KENTUCKY COAL FACTS

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DEPARTMENT FOR ENERGY DEVELOPMENT AND INDEPENDENCE

IN PARTNERSHIP WITH THE KENTUCKY COAL ASSOCIATION

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Executive Summary

Overview

After more than two centuries of commercial mining operations, Kentucky's domestic supply of coal remains an important component of the Commonwealth's economy. In 2013, Kentucky ranked as the third -highest coal producer in the United States at 80.5 million tons. Coal continued to supply a majority of energy in Kentucky and remained the largest source of domestic energy production in the Commonwealth. At the end of 2013, coal mines in Kentucky directly employed 11,885 people and mining directly contributed billions of dollars to the economy of Kentucky. Over 30 percent of the coal produced in Kentucky was consumed within the Commonwealth; however, the largest market for Kentucky coal remains the generation of electrical power across the United States, primarily in the southeast.

Production

Kentucky coal production decreased in 2013 by more than 11.8 percent from 2012, to 80.5 million tons, the lowest level since 1963. Eastern Kentucky coal production decreased in 2013 by 19 percent from 2012 to 39.8 million tons—the lowest level since 1962. Production slowed at both underground and surface mines, but declines in surface mining were more severe. Eastern Kentucky production has declined by 63 percent since the year 2000, and by 70 percent since peak production at 131 million tons in 1990. Western Kentucky coal production decreased by 2.8 percent from 2012 to 40.9 million tons. Union County remained the largest coal-producing county in Kentucky, out-producing the second-largest, Pike County, by 2.3 million tons or 21 percent. Total annual production in 2013 in western Kentucky, where thicker, more productive coal seams yield cheaper coal, was greater than in eastern Kentucky for the first time since 1911.

Employment

At the end of 2013, Kentucky coal mines employed 11,885 persons, 6,643 underground coal miners, 3,414 surface miners, 1,438 preparation plant workers, and 390 on-site office staff. During 2013, employment at Kentucky coal mines decreased by over 15.5 percent from 14,107 at the beginning of the year, to an average of only 11,885 by December—a one-year loss of 2,222 employees. Coal mine layoffs have been concentrated in eastern Kentucky where on-site employment has fallen by approximately 7,000 jobs, or 38 percent, since mid-year 2011 to 7,436 by the end of 2013. Employment in western Kentucky has remained relatively stable during this same period, with 4,449 at the end of 2013.

Markets

The markets and destinations for Kentucky coal during 2013 were concentrated in 17 states, with a small but growing market for international exports. Approximately 30 percent of the coal mined in Kentucky during 2013 was consumed in the Commonwealth—primarily by electric utilities—making Kentucky the largest single market for Kentucky coal. The vast majority of Kentucky coal — 62.1 million tons or 77 percent — was shipped to electric power plants in 17 different states, principally located in the southeast. Following Kentucky, the states of Florida, Georgia, South Carolina, and North Carolina were the largest consumers of Kentucky coal during 2013. Coal-fired power plant closures in these states have significantly reduced domestic demand for Kentucky coal. However, the value of Kentucky coal exports to foreign countries increased by 21.5 percent in 2013, to a record-high of 87.3 million dollars.

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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 Aron Patrick (Aron.Patrick@ky.gov) or Adam Blandford (Adam.Blandford@ky.gov) or by calling the Kentucky Department for Energy Development and Independence at 502-564-7192.

History of Coal in Kentucky

Kentucky coal has been commercially mined 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: Big Sandy Operators stand at a coal mine tipple, used to load coal onto railcars on March 26, 1914. Jenkins, Kentucky 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.

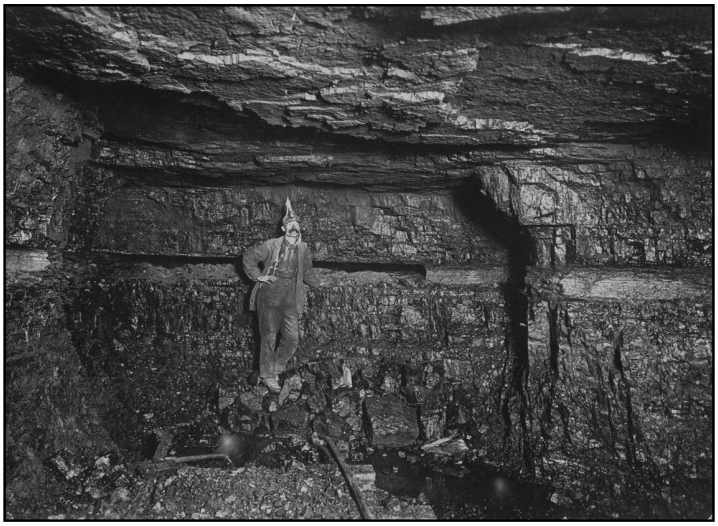


Photo: Face of room in No. 205 Mine in Jenkins, Letcher County, Kentucky between 1911 and 1913. In 1911, the Consolidation Coal Company purchased one hundred thousand acres of coal lands in Pike, Letcher and Floyd counties, Kentucky. Jenkins, Kentucky Photographic Collection, University of Kentucky Special 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. In turn, this industrialization granted the United States the highest economic growth rate in the world during that period.

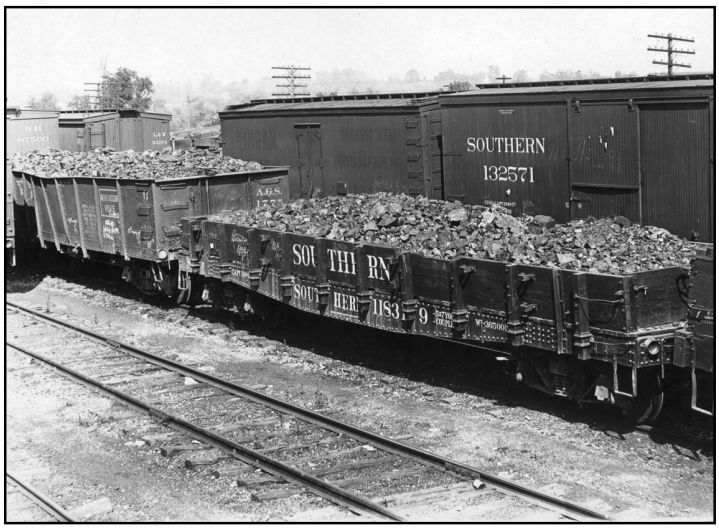


Photo: Southern Railroad car shipping coal. Louis Edward Nollau Photographic Print Collection, University of Kentucky Special Collections.

History of Coal in Kentucky

Photo: Coal miners changing shifts at Inland Steel Company mine in 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.

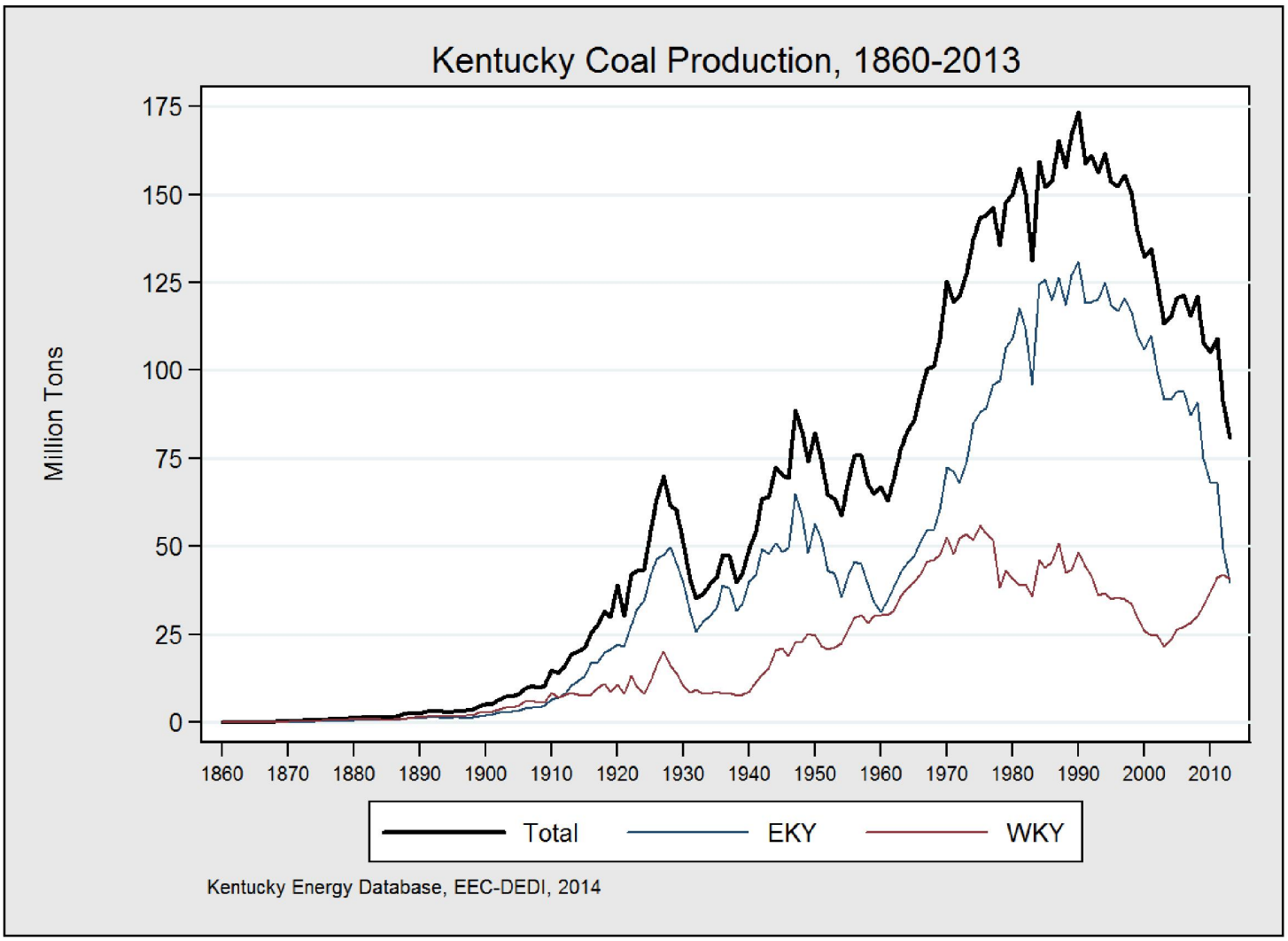
Photo: Coal pile at Farmers Supply Company at 325 East Vine Street, Lexington, 1933.
University of Kentucky Special Collections

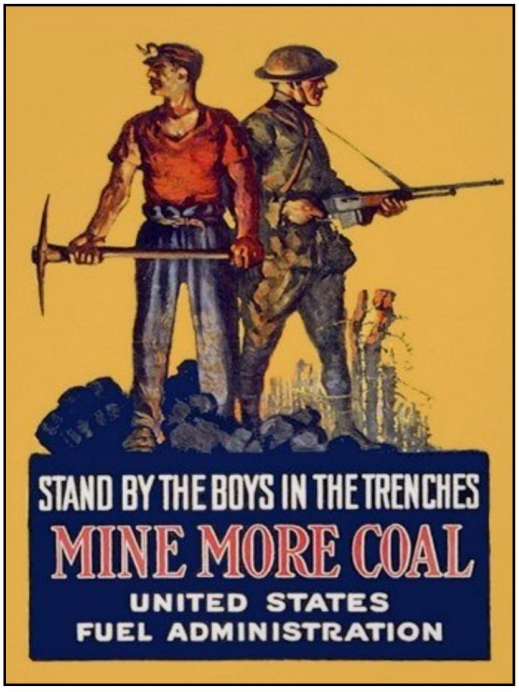
Photo: A coal miner's child studies in grade school in Harlan County, September 15, 1946. Russell Lee Photographic Collection, University of Kentucky Special Collections.

Photo: J. W. Hardy, President of The North Fork Coal & Iron Company. The company, owned and operated entirely by African-Americans, began mining coal in Morgan County in 1911 and held offices at 256 East Short Street, in Lexington. Sallie Price Family Papers, 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, blacks, and native whites. Other camps segregated the communities while integrating the mines.

History of Coal in Kentucky





In 1917, the United States formally declared war on Germany. After one of the coldest winters ever recorded, coal supplies were low, and more coal was desperately needed to continue production of guns, munitions, and ships for the war. President Woodrow Wilson 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.

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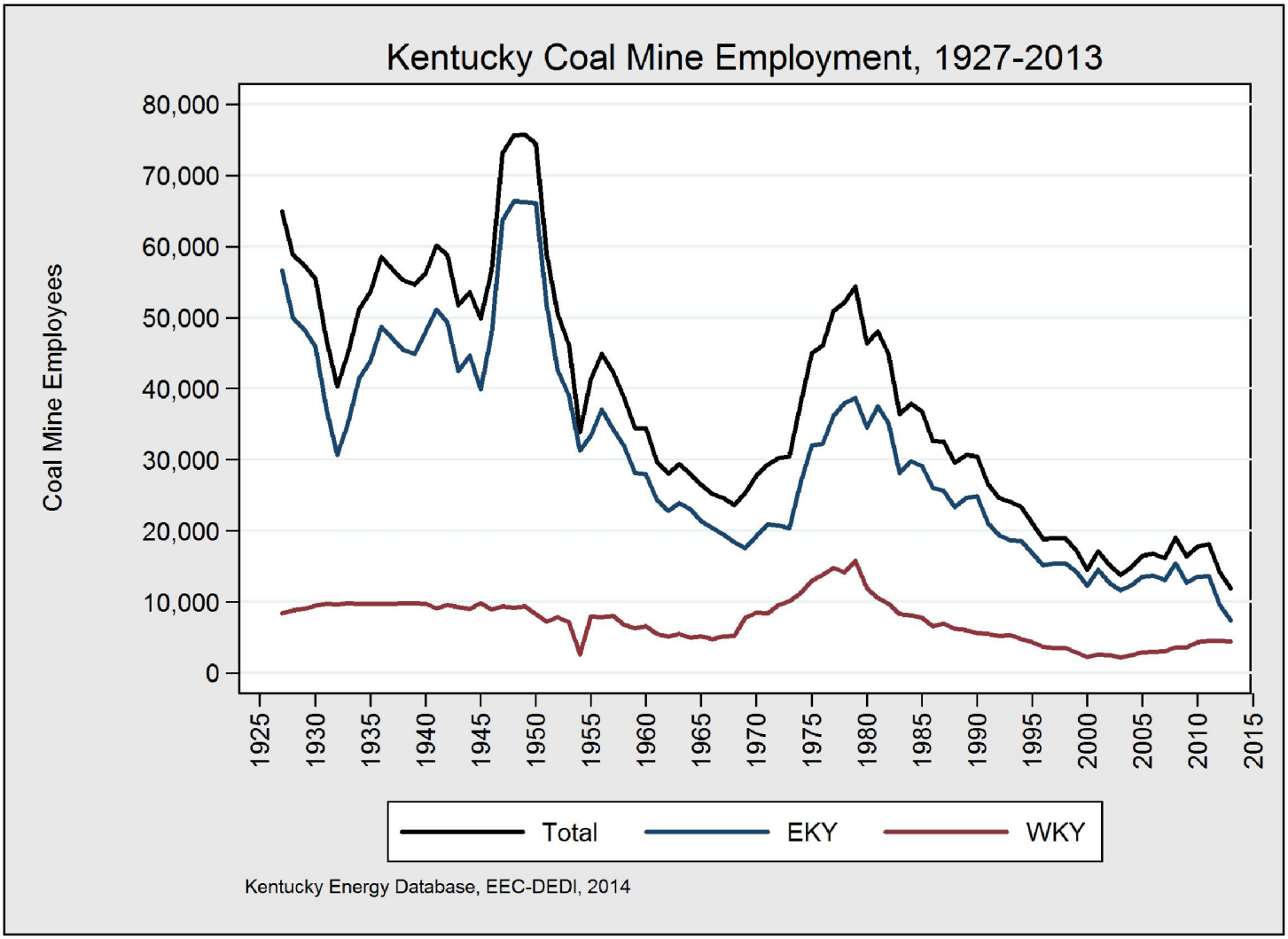
History of Coal in Kentucky



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 and 9,223 in western Kentucky, respectively. 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 vis-à-vis 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 technology 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.

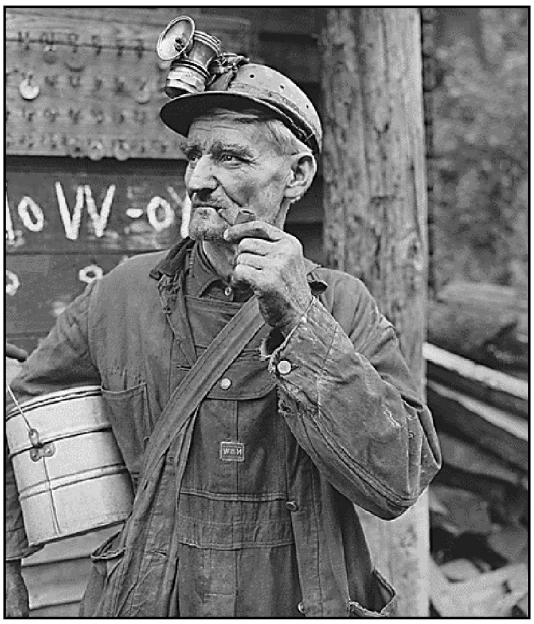


Photo: Miner in Lejunior, Harlan County. 9/13/1946

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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 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 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.**

1861-1865 Kentucky coal production collapses with the onset of the Civil War.

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.

Machines developed to undercut coal beds.

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

1978 **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 An explosion in Darby Mine No. 1 in Harlan County kills five miners—three from carbon monoxide poisoning and two from the initial blast.

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 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.

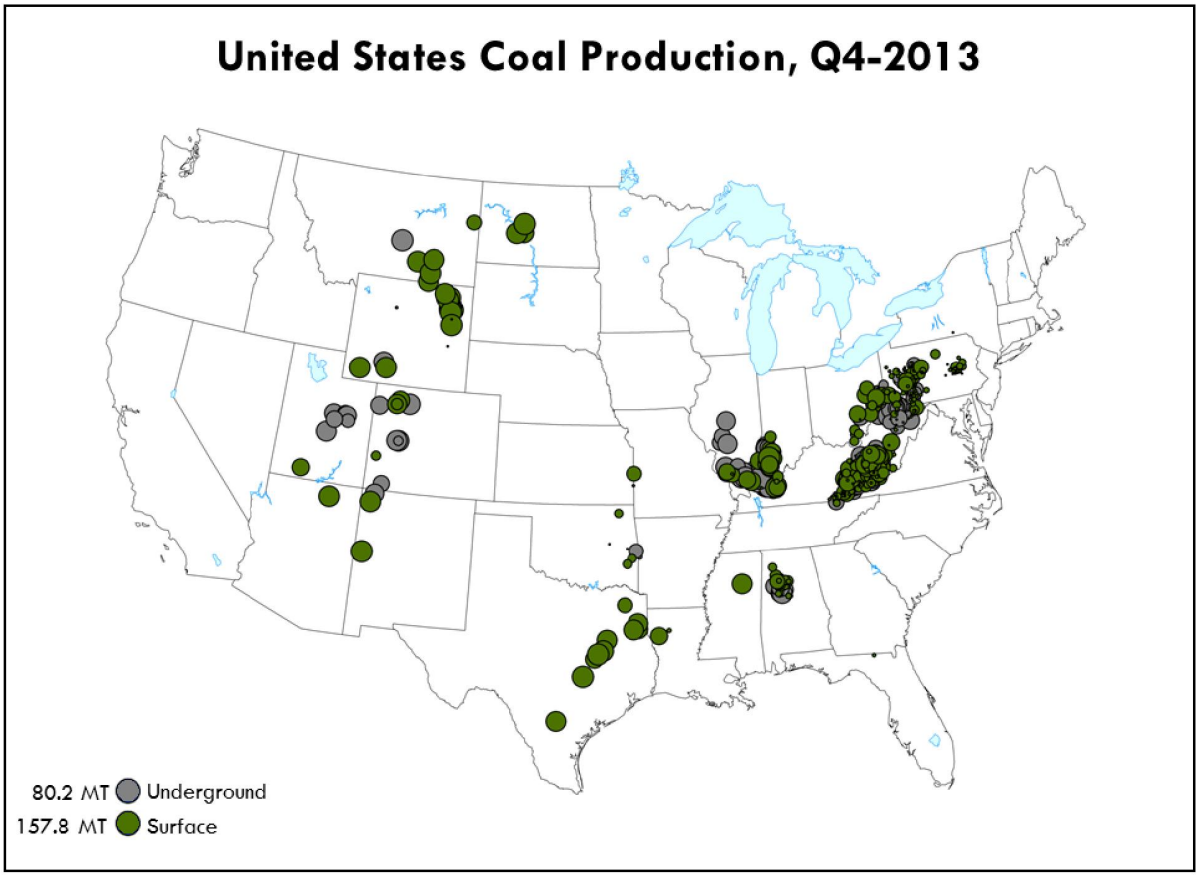
2010 Kentucky's most efficient coal-fired power plant, an Advanced Super Critical Pulverized Power Plant, begins operation in Trimble County.

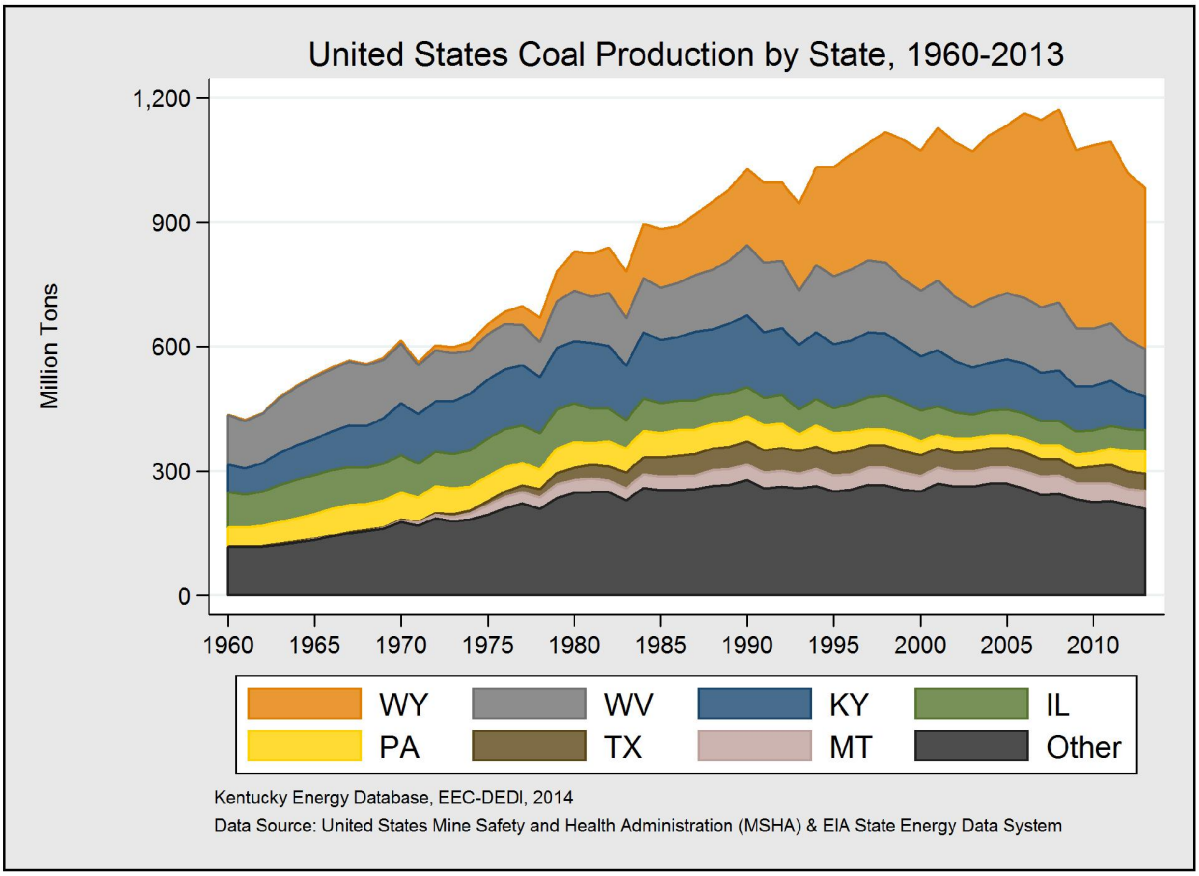
2012 **Union County in western Kentucky replaces Pike County as Kentucky's leading coal-producing county.**

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

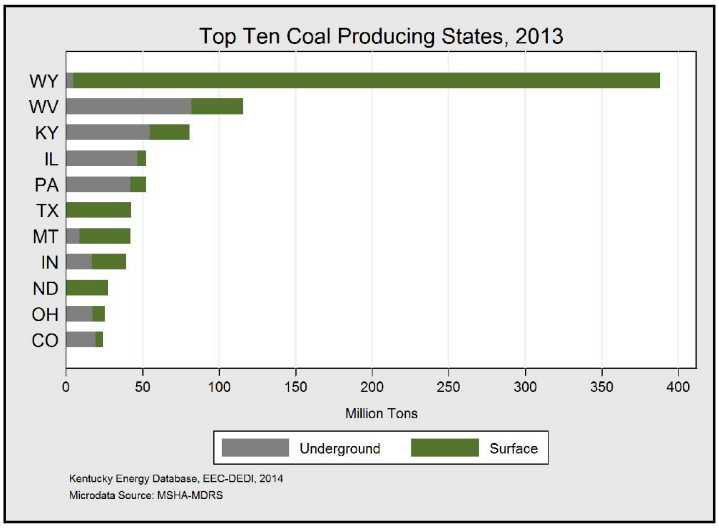
Photo: Coal miners on a mining cart leaving a mine entrance, 1939. Part of Harlan County Mine Strike Photographic Collection, University of Kentucky Special Collections

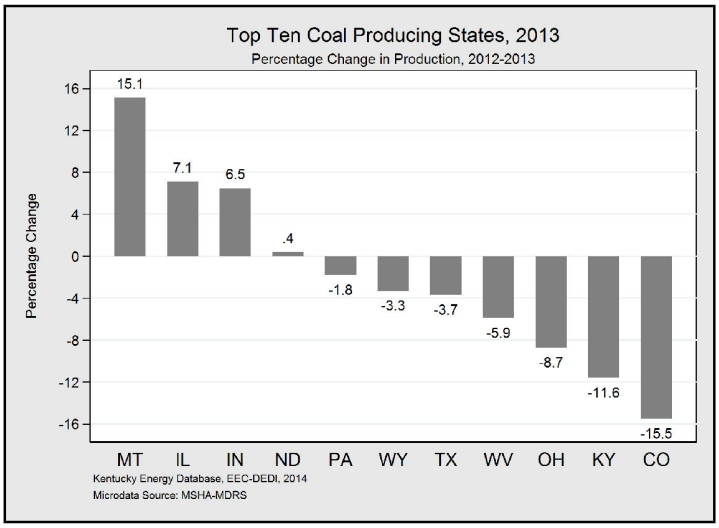
United States Coal Production





United States Coal Production





U.S Coal Production by State, 2013				
State	Rank	Thousand Tons	1 Year Change	Percent
United States	-	982,733	-3.4%	100.0%
Wyoming	1	387,995	-3.3%	39.5%
West Virginia	2	115,892	-5.9%	11.8%
Kentucky	3	80,551	-11.6%	8.2%
Illinois	4	52,255	+7.1%	5.3%
Pennsylvania	5	52,096	-1.8%	5.3%
Texas	6	42,559	-3.7%	4.3%
Montana	7	42,231	+15.1%	4.3%
Indiana	8	39,102	+6.5%	4.3%
North Dakota	9	27,639	+0.4%	4.0%
Ohio	10	25,187	-8.7%	2.6%
Colorado	11	24,139	-15.5%	2.5%
New Mexico	12	21,969	-2.2%	2.2%
Alabama	13	18,467	-6.2%	1.9%
Virginia	14	17,071	-9.4%	1.7%
Utah	15	15,421	-5.3%	1.6%
Arizona	16	7,603	+1.5%	0.8%
Mississippi	17	3,575	+21.1%	0.4%
Louisiana	18	2,809	-29.4%	0.3%
Maryland	19	1,894	-19.6%	0.2%
Alaska	20	1,550	-24.4%	0.2%
Oklahoma	21	1,136	+7.8%	0.1%
Tennessee	22	1,098	-1.2%	0.1%
Missouri	23	414	-1.9%	<0.1%
Arkansas	24	58	-40.4%	<0.1%
Kansas	25	22	+39.6%	<0.1%
Washington	-	0	-100%	0%

Coal production in the United States decreased in 2013 by 3.4 percent compared to 2012 with 982.9 million tons mined. Since 2008—the year with the highest coal production in the United States—total coal production has declined by 188.9 million tons, or 16.1 percent.

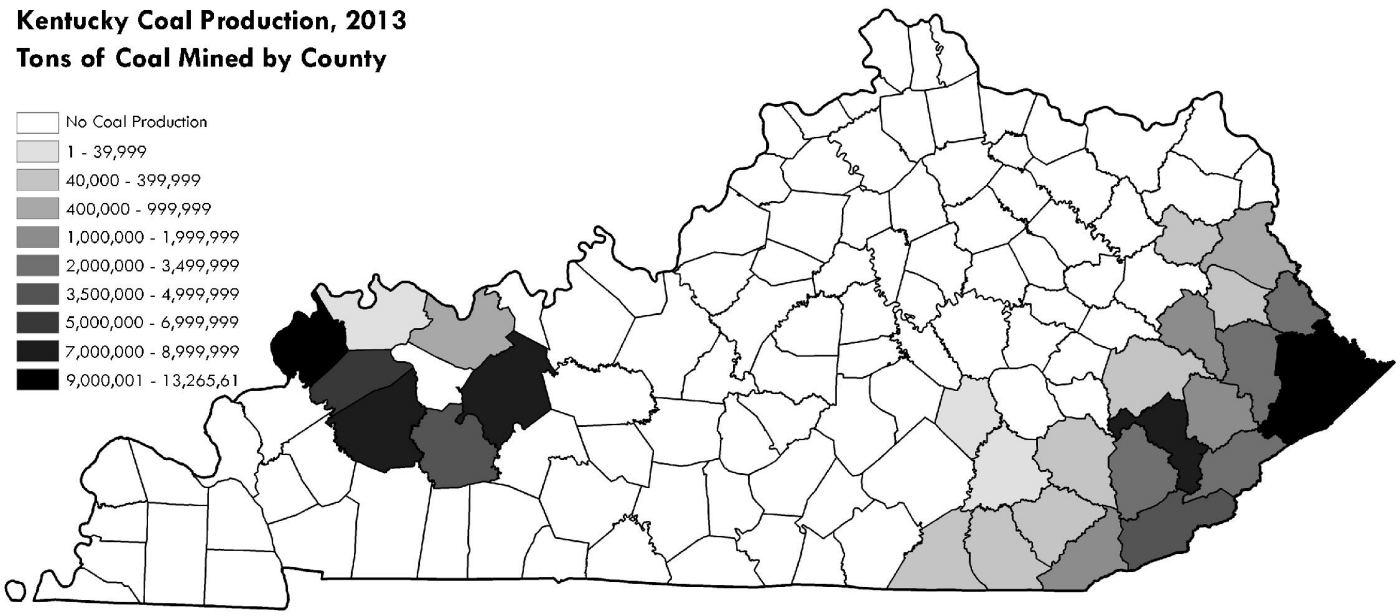
In 2013, coal mines in Wyoming mined 39.5 percent of national production with 388 million tons of Powder River Basin coal. Wyoming has produced more coal annually than any other state since overtaking the former top producer, Kentucky, in 1988.

The second-largest coal producer during 2013, West Virginia, accounted for 11.8 percent of national production and supplied consumers with 115.9 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 8.2 percent of national production in 2013, 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 12 percent in 2013 to 80.6 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 53 percent since.

Illinois overtook Pennsylvania to become the fourth-largest coal producer in 2013 with 52.3 million tons of coal mined. Illinois coal production has grown by 58 percent since 2008, or by 19.2 million tons.

Kentucky Coal Production



Kentucky Energy Database, EEC-DEDI, 2014

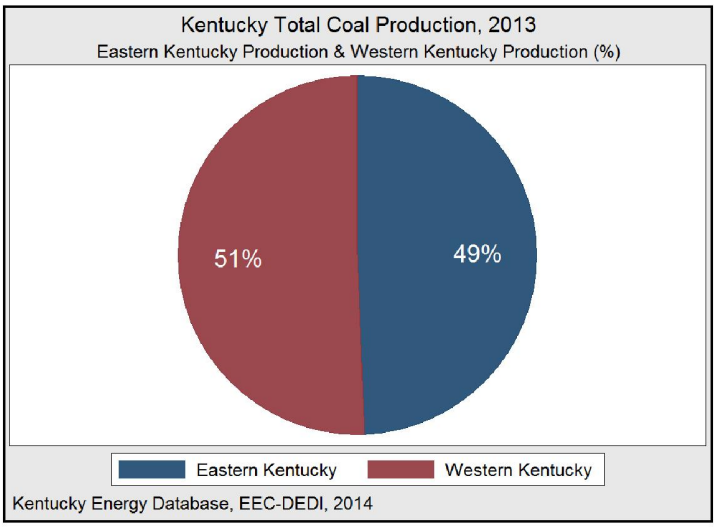
County	Tons	1 Year Change	Percentage
Total	80,551,297	-12.0%	100.0%
Union	13,265,616	-1.6%	16.5%
Pike	10,950,788	-16.9%	13.6%
Hopkins	8,963,894	+0.2%	11.1%
Ohio	8,197,105	+13.4%	10.2%
Perry	7,606,172	-15.1%	9.4%
Webster	5,880,279	+5.9%	7.3%
Harlan	4,566,066	-34.7%	5.7%
Muhlenberg	4,073,837	-16.7%	5.1%
Martin	2,987,669	-16.7%	3.7%
Floyd	2,441,648	-0.3%	3.0%
Letcher	2,174,989	-27.5%	2.7%
Leslie	2,136,704	-30.8%	2.7%
Knott	1,902,183	-27.0%	2.4%
Magoffin	1,551,124	-23.0%	1.9%

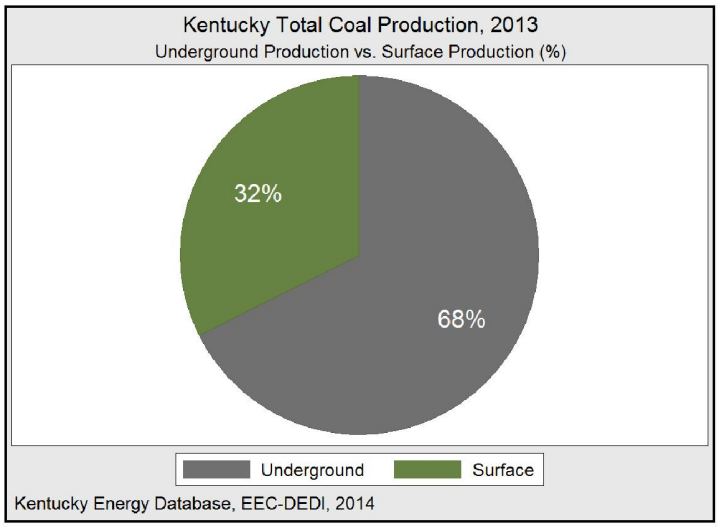
County	Tons	1 Year Change	Percentage
Bell	1,156,997	-1.2%	1.4%
Lawrence	643,970	+170.6%	0.8%
Daviess	484,569	+22.6%	0.6%
Knox	380,039	-41.0%	0.5%
Johnson	331,146	+1.1%	0.4%
Whitley	285,761	1.9%	0.4%
Clay	181,527	-38.2%	0.2%
Breathitt	180,251	-37.9%	0.2%
McCreary	111,242	+250.4%	0.1%
Elliott	46,421	+1837.4%	0.1%
Laurel	24,196	+91.6%	<0.1%
Henderson	13,663	-99.1%	<0.1%
Rockcastle	13,441	+172.6%	<0.1%

During 2013, coal production in the Commonwealth decreased to 80.6 million tons, the lowest level of recorded annual production since 1963. In 2012, Union County became the top producer of coal in Kentucky throughout the entire year. Pike County, the largest producer from 1978 to 2011, was the county with the most coal production in the eastern coalfield.

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 of the coal from each is distinct. Both of these resource tracts contain rich deposits of bituminous coal, and have witnessed coal-mining activities for at least 220 years. The coalfield of eastern Kentucky has coal with a relatively higher heat content and lower sulfur content than western Kentucky. However, western Kentucky coal is relatively less expensive than eastern Kentucky coal in terms of delivered price. The difference in the delivered price of coal between the two coalfields is a result of numerous factors 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



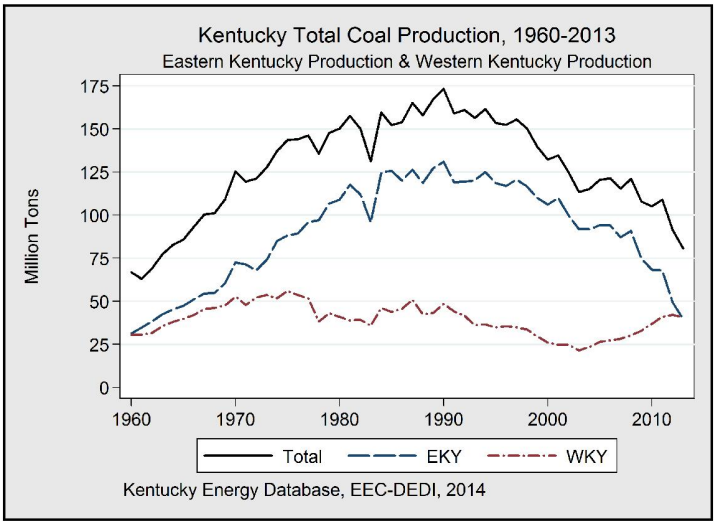


Region	2013 Tonnage	Annual Change
Total	80,551,297	-11.6%
Western Kentucky	40,878,963	-2.8%
Eastern Kentucky	39,672,334	-19.8%

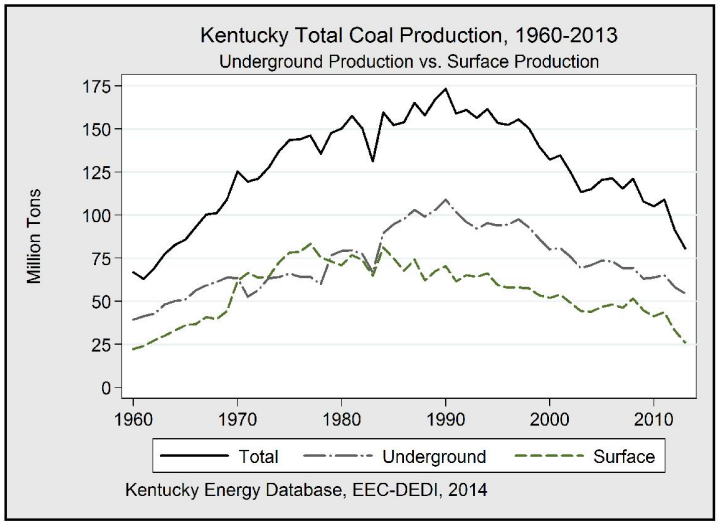
Kentucky coal mines produced 80.6 million tons in 2013, a decrease of almost 12 percent from 2012. Production declined in both the eastern and western coalfields in 2013.

Mine Type	2013 Tonnage	Annual Change
Total	80,551,297	-11.6%
Underground	54,620,360	-6.4%
Surface	25,930,937	-21.8%

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.

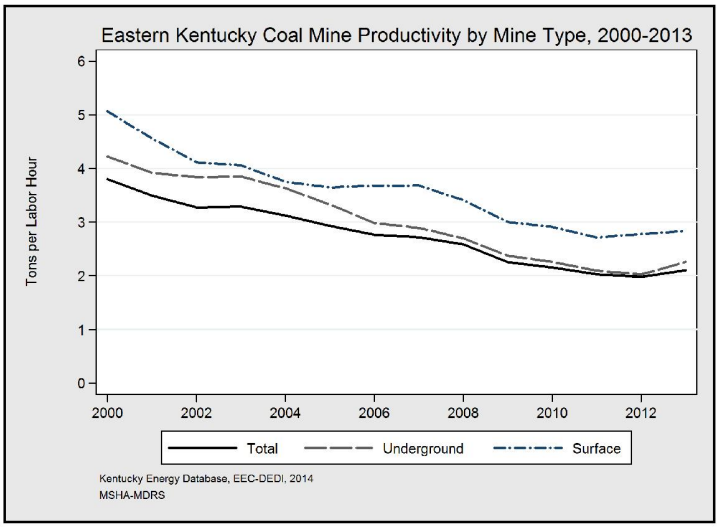


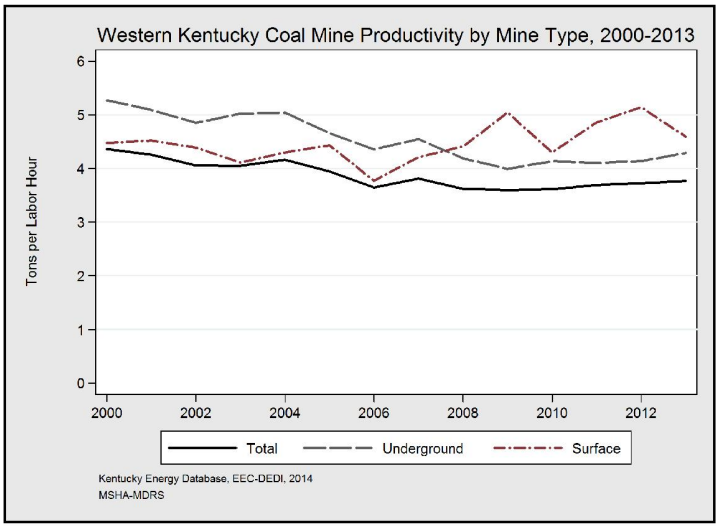
Eastern Kentucky has averaged 69 percent of coal production since 1911, when eastern Kentucky overtook western Kentucky as the top-producing coalfield. Western Kentucky coal mines have produced the majority of coal in the Commonwealth since the third quarter of 2013.



Underground coal mines produced 54.6 million tons of coal, or 68 percent of total Kentucky production in 2013, a decrease of 6.4 percent from 2012. Surface mining operations, which mined 25.9 million tons of coal, decreased production by 21.8 percent since 2012. Production declines in both surface and underground mining since 1990 have been concentrated in the eastern coalfield.

Coal Mine Productivity





Region	Mine Type	Tons/Hour
Eastern Kentucky	All*	2.10
	Underground	2.26
	Surface	2.84

Region	Mine Type	Tons/Hour
Western Kentucky	All*	3.77
	Underground	4.29
	Surface	4.60

Total Labor Hours*	Underground	Surface
18,914,730	8,660,592	7,082,531

Total Labor Hours*	Underground	Surface
10,851,234	8,178,023	1,268,758

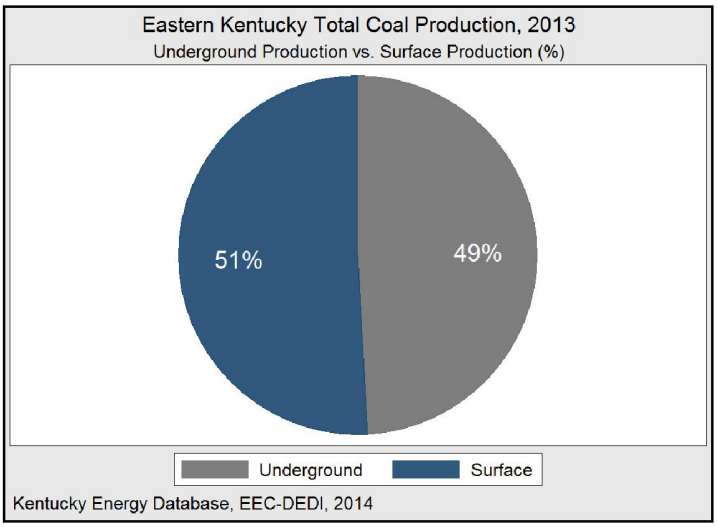
Source: U.S. Department of Labor, Mine Safety and Health Administration, "Quarterly Mine Employment and Coal Production Report" (MSHA Form 7000-02). ***Coal mine productivity is defined as total coal production (tons) divided by total employee labor hours. Total labor hours include the combination by mine site of direct miner hours, preparation plant hours, and on-site office employee hours.** Historical and current reporting on mine productivity statewide and nationwide indicates a trend of declining productivity across all coalfields in the United States since the year 2000.

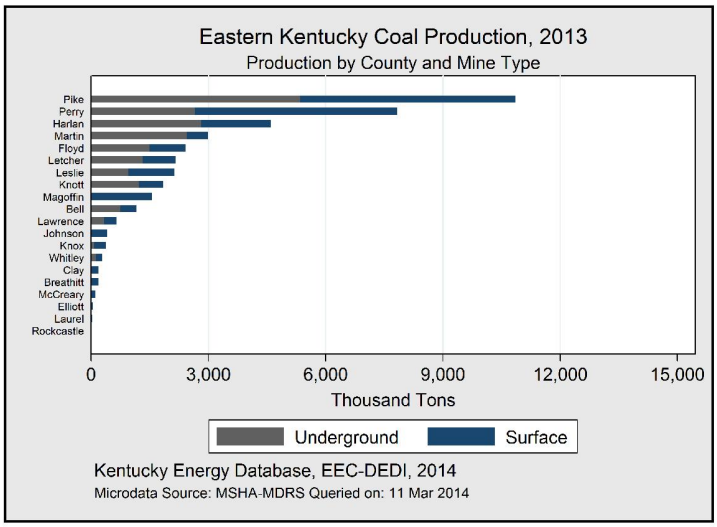
Coal mining productivity in eastern and western Kentucky has been decreasing since 2000, though productivity in the east and west rose in 2013. As a result of different geologic and hydraulic conditions, productivity varies significantly across counties and methods of coal production. However, total western Kentucky productivity levels have remained consistent whereas eastern Kentucky productivity has dropped more considerably.

At an average of 2.10 tons per labor hour in 2013, productivity in the eastern coalfield was up for the year as less productive mines were closed. However, productivity is down 45 percent from the year 2000, when production was 3.8 tons per labor hour. Productivity for both surface mines and underground mines in eastern Kentucky fell consistently from 2000 to 2012, but overall rose by 5.8 percent in 2013. Surface mines in eastern Kentucky remained the most efficient form of coal mining in the region.

At 3.77 tons per labor hour in 2013, average coal mining productivity in western Kentucky was 79 percent higher than eastern Kentucky. While surface mines produced at a rate of 4.6 tons per hour in 2013, surface mine production accounted for only 14 percent of regional production. Therefore, western Kentucky productivity was most influenced by underground operations. Total coal mine productivity in western Kentucky has fallen by 14 percent since 2000, but production has fallen by 18 percent while surface production has increased by three percent during that period. Increases in preparation plant and office employment since 2000 have affected total productivity numbers in the region.

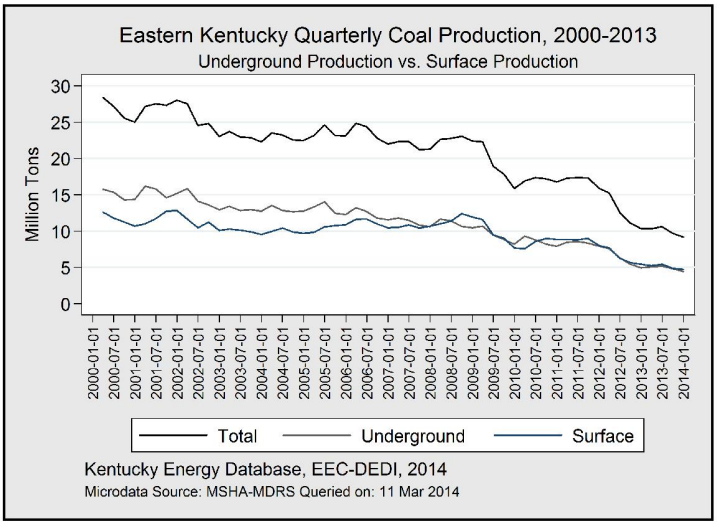
Eastern Kentucky Coal Production





Mine Type	2013 Tonnage	Annual Change
Total	39,672,334	-19.8%
Surface	20,099,065	-20.2%
Underground	19,573,269	-19.3%

Eastern Kentucky coal production decreased in 2013 by 19.8 percent to 39.7 million tons of coal—50.7 percent from surface mines and 49.4 percent from underground mines.

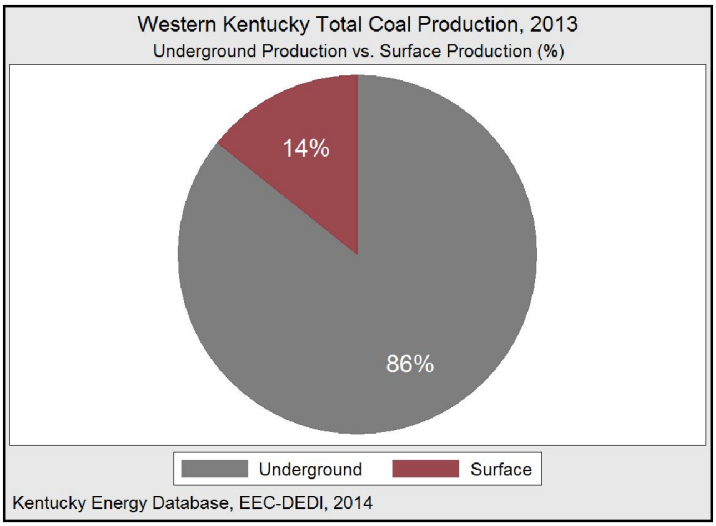


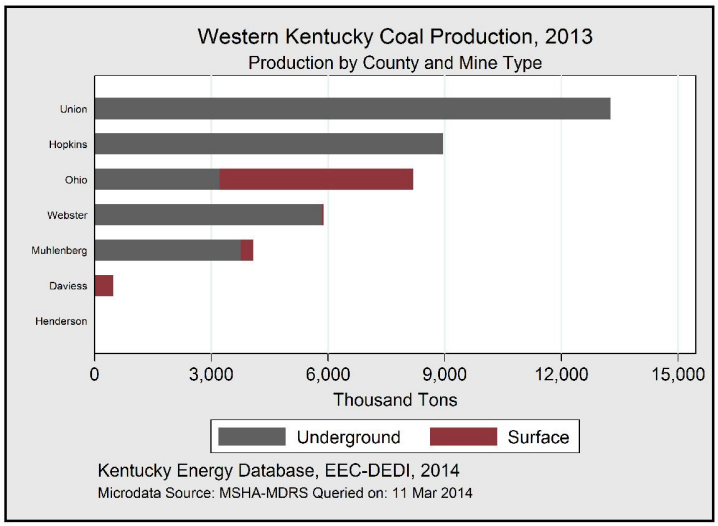
Eastern County	2013 Tonnage	Annual Change
Pike	10,950,788	-16.9%
Perry	7,606,172	-16.5%
Harlan	4,566,066	-34.7%
Martin	2,987,669	-16.7%
Floyd	2,441,648	-0.3%
Letcher	2,174,989	-27.5%
Leslie	2,136,704	-30.8%
Knott	1,902,183	-27.0%
Magoffin	1,551,124	-23.0%
Bell	1,156,997	-1.2%
Lawrence	643,970	+170.6%
Knox	380,039	+41.0%
Johnson	331,146	+1.1%
Whitley	285,761	+1.9%
Clay	181,527	-38.2%
Breathitt	180,251	-37.9%
McCreary	111,242	+250.4%
Elliott	46,421	+1,837.4%
Laurel	24,196	+91.6%
Rockcastle	13,441	+172.6%

Production contracted at both surface and underground mining operations in 2013 by 20.2 and 19.3 percent, respectively. Eastern Kentucky produced 9.2 million tons during the fourth quarter of 2013. Eastern Kentucky coal production has decreased by 63 percent since 2000 and by 70 percent since peak Kentucky production in 1990.

Pike County yielded the most coal of any county in eastern Kentucky and was the second-largest producing county overall, mining nearly 11 million tons during 2013. Pike County was the highest coal producing county in Kentucky from 1978 to 2012 and produced the most coal of any county in Kentucky history in 1996 with 36 million tons of coal mined.

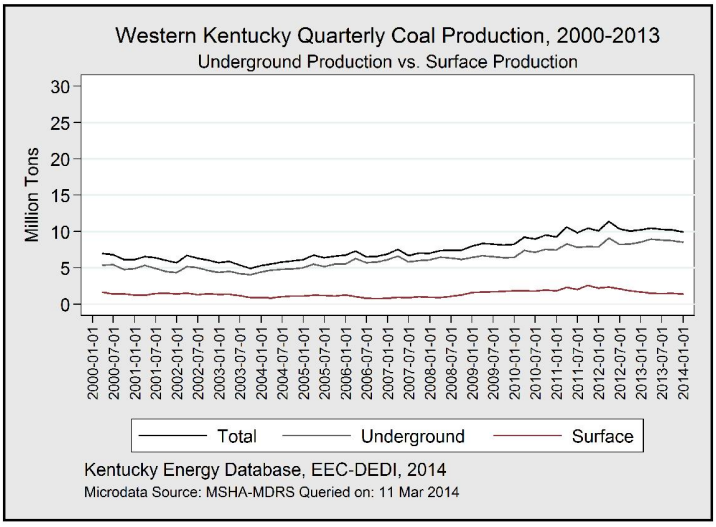
Western Kentucky Coal Production





Mine Type	2013 Tonnage	Annual Change
Total	40,878,963	-2.8%
Underground	35,047,091	+3.0%
Surface	5,831,872	-26.7%

Western Kentucky mined 41 million tons in 2013, a decrease of 2.8 percent from the year prior. Of this, 86 percent of regional coal production was from underground mines.



Underground mining increased by 3 percent in 2013, while surface mining decreased by 26.7 percent. Western Kentucky produced 9.9 million tons during the fourth quarter of 2013. Western Kentucky annual coal production has decreased by 15.5 percent since 1990, but has increased by 90.1 percent since 2003.

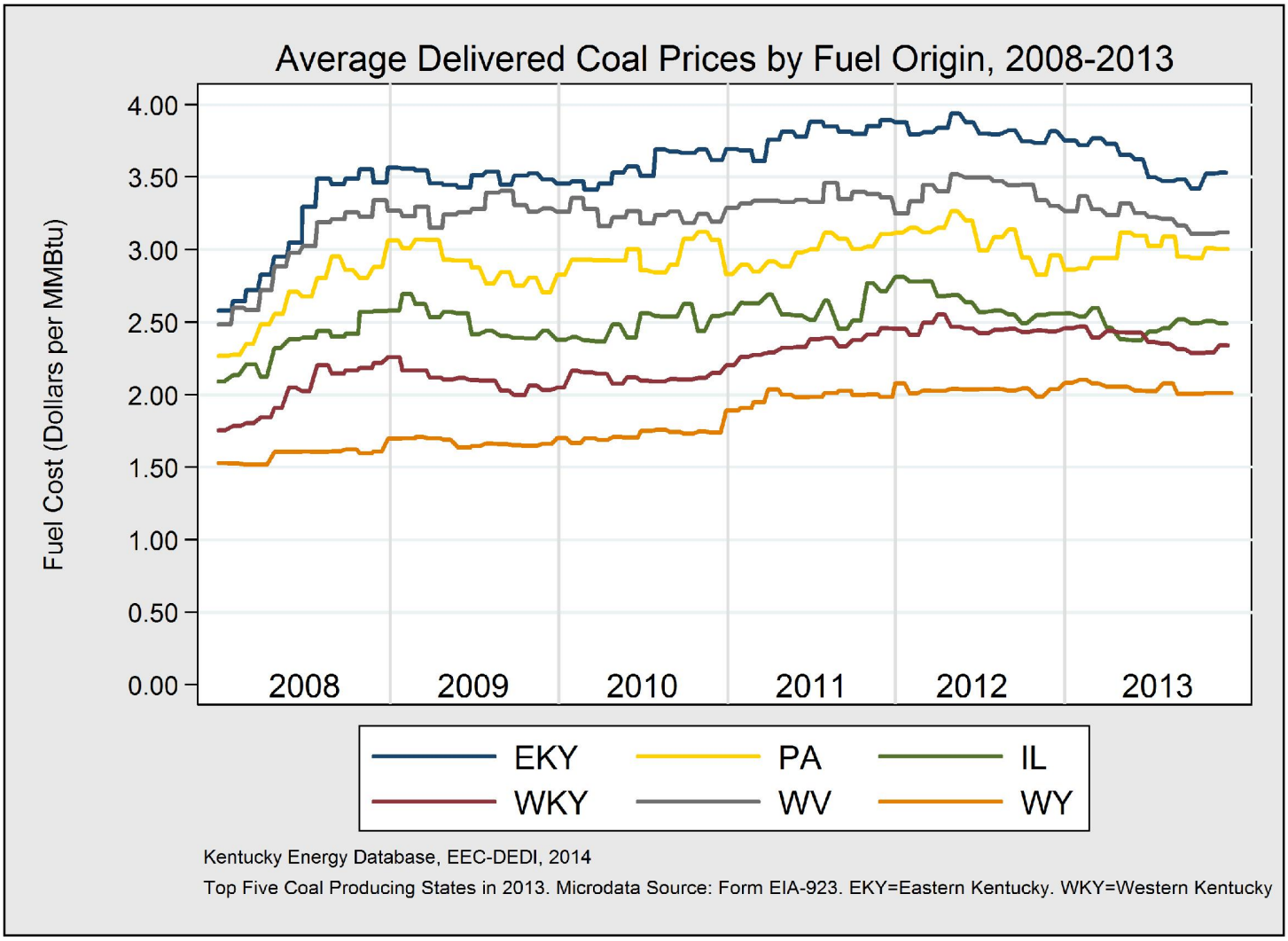
Western County	2013 Tonnage	Annual Change
Union	13,265,616	-1.6%
Hopkins	8,963,894	+0.2%
Ohio	8,197,105	+13.4%
Webster	5,880,279	+5.9%
Muhlenberg	4,073,837	-16.7%
Daviess	484,569	+22.6%
Henderson	13,663	-99.1%

Union County remained Kentucky's leading coal producing county, mining nearly 13.3 million tons during 2013, though production in the county decreased by 1.6 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, 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.

Delivered Price of Coal by Origin



Kentucky Energy Database, EEC-DEDI, 2014

Top Five Coal Producing States in 2013. Microdata Source: Form EIA-923. EKY=Eastern Kentucky. WKY=Western Kentucky

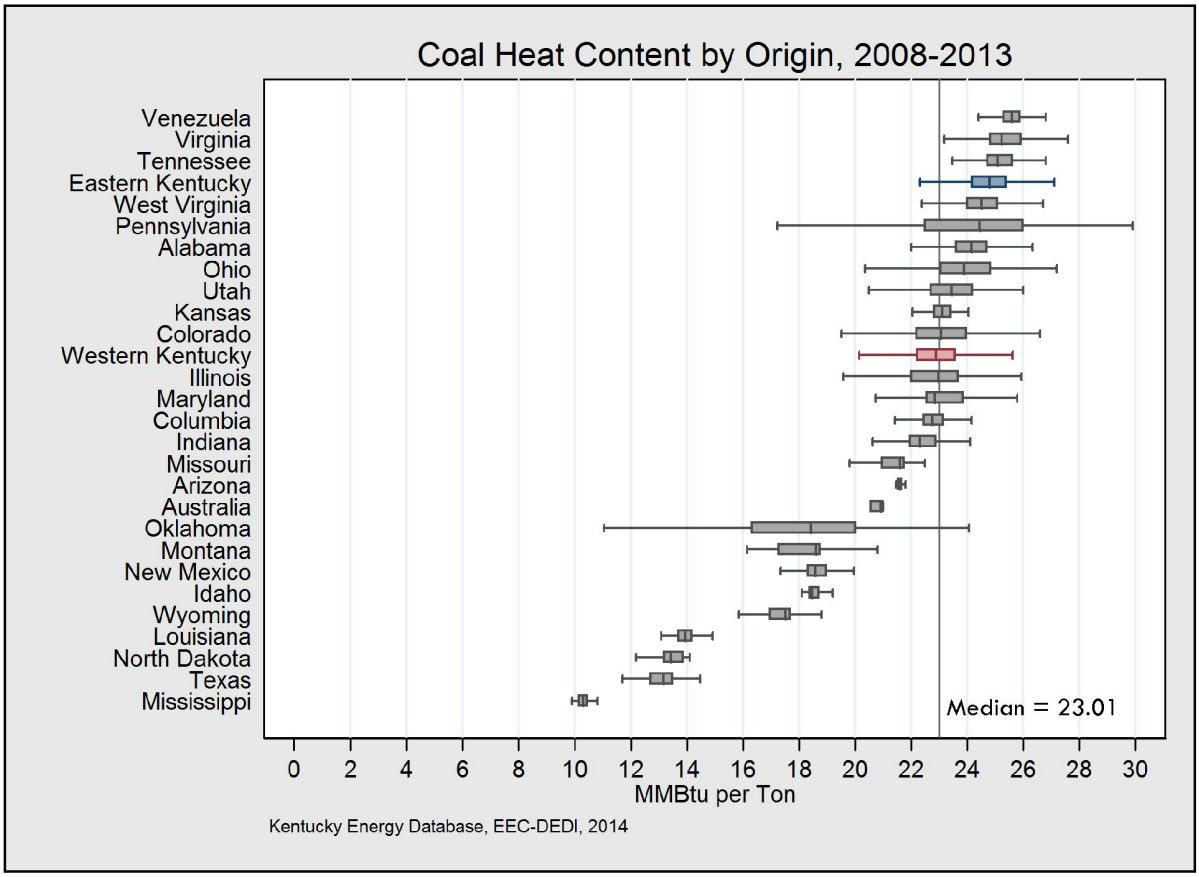
Origin	2013 $ per MMBtu	Since 2008
Eastern Kentucky	3.62	+10%
West Virginia	3.23	+6.6%
Pennsylvania	2.68	+12.2%
Illinois	2.49	+4.1%
Western Kentucky	2.40	+16.9%
Wyoming	2.03	+26.5%

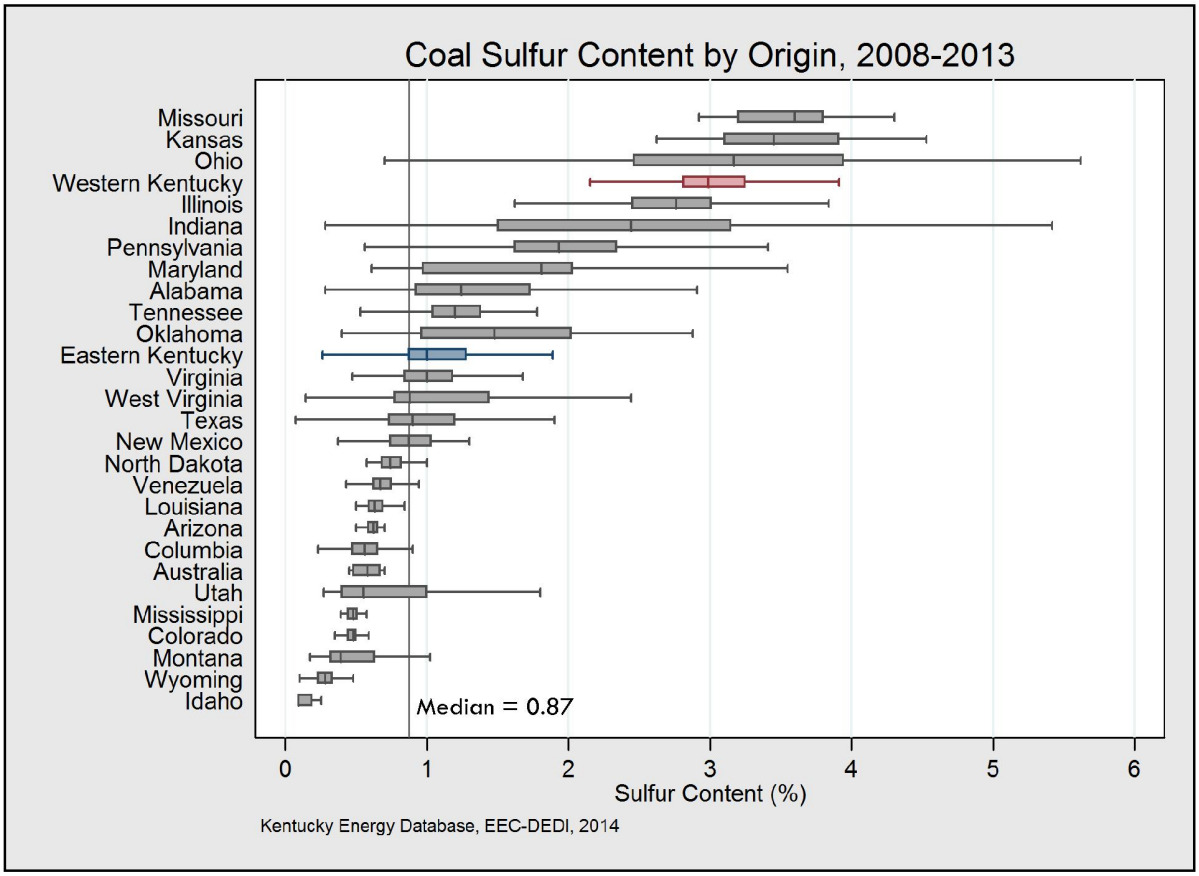
In 2013, Wyoming, West Virginia, Kentucky, Pennsylvania, and Illinois represented 70 percent of coal production in the United States. A group of 20 states accounted for the remaining 30 percent of coal production; yet, no single state within this group represented more than five percent of national production.

Of the five largest coal-producing states in 2013, coal mined in eastern Kentucky was, on average, the most expensive coal delivered to electric utilities in the United States. West Virginia and Pennsylvania, which 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 2013 and mines sub-bituminous coal in the Powder River Basin, offered the least expensive coal, 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.

U.S. Market Steam Coal Properties





U.S. Market Steam Coal Properties

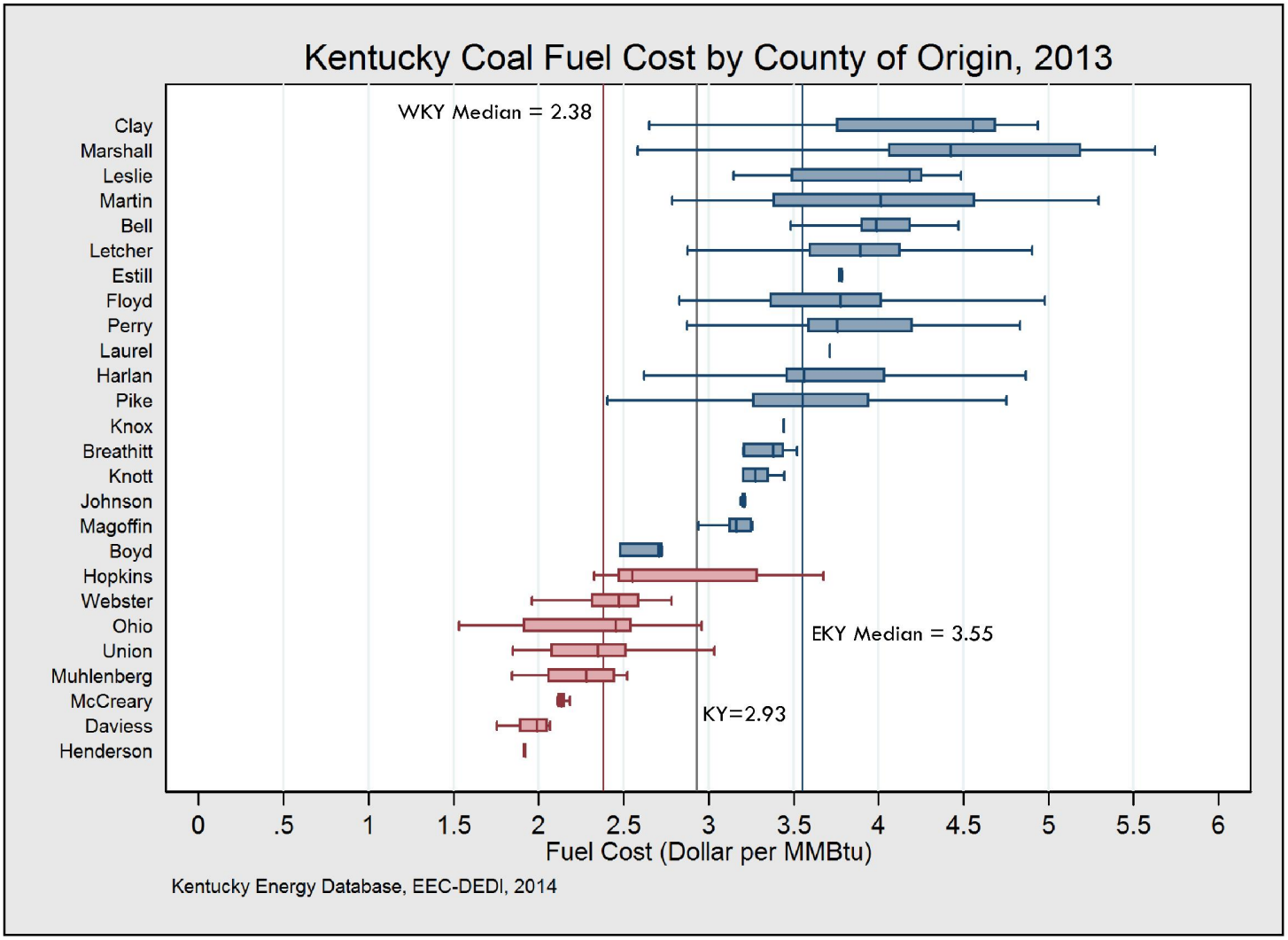
State	Mean Heat Content (MMBtu per Ton)	Median Sulfur Content (%)	Median Ash Content (%)	2013 Mean Delivered Price ($ per MMBtu)	2013 Median Delivered Price ($ per Ton)
Alabama	24.17	1.30	13.09	4.16	98.78
Arkansas	23.99	1.19	15.20	-	
Arizona	21.59	0.61	10.60	2.22	47.86
Columbia	22.71	0.58	7.50	3.94	85.41
Colorado	23.03	0.47	9.40	2.73	61.58
Eastern Kentucky	**24.84**	**1.00**	**10.20**	**3.55**	**89.24**
Illinois	22.94	2.84	8.70	2.34	53.90
Indiana	22.43	2.70	8.60	2.53	56.78
Indonesia	19.73	0.47	4.30	-	-
Louisiana	13.82	0.64	14.10	3.40	46.24
Maryland	22.82	1.83	18.20	2.44	58.98
Missouri	21.59	3.54	15.00	2.59	55.29
Mississippi	10.36	0.48	14.75	-	-
Montana	18.59	0.39	5.00	2.08	38.46
North Dakota	13.40	0.76	8.60	1.52	20.28
New Mexico	18.53	0.87	16.10	2.19	40.58
Ohio	23.99	3.23	10.30	2.03	49.28
Oklahoma	19.38	1.12	29.20	4.70	110.36
Pennsylvania	24.47	1.98	12.00	2.98	77.82
Tennessee	25.17	1.23	8.90	3.75	97.91
Texas	13.20	0.90	16.25	2.57	33.01
Utah	23.40	0.55	10.70	2.11	46.07
Virginia	25.19	0.98	11.00	3.22	62.77
Venezuela	25.54	0.68	7.00	-	-
Western Kentucky	**22.97**	**2.99**	**9.40**	**2.38**	**55.28**
West Virginia	24.50	0.90	11.79	3.23	79.70
Wyoming	17.53	0.28	5.00	2.00	35.17

Steam Coal Properties

Coals 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 in 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 coal mine 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.

Price of Coal by Kentucky County

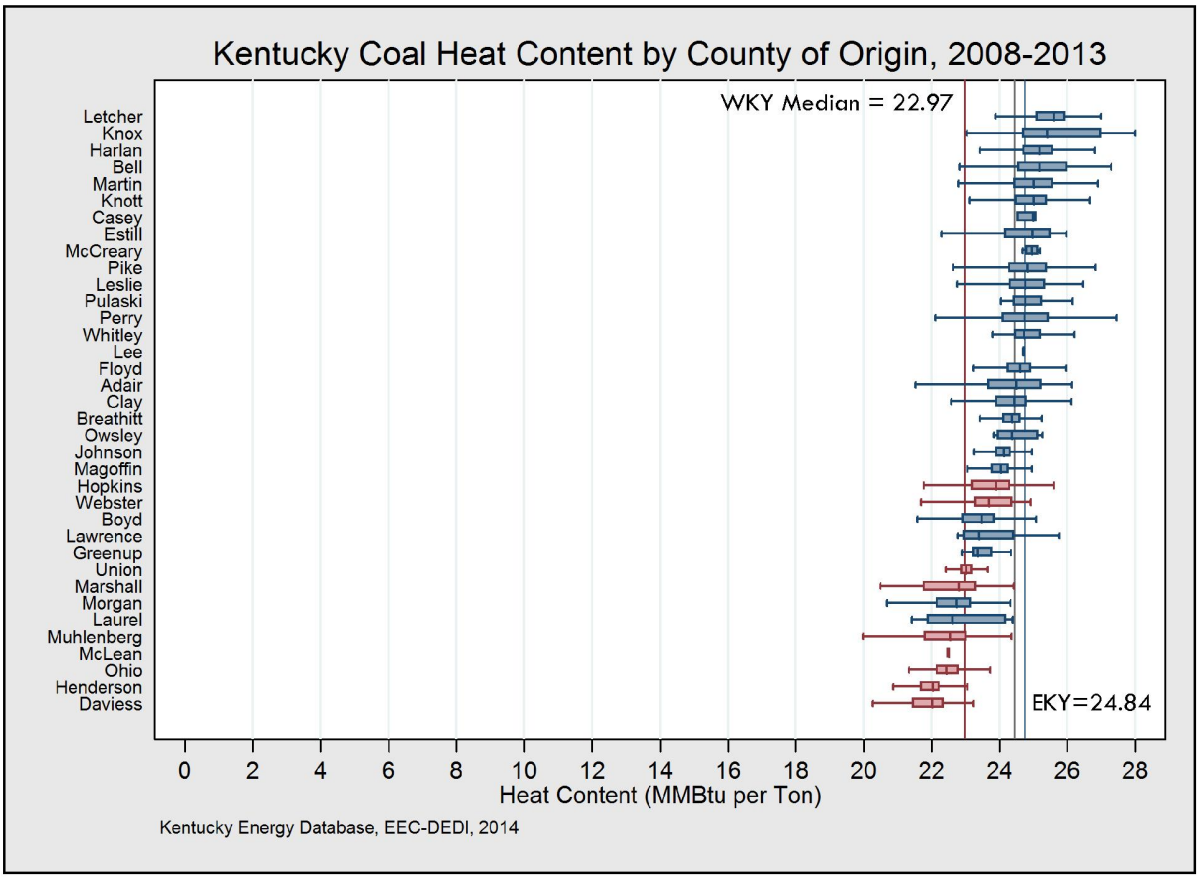


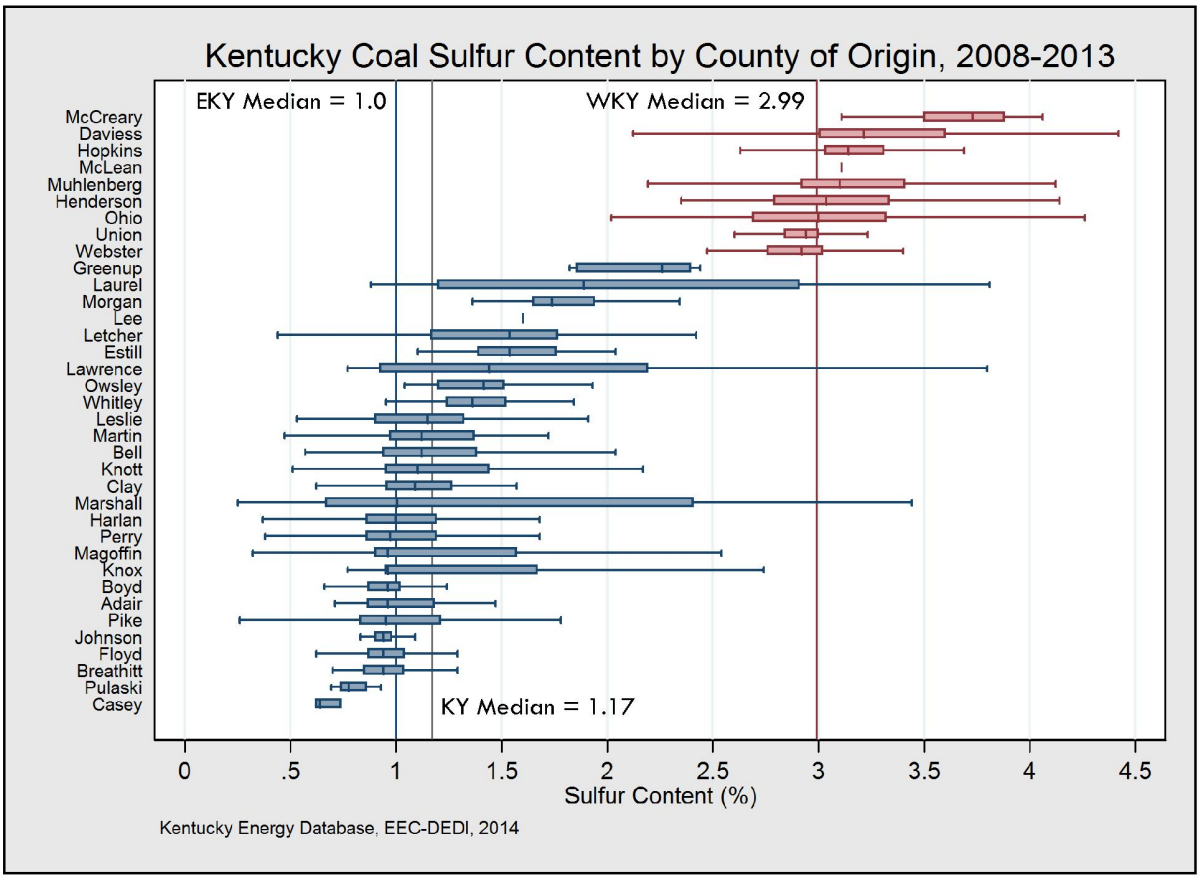
The above chart summarizes the range of delivered prices for coal by coal mining county. The whiskers (horizontal lines) on each plot denote the minimum and maximum prices for each county, while the box component represents the 25th percentile through the 75th percentile of price values (or 50 percent of the data). The vertical line within the box component marks the median delivered price. The above graphic provides data on the delivery price of coal, after processing. However, the table represents median price delivery data for only the year 2011.

Eastern Kentucky Coal Prices, 2013			Western Kentucky Coal Prices, 2013		
Range	County	Median (Dollars per MMBtu)	Range	County	Median (Dollars per MMBtu)
Max	Clay	4.56	Max	Ohio	2.46
Average	All	3.55	Average	All	2.38
Min	McCreary	2.14	Min	Henderson	1.92

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

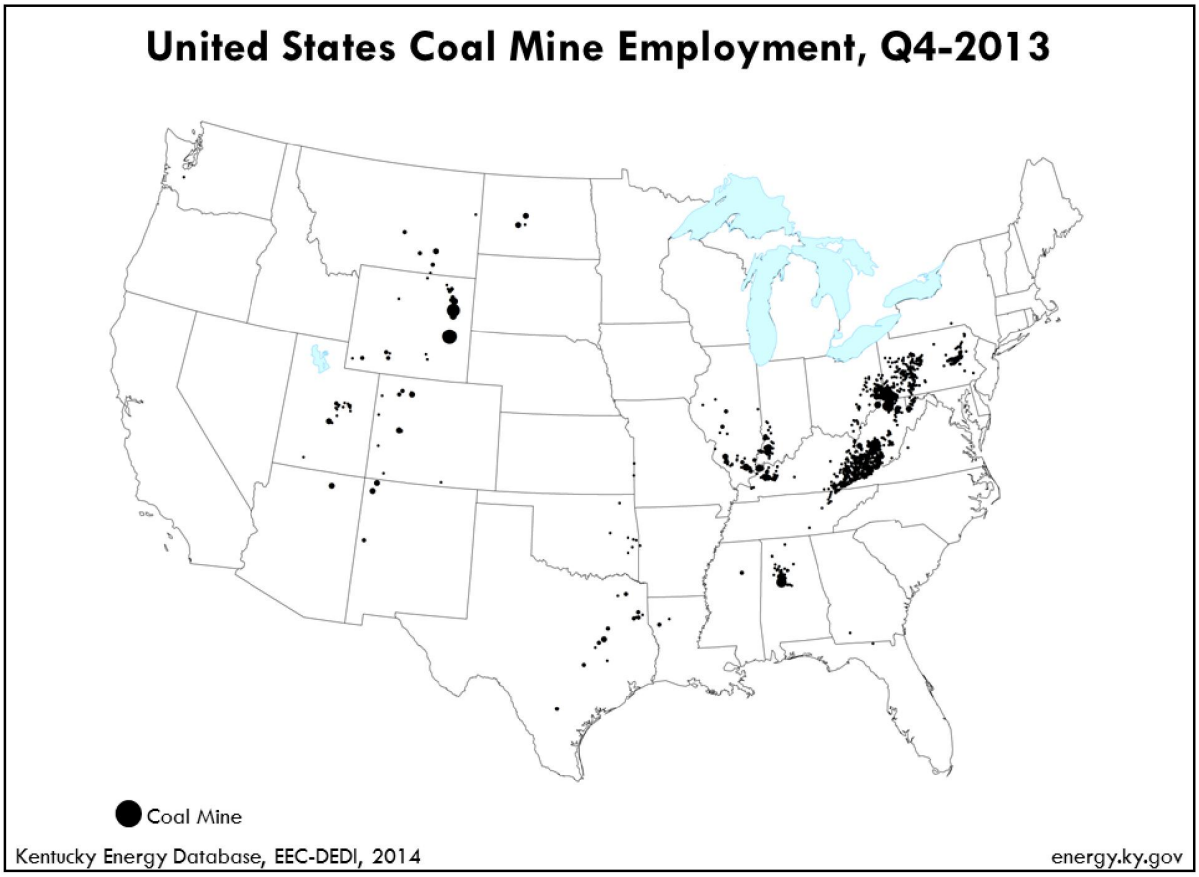
Region	Median Heat Content (MMBtu per Ton)	Median Sulfur Content (%)	Median Ash Content (%)	Median Delivered Price ($ per MMBtu)	2013 Median Delivered Price ($ per Ton)
Kentucky	**24.45**	**1.17**	**10.00**	**2.93**	
Eastern Kentucky	**24.84**	**1.00**	**10.20**	**3.55**	**89.24**
Bell	25.18	1.12	9.00	3.99	98.48
Boyd	23.48	0.96	12.70	2.71	64.18
Breathitt	24.38	0.94	11.10	3.38	84.02
Clay	24.45	1.09	11.20	4.56	113.06
Estill	24.98	1.54	8.75	3.78	96.27
Floyd	24.60	0.94	10.07	3.78	94.19
Harlan	25.18	1.00	9.90	3.56	93.05
Johnson	24.13	0.94	9.86	3.21	76.83
Knott	25.00	1.10	10.00	3.28	80.88
Knox	25.40	0.96	8.80	3.44	86.29
Laurel	22.62	1.89	11.04	3.71	89.76
Leslie	24.76	1.15	10.00	4.18	105.63
Letcher	25.61	1.54	8.80	3.89	97.35
Magoffin	24.05	0.96	10.46	3.16	76.04
Martin	25.01	1.12	8.80	4.01	99.95
McCreary	24.96	3.73	11.15	2.14	53.39
Perry	24.74	0.97	10.30	3.76	94.61
Pike	24.84	0.95	10.60	3.55	89.86
Western Kentucky	**22.97**	**2.99**	**9.40**	**2.38**	**55.28**
Daviess	22.02	3.22	10.70	1.99	42.86
Henderson	22.04	3.04	9.85	1.92	40.10
Hopkins	23.90	3.14	9.30	2.55	61.55
Marshall	22.81	1.01	8.00	4.43	102.11
Muhlenberg	22.54	3.10	10.70	2.28	52.23
Ohio	22.44	3.00	10.00	2.46	54.89
Union	23.02	2.94	8.40	2.35	54.26
Webster	23.69	2.92	9.20	2.48	58.74

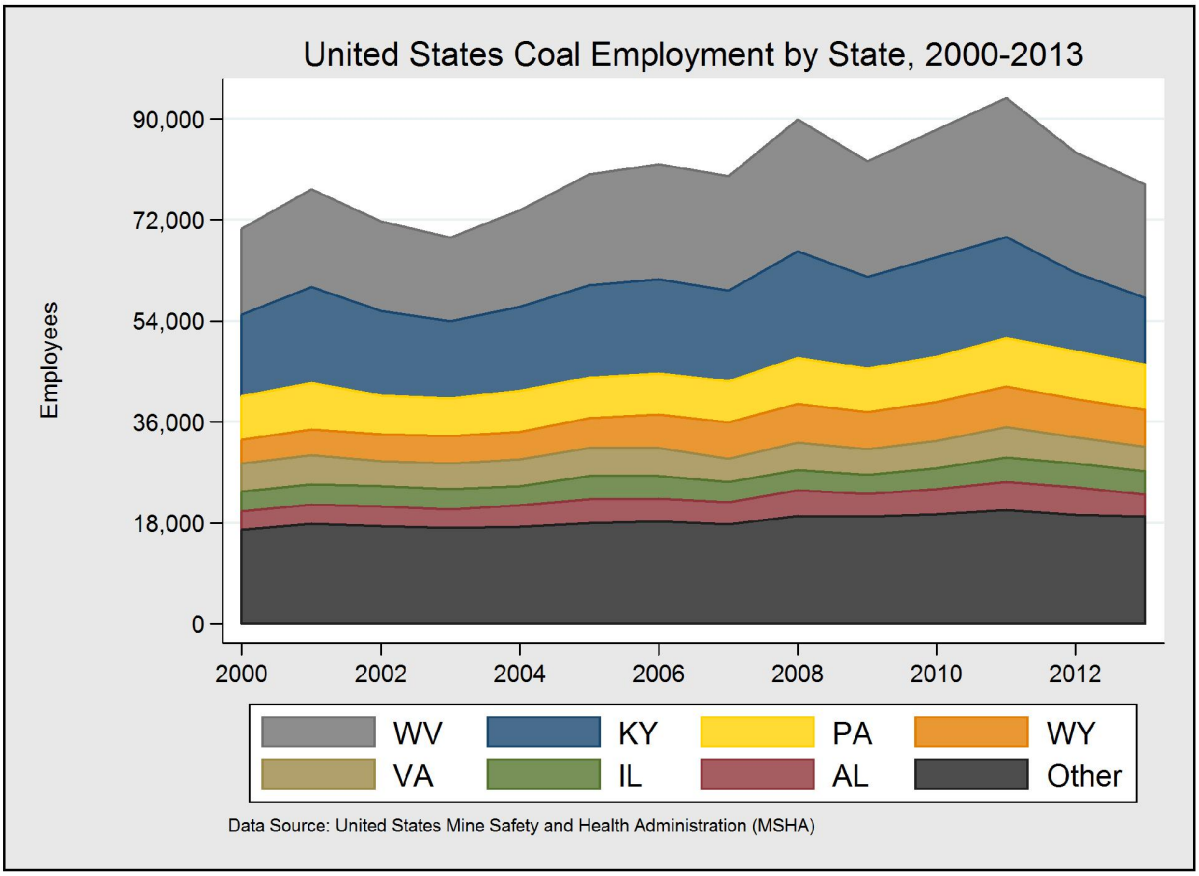
Kentucky Steam Coal Chemical Properties

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 2013 had an 8 percent higher heat content per ton, 67 percent less sulfur, and in 2013, nominal delivered costs that were 49 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 is mined in western Kentucky.

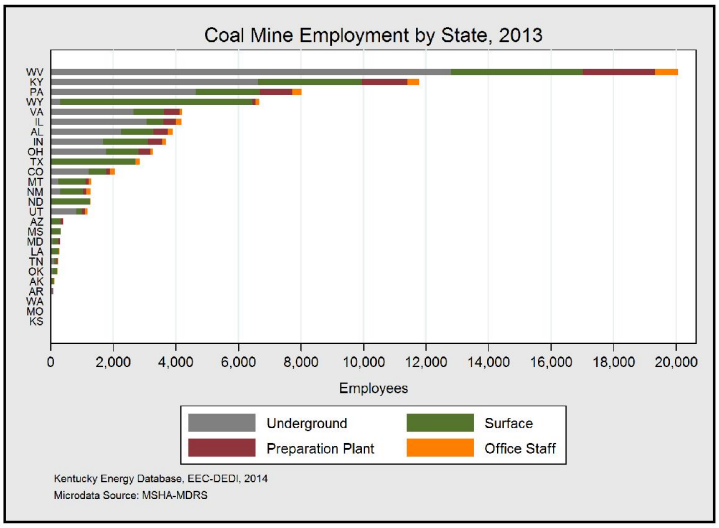
The preceding box and whisker plots summarize the range of heat or sulfur content of coal by county. The whiskers denote the minimum and maximum values for each county, while the box component represents the 25th percentile through the 75th percentile of values (or 50 percent of the data). The vertical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

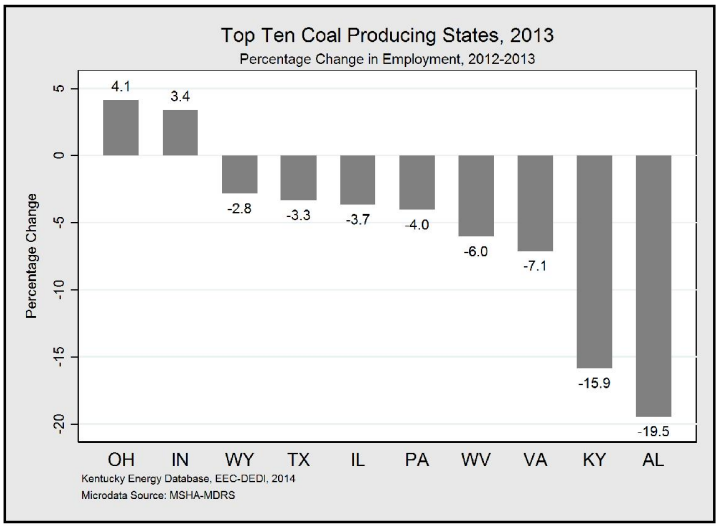
United States Coal Employment





Coal Mine Employment





U.S Coal Employment by State, 2013				
State	Rank	Employment	1 Year Change	Percent
United States	-	78,300	-6.9%	100.0%
West Virginia	1	20,176	-6.0%	25.8%
Kentucky	2	11,885	-15.9%	15.2%
Pennsylvania	3	8,080	-4.0%	10.3%
Wyoming	4	6,657	-2.8%	8.5%
Virginia	5	4,286	-7.1%	5.5%
Illinois	6	4,183	-3.7%	5.3%
Alabama	7	3,932	-19.5%	5.0%
Indiana	8	3,682	+3.4%	4.7%
Ohio	9	3,287	+4.1%	4.2%
Texas	10	2,842	-3.3%	3.6%
Colorado	11	2,047	-10.9%	2.6%
Utah	12	1,409	-7.1%	1.8%
Montana	13	1,296	+4.6%	1.7%
New Mexico	14	1,282	-1.9%	1.6%
North Dakota	15	1,263	+4.2%	1.6%
Arizona	16	398	-7.4%	0.5%
Mississippi	17	328	+26.2%	0.4%
Maryland	18	306	-28.2%	0.4%
Louisiana	19	273	-3.2%	0.3%
Tennessee	20	225	-25.7%	0.3%
Oklahoma	21	198	-0.5%	0.3%
Alaska	22	122	-12.2%	0.2%
Arkansas	23	82	+9.3%	0.1%
Washington	24	31	+24.0%	<0.1%
Missouri	25	24	+4.3%	<0.1%
Kansas	26	6	+0%	<0.1%

Coal employment in the United States decreased in 2013 by 6.9 percent compared to 2012 with 78,300 full-time workers employed. Since 2008—the year with the highest coal production in the United States—total coal employment has declined by 11,574 jobs, or 12.9 percent.

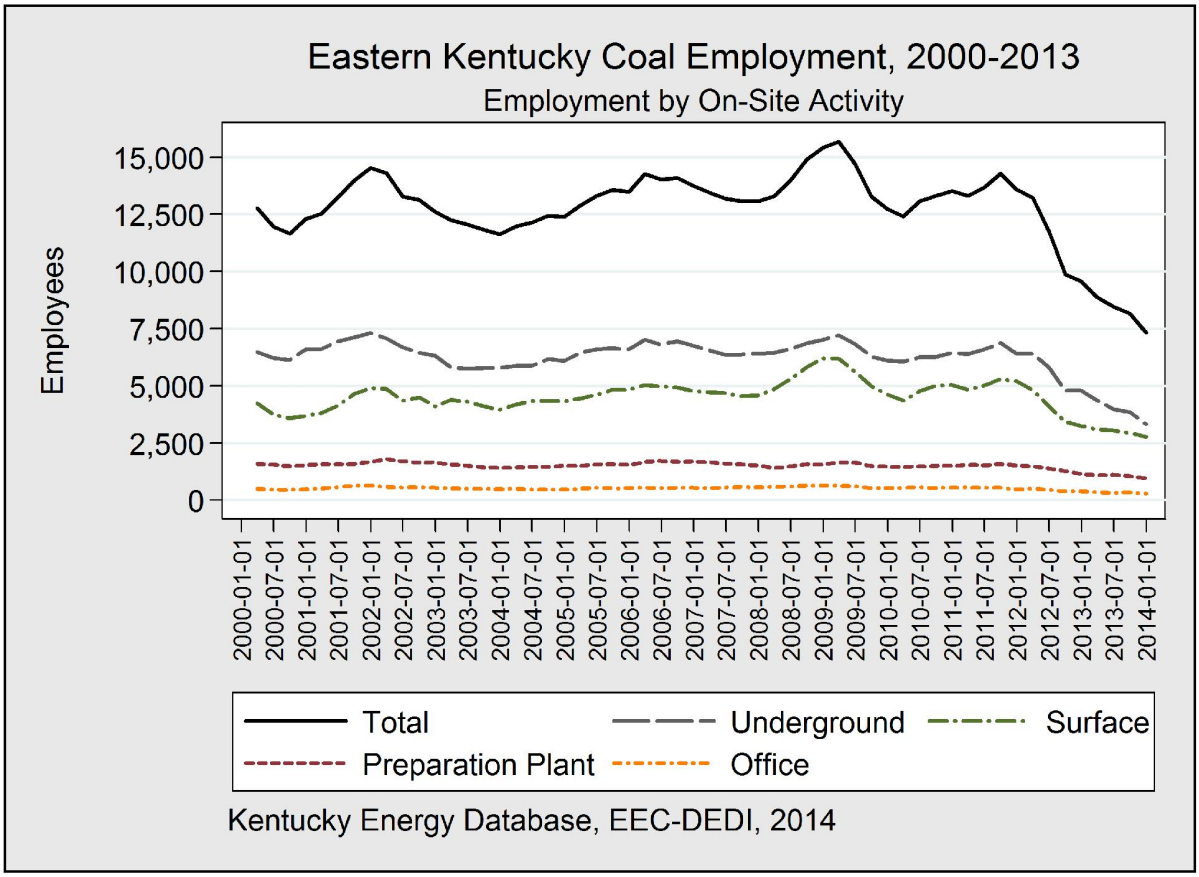
The largest coal employer during 2013, West Virginia, accounted for over a quarter of national direct-coal employment and employed 20,176 workers. West Virginia has had the most direct-coal employment at least since 2000.

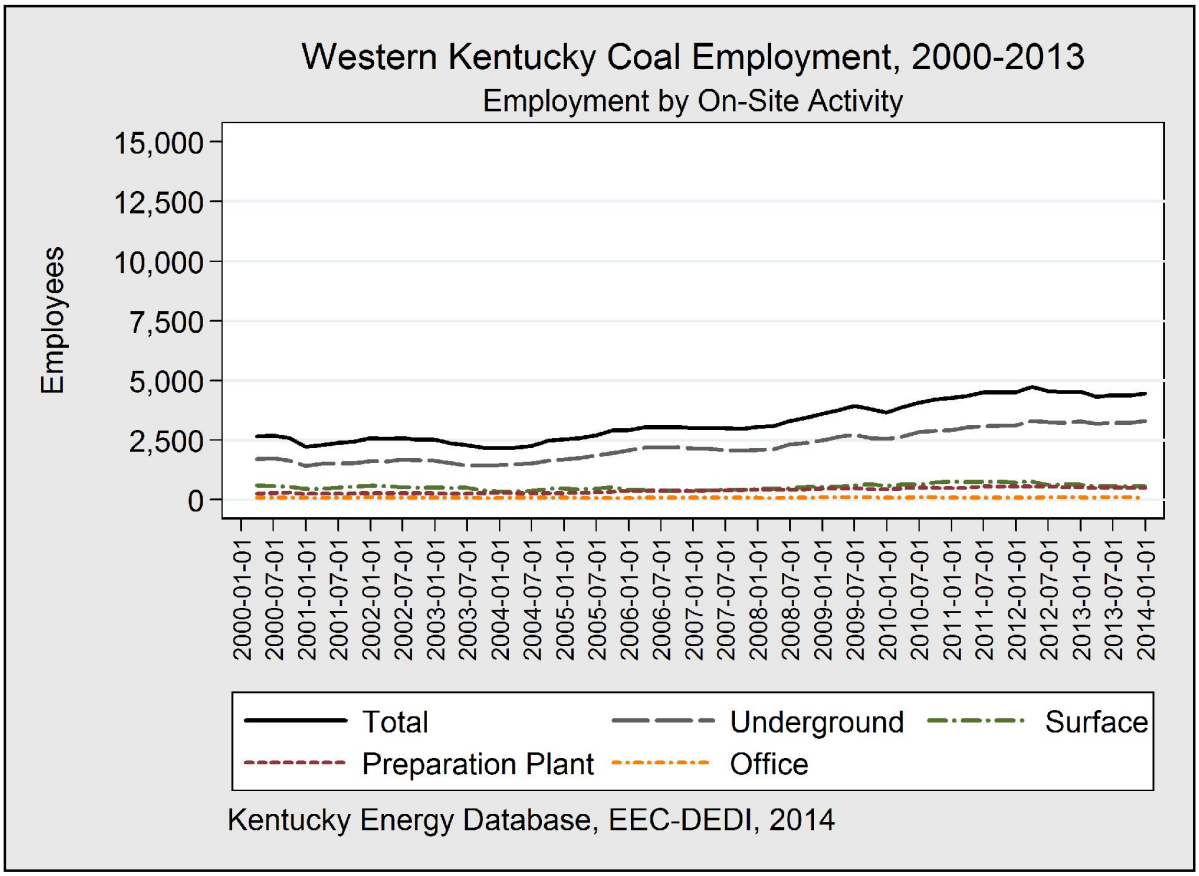
Kentucky has the second-highest number of coal workers, with 15.2 percent of national employment in 2013. Coal employment in Kentucky decreased by 15.9 percent in 2013 to 11,885 workers.

Pennsylvania, the third-highest coal-employment state in 2013, had 8,080 direct coal employment jobs.

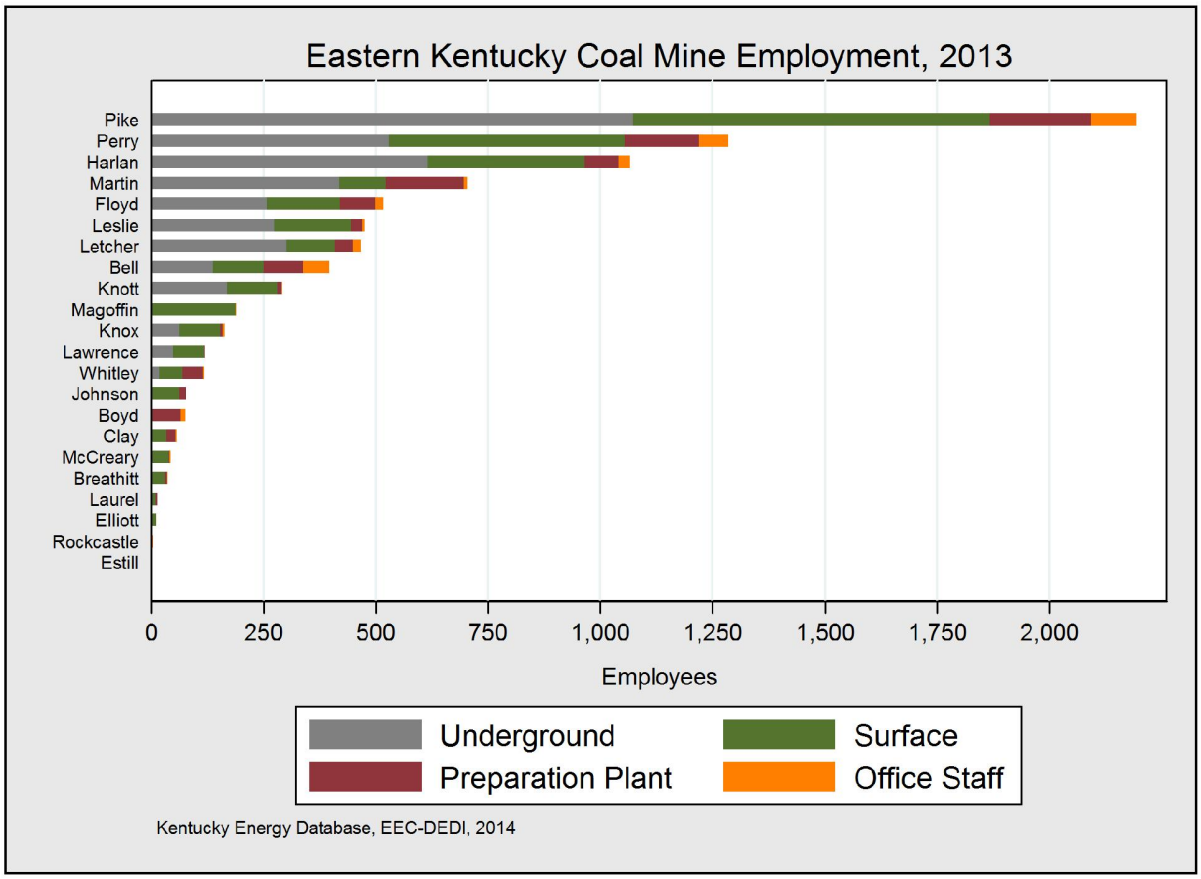
Wyoming hosted the fourth-most direct coal employees despite producing approximately 40 percent of the coal in the United States.

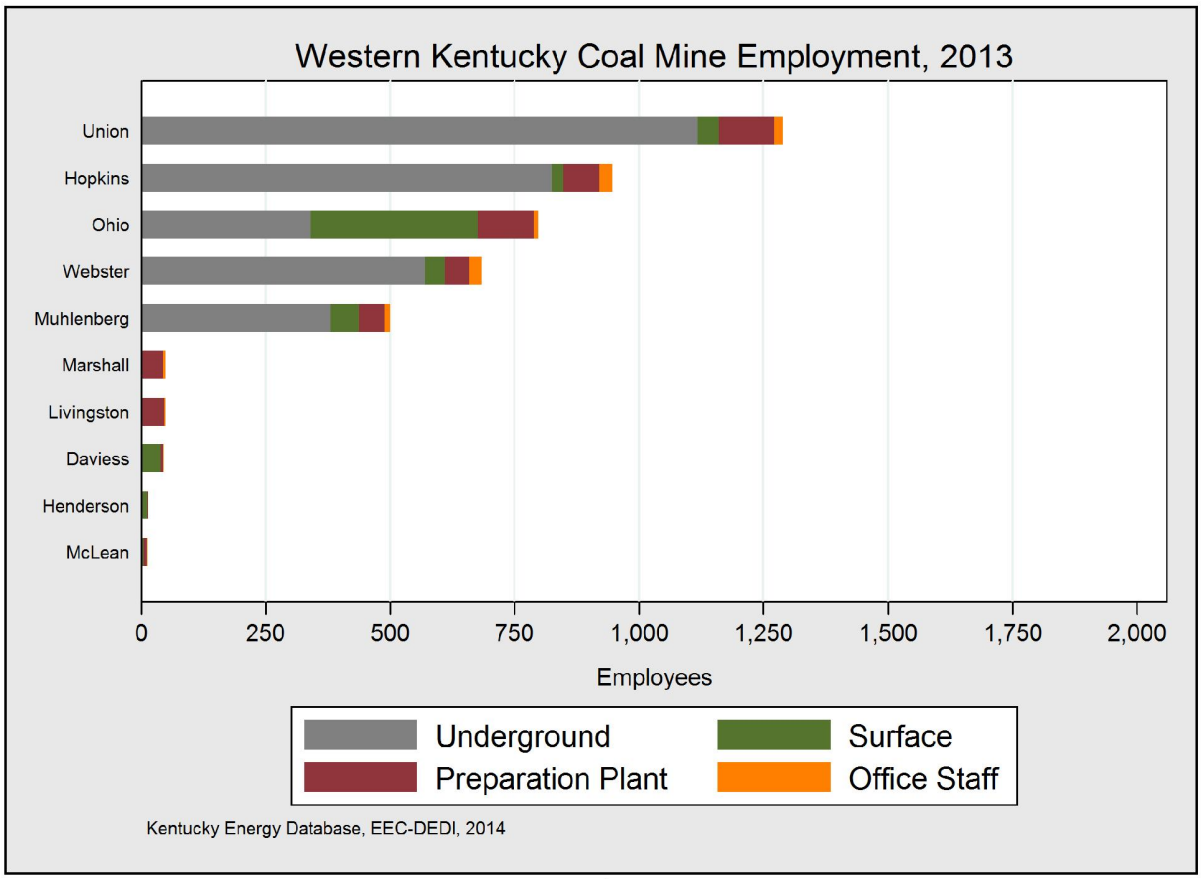
Coal Mine Employment





Coal Mine Employment





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	**11,885**	**6,643**	**3,414**	**1,438**	**390**	**0.7%**
Eastern Kentucky	**7,473**	**3,335**	**2,885**	**989**	**294**	**2.6%**
Pike	1,897	876	730	192	99	8.5%
Perry	1,223	518	499	144	62	10.1%
Harlan	932	526	330	69	7	13.1%
Martin	652	385	109	153	5	28.0%
Floyd	506	236	179	74	17	4.7%
Letcher	401	219	116	49	17	8.8%
Bell	364	123	98	86	57	4.3%
Knott	270	164	98	6	2	11.4%
Leslie	254	149	98	4	3	14.0%
Magoffin	175	-	175	-	-	8.4%
Knox	175	69	94	10	2	2.4%
Whitley	154	17	87	48	2	1.3%
Lawrence	145	53	89	3	-	4.4%
Boyd	76	-	-	63	13	0.3%
Johnson	75	-	52	23	-	1.3%
Clay	56	-	36	18	2	1.7%
Breathitt	40	-	34	5	1	1.3%
Livingston	37	-	-	35	2	1.2%
McCreary	25	-	21	1	3	1.2%
Elliott	10	-	10	-	-	1.1%
Estill	6	-	-	6	-	0.3%
Western Kentucky	**4,412**	**3,308**	**559**	**449**	**96**	**2.0%**
Union	1,328	1,155	44	110	19	24.4%
Hopkins	975	857	20	72	26	5.4%
Ohio	838	371	339	119	9	12.0%
Webster	669	560	40	45	24	22.4%
Muhlenberg	477	354	66	47	10	5.5%
Marshall	50	-	-	45	5	0.5%
Daviess	43	-	37	4	2	0.1%
McLean	22	11	3	7	1	1.1%
Henderson	10	-	10	-	-	<0.1%

†Sources: MSHA Mine Data Retrieval System (MSHA-MDRS) and Bureau of Labor Statistics (BLS) *Quarterly Census of Employment and Wages [December 2013 County Estimates]*.

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.

Induced and Indirect Effects

Direct Benefits

The Kentucky coal industry provides direct benefits in terms of coal severance revenue, jobs, and wages to miners. These direct benefits are as follows:

- Employed an average of 12,636 miners in 2013, with 8,252 in eastern Kentucky and 4,384 in western Kentucky.
- Paid wages of $850 million in 2013, resulting in an average annual wage of $72,779 per miner.
- Produced almost 80.6 million tons of coal with an approximate value of $4.96 billion dollars.
- Severance taxes on coal production in calendar year 2013 were $212,443,519.59.
- In FY 2014, $61.3 million in coal severance tax receipts were returned to coal-producing counties for infrastructure improvements and economic development projects.
- In FY 2013, $24.5 million in unmined mineral taxes were collected.

Indirect Benefits

The coal industry provides many benefits to Kentucky in addition to the direct benefits mentioned above. Indirect benefits include new income flowing into the coal industry that is then re-spent creating a multiplier effect. Economic impact models trace the flow of these dollars for new spending in the economy. Economic impact models are not designed to calculate the impact for an existing industry. We can, however, gauge the industries that will receive the greatest impact for any new investment. Below are the top five types of industries that receive the greatest percentage of an indirect impact.

- 20 percent of indirect spending would be spent in industries defined as mining coal and support activities for mining. This is essentially intra-industry trade that does show up as new revenue.
- 15 percent would be spent in the transportation industry by rail or truck.
- 14 percent would be spent in professional services industries. These are typically industries such as architectural and industrial engineering, management companies, legal services, financial institutions and other industries that provide services that might not be offered in house.
- 9 percent would be spent in the petroleum industry, natural gas and electric power transmission.
- 9 percent would be spent in industries that sell or maintain commercial equipment and structures used to support the coal industry.

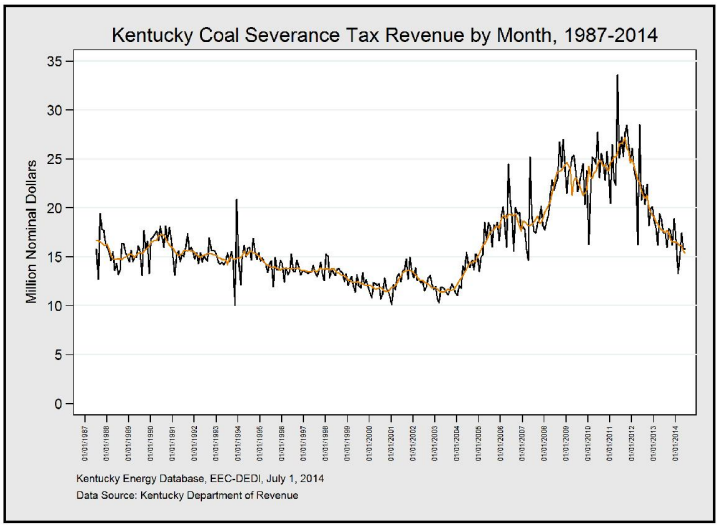
Source: Dr. Christopher Jepsen, Associate Director, and Dr. Anna Stewart, Economic Analyst, University of Kentucky Gatton College of Business and Economics, Center for Business and Economic Research.

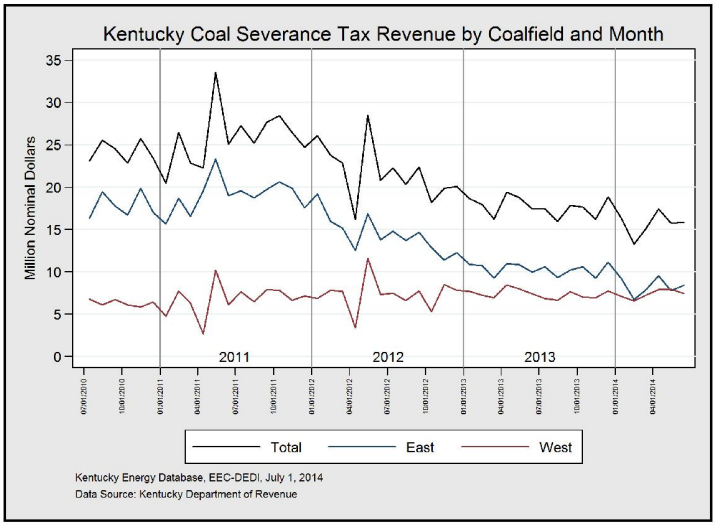
Induced Effects

In addition to indirect effects, induced effects also contribute to the economic impact of new spending in the coal industry in Kentucky. Induced effects occur when money that is received as income by employees and/or owners either at the direct or indirect level is spent on personal expenditures such as household goods and services.

Source: Dr. Christopher Jepsen, Associate Director, and Dr. Anna Stewart, Economic Analyst, University of Kentucky Gatton College of Business and Economics, Center for Business and Economic Research.

Kentucky Coal Severance Receipts





Region	CY 2013 Receipts	1 Year Change
Total	$212,443,519.59	-18.7%
Eastern Kentucky	$123,848,332.43	-28.6%
Western Kentucky	$88,595,187.16	+0.5%

Slowing coal production in eastern Kentucky drove down total 2013 Kentucky severance tax receipts to 212.4 million dollars, which is a decrease of 18.7 percent from 261 million dollars in 2012 and of 31.6 percent from 310.5 million dollars in 2011. Eastern Kentucky coal severance tax receipts decreased by 28.6 percent during 2013 while western Kentucky receipts increased by a marginal 0.5 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. Thirty-three gigawatts of 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, as well as lower cost alternatives, including natural gas and coal from other regions. These power plant closures can be expected to place additional downward pressure on coal demand, prices, and thus coal severance tax revenue.

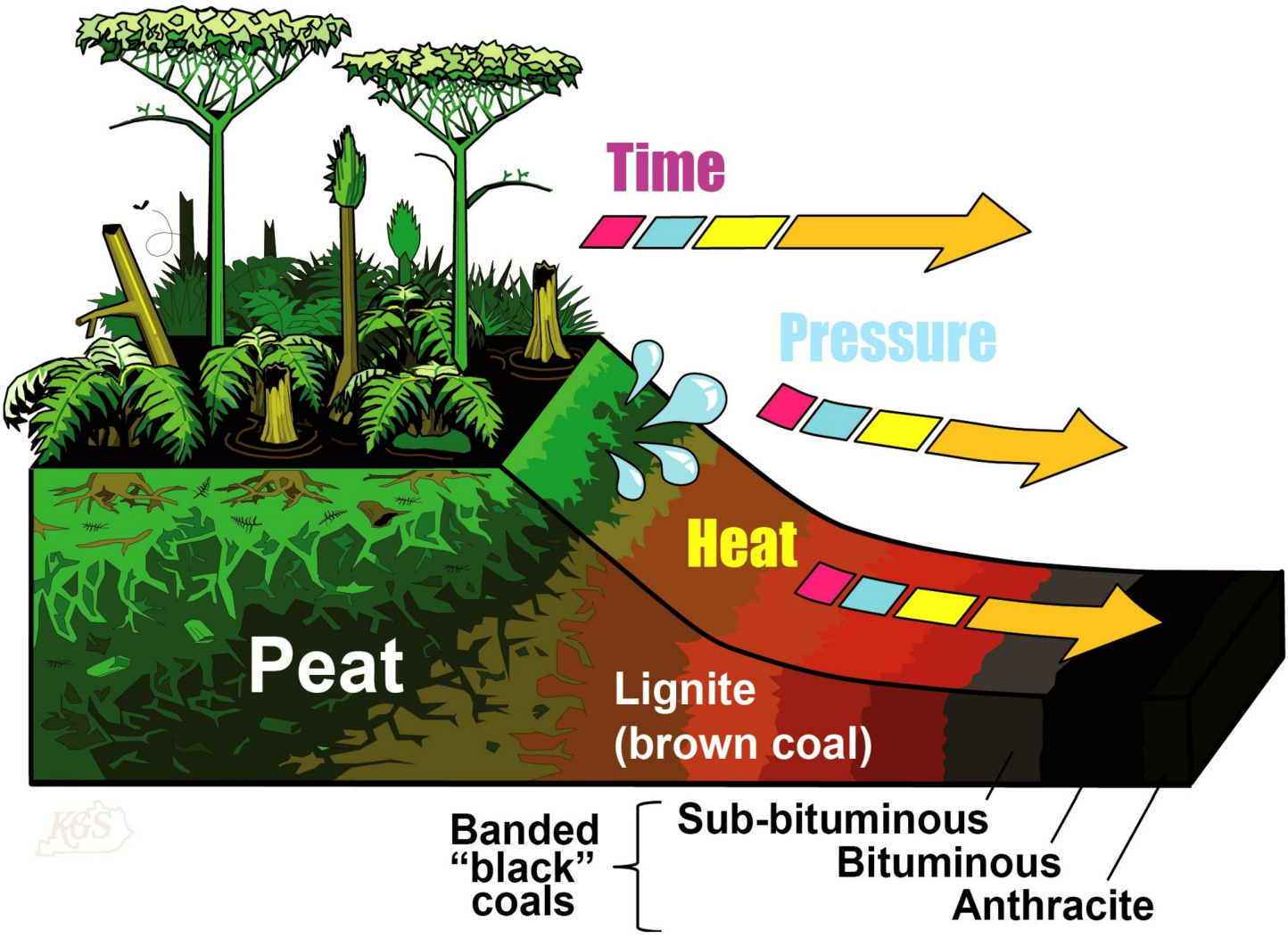
Coal Severance Tax Calculation

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 varies 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

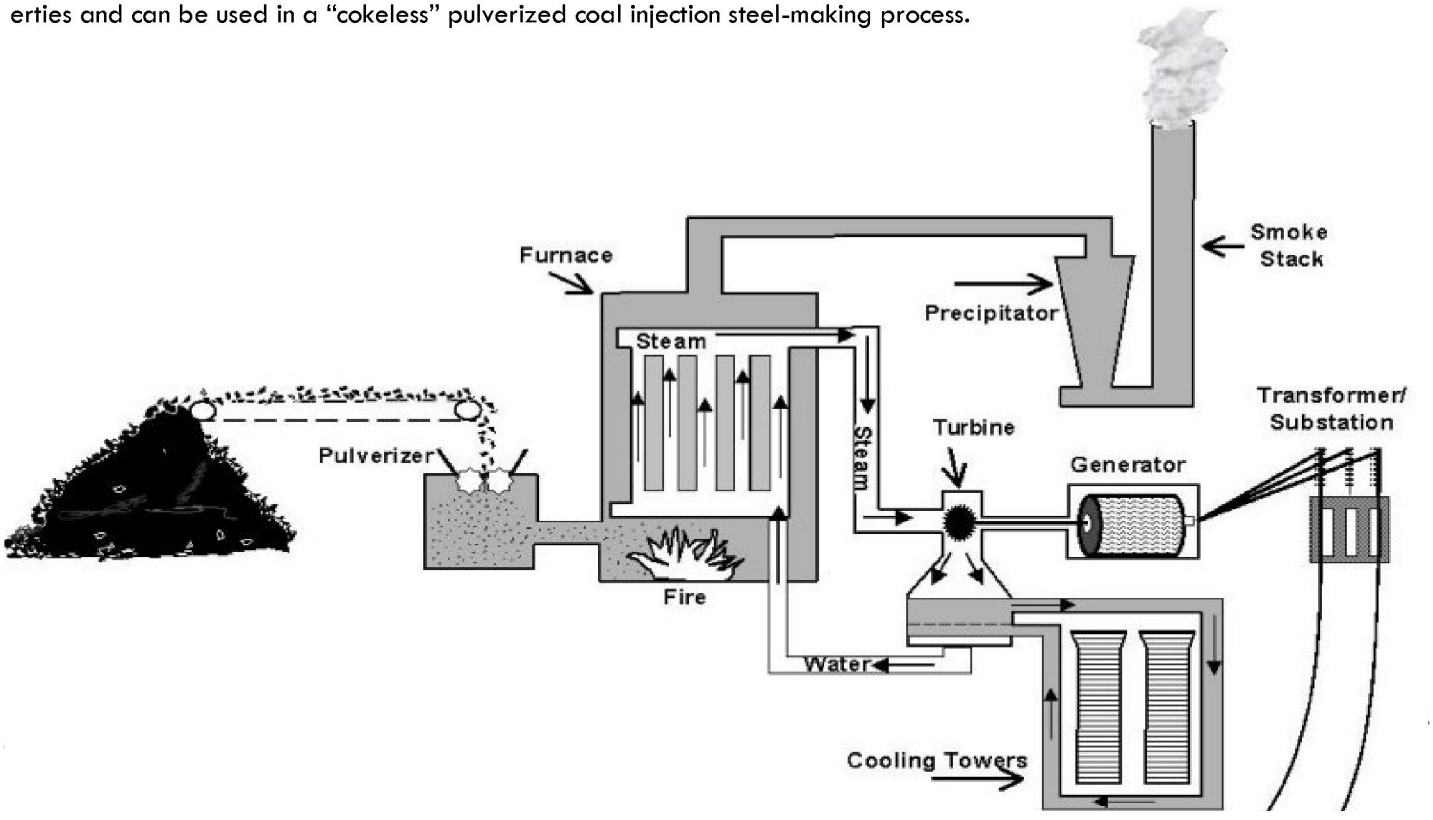
Coal is generally classified in terms of rank and grade. While no two coal deposits are the same in terms of chemical composition, coal generally consists of varying levels of carbon, oxygen, hydrogen, nitrogen, sulfur, ash, moisture content, and mineral material (silicon, aluminum, iron, calcium, and 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 coals are classified as either sub-bituminous, bituminous, or anthracite, depending on their calorific value (Btu) 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. The heat produced by the combustion of the coal yields very high temperature/high pressure steam that drives generators with turbines to produce electricity. The vast majority of the coal mined in Kentucky is sold as steam coal.

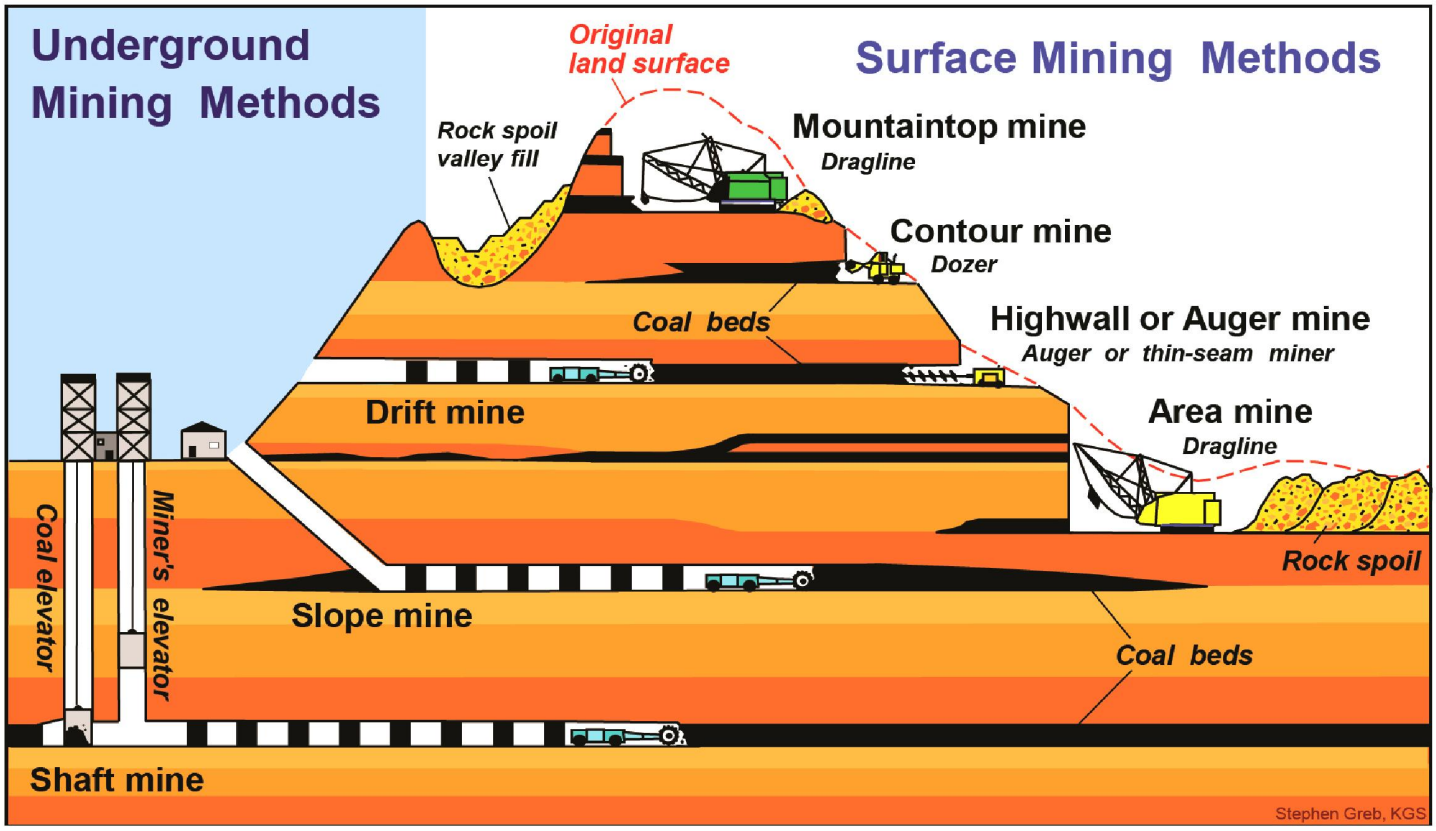
Metallurgical Coal

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 coals have 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

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 68 percent of coal production in Kentucky in 2013, with room and pillar systems being the most common mining method. Surface mines accounted for 32 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 2013, combined coal production from underground operations and surface operations was more than 80 million tons with a slight majority of production in western Kentucky.

Kentucky Coal Production by Mining Method, 2013*

Mine Type	Auger	Refuse Pile	Dredge	Strip/Quarry/Open Pit	Underground	Total
State	1,420,781	151,607	7,569	24,536,456	54,608,120	80,724,533
WKY	36,108	-	-	5,795,764	35,047,092	40,878,964
EKY	1,384,673	151,607	7,569	18,740,692	19,561,028	39,845,569

*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 2013.

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.

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 electri-

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 current Kentucky miner workforce of 11,885 miners.

*Tests are required in addition to years of experience.

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Mines and Licensing

Number of Kentucky Mine Licenses, 1985-2012					
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
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

Source: Kentucky Division of Mines & Minerals, Annual Reports, 1960-2002; Kentucky Department of Natural Resources, Division of Mine Safety, Annual Reports, 2003-2012. (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, 1985-2012					
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

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), 2010-2011.

Mines and Licensing

Kentucky Coal Production and Active Mine Counts by County and Mine Type, 2013						
Location	Underground		Surface		Total	
Area/County	Active	Production	Active	Production	Active	Production
Statewide	94	54,620,360	185	26,930,937	279	81,551,297
EKY	82	19,573,269	173	20,099,065	258	39,672,334
Pike	26	5,349,664	42	5,601,124	68	10,950,788
Perry	6	2,660,828	15	4,945,344	21	7,606,172
Harlan	15	2,810,177	18	1,755,889	33	4,566,066
Martin	3	2,456,036	4	531,633	7	2,987,669
Floyd	9	1,502,289	13	939,359	22	2,441,648
Letcher	8	1,334,427	13	840,562	21	2,174,989
Leslie	3	949,650	8	1,187,054	11	2,136,704
Knott	3	1,229,274	6	672,909	9	1,902,183
Magoffin	-	-	4	1,551,124	4	1,551,124
Bell	4	744,235	11	412,762	15	1,156,997
Lawrence	1	336,061	7	307,909	8	643,970
Knox	3	83,052	8	296,987	11	380,039
Johnson	-	-	6	331,146	6	331,146
Whitley	1	117,576	4	168,185	5	285,761
Clay	-	-	6	181,527	6	181,527
Breathitt	-	-	3	180,251	3	180,251
McCreary	-	-	1	111,242	1	111,242
Elliott	-	-	1	46,421	1	46,421
Laurel	-	-	2	24,196	2	24,196
Rockcastle	-	-	1	13,441	1	13,441
WKY	12	35,047,091	12	5,831,872	24	40,878,963
Union	3	13,265,616	-	-	3	13,265,616
Hopkins	3	8,963,894	-	-	3	8,963,894
Ohio	2	3,209,654	5	4,987,451	7	8,197,105
Webster	2	5,841,653	2	38,626	4	5,880,279
Muhlenberg	2	3,766,274	2	307,563	4	4,073,837
Daviess	-	-	2	484,569	2	484,569
Henderson	-	-	1	13,663	1	13,663

Source: Kentucky Department of Natural Resources, Division of Mine Safety, Database Retrieval (July 2013); U.S. Department of Labor, Mine Safety and Health Administration, "Quarterly Mine Employment and Coal Production Report" (MSHA Form 7000-02).

Two-thirds of active coal mines in eastern Kentucky in 2013 were broadly defined as surface operations. However, the combined annual production of surface mines was only slightly higher than underground production: 20.1 million tons compared to 19.6 million tons. During 2013, there were 20 counties in the eastern coalfield that had active mine sites and licenses.

Though there were as many active underground mines as surface mines in western Kentucky in 2013, 86 percent of regional production was from underground. During the year, seven counties in the region registered coal production.

Reclamation

Kentucky Mine Reclamation Status and Primacy Bond Releases, 1990-2013									
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	$ 6,397545	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
Total	10,206	336,964	$579,240,263	5,926	208,230	$ 238,861,052	9,875	327,437	$ 314,253,933

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. Kentucky coal operators through FY 2009 have paid $1.05 billion into the Federal Abandoned Mine Land program to reclaim land mined prior to August 3, 1977.

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. As of March 2014, the Kentucky mining industry had a total of 8,929 outstanding bonds valued at $920 million. 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

Reclamation

Abandoned Mine Land Reclamation Fund (Millions), 1985—2013				
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
Total	$605.09	$301.07	$472.54	$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 reclaim pre-SMCRA sites left abandoned, un-reclaimed, or insufficiently reclaimed, as well as certain sites under interim programs (1977-1982).

The Kentucky coal industry (through FY 2013) has contributed $1.16 billion to the Abandoned Mine Land (AML) Reclamation Fund since 1978. Nationally, over $10.1 billion (through FY 2013) has been paid by active coal operators across the United States. Fifty percent (50%) of the total Kentucky AML fees go directly to the state share account. However, $39.04 million (September, 2013) is unallocated due to the federal appropriation process (see Kentucky State Share Balance column in table above). 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. The result has been an increase in the Kentucky AML Grant over the past six years. The July 2014 grant will contain the last of the 7 equal payments of the unappropriated state share balance. In 2015, Kentucky's AML grant is expected to be significantly less than the previous 7 years especially with the strong tdownward trend in the Commonwealth's coal production. The AML program's federal grant funding is set to expire in 2021.

Abandoned Mine Land Reclamation Accomplishments Through 2013	
138 Water Line Projects ($110.14 million)	2,540 Mine Portal Closures
Over 36,328 Feet of High Wall Eliminated	218 Vertical Shafts Sealed
Over 268 Hazardous Structures Removed	47.6 Miles of Stream Restoration
Over 2,423 Acres Landslide Projects Stabilized	289.7 Acres of Mine Fires Controlled
$528 Million in Expenditures	131,761 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.

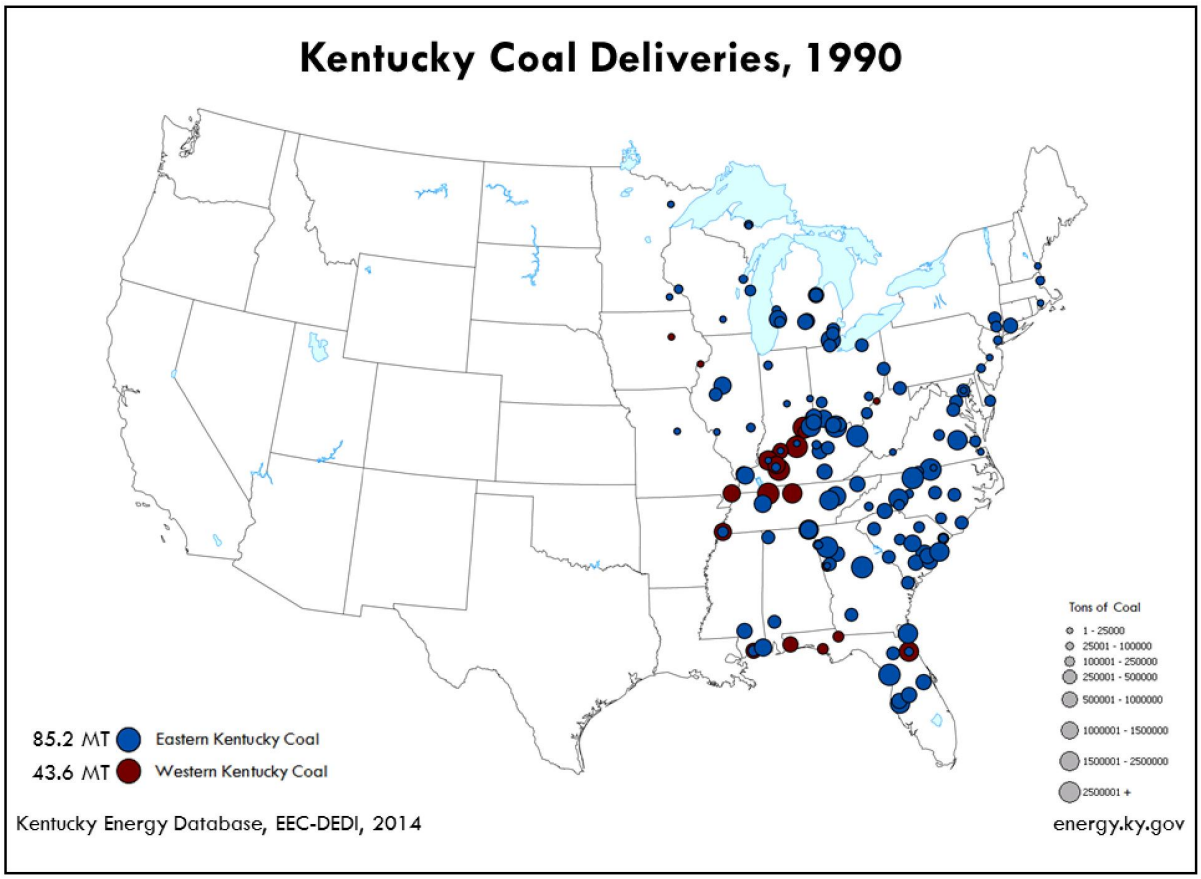
Source: Kentucky Coal Association.

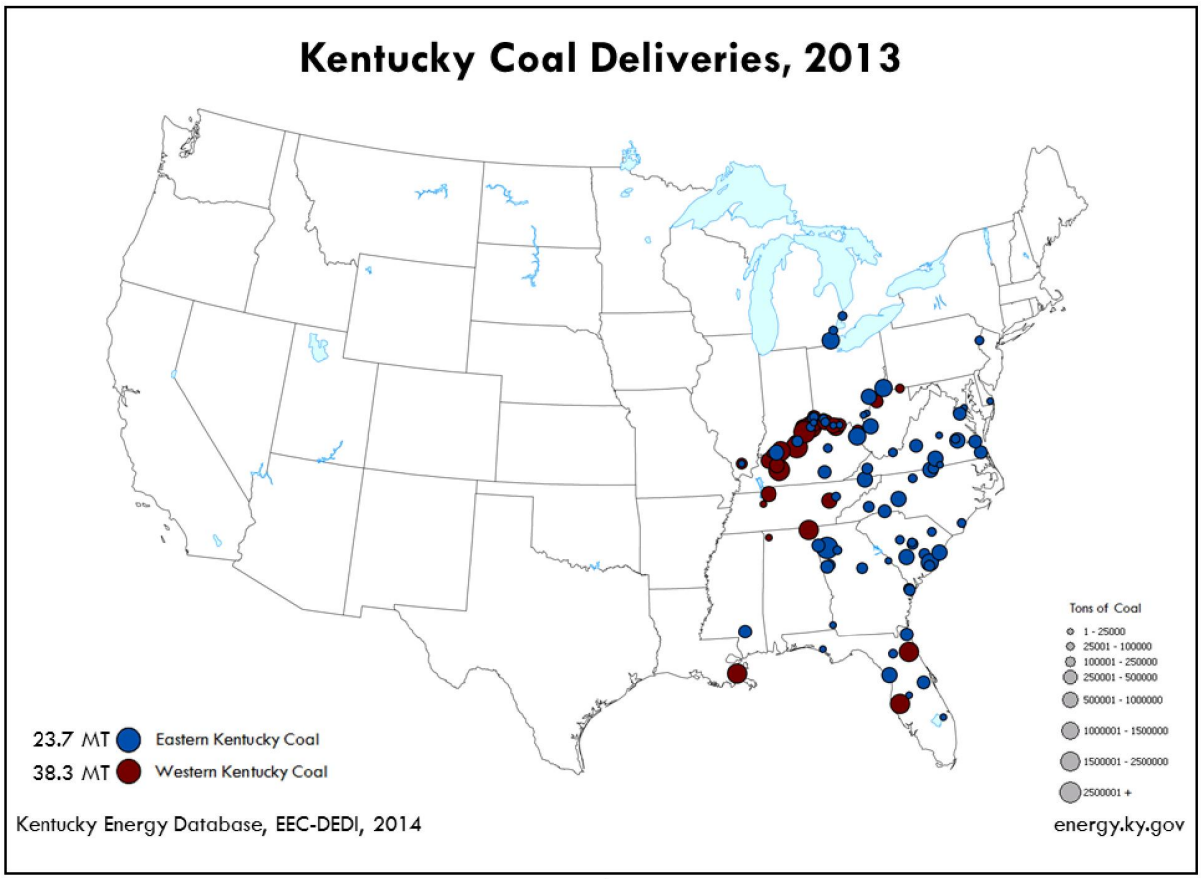
Post-Mining Land Use

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

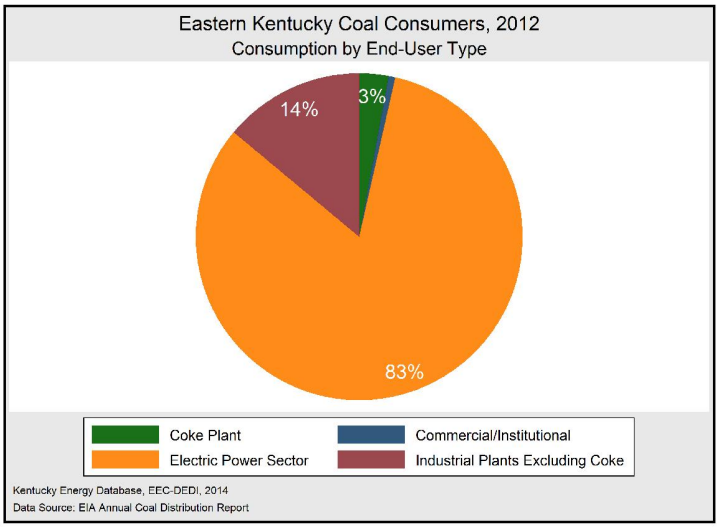
Industrial / Commercial	
Electrical Construction Office and Shop	Hopkins
Electric Utility Operations Center	Hopkins
Industrial Scrubber Sludge Disposal	Ohio, Daviess, Webster
Explosive Manufacturing	Muhlenberg
Apparel Manufacturing	Perry, Boyd
Mine Shops / Welding / Machine / Equip.	Johnson, Hopkins, 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

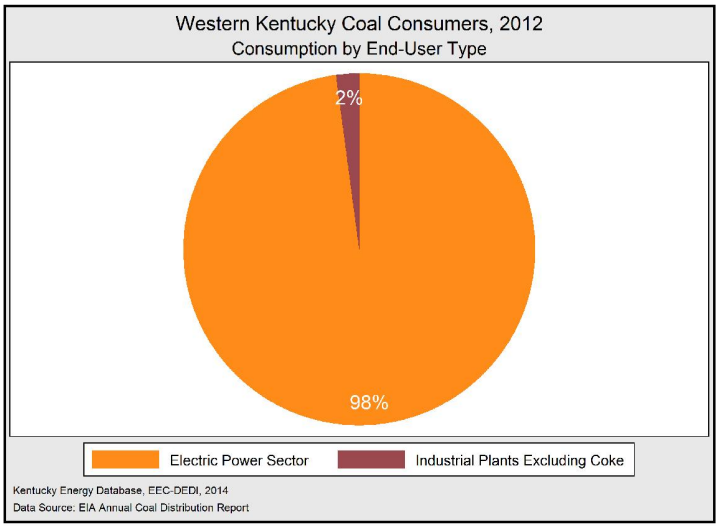
Kentucky Coal Consumers, 1990-2013





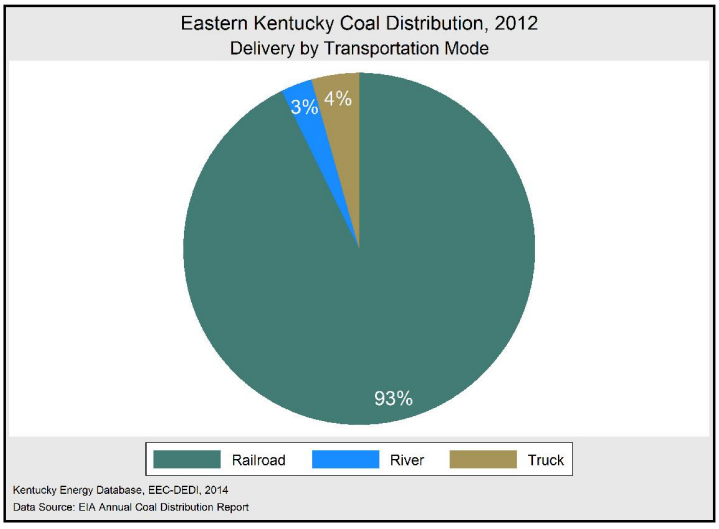
Kentucky Coal Distribution, 2012

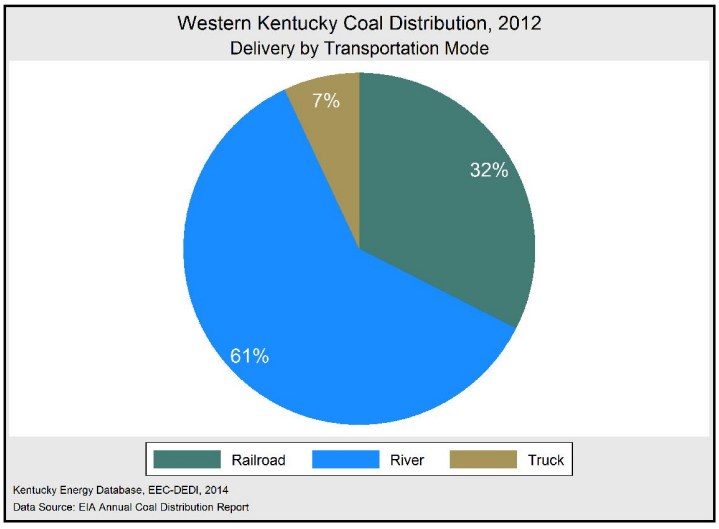




End-User	Tons	Percentage
Electric Power	114,743,976	83%
Industrial	19,383,880	14%
Coke	4,042,973	3%
Commercial	902,797	<1%

End-User	Tons	Percentage
Electric Power	151,843,152	98%
Industrial	3,285,749	2%
Coke	63,951	<1%
Commercial	-	<1%

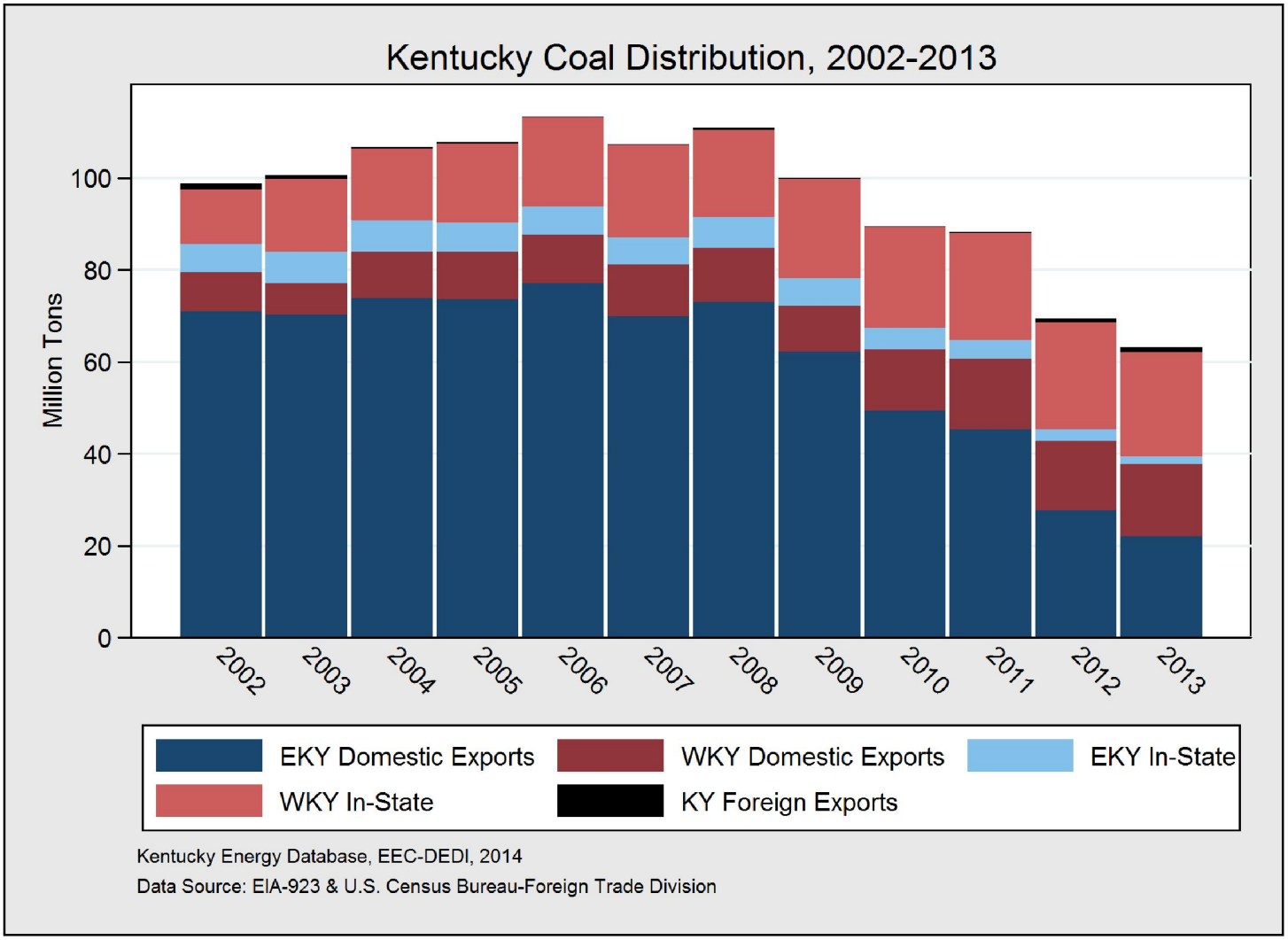




The vast majority of coal shipped from eastern Kentucky in 2012 was loaded onto rail cars and delivered to electric power plants in the United States. Industrial facilities were the next largest consumer of eastern Kentucky coal—14 percent of demand for the commodity. Coke plant deliveries more than tripled between 2011 and 2012, from 870 thousand tons of coal shipped to coke plants in 2011. Demand from commercial consumers accounted for less than one percent of eastern Kentucky coal distribution during the year.

Due to geography and the accessibility of river ports, the majority of western Kentucky coal was loaded onto barges, though a third of western Kentucky coal was transported by rail during the same year, and seven percent was delivered by truck. In 2012, electric power plants represented 98 percent of the demand for western Kentucky coal.

Kentucky Coal Distribution, 2013



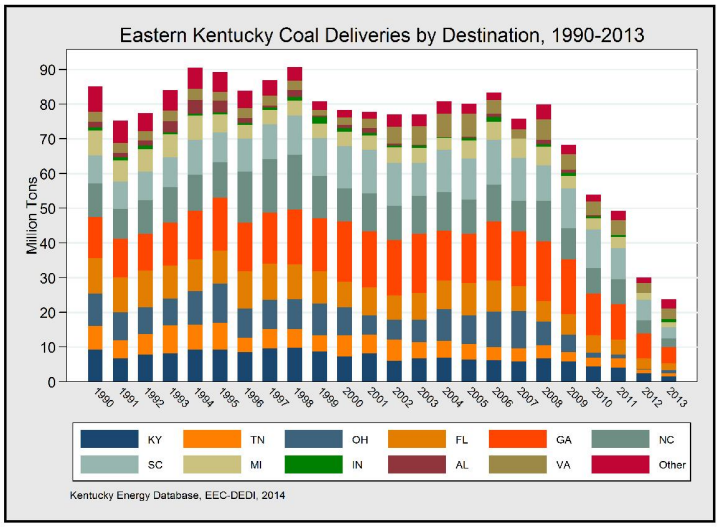
Coal Distribution by Destination, 2013		
Coal and Destination	Thousand Tons	Percentage
Total Distribution	63,220	100%
WKY In-State	22,562	36%
EKY Out-of-State*	22,110	35%
WKY Out-of-State*	15,775	25%
EKY In-State	1,624	3%
Foreign Exports	1,149	2%

*Totals labeled "Out-of-State" represent shipments of coal to consumers within the United States, and may also be considered domestic exports. A difference of approximately 17.3 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 since 1990.

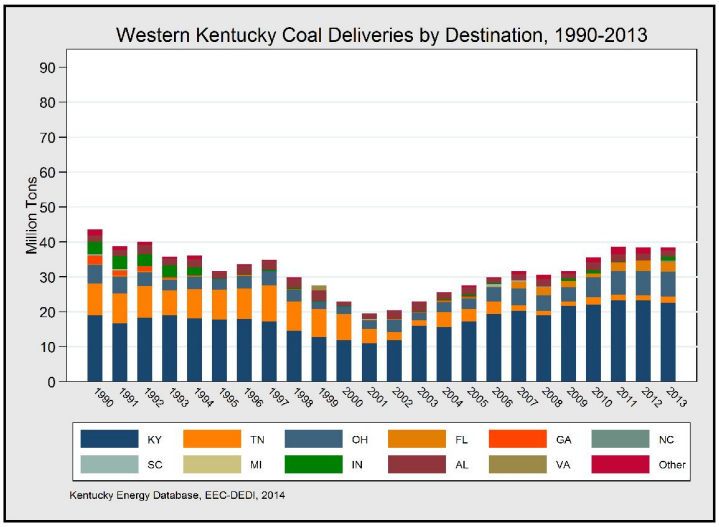
Eastern Kentucky coal has predominantly been sold to states in the southeastern United States. Conversely, western Kentucky coal has mostly been mined for in-state consumption. Kentucky remains the largest single consumer of Kentucky coal, increasing its consumption as other states have decreased their consumption of coal from Kentucky. Big Sandy and Cooper power plants consume most of the eastern Kentucky coal consumed in Kentucky. Known foreign exports reached their highest point in 2013 at 1.1 million tons, or two percent of coal deliveries.

Kentucky Coal Deliveries



Known shipments of steam coal from eastern Kentucky to power plants within the United States decreased by 21 percent in 2013 from 30.1 to 23.7 million tons. The largest markets for eastern Kentucky coal are traditionally located in the southeast, and were led by Georgia, South Carolina, and Virginia during the year. Overall, coal mined in the region was shipped to 16 different states in 2013.

Eastern Kentucky Coal Deliveries, 2013		
Destination	Thousand Tons	Percentage
Total	23,734	100%
Georgia	4,745	20.0%
South Carolina	3,213	13.5%
Virginia	2,969	12.5%
North Carolina	2,421	10.2%
West Virginia	1,999	8.4%
Florida	1,960	8.3%
Kentucky	1,624	6.8%
Michigan	1,482	6.2%
Indiana	959	4.0%
Tennessee	904	3.8%
Ohio	781	3.3%
Maryland	339	1.4%
Mississippi	277	1.2%
Pennsylvania	34	<1.0%
Delaware	24	<1.0%
Illinois	3	<1.0%



Known shipments of steam coal from western Kentucky to power plants within the United States decreased by 0.3 percent in 2013 from 38.4 to 38.3 million tons. The largest market for western Kentucky coal is consistently Kentucky, which represented 58.9 percent of western Kentucky coal deliveries during the year. Overall, coal mined in western Kentucky was shipped to 10 different states in 2013. Western Kentucky coal deliveries have increased by 7.8 million tons since 2008, or by 26 percent.

Western Kentucky Coal Deliveries, 2013		
Destination	Thousand Tons	Percentage
Total	38,337	100%
Kentucky	22,562	59%
Florida	7,040	18%
Ohio	2,752	7%
Tennessee	1,881	5%
Alabama	1,666	4%
Indiana	1,125	3%
West Virginia	495	1%
North Carolina	433	1%
Mississippi	278	<1.0%
Illinois	105	<1.0%

Kentucky Coal Deliveries, 2013		
Origin	Thousand Tons	1 Year Change
Total	62,071	-9.5%
WKY	38,337	-0.3%
EKY	23,734	-21.1%

Total Kentucky coal deliveries have decreased by 48.3 million tons, or by 44 percent since 2008, primarily because of reduced shipments from eastern Kentucky.

Eastern Kentucky Coal Deliveries

Eastern Kentucky Coal Deliveries to Electric Power Plants, 2013				
Rank	Plant ID	Power Plant Name	State	Annual Deliveries (Tons)
1	703	Bowen	GA	3,487,211
2	1733	Monroe	MI	1,372,556
3	3948	Mitchell	WV	1,277,072
4	3298	Williams	SC	1,107,485
5	1353	Big Sandy†	KY	1,017,140
6	2712	Roxboro	NC	986,647
7	628	Crystal River	FL	934,253
8	3797	Chesterfield	VA	906,371
9	50481	Tennessee Eastman Operations	TN	871,131
10	3935	John E Amos	WV	720,616
11	7210	Cope	SC	698,373
12	6249	Winyah	SC	697,517
13	7213	Clover	VA	697,167
14	6166	Rockport	IN	689,716
15	2727	Marshall	NC	660,041
16	2872	Muskingum River	OH	573,012
17	1384	Cooper	KY	482,506
18	564	Stanton Energy Center	FL	475,709
19	10672	Cedar Bay Generating Company LP	FL	475,220
20	50900	Covington Facility†	VA	445,537
21	2721	James E. Rogers Energy Complex	NC	350,275
22	708	Hammond	GA	339,436
23	1573	Morgantown Generating Plant	MD	338,343
24	6052	Wansley	GA	324,600
25	3803	Chesapeake	VA	289,797
26	6061	R D Morrow	MS	277,085
27	3809	Yorktown†	VA	274,476
28	130	Cross	SC	207,652
29	56808	Virginia City Hybrid Energy Center	VA	204,179
30	6250	Mayo	NC	192,157
31	3297	Wateree	SC	185,309
32	50398	International Paper Savanna Mill	GA	178,812
33	1008	R Gallagher	IN	151,424
34	709	Harllee Branch	GA	128,085
35	7737	Cogen South	SC	123,703
36	733	Kraft	GA	119,022
37	988	Tanners Creek	IN	117,882
38	2706	Asheville	NC	114,371
39	728	Yates†	GA	113,547
40	8042	Belews Creek	NC	91,960
41	52151	International Paper Eastover Facility	SC	90,204
42	54081	Spruance Genco LLC	VA	88,517
43	1740	River Rouge	MI	78,808
44	2830	Walter C Beckjord†	OH	63,150

† Announced closure or partial closure of power plant, 2013-2016.

Eastern Kentucky Coal Deliveries

Eastern Kentucky Coal Deliveries to Electric Power Plants, 2013				
Rank	Plant ID	Power Plant Name	State	Annual Deliveries (Tons)
45	6019	W H Zimmer	OH	62,582
46	1385	Dale†	KY	60,751
47	50806	Florence Mill	SC	58,457
48	2832	Miami Fort†	OH	52,558
49	3287	McMeekin	SC	44,263
50	3776	Glen Lyn	VA	43,034
51	10361	Savannah River Mill	GA	40,464
52	1356	Ghent	KY	40,085
53	663	Deerhaven Generating Station	FL	37,319
54	3113	Portland	PA	33,958
55	3396	Bull Run	TN	33,111
56	1743	St Clair	MI	30,787
57	2713	L V Sutton Steam†	NC	25,383
58	594	Indian River Generating Station†	DE	23,340
59	6031	Killen Station	OH	21,869
60	50976	Indiantown Cogeneration LP	FL	21,512
61	6018	East Bend	KY	13,994
62	676	C D McIntosh Jr	FL	12,982
63	3796	Bremo Bluff	VA	11,796
64	6041	H L Spurlock	KY	9,934
65	54101	Georgia-Pacific Cedar Springs	GA	8,991
66	52007	Mecklenburg Power Station	VA	8,338
67	8102	General James M Gavin	OH	7,536
68	54358	International Paper Augusta Mill	GA	4,529
69	643	Lansing Smith	FL	3,332
70	976	Marion	IL	3,111
71	6264	Mountaineer	WV	1,602
72	1571	Chalk Point LLC†	MD	112

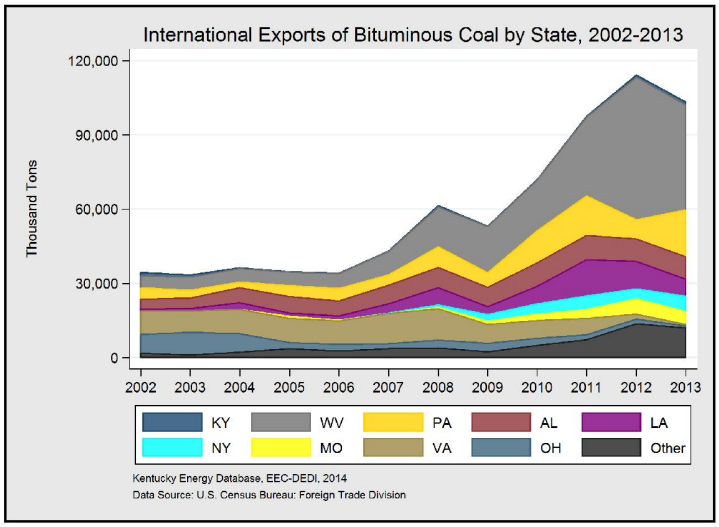
† Announced closure or partial closure of power plant, 2013-2016.

Western Kentucky Coal Deliveries

Western Kentucky Coal Deliveries to Electric Power Plants, 2013				
Rank	Plant ID	Power Plant Name	State	Annual Deliveries (Tons)
1	1356	Ghent	KY	4,389,955
2	1378	Paradise†	KY	4,205,257
3	1364	Mill Creek	KY	3,225,169
4	6071	Trimble County	KY	2,552,376
5	645	Big Bend	FL	2,166,844
6	136	Seminole	FL	2,013,487
7	8827	IMT Transfer	FL	1,676,724
8	50	Widows Creek†	AL	1,647,812
9	1381	Kenneth C Coleman†	KY	1,567,829
10	2850	J M Stuart	OH	1,234,590
11	1363	Cane Run†	KY	1,193,549
12	8816	Davant Transfer	FL	1,182,623
13	6018	East Bend	KY	1,062,012
14	1374	Elmer Smith	KY	1,051,468
15	983	Clifty Creek	IN	1,051,216
16	3399	Cumberland	TN	989,122
17	6823	D B Wilson†	KY	980,372
18	1382	HMP&L Station Two Henderson	KY	920,431
19	3407	Kingston	TN	888,119
20	6041	H L Spurlock	KY	775,799
21	6639	R D Green	KY	638,218
22	6019	W H Zimmer	OH	579,597
23	2721	James E. Rogers Energy Complex	NC	432,496
24	6031	Killen Station	OH	417,018
25	2832	Miami Fort†	OH	327,948
26	8851	Associated Terminals	MS	277,496
27	6004	FirstEnergy Pleasants Power Station†	WV	259,344
28	2830	Walter C Beckjord†	OH	194,067
29	8848	Ceredo	WV	141,541
30	976	Marion	IL	105,210
31	3943	FirstEnergy Fort Martin Power Station	WV	83,713
32	6705	Warrick	IN	73,376
33	47	Colbert	AL	18,024
34	6264	Mountaineer	WV	10,394
35	3406	Johnsonville†	TN	3,308

† Announced closure or partial closure of power plant, 2013-2016.

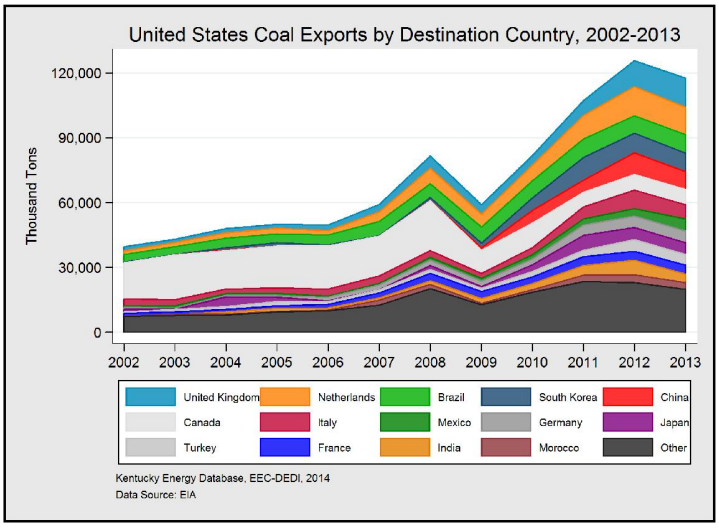
International Exports



Known shipments of bituminous coal from the United States decreased by 9.5 percent in 2013, but have nearly doubled since 2002. The federally available data are complicated by the confusion of export terminals and mining areas. For example, New York is ranked fifth above in bituminous coal exports, yet produces no coal.

United States Coal Exports, 2013		
Export State	Thousand Tons	Percentage
Total*	103,232	100%
West Virginia	42,333	41.0%
Pennsylvania	18,967	18.4%
Alabama	9,106	8.8%
Louisiana	6,913	6.7%
New York	6,209	6.0%
Missouri	5,105	4.9%
Illinois	4,979	4.8%
California	2,956	2.9%
Connecticut	1,435	1.4%
Montana	1,418	1.4%
Kentucky	1,149	1.1%
Ohio	863	0.8%
Maryland	649	0.6%
Virginia	551	0.5%
Texas	324	0.3%
Wisconsin	205	0.2%

*Exports less than 200,000 tons have not been listed.

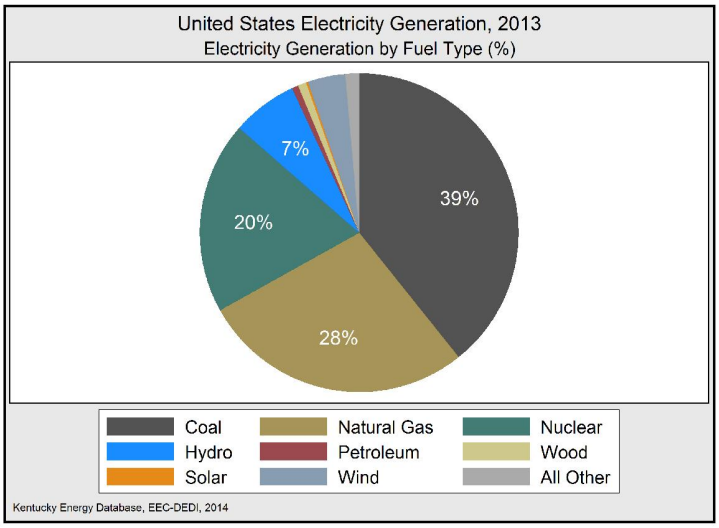


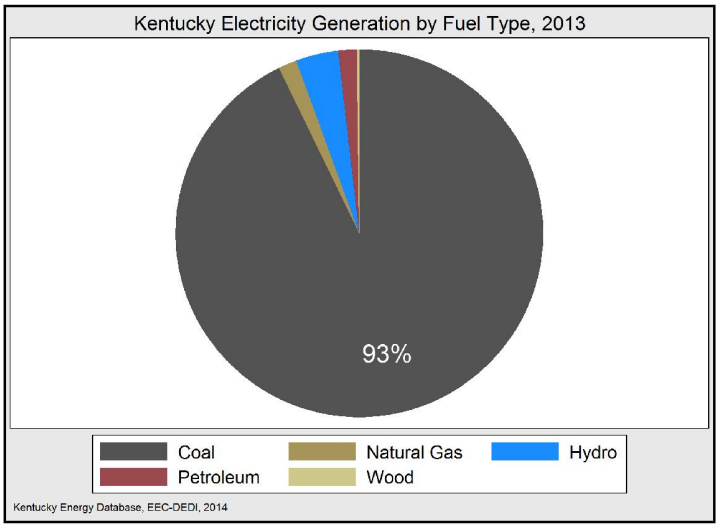
The United States exported coal to 86 countries in 2013, with the 14 countries displayed accounting for over 92 percent of the total. In 2002, US coal exports were predominantly sent to Canada. Today, US coal export destinations are much more diverse. 52 percent of United States coal exports went to Europe, 23 percent to Asia, 12 percent to North America, 10 percent to South America, and 3 percent to Africa in 2013.

United States Coal Exports, 2013		
Destination Country	Thousand Tons	Percentage
Total†	117,659	100%
United Kingdom	13,511	11.5%
Netherlands	12,709	10.8%
Brazil	8,610	7.3%
South Korea	8,430	7.2%
China	8,230	7.0%
Canada	7,110	6.0%
Italy	6,594	5.6%
Mexico	5,633	4.8%
Germany	5,475	4.7%
Japan	5,360	4.6%
Turkey	4,984	4.2%
France	4,109	3.5%
India	3,921	3.3%
Morocco	3,090	2.6%
Ukraine	2,895	2.5%
Chile	2,621	2.2%
Belgium	2,007	1.7%
Spain	1,579	1.3%
Switzerland	1,418	1.2%

†Exports of less than 1.1 million tons have not been listed.

Electricity Generation

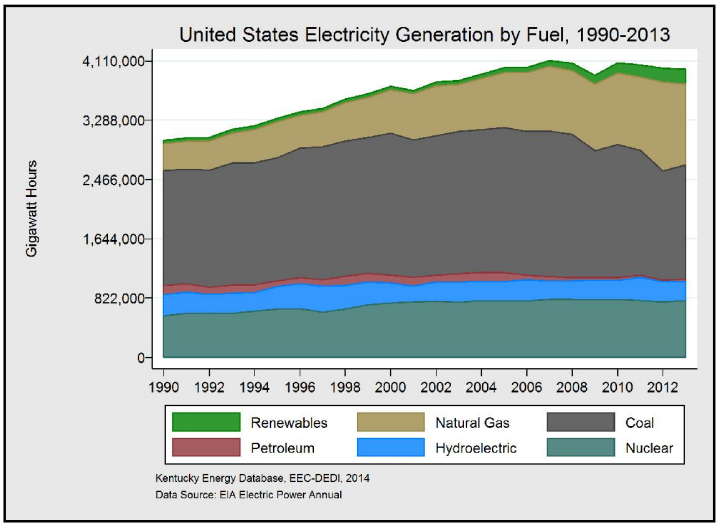


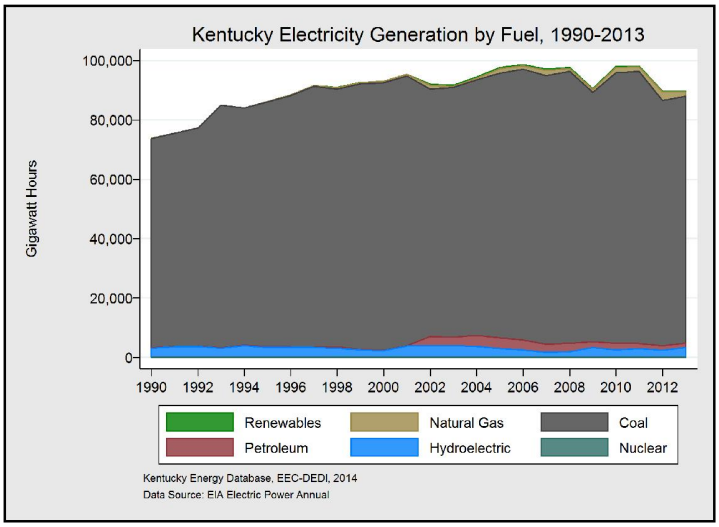


Fuel Type*	Gigawatt Hours	Annual Change
Total	4,059,252	+0.1%
Coal	1,586,776	+4.6%
Natural Gas	1,116,906	-9.3%
Nuclear	789,009	+2.6%
Hydro	268,908	-2.8%
Wind	153,587	+9.6%

*Only top five sources listed

Fuel Type*	Gigawatt Hours	Annual Change
Total	89,763	-0.1%
Coal	83,177	+7.4%
Hydro	3,356	+41.3%
Natural Gas	1,471	-50.5%
Petroleum	1,426	-9.0%
Wood and Biomass	322	-2.3%

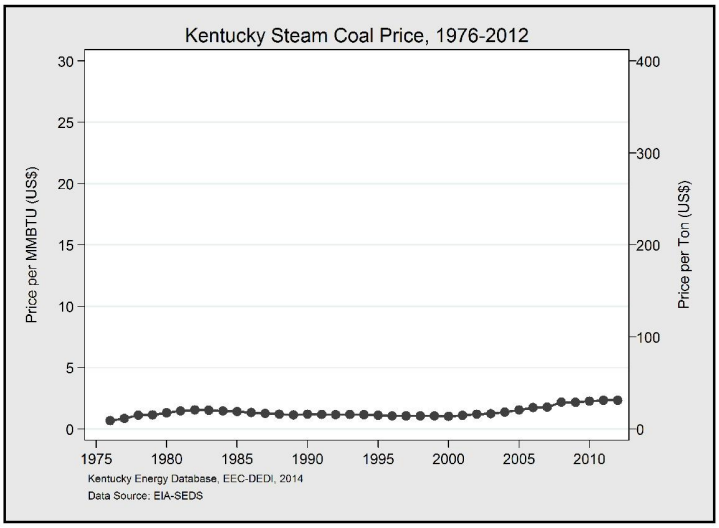




Coal remained the largest fuel source for electricity in the United States in 2013, followed by natural gas, and nuclear power. These three largest generation types are 87 percent of the United States' electricity portfolio. Despite growth in recent years, natural gas consumption decreased by 9.3 percent in 2013 from 2012. Since 2007, wind resources and natural gas facilities have been the fastest growing sources of electricity generation in the United States.

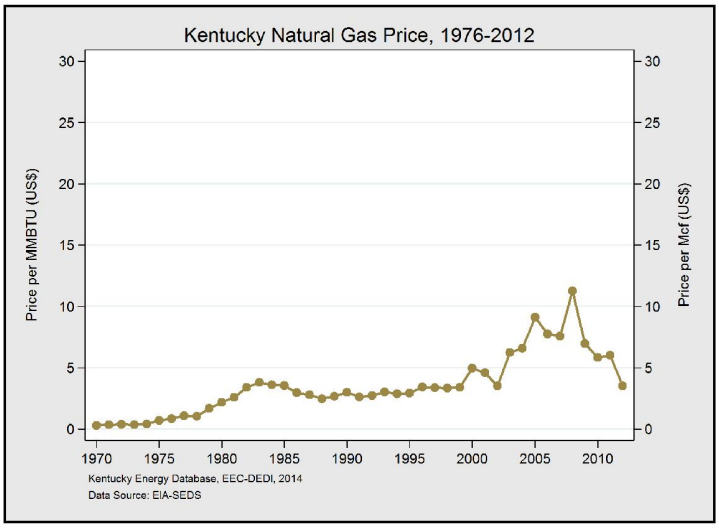
Of the electricity generated in Kentucky in 2013, 92.7 percent was derived through the combustion of coal. Despite an aggregate decrease in total electricity generation in 2013, the amount of coal consumed increased. Hydroelectric power recovered from the 2012 drought to produce the second most of all fuels. Natural gas facilities were the third-largest source of electricity—used primarily for peak load periods. 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



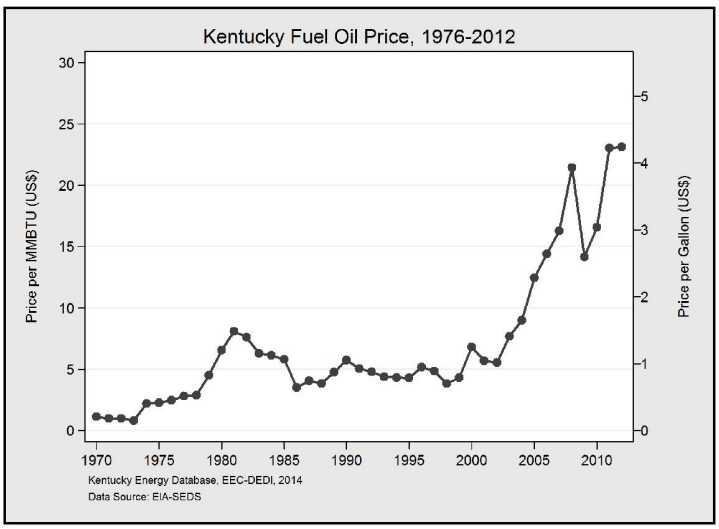
Fuel Type	($US)/MMBtu	($US)/Ton
Coal	2.42	32.84

The price of coal has remained low and stable for decades. The price of coal in 2012 was $2.34 per MMBtu—no change from 2011. Coal is beneficial because of its ability to be stockpiled and used at any time while natural gas and renewables cannot.



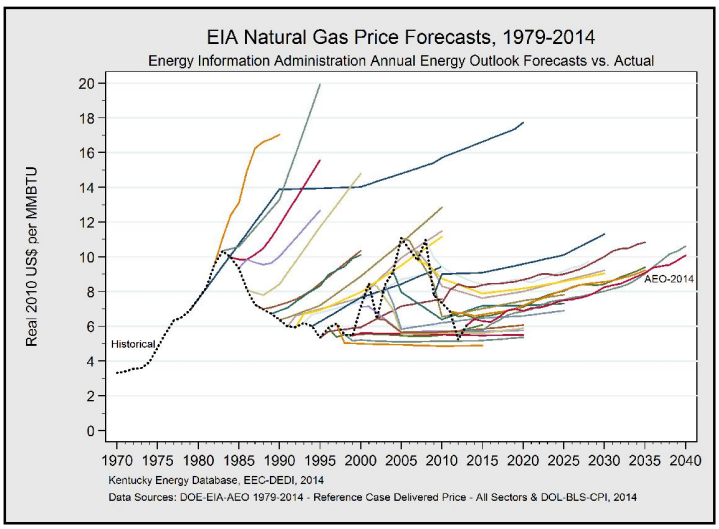
Fuel Type	($US)/MMBtu	($US)/Mcf
Natural Gas	3.52	3.52

The average price of natural gas in Kentucky in 2012 was $3.52 per thousand MMBtu, a 41 percent decrease from 2011. Natural gas prices have decreased substantially in recent years following the spread of horizontal hydraulic fracturing, but remain more expensive than coal on a unit of heat basis.



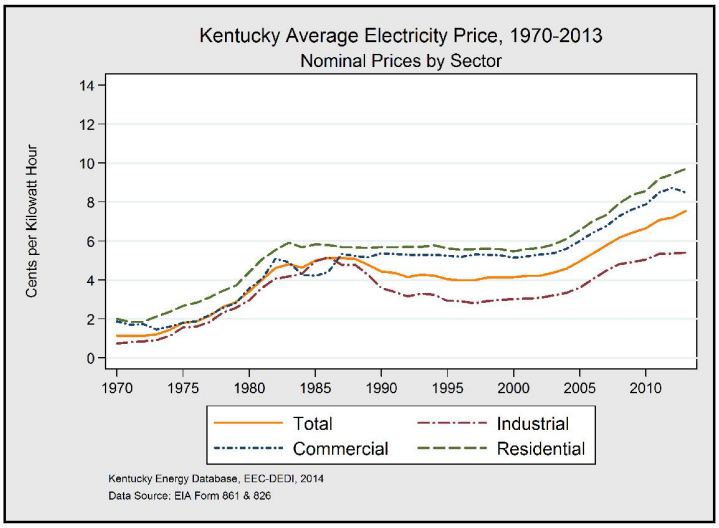
Fuel Type	($US)/MMBtu	($US)/Gallon
Diesel	23.11	4.25

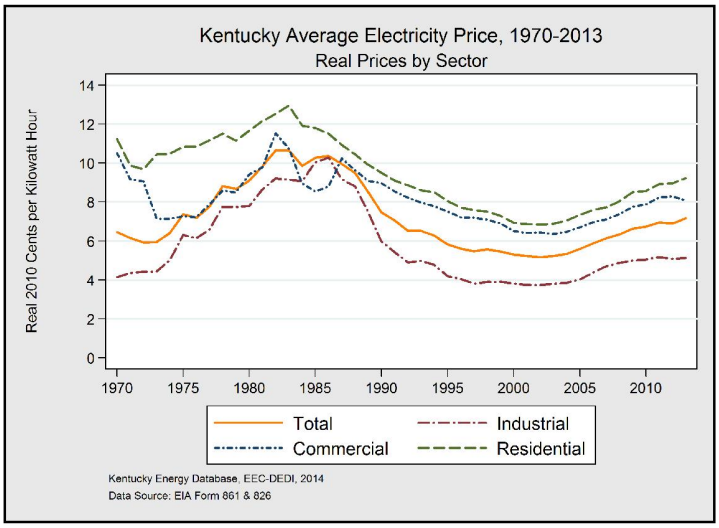
The average price of fuel oil, used in electricity generation, in 2012 was $23.11 per MMBtu in Kentucky, a 4 percent increase from 2011. Petroleum generators in Kentucky are used primarily for peak-load generation, but are a relatively small source of electricity generation, overall—averaging 1.8 percent 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





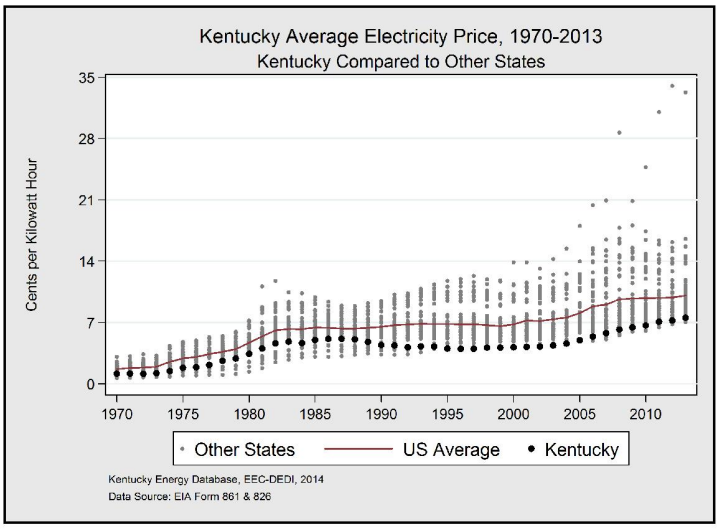
Sector	Nominal Cents/kWh	Since 2000
Average	7.54¢	+81.8%
Residential	9.71¢	+77.5%
Commercial	8.50¢	+65.3%
Industrial	5.40¢	+79.3%

Sector	Real* Cents/kWh	Since 2000
Average	7.06¢	+35.2%
Residential	9.09¢	+33.1%
Commercial	7.96¢	+24.0%
Industrial	5.06¢	+34.5%

*Real 2010 $US

In 2013, the average price of electricity across economic sectors in Kentucky was 7.54¢ per kilowatt-hour. This average price ranked Kentucky electricity prices the second lowest in the country. The residential sector paid the highest price for electricity at 9.71¢ per kilowatt-hour, followed by the commercial sector at 8.50¢ per-kilowatt hour, and the industrial sector at 5.40¢ per kilowatt-hour. Since 2000, the average price of electricity in Kentucky has risen by 82 percent.

Adjusting for inflation, the trends of electricity prices in Kentucky between 1970 and 2013 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. However, the real price of electricity in Kentucky in inflation-adjusted dollars has been increasing since 2002. This period of 13 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 up since 2002 has been the rising price of steam coal used by electric utilities.

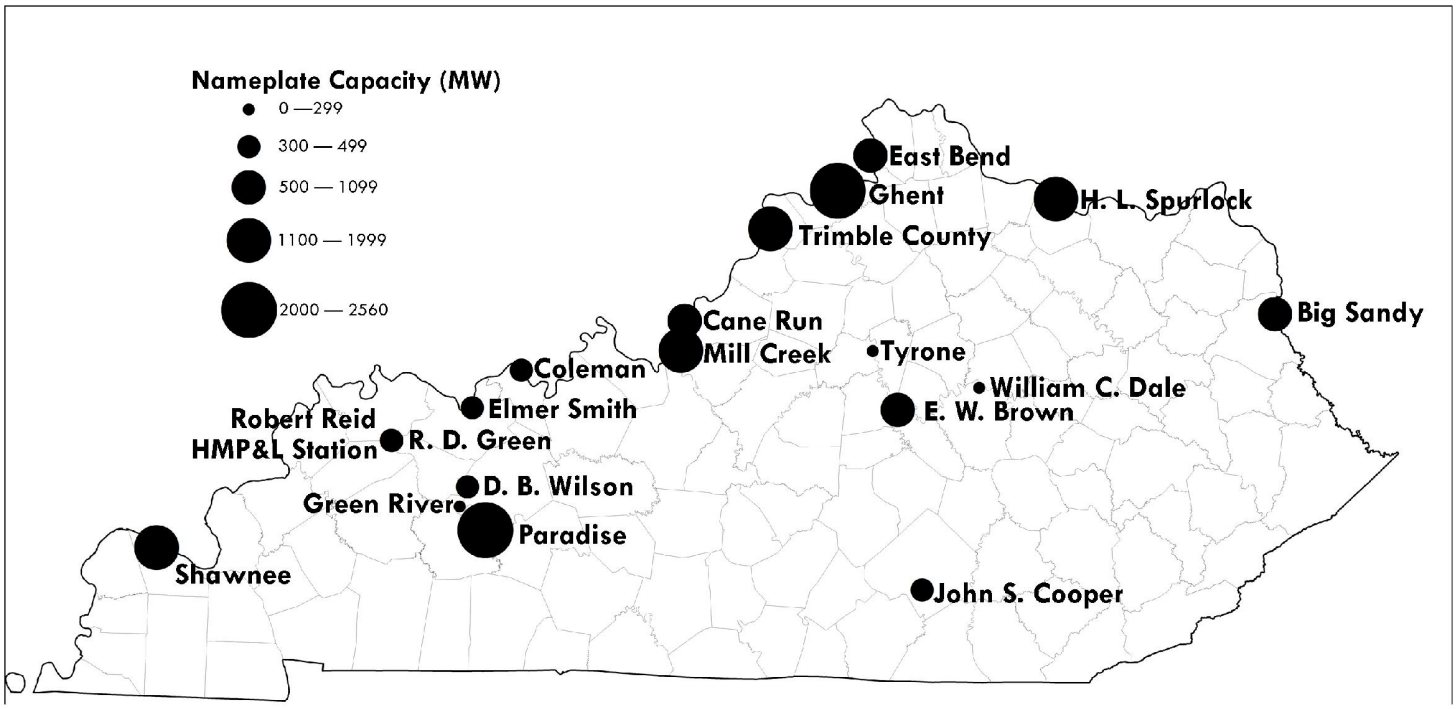


Since 1970, the average price of electricity in Kentucky has been among the lowest in the United States and well below the national average. During this period, Kentucky electricity prices have always been among the 8th lowest and within the five-lowest since 1992. Though the state with the lowest average 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, 2013

Rank	State	Primary Generation Source	Percentage Coal	Electricity Price (Cents per kWh)	Inflation Adjusted 1 Year Change	Inflation Adjusted 5 Year Change
1	Washington	Hydroelectric	5.7%	7.06	+0%	+0.5%
2	Kentucky	Coal	92.7%	7.54	+3.2%	+12.7%
3	Wyoming	Coal	89.0%	7.55	+3.8%	+25.9%
4	Idaho	Hydroelectric	0.5%	7.61	+10.1%	+23.5%
5	Oklahoma	Natural Gas	40.4%	7.81	+3.6%	-7.0%
6	Arkansas	Coal	52.1%	7.82	+2.1%	-2.1%
7	West Virginia	Coal	95.5%	7.91	-4.1%	+32.2%
8	Illinois	Nuclear	43.1%	7.99	-6.7%	-19.9%
9	Louisiana	Natural Gas	21.2%	8.00	+14.4%	-19.3%
10	Iowa	Coal	59.0%	8.12	+3.3%	+8.9%
11	Utah	Coal	80.5%	8.18	+2.8%	+17.7%
12	North Dakota	Coal	78.7%	8.19	+3.7%	+14.1%
13	Oregon	Hydroelectric	6.2%	8.39	+0.3%	+7.2%
14	Montana	Coal	54.1%	8.58	+2.9%	+4.3%
15	Indiana	Coal	84.1%	8.63	+4.1%	+13.8%
16	Nebraska	Coal	71.9%	8.69	+5.2%	+22.1%
17	Texas	Natural Gas	34.0%	8.77	+0.6%	-24.4%
18	South Dakota	Hydroelectric	28.5%	8.84	+2.2%	+14.4%
19	Missouri	Coal	83.1%	8.96	+4.3%	+21.2%
20	Virginia	Nuclear	27.6%	9.01	-2.2%	+4.7%
21	Alabama	Coal	31.7%	9.02	-3.1%	-0.2%
22	Nevada	Natural Gas	14.2%	9.04	-0.3%	-13.9%
23	South Carolina	Nuclear	25.8%	9.14	-0.6%	+7.5%
24	Mississippi	Natural Gas	16.4%	9.16	+5.4%	-3.5%
25	Ohio	Coal	69.7%	9.16	-0.3%	+1.8%
26	North Carolina	Coal	38.2%	9.18	-0.5%	+6.5%
27	Tennessee	Coal	42.4%	9.22	-2.3%	+4.9%
28	New Mexico	Coal	67.5%	9.24	+2.7%	+4.8%
29	Minnesota	Coal	45.3%	9.52	+6.2%	+13.9%
30	Georgia	Natural Gas	33.0%	9.53	+0.9%	-0.3%
31	Kansas	Coal	61.3%	9.57	+2.8%	+19.5%
32	Colorado	Coal	63.2%	9.80	+3.2%	+6.5%
33	Pennsylvania	Coal	39.6%	9.83	-2.1%	-1.5%
	United States Average	Coal	39.1%	10.08	+0.9%	-3.5%
34	Arizona	Coal	39.4%	10.16	+2.4%	+3.0%
35	Florida	Natural Gas	21.0%	10.30	-2.9%	-11.3%
36	Wisconsin	Coal	61.0%	10.63	+1.3%	+10.1%
27	Delaware	Natural Gas	20.4%	10.98	-2.7%	-17.1%
38	Michigan	Coal	54.2%	11.26	+1.2%	+17.2%
39	Maryland	Coal	44.1%	11.65	+1.3%	-17.1%
	District of Columbia	Natural Gas	0.0%	11.85	-1.3%	-16.4%
40	Maine	Natural Gas	0.4%	11.87	-1.1%	-20.7%
41	New Jersey	Nuclear	3.2%	13.70	-2.7%	-11.9%
42	Rhode Island	Natural Gas	0.0%	13.91	+6.6%	-19.7%
43	New Hampshire	Nuclear	6.8%	14.31	-0.9%	-9.7%
44	Vermont	Nuclear	0.0%	14.45	-0.2%	+8.3%
45	Massachusetts	Natural Gas	10.6%	14.51	+4.0%	-17.6%
46	California	Natural Gas	0.7%	14.57	+4.8%	+8.8%
47	New York	Natural Gas	3.5%	15.62	+1.7%	-12.9%
48	Connecticut	Nuclear	1.5%	15.68	-0.4%	-18.5%
49	Alaska	Natural Gas	8.6%	16.51	+0.6%	+4.8%
50	Hawaii	Petroleum	14.0%	33.27	-3.5%	+7.3%

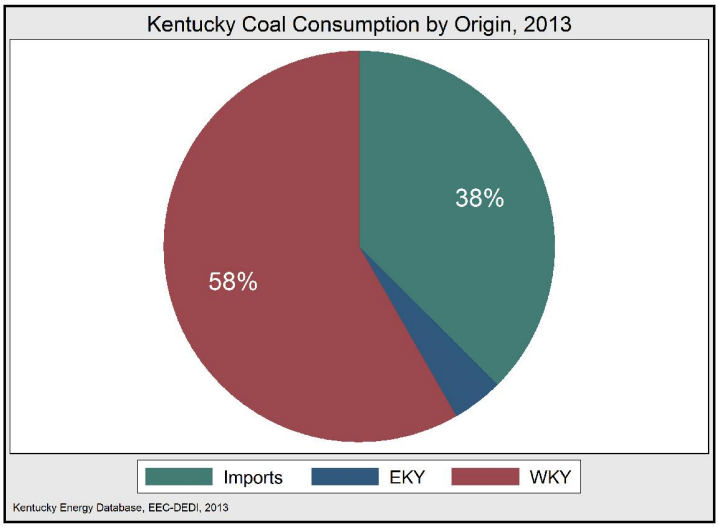
Coal Power Plants in Kentucky

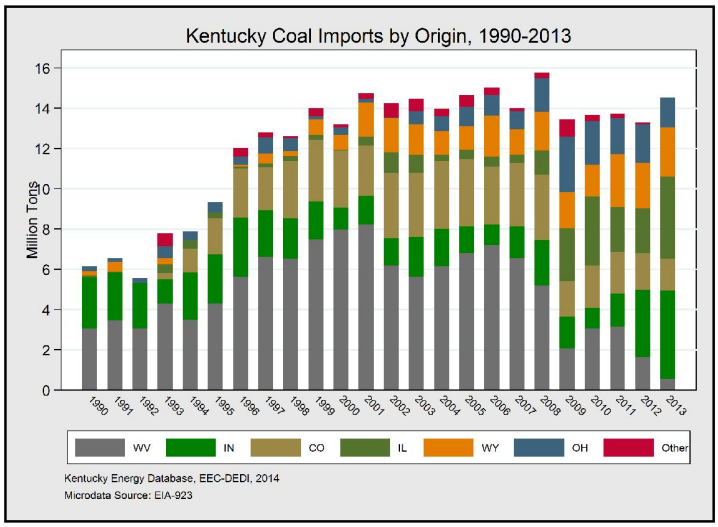


Power Plant	Nameplate Capacity (MW)	Years of Operation	Electric Utility/Operator	County	Phone
Coleman†	455	1969-2014	Big Rivers Electric Corp.	Hancock	(270) 844-6153
D. B. Wilson†	420	1984-2014	Big Rivers Electric Corp.	Ohio	(270) 844-6154
R. D. Green	464	1979-Present	Big Rivers Electric Corp.	Webster	(270) 844-6155
Robert Reid†	65	1966-2014	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	1954-2015	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, idled, or is in the process of conversion to natural gas-fuelled units.

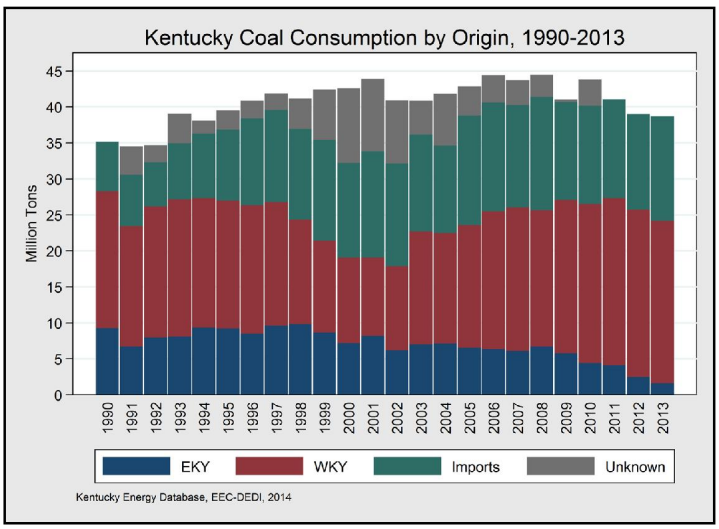
Kentucky In-State Coal Consumption





Origin of Coal	Thousand Tons	1 Year Change
Total	38,710	-0.7%
Western Kentucky	22,562	-3.0%
Imports	14,523	9.0%
Eastern Kentucky	1,624	-35%

All values have been rounded to the nearest thousand tons.

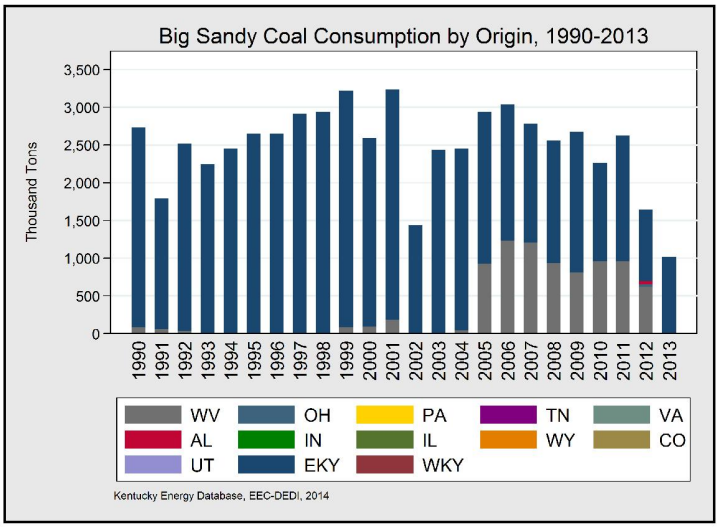


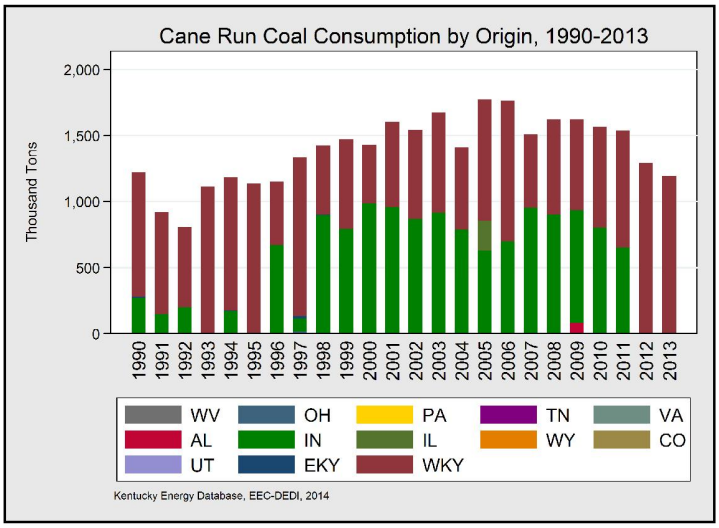
Coal consumption in Kentucky decreased by 0.7 percent in 2013 to 38.7 million tons. Coal mined in western Kentucky was by far the largest source of coal used within the Commonwealth, representing 58 percent of coal consumption. Conversely, coal from eastern Kentucky accounted for 4 percent of the coal consumed in Kentucky in 2013. Kentucky imported coal from six different states during 2013, totaling 14.5 million tons, or 37.5 percent of coal consumption.

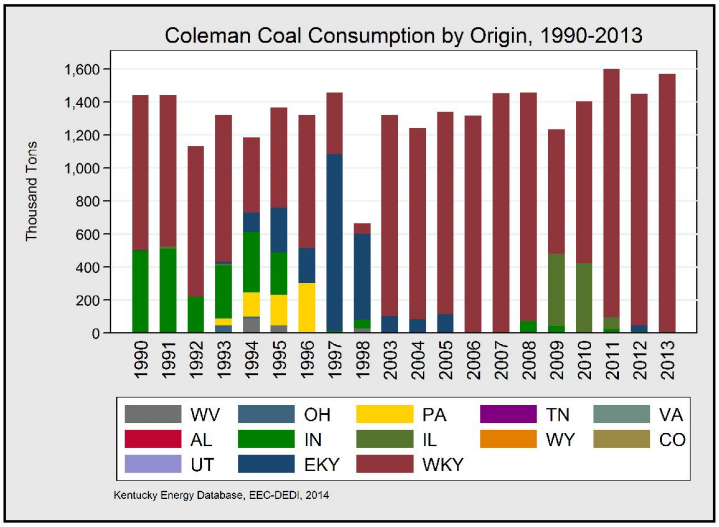
Imported Coal	Thousand Tons	1 Year Change
Total Imports	14,523	+9%
Indiana	4,412	+32%
Illinois	4,073	+83%
Wyoming	2,438	+8%
Colorado	1,570	-14%
Ohio	1,485	-23%
West Virginia	541	-67%
Tennessee	2	+166%

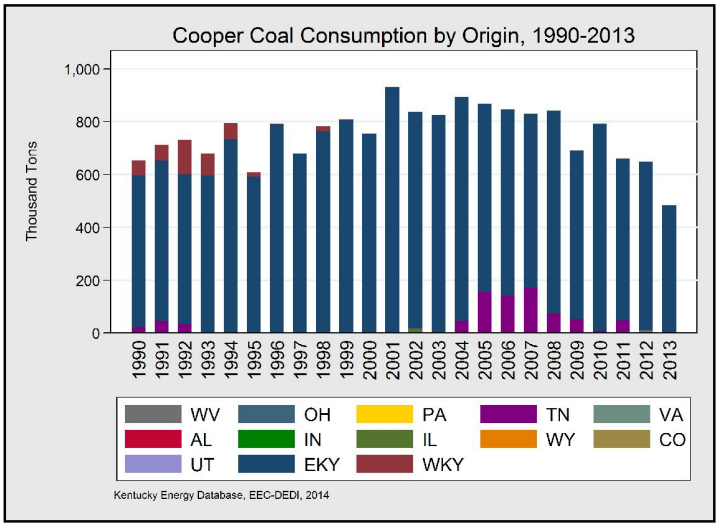
Several factors affect the use of imported coal in Kentucky including the price, delivery cost, heat content, and the sulfur content of a particular coal. For electrical power generation, utilities must balance the economic and environmental costs of these factors when purchasing coal. As a result, electric 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.

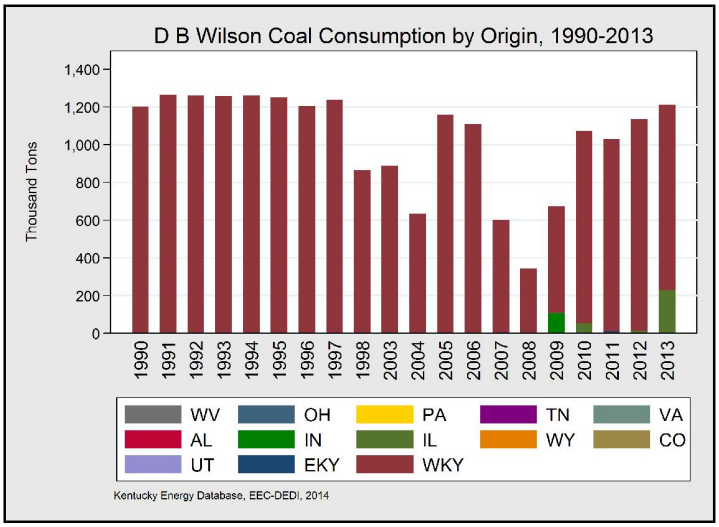
Kentucky In-State Coal Consumption

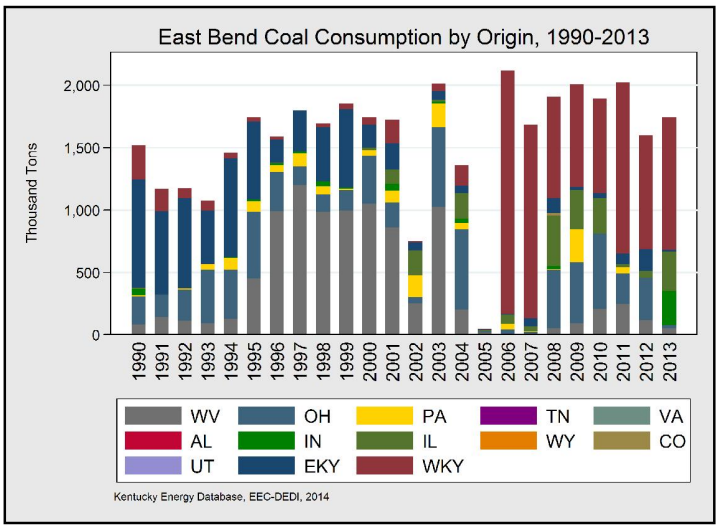




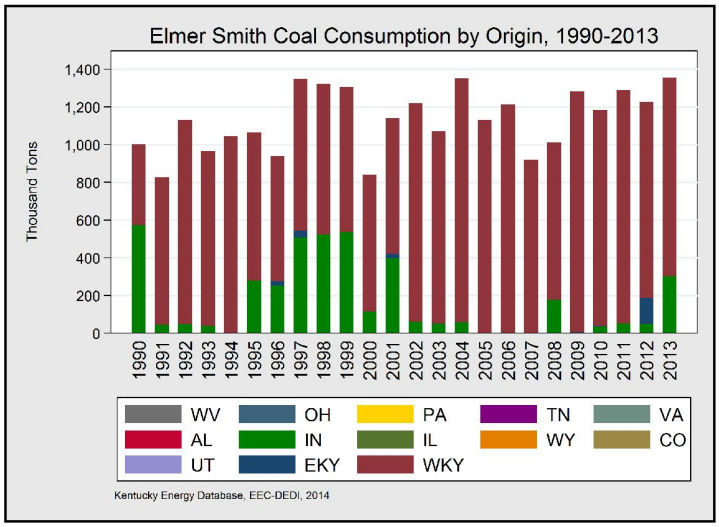


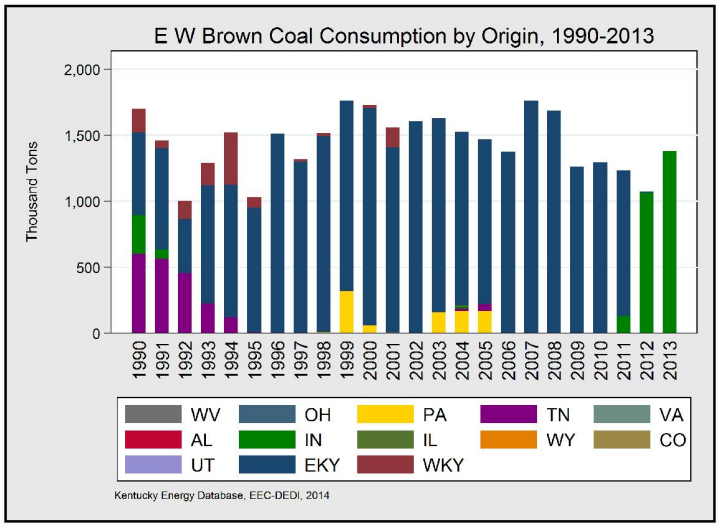


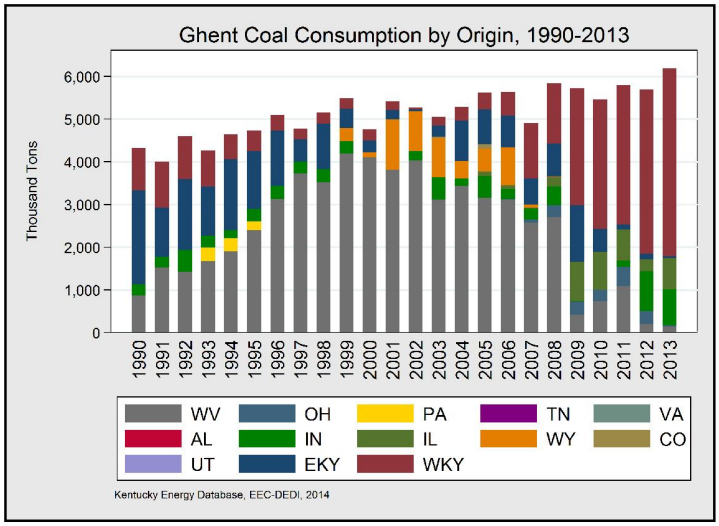


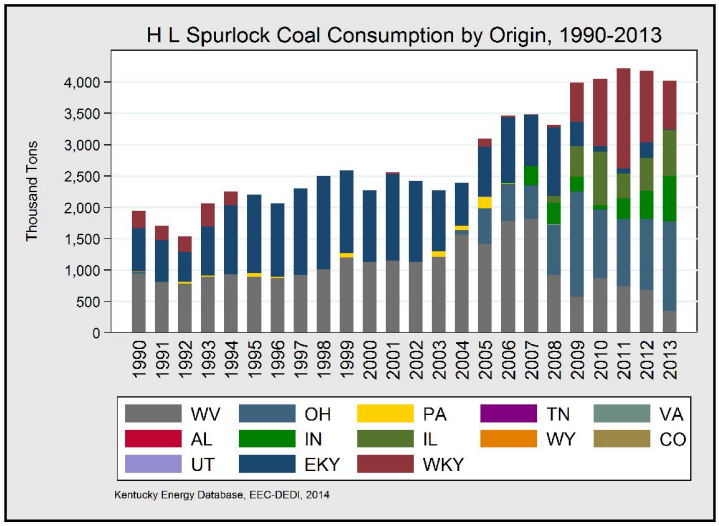


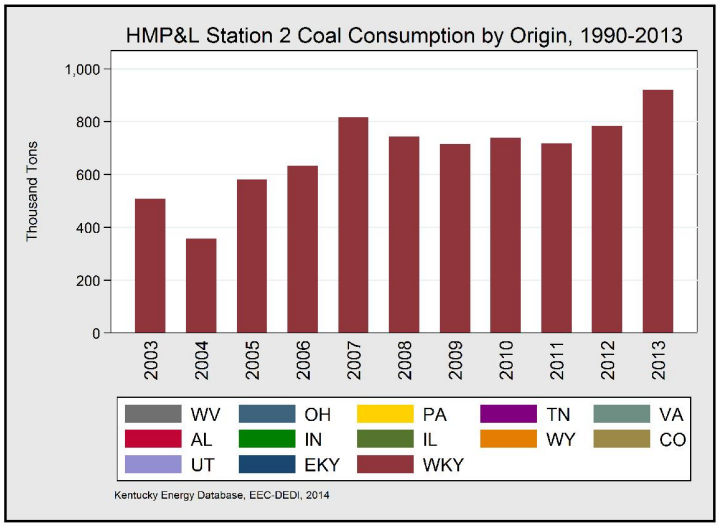
Kentucky In-State Coal Consumption

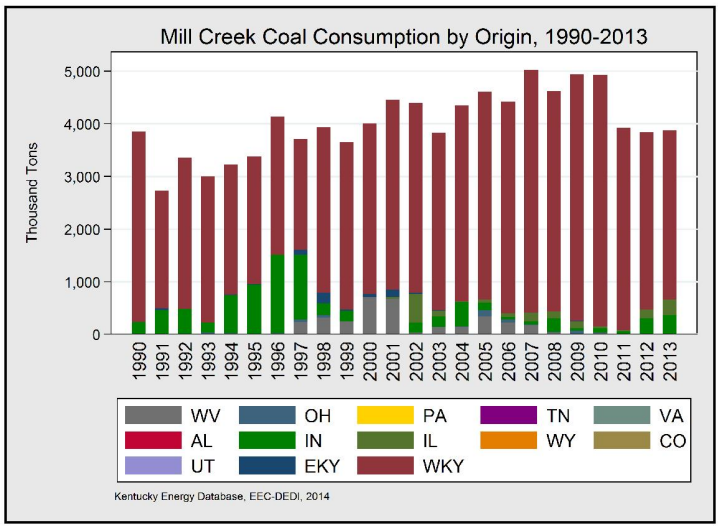




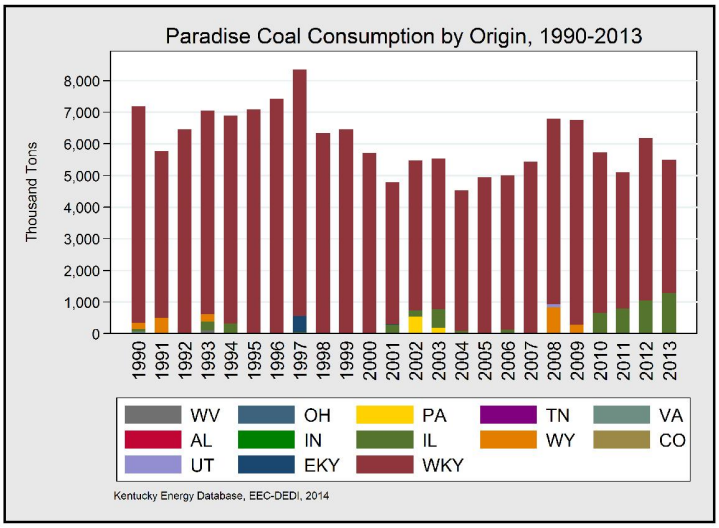


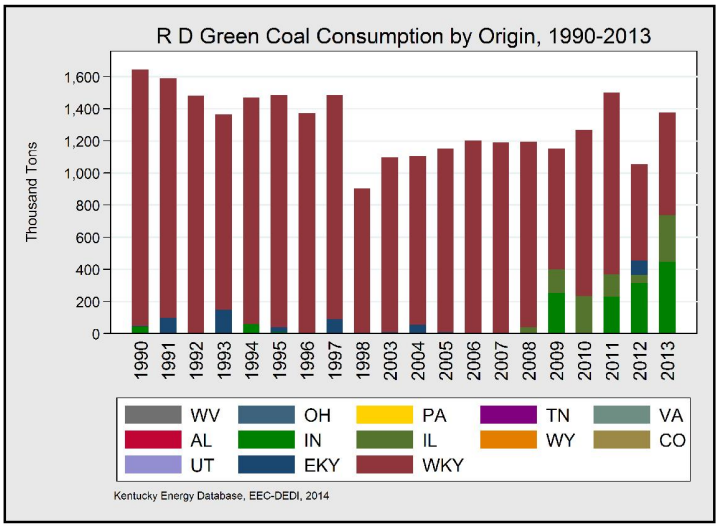


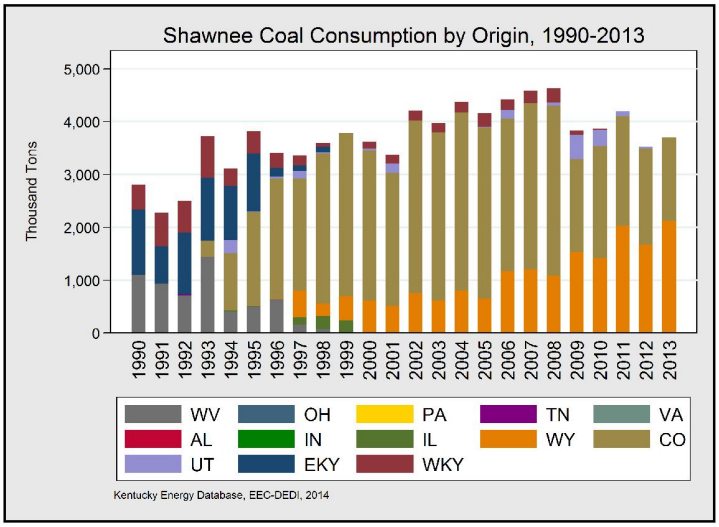


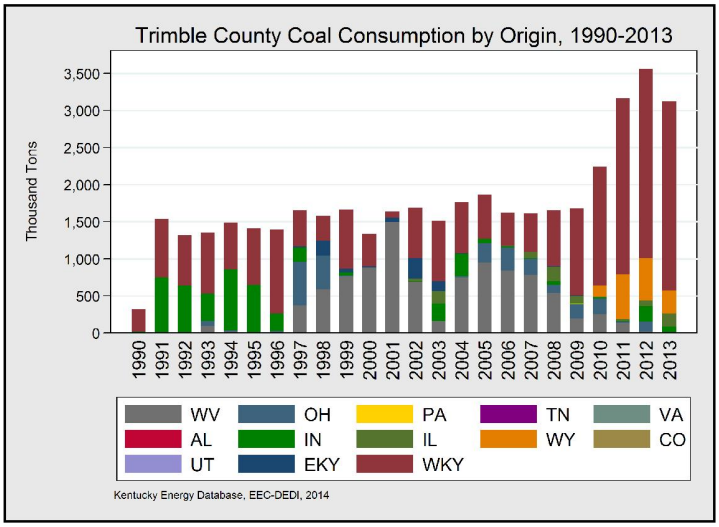


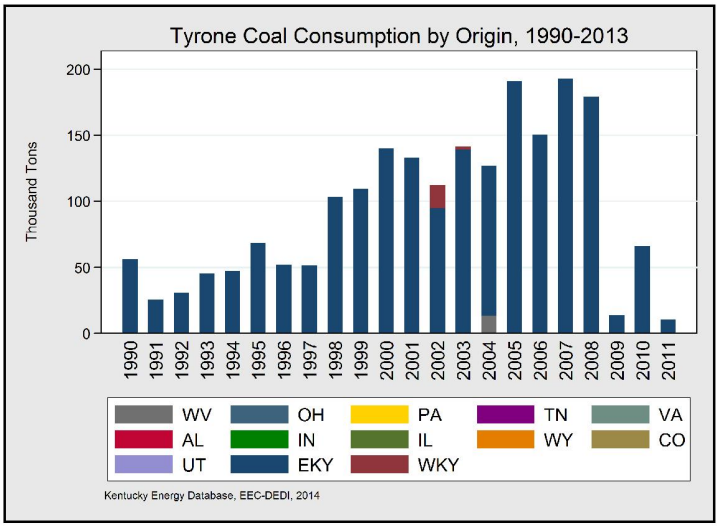
Kentucky In-State Coal Consumption

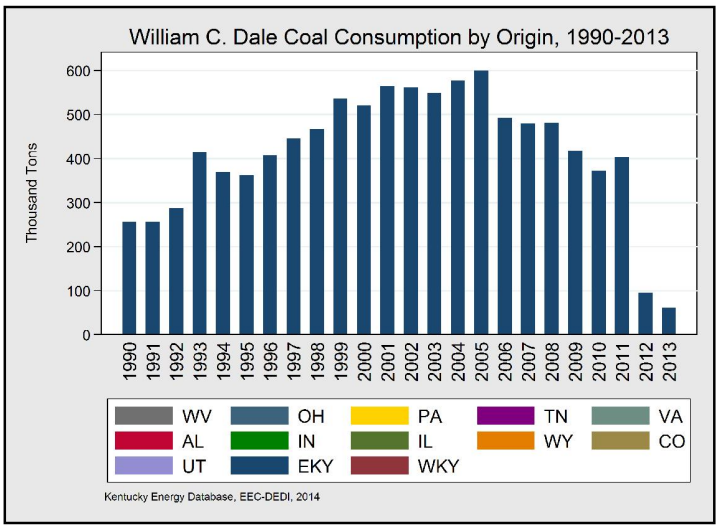




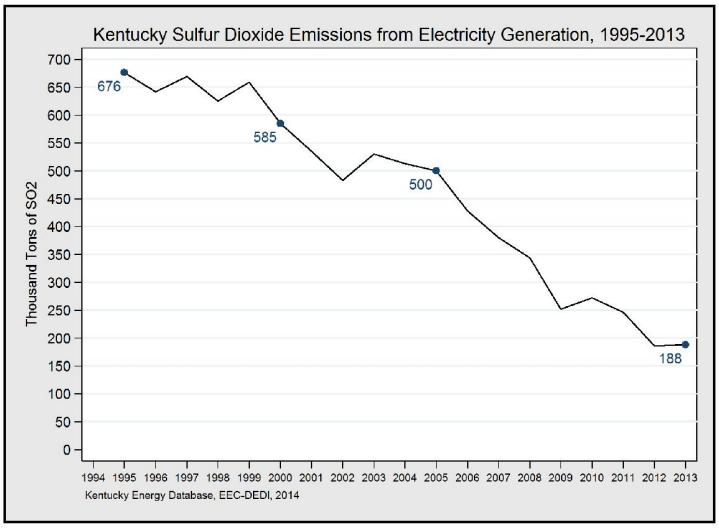


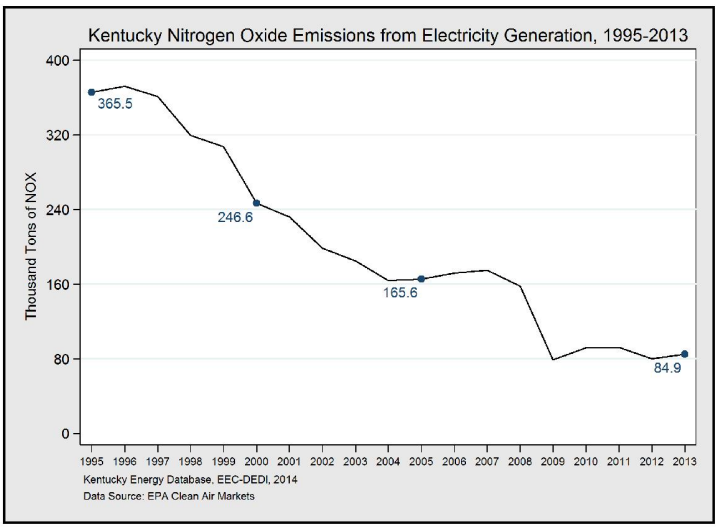






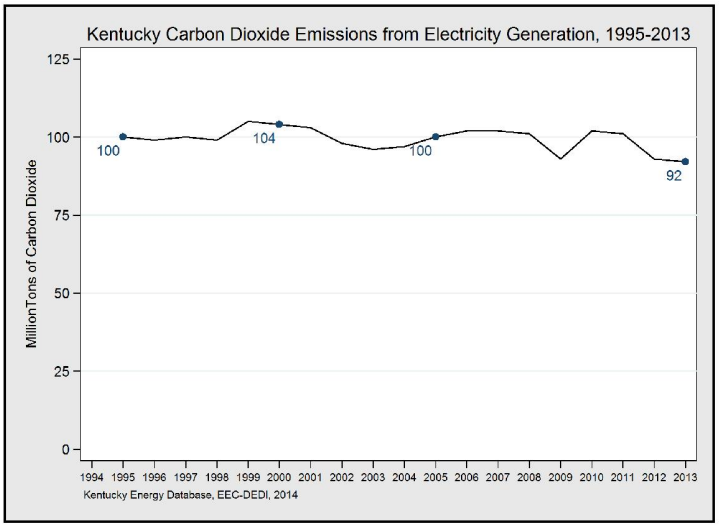
Kentucky Electric Power Emissions





Emission	Tons	Since 1995
Carbon Dioxide	92,255,593	-7.8%
Sulfur Dioxide	188,114	-72.2%
Nitrogen Oxides	84,877	-76.8%

Sulfur dioxide and nitrogen oxides are considered criteria pollutants, and their release is restricted by National Ambient Air Quality Standards (NAAQS) set forth by the Environmental Protection Agency.

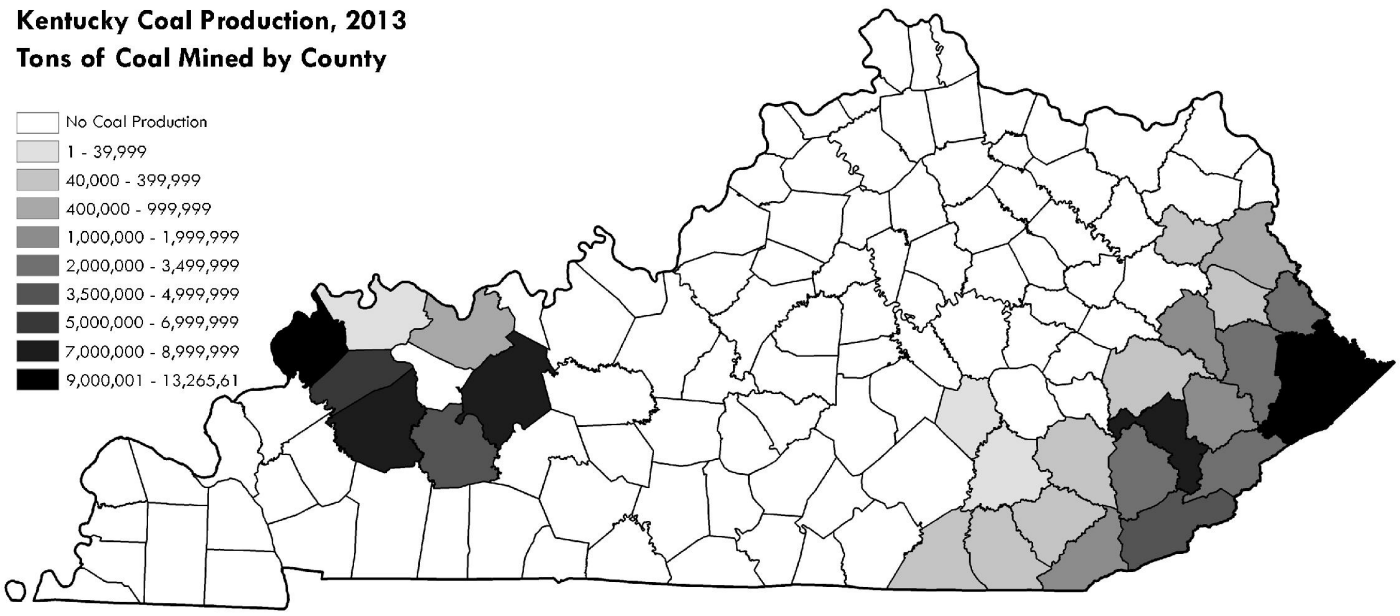


Sulfur dioxide (SO_2) is a highly reactive gas and major pollutant that is monitored and regulated at the state and federal level due to its connection to acid rain, incidence of asthma, and other respiratory problems. In 2013, the electric power sector of Kentucky emitted 188,114 tons of sulfur dioxide, a 72.2 percent decrease from 1995 and 67.9 percent from 2000.

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 2013, the electric power sector of Kentucky emitted 84,887 tons of nitrogen oxides, a decrease of 76.8 percent from 1995 and of 65.6 percent from 2000.

Carbon dioxide (CO_2) emissions from fossil fuel power plants, although not directly harmful to human health, are a greenhouse gas monitored at the state and federal level. In 2013, electric power plants in Kentucky emitted 92 million tons of carbon dioxide, a decrease of 7.8 percent from 1995 and a decrease of 11 percent from 2000.

Coal Producing Counties, 2013



Kentucky Energy Database, EEC-DEDI, 2014

Western Kentucky Coal Producing Counties, 2013			
Rank	County	Production (Tons)	1 Year Change
1	Union	13,265,616	-1.6%
3	Hopkins	8,963,894	+0.2%
4	Ohio	8,197,105	+13.4%
6	Webster	5,880,279	+5.9%
8	Muhlenberg	4,073,837	-16.7%
17	Daviess	484,569	+22.6%
26	Henderson	13,663	-99.1%

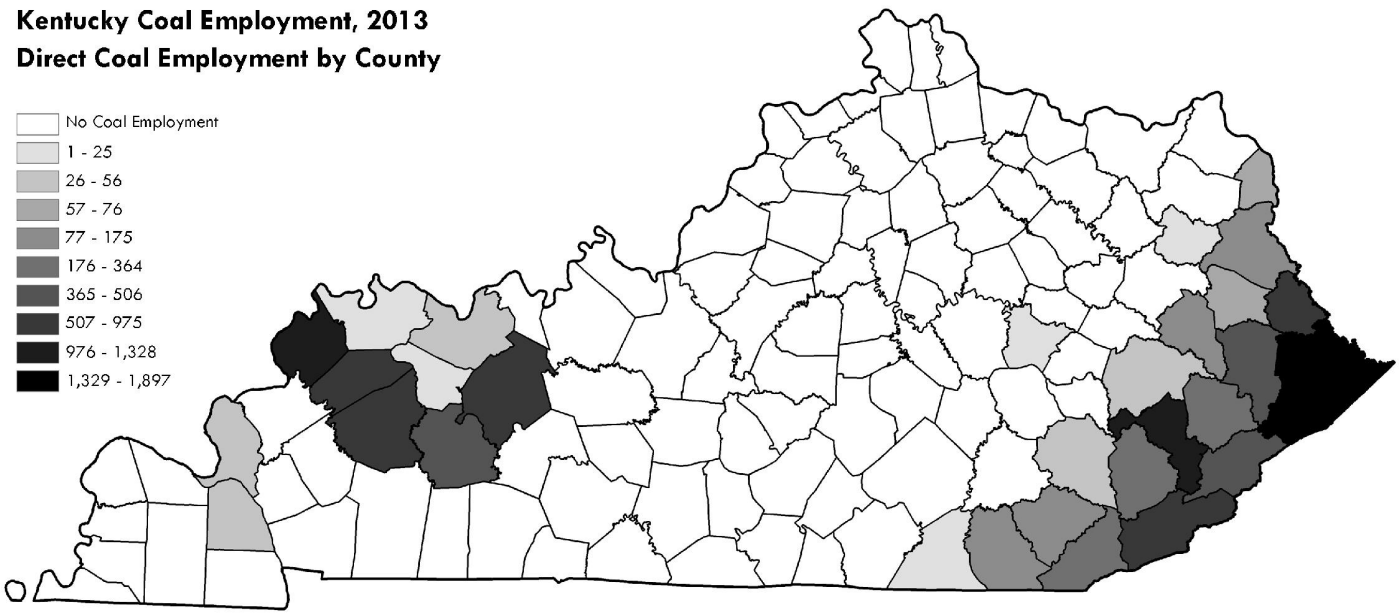
Eastern Kentucky Coal Producing Counties, 2013			
Rank	County	Production (Tons)	1 Year Change
2	Pike	10,950,788	-16.9%
5	Perry	7,606,172	-16.5%
7	Harlan	4,566,066	-34.7%
9	Martin	2,987,669	-16.7%
10	Floyd	2,441,648	-0.3%
11	Letcher	2,174,989	-27.5%
12	Leslie	2,136,704	-30.8%
13	Knott	1,902,183	-28.0%
14	Magoffin	1,551,124	-23%
15	Bell	1,156,997	-1.2%
16	Lawrence	643,970	+170.6%
18	Knox	380,039	-41.0%
19	Johnson	331,146	+1.1%
20	Whitley	285,761	+1.9%
21	Clay	190,001	-35.3%
22	Breathitt	180,251	-37.9%
23	McCreary	111,242	+250.4%
24	Elliott	46,421	+1,837.4%
25	Laurel	24,196	+91.6%
27	Rockcastle	13,441	+172.6%

During 2013, there were 27 counties in Kentucky that registered coal production—seven in the western coalfield and 20 in the eastern coalfield—a decrease of two counties compared to 2012. The two counties that stopped production in 2013 were Owsley and Wolfe counties, located in eastern Kentucky.

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 over the past five years, no more than 29 counties have produced coal.

Though 27 counties registered coal production in Kentucky in 2013, 34 counties had active permitted operations relating to coal production, processing, and/or transportation during the year.

Coal Employment, 2013



Kentucky Energy Database, EEC-DEDI, 2014

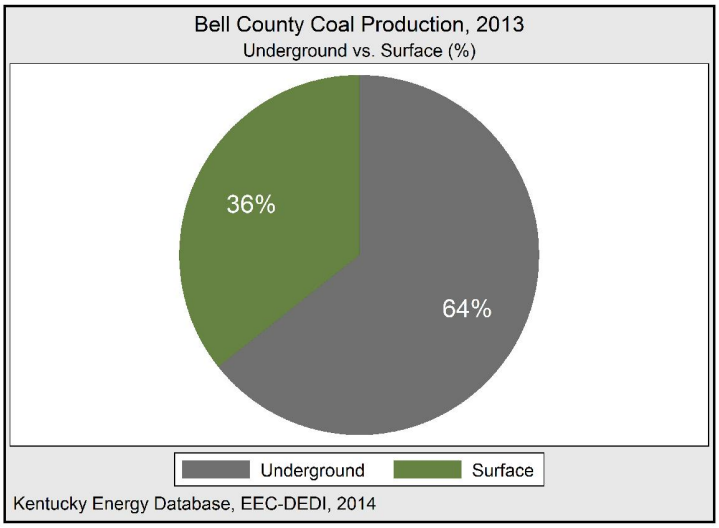
Western Kentucky Coal Producing Counties, 2013			
Rank	County	Employment	1 Year Change
2	Union	1,328	+2.8%
4	Hopkins	975	-2.2%
6	Ohio	838	+18.0%
7	Webster	669	-5.4%
10	Muhlenberg	477	-17.2%
22	Marshall	50	+0%
23	Daviess	43	+0%
25	Livingston	37	-28.9%
27	McLean	22	+175%
28	Henderson	10	-90.7%

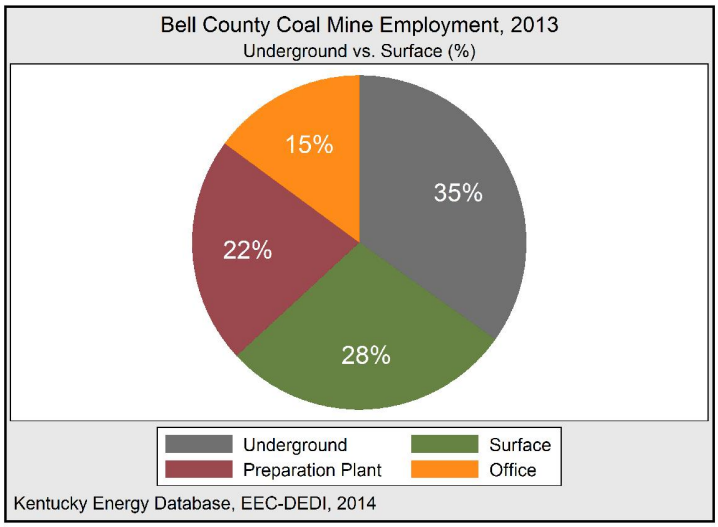
30 counties registered direct coal employment in the fourth quarter of 2013 with 10 counties registering in western Kentucky and 20 in the east. The discrepancy in counties with coal employment and production results from four counties with preparation plants but no active mining. The following counties recorded coal-related labor hours, such as coal processing, in 2013, but produced no coal: Boyd, Estill, Livingston, Marshall, and McLean.

Historically, 57 of the 120 counties in Kentucky have recorded direct coal employment. In the past five years 39 counties recorded direct coal employment.

Eastern Kentucky Coal Producing Counties, 2013			
Rank	County	Employment	1 Year Change
1	Pike	1,897	-20.3
3	Perry	1,223	-20.1%
5	Harlan	932	-34.5%
8	Martin	652	-9.6%
9	Floyd	506	-7.3%
11	Letcher	401	-34.8%
12	Bell	364	-18.8%
13	Knott	270	-18.2%
14	Leslie	254	-61.1%
15	Knox	175	-21.9%
15	Magoffin	175	-4.9%
17	Whitley	154	+69.2%
18	Lawrence	145	+74.7%
19	Boyd	76	-9.5%
20	Johnson	75	+10.3%
21	Clay	56	-15.2%
24	Breathitt	40	+35.5%
26	McCreary	25	-28.6%
28	Elliott	10	-
30	Estill	6	+500%

Bell County

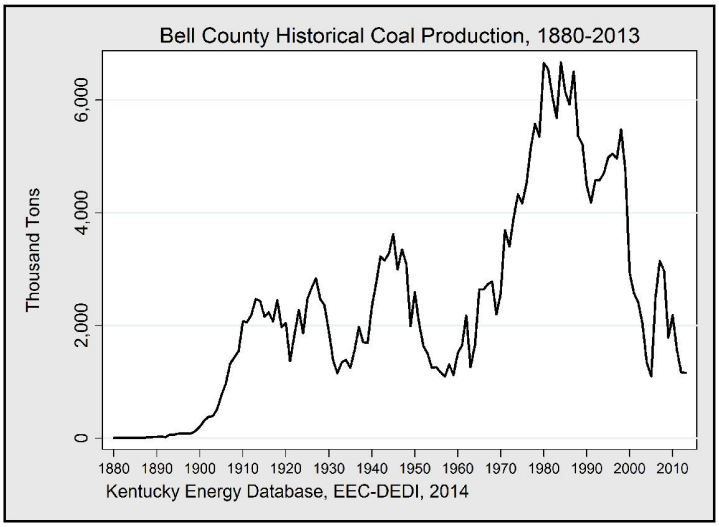


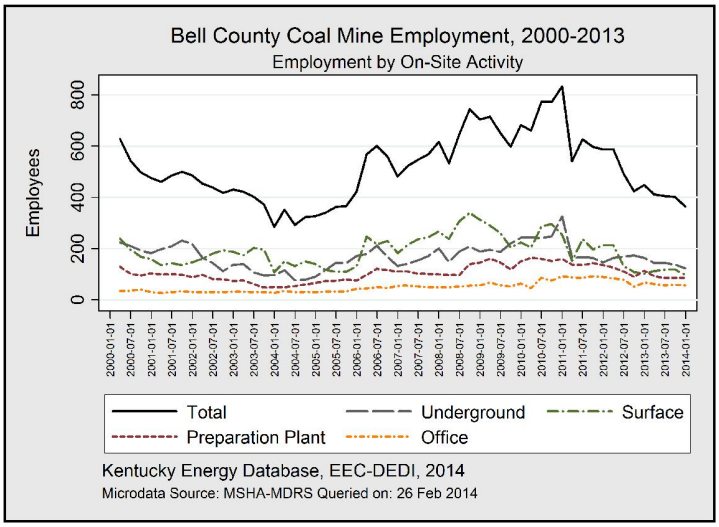


Production Method	Mines	Production	Annual Change
Total	15	1,156,997	-1.2%
Underground	4	744,235	+0.7%
Surface	11	412,762	-4.4%

On-Site Activity	Employment	Annual Change
Total	364	-18.8%
Underground	123	-25.0%
Surface	98	-3.9%
Preparation Plant	86	-24.6%
Office	57	-16.2%

Bell County has hosted both surface and underground mines since at least 1948 and has recorded production back to 1879.

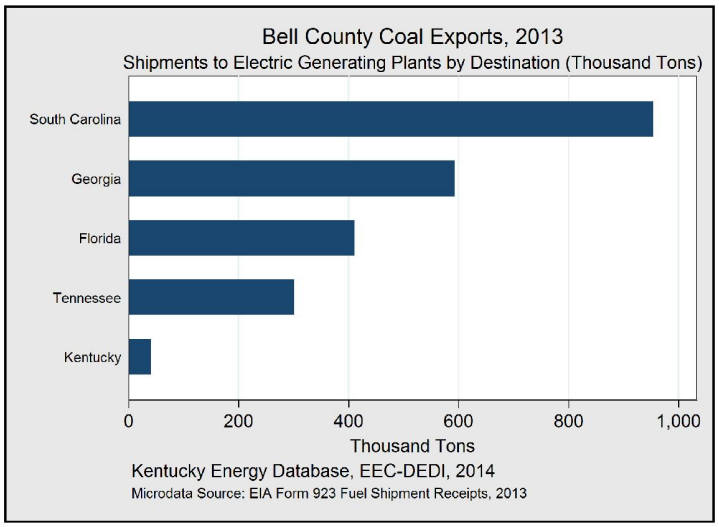


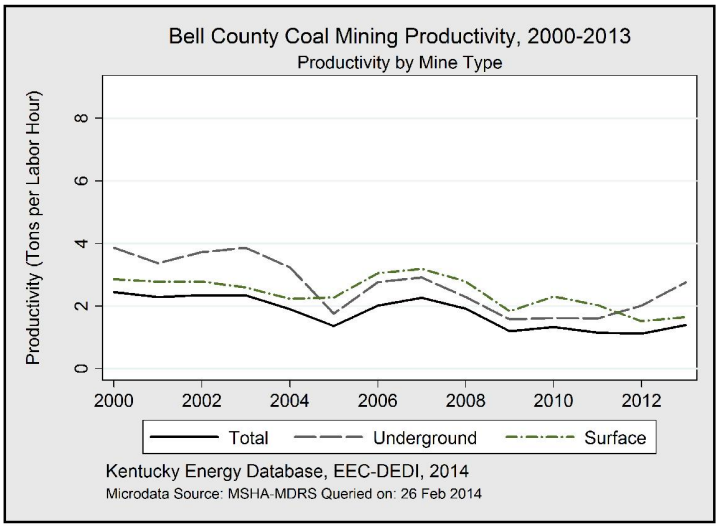


In 2013, the 29 relatively small coal mines in Bell County produced roughly 1.2 million tons of coal, which accounted for 1.4 percent of annual coal production in Kentucky. Coal mining in Bell County has fluctuated between surface and underground mining operations throughout the county's coal mining history with surface mining being most prominent from 2005 to 2011.

Coal mines and preparation plants in Bell County employed an average of 364 full-time employees in 2013, a decrease of nearly 19 percent from 2012. Bell County on-site mine employment has been relatively evenly dispersed among the four sectors. In 2013, the largest portions of these jobs were held by 123 underground miners, followed by 98 surface miners, and 86 preparation plant operators. An additional 57 individuals worked full-time in mine site offices in Bell County.

Bell County





State and Power Plant	Deliveries (Tons)	Percentage
Total	**2,300,685**	**100%**
South Carolina	**954,218**	**41.4%**
Winyah	517,119	22.5%
Cross	207,652	9.0%
Williams	140,289	6.1%
Cope	76,396	3.3%
Wateree	12,762	0.5%
Georgia	**593,383**	**25.8%**
Bowen	593,383	25.8%
Florida	**411,296**	**17.9%**
Cedar Bay Generating	398,314	17.3%
C D McIntosh Jr	12,982	0.6%
Tennessee	**300,992**	**13.1%**
Eastman Operations	300,992	13.1%
Kentucky	**40,796**	**1.8%**
Cooper	40,796	1.8%

Chemical Composition and Cost

Coal mined in Bell County had a median sulfur content of 1.12 percent, a median ash content of 9 percent, and a median heat content of 25.18 MMBtu per ton. The mine-mouth cost of extracting coal in the county in 2013 had a median cost of $70.45, processing costs of $12.96, and transportation costs of $15.07. These costs resulted in a median delivered price per ton of $98.48—ranging from $76.70 to $132.30 per ton. The price per MMBtu of Bell County coal had a median of $3.99 per MMBtu and ranged from $3.04 to $5.39 per MMBtu.

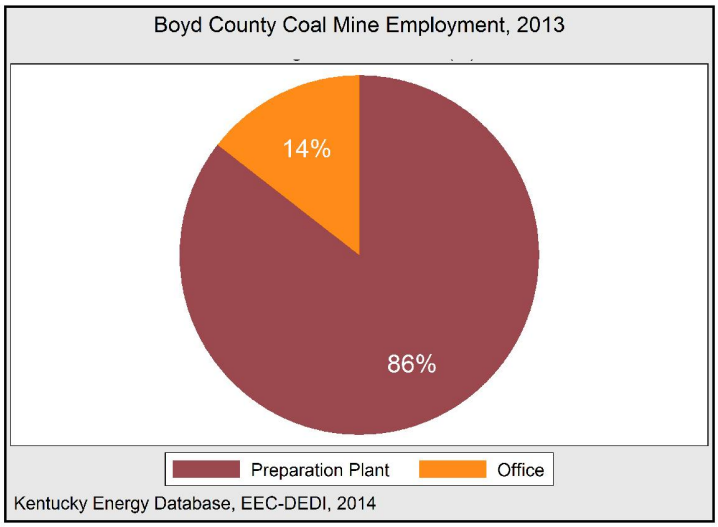
Bell County Coal Market

The largest market for Bell County steam coal for the last five years has been South Carolina, where five power plants received a total of 954 thousand tons in 2013. In 2012, Bell County sent 2.2 million tons to nine plants in South Carolina. The Winyah Generating Station of South Carolina accounted for approximately 23 percent of steam coal shipments of Bell County coal during the year. Power plants in Georgia were the next largest consumers of coal from the county, followed by Florida, Tennessee, and Kentucky. Overall, coal shipments have decreased by 41 percent from 2012.

Bell County Coal Mining Productivity

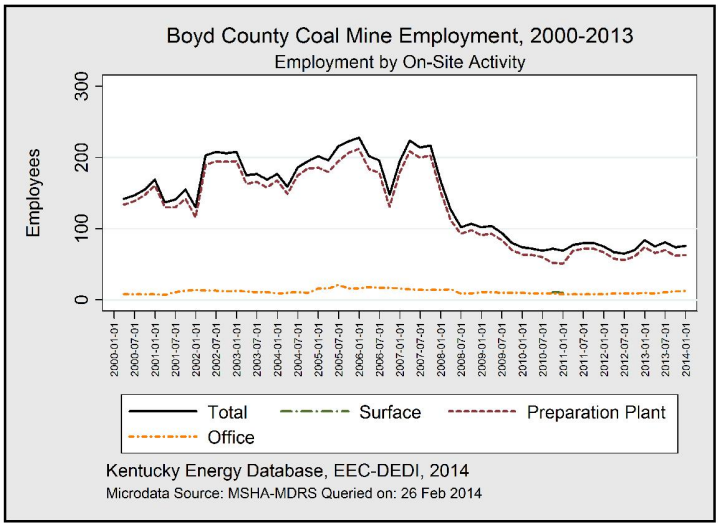
2013 productivity in Bell County was the fifth lowest of any Kentucky county at 1.39 tons per labor hour, only marginally higher than neighboring Whitley County. While underground mine productivity increased to 2.76 tons per labor hour, surface mines in Bell County averaged 1.65 tons per labor hour for the year.

Boyd County



On-Site Activity	Employment	Annual Change
Total	76	-9.5%
Preparation Plant	63	-14.9%
Office	13	+30.0%

Since at least 2000, preparation plants and terminals have been the largest source of direct coal mining employment in Boyd County.



Boyd County has not registered coal production since 1990. However, several coal transportation terminals were active in the county during the year. In 2013, coal-mining companies in Boyd County employed 76 individuals full-time, with 63 of these employees operating coal preparation plants. An additional 13 people were employed in office positions connected to the active coal preparation plants.

State and Power Plant	Deliveries (Tons)	Percentage
Total	**342,175**	**100%**
Indiana	**209,398**	**61.2%**
R Gallagher	151,424	44.3%
Tanners Creek	39,462	11.5%
Rockport	18,512	5.4%
Ohio	**132,777**	**38.8%**
W H Zimmer	62,516	18.3%
Walter C Beckjord	42,241	12.3%
Killen Station	28,020	8.2%

Boyd County Coal Market

Though Boyd County did not directly produce coal in 2013, it did prepare and ship coal from surrounding counties to customers outside of Kentucky. Coal shipments from the county have grown from 118 thousand tons in 2012 to 342 thousand tons in 2013. This growth in coal exports results from 209 thousand tons being shipped to Indiana, from no shipments in 2012 and an increase in deliveries to Ohio of 69 percent since 2012. Of the more than 342 thousand tons of coal shipped from Boyd County during 2013, 44 percent was delivered to R Gallagher Generating Station in New Albany, Indiana. The Big Sandy Power Plant in Louisa, Kentucky did not purchase coal from Boyd County in 2013, but received 39 thousand tons shipped from preparation plants and terminals in Boyd County in 2012.

Chemical Composition and Cost

On average, coal exported from Boyd County had a median sulfur content of 0.96 percent, a median ash content of 12.7 percent, and a median heat content of 23.48 MMBtu per ton. The average delivered price per ton for Boyd County coal in 2013 was $64.18, and ranged from $58.55 to $64.69 per ton. The price per MMBtu of Boyd County coal had a median of $2.71 per MMBtu and ranged from $2.48 to $2.73 per MMBtu.

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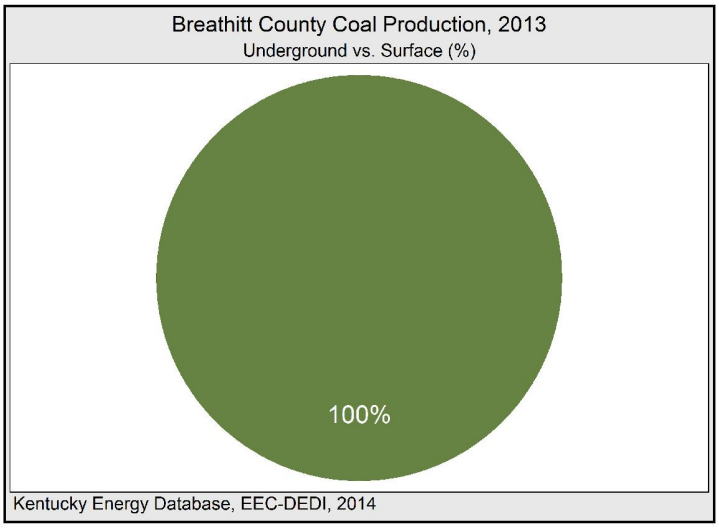
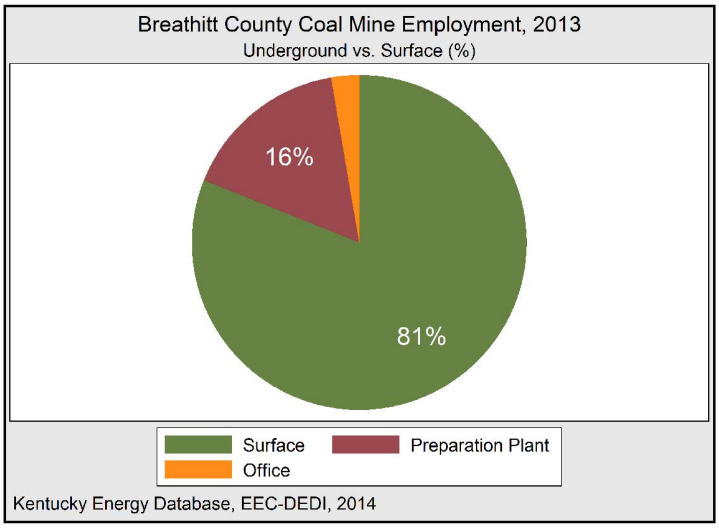
Breathitt County

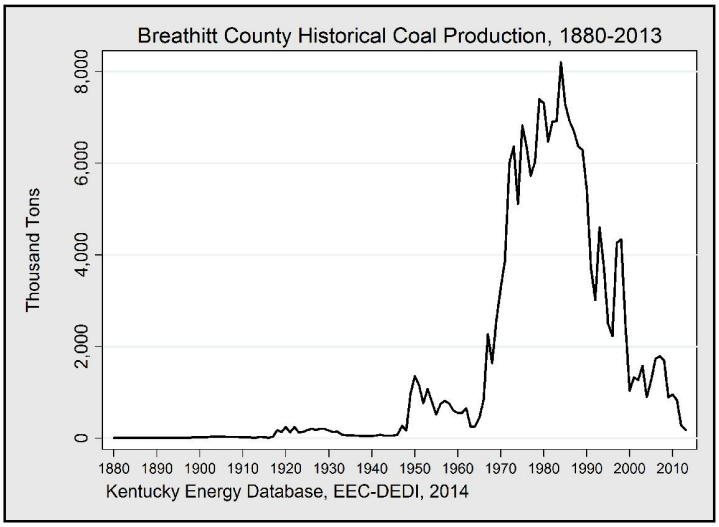


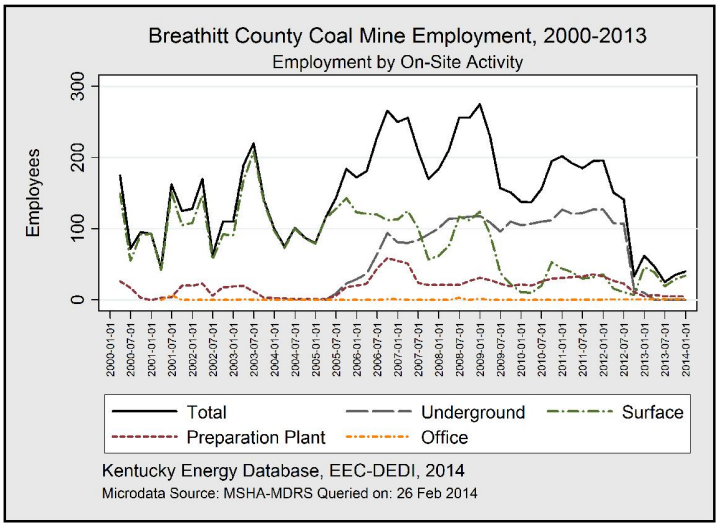


Production Method	Mines	Production	Annual Change
Total	3	180,251	-37.9%
Surface	3	180,251	+428.0%
Underground	0	0	-100%

On-Site Activity	Employment	Annual Change
Total	40	-35.5%
Surface	34	-26.1%
Preparation Plant	5	+0%
Office	1	+0%
Underground	0	-100%

Total coal production in Breathitt County decreased by over 37 percent from 2012, with surface mines increasing production and underground mines ceasing operations.

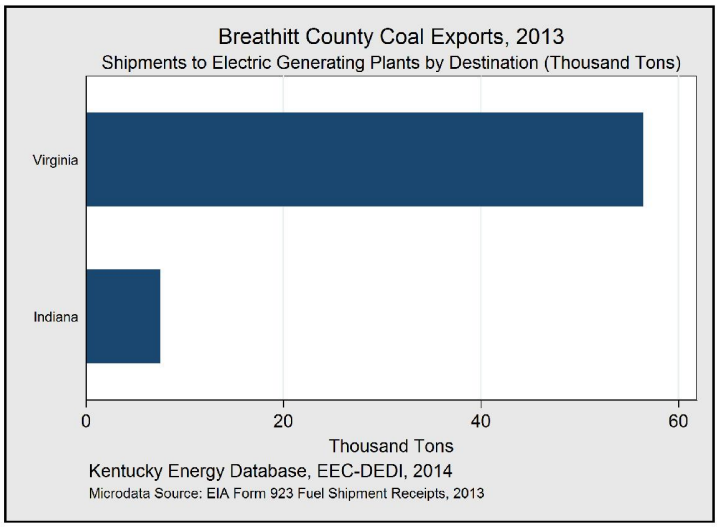


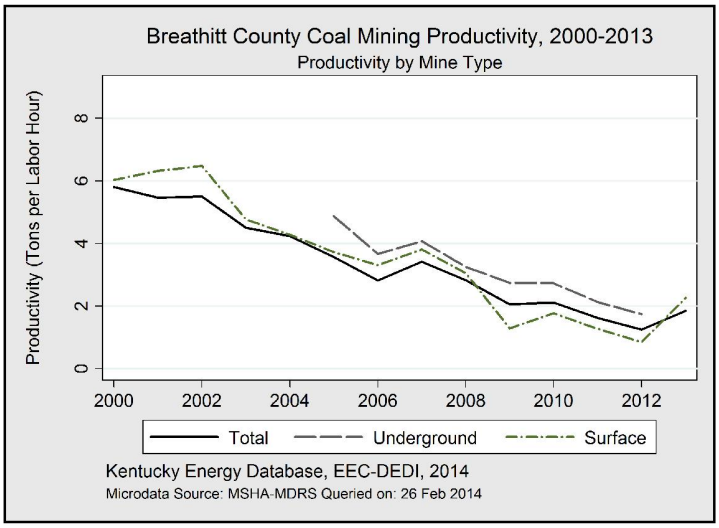


In 2013, three small surface mines in Breathitt County produced more than 180 thousand tons of coal, which accounted for 0.2 percent of annual coal production in Kentucky. Underground production in Breathitt County extracted no more than 1.1 million tons in the county in any year but until 2013 had remained relatively steady throughout the last 70 years. Conversely, surface operations excavated most of the coal from the county from 1964 to 2007.

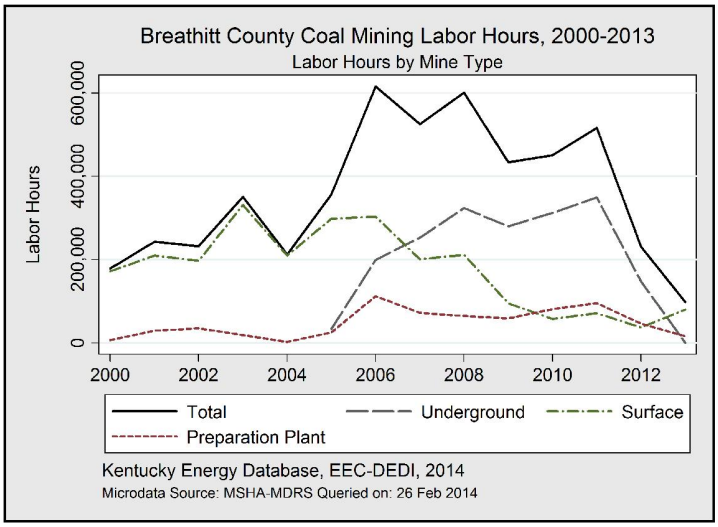
Breathitt County coal mines and preparation plants employed an average of 40 on-site employees in 2013, a decrease of almost 36 percent from 2012, or 22 jobs. The majority of these jobs were held by 34 surface miners, followed by preparation plant operators and office staff. There were no recorded underground mining operations in 2013.

Breathitt County





State and Power Plant	Deliveries (Tons)	Percentage
Total	**64,012**	**100%**
Virginia	**56,430**	**88.2%**
Chesterfield	56,430	88.2%
Indiana	**7,582**	**11.8%**
Tanners Creek	7,582	11.8%



Breathitt County Coal Market

In 2013, Breathitt County shipped coal to just two power plants: Chesterfield Power Station in Virginia and Tanners Creek Plant in Lawrenceburg, Indiana. Tanners Creek Plant is scheduled to close by mid-year 2015, according to its owner, American Electric Power. Breathitt County steam coal exports decreased by 45 percent from 2012 and by 93 percent relative to 2011.

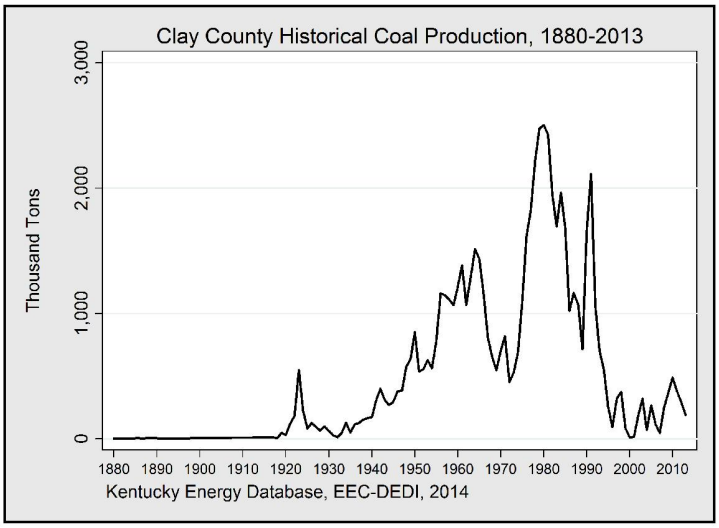
Breathitt County Coal Mining Productivity

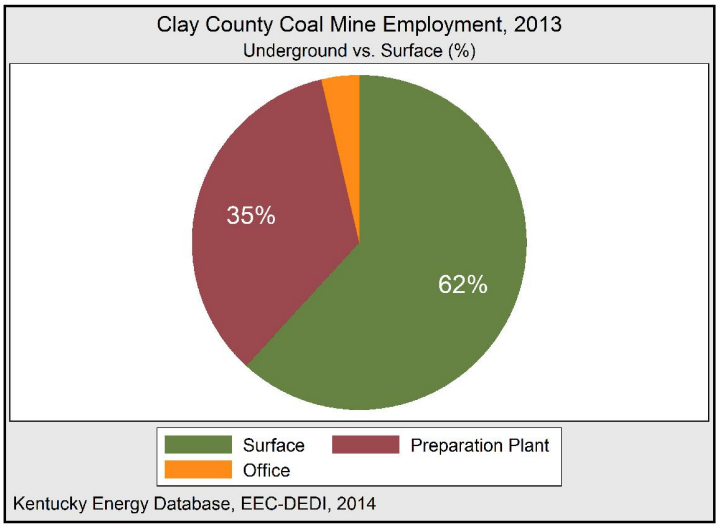
Breathitt County's productivity in 2013, including labor hours at the county's 4 preparation plants, increased to 1.84 tons per labor hour from 1.25 the year prior. County productivity has decreased by more than 68 percent from the year 2000. The county's 4 surface mines averaged 2.26 tons per labor hour.

Chemical Composition and Cost

Coal mined in Breathitt County had a median sulfur content of 0.94 percent, a median ash content of 11.1 percent, and a median heat content of 24.38 MMBtu per ton. The mine-mouth cost of extracting coal in the county in 2013 had a median cost of $60.39, processing costs of $0.85, and transportation costs of $22.78. These costs resulted in a median delivered price per ton of $84.02—ranging from $79.07 to $86.18 per ton. The price per MMBtu of Breathitt County coal had a median of $3.38 per MMBtu and ranged from $3.21 to $3.52 per MMBtu.

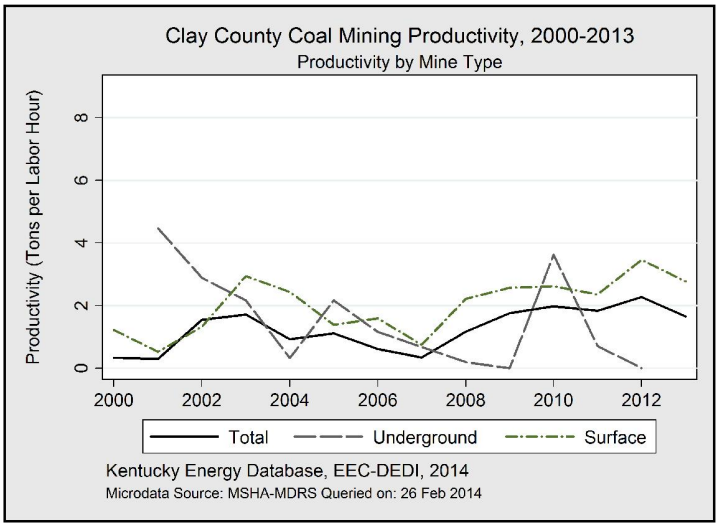
Clay County

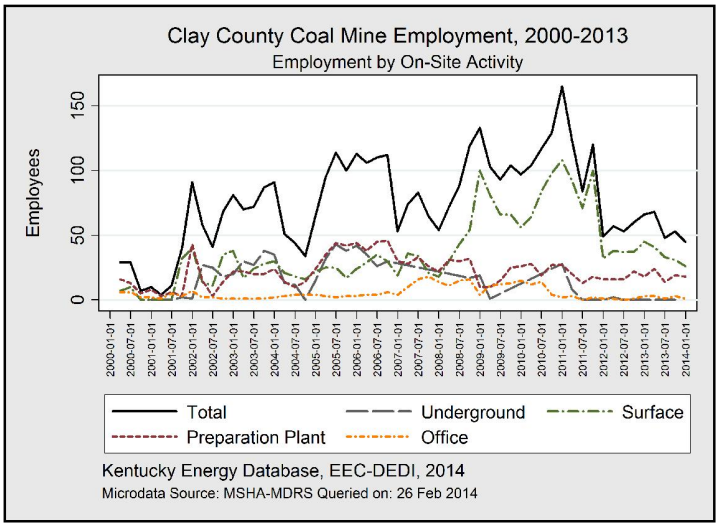




Production Method	Mines	Production	Annual Change
Total	6	190,001	-35.3%
Surface	6	190,001	-35.3%

On-Site Activity	Employment	Annual Change
Total	56	-15.1%
Surface	36	-20.0%
Preparation Plant	18	+0%
Office	2	-33.3%

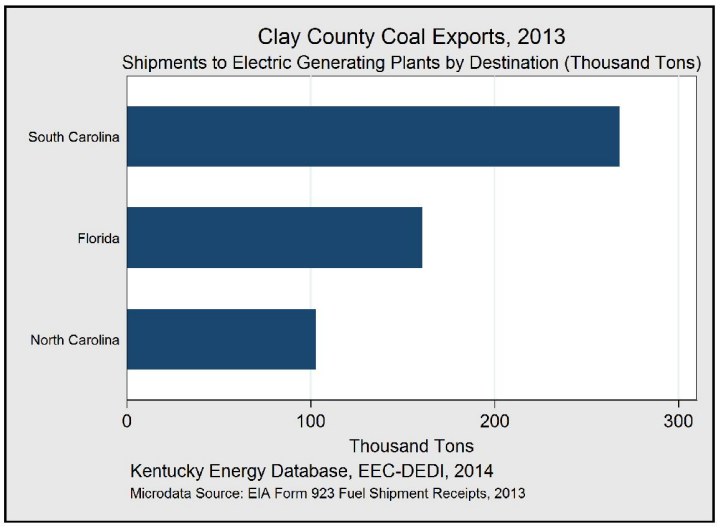




Coal mines in Clay County produced more than 190 thousand tons of coal, which accounted for 0.2 percent of annual coal production in Kentucky. Almost all of the coal mined in Clay County since 2006 has come from surface mining operations. Total coal production in Clay County decreased by 41 percent from 2003, and is down by 73 percent since 1993.

Clay County coal mines employed an average of 56 on-site employees in 2013, which was a decrease of 15 percent from 2012. The majority of these jobs were held by 36 miners working on the surface. 18 employees worked full-time in coal preparation plants and 2 people worked in an on-site office in Clay County during 2013. Coal mining employment has not been above 200 jobs since 1989. Conversely, between 1975 and 1990, there was on average over 1,500 on-site coal jobs in Clay County.

Clay County



State and Power Plant	Deliveries (Tons)	Percentage
Total	**531,566**	**100%**
South Carolina	**268,040**	**50.4%**
Cope	255,327	48.0%
Wateree	12,713	2.4%
Florida	**160,735**	**30.2%**
Cedar Bay Generating Company LP	76,906	14.4%
Crystal River	71,060	13.4%
Stanton Energy Center	12,769	2.4%
North Carolina	**102,791**	**19.4%**
Marshall	64,214	12.1%
James E. Rogers	38,577	7.3%

Clay County Coal Market

Of the 531,566 tons of steam coal exported from Clay County in 2013, more than 50 percent was delivered to power plants in South Carolina. The Cope Generating Station in Orangeburg County, South Carolina, was the single largest customer for Clay County coal, receiving 255,327 tons during the year, or nearly half of all coal shipped from the county that year. The states of Florida and North Carolina were also significant consumers of Clay County coal in 2013.

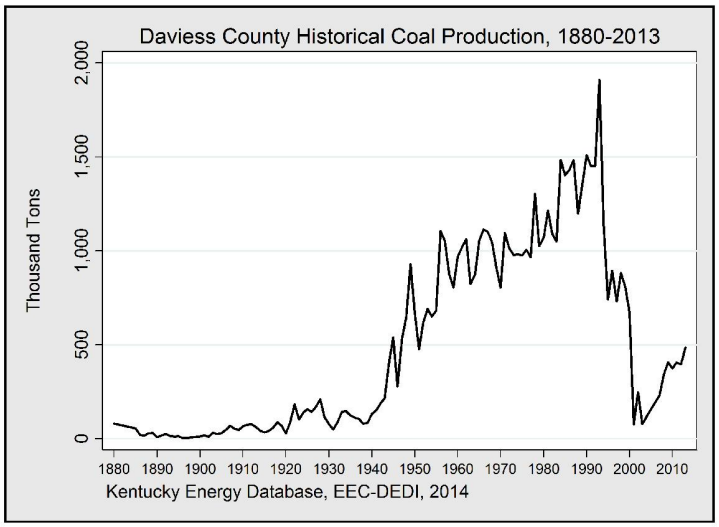
Clay County Coal Mining Productivity

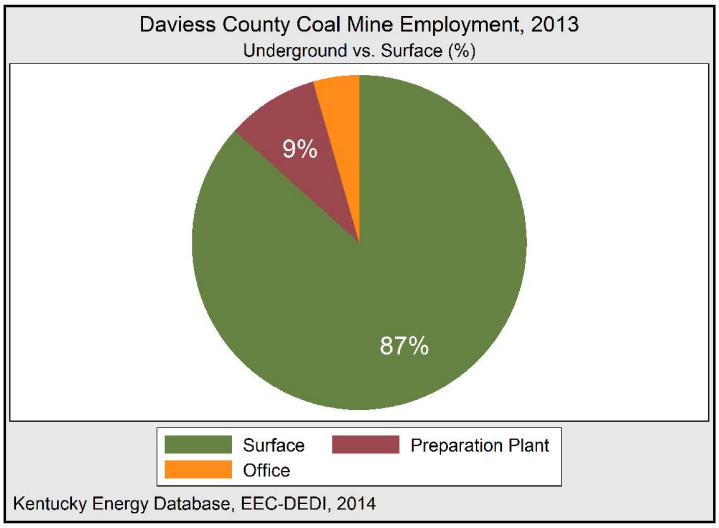
Clay County's overall coal mining productivity in 2013 was 1.54 tons per labor hour, which is higher than the historical average of 1.23, but 32 percent lower productivity in 2012. Clay County surface mines generally yielded 2.56 tons per labor hour, down from 3.47 tons per labor hour the year before.

Chemical Composition and Cost

On average, coal mined in Clay County had a median sulfur content of 1.09 percent, a median ash content of 11.2 percent, and a median heat content of 24.45 MMBtu per ton. The average delivered price per ton for Clay County coal in 2013 was $113.06, and ranged from $58.04 to $124.19 per ton. The price per MMBtu of coal from Clay County had a median of $4.56 per MMBtu and ranged from $2.65 to $4.94 per MMBtu.

Daviess County

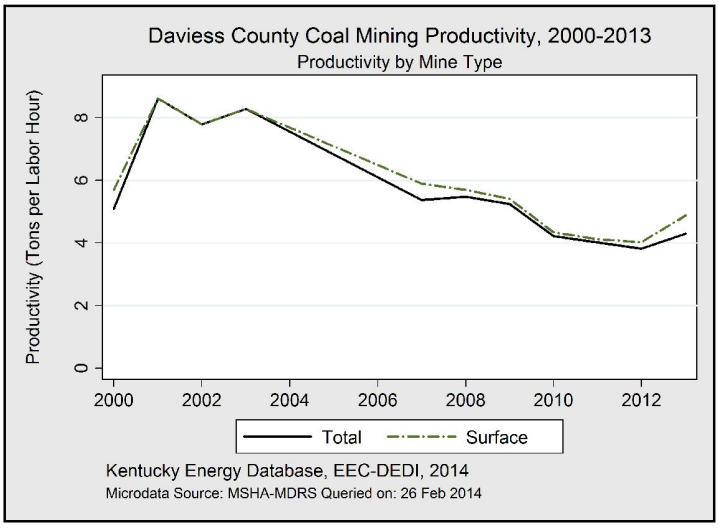


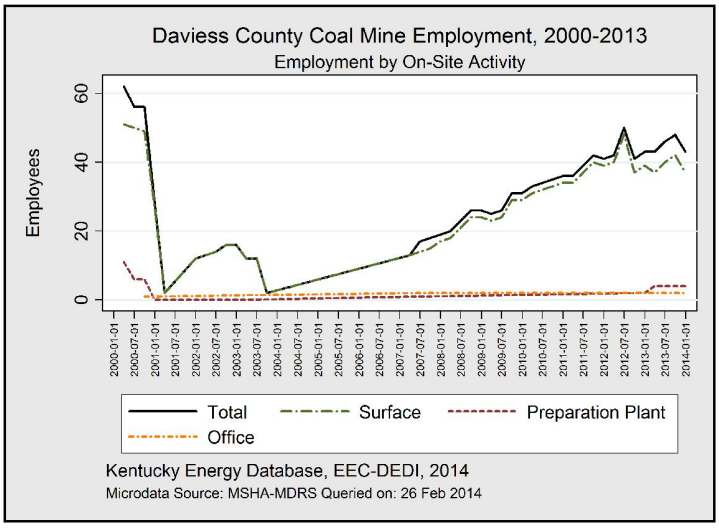


Production Method	Mines	Production	Annual Change
Total	2	484,569	+22.6%
Surface	2	484,569	+22.6%

Mining in Daviess County has grown to nearly 485 thousand tons in 2013.

On-Site Activity	Employment	Annual Change
Total	43	+0%
Surface	37	-5.1%
Preparation Plant	4	+100%
Office	2	+0%

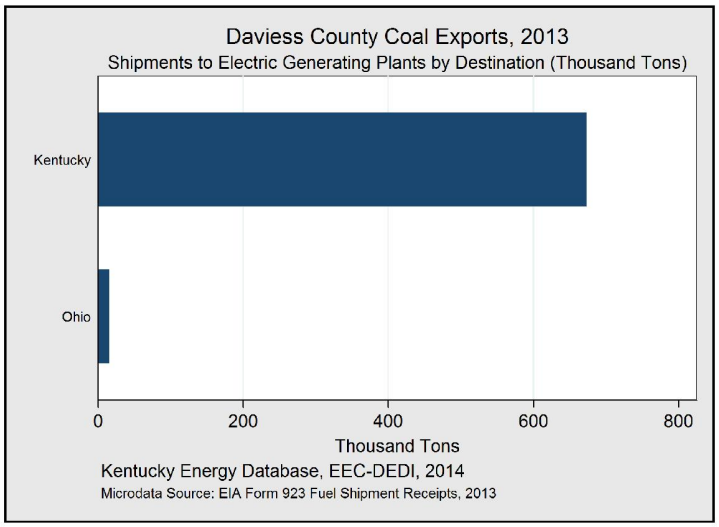




In 2013, Daviess County increased production and mined 0.6 percent of annual coal production in Kentucky. All of the coal mined in Daviess County in recent decades has come from surface mining operations.

Daviess County coal mines employed an average of 43 on-site employees in 2013, which has remained stable in recent years. Historically, surface mine labor hours have been the largest source of coal mine employment in Daviess County on an annual basis as the vast majority of coal mining in the county has been from surface operations.

Daviess County



State and Power Plant	Deliveries (Tons)	Percentage
Total	**688,630**	**100%**
Kentucky	**673,404**	**97.8%**
Elmer Smith	646,578	93.9%
Trimble County	15,889	2.3%
Ghent	10,937	1.6%
Ohio	**15,226**	**2.2%**
Miami Fort	15,226	2.2%

Daviess County Coal Market

In all, four different power plants in Kentucky and Ohio received a total of 689 thousand tons of steam coal mined in Daviess County during 2013. Shipments of coal from Daviess County decreased by 56 percent from 2012. Elmer Smith, operated by Owensboro Municipal Utilities, received 94 percent of coal from the county in 2013. While Elmer Smith increased consumption of coal from Daviess County in 2013, Trimble County and Ghent Generating Stations decreased consumption and R. D. Green and D. B. Wilson did not receive Daviess County coal that year.

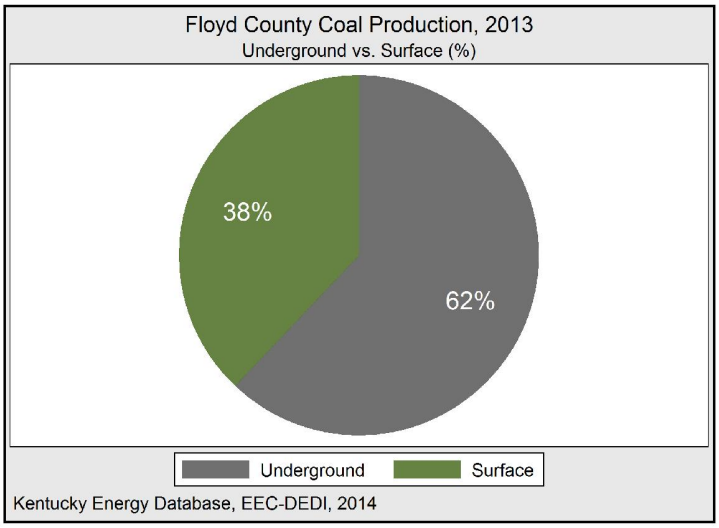
Chemical Composition and Cost

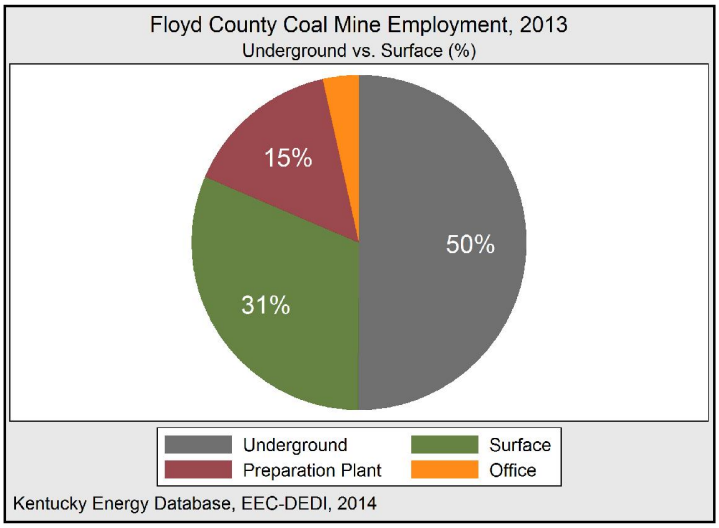
On average, coal mined in Daviess County had a median sulfur content of 3.22 percent, a median ash content of 10.7 percent, and a median heat content of 22.02 MMBtu per ton. The average delivered price per ton for Daviess County coal in 2013 was $42.86, and ranged from $36.29 to $74.75 per ton. The price per MMBtu of coal from Daviess County had a median of $1.99 per MMBtu and ranged from $1.76 to $3.32 per MMBtu.

Daviess County Coal Mining Productivity

Although Daviess County in western Kentucky had the second-highest mine productivity in the Commonwealth in 2013, productivity has fallen by about half from its recent peak in 2001. Overall productivity was 4.29 tons per labor hour, while surface productivity averaged 4.88 tons per labor hour. In 2012, total productivity was 3.82 tons per labor hour, while surface productivity averaged 4.02 tons per labor hour.

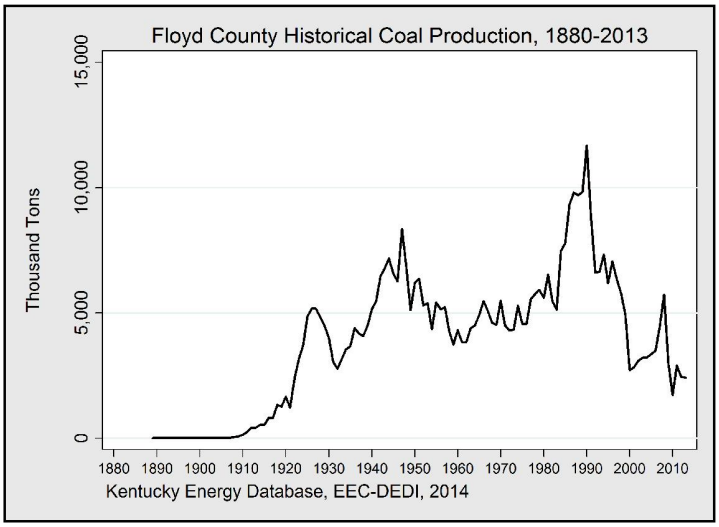
Floyd County

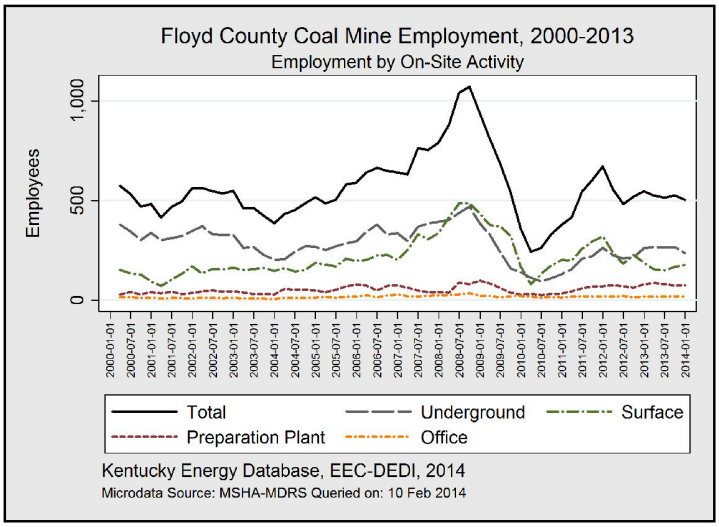




Production Method	Mines	Production	Annual Change
Total	22	2,441,648	-0.3%
Underground	9	1,502,289	+16.1%
Surface	13	939,359	-18.6%

On-Site Activity	Employment	Annual Change
Total	506	-7.3%
Underground	236	-9.2%
Surface	179	-4.8%
Preparation Plant	74	-8.6%
Office	17	+0%

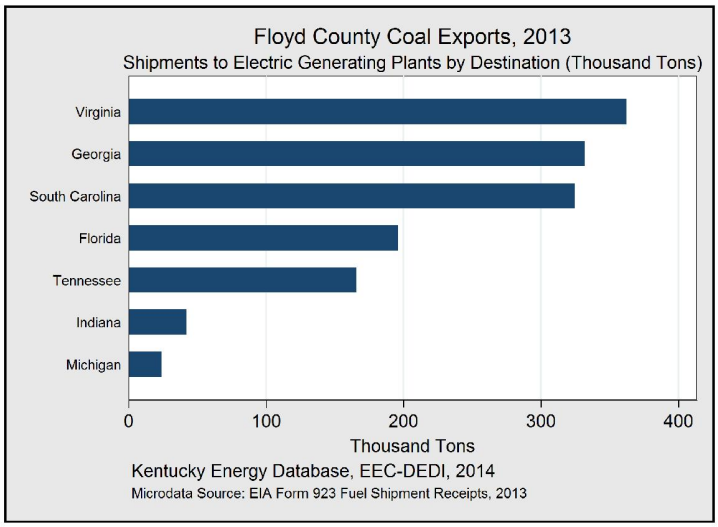


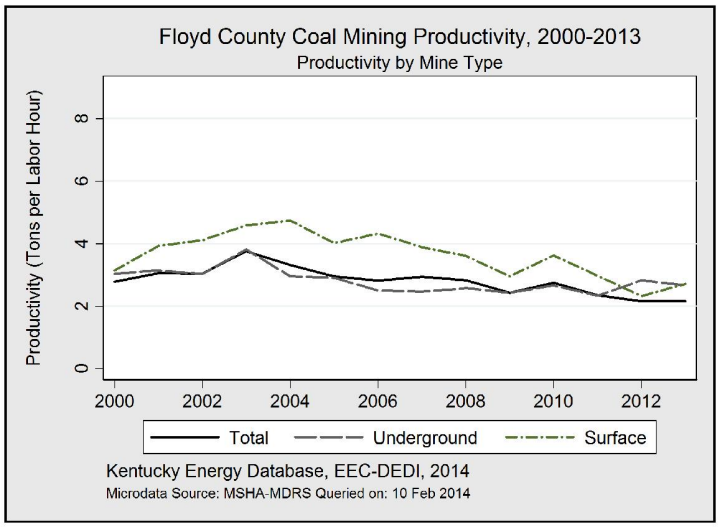


The 22 active coal mines in Floyd County during 2013 produced nearly 2.5 million tons of coal, which accounted for three percent of annual coal production in Kentucky. 62 percent of the coal mined in Floyd County in 2013 came from underground mines, though historical production in the county has been relatively evenly split between surface and underground mining. Floyd County production has decreased by 24 percent in a decade and by 67 percent since 1994, when the county produced more than 7 million tons.

Coal mines and preparation plants in Floyd County employed approximately 506 persons on-site in 2013, which was a decrease of 40 full-time jobs, or 8 percent from 2012. Underground mines were the largest source of direct coal mine employment in 2013, followed by surface mines and coal preparation plants.

Floyd County





State and Power Plant	Deliveries (Tons)	Percentage
Total	**1,446,733**	**100%**
Virginia	**362,262**	**25.0%**
Chesterfield	340,363	23.5%
Spruance Genco LLC	21,899	1.5%
Georgia	**331,962**	**22.9%**
Bowen	280,644	19.4%
Harllee Branch	51,318	3.4%
South Carolina	**324,476**	**22.4%**
Kapstone	123,703	8.6%
Williams	87,566	6.1%
Cope	75,171	5.2%
Winyah	25,389	1.8%
Wateree	12,647	0.9%
Florida	**196,074**	**13.6%**
Crystal River	148,063	10.2%
Deerhaven Generating Station	24,832	1.7%
Stanton Energy Center	23,179	1.6%
Tennessee	**165,866**	**11.5%**
Tennessee Eastman Operations	165,866	11.5%
Indiana	**42,220**	**2.9%**
Tanners Creek	40,544	2.8%
Rockport	1,676	0.1%
Michigan	**23,873**	**1.7%**
Monroe	12,989	0.9%
River Rouge	10,884	0.8%

Floyd County Coal Market

Of the 1.45 million tons of steam coal exported from Floyd County in 2013, nearly a quarter was consumed by the Chesterfield Power Station in Virginia. Georgia was the second-largest market for Floyd County coal, where Plant Bowen consumed 280 thousand tons, or 19 percent of Floyd County's coal shipments. Coal in the county was also shipped to seven states in total during 2013. Overall, coal shipments from Floyd County decreased by 22 percent from 2012.

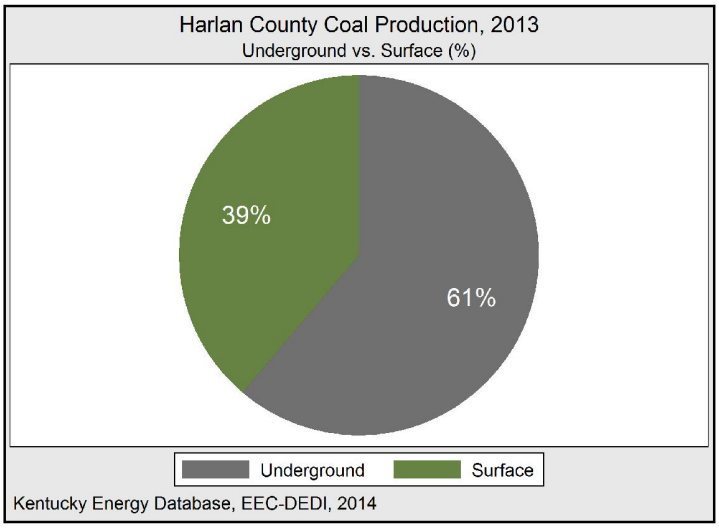
Floyd County Coal Mining Productivity

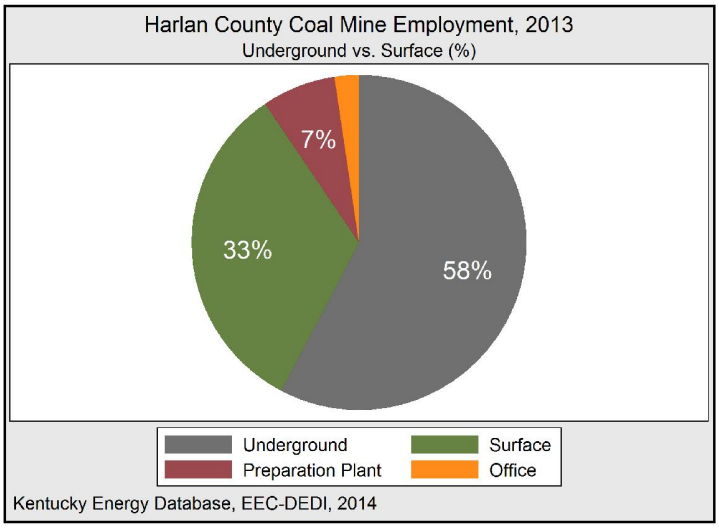
Floyd County mining productivity decreased to 2.17 tons per labor hour in 2013. While underground operations averaged 2.67 tons per labor hour, surface operations produced at a rate of 2.77 tons per labor hour. Mining productivity has steadily decreased over the last decade, when productivity was 3.75 tons per labor hour.

Chemical Composition and Cost

Coal mined in Floyd County had a median sulfur content of 0.94 percent, a median ash content of 10.07 percent, and a median heat content of 24.6 MMBtu per ton. The mine-mouth cost of extracting coal in the county in 2013 had a median cost of $57.31, processing costs of $7.68, and transportation costs of $29.21. These costs resulted in a median delivered price per ton of $94.20—ranging from $70.07 to $134.68 per ton. The price per MMBtu of coal from Floyd County had a median of $3.78 per MMBtu and ranged from $2.83 to $5.52 per MMBtu.

Harlan County

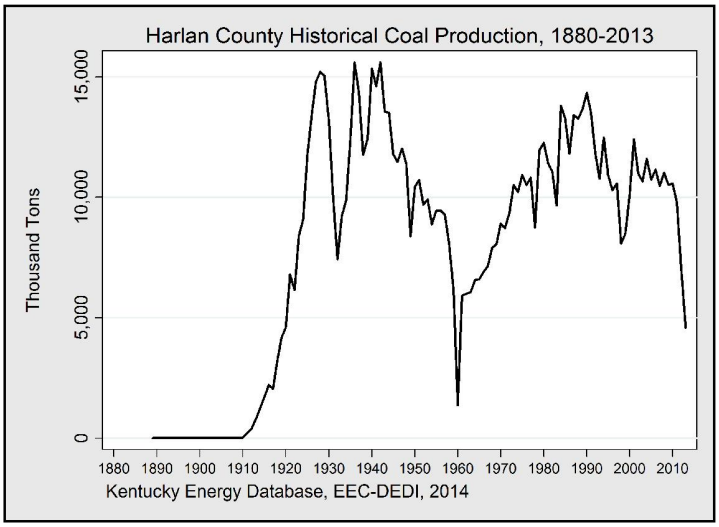


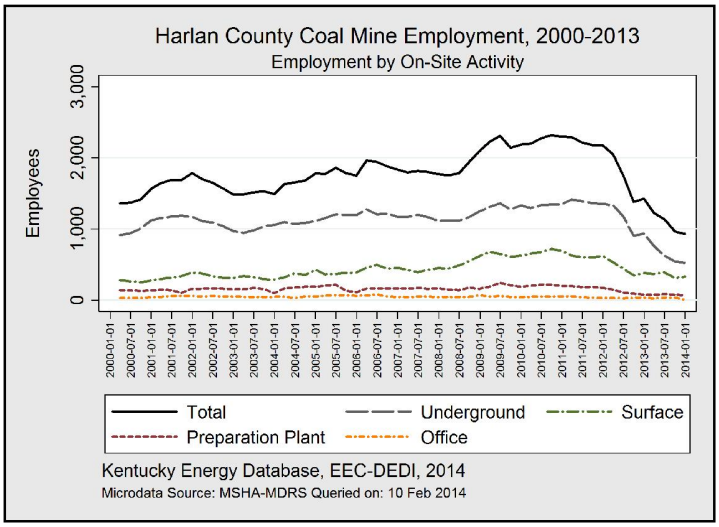


Production Method	Mines	Production	Annual Change
Total	33	4,566,066	-34.7%
Underground	15	2,810,177	-44.5%
Surface	18	1,755,889	-9.1%

On-Site Activity	Employment	Annual Change
Total	932	-34.5%
Underground	526	-43.6%
Surface	330	-13.2%
Preparation Plant	69	-9.2%
Office	7	-80.0%

Harlan County has normally been among the top five counties for coal production and employment in Kentucky, though the county produced seventh most of all counties in 2013.

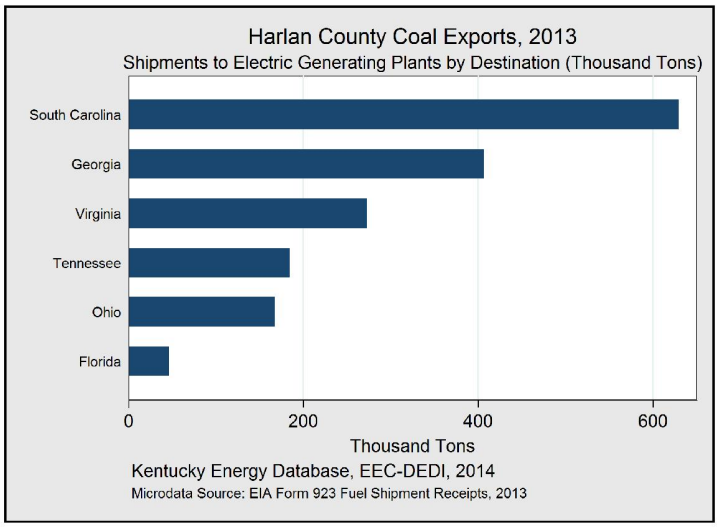


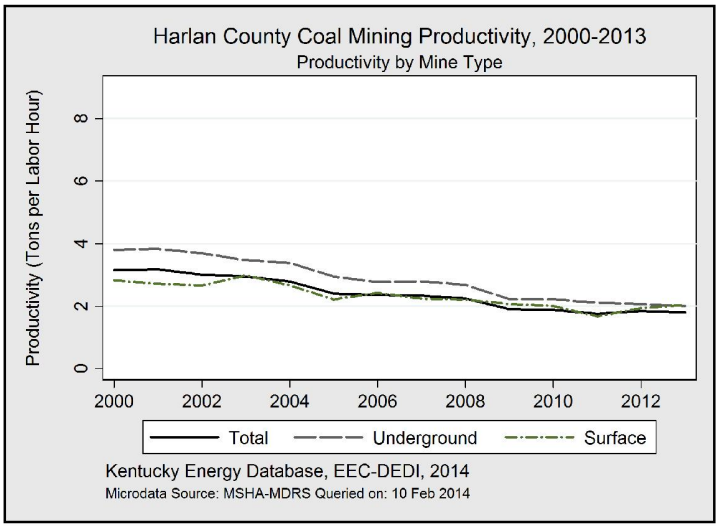


Harlan County produced 4.6 million tons of coal in 2013, 5.7 percent of total production in the Commonwealth. Production continued to decrease from 2010, when the county mined almost 11 million tons of coal. 62 percent of the coal produced in 2013 in Harlan County came from underground mining operations, while 38 percent from surface mines. Historically, mining in the county has been predominantly underground. The county produced the most coal of all Kentucky counties from 1923 to 1946.

Direct coal mine employment in Harlan County was the fifth-highest in the Commonwealth in 2013, though mining employment decreased by 35 percent compared with 2012. During 2013, coal mines in Harlan County employed on average 932 individuals full-time. Underground mines were the largest source of mining employment, followed by surface operations. 69 individuals worked in coal preparations plants, while only 7 worked at on-site offices.

Harlan County





State and Power Plant	Deliveries (Tons)	Percentage
Total	**1,708,120**	**100%**
South Carolina	**629,416**	**36.9%**
Williams	320,685	18.8%
Cope	127,980	7.5%
International Paper Eastover	90,204	5.3%
Florence Mill	58,457	3.4%
Wateree	32,090	1.9%
Georgia	**407,016**	**23.8%**
Bowen	407,016	23.8%
Virginia	**272,865**	**16.0%**
Virginia City Hybrid Energy	202,197	11.8%
Chesterfield	47,095	2.8%
Bremo Bluff	11,796	0.7%
Yorktown	11,777	0.7%
Tennessee	**184,749**	**10.8%**
Tennessee Eastman Operations	162,462	9.5%
Bull Run	22,287	1.3%
Ohio	**167,800**	**9.8%**
Muskingum Run	167,800	9.8%
Florida	**46,274**	**2.7%**
Crystal River	23,398	1.4%
Stanton Energy Center	22,876	1.3%

Harlan County Coal Market

The states of South Carolina, Georgia, and Virginia consumed nearly 77 percent of the steam coal shipped from Harlan County in 2013. Plant Bowen of Bartow County, Georgia, alone received approximately one-quarter of all tons shipped during reporting year 2013. The largest consumer state was South Carolina. None of the coal shipped from Harlan County during the year was consumed in Kentucky.

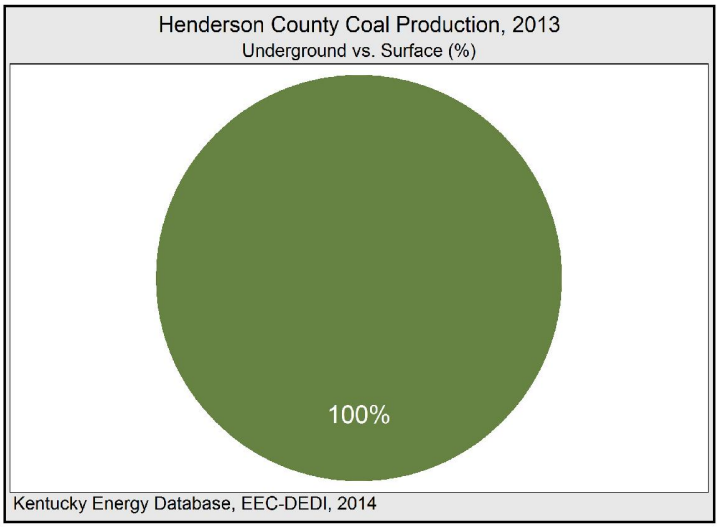
Harlan County Coal Mining Productivity

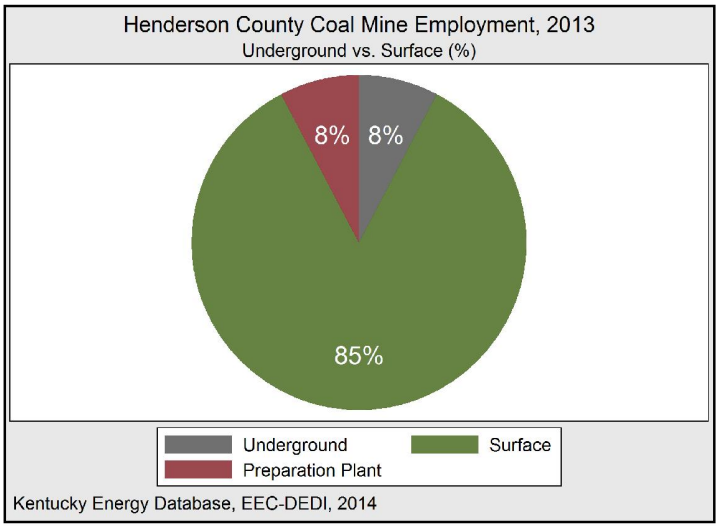
Harlan County's productivity in 2013 was 1.79 tons per labor hour, a decrease of almost 43 percent since the year 2000. Surface mines in Harlan County, historically, have not been as productive as the county's underground mines. However, in 2013 underground mines on average yielded 2.0 tons per labor hour while surface mines yielded 2.01 per labor hour.

Chemical Composition and Cost

Coal mined in Harlan County had a median sulfur content of 1 percent, a median ash content of 9.9 percent, and a median heat content of 25.18 MMBtu per ton. The mine-mouth cost of extracting coal in the county in 2013 had a median cost of $62.30, processing costs of $7.84, and transportation costs of $22.91. These costs resulted in a median delivered price per ton of $93.05—ranging from $27.69 to $128.50 per ton. The price per MMBtu of coal from Harlan County had a median of $3.56 per MMBtu and ranged from $1.83 to $5.14 per MMBtu.

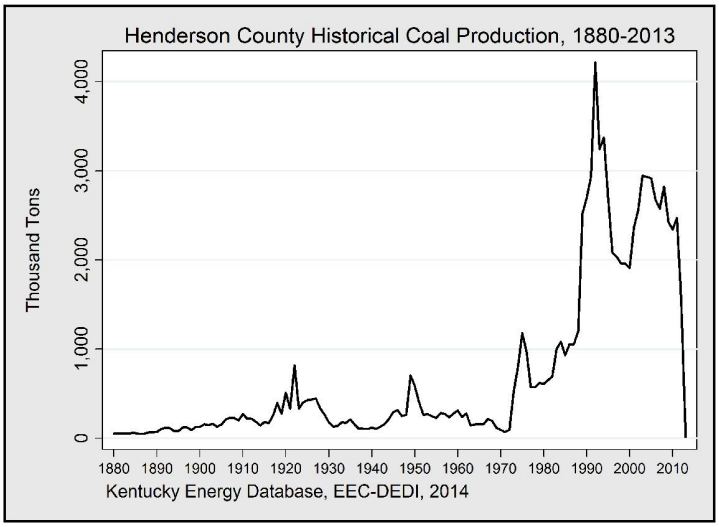
Henderson County

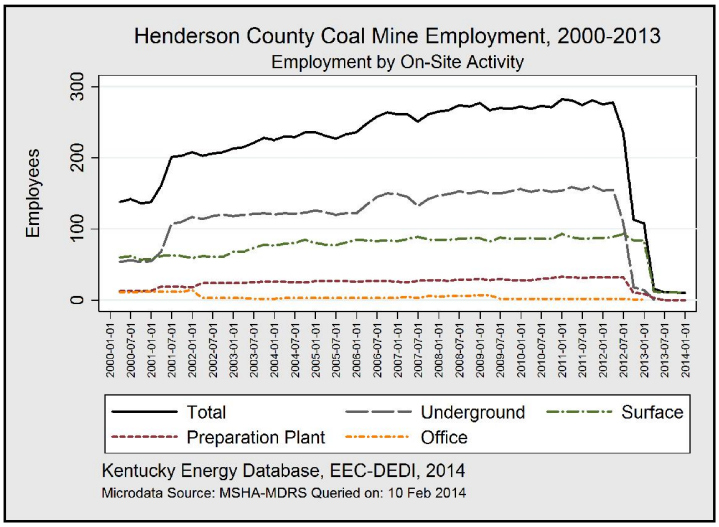




Production Method	Mines	Production	Annual Change
Total	1	13,663	-99.1%
Surface	1	13,663	-98.7%
Underground	0	0	-100%

On-Site Activity	Employment	Annual Change
Total	10	-90.7%
Surface	10	-88.1%



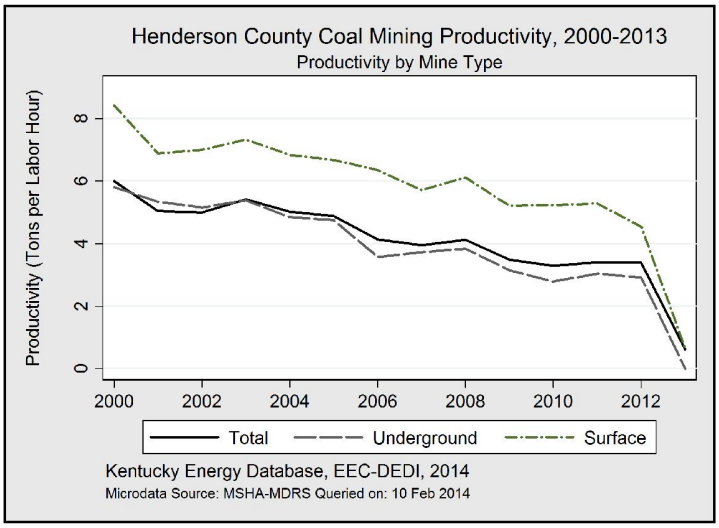


Henderson County produced 14 thousand tons of coal in 2013, which was less than one percent of total production across the Commonwealth and a decrease of over 99 percent from 2012. Most of Henderson county coal production had been from underground mines until 1988, when both types of mining were used.

Coal mines in Henderson County employed an average of 10 persons full-time in 2013. Total mining employment in the county decreased by 98 jobs, or by 91 percent compared with 2012. 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

State and Power Plant	Deliveries (Tons)	Percentage
Total	**19,505**	**100.0%**
Kentucky	**19,505**	**100.0%**
Elmer Smith	19,505	100.0%



Henderson County Coal Market

During the year a total of 19.5 thousand tons of coal were shipped from Henderson County, a decrease of 91 percent from 2012. Elmer Smith Station, operated by Owensboro Municipal Utilities, was the only known recipient of Henderson County coal in 2013.

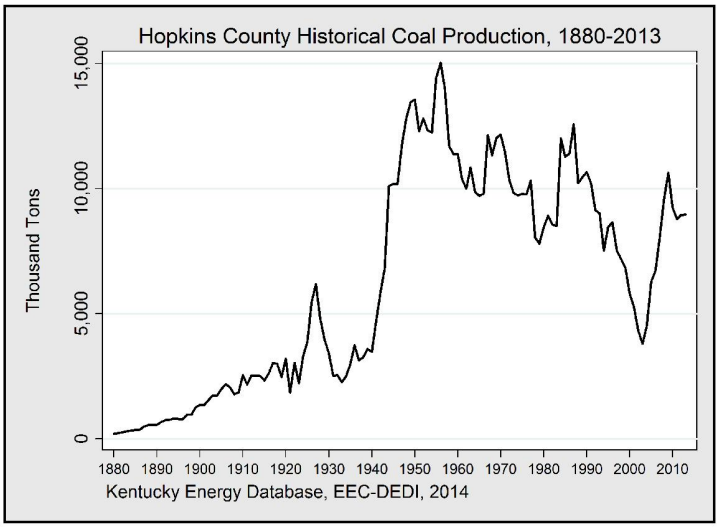
Chemical Composition and Cost

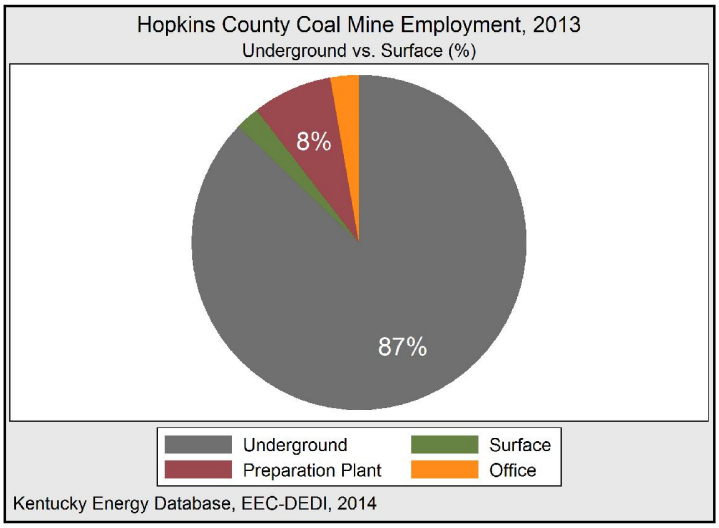
On average, coal mined in Henderson County had a median sulfur content of 3.04 percent, a median ash content of 9.85 percent, and a median heat content of 22.04 MMBtu per ton. The average delivered price per ton for Henderson County coal in 2013 was $40.10, and ranged from $38.24 to $41.95 per ton. The price per MMBtu of coal from Henderson County had a median of $1.92 per MMBtu.

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

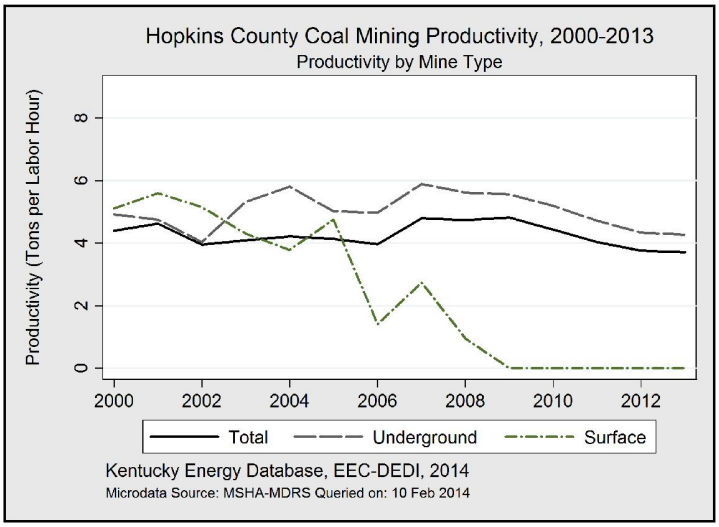


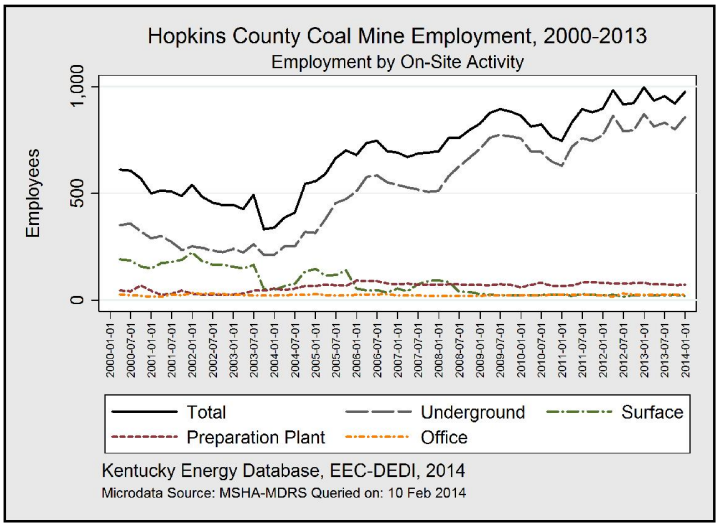


Production Method	Mines	Production	Annual Change
Total	3	8,963,894	+0.2%
Underground	3	8,963,894	+0.2%

During the past 14 years, underground mines have been the largest source of coal mining employment and production in Hopkins County.

On-Site Activity	Employment	Annual Change
Total	975	-2.2%
Underground	857	-1.6%
Preparation Plant	72	-11.1%
Office	26	+8.3%
Surface	20	-4.8%

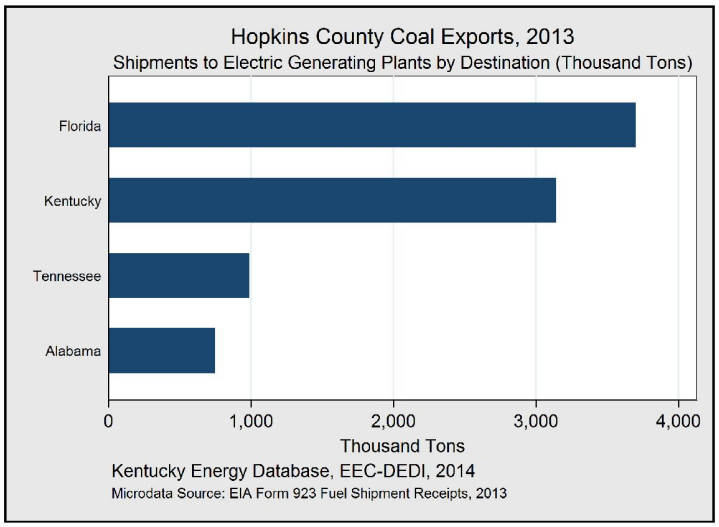




The three active underground coal mines and one preparation plant in Hopkins County produced nearly 9 million tons of coal in 2013, which was 11.1 percent of total production across the Commonwealth, or third most of any county that year. Though the county has had no registered surface mining production since 2008, both production methods have been widespread throughout its history. Hopkins County was the Commonwealth's leading coal producing county from 1881 to 1907, in 1912, and again from 1948 to 1960.

975 people were employed full-time in coal mines and 1 preparation plant of Hopkins County in the fourth quarter of 2013. Compared to the year prior, direct coal mine employment decreased by more than two percent in Hopkins County, a net loss of 22 full-time mining jobs. In 2013, Hopkins County had the fourth-highest direct coal employment of any county in the Commonwealth.

Hopkins County



State and Power Plant	Deliveries (Tons)	Percentage
Total	**8,581,482**	**100%**
Florida	**3,700,675**	**43.1%**
Big Bend	2,166,844	25.3%
Seminole	1,533,831	17.9%
Kentucky	**3,140,873**	**36.6%**
Mill Creek	1,297,974	15.1%
Paradise	775,581	9.0%
HMP&L Station Two	722,480	8.4%
R D Green	281,113	3.3%
Cane Run	63,725	0.7%
Tennessee	**989,880**	**11.5%**
Kingston	591,357	6.9%
Cumberland	397,164	4.6%
Johnsonville	1,359	<0.1%
Alabama	**750,054**	**8.8%**
Widows Creek	732,030	8.6%
Colbert	18,024	0.2%

Hopkins County Coal Market

Coal shipments from Hopkins County increased by 17 percent from 2012 to 8.6 million tons in 2013. Florida remained the single-largest market for Hopkins County steam coal in 2013, followed by Kentucky. The Big Bend Power Plant, located outside of Tampa, Florida, itself received approximately 25 percent of the 8.6 million tons shipped from Hopkins County during 2013, which was approximately 92 percent of the coal the plant received that year. Coal delivered from Hopkins County comprised over half of all coal deliveries to Seminole Generating Station in 2013. Combined, Florida and Kentucky received 80 percent of coal shipments from the county during the year. Coal from Hopkins County was also delivered to power plants in Tennessee and Alabama in 2013.

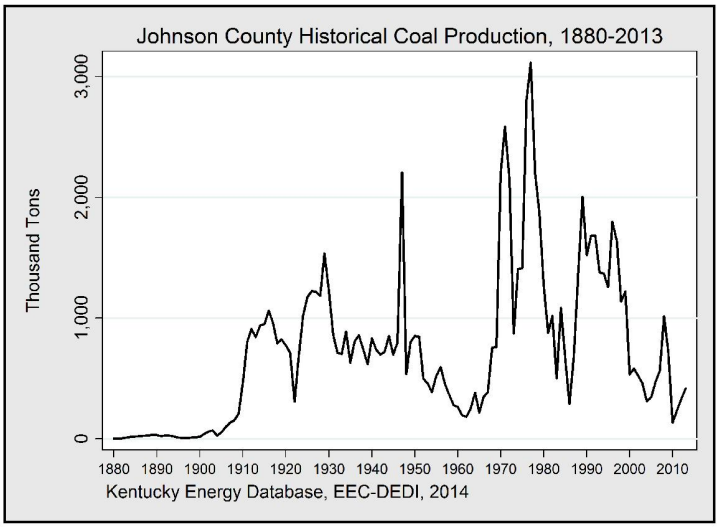
Hopkins County Coal Mining Productivity

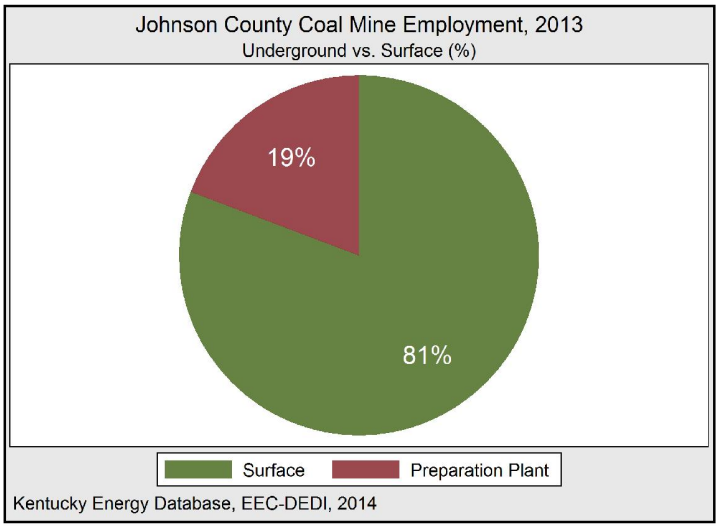
At 3.71 tons per labor hour, Hopkins County in western Kentucky had the fourth highest average mine productivity in the Commonwealth in 2013. Over the past eleven years, productivity in the county has remained stable, and is down only 9.5 percent from 2012 and 15 percent compared with the year 2000.

Chemical Composition and Cost

On average, coal mined in Hopkins County had a median sulfur content of 3.14 percent, a median ash content of 9.30 percent, and a median heat content of 23.9 MMBtu per ton. The average delivered price per ton for Hopkins County coal in 2013 was $61.55, and ranged from $52.06 to $90.86 per ton. The price per MMBtu of coal from Hopkins County had a median of $2.55 per MMBtu and ranged from $2.33 to $3.67 per MMBtu.

Johnson County

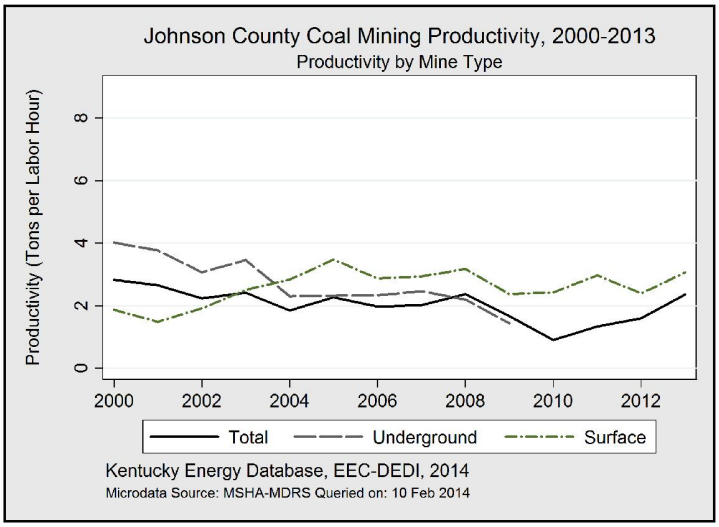


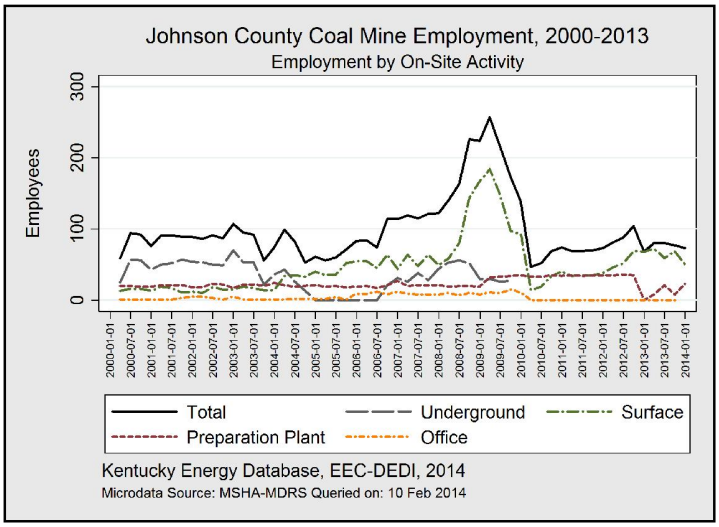


Production Method	Mines	Production	Annual Change
Total	6	331,146	+1.1%
Surface	6	331,146	+1.1%

On-Site Activity	Employment	Annual Change
Total	75	+10.3%
Surface	52	-23.5%
Preparation Plant	23	-

Johnson County had 331 thousand tons of coal mined in 2013.

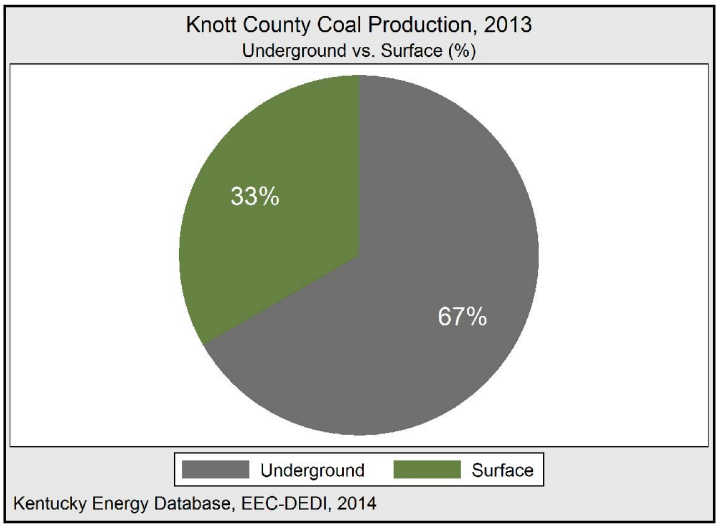


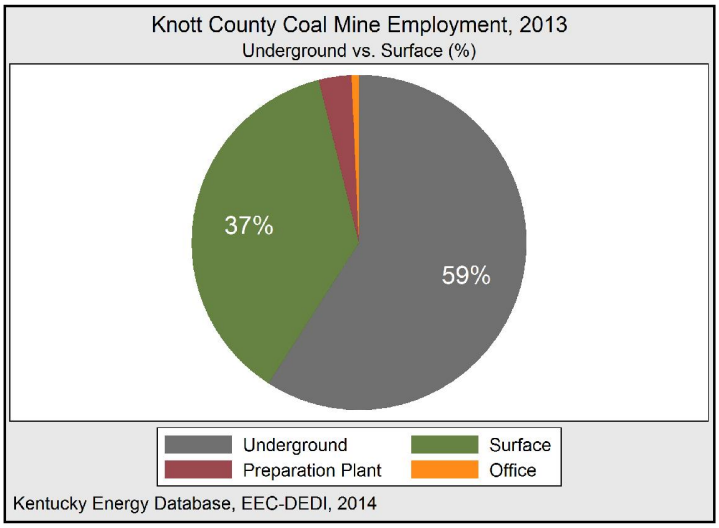


In 2013, coal production from underground mines in Johnson County once again became the primary mining form, as underground operations mined most of the county's coal from 1987 to 2004 and surface operations produced the vast majority of Johnson County coal from 1968 to 1987. Johnson County's coal industry employed 75 people full-time in 2013—a 10 percent increase from 2012 as a result of an increase in preparation plant employment. Surface mine sites were the largest source of mining employment in the county during 2013.

Coal mined in Johnson County had a median sulfur content of 0.94 percent, a median ash content of 9.86 percent, and a median heat content of 24.13 MMBtu per ton. The mine-mouth cost of extracting coal in the county in 2013 had a median cost of $61.93, processing costs of $2.73, and transportation costs of $12.17. These costs resulted in a median delivered price per ton of $76.83—ranging from $75.52 to $79.09 per ton. The price per MMBtu of coal from Johnson County had a median of $3.21 per MMBtu and ranged from $3.19 to $3.29 per MMBtu.

Knott County

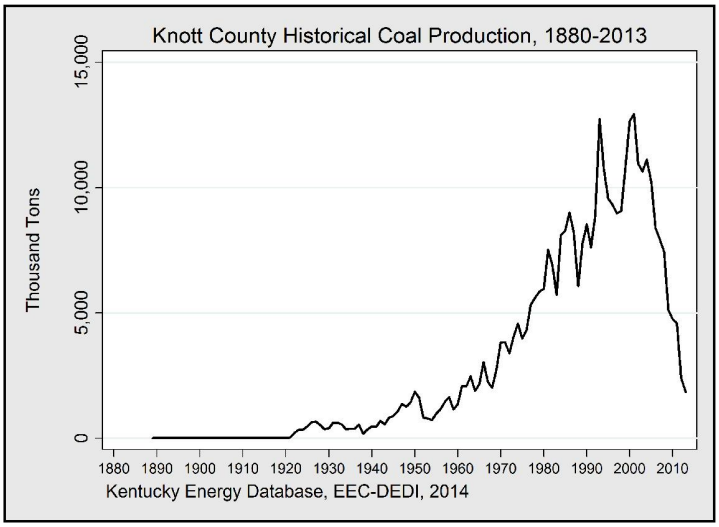


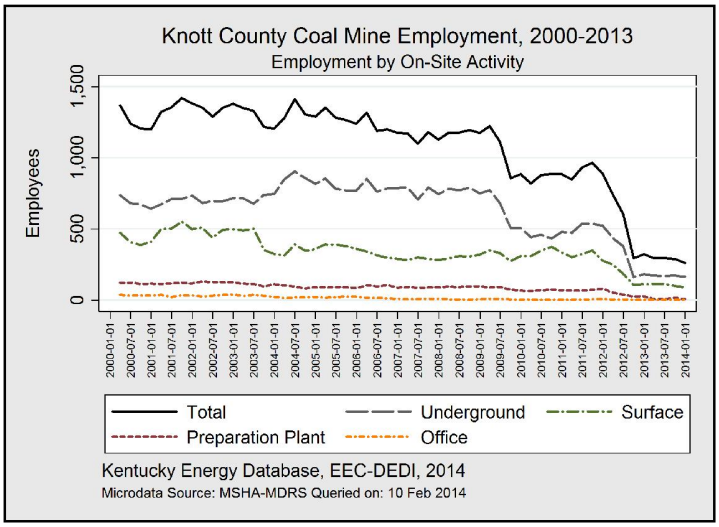


Production Method	Mines	Production	Annual Change
Total	9	1,902,183	-28.0%
Underground	3	1,229,274	-15.4%
Surface	6	672,909	-43.4%

On-Site Activity	Employment	Annual Change
Total	270	-18.2%
Underground	164	-9.4%
Surface	98	-18.3%
Preparation Plant	6	-77.8%
Office	2	+0%

Knott County reached its peak production in 2001, when mines in the county produced nearly 13 million tons, third-highest of all counties at the time.

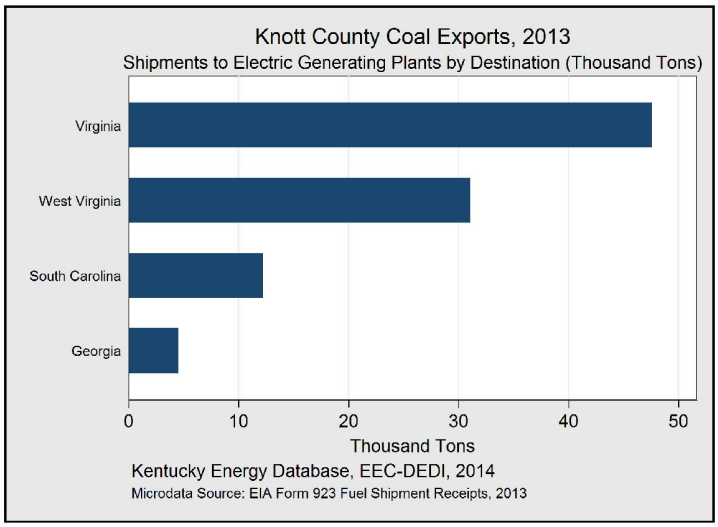


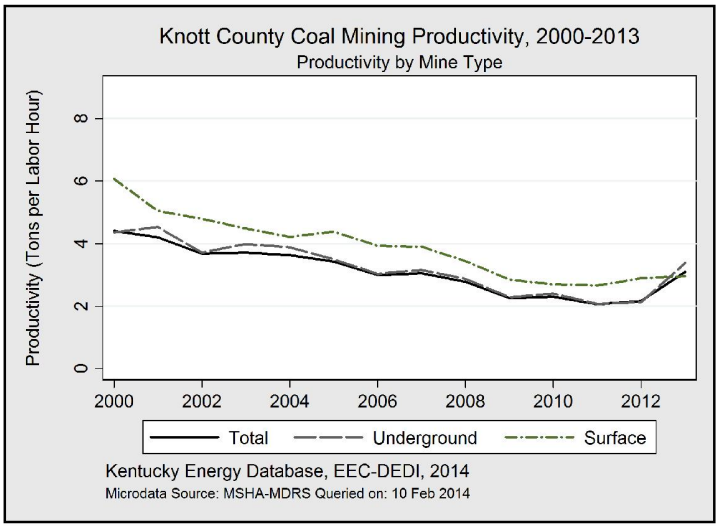


Coal mines and preparation plants in Knott County produced more than 1.9 million tons of coal in 2013—2.4 percent of total production in Kentucky. Coal mining has been evenly spread between surface and underground mining in the county, with continual mining from both underground and surface operations occurring for over 65 years.

Knott County employed an average of 270 persons full-time in 2013. Compared with 2012, direct coal mine employment in Knott County decreased by 18 percent, a loss of 60 mining jobs. Coal employment decreased by 63 percent in 2012, or by 566 jobs relative to 2011. Since at least 2000, underground mines have provided the largest concentration of mining employment in Knott County.

Knott County





State and Power Plant	Deliveries (Tons)	Percentage
Total	**95,391**	**100%**
Virginia	**47,581**	**49.9%**
Chesterfield	35,754	37.5%
Yorktown	11,827	12.4%
West Virginia	**31,057**	**32.6%**
John E Amos	31,057	32.6%
South Carolina	**12,224**	**12.8%**
Cope	12,224	12.8%
Georgia	**4,529**	**4.7%**
International Paper Augusta Mill	4,529	4.7%

Knott County Coal Market

Power plants in Virginia received the largest share of Knott County steam coal in 2013. Of those stations, Chesterfield Power Station, in Virginia, received almost 38 percent of all tons shipped during reporting year 2013. West Virginia, South Carolina, and Georgia were the remaining markets for Knott County coal. In total, 95 thousand tons of steam coal were shipped to four different states from Knott County during 2013—a decrease of 89 percent from 2012 when Knott County coal shipped to eight different states.

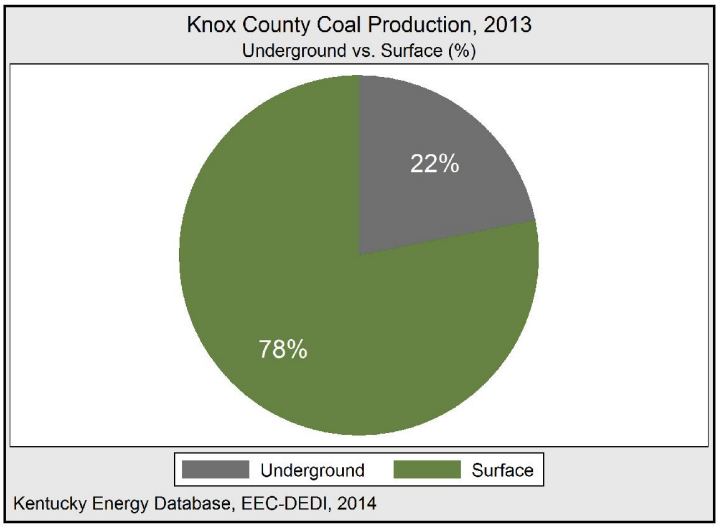
Knott County Coal Mining Productivity

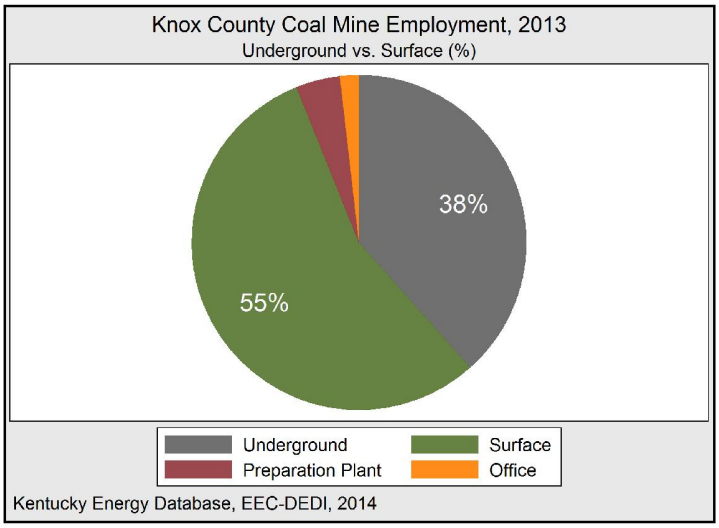
Knott County's productivity in 2013 was 3.2 tons per labor hour, an increase of 40 percent from 2012, but a decrease of more than 28 percent from the year 2000. Underground mines in Knott County gained appreciably in productivity and were more productive than underground mines, yielding 3.38 tons per labor hour, from 2.13 tons per labor hours the year before. Surface mines yielded 3.13 tons per labor hour compared to 3.43 tons per labor hour in 2012.

Chemical Composition and Cost

Coal mined in Knott County had a median sulfur content of 1.1 percent, a median ash content of 10 percent, and a median heat content of 25 MMBtu per ton. The mine-mouth cost of extracting coal in the county in 2013 had a median cost of $58.75, processing costs of $5.84, and transportation costs of $16.30. These costs resulted in a median delivered price per ton of $80.89—ranging from $72.84 to $85.27 per ton. The price per MMBtu of coal from Knott County had a median of $3.28 per MMBtu and ranged from $2.93 to $3.44 per MMBtu.

Knox County

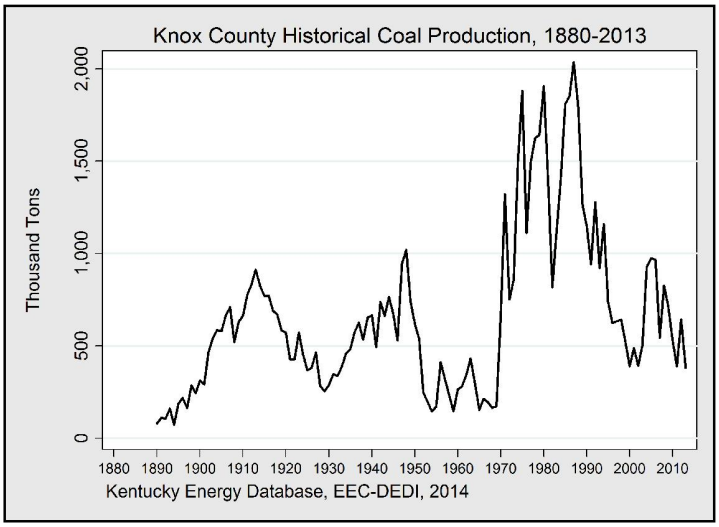


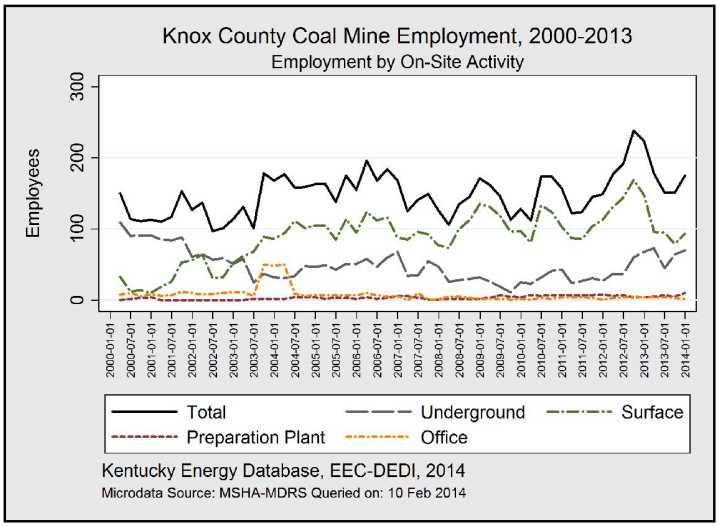


Production Method	Mines	Production	Annual Change
Total	11	380,039	-41%
Surface	8	296,987	-48.8%
Underground	3	83,052	+29.8%

On-Site Activity	Employment	Annual Change
Total	175	-21.9%
Surface	94	-36.5%
Underground	69	+1.5%
Preparation Plant	10	+150%
Office	2	-50.0%

The EKPC Cooper Power Plant located in southeastern Kentucky was the sole consumer of coal mined in Knox County during 2013.

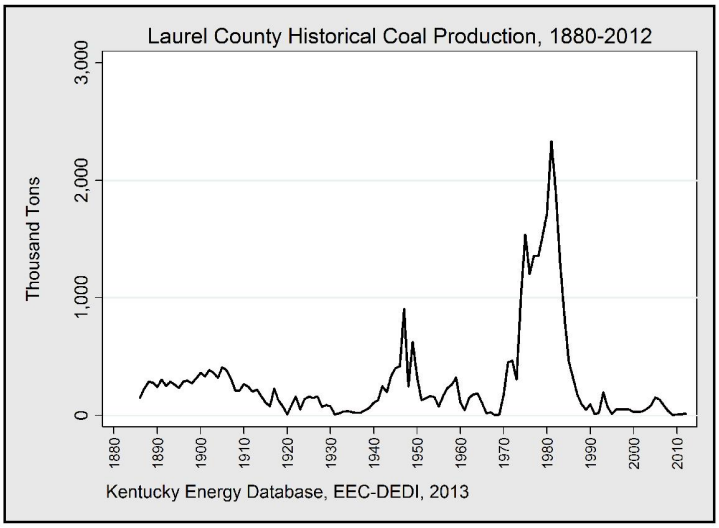




Coal mines and 1 preparation plant in Knox County produced a total of 380 thousand tons in 2013, or 0.5 percent of the Commonwealth's total production. Coal production in Knox County decreased by 41 percent in 2013. In 1992, the county's 30 underground mines, 4 surface mines, and 3 preparation plants produced more than 1.2 million tons. Surface mining techniques have become the predominant extraction method since 2003.

Knox County coal mines employed 175 people in 2013, a decrease of 22 percent from 2012, but above the 10-year average. Approximately 54 percent of mining employment in Knox County was at surface mine sites in 2013. Coal employment in Knox County has remained relatively stable since 1990, when there were 197 direct coal jobs in the county, an aggregate decrease of 11 percent in over 20 years.

Laurel County

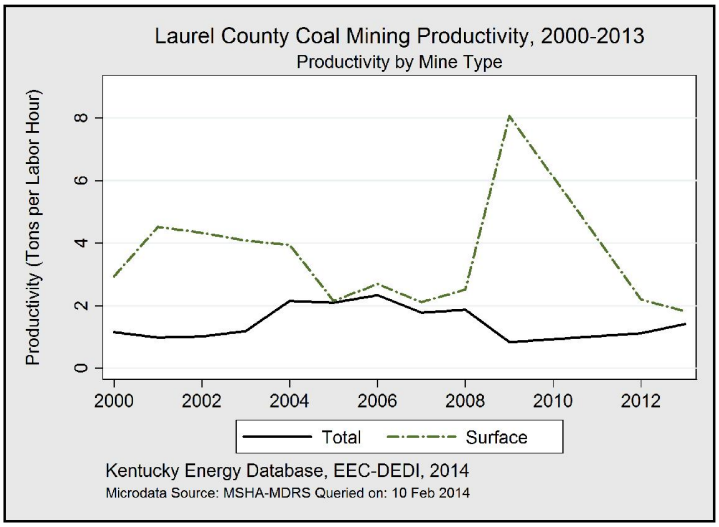


Production Method	Mines	Production	Annual Change
Total	2	24,196	+91.6%
Surface	2	24,196	+91.6%

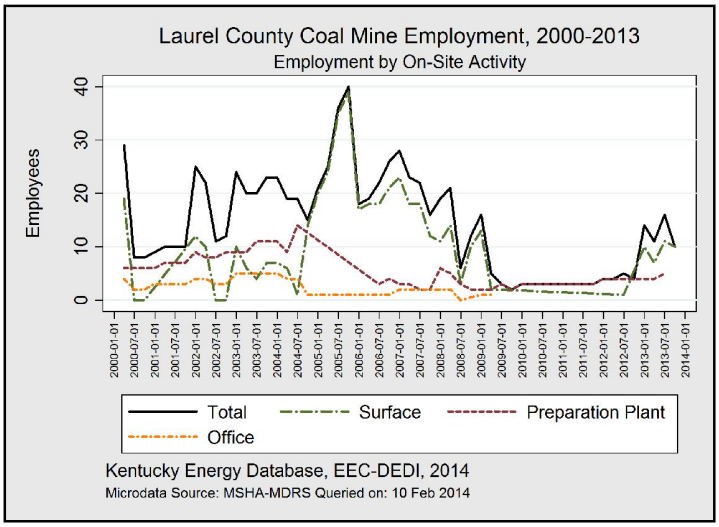
Laurel County in eastern Kentucky did not register coal production in 2010 and 2011, but had mining operations in 2012 and 2013.

On-Site Activity	Employment	Annual Change
Total	10	-
Surface	10	-
Preparation Plant	0	-

The two mines in Laurel County employed an average of ten persons on site.



Two small surface mines in Laurel County registered 24 thousand tons of coal production in 2013. This total represented less than one percent of Kentucky coal production during the year. Coal production peaked briefly in Laurel County at nearly 2.5 million tons in 1981. Since 1990, coal production in Laurel County has been minimal year-to-year. No mining operations were reported in the fourth quarter of 2013.



In January 2013, there were 16 people employed at coal mines in Laurel County. However, as of December, there were no remaining employees. Direct coal mine employment in Laurel County during 2013 averaged 11 full-time workers.

Laurel County

Laurel County Coal Market

The John E. Amos Power Plant, located near Winfield, West Virginia, was the sole consumer of Laurel County steam coal in 2013. In 2012, steam coal from Laurel County was delivered to three plants in all, but only constituted 165 thousand tons. There were no recorded deliveries of coal from the county in 2009 through 2011.

Laurel County Coal Mining Productivity

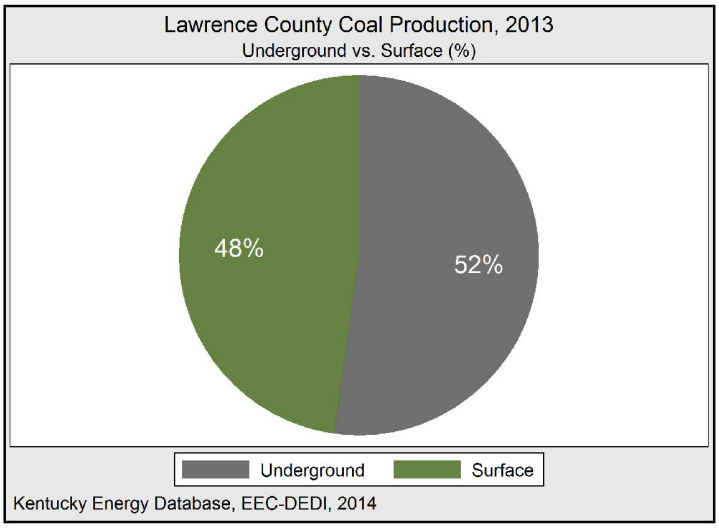
Laurel County's productivity in 2013 was 1.41 tons per labor hour, an increase of 27 percent from 2012, and an increase of more than 23 percent from the year 2000. Surface mines yielded 1.82 tons per labor hour compared to 2.2 tons per labor hour in 2012. As a result, increases in productivity during 2013 are more a reflection of decreased employment in the preparation plants located in Laurel County than changes in mining productivity.

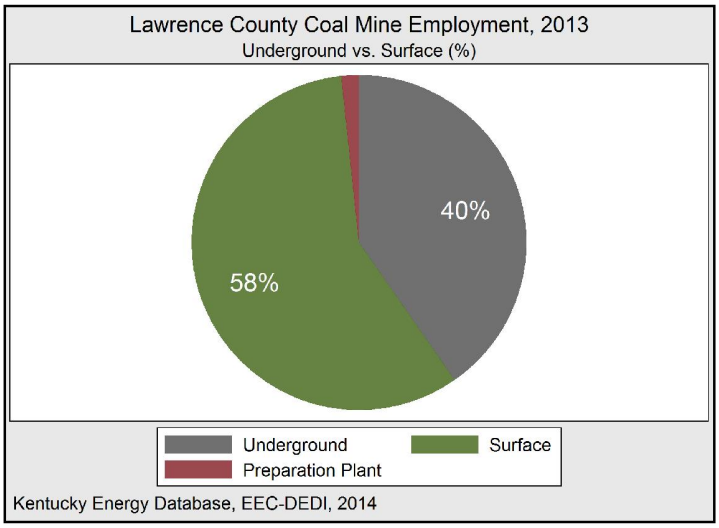
Chemical Composition and Cost

On average, coal mined in Laurel County had a median sulfur content of 1.89 percent, a median ash content of 11.04 percent, and a median heat content of 22.62 MMBtu per ton. The average delivered price per ton for Laurel County coal in 2013 was $89.76. The price per MMBtu of coal from Laurel County had a median of $3.71.

State and Power Plant	Deliveries (Tons)	Percentage
Total	**116**	**100.0%**
West Virginia	**116**	**100.0%**
John E Amos	116	100.0%

Lawrence County

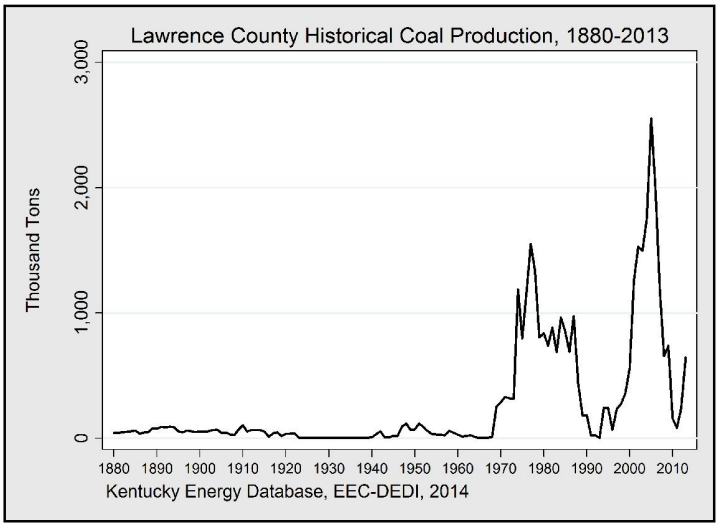


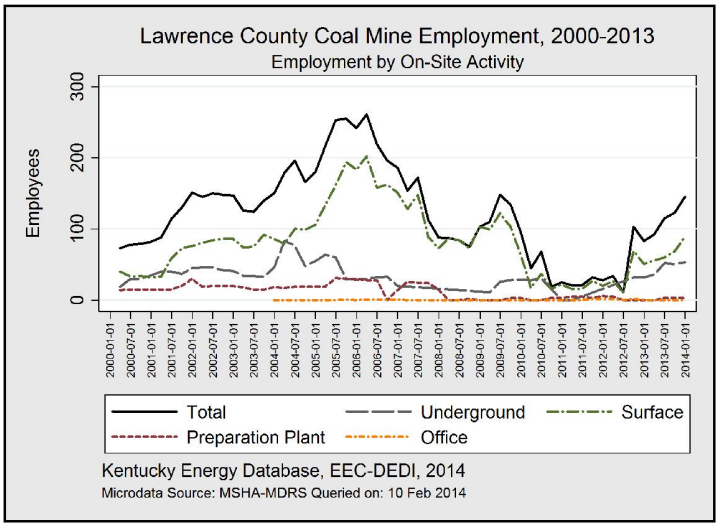


Production Method	Mines	Production	Annual Change
Total	8	643,970	+170.6%
Underground	1	336,061	+375.9%
Surface	7	307,909	+84.0%

On-Site Activity	Employment	Annual Change
Total	145	+74.7%
Surface	89	+74.5%
Underground	53	+65.6%
Preparation Plant	3	-

Coal production in Lawrence County reached its highest-recorded level in 2004 at 1.8 million tons, or 14 highest in the state for that year.

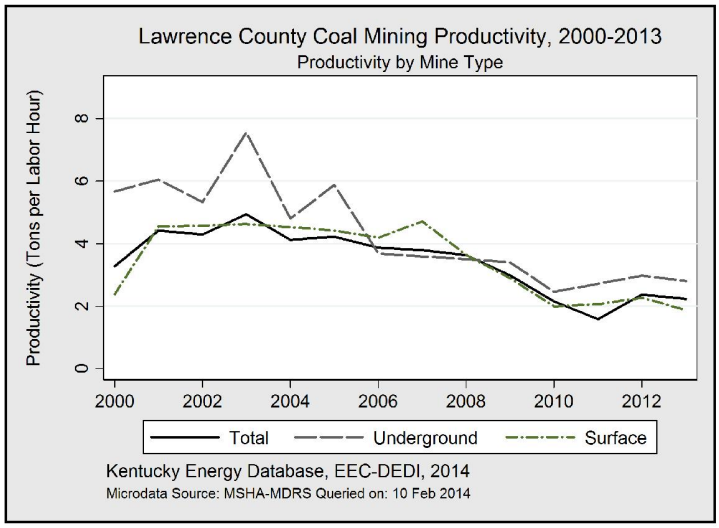




In 2013, a total of 643 thousand tons of coal was produced in Lawrence County produced. Coal production in Lawrence County increased by 171 percent compared with 2012, and represented 0.8 percent of Kentucky coal production in 2013. Surface mining operations were 58 percent of coal production in Lawrence County during the year. Coal mining in Lawrence County has historically been through surface operations, though both underground and surface mining have grown in recent years.

Coal mine employment in Lawrence County increased from 83 full-time workers in 2012 to 145 full-time workers in 2013. On average, surface mines within Lawrence County provided the largest source of mining employment, followed by underground operations. All of the steam coal shipped from Lawrence County in 2013 was delivered to the Kenneth C. Coleman plant in Hancock County, Kentucky.

Lawrence County



Lawrence County Coal Market

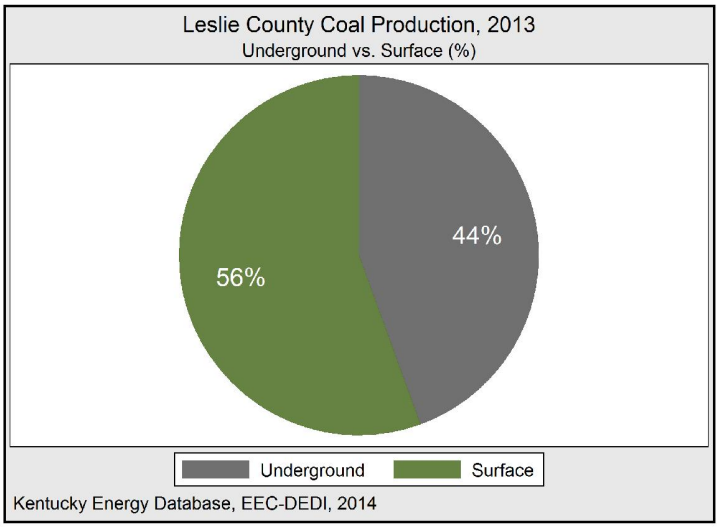
Kenneth C. Coleman Station in Hawesville, Kentucky was the only recipient of coal shipped from Lawrence County in 2013. 22 thousand tons of Lawrence County coal was shipped to Crystal River Energy Complex in 2012.

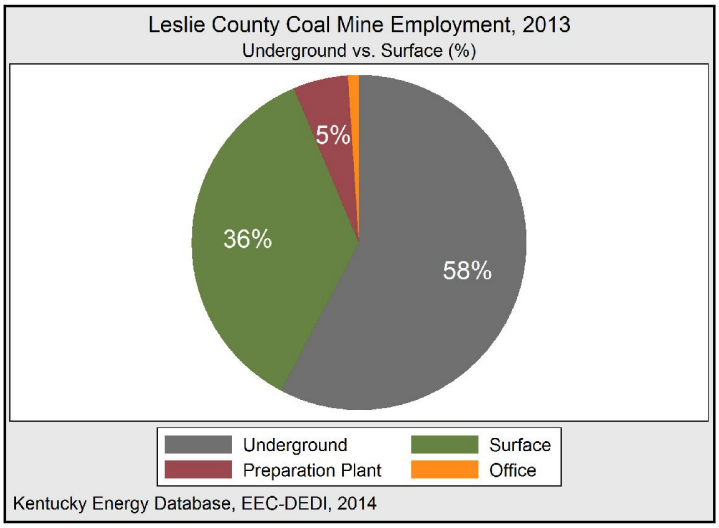
Lawrence County Coal Mining Productivity

While average productivity at underground mines in Lawrence County was 2.23 tons per hour in 2013, productivity at surface mining operations was 1.87 tons per labor hour, and productivity at underground mines was 2.8 tons per hour. This contrasts significantly from 2000 to 2005, when underground mining yielded on average 5.87 tons per labor hour. Surface mining productivity has been more consistent but usually less productive than underground mining in the county.

State and Power Plant	Deliveries (Tons)	Percentage
Total	**1,775**	**100.0%**
Kentucky	**1,775**	**100.0%**
Kenneth C Coleman	1,775	100.0%

Leslie County

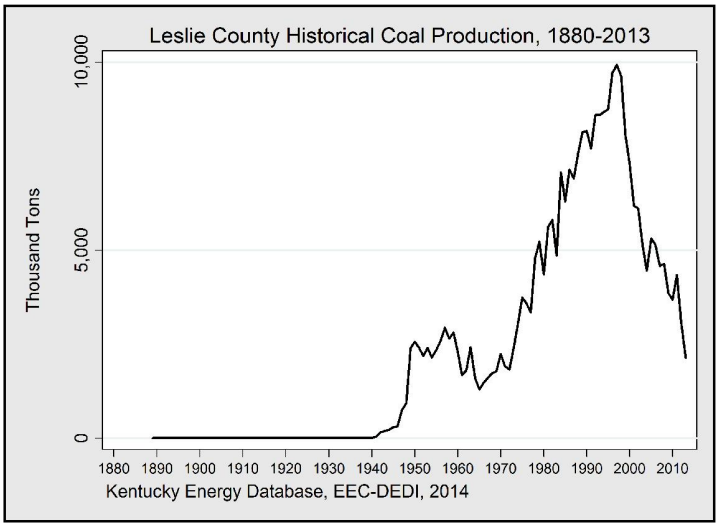


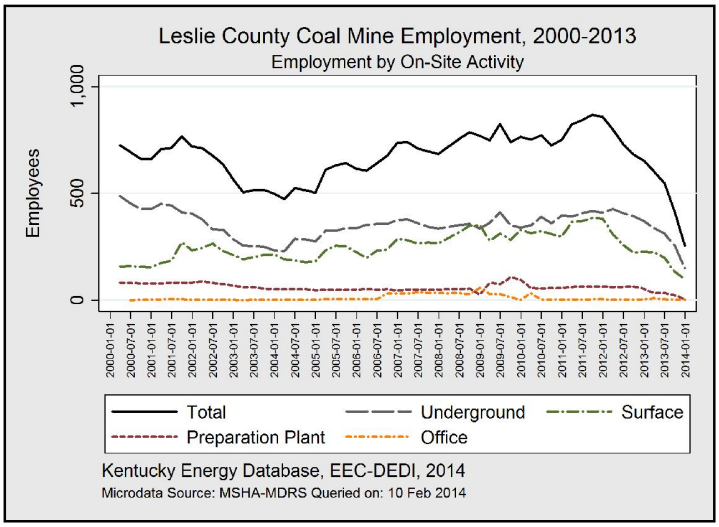


Production Method	Mines	Production	Annual Change
Total	11	2,136,704	-30.8%
Surface	8	1,187,054	-31.8%
Underground	3	949,650	-29.5%

On-Site Activity	Employment	Annual Change
Total	254	-61.1%
Underground	149	-59.7%
Surface	98	-56.8%
Preparation Plant	4	-92.5%
Office	3	+0%

Underground mining began to decline in the county in 1996, though an increase in surface production the next year meant peak production was reached in 1997 with 9.9 million tons.

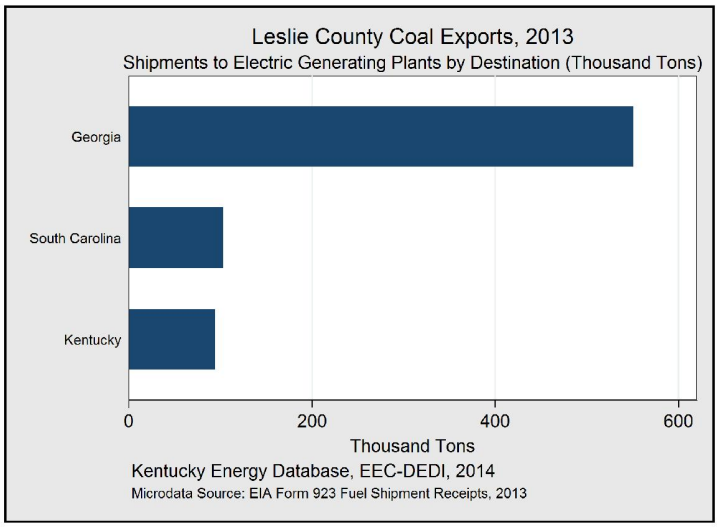


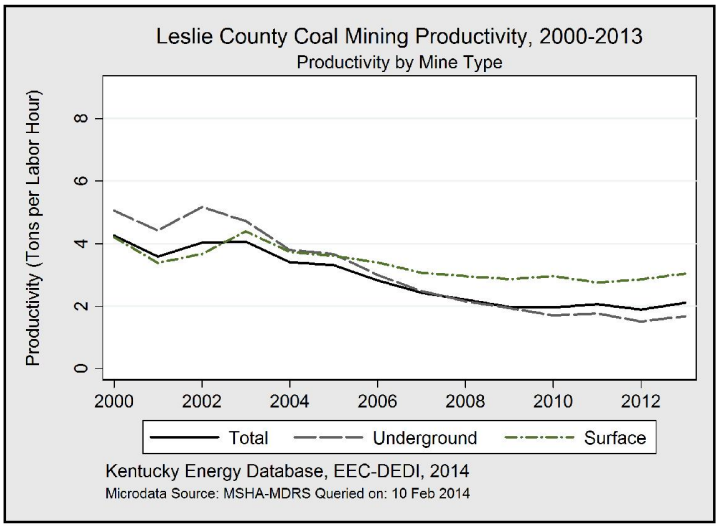


During 2013, Leslie County produced more than 2.1 million tons of coal. Production in the county was led slightly by surface operations, which represented 56 percent of coal mined in 2013. Most of the county's historical production was from underground operations. Overall, Leslie County represented 2.6 percent of statewide coal production in 2013, though production decreased by 31 percent relative to 2012.

Despite increasing productivity in recent years, total coal employment fell by 399 jobs since 2012, the largest percentage loss of coal employment in any county last year. In 2013, coal mining companies in Leslie County maintained around 254 full-time employees with the majority of workers stationed at underground operations.

Leslie County





State and Power Plant	Deliveries (Tons)	Percentage
Total	**747,916**	**100%**
Georgia	**550,174**	**73.6%**
Bowen	486,125	65.0%
Harllee Branch	64,049	8.6%
South Carolina	**103,323**	**13.8%**
Winyah	103,323	13.8%
Kentucky	**94,419**	**12.6%**
Cooper	94,419	12.6%

Leslie County Coal Market

Plant Bowen of Bartow County, Georgia, was the recipient of 65 percent of the coal shipped from Leslie County during 2013. Overall, 748 thousand tons of coal mined in Leslie County was delivered to four power plants in three different states in 2013, down from 1.5 million tons shipped to seven power plants in four states during 2012.

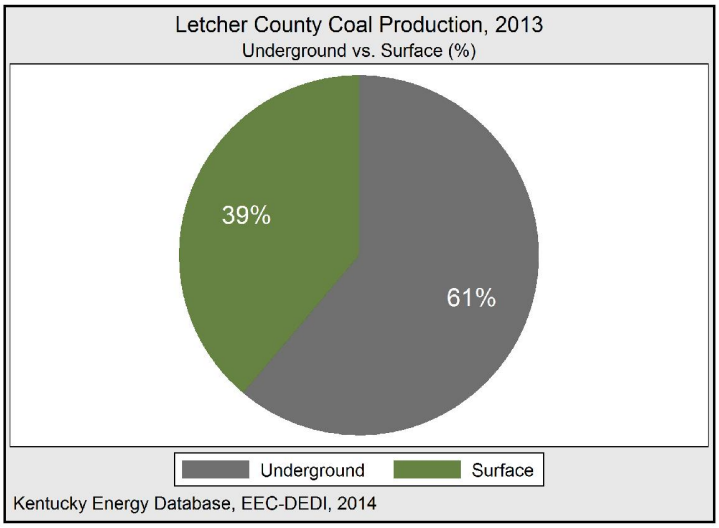
Leslie County Coal Mining Productivity

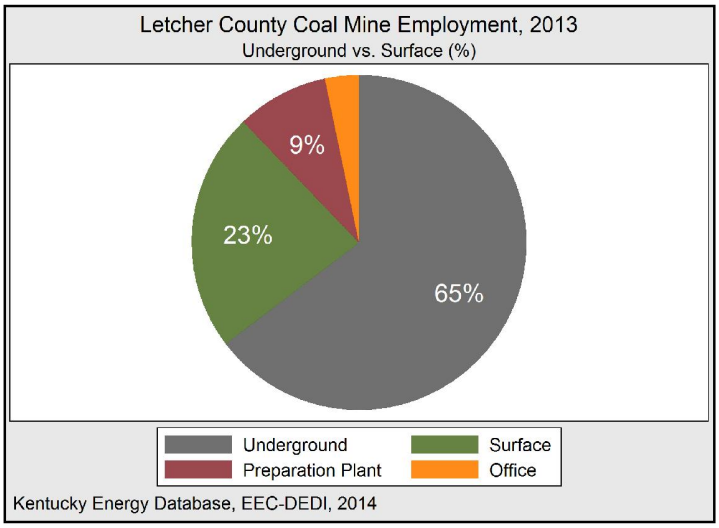
Average mine productivity in Leslie County was 2.11 tons per labor hour in 2013. Overall, county-level productivity was boosted by surface operations, which was 56 percent of annual production, at an average of 3.04 tons per labor hour. In 2013, underground mines yielded 1.68 tons per labor hour, from 1.51 the year before. Both surface and underground mining was more productive in 2013, despite an overall downward trend in recent years.

Chemical Composition and Cost

Coal mined in Leslie County had a median sulfur content of 1.15 percent, a median ash content of 10 percent, and a median heat content of 24.77 MMBtu per ton. The mine-mouth cost of extracting coal in the county in 2013 had a median cost of $60.59, processing costs of $7.95, and transportation costs of $37.09. These costs resulted in a median delivered price per ton of $105.63—ranging from $73.22 to $114.91 per ton. The price per MMBtu of coal from Leslie County had a median of $4.18 per MMBtu and ranged from $3.15 to $4.49 per MMBtu.

Letcher County

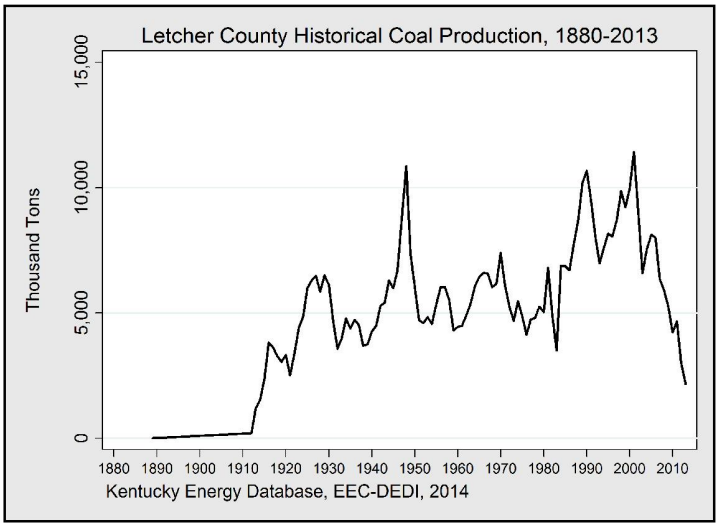


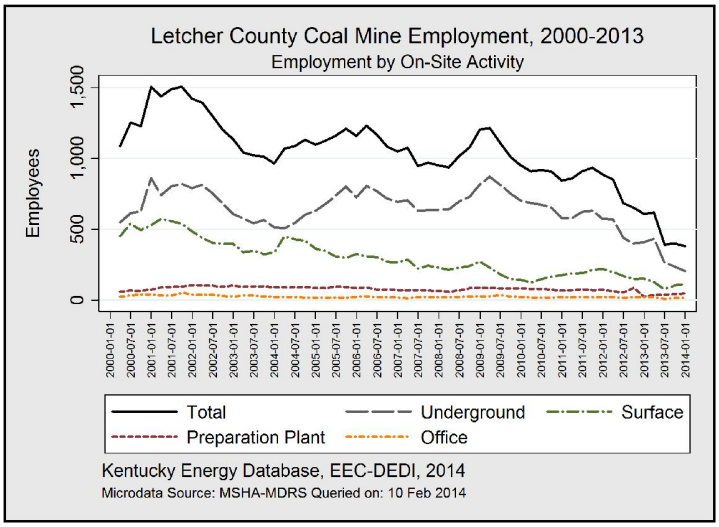


Production Method	Mines	Production	Annual Change
Total	21	2,174,989	-27.5%
Underground	8	1,334,427	-33.1%
Surface	13	840,562	-16.5%

On-Site Activity	Employment	Annual Change
Total	401	-34.8%
Underground	219	-47.0%
Surface	116	-24.1%
Preparation Plant	49	+96.0%
Office	17	-29.2%

Letcher County, in eastern Kentucky, has been a mainstay in Kentucky coal production, on average having the sixth-most direct coal employment of any county in Kentucky.

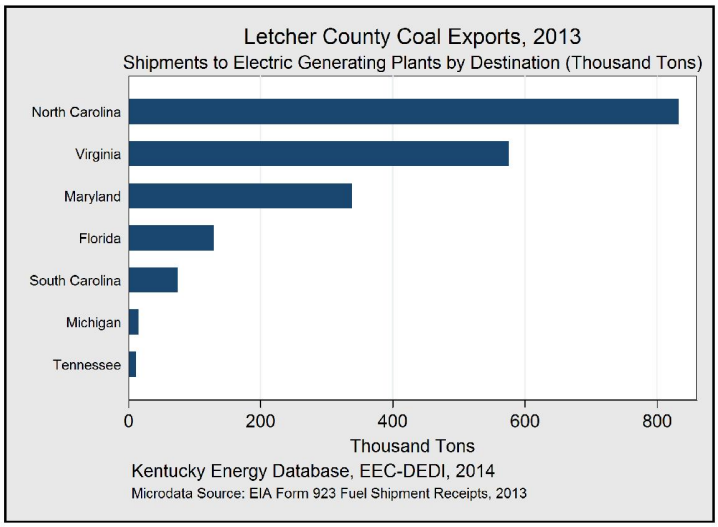


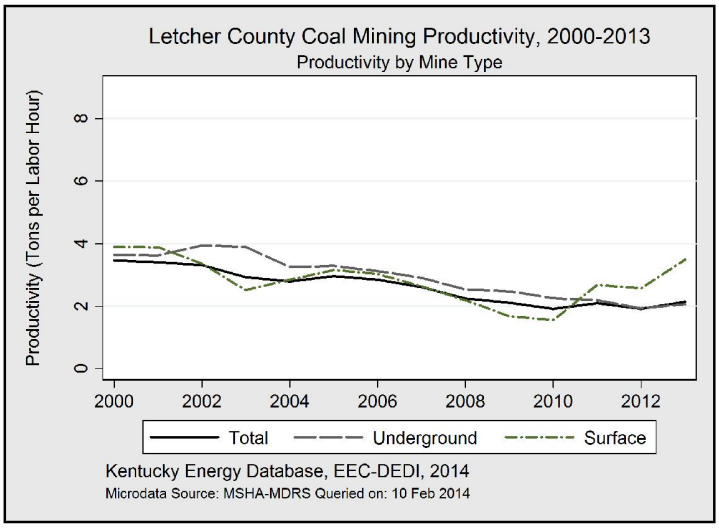


With 21 active mine sites in 2013, Letcher County produced 2.2 million tons of coal, or 2.7 percent of statewide production. County coal production and employment have both dropped significantly since 2001—by 81 and 72 percent, respectively. Underground operations accounted for 61 percent of annual production in 2013, and have been the primary means of mining in the county throughout its history.

Coal mine operations in Letcher County employed 401 people full-time during 2013, a net loss of 214 full-time miners compared to 2012. Approximately 55 percent of coal mining employment involved underground mining, followed by surface sites—29 percent of full-time jobs. In addition, 49 individuals operated preparation plants within the county, while 17 people worked in offices directly supporting mine operations.

Letcher County





State and Power Plant	Deliveries (Tons)	Percentage
Total	**1,976,489**	**100%**
North Carolina	**832,619**	**42.1%**
Marshall	545,813	27.6%
James E. Rogers	274,240	13.9%
L V Sutton Steam	12,566	0.6%
Virginia	**575,350**	**29.1%**
Covington Facility	445,537	22.5%
Yorktown	72,163	3.7%
Chesterfield	57,650	2.9%
Maryland	**338,455**	**17.1%**
Morgantown	338,343	17.1%
Chalk Point LLC	112	0.0%
Florida	**129,468**	**6.6%**
Stanton Energy Center	118,009	6.0%
Crystal River	11,459	0.6%
South Carolina	**74,911**	**3.8%**
Cope	49,334	2.5%
Wateree	12,933	0.7%
Williams	12,644	0.6%
Michigan	**14,862**	**0.8%**
Monroe	14,862	0.8%
Tennessee	**10,824**	**0.5%**
Bull Run	10,824	0.5%

Letcher County Coal Market

Nearly two million tons of coal mined in Letcher County were shipped to power plants in seven different states during 2013. North Carolina and Virginia were the two largest markets for Letcher County coal in 2013, consuming over 71 percent of coal from the county. No utility-scale power plants in Kentucky have received shipments of steam coal from Letcher County during the last five years.

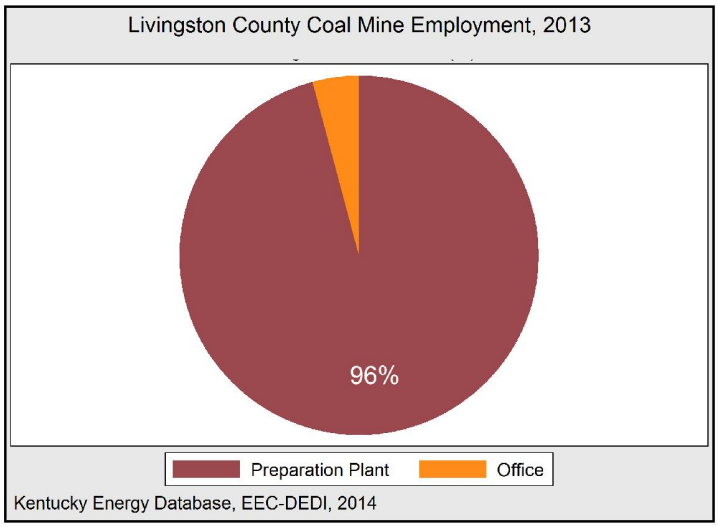
Letcher County Coal Mining Productivity

Average coal mine productivity in Letcher County was 2.13 tons per hour in 2013. While underground operations had productivity of 2.06 tons per hour and represented 61 percent of county production, surface operations were 70 percent more efficient at 3.50 tons per hour. Since 2000, Letcher County productivity has fallen by 45 percent, but productivity increased by 12 percent from 2012.

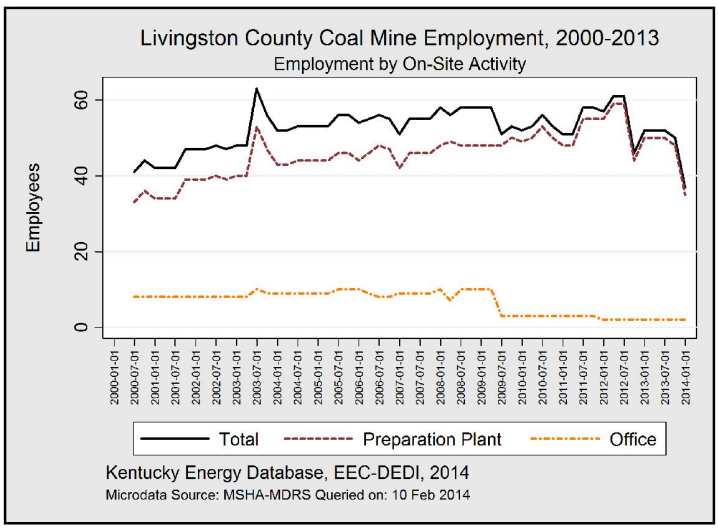
Chemical Composition and Cost

Coal mined in Letcher County had a median sulfur content of 1.54 percent, a median ash content of 8.8 percent, and a median heat content of 25.61 MMBtu per ton. The mine-mouth cost of extracting coal in the county in 2013 had a median cost of $65.46, processing costs of $3.13, and transportation costs of $28.76. These costs resulted in a median delivered price per ton of $97.35—ranging from $68.20 to $124.24 per ton. The price per MMBtu of coal from Leslie County had a median of $3.89 per MMBtu and ranged from $2.88 to $4.91 per MMBtu.

Livingston County



On-Site Activity	Employment	Annual Change
Total	37	-28.8%
Preparation Plant	35	-30%
Office	2	0%



During 2013, coal preparation and transportation facilities in Livingston County supported 37 full-time employees. 35 of these individuals operated coal preparation plants, cleaning and loading coal for delivery to electric utilities. Around two people were employed in office capacities, in direct support of preparation plants.

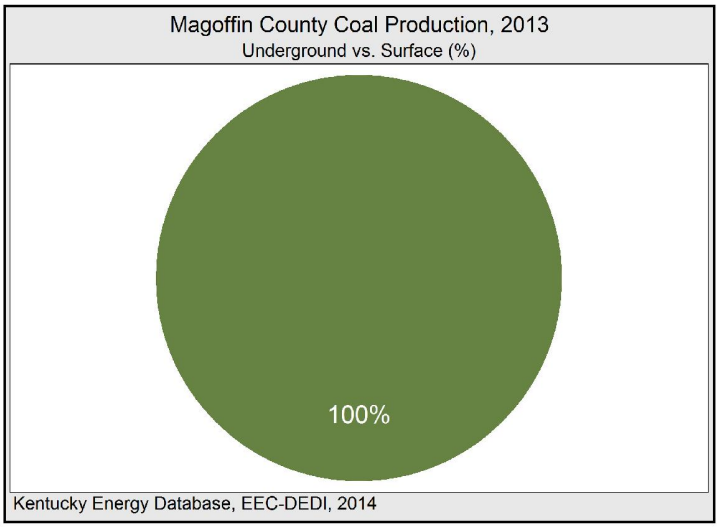
A Coal Preparation Plant

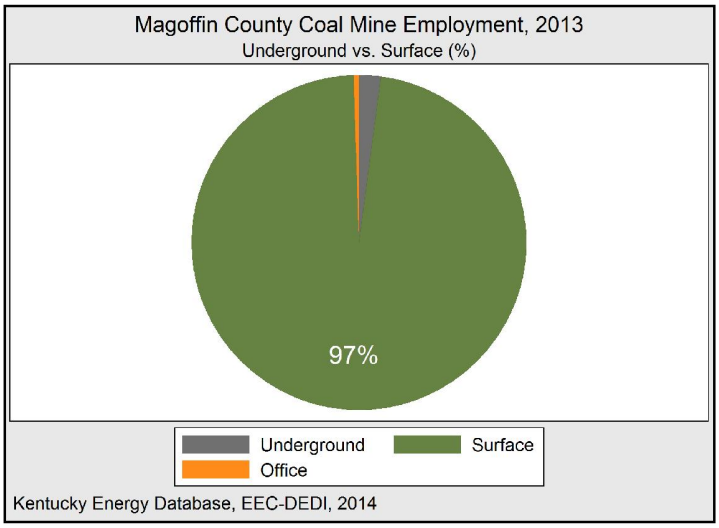
State and Power Plant		Deliveries (Tons)	Percentage
Total		**108,321**	**100.0%**
Illinois		**108,321**	**100.0%**
	Marion	108,321	100.0%

Livingston County Coal Shipments

Livingston County registered its first coal shipment in five years, with over 108 thousand tons being shipped to Marion Plant, in Illinois. Livingston County has never registered coal production, but has registered on-site coal employment for many years from its preparation plant operations.

Magoffin County

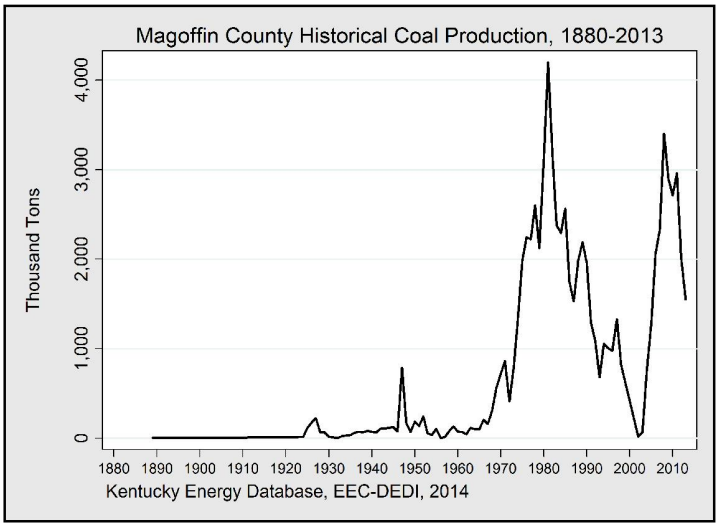


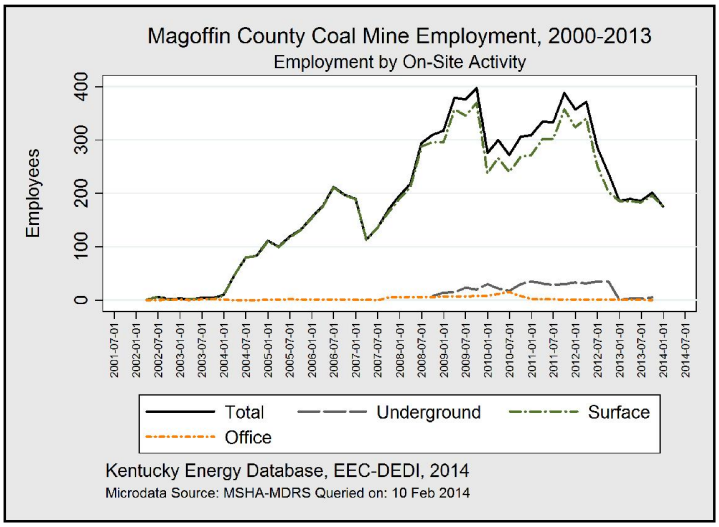


Production Method	Mines	Production	Annual Change
Total	4	1,551,124	-23.0%
Surface	4	1,551,124	-20.4%
Underground	0	0	-100%

On-Site Activity	Employment	Annual Change
Total	180	-4.9%
Surface	175	-4.4%
Underground	5	-
Office	0	-100%

Magoffin County, in eastern Kentucky, has continued to have vast fluctuations in its coal mine production and employment since the 1960s.

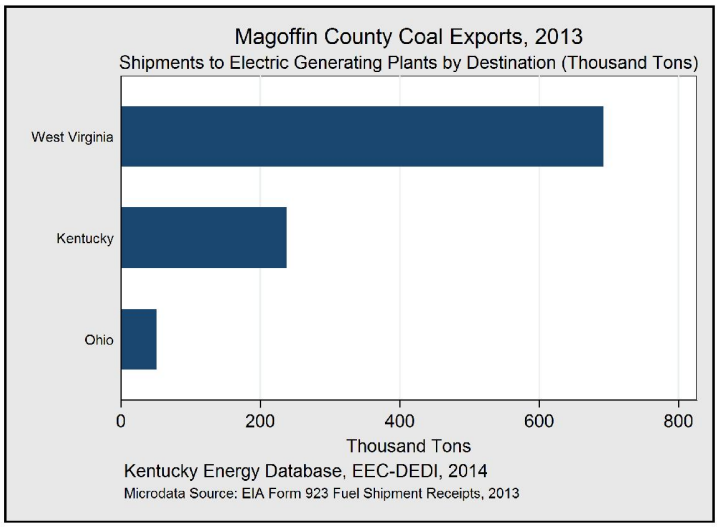


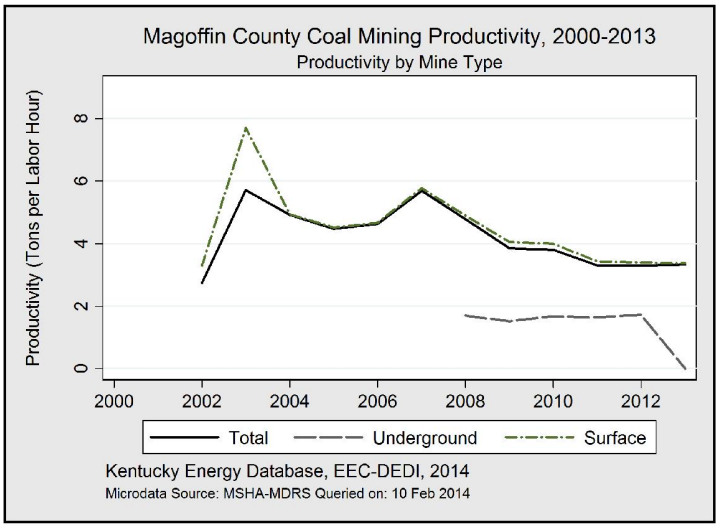


Throughout its history, coal production in Magoffin County has fluctuated substantially, with coal production decreasing from more than four million tons in 1981 to zero by 1999 and recovering to 3.4 million by 2008. Magoffin mining has been driven almost entirely by surface mine operations. In 2013, coal production in Magoffin County approximated 1.9 percent of total Kentucky coal production and was approximately 1.6 million tons, a one-year decrease of 23 percent.

Recently, many areas of Magoffin County were considered mined-out, and no longer supported productive mine operations. However, with a substantial increase in the market price of coal starting in 2002, the economics of mining in Magoffin County changed, and new surface and underground mine sites were developed. During 2013, coal mining in the county supported around 175 full-time employees—a one year decrease of six percent—with the majority of these miners stationed at surface mine operations.

Magoffin County





State and Power Plant	Deliveries (Tons)	Percentage
Total	**981,047**	**100%**
West Virginia	**692,219**	**70.6%**
Mitchell	692,219	70.6%
Kentucky	**237,823**	**24.2%**
Big Sandy	207,230	21.1%
Dale	30,593	3.1%
Ohio	**51,005**	**5.2%**
Miami Fort	51,005	5.2%

Magoffin County Coal Market

In 2013, Magoffin County registered its highest level of coal shipments during the last five years, with 981 thousand tons being shipped to three different states. The Mitchell Power Plant of Moundsville, West Virginia was the largest recipient of steam coal shipped from Magoffin County during 2013, consuming over 70 percent of coal from the county. Coal from Magoffin County was also shipped to the Big Sandy Power Plant of Kentucky—21 percent of Magoffin County coal consumption in 2013.

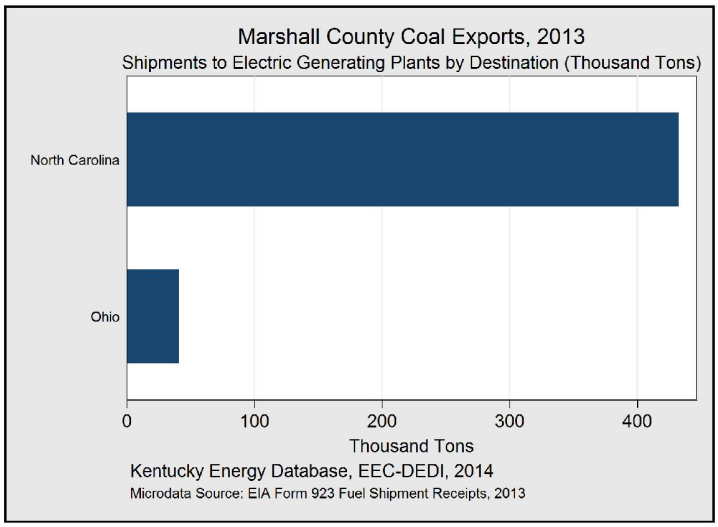
Magoffin County Coal Mining Productivity

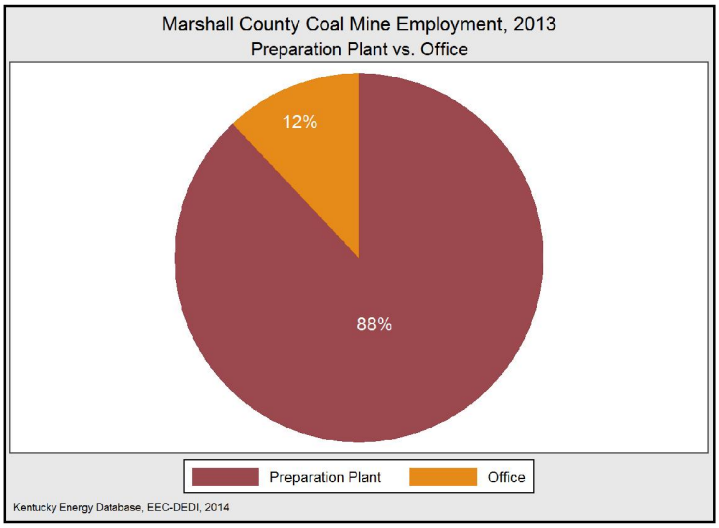
At 3.29 tons per labor hour, average coal mine productivity in Magoffin County was the sixth highest in Kentucky and the highest of any county in eastern Kentucky in 2013. This level of productivity was influenced entirely by surface mine operations, which represented all coal production in Magoffin County in 2013. Production in the county increased from 3.29 tons per labor hour in 2012

Chemical Composition and Cost

On average, coal mined in Magoffin County had a median sulfur content of 0.96 percent, a median ash content of 10.46 percent, and a median heat content of 24.05 MMBtu per ton. The average delivered price per ton for Magoffin County coal in 2013 was $76.04, and ranged from $44.76 to $79.77 per ton. The price per MMBtu of coal from Magoffin County had a median of $3.16 per MMBtu and ranged from $1.94 to $3.26 per MMBtu.

Marshall County





State and Power Plant	Deliveries (Tons)	Percentage
Total	**473,247**	**100%**
North Carolina	**432,496**	**91.4%**
James E. Rogers Energy Complex	432,496	91.4%
Ohio	**40,751**	**8.6%**
J M Stuart	40,751	8.6%

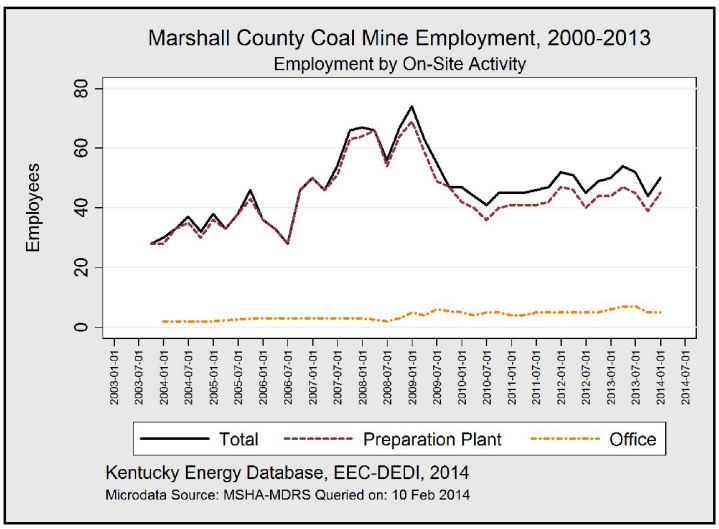
On-Site Activity	Employment	Annual Change
Total	50	+0%
Preparation Plant	45	+2.3%
Office	5	-16.7%

<u>Marshall County Coal Shipments</u>

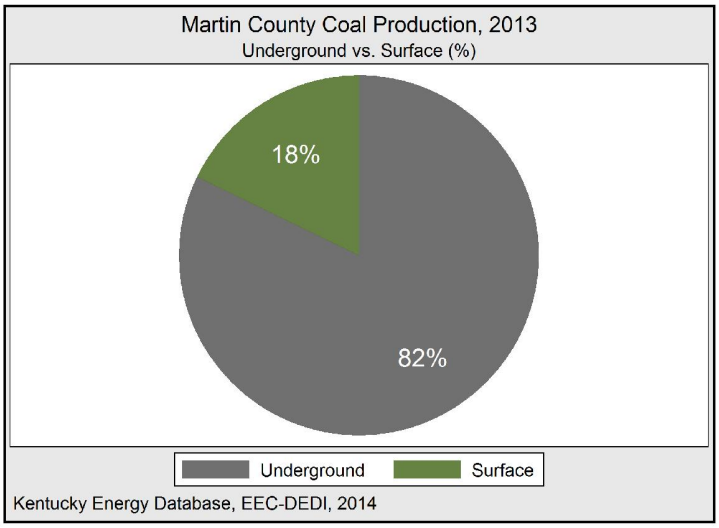
Marshall County, in western Kentucky, registered no coal production in 2013, and geologic surveys reaching back to 1978 do not list any coal resources within the county. However, coal mining operations in Marshall County did prepare and ship coal from neighboring coal-producing counties. In 2013, approximately 474 thousand tons of coal were shipped from Marshall County facilities and delivered to power plants in North Carolina and Ohio.

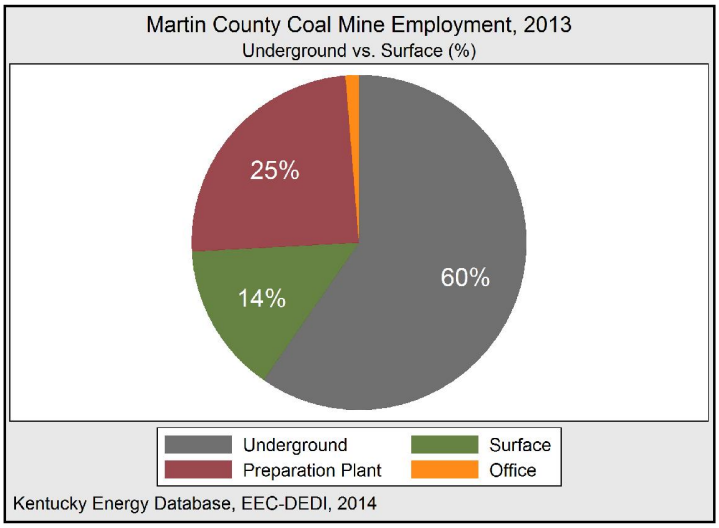
<u>Marshall County Coal Mining Employment</u>

During 2013, coal preparation and transportation facilities in Marshall County supported 50 full-time employees. 45 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.



Martin County

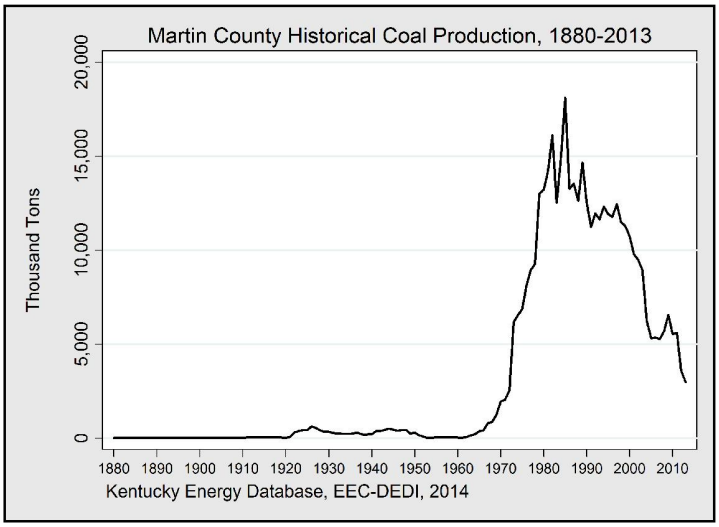


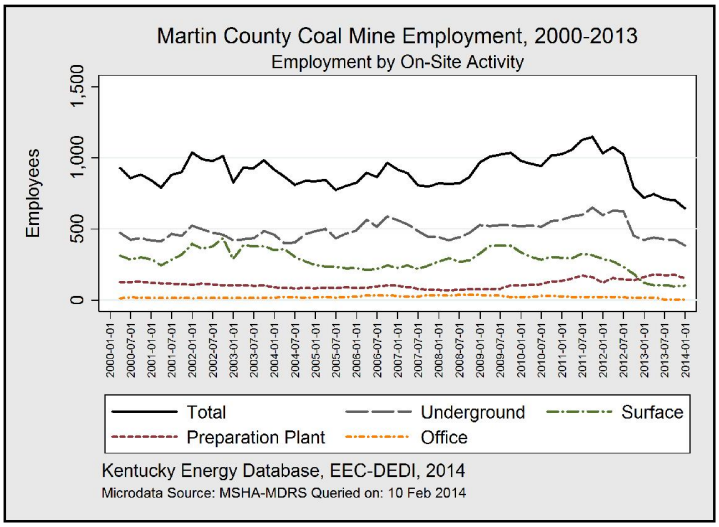


Production Method	Mines	Production	Annual Change
Total	7	2,987,669	-16.7%
Underground	3	2,456,036	-6.3
Surface	4	531,633	-44.9%

On-Site Activity	Employment	Annual Change
Total	652	-9.6%
Underground	385	-8.8%
Preparation Plant	153	-5%
Surface	109	-10.7%
Office	5	-68.8%

Throughout most of the 20th century, mining in Martin County has been split relatively evenly between surface and underground mining operations.

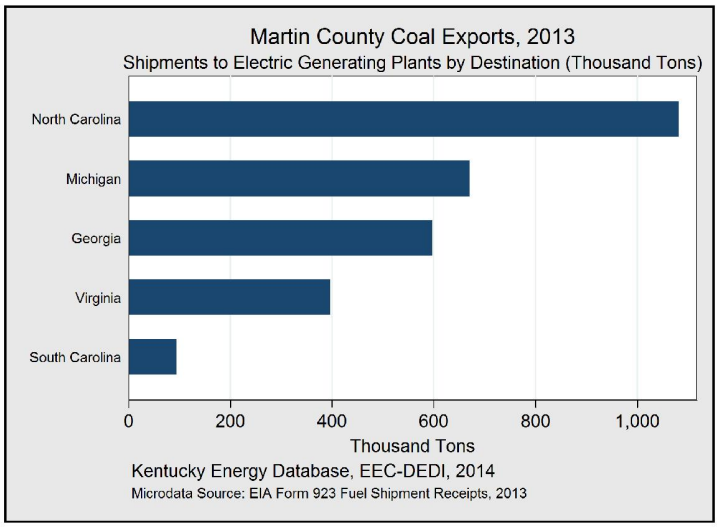


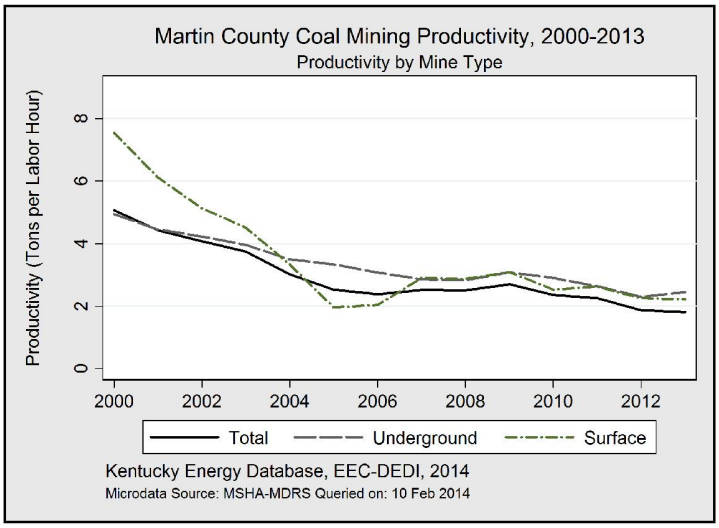


Three underground mines and four surface mines produced 2.9 million tons of coal in Martin County in 2013. Annual production from Martin County decreased by 17 percent but represented 3.7 percent of statewide coal production. Yet, coal production in the county has declined by an annual rate of 7.3 percent since a high of 11.7 million tons in 1996.

Coal companies in Martin County directly employed 652 people full-time during 2013, a net loss of 69 full-time jobs compared with 2012. The majority of coal miners in Martin County were employed in underground operations, and have been since at least 2000. Additionally, 153 people worked in coal preparation plants, 109 people worked in surface mining operations, and 5 individuals supported mine operations in office capacities.

Martin County





State and Power Plant	Deliveries (Tons)	Percentage
Total	**2,840,458**	**100%**
North Carolina	**1,081,289**	**38.1%**
Roxboro	926,183	32.6%
Mayo	155,106	5.5%
Michigan	**670,559**	**23.6%**
Monroe	655,693	23.1%
River Rouge	14,866	0.5%
Georgia	**597,596**	**21.0%**
Wansley	236,611	8.3%
Hammond	163,243	5.7%
Kraft	108,987	3.8%
Yates	88,755	3.1%
Virginia	**396,174**	**14.0%**
Chesapeake	233,636	8.2%
Clover	116,032	4.1%
Chesterfield	46,506	1.6%
South Carolina	**94,840**	**3.3%**
McMeekin	44,263	1.6%
Williams	37,877	1.3%
Cope	12,700	0.4%

Martin County Coal Market

Steam coal shipments from Martin County increased by 48 percent from 2012, primarily as a result of increased shipments to North Carolina, Michigan, and Georgia. In total, 2.8 million tons of coal mined in Martin County was shipped to power plants in 2013. The Roxboro Steam Plant of Semora, North Carolina, and The Monroe Power Plant of Monroe, Michigan received almost 56 percent of Martin County coal in 2013.

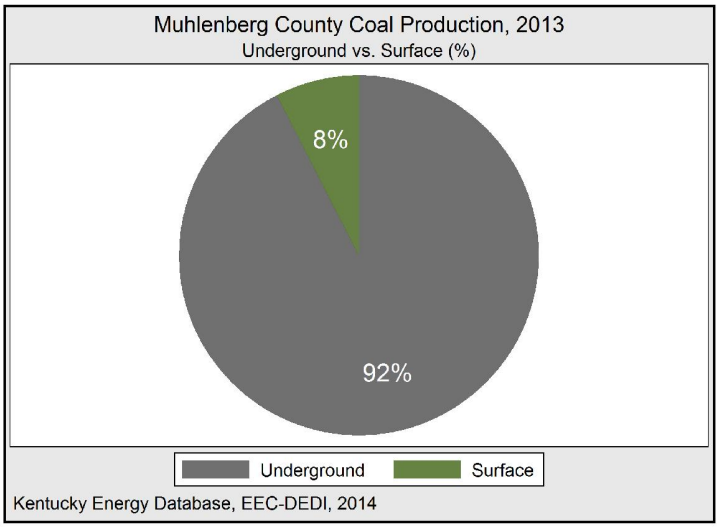
Martin County Coal Mining Productivity

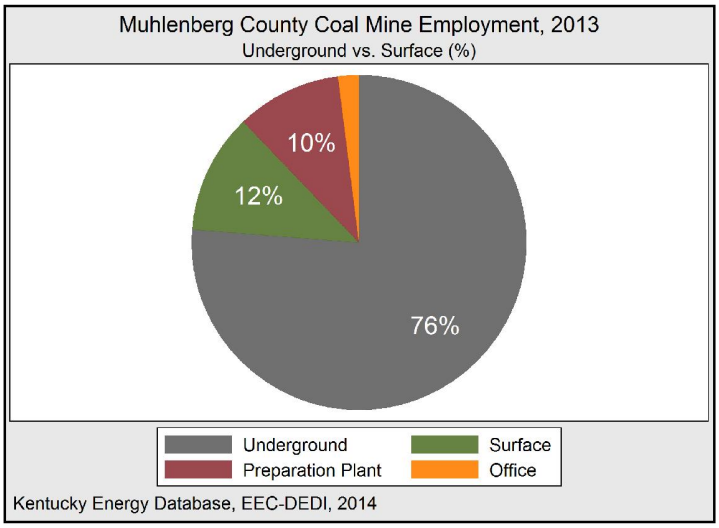
Martin County's productivity in 2013 was 1.81 tons per labor hour, a decrease of greater than 64 percent from the year 2000. In 2013, underground mines in Martin County were more productive than surface mines—2.45 tons per hour compared to 2.22 tons per hour. However, the productivity of surface mines in Martin County has fluctuated substantially, compared to the relative stability of underground operations over time.

Chemical Composition and Cost

Coal mined in Martin County had a median sulfur content of 1.12 percent, a median ash content of 8.8 percent, and a median heat content of 25.01 MMBtu per ton. The mine-mouth cost of extracting coal in the county in 2013 had a median cost of $61.40, processing costs of $7.12, and transportation costs of $31.43. These costs resulted in a median delivered price per ton of $99.95—ranging from $72.33 to $137.33 per ton. The price per MMBtu of coal from Martin County had a median of $4.01 per MMBtu and ranged from $2.79 to $5.30 per MMBtu.

Muhlenberg County

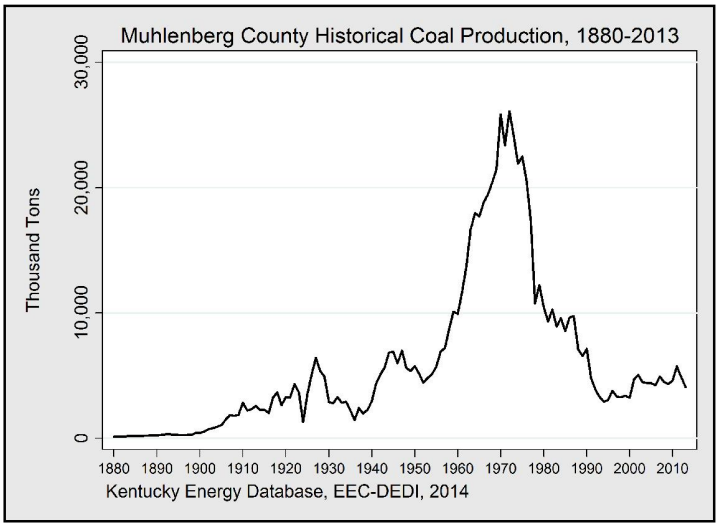


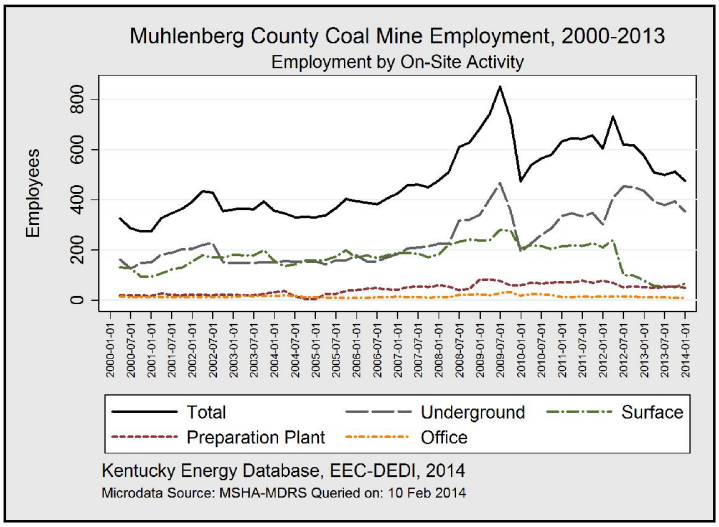


Production Method	Mines	Production	Annual Change
Total	4	4,073,837	-16.7%
Underground	2	3,766,274	-1.1%
Surface	2	307,563	-71.5%

On-Site Activity	Employment	Annual Change
Total	477	-17.2%
Underground	354	-18.6%
Surface	66	-16.5%
Preparation Plant	47	-7.9%
Office	10	-9.1%

Among the historic top-producers in Kentucky, Muhlenberg County is home to the Paradise Fossil Plant, among the largest coal fired plants in the country.



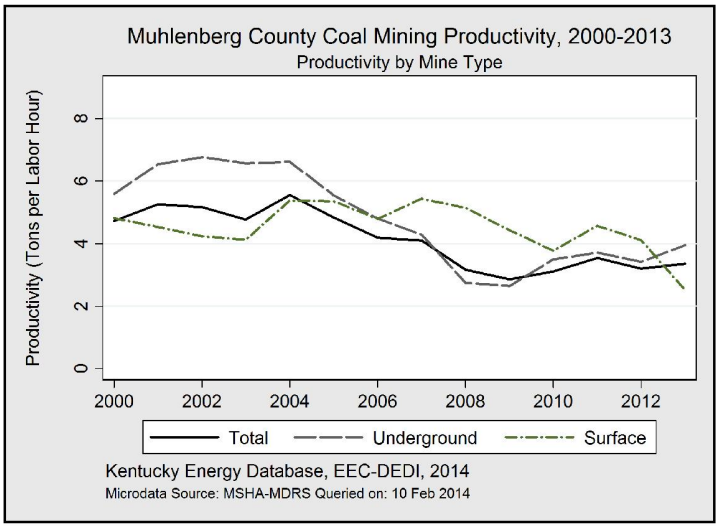


A total of 4.1 million tons of coal was produced in Muhlenberg County in 2013. Since 1993, most of the coal production in Muhlenberg County has been from underground mining. This production orientation contrasts significantly from production of the late 1950s to the late 1980s, when surface production was widespread. In fact, Muhlenberg County was Kentucky's top coal producer from 1961 to 1978, with most of its coal being mined using surface operations.

Approximately 477 people were employed full-time at coal mine sites in Muhlenberg County in 2013, a decrease from 2012 of 17 percent, or 99 employees. Recent job losses have been from contractions in surface operations, which are now just eight percent of Muhlenberg County's coal production and 12 percent of employment.

Muhlenberg County

State and Power Plant	Deliveries (Tons)	Percentage
Total	**4,443,939**	**100%**
Kentucky	**4,443,939**	**100.0%**
Paradise	2,749,077	61.9%
D B Wilson	784,043	17.6%
Ghent	390,560	8.8%
Kenneth C Coleman	258,634	5.8%
Trimble County	153,956	3.5%
H L Spurlock	54,796	1.2%
Mill Creek	52,873	1.2%



Muhlenberg County Coal Market

Power plants in Kentucky consumed all coal shipped from Muhlenberg County in 2013. Paradise Fossil Plant alone, where 2 or 3 coal-fired generating units will be retired in 2015, received 62 percent of Muhlenberg County's coal shipments. In total, approximately 4.4 million tons of coal mined in Muhlenberg County were delivered to seven different power plants during 2013. In 2012, ten power plants in two states consumed 5.7 million tons of Muhlenberg County coal.

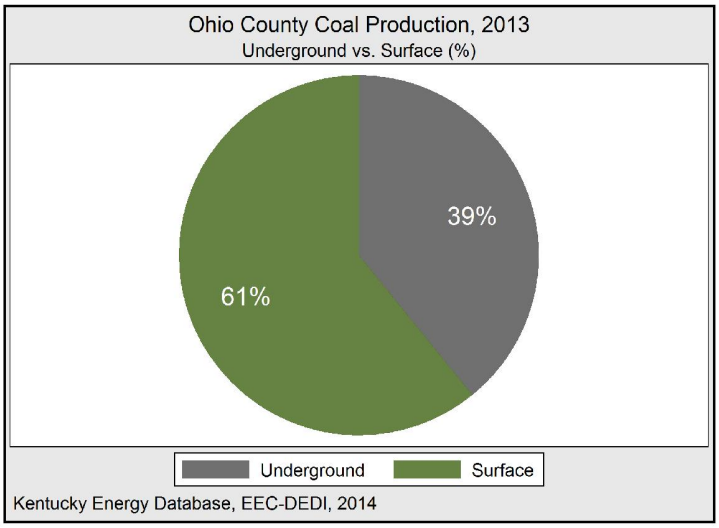
Muhlenberg County Coal Mining Productivity

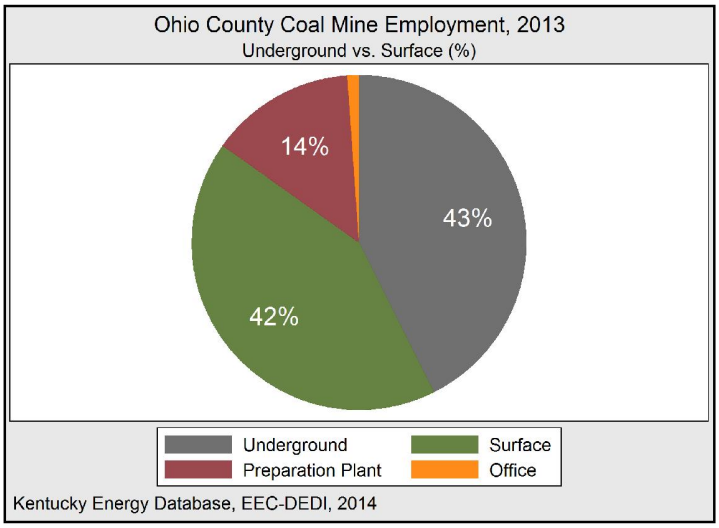
While average productivity at underground mines in Muhlenberg County was 3.36 tons per hour in 2013, productivity at underground mines was 3.96 tons per labor hour and surface mines was 2.51 tons per hour. This contrasts significantly from 2012, when underground mines yielded 3.42 tons per labor hour and surface mines produced at a rate of 4.12 tons per labor hour. Overall productivity for coal mine operations in Muhlenberg County during 2013 was fifth highest in Kentucky.

Chemical Composition and Cost

On average, coal mined in Muhlenberg County had a median sulfur content of 3.1 percent, a median ash content of 10.7 percent, and a median heat content of 22.54 MMBtu per ton. The average delivered price per ton for Muhlenberg County coal in 2013 was $52.23, and ranged from $41.15 to $56.11 per ton. The price per MMBtu of coal from Muhlenberg County had a median of $2.28 per MMBtu and ranged from $1.84 to $2.52 per MMBtu.

Ohio County

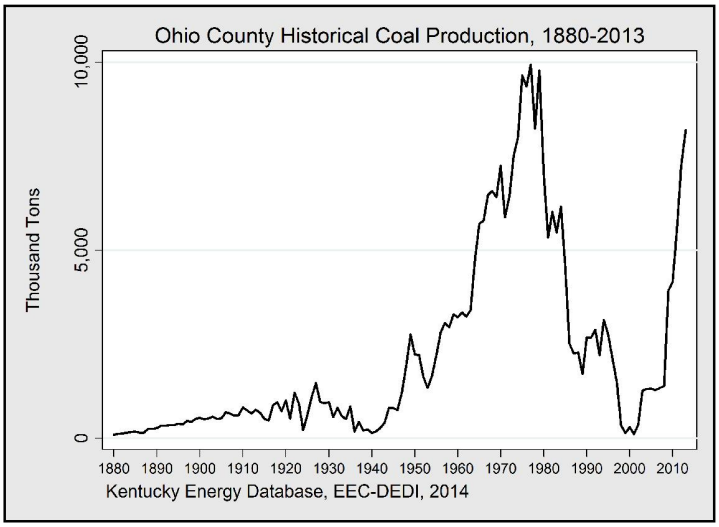


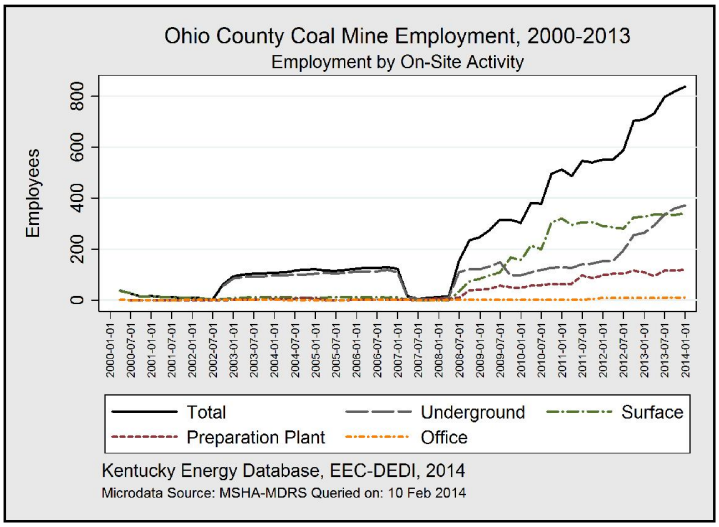


Production Method	Mines	Production	Annual Change
Total	7	8,197,105	13.4%
Underground	2	4,987,451	-7.3%
Surface	5	3,209,654	73.5%

On-Site Activity	Employment	Annual Change
Total	838	+18.0%
Underground	371	+40.5%
Surface	339	+3.7%
Preparation Plant	119	+8.2%
Office	9	+0%

Since a temporary stoppage in 2007, coal production and employment in Ohio County has increased appreciably throughout the past five years.

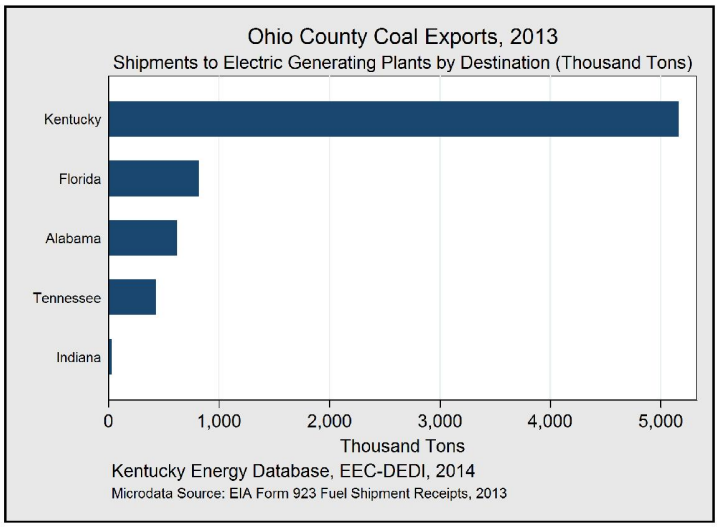


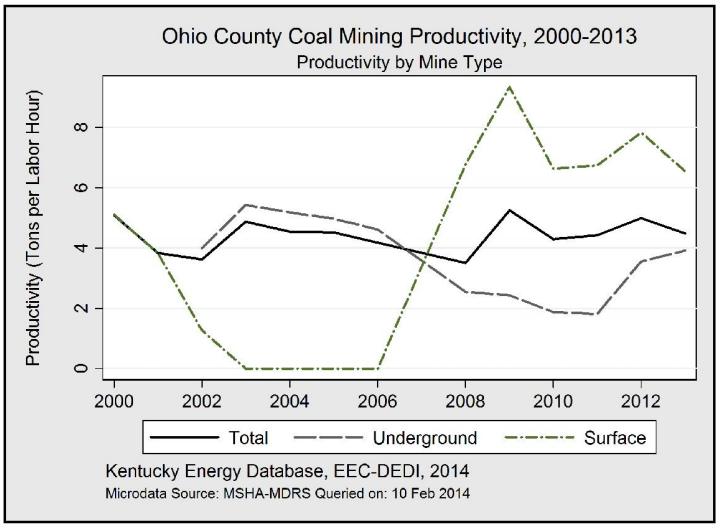


Between 2008 and 2013, coal production in Ohio County increased by 489 percent. Bolstered by production from three active surface mines (and two smaller underground sites), Ohio County produced more than 8.2 million tons of coal during 2013. Overall, Ohio County accounted for approximately 10.2 percent of statewide production during the year, fourth-most of any county.

Since 2008, direct employment by coal companies in Ohio County has increased by 239 percent to 838 full-time employees, sixth-most of all Kentucky counties in 2013. The majority of mining production has been from surface operations since 1947 with the exception of 2001 through 2007, when there were no active surface mines,

Ohio County





State and Power Plant	Deliveries (Tons)	Percentage
Total	**7,053,404**	**100%**
Kentucky	**5,160,928**	**73.2%**
Ghent	2,581,028	36.6%
Cane Run	1,129,824	16.0%
Elmer Smith	384,330	5.4%
Trimble County	370,378	5.3%
Paradise	359,079	5.1%
H L Spurlock	283,828	4.0%
Mill Creek	52,461	0.7%
Florida	**814,624**	**11.5%**
Davant Transfer	814,624	11.5%
Alabama	**620,446**	**8.8%**
Widows Creek	620,446	8.8%
Tennessee	**425,475**	**6.0%**
Kingston	296,762	4.2%
Cumberland	127,880	1.8%
Johnsonville	833	<0.1%
Indiana	**31,931**	**0.5%**
Warrick	31,931	0.5%

Ohio County Coal Market

Ohio County coal shipments grew by 26 percent in 2013 and by 400 percent since 2008. Kentucky received 73 percent of the market for Ohio County coal in 2013, and coal from the county was delivered to seven different power plants across the state that year. Other markets for Ohio County coal in 2013 were Florida, Alabama, Tennessee, and Indiana. More than seven million tons of Ohio County coal were delivered to power plants in 2013.

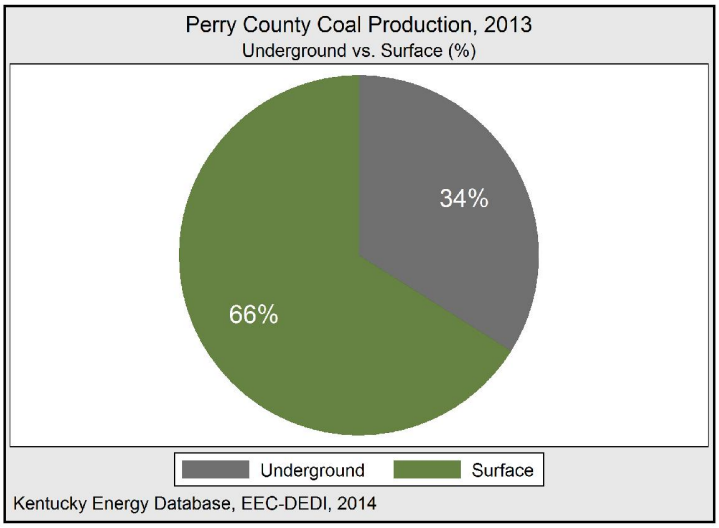
Ohio County Coal Mining Productivity

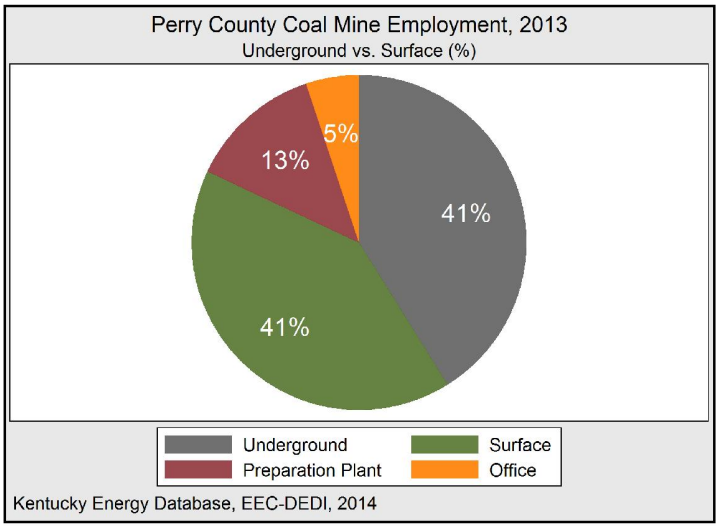
Of all coal mining counties in Kentucky in 2013, Ohio County in western Kentucky had the highest average productivity at 4.98 tons per labor hour. Surface operations, which represented 61 percent of annual production, achieved a statewide high of 6.54 tons per labor hour. Underground operations had an average productivity of 3.92 tons per hour and accounted for 39 percent of county production in 2013. 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 percent, a median ash content of 10 percent, and a median heat content of 22.44 MMBtu per ton. The average delivered price per ton for Ohio County coal in 2013 was $54.89, and ranged from $34.81 to $68.03 per ton. The price per MMBtu of coal from Ohio County had a median of $2.46 per MMBtu and ranged from $1.53 to $2.96 per MMBtu.

Perry County

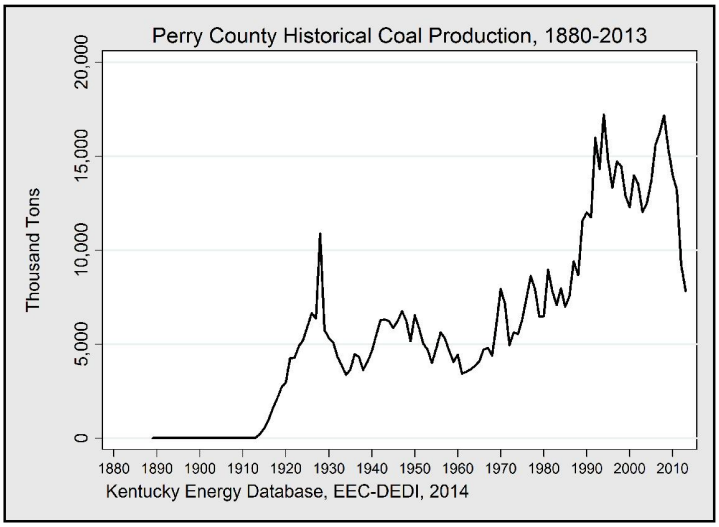


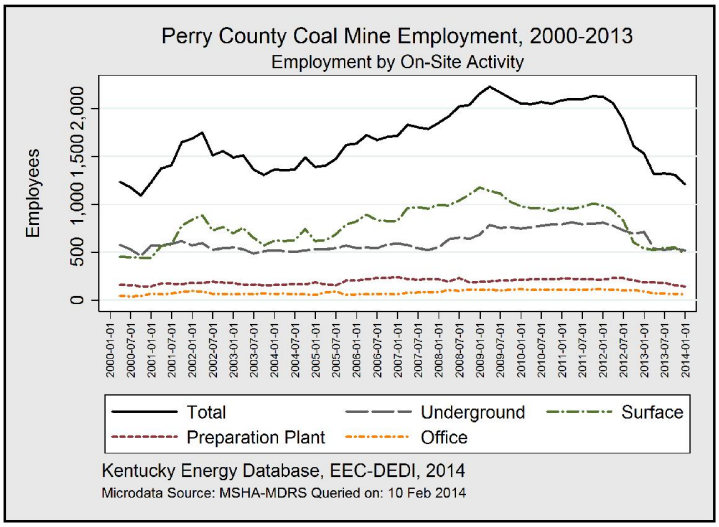


Production Method	Mines	Production	Annual Change
Total	21	7,606,172	-16.5%
Surface	15	4,945,344	-18.8%
Underground	6	2,660,828	-11.8%

With the exception of 1999, surface mining has been the largest source of coal production in Perry County since 1972.

On-Site Activity	Employment	Annual Change
Total	1,223	-20.1%
Underground	518	-27.2%
Surface	499	-7.6%
Preparation Plant	144	-22.2%
Office	62	-33.3%

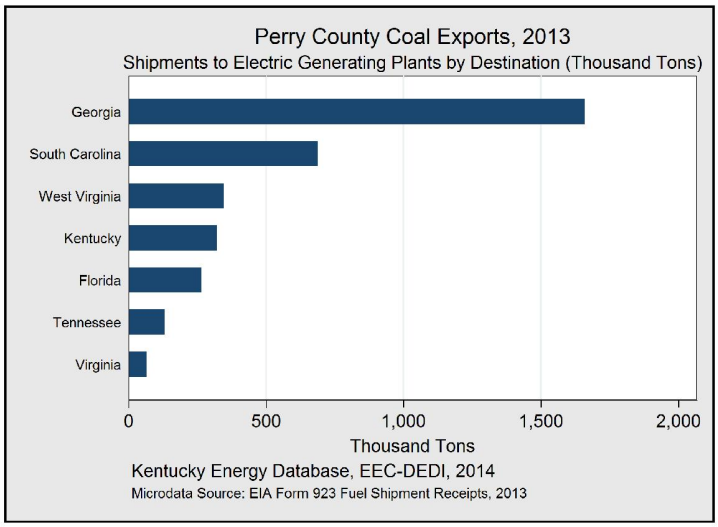


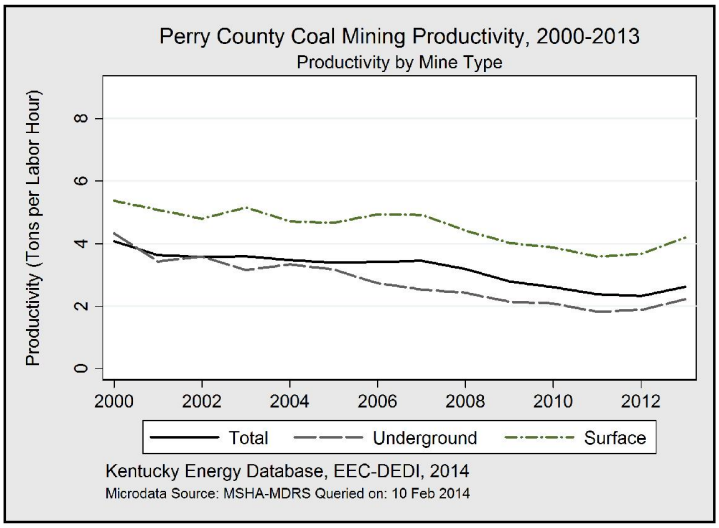


Perry County, located in eastern Kentucky, mined the fifth-most of any county in Kentucky with more than 7.6 million tons in 2013, or 9.4 percent of total state production. From 1992 to 2011, Perry County produced the second most of all counties, with the exception of 2000 when it produced third most. Surface mines have produced the majority of Perry County coal since 1972, except for 1999. Production decreased by 17 percent from 2012 and is down 56 percent from a 2008 high of 17 million tons.

Direct coal mining employment in Perry County in 2013 was the third highest in the state, with an average of 1,223 individuals employed full-time during the year. Throughout the last ten years, Perry County has remained among the top three one-site coal employers in the Commonwealth. Employment in surface and underground mine operations has generally risen and fallen in tandem with the production from their respective mining operation types.

Perry County





State and Power Plant	Deliveries (Tons)	Percentage
Total	**3,476,961**	**100%**
Georgia	**1,658,336**	**47.7%**
Bowen	1,607,672	46.2%
Wansley	25,192	0.7%
Hammond	12,754	0.4%
Harllee Branch	12,718	0.4%
South Carolina	**687,815**	**19.8%**
Williams	508,424	14.6%
Wateree	102,164	2.9%
Cope	77,227	2.2%
West Virginia	**347,134**	**10.0%**
John E Amos	347,134	10.0%
Kentucky	**322,865**	**9.%**
Cooper	228,694	6.6%
Ghent	40,085	1.2%
Dale	30,158	0.9%
East Bend	13,994	0.4%
H L Spurlock	9,934	0.3%
Florida	**263,695**	**7.6%**
Stanton Energy Center	228,023	6.6%
Crystal River	23,185	0.7%
Deerhaven Generating	12,487	0.4%
Tennessee	**130,498**	**3.7%**
Tennessee Eastman	130,498	3.7%
Virginia	**66,618**	**1.9%**
Spruance Genco LLC	66,618	1.9%

Perry County Coal Market

Steam coal from Perry County was delivered to power plants in seven different states during reporting year 2013, and Georgia and South Carolina together consumed over two-thirds of coal from the county that year. Plant Bowen of Georgia by itself received 46 percent of Perry County coal deliveries—the plant received 38 percent of its 2013 shipments from Perry County. Total shipments of Perry County steam coal decreased by 1.3 million tons from 2012, or by 27 percent.

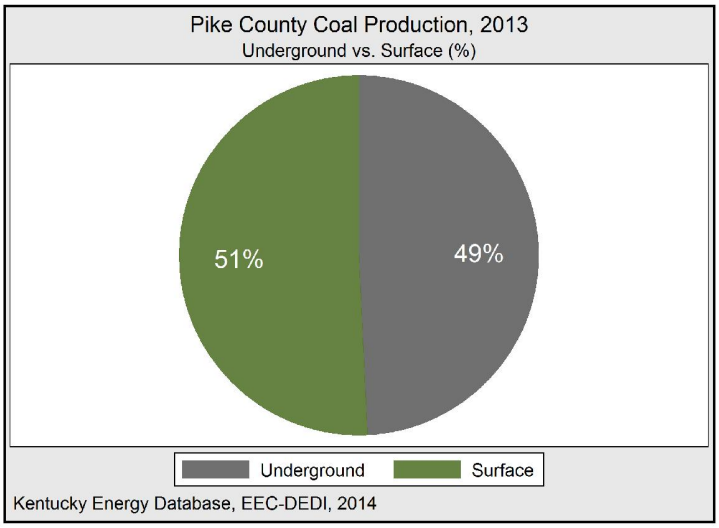
Perry County Coal Mining Productivity

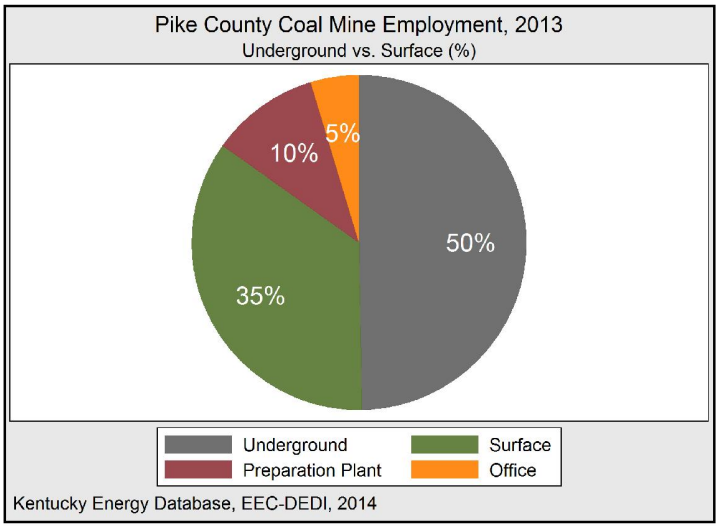
With an average productivity of 2.55 tons per labor hour, Perry County had the third-highest productivity for counties of the eastern coalfield in 2013. Surface coal mines in Perry County were more productive than underground coal mines (4.02 compared to 2.22). Average coal mine productivity in Perry County increased from 2.30 tons per labor hour in 2013.

Chemical Composition and Cost

Coal mined in Perry County had a median sulfur content of 0.97 percent, a median ash content of 10.3 percent, and a median heat content of 24.74 MMBtu per ton. The mine-mouth cost of extracting coal in the county in 2013 had a median cost of $62.31, processing costs of $5.67, and transportation costs of $26.63. These costs resulted in a median delivered price per ton of $94.61—ranging from $41.01 to $155.13 per ton. The price per MMBtu of coal from Perry County had a median of $3.76 per MMBtu and ranged from $2.04 to $6.48 per MMBtu.

Pike County

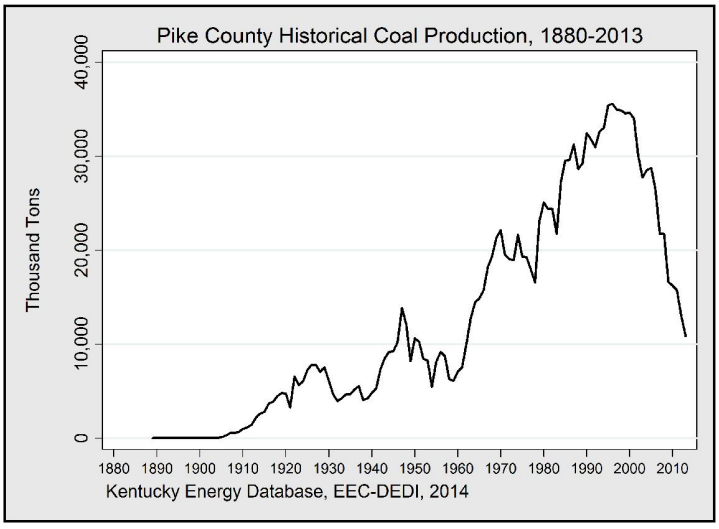


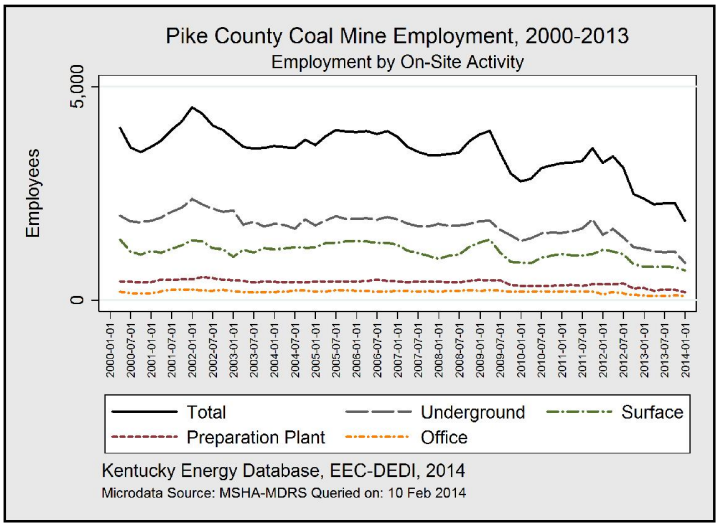


Production Method	Mines	Production	Annual Change
Total	68	10,950,788	-16.9%
Surface	42	5,601,124	-20.2%
Underground	26	5,349,664	-13.3%

On-Site Activity	Employment	Annual Change
Total	1,897	-20.3%
Underground	876	-27.1%
Surface	730	-7.8%
Preparation Plant	192	-31.9%
Office	99	-5.7%

Since the mid-1990s, coal production in Pike County has been in decline. Production has decreased by approximately 69 percent from its highest recorded production in 1996.

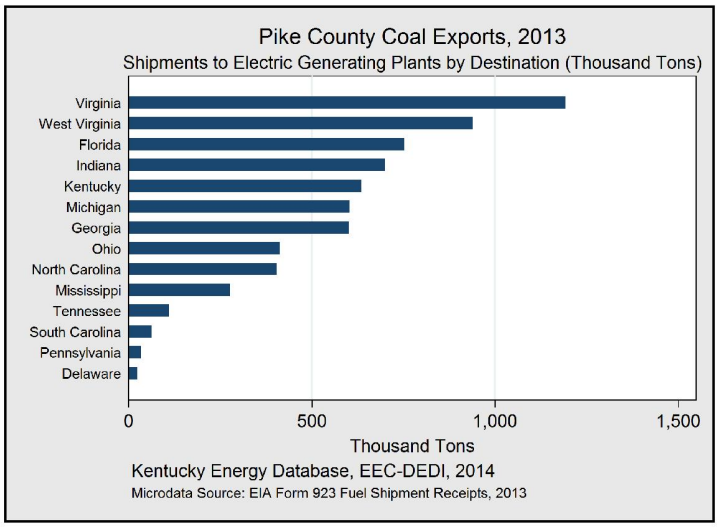


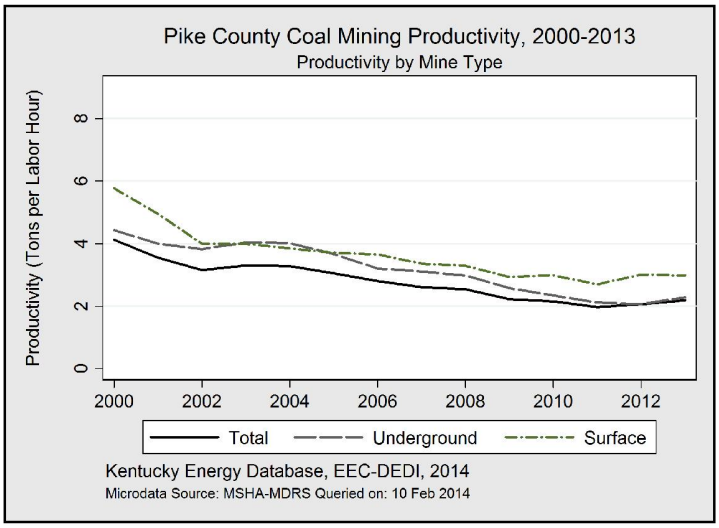


Pike County of eastern Kentucky mined the most coal of any county in Kentucky between 1978 and 2012, when Union County became the largest county producer. In 2000 and 2001, Pike County excavated over 25 percent of all coal mined in Kentucky, a proportion unseen since 1941. Mines in Pike County produced nearly 11 million tons of coal in 2013, or nearly 14 percent of all coal mined in Kentucky. Additionally, with 68 producing mine sites, Pike County had the most coal mining operations of any county in Kentucky in 2013.

Though the second-largest coal producer in 2013, Pike County averaged the most direct coal mining employment of all counties in Kentucky. Pike County has had the highest coal mine employment of any county since 1956—averaging 20 percent of total state coal mine employment since 1975. Pike County on-site mine employment has remained relatively diverse among the four categories listed, with underground mining averaging 46 percent of employment, surface mining 39 percent, and preparation plants 10 percent.

Pike County

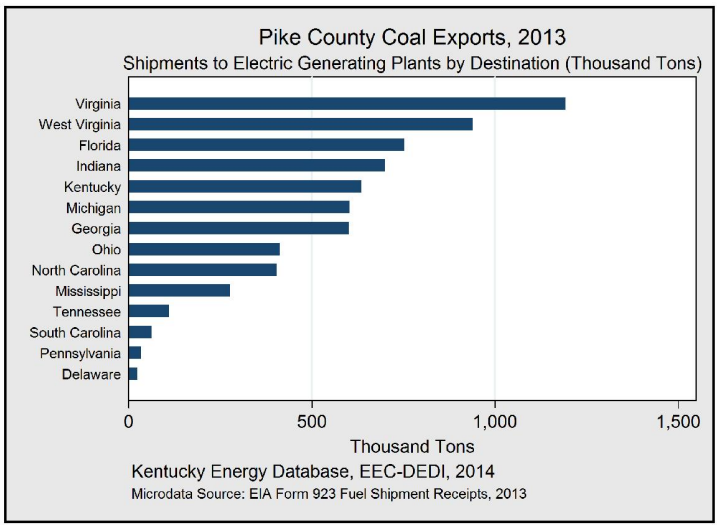




State and Power Plant	Deliveries (Tons)	Percentage
Total	**6,750,079**	**100%**
Virginia	**1,191,932**	**17.7%**
Clover	581,135	8.6%
Chesterfield	322,573	4.8%
Yorktown	178,709	2.6%
Chesapeake	56,161	0.8%
Glen Lyn	43,034	0.6%
Mecklenburg Power	8,338	0.1%
Virginia City Hybrid	1,982	<0.1%
West Virginia	**939,158**	**13.9%**
Mitchell	584,853	8.7%
John E Amos	342,309	5.1%
Mountaineer	11,996	0.2%
Florida	**752,785**	**11.2%**
Crystal River	657,088	9.7%
Stanton Energy Center	70,853	1.0%
Indiantown	21,512	0.3%
Lansing Smith	3,332	<0.1%
Indiana	**699,822**	**10.4%**
Rockport	669,528	9.9%
Tanners Creek	30,294	0.4%
Kentucky	**634,792**	**9.4%**
Big Sandy	634,792	9.4%
Michigan	**603,610**	**8.9%**
Monroe	519,765	7.7%
River Rouge	53,058	0.8%
St Clair	30,787	0.5%

State and Power Plant	Deliveries (Tons)	Percentage
Georgia	**601,701**	**8.9%**
International Paper Savanna Mill	178,812	2.6%
Hammond	163,439	2.4%
Bowen	112,371	1.7%
Wansley	62,797	0.9%
Savannah River Mill	40,464	0.6%
Yates	24,792	0.4%
Kraft	10,035	0.1%
Georgia-Pacific Cedar Springs	8,991	0.1%
Ohio	**412,748**	**6.1%**
Muskingum River	405,212	6.0%
General James M Gavin	7,536	0.1%
North Carolina	**404,135**	**6.0%**
Asheville	114,371	1.7%
Belews Creek	91,960	1.4%
Roxboro	60,464	0.9%
Marshall	50,014	0.7%
James E. Rogers Energy Complex	37,458	0.6%
Mayo	37,051	0.5%
L V Sutton Steam	12,817	0.2%
Mississippi	**277,085**	**4.1%**
R D Morrow	277,085	4.1%
Tennessee	**111,313**	**1.6%**
Tennessee Eastman Operations	111,313	1.6%

Pike County



McCoy Elkhorn Coal Corporation, Mine #15, Pike County, KY.

(Photo provided courtesy of the James River Coal Company).

State and Power Plant	Deliveries (Tons)	Percentage
South Carolina	**63,700**	**0.9%**
Winyah	51,686	0.8%
Cope	12,014	0.2%
Pennsylvania	**33,958**	**0.5%**
Portland	33,958	0.5%
Delaware	**23,340**	**0.4%**
Indian River Generating Station	23,340	0.3%

Pike County Coal Market

A total of 6.75 million tons of coal mined in Pike County was shipped to power plants in 14 different states during the year. Of this amount, 634 thousand tons were shipped to Big Sandy Power Plant, located in Louisa, Kentucky. Pike County is relatively insulated from the closure or decreased consumption of any single plant because of the sheer size of its shipments relative to other Kentucky counties—no single plant consumed more than 10 percent of Pike County coal in 2013. Regardless, fuel shipments from the county have continually declined over the last five years. Overall, shipments in 2013 decreased by nine percent relative to 2012 levels and by 71 percent relative to 2008. For example, Monroe Power Plant has been among the top six consumers of Pike County coal for the last five years, but has decreased consumption of coal from the county by 72 percent since 2008.

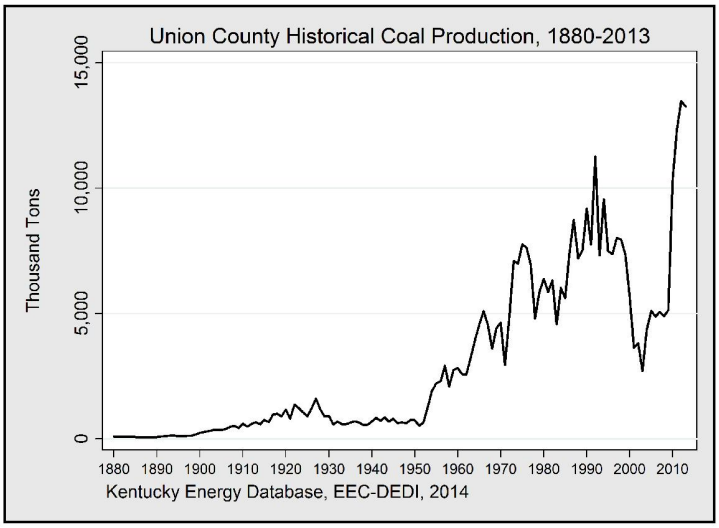
Pike County Coal Mining Productivity

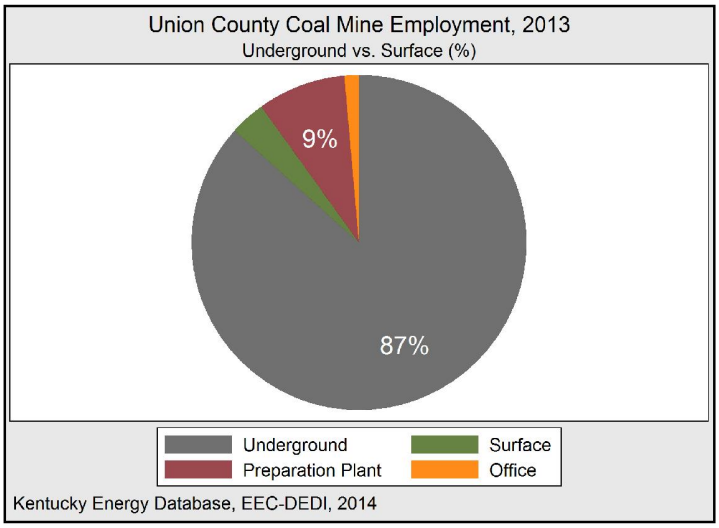
In 2013, average coal mine productivity in Pike County was 2.17 tons per labor hour. Surface mines in the county were more productive at 2.91 tons per hour, while underground operations averaged 2.28 tons per hour. Compared with 2012, coal mining productivity improved slightly from 2.06 tons per labor hour, or by five percent, as a result of increased productivity from underground mines.

Chemical Composition and Cost

Coal mined in Pike County had a median sulfur content of 0.95 percent, a median ash content of 10.6 percent, and a median heat content of 24.84 MMBtu per ton. The mine-mouth cost of extracting coal in the county in 2013 had a median cost of $67.78, processing costs of $6.00, and transportation costs of $16.08. These costs resulted in a median delivered price per ton of $89.86—ranging from $39.79 to $129.89 per ton. The price per MMBtu of coal from Pike County had a median of $3.55 per MMBtu and ranged from $2.40 to $5.33 per MMBtu.

Union County

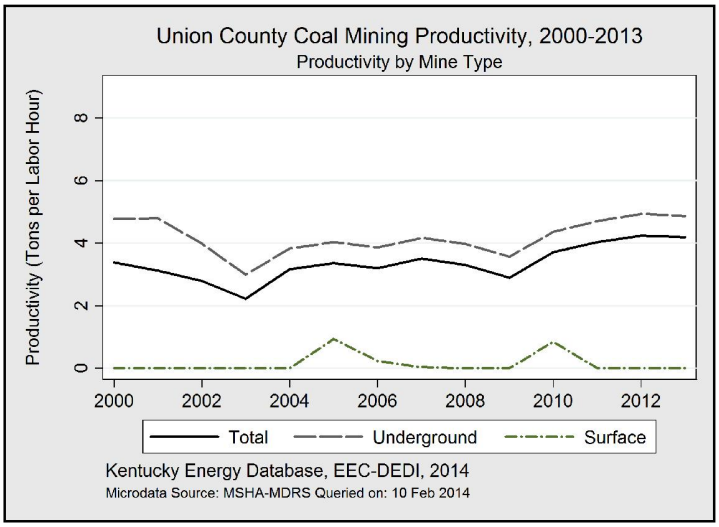


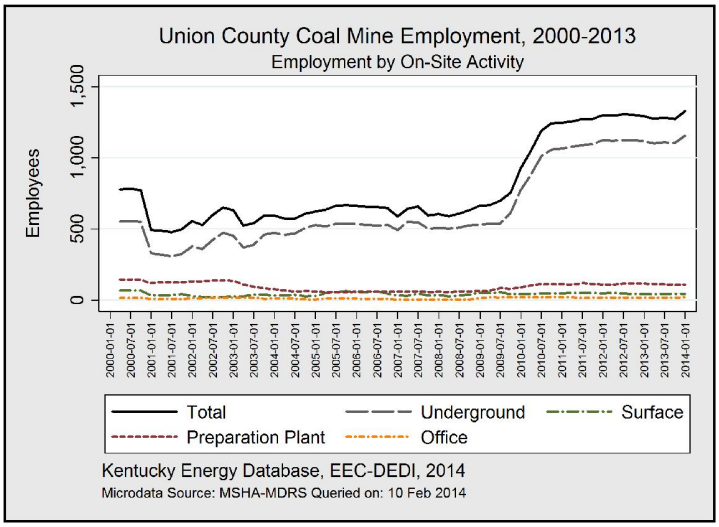


Production Method	Mines	Production	Annual Change
Total	3	13,265,616	-1.6%
Underground	3	13,265,616	-1.6%

Unlike most coal-producing counties in Kentucky, mine productivity in Union County has been stable since 2004 and has actually increased over the past three years.

On-Site Activity	Employment	Annual Change
Total	1,328	+2.8%
Underground	1,155	+3.6%
Preparation Plant	110	-6.0%
Surface	44	+2.3%
Office	19	+11.8%

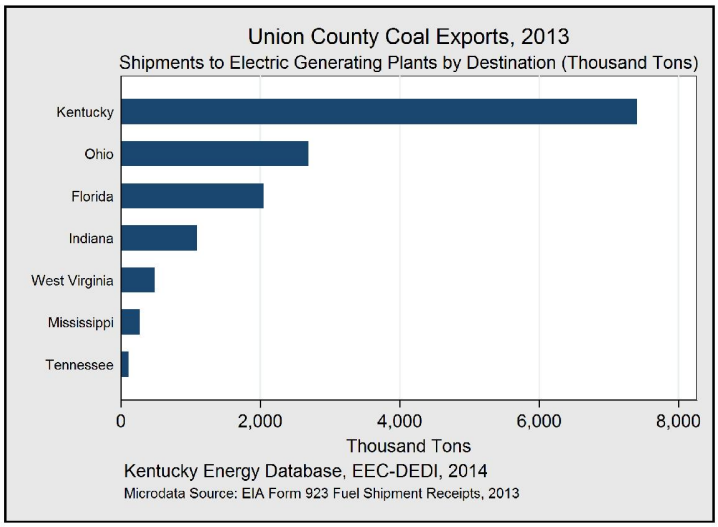




During 2013, Union County of western Kentucky produced 13.3 million tons of coal and, despite a 1.6 percent reduction in production from 2012, remained the largest coal-producing county in Kentucky. In 2013, Union County mined 16.4 percent of total coal production in Kentucky. A major factor in the direction of Union County's coal production has been the development of the River View Mine, which now holds the record in Kentucky for the most production by one mine in a year.

Coal mines in Union County on average employed 1,328 workers full-time in 2013—the second most of any county that year. The vast majority of direct mining jobs in Union County have been from underground mine operations with at least 67 percent of mine employment since 2000 and at least 80 percent of mine employment since 2004. In addition, 173 individuals were employed full-time at preparation plants, surface mines, and on-site offices during 2013.

Union County



River View Coal Mine, Union County, 2012.
Photo courtesy of River View Coal, LLC.

State and Power Plant	Deliveries (Tons)	Percentage
Total	**14,099,522**	**100%**
Kentucky	**7,404,812**	**52.5%**
Trimble County	2,012,153	14.3%
Ghent	1,407,430	10.0%
Kenneth C Coleman	1,307,420	9.3%
East Bend	1,062,012	7.5%
H L Spurlock	437,175	3.1%
R D Green	344,611	2.4%
Paradise	321,520	2.3%
HMP&L Station Two Henderson	197,951	1.4%
D B Wilson	196,329	1.4%
Mill Creek	118,211	0.8%
Ohio	**2,687,818**	**19.1%**
J M Stuart	1,193,839	8.5%
W H Zimmer	576,323	4.1%
Killen Station	410,867	2.9%
Miami Fort	312,722	2.2%
Walter C Beckjord	194,067	1.4%
Florida	**2,044,723**	**14.5%**
IMT Transfer	1,676,724	11.9%
Davant Transfer	367,999	2.6%
Indiana	**1,092,661**	**7.7%**
Clifty Creek	1,051,216	7.5%
Warrick	41,445	0.3%

State and Power Plant	Deliveries (Tons)	Percentage
West Virginia	**484,598**	**3.4%**
FirstEnergy Pleasants	259,344	1.8%
Ceredo	141,541	1.0%
FirstEnergy Fort Martin	83,713	0.6%
Mississippi	**277,496**	**2.0%**
Associated Terminals	277,496	2.0%
Tennessee	**107,414**	**0.8%**
Cumberland	107,414	0.8%

Union County Coal Market

More coal was shipped from Union County in western Kentucky to power plants in the United States than any other county in Kentucky in 2012 and 2013. During the year, more than 14.1 million tons of coal mined in Union County were delivered to seven different states. Power plants in Kentucky accounted for more than half of Union County coal deliveries in 2013 and Kentucky has remained the largest market for coal from Union county for the last five years. Shipments of steam coal from Union County have grown by 41 percent since 2012 and by 235 percent since 2008. The largest consumer of Union County coal in 2013, Trimble County Generating Station, received approximately 64 percent of the coal it received that year from Union County.

Union County

River View Coal Mine, Union County, 2012.
Photo courtesy of River View Coal, LLC.

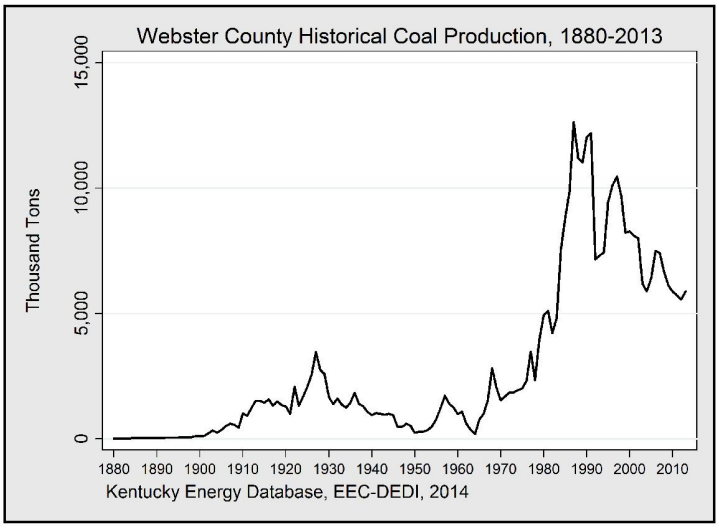
Union County Coal Mining Productivity

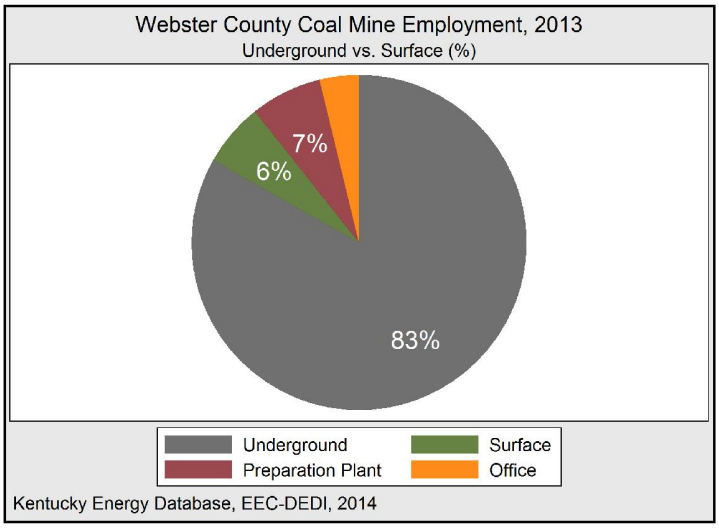
In 2013, average coal mine productivity in Union County was 4.19 tons per labor hour, the third highest of any county. Underground operations averaged 4.86 tons per labor hour. Compared with 2013, coal mining productivity decreased slightly from 4.23 tons per labor hour and 4.93 tons per labor hour from underground mining.

Chemical Composition and Cost

Coal mined in Union County had a median sulfur content of 2.94 percent, a median ash content of 8.4 percent, and a median heat content of 23.02 MMBtu per ton. The mine-mouth cost of extracting coal in the county in 2013 had a median cost of $42.58, processing costs of $5.07, and transportation costs of $6.61. These costs resulted in a median delivered price per ton of $54.26—ranging from $42.61 to $70.72 per ton. The price per MMBtu of coal from Union County had a median of $2.35 per MMBtu and ranged from $1.85 to $3.04 per MMBtu.

Webster County

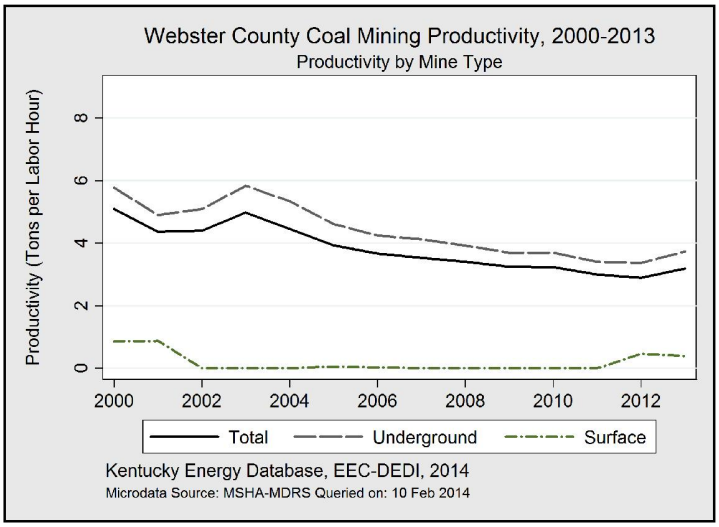


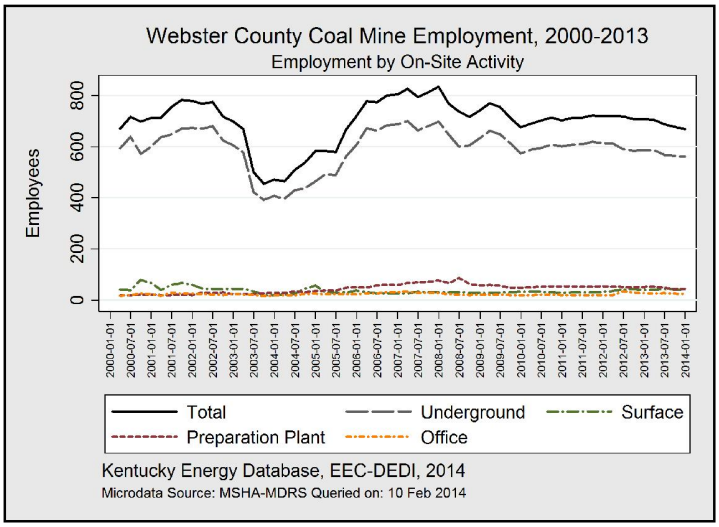


Production Method	Mines	Production	Annual Change
Total	4	5,880,279	+5.9%
Underground	2	5,841,653	+6.1%
Surface	2	38,626	-17.0%

Coal production in Webster County has decreased by 10 percent in the last 10 years, whereas total production in Kentucky has fallen by 29 percent.

On-Site Activity	Employment	Annual Change
Total	669	-5.4%
Underground	560	-4.6%
Preparation Plant	45	-13.5%
Surface	40	-2.4%
Office	24	-11.1%

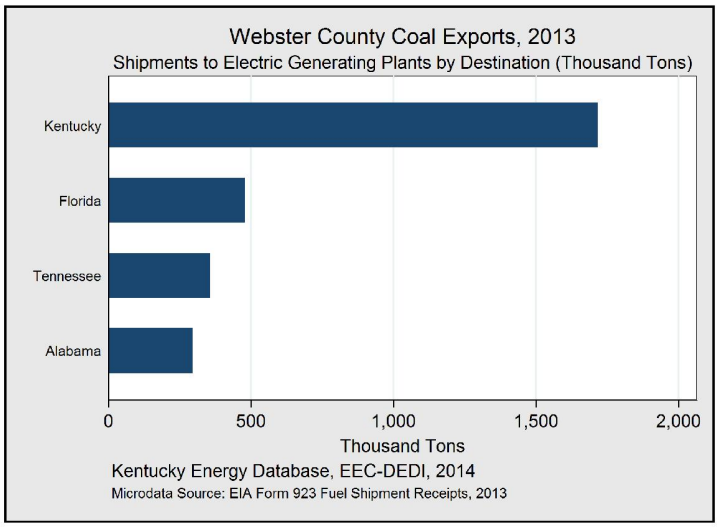




83 percent of coal production in Webster County came from underground operations in 2013. Webster County produced sixth most of any county in Kentucky with nearly 6 million tons of coal, or 7.3 percent of the Commonwealth's total annual production. Coal production levels in the county have fluctuated considerably year-to-year. In 2013, Webster County annual production has decreased by 52 percent from a recent peak of 12.2 million tons in 1991, when 1,088 full-time coal workers were employed in the county.

Coal mines in Webster County directly employed 669 people full-time in 2013. Underground mine sites were the largest concentration of direct coal mining jobs, employing 560 miners throughout the year. Underground mining operations have provided the vast majority of direct coal employment in Webster County since at least 2000.

Webster County



State and Power Plant	Deliveries (Tons)	Percentage
Total	**2,848,916**	**100%**
Kentucky	**1,716,144**	**60.2%**
Mill Creek	1,703,650	59.8%
R D Green	12,494	0.4%
Florida	**479,656**	**16.8%**
Seminole	479,656	16.8%
Tennessee	**357,780**	**12.6%**
Cumberland	356,664	12.5%
Johnsonville	1,116	<0.1%
Alabama	**295,336**	**10.4%**
Widows Creek	295,336	10.4%

Webster County Coal Market

Mill Creek Station, located near Louisville, Kentucky, was the largest single consumer of coal shipped from Webster County in 2013, consuming nearly 60 percent of all coal shipped from Webster County that year. Overall, steam coal shipments had been stable between 2008 and 2012, but decreased by 55 percent in 2013 relative to 2012 levels.

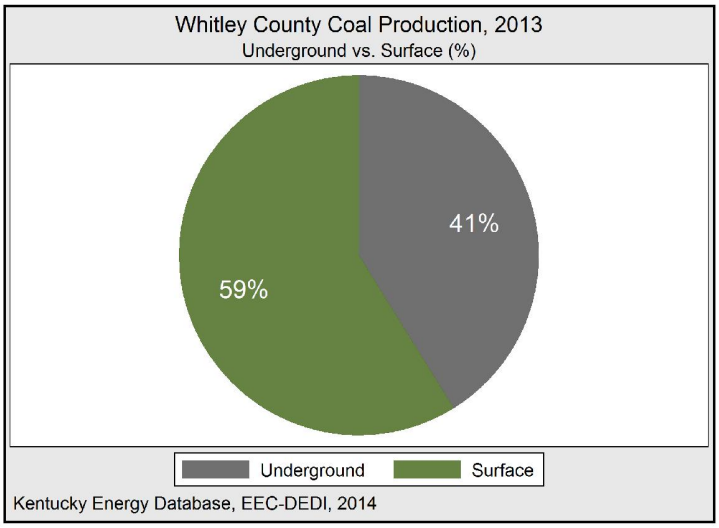
Webster County Coal Mining Productivity

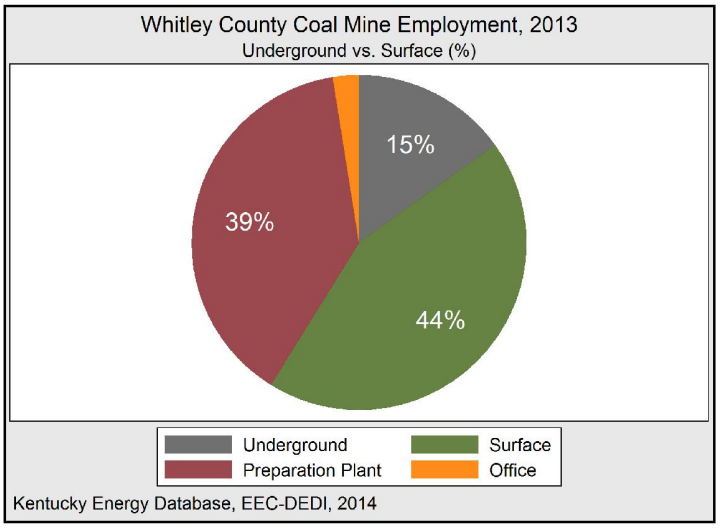
Coal mine productivity in Webster County was 3.18 tons per labor hour during 2013. The vast majority of coal production in the county came from underground operations in 2013, and was produced at a rate of 3.73 tons per labor hour.

Chemical Composition and Cost

On average, coal mined in Webster County had a median sulfur content of 2.92 percent, a median ash content of 9.2 percent, and a median heat content of 23.69 MMBtu per ton. The average delivered price per ton for Webster County coal in 2013 was $58.74, and ranged from $33.36 to $88.65 per ton. The price per MMBtu of coal from Webster County had a median of $2.48 per MMBtu and ranged from $1.77 to $3.65 per MMBtu.

Whitley County

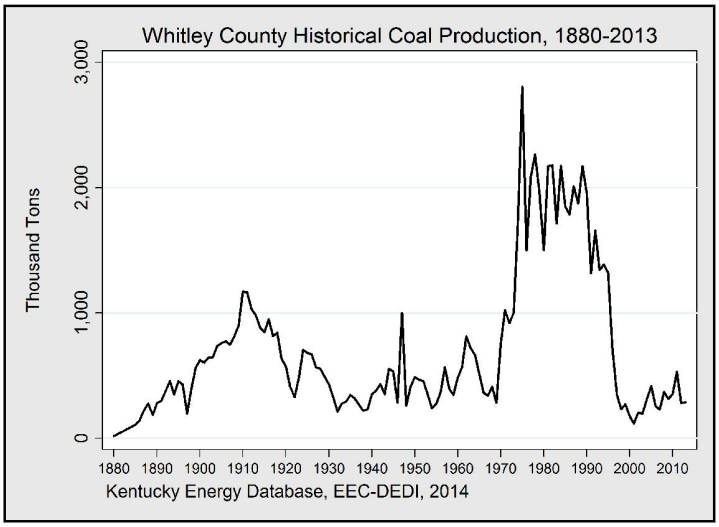


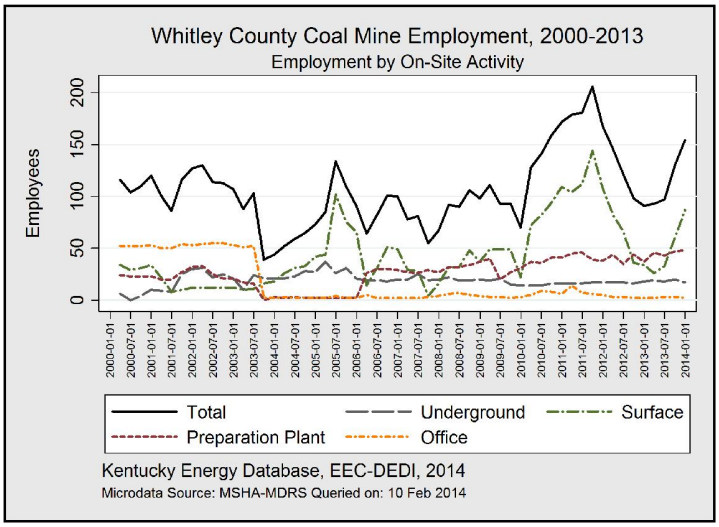


Production Method	Mines	Production	Annual Change
Total	5	285,761	+1.9%
Surface	4	168,185	-6.9%
Underground	1	117,576	+17.6%

On-Site Activity	Employment	Annual Change
Total	154	69.2%
Surface	87	155.9%
Preparation Plant	48	29.7%
Underground	17	-5.6%
Office	2	0%

Whitley County has not produced more than 600 thousand tons in one year since 1995, and reached peak production in 1975 with 2.8 million tons of coal mined.





The mines in Whitley County in 2013 produced 286 thousand tons of coal, a one-year increase of two percent. One underground mine in the county supplied 41 percent of the county's production, with approximately 118 thousand tons. Whitley County's production has fluctuated between surface and underground operations, with most production between 1992 and 1997 originating in underground operations and most production since coming from surface mining operations.

Surface operations were the primary form of direct employment for Whitley County in 2013, providing 87 full-time jobs. Employment in Whitley County has fluctuated over the past year, with full-time employment decreasing to 91 in the fourth quarter of 2012 and thereafter increasing to 154 employees during the fourth quarter of 2013; employment increased from 97 to 130 full-time employees between the second and third quarter of 2013.

Glossary of Terms

Anthracite – The highest rank of coal. It is a hard, brittle, and black lustrous coal, often referred to as hard coal, containing a high percentage of fixed carbon and a low percentage of volatile matter. The moisture content of fresh-mined anthracite generally is less than 15 percent. The heat content of anthracite ranges from 22 to 28 million Btu per ton. The heat content of anthracite coal consumed in the United States averages 25 million Btu per ton, on the as-received basis (i.e., containing both inherent moisture and mineral matter).

Ash – Impurities consisting of silica, iron, alumina, and other noncombustible matter that are contained in coal and remain after the combustion of coal. Ash increases the weight of coal, adds to the cost of handling, and can affect its burning characteristics. Ash content is measured as a percent by weight of coal on an "as received" or a "dry" (moisture-free, usually part of a laboratory analysis) basis.

Auger mine – A surface mine in which the coal bed is removed by means of a large diameter drill. Usually operated only when the overburden becomes too thick for economical strip mining.

Backfill – The replacement of previously excavated earth.

Bituminous – A dense coal, usually black, often with well-defined bands of bright and dull material, used primarily as fuel in steam-electric power generation, with substantial quantities also used for heat and power applications in manufacturing and to make coke. Bituminous coal is the most abundant coal in active United States mining regions. Its moisture content usually is less than 20 percent. The heat content of bituminous coal ranges from 21 to 30 million Btu per ton on a moist, mineral-matter-free basis. The heat content of bituminous coal consumed in the United States averages 24 million Btu per ton, on the as-received basis (i.e., containing both inherent moisture and mineral matter).

Briquettes – Made from compressed coal fines, with or without a binding agent such as asphalt.

British thermal unit (Btu) – The quantity of heat required to raise the temperature of 1 pound of liquid water by 1 degree Fahrenheit at the temperature at which water has its greatest density (approximately 39 degrees Fahrenheit).

Central Appalachian Basin – A geographic classification of areas in eastern Kentucky, Virginia, southern West Virginia, and eastern Tennessee where coal is produced.

Cleaned coal or prepared coal – A coal that has been processed to reduce the amount of impurities present and improve its burning characteristics.

Coal – A readily combustible black or brownish-black rock whose composition, including inherent moisture, consists of more than 50 percent by weight and more than 70 percent by volume of carbonaceous material. Coal forms from plant remains that have been compacted, hardened, chemically altered, and metamorphosed by heat and pressure over geologic time.

Coal bed – A stratum of coal. Also called a coal seam.

Coal bed methane well gas – Methane produced from coal seams. Coal bed methane is formed during coalification, which is the geologic process that transforms organic material into coal. Methane buildup in coal mines is incredibly dangerous and may lead to mine explosions.

Glossary of Terms

Coal gasification – The process of converting coal into gas. The basic process involves crushing coal to a powder, which is then heated in the presence of steam and oxygen to produce a gas. The gas is then refined to reduce sulfur and other impurities. The gas can be used as a fuel or processed further and concentrated into chemical or liquid fuel.

Coal preparation processes (Cleaning/Beneficiation/Processing) – Any processing of mined coal to prepare it for market, including crushing and screening or sieving the coal to reach a uniform size, which normally results in removal of some non-coal or waste material. The term coal preparation most commonly refers to processing, including crushing and screening, passing the material through one or more processes. Many of the processes separate rock, clay, and other minerals from coal in a liquid medium; hence, the term washing is widely used. In some cases, coal passes through a drying step before loading.

Coke – A solid carbonaceous residue derived from low-ash, low-sulfur bituminous coal from which the volatile constituents are driven off by baking in an oven at temperatures as high as 2,000 degrees Fahrenheit so that the fixed carbon and residual ash are fused together. Coke is used as a fuel and as a reducing agent in smelting iron ore in a blast furnace. Coke from coal is grey, hard, and porous and has a heating value of 24.8 million Btu per ton.

Combined-cycle system – An electric generating technology in which electricity is produced from otherwise lost waste heat exiting from one or more gas (combustion) turbines. The exiting heat is routed to a conventional boiler or to a heat recovery steam generator for utilization by a steam turbine in the production of electricity. This process increases the efficiency of the electric generating unit.

Compliance coal – A coal, or a blend of coal, that meets sulfur dioxide emission standards for air quality without the need for flue-gas desulfurization.

Continuous mining – A form of room pillar mining in which a continuous mining machine extracts and removes coal from the working face in one operation; no blasting is required.

Contour mining – A mining method practiced when the coal is mined on hillsides. The mining follows the contour of the hillside until the overburden becomes uneconomical to remove. This method creates a shelf, or bench, on the hillside.

Conventional mining – The oldest form of room pillar mining, which consists of a series of operations that involve cutting the coal bed, so it breaks easily when blasted with explosives or high pressure air, and then loading the broken coal.

Criteria pollutant – A pollutant determined to be hazardous to human health and regulated under EPA's National Ambient Air Quality Standards. The 1970 amendments to the Clean Air Act require EPA to describe the health and welfare impacts of a pollutant as the "criteria" for inclusion in the regulatory regime.

Culm and silt – Waste materials from preparation plants. In the anthracite region, culm consists of coarse rock fragments containing as much as 30 percent small-sized coal. Silt is a mixture of very fine coal particles (approximately 40 percent) and rock dust that has settled out from wastewater from the plants. The terms culm and silt are sometimes used interchangeably and are sometimes called refuse. Culm and silt have a heat value ranging from 8 to 17 million Btu per ton.

Energy Information Administration. Glossary. Retrieved from EIA website: http://www.eia.gov/tools/glossary/index.cfm

Glossary of Terms

Demonstrated reserve base (coal) – A measurement used by the EIA equal to the sum of coal in both measured and indicated resource categories of reliability, representing 100 percent of the in-place coal in those categories as of a certain date that meet specific minability criteria.

Dragline – An excavator that removes overburden to expose the coal by means of a scoop bucket that is suspended from a long boom. The dragline digs by pulling the bucket toward the machine by means of a wire rope.

Drift mine – a mine driven horizontally into coal that is exposed or accessible in a hillside.

Flue – An enclosed passage way for directing products of combustion to the atmosphere

Flue gas desulfurization system (scrubber) – Equipment used to remove sulfur oxides from the combustion gases of a boiler plant before discharge to the atmosphere. Chemicals such as lime are used as the scrubbing media.

Fluidized-bed combustion (FBC) – A method of burning particulate fuel, such as coal, in which the amount of air required for combustion far exceeds that found in conventional burners. The fuel particles are continually fed into a bed of mineral ash in the proportions of 1 part fuel to 200 parts ash, while a flow of air passes up through the bed, causing it to act like a turbulent fluid.

Fly ash – Particulate matter mainly from coal ash in which the particle diameter is less than 1 x 104 meter. This ash is removed from the flue gas using flue gas particulate collectors such as fabric filters and electrostatic precipitators.

Gob pile – A pile of loose waste material in a mine, or backfill waste material packed in steps or layers to support the roof of a mine. A gob pile is also called a "refuse" pile.

Illinois Basin - A geographic classification of areas in western Kentucky and southern Illinois and Indiana where coal is produced.

Land reclamation – Process of restoring surface environment to acceptable pre-existing conditions. Includes surface contouring, equipment removal, well plugging, revegetation, and other processes.

Lignite – The lowest rank of coal, often referred to as brown coal, used almost exclusively as fuel for steam-electric power generation. It is brownish-black and has a high inherent moisture content, sometimes as high as 45 percent The heat content of lignite ranges from 9 to 17 million Btu per ton on a moist, mineral-matter-free basis. The heat content of lignite consumed in the United States averages 13 million Btu per ton, on the as-received basis (i.e. containing both inherent moisture and mineral matter).

Longwall mining machine – An automated form of underground coal mining characterized by high recovery and extraction rates, feasible only in relatively flat-lying, thick, and uniform coalbeds. Longwall mining is done under movable roof supports that are advanced as the bed is cut. The roof in the mined-out area is allowed to fall as the mining advances.

Low-sulfur coal – Generally contains 1 percent or less sulfur by weight. For air quality standards, "low sulfur coal" contains 0.6 pounds or less sulfur per million Btu, which is equivalent to 1.2 pounds of sulfur dioxide per million Btu

Glossary of Terms

Metallurgical coal (coking coal) – A coal that meets the requirements for making coke. It must have a low ash and sulfur content and form a coke that is capable of supporting the charge of iron ore and limestone in a blast furnace. A blend of two or more bituminous coals is usually required to make coke.

Methane – A colorless, flammable, odorless hydrocarbon gas which is the major component of natural gas and is produced from coal seams.

Mountaintop mining – Mining of a coalbed that underlies the top of a mountain. The overburden, which is the mountaintop, is completely removed so that all of the coal can be recovered. The overburden material is later replaced in the mined-out area. This method leaves large plateaus of level land.

Overburden – Any material, consolidated or unconsolidated, that overlies a coal deposit.

Peat – Partially decomposed plant debris. It is considered an early stage in the development of coal. peat is distinguished from lignite by the presence of free cellulose and a high moisture content (exceeding 70 percent). The heat content of air-dried peat (about 50 percent moisture) is about 9 million Btu per ton.

Pillar – areas of coal left between the rooms in the process of room and pillar underground coal mining to support the overburden.

Powder River Basin - A geographic classification of areas in southeastern Montana and northeastern Wyoming where coal is produced.

Preparation plant – A mining facility at which coal is crushed, screened, and mechanically and chemically cleaned.

Pulverized coal – A coal that has been crushed to a fine dust in a grinding mill. It is blown into the combustion zone of a furnace and burns very rapidly and efficiently.

Reclamation - The process of restoring surface environment to acceptable pre-existing conditions. Includes surface contouring, equipment removal, well plugging, revegetation, etc.

Recoverable coal – Coal that is, or can be, extracted from a coal bed by mining using currently available technology and under prevailing economic conditions .

Rock dusting - A process of spraying pulverized limestone in an underground coal mine to reduce the likelihood of coal dust explosions.

Roof-bolting machine - a machine used to drill holes and place bolts (usually 2 to 10 feet long) to support the mine roof. Roof bolting units can be installed on a continuous mining machine.

Room and pillar mining – The most common method of underground mining in which the mine roof is supported mainly by coal pillars left at regular intervals. Rooms are places where the coal is mined; pillars are areas of coal left between the rooms.

Slack coal – Bituminous coal one-half inch or smaller in size.

Shaft – A mine that reaches the coal bed by means of a vertical shaft.

Slope mine – A mine that reaches the coal bed by means of an inclined opening.

Energy Information Administration. Glossary. Retrieved from EIA website: http://www.eia.gov/tools/glossary/index.cfm

Glossary of Terms

Steam coal – Coal used in boilers to generate steam to produce electricity or for other purposes.

Stoker coal – Coal that has been crushed to specific sizes (but not powdered) for burning on a grate in automatic firing equipment.

Slurry – A viscous liquid with a high solids content. Coal slurry is a byproduct of coal mining and preparation processes

Slurry dam – A repository for the silt or culm from a preparation plant.

Subbituminous – A coal whose properties range from those of lignite to those of bituminous coal and used primarily as fuel for steam-electric power generation. Subbituminous coal contains 20 to 30 percent inherent moisture by weight. The heat content of subbituminous coal ranges from 17 to 24 million Btu per ton on a moist, mineral-matter-free basis. The heat content of subbituminous coal consumed in the United States averages 17 to 18 million Btu per ton, on the as-received basis (i.e., containing both inherent moisture and mineral matter).

Tipple - A central facility used in loading coal for transportation by rail or truck.

Undiscovered resources (coal) – Unspecified bodies of coal surmised to exist on the basis of broad geologic knowledge and theory. Undiscovered resources include beds of bituminous coal and anthracite 14 inches or more thick and beds of subbituminous coal and lignite 30 inches or more thick that are presumed to occur in unmapped and unexplored areas to depths of 6,000 feet. The speculative and hypothetical resource categories comprise undiscovered resources.

Waste coal – Usable material that is a byproduct of previous coal processing operations. Waste coal is usually composed of mixed coal, soil, and rock (mine waste). Most waste coal is burned as-is in unconventional fluidized-bed combustors. For some uses, waste coal may be partially cleaned by removing some extraneous noncombustible constituents. Examples of waste coal include fine coal, coal obtained from a refuse bank or slurry dam, anthracite culm, bituminous gob, and lignite waste.

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132 Brighton Park Boulevard, Frankfort, KY 40601	FAX:	502-573-0344
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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 Aron Patrick (Aron.Patrick@ky.gov) or Adam Blandford (Adam.Blandford@ky.gov) or by calling the Kentucky Department for Energy Development and Independence at 502-564-7192.

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)
Bureau of Labor Statistics (BLS)
U.S. Census Bureau

United States Department of the Interior (DOI)
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)

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 Aron Patrick (Aron.Patrick@ky.gov) or Adam Blandford (Adam.Blandford@ky.gov) or by calling the Kentucky Department for Energy Development and Independence at 502-564-7192.

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