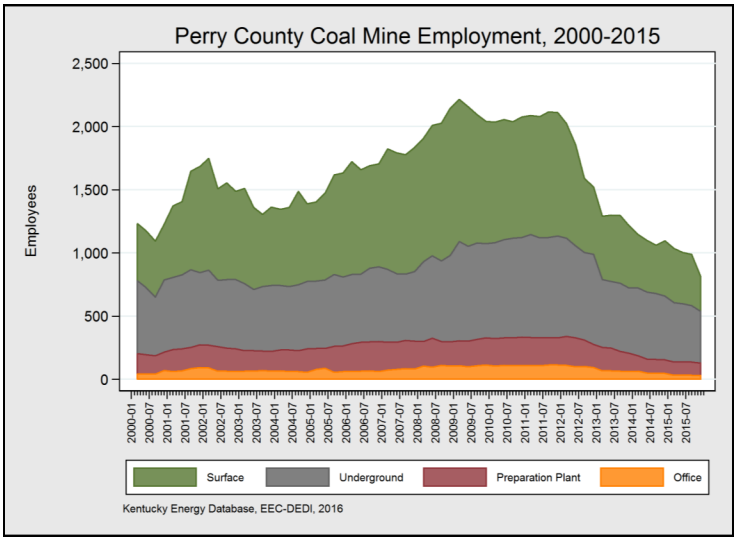


Production Method	Mines	Production	Annual Change
Total	22	6,652,760	-11.01%
Surface	14	4,496,722	-4.26%
Underground	8	2,156,038	-22.42%

On-Site Activity	Employment	Annual Change
Total	966	-12.43%
Underground	447	-14.53%
Surface	382	-7.51%
Preparation Plant	104	-7.96%
Office	33	-37.74%

In 2015, 22 mines in Perry County mined 6.6 million tons of coal, fifth most productive among all Kentucky counties in tonnage.

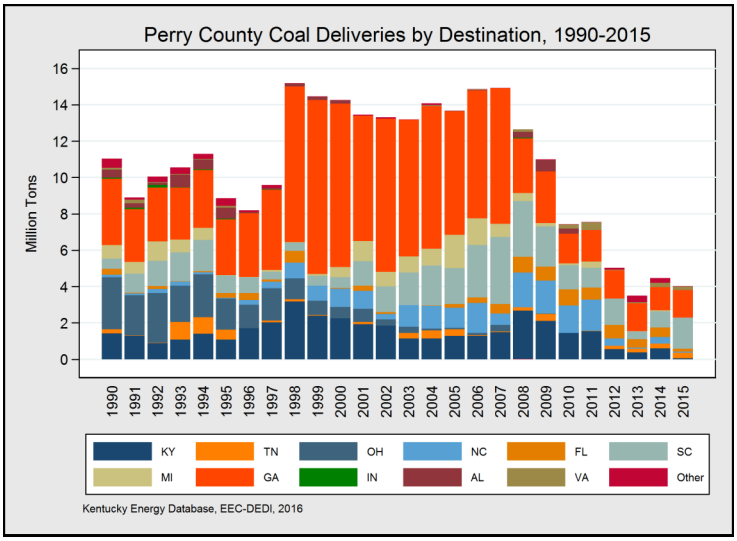


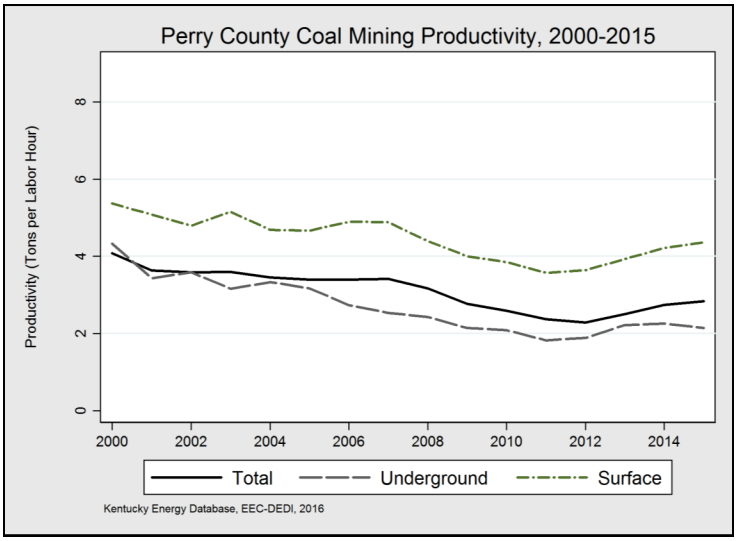


Coal production has been recorded in Perry County since 1889, but it was not until 1917, during the First World War, that production would reach one million tons. Coal production rose again during the Second World War. In 1972, surface mining became the dominant method of coal extraction in Perry County. Production peaked in 1994 at 17.23 million tons, and in 2008 rose again to 17.17 million tons, but has declined significantly since. Coal production has declined by 61 percent since 2008. To date, Perry County has produced 752 million tons, the 5th most of any county.

Perry County had the second-highest number of coal production workers in Kentucky in 2015, with 966 employed on average. A total of 447 miners worked underground, 382 worked above ground, 104 in preparation plants, and 33 in on-site office capacities. Coal mine employment peaked in at 7,451 in Perry County in 1949, which at the time, was equivalent to 16 percent of the county population. Through 2015, coal production employment has declined by 87 percent since 1949.

Perry County





State and Power Plant	Deliveries (Tons)	Percentage
Total	**3,999,046**	**100%**
South Carolina	**1,716,236**	**42.9%**
Winyah	1,200,269	30.0%
Cross	348,304	8.7%
Williams	129,068	3.2%
Cope	25,559	0.6%
Wateree	13,036	0.3%
Georgia	**1,504,878**	**37.6%**
Bowen	1,457,507	36.4%
Harllee Branch†	25,826	0.6%
International Paper Savanna Mill	15,244	0.4%
International Paper Augusta Mill	6,301	0.2%
Tennessee	**312,654**	**7.8%**
Tennessee Eastman Operations	206,652	5.2%
Bull Run	106,002	2.7%
Virginia	**200,075**	**5.0%**
Spruance Genco LLC	200,075	5.0%
Florida	**163,734**	**4.1%**
Crystal River†	127,299	3.2%
Indiantown Cogeneration LP	36,435	0.9%
North Carolina	**51,635**	**1.3%**
James E. Rogers Energy Complex	51,635	1.3%
Kentucky	**49,834**	**1.2%**
Cooper	39,008	1.0%
William C. Dale	10,826	0.3%

† The closure, or partial closure, of this power plant has been announced for 2015-2022.

Perry County Coal Mining Productivity

Perry County had an average productivity of 2.84 tons per labor hour in 2015. Surface coal mines in Perry County were more productive than underground coal mines (4.36 compared to 2.84). Perry County had the fourth-highest surface mining productivity rate throughout the state in 2015 and the twelfth-highest underground mining rate. Since, 2000, Perry County coal mine productivity has declined steadily, which has increased the costs of coal production, and decreased cost-competiveness versus alternative sources of energy. With the closure of less productive mines since 2008, average coal mine productivity increased slightly. Mining productivity in Perry County has remained relatively stable compared to other counties in eastern Kentucky.

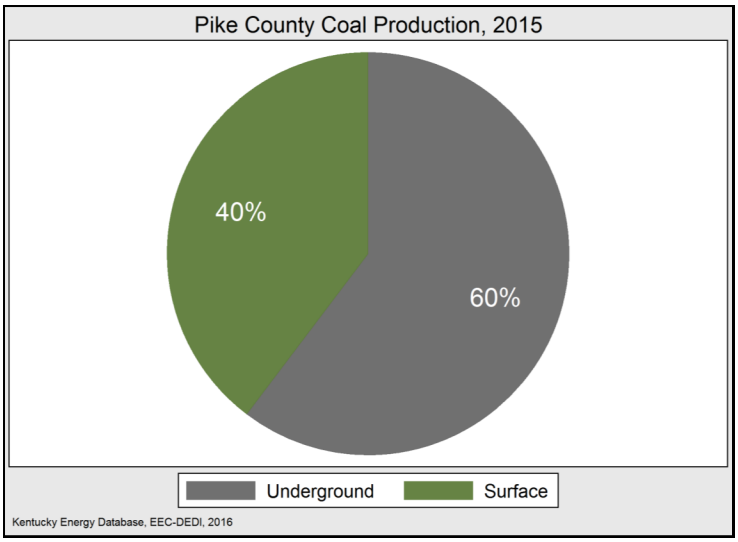
Perry County Coal Market

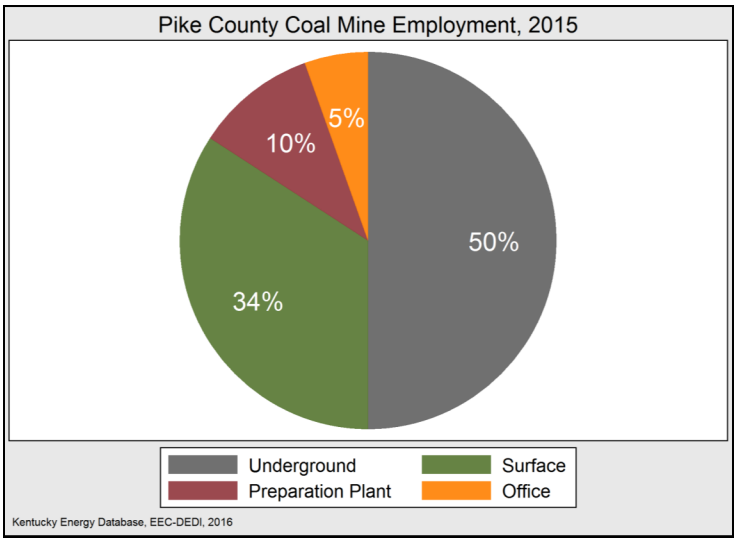
Steam coal from Perry County was delivered to power plants in 7 different states during reporting year 2015. Plant Bowen of Georgia by itself received 36 percent of Perry County coal deliveries—the plant received 22 percent of its 2015 shipments from Perry County. Crystal River, Perry County's third largest coal consumer in 2015 will close half of its coal units by 2018. In all, four plants representing 19 percent of 2015 coal shipments have announced coal unit closures.

Chemical Composition and Cost

Coal mined in Perry County had a median sulfur content of 0.98 percent, a median ash content of 9.5 percent, and a median heat content of 25.17 MMBtu per ton. These costs resulted in a median delivered price per ton of $79.13. The delivered price per MMBtu of coal from Perry County had a median of $3.24 per MMBtu.

Pike County

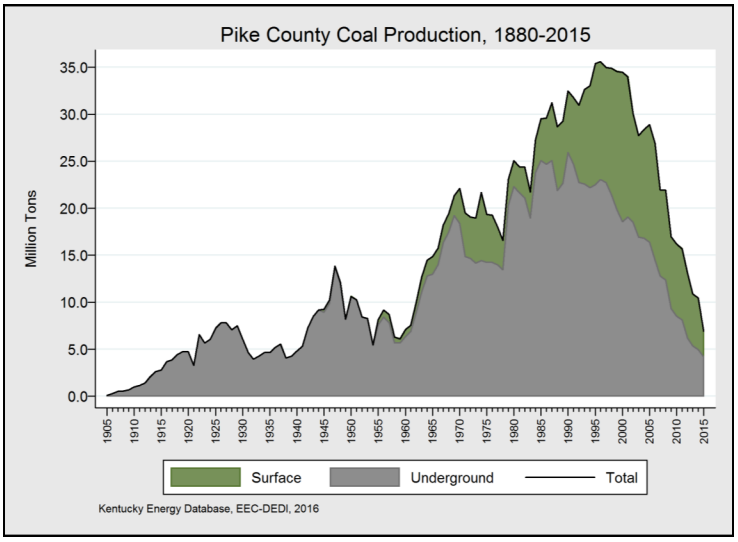


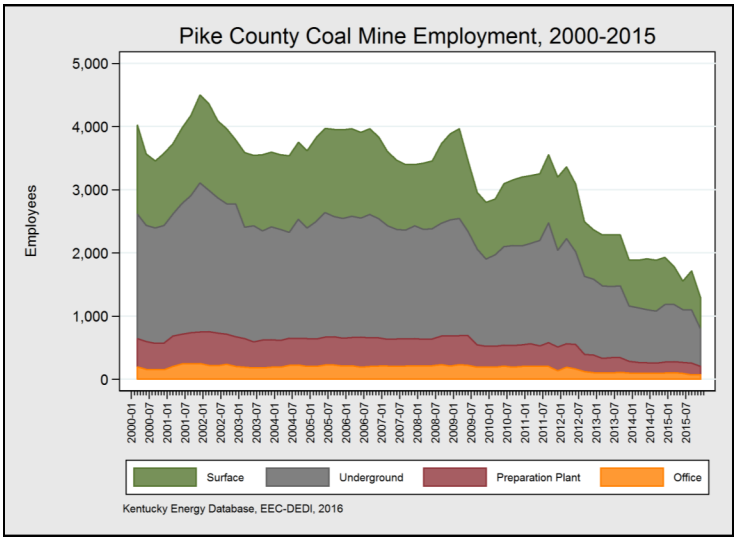


Production Method	Mines	Production	Annual Change
Total	77	6,926,940	-33,.69%
Surface	42	2,748,058	-49.9%
Underground	35	4,178,882	-15.76%

On-Site Activity	Employment	Annual Change
Total	1,591	-16.45%
Underground	796	-7.55%
Surface	543	-30.12%
Preparation Plant	165	-1.2%
Office	87	-11.22%

In 2015, Pike County mined 6.9 million tons of coal which was the second highest tonnage amongst Kentucky counties.

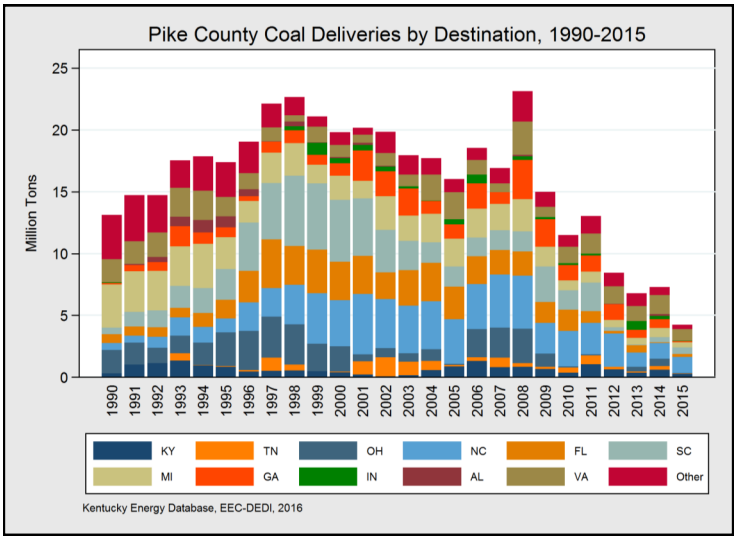




Coal mines in Pike County have produced 1.6 billion tons of coal since 1889, which is more coal than was produced in any other Kentucky county. Even the second largest producer historically, Harlan County, trails by 500 million tons. Annual production peaked in Pike County at 35.6 million tons in 1996, and in the 18 years since has declined by 81 percent to 6.6 million tons in 2015. Historically, the vast majority of Pike County coal has come from underground operations, 60 percent came from underground mines in 2015.

In 2015, coal mines in Pike County employed more coal workers than any other Kentucky county. There was an average of 1,591 persons at coal production facilities, including 1,339 coal miners—796 underground and 543 surface—165 persons employed in coal preparation plants, and 87 working in on-site offices. Coal mine employment in the county peaked at 14,392 in 1948, which was 18 percent of the county's population at the time.

Pike County

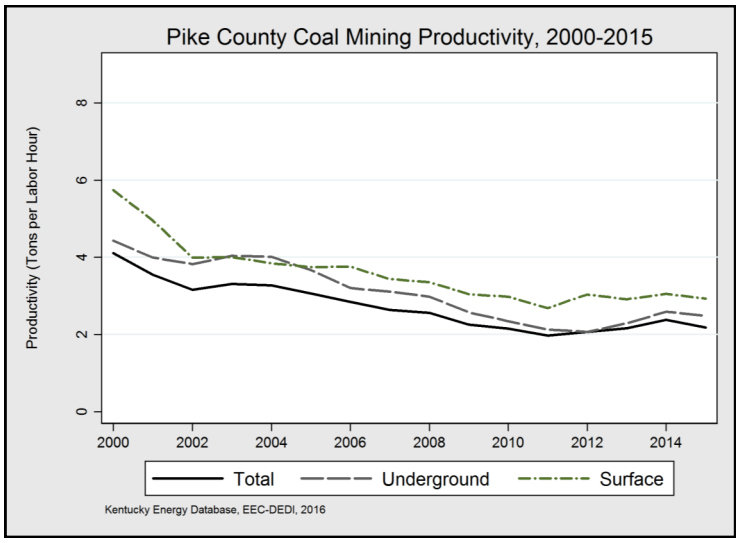


State and Power Plant	Deliveries (Tons)	Percentage
Total	**4,247,028**	**100%**
North Carolina	**1,285,410**	**30.3%**
Belews Creek	272,129	6.4%
Mayo	241,427	5.7%
James E. Rogers	216,624	5.1%
G G Allen	205,463	4.8%
Marshall	197,902	4.7%
Roxboro	128,352	3.0%
Asheville†	23,513	0.6%
Virginia	**932,545**	**22.0%**
Clover	533,121	12.6%
Chesterfield	285,038	6.7%
Yorktown†	82,992	2.0%
Spruance Genco LLC	21,988	0.5%
Mecklenburg	9,272	0.2%
Virginia City Hybrid	134	0.0%
South Carolina	**533,654**	**12.6%**
Wateree	368,521	8.7%
Cope	89,004	2.1%
Winyah	38,093	0.9%
Cross	25,072	0.6%
Williams	12,964	0.3%
Michigan	**420,352**	**9.9%**
Monroe	358,209	8.4%
River Rouge	51,427	1.2%
Escanaba Mill	10,716	0.3%

State and Power Plant	Deliveries (Tons)	Percentage
West Virginia	**274,838**	**6.5%**
Mitchell	147,429	3.5%
John E Amos	92,310	2.2%
Philip Sporn†	26,894	0.6%
Mountaineer	8,205	0.2%
Kentucky	**266,330**	**6.3%**
Big Sandy†	266,330	6.3%
Florida	**246,090**	**5.8%**
Deerhaven	174,536	4.1%
Generating Station Indiantown Cogeneration LP	61,002	1.4%
Crystal River†	10,552	0.2%
Georgia	**65,725**	**1.5%**
Bowen	38,149	0.9%
International Paper	15,251	0.4%
Savanna Mill Hammond	12,325	0.3%
Mississippi	**59,608**	**1.4%**
R D Morrow	59,608	1.4%
Indiana	**51,681**	**1.2%**
Rockport	35,704	0.8%
R Gallagher	15,977	0.4%
Ohio	**50,819**	**1.2%**
Muskingum River†	35,945	0.8%
Killen Station	14,874	0.4%
Tennessee	**30,936**	**0.7%**
Tennessee Eastman	19,316	0.5%
Bull Run	11,620	0.3%
New York	**16,388**	**0.4%**
RED-Rochester, LLC	16,388	0.4%
Maryland	**12,652**	**0.3%**
Herbert A Wagner†	12,652	0.3%

† The closure, or partial closure, of this power plant has been announced for 2015-2022.

Pike County



Pictured: McCoy Elkhorn Coal Corp., Mine #15, Pike County, Kentucky. (Courtesy of the James River Coal Company).

Pike County Coal Mining Productivity

In 2015, average coal mine productivity in Pike County was 2.17 tons per labor hour. Surface mines in the county were more productive at 2.93 tons per hour, while underground operations averaged 2.45 tons per hour. Compared with 2013, coal mining productivity decreased slightly from 2.37 tons per labor hour, or by 8 percent. Underground mining productivity in Pike County has decreased by 47 percent since 2000 and surface mining productivity is half of 2000 levels.

Pike County Coal Market

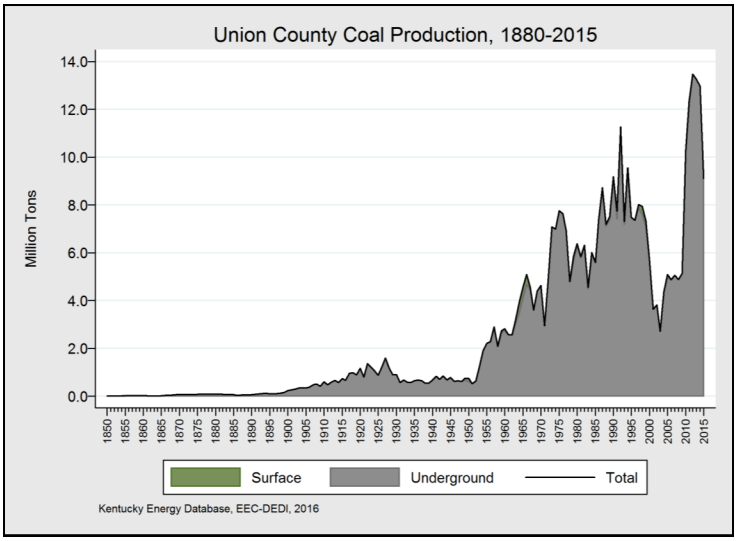
A total of 4.2 million tons of coal mined in Pike County was shipped to power plants in 14 different states in 2015. Of this amount, 266 thousand tons were shipped to Louisa's Big Sandy Power Plant, which is retiring one coal unit and converting the other to natural gas. Pike County is relatively insulated from the closure or decreased consumption of any single plant because of the sheer size and diversity of its shipments relative to other Kentucky counties—no single plant consumed more than 14 percent of Pike County coal in 2015. Regardless, fuel shipments from the county have declined over the last five years.

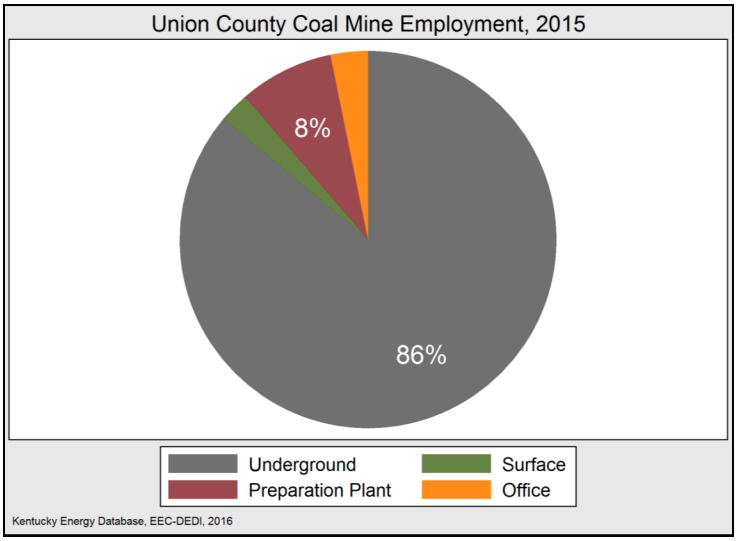
Chemical Composition and Cost

Coal mined in Pike County had a median sulfur content of 0.98 percent, a median ash content of 10.1 percent, and a median heat content of 24.95 MMBtu per ton. These costs resulted in a median delivered price per ton of $79.13. The delivered price per MMBtu of coal from Pike County had a median of $3.24 per MMBtu.

† The closure, or partial closure, of this power plant has been announced for 2015-2022.

Union County

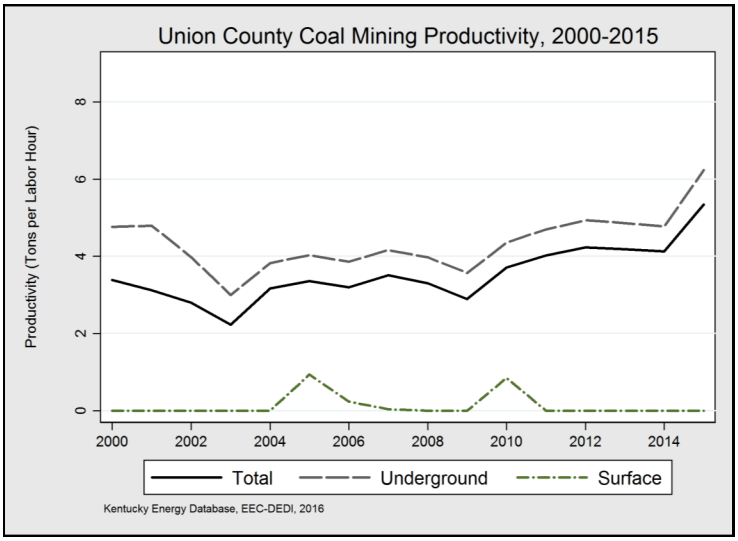


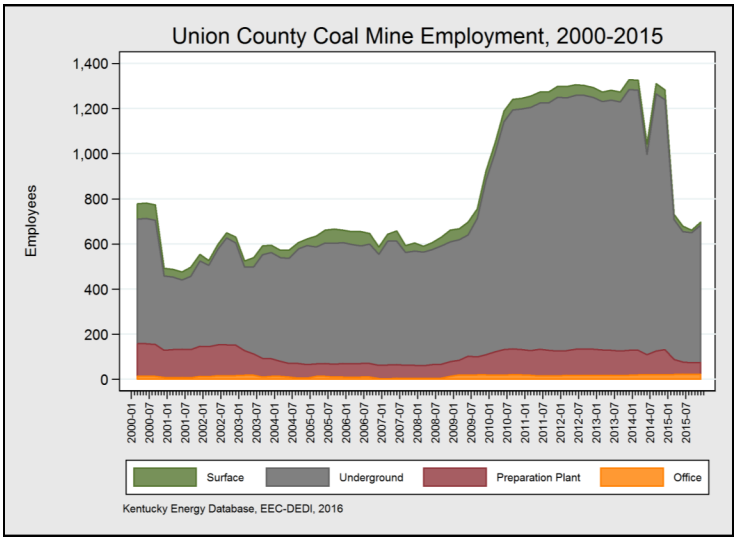


Production Method	Mines	Production	Annual Change
Total	4	9,114,413	-29.77%
Underground	3	9,114,413	-29.77%
Surface	1	0	+0.0%

On-Site Activity	Employment	Annual Change
Total	689	-44.48%
Underground	593	-44.73%
Preparation Plant	18	-59.09%
Surface	56	-46.15%
Office	22	+10.0%

Union County coal mines produced 9.1 million tons of coal in 2015. This represents an almost 30 percent decrease from 2014.

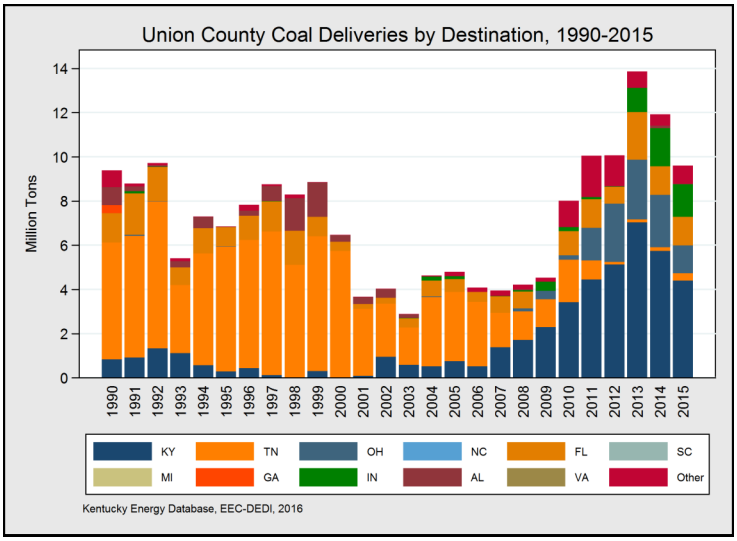




Coal production in 2015 in Union County decreased by 29.7 percent; however, Union County remained the largest coal producing county in Kentucky. In 2015, Union County mined 14.84 percent of total coal production in Kentucky. The vast majority of Union County's coal production comes from the underground operations at Alliance Resource's River View Mine, which is Kentucky's largest producing coal mine. Coal production began in Union County in 1836 at 500 tons and the county's highest production was 13.5 million tons in 2012.

On average, coal mines in Union County on average employed 689 workers full-time. In early 2015 over 550 miner layoffs occurred in Union County, bringing employment to 731 as of April 1, 2015. The vast majority of direct mining jobs in Union County has always been in underground mine operations with at least 67 percent of mine employment since 2000 and at least 80 percent of mine employment since 2004.

Union County



Pictured above: River View Coal Mine, Union County, 2012.

State and Power Plant	Deliveries (Tons)	Percentage
Total	**9,595,393**	**100%**
Kentucky	**4,384,278**	**45.7%**
Trimble County	1,805,893	18.8%
East Bend	649,147	6.8%
R D Green	640,952	6.7%
Ghent	636,630	6.6%
H L Spurlock	444,118	4.6%
Paradise†	141,904	1.5%
Mill Creek	59,165	0.6%
HMP&L Station Two	6,469	0.1%
Indiana	**1,485,573**	**15.5%**
Clifty Creek	1,462,852	15.2%
R Gallagher	22,721	0.2%
Florida	**1,287,811**	**13.4%**
IMT Transfer	860,233	9.0%
Davant Transfer	427,578	4.5%
Ohio	**1,258,649**	**13.1%**
J M Stuart	428,771	4.5%
Miami Fort†	396,873	4.1%
Killen Station	278,445	2.9%
W H Zimmer	154,560	1.6%
West Virginia	**648,465**	**6.8%**
Ceredo	648,465	6.8%
Tennessee	**343,896**	**3.6%**
Cumberland	333,404	3.5%
Calvert City	10,373	0.1%
Kingston	119	0.0%
Mississippi	**174,789**	**1.8%**
Associated Terminals	174,789	1.8%
Alabama	**11,932**	**0.1%**
Colbert†	11,932	0.1%

Union County Coal Market

Union County shipped the most coal of any county in Kentucky in 2015. During the year, more than 9.5 million tons of coal mined in the county were delivered to eight different states, with nearly half going to coal plants in Kentucky. The largest consumer of Union County coal in 2015, Trimble County Generating Station, received approximately 18 percent of its coal from Union County. While demand for all coal is expected to continue to decline in Kentucky and nationally, the near-term outlook for demand of steam coal produced in Union County is stable because less than six percent of Union County coal consumers are affected by unit closures.

† The closure, or partial closure, of this power plant has been announced for 2015-2022.

Union County

River View Coal Mine, Union County, 2012.

Photo courtesy of River View Coal, LLC.

Union County Coal Mining Productivity

Unlike most coal-producing counties in Kentucky, mine productivity in Union County had been stable between 2004 and 2009 and has increased since. In 2015, average coal mine productivity in Union County was 5.34 tons per labor hour. Underground operations averaged 6.27 tons per labor hour, making Union County the most productive county for underground mining. In fact, Union County has had the most productive underground operations in Kentucky since 2012.

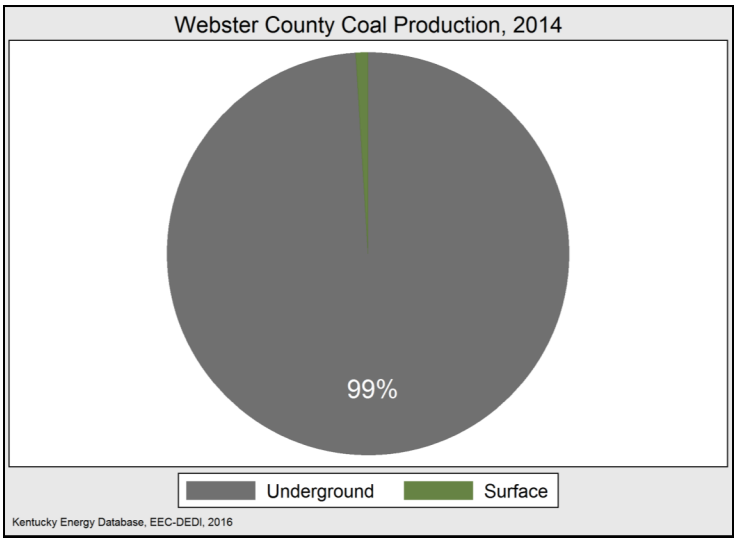
Chemical Composition and Cost

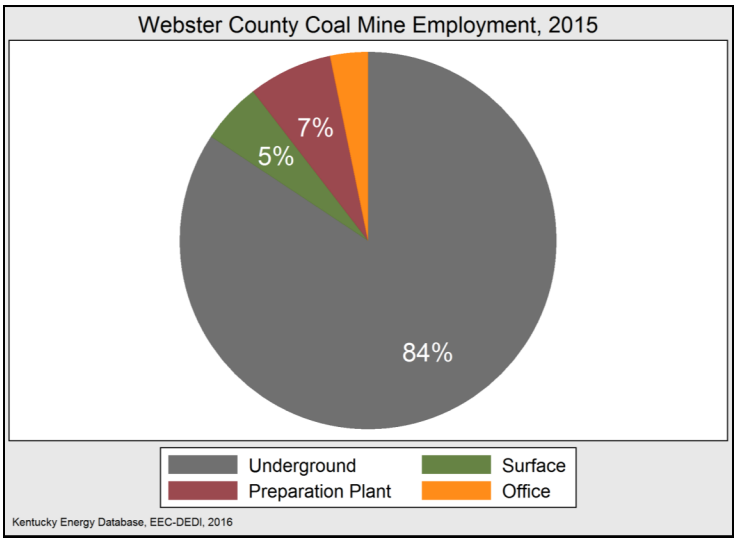
Coal mined in Union County had a median sulfur content of 3.01 percent, a median ash content of 8.2 percent, and a median heat content of 22.96 MMBtu per ton. These costs resulted in a median delivered price per ton of $53.57. The delivered price per MMBtu of coal from Union County had a median cost of $2.33 per MMBtu.

Coal Reserves

According to Kentucky Geological Survey, Union County has the most mineable coal of all Kentucky counties. The county has 4.8 billion tons, or 19 percent of Kentucky's 25,343 billion tons in its Demonstrated Reserve Base.

Webster County

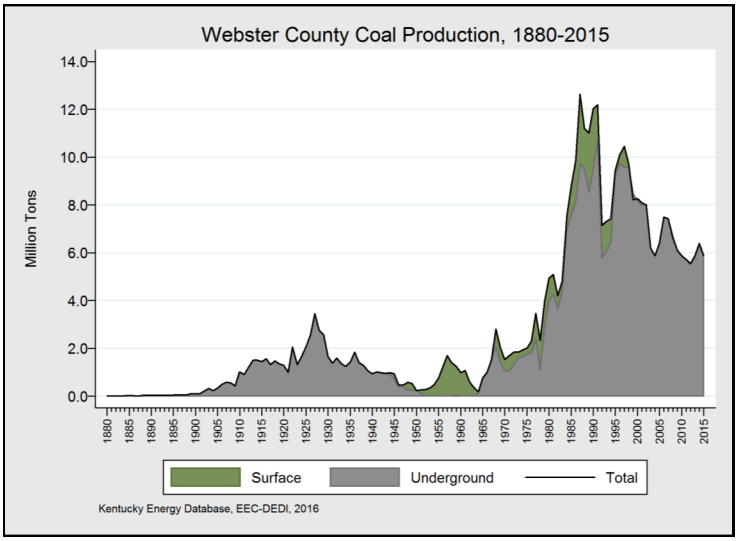


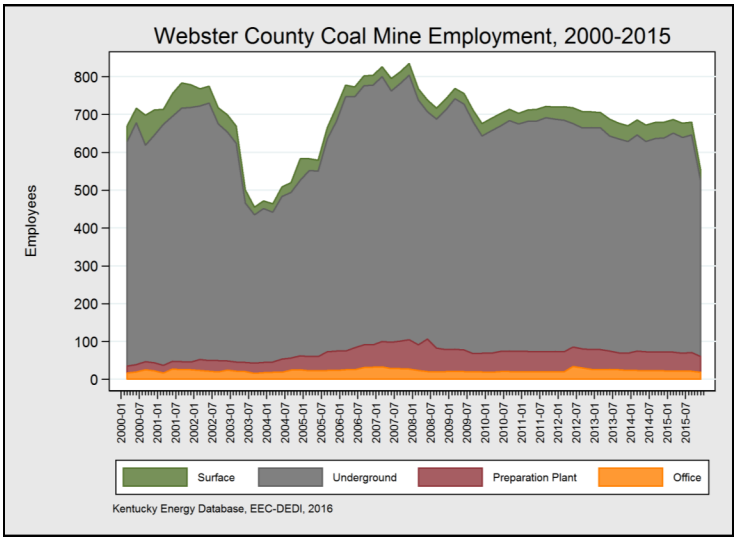


Production Method	Mines	Production	Annual Change
Total	2	5,871,014	-8.24%
Underground	2	5,871,014	-7.32%

In 2015, Webster County mined 5.8 million tons of coal, which was a decrease of 8.2 percent from 2014. All of this coal came from underground mines.

On-Site Activity	Employment	Annual Change
Total	650	-4.27%
Underground	548	-2.84%
Preparation Plant	47	-6.0%
Surface	34	-19.05%
Office	21	-8.7%

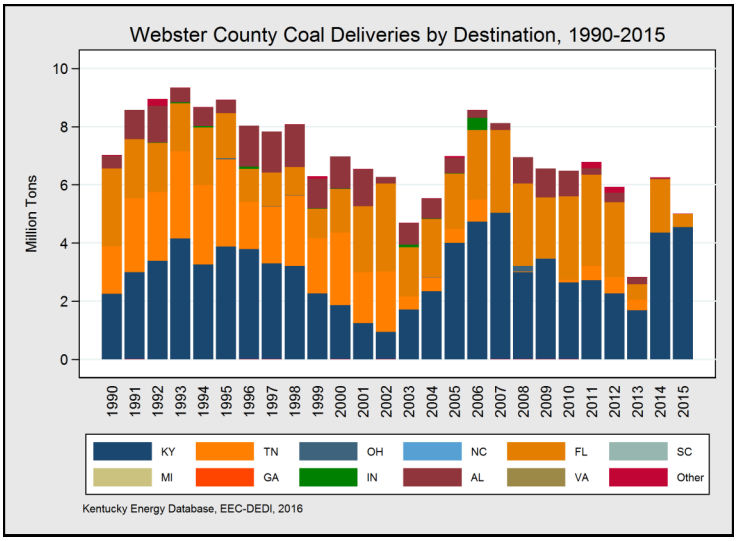


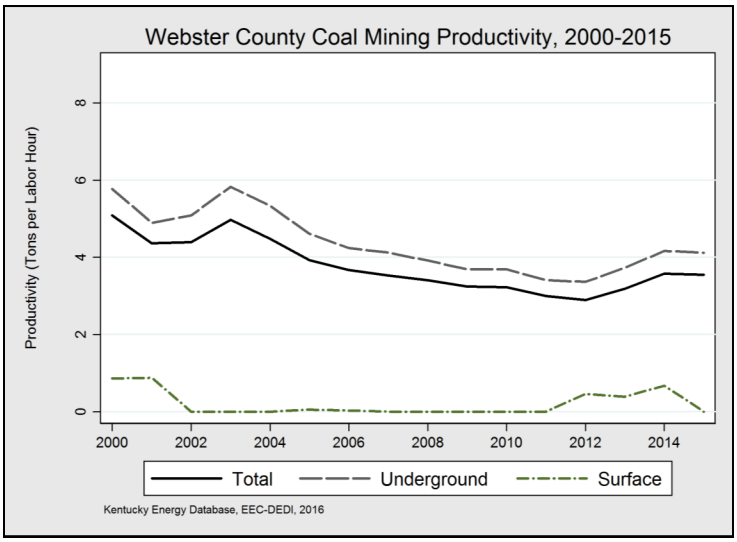


Coal production has been recorded in Webster County since 1869 and would first reach one million tons annually in 1910. Production peaked in Webster County in 1987 at 12.6 million tons and has declined by 53 percent through 2015. The vast majority of coal produced in Webster County comes from Alliance's Dotiki Mine or Onton #9 mine. Until being recently surpassed by Alliance's River View Mine, Dotiki was the largest coal mine in Kentucky.

Coal mines in Webster County directly employed 649 people full-time in 2015. Most of these workers, 548 or 84 percent, were underground coal miners. There were also 47 workers employed in preparation plants, 34 surface mine workers, and 21 on-site office staff. Coal mine employment peaked at 1,343 in 1994 and has declined by 51 percent through 2015.

Webster County





State and Power Plant	Deliveries (Tons)	Percentage
Total	**4,995,764**	**100%**
Kentucky	**4,543,889**	**91.0%**
Mill Creek	2,758,310	55.2%
Paradise†	818,117	16.4%
HMP&L Station Two	478,880	9.6%
East Bend	391,857	7.8%
R D Green	96,725	1.9%
Florida	**450,134**	**9.0%**
Seminole	438,627	8.8%
IMT Transfer	11,507	0.2%
Mississippi	**1,741**	<0.1%
Associated Terminals	1,741	<0.1%

Webster County Coal Market

Mill Creek Station, located near Louisville, Kentucky, was the largest single consumer of coal shipped from Webster County in 2015, consuming nearly 55 percent of all coal shipped from Webster County that year. Paradise Fossil Plant, which is expected to lose two-thirds of its coal capacity by 2017, bought 16 percent of the coal shipped from Webster County in 2015. Overall, known steam coal shipments had been stable between 2008 and 2012, but decreased by 55 percent in 2013, but more than doubled again in 2014.

Webster County Coal Mining Productivity

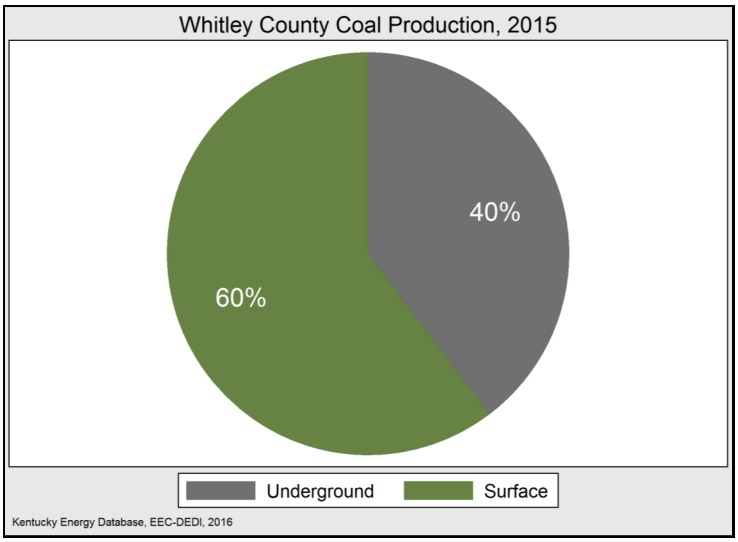
Overall coal mine productivity in Webster County was 3.54 tons per labor hour during 2015. All of the coal production in the county came from underground operations in 2015, which produced at a rate of 4.11 tons per labor hour, making Webster County the third most productive county for underground mining in the state that year.

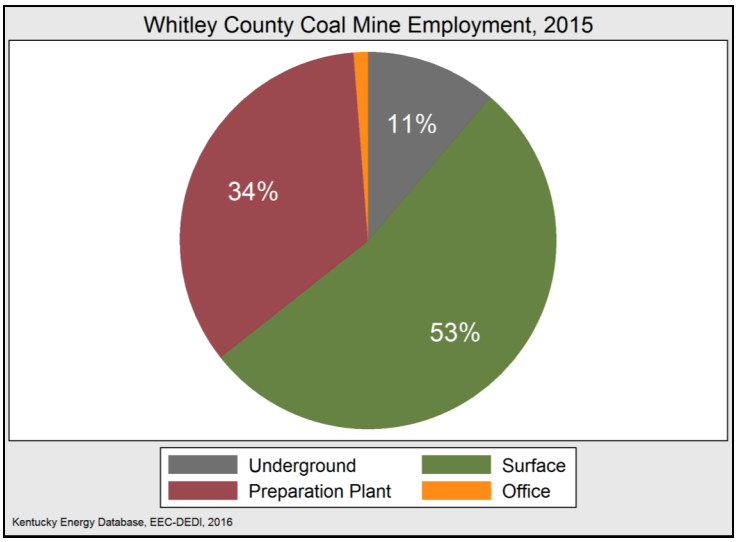
Chemical Composition and Cost

On average, coal mined in Webster County had a median sulfur content of 3.14 percent, a median ash content of 9.25 percent, and a median heat content of 24.13 MMBtu per ton. The average delivered price per ton for Webster County coal in 2015 was $57.20. The delivered price per MMBtu of coal from Webster County had a median of $2.39 per MMBtu.

† The closure, or partial closure, of this power plant has been announced for 2015-2022.

Whitley County

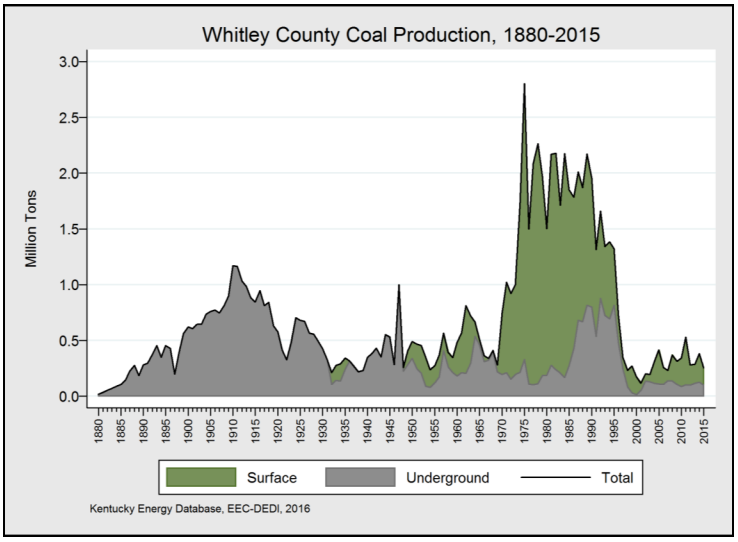


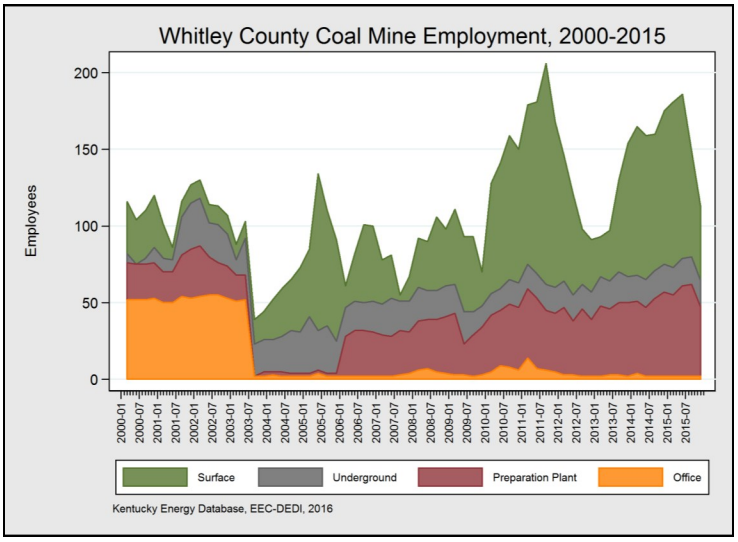


Production Method	Mines	Production	Annual Change
Total	15	253,477	-33.58%
Surface	15	152,992	-40.42%
Underground	0	100,485	-19.51%

On-Site Activity	Employment	Annual Change
Total	160	-3.64%
Surface	85	-10.53%
Preparation Plant	55	+10.0%
Underground	18	+0.0%
Office	2	-33.33%

The mines in Whitley County in 2015 produced 253 thousand tons of coal, which was a decrease of 33.5 percent from 2014.

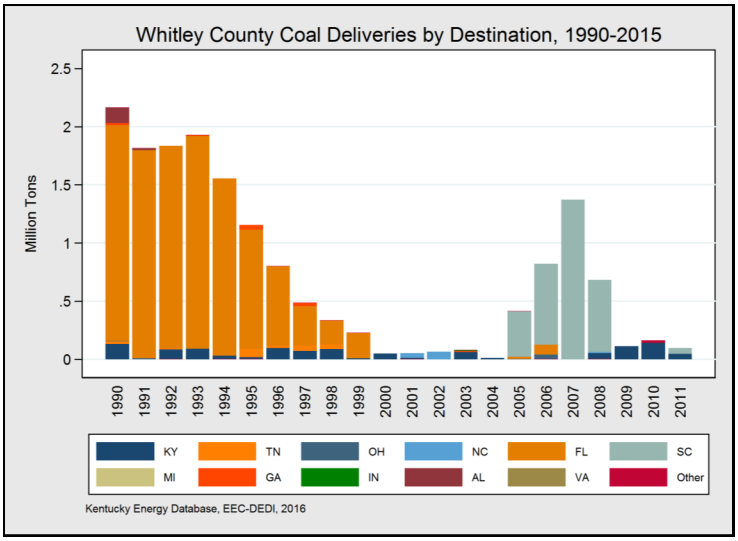


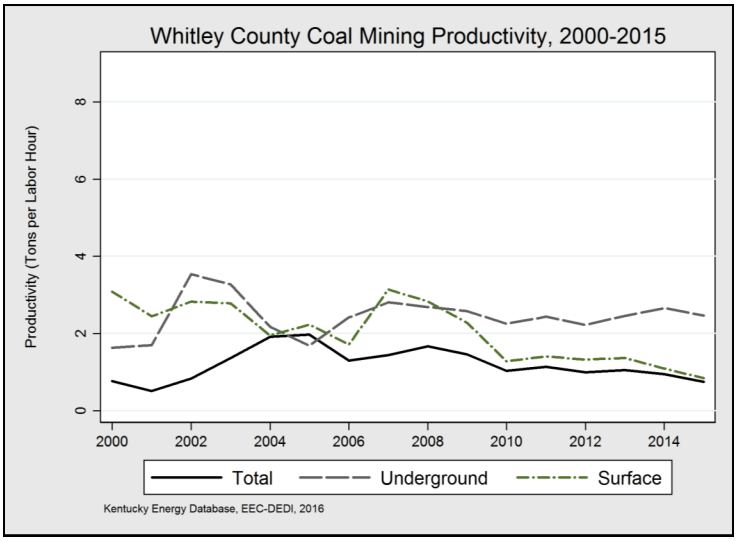


Whitley County began mining coal with 300 tons in 1837. Coal production peaked at 2.8 million tons in 1975, primarily from surface mines, and has declined by 90 percent through 2015. Whitley County has not produced more than 600 thousand tons in one year since 1996. Coal produced in Whitley County today comes primarily from surface mines, while 40 percent comes from underground mines.

In 2015, a total of 160 persons were employed at coal production facilities in Whitley County, a decrease of 4.22 percent from 2015. Whitley County surface operations provided 85 full time jobs to the county in 2015, a decrease of 10 percent from 2014. Preparation plants in Whitley County employed 55 people. Only 18 coal miners worked underground.

Whitley County





Whitley County Coal Mining Productivity

Whitley County coal mines had an overall productivity of .79 tons per labor hour, an overall decrease from .95 in 2015. Underground mines averaged 2.52 tons per labor hour in 2015. Surface mines remained closer to the overall average at .89 tons per labor hour.

Kentucky Coal Production

Year	Production (1,000 Tons)			Year	Production (1,000 Tons)			Year	Production (1,000 Tons)		
	Total	East	West		Total	East	West		Total	East	West
1790	0.02	0.02	0	**1836**	40	31	9	**1882**	1,386	535	851
1791	0	0	0	**1837**	59	48	11	**1883**	1,486	581	905
1792	0	0	0	**1838**	74	62	12	**1884**	1,576	617	959
1793	0	0	0	**1839**	64	50	14	**1885**	1,341	693	648
1794	0.02	0.02	0	**1840**	62	47	15	**1886**	1,519	664	855
1795	0	0	0	**1841**	65	48	17	**1887**	1,933	951	982
1796	0	0	0	**1842**	67	48	19	**1888**	2,401	1,125	1,276
1797	0	0	0	**1843**	69	49	20	**1889**	2,399	1,109	1,290
1798	0	0	0	**1844**	71	49	22	**1890**	2,532	1,217	1,315
1799	0	0	0	**1845**	72	49	23	**1891**	2,963	1,355	1,608
1800	0.1	0.1	0	**1846**	72	49	23	**1892**	3,028	1,293	1,735
1801	0.1	0.1	0	**1847**	73	48	25	**1893**	3,302	1,502	1,800
1802	0.1	0.1	0	**1848**	74	48	26	**1894**	2,957	1,150	1,807
1803	0.2	0.2	0	**1849**	74	47	27	**1895**	3,207	1,423	1,784
1804	0.2	0.2	0	**1850**	76	47	29	**1896**	3,183	1,421	1,762
1805	0.3	0.3	0	**1851**	77	47	30	**1897**	3,304	1,189	2,115
1806	0.4	0.4	0	**1852**	79	47	32	**1898**	3,535	1,471	2,064
1807	0.5	0.5	0	**1853**	82	49	33	**1899**	4,506	1,765	2,741
1808	0.5	0.5	0	**1854**	85	51	34	**1900**	5,021	2,087	2,934
1809	0.6	0.6	0	**1855**	108	67	41	**1901**	5,325	2,253	3,072
1810	0.7	0.7	0	**1856**	114	67	47	**1902**	6,429	2,785	3,644
1811	0.8	0.8	0	**1857**	118	69	49	**1903**	7,198	2,953	4,245
1812	0.9	0.9	0	**1858**	123	71	52	**1904**	7,168	3,046	4,122
1813	1.0	1.0	0	**1859**	127	73	54	**1905**	8,039	3,357	4,682
1814	1.1	1.1	0	**1860**	129	75	54	**1906**	9,598	3,810	5,788
1815	1.2	1.2	0	**1861**	44	1	43	**1907**	10,436	4,275	6,161
1816	1.3	1.3	0	**1862**	4	0	4	**1908**	9,806	4,171	5,635
1817	1.4	1.4	0	**1863**	4	0	4	**1909**	10,294	4,716	5,578
1818	1.5	1.5	0	**1864**	104	0	104	**1910**	14,766	6,317	8,449
1819	1.6	1.6	0	**1865**	107	0	107	**1911**	13,899	6,939	6,960
1820	2.0	1.7	0.3	**1866**	139	30	109	**1912**	15,789	7,993	7,796
1821	2.1	1.8	0.3	**1867**	114	45	69	**1913**	18,797	10,359	8,438
1822	2.3	1.9	0.4	**1868**	175	71	104	**1914**	19,582	11,789	7,793
1823	2.4	2.0	0.4	**1869**	229	92	137	**1915**	20,704	13,119	7,585
1824	3.1	2.6	0.5	**1870**	282	125	157	**1916**	24,631	16,893	7,738
1825	6.7	3.1	3.6	**1871**	345	127	218	**1917**	27,125	17,187	9,938
1826	7.5	3.6	3.9	**1872**	530	155	375	**1918**	30,787	19,988	10,799
1827	8.5	4.2	4.3	**1873**	528	149	379	**1919**	29,289	20,657	8,632
1828	9.6	5.0	4.6	**1874**	583	164	419	**1920**	32,893	22,177	10,716
1829	16.0	11.1	4.9	**1875**	666	226	440	**1921**	29,715	21,596	8,119
1830	18.9	13.6	5.3	**1876**	732	260	472	**1922**	40,565	27,302	13,263
1831	21.7	16.1	5.6	**1877**	800	295	505	**1923**	42,248	32,273	9,975
1832	23.4	17.5	5.9	**1878**	889	316	573	**1924**	42,576	34,450	8,126
1833	26.6	19.5	7.1	**1879**	1,124	373	751	**1925**	53,836	42,072	11,764
1834	34.6	27.4	7.2	**1880**	1,201	458	743	**1926**	62,661	46,353	16,308
1835	36.0	28.0	8.0	**1881**	1,292	495	797				

Coal Production and Employment

Year	Production (1,000 Tons)			Employment			Year	Production (1,000 Tons)			Employment		
	Total	East	West	Total	East	West		Total	East	West	Total	East	West
1927	67,768	47,697	20,071	64,969	56,623	8,346	**1973**	127,518	73,954	53,564	30,505	20,375	10,130
1928	65,794	49,845	15,949	58,775	49,937	8,838	**1974**	136,769	85,018	51,751	37,716	26,556	11,160
1929	59,395	45,294	14,101	57,445	48,387	9,058	**1975**	144,202	88,237	55,965	44,961	32,017	12,944
1930	50,065	39,625	10,440	55,424	45,930	9,494	**1976**	142,932	89,315	53,617	46,097	32,313	13,784
1931	39,804	31,462	8,342	46,984	37,240	9,744	**1977**	147,575	95,902	51,673	50,922	36,141	14,781
1932	34,987	25,620	9,367	40,282	30,660	9,622	**1978**	135,281	97,056	38,225	52,115	37,961	14,154
1933	36,447	28,427	8,020	44,963	35,180	9,783	**1979**	149,834	106,665	43,169	54,407	38,643	15,764
1934	38,455	30,252	8,203	51,148	41,387	9,761	**1980**	149,969	109,011	40,958	46,395	34,521	11,874
1935	40,933	32,335	8,598	53,631	43,917	9,714	**1981**	156,537	117,661	38,876	48,050	37,505	10,545
1936	47,094	38,826	8,268	58,494	48,741	9,753	**1982**	151,278	112,021	39,257	44,860	35,101	9,759
1937	46,468	38,111	8,357	56,810	47,067	9,743	**1983**	131,596	95,818	35,778	36,433	28,100	8,333
1938	39,031	31,497	7,534	55,322	45,481	9,841	**1984**	170,678	124,567	46,111	37,876	29,801	8,075
1939	41,496	33,516	7,980	54,693	44,905	9,788	**1985**	169,571	125,780	43,791	36,814	29,099	7,715
1940	48,572	40,012	8,560	56,293	46,574	9,719	**1986**	165,607	119,905	45,702	32,654	26,030	6,624
1941	53,354	41,865	11,489	60,160	51,096	9,064	**1987**	177,259	126,382	50,877	32,590	25,640	6,950
1942	62,531	49,136	13,395	58,815	49,290	9,525	**1988**	161,209	118,680	42,529	29,559	23,346	6,213
1943	63,231	47,956	15,275	51,777	42,468	9,309	**1989**	170,516	127,284	43,232	30,656	24,620	6,036
1944	71,394	50,998	20,396	53,586	44,610	8,976	**1990**	179,373	130,971	48,402	30,498	24,912	5,586
1945	69,290	48,325	20,965	49,855	39,992	9,863	**1991**	163,293	119,159	44,134	26,642	21,129	5,513
1946	68,493	49,638	18,855	56,623	47,712	8,911	**1992**	161,068	119,382	41,686	24,624	19,419	5,205
1947	87,556	64,933	22,623	73,091	63,714	9,377	**1993**	156,299	120,191	36,108	24,063	18,711	5,352
1948	81,384	58,405	22,979	75,633	66,410	9,223	**1994**	161,637	125,064	36,573	23,368	18,577	4,791
1949	73,278	48,075	25,203	75,707	66,300	9,407	**1995**	153,493	118,558	34,935	21,125	16,840	4,285
1950	80,988	56,474	24,514	74,457	66,141	8,316	**1996**	152,425	116,951	35,474	18,826	15,130	3,696
1951	73,036	51,504	21,532	58,991	51,767	7,224	**1997**	155,551	120,615	34,936	18,937	15,422	3,515
1952	63,826	42,977	20,849	50,555	42,680	7,875	**1998**	150,295	116,654	33,641	18,927	15,417	3,510
1953	63,318	42,114	21,204	46,109	39,000	7,109	**1999**	139,626	110,043	29,583	17,211	14,287	2,924
1954	58,055	35,537	22,518	38,658	31,326	7,332	**2000**	131,985	105,932	26,053	14,508	12,288	2,220
1955	68,165	41,869	26,296	41,291	33,344	7,947	**2001**	134,584	109,963	24,621	17,093	14,508	2,585
1956	75,328	45,523	29,805	44,935	37,105	7,830	**2002**	124,634	99,864	24,770	15,131	12,607	2,524
1957	75,394	45,030	30,364	42,261	34,259	8,002	**2003**	113,306	91,801	21,505	13,791	11,614	2,177
1958	67,252	39,066	28,186	38,693	31,890	6,803	**2004**	114,674	91,265	23,409	14,899	12,361	2,538
1959	64,468	34,131	30,337	34,488	28,138	6,350	**2005**	120,529	94,102	26,427	16,461	13,543	2,918
1960	61,612	31,208	30,404	34,473	27,917	6,556	**2006**	121,808	94,531	27,277	16,756	13,749	3,007
1961	65,395	34,786	30,609	29,765	24,303	5,462	**2007**	115,505	87,238	28,267	16,112	13,061	3,051
1962	70,050	38,389	31,661	28,015	22,842	5,173	**2008**	121,138	90,971	30,167	19,028	15,418	3,610
1963	78,183	42,464	35,719	29,445	23,927	5,518	**2009**	108,169	75,217	32,952	16,378	12,727	3,651
1964	83,238	45,256	37,982	28,066	23,074	4,992	**2010**	105,466	68,135	37,331	17,796	13,484	4,312
1965	87,207	47,328	39,879	26,501	21,389	5,112	**2011**	108,933	67,922	41,011	18,085	13,579	4,506
1966	93,189	51,207	41,982	25,114	20,335	4,779	**2012**	91,201	49,155	42,046	14,105	9,562	4,543
1967	100,106	54,492	45,614	24,643	19,473	5,170	**2013**	80,277	39,398	40,879	11,890	7,441	4,449
1968	100,976	54,845	46,131	23,667	18,413	5,254	**2014**	77,427	37,458	39,969	11,586	7,153	4,433
1969	108,026	60,461	47,565	25,297	17,584	7,713	**2015**	61,414	28,090	33,324	9,557	5,947	3,610
1970	125,308	72,596	52,712	27,689	19,223	8,466	*This report uses the best-available estimate for each factor at the time of publication. As a result of data revisions, confidentiality, rounding, and reporting errors, the table values may not precisely equal the sum of the included components and may be subject to change.*						
1971	119,189	71,337	47,852	29,313	20,912	8,401							
1972	120,271	67,967	52,304	30,221	20,696	9,525							

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In order to provide the public with timely access to these data, this report uses the best-available estimate for each factor at the time of publication. However, as a result of data revisions, confidentiality, rounding, and reporting errors, the table values may not precisely equal the sum of the included components and certain indicators may be subject to change. Please direct all data-related inquiries to Bryon Ellis (Bryon.Ellis@ky.gov) or Greg Bone (Greg.Bone@ky.gov) or by calling the Kentucky Department for Energy Development and Independence at 502-782-7245.

Data Sources

Kentucky Energy and Environment Cabinet
Department for Energy Development and Independence (DEDI)
Department for Natural Resources (DNR)
Department for Environmental Protection (DEP)

Kentucky Geological Survey

United States Department of Energy (DOE)

Energy Information Administration (EIA)

Federal Energy Regulatory Commission (FERC)

United States Department of Commerce (DOC)
Bureau of Economic Analysis (BEA)
U.S. Census Bureau

United States Department of the Interior (DOI)

United States Environmental Protection Agency (EPA)

United States Department of Labor (DOL)
Mine Safety and Health Administration (MSHA)
Bureau of Labor Statistics (BLS)

Additional Reference and Educational Materials (Not Used in this Document)

U. S. Department of Energy
(www.fossil.energy.gov/education/)

American Coal Foundation
(www.teachcoal.org)

UK Center for Applied Energy Research
(www.caer.uky.edu)

Coal In Kentucky
University of Kentucky, documentary (2010)
(www.coalinkentucky.com)

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