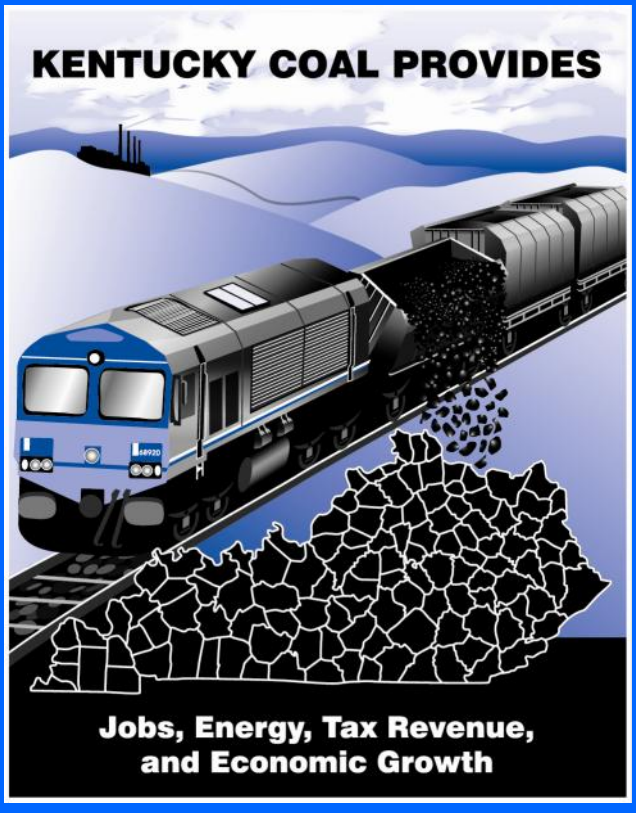
11th EDITION - POCKET GUIDE

KENTUCKY COAL FACTS



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Highlights

Production

Kentucky produced 112.9 million tons of coal in 2009 (107.3 according to Federal data), compared to the record production of 179.4 million tons set in 1990. Kentucky has been one of the top three coal producers in the United States for the last 50 years.

Employment

The Kentucky coal industry paid $1.437 billion in direct wages in 2009. According to State figures the industry directly employed 23,340 persons, indirectly providing 3 additional jobs for every miner employed. The average weekly wage for coal miners in Kentucky was $1,214 during 2009.

Economy

The Kentucky coal industry brought approximately $5.3 billion (assuming average $58 coal price) into Kentucky during 2009 through coal sales to customers in 25 other states and 4 foreign countries. Kentucky coal companies paid $270.34 million in coal severance taxes in Fiscal Year 2009-10.

Coal Markets

Electric power plants, located in 21 states, accounted for almost 94% of the Kentucky coal sold during 2009. The remainder is sold for industrial uses.

Approximately 73% of the coal produced in Kentucky is sold out-of-state each year.

There are 21 major coal-burning electric generating plants in Kentucky, and almost all (92.7%) of Kentucky's electricity is generated from coal.

Environment

All surface-mined land today is reclaimed equal to or better than it was prior to mining. Kentucky mining companies have received 25 national reclamation awards from 1986 thru 2005 for outstanding achievement in surface mining.

Coal mining creates valuable lands such as wildlife habitats, gently rolling mountain-tops, wetlands, and industrial sites where only steep, unproductive hillsides had once existed.

Kentucky operators have paid over $1.052 billion into the Federal Abandoned Mine Land Fund since 1978 to reclaim abandoned coal mines. Nationwide, operators have paid over $9 billion into this fund. Until 2006, all contributions were not allocated from the fund, but the Surface Mine Act was amended to force distribution of all monies within 7 years.

Coal Resources

Kentucky has two distinct coal fields, one in Western Kentucky and one in Eastern Kentucky. Kentucky's 86.3 billion tons of remaining coal resources represent 82% of the original resource.

Electricity

Average retail electricity costs in Kentucky were 6.03 cents/kilowatt-hour in 2009, the lowest in the United States.

This publication is for informational use only. Printed in 2011, it contains mainly 2009 statistics—the most recent year of complete information. It includes some extrapolative second and third party data as well as some broad estimates, and should not necessarily be construed as official source data or be construed as advocating or reflecting any policy position of the Kentucky Department for Energy Development and Independence, the Kentucky Coal Association, or the Kentucky Geological Survey.

Coal mine and production data are compiled by both Kentucky and Federal agencies. Both sources are used in this publication for completeness, however the reader should be aware that differences exist between the sources.

Totals given in some tables of this book do not appear to sum correctly due to rounding of the original data.

All coal tonnages in this report are given in short tons (2000 lbs.)

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Changes & Trends

Western Kentucky

Western Kentucky coal production has been increasing since 2003 as a result of greater demand for lower-cost, medium-sulfur coal suitable for power plants with emission control technology. This trend is expected to continue in the near term because of new mine openings in the region and anticipated improvements to coal-fired plants.

Eastern Kentucky

The number of eastern Kentucky underground mines has decreased steadily from around 900 in 1985 to 186 in 2009. While the current mines have larger production than earlier mines, total underground production has been falling incrementally from 70 to 80 million tons (MT) in the 1990's and 50 to 60 MT in the early 2000's to 37 MT in 2009. This change is believed to be due to the high cost of underground mining in the region and reduced demand arising from power plants switching to sulfur-reduction technology or cheaper western U.S. coal.

Market Share

Kentucky remains the third largest coal producer in the U.S., but its share of the domestic coal market has continued to fall (23% in 1975; 10% in 2009) as western U.S. coal captures more market share.

Employment

After nearly three decades of declining employment due to increased efficiency and fewer mines, Kentucky mining employment has risen in the last decade. Western Kentucky mines have added 1,200 employees and eastern Kentucky mines have added 2,157 employees.

Coal Prices

After three decades of level coal prices in the $20 per ton range, coal prices have risen dramatically over the past ten years to a current average price of $58 per ton.

Mine Productivity

Between 2000 and 2009, mine productivity has declined in Kentucky and the United States, reversing a century-long trend of increased productivity.

Power Plant Emissions

Kentucky's NOx and SO_2 emissions from electric power plants have declined steadily since 1990 when the Clean Air Act Amendments were instituted. During the same period, CO_2 emissions have risen 20% due to increased power consumption.

Data Sources

The information in this booklet is compiled by a number of State, Federal, and private agencies. Without the assistance of those organizations and their representatives, this publication would not be possible. Each page lists the specific sources used for this update. This page gives contact information for the organizations and who assisted us with data collection. Some of the historical data shown in this issue was derived from earlier versions of this booklet, and the data sources referenced here may no longer be readily available.

U.S. Department of Energy, Energy Information Administration
www.eia.doe.gov

Kentucky Energy and Environment Cabinet, Department for Natural Resources

Office of Mine Safety and Licensing
http://omsl.ky.gov

Coal production, mines, and licensing
John Hiett (John.Hiett@ky.gov)
http://omsl.ky.gov/Pages/AnnualReports.aspx

Safety Analysis, Training & Certification
Frank Reed (Frank.Reed@ky.gov)
http://omsl.ky.gov/Pages/SafetyAnalysis,TrainingandCertification.aspx

Division of Mine Reclamation and Enforcement
http://dmre.ky.gov/
Mr. Clay Baxter (Clay.Baxter@ky.gov): Reclamation

Department for Natural Resources, Division of Abandoned Mine Lands
http://aml.ky.gov/
Mr. Steve Hohmann (Steve.Hohmann@ky.gov): AML

Kentucky Office of Employment and Training, Research and Statistics Branch, Employment and Wage Section
http://oet.ky.gov/
Ms. Beverly Dearborn (beverlym.dearborn@ky.gov): wages

Kentucky Department of Revenue
http://revenue.ky.gov/
Mr. Randy Murray (Randy.Murray@ky.gov)
Ms. Sarah Pence (Sarah.Pence@ky.gov): Unmined minerals tax

Kentucky Department for Local Government
http://www.dlg.ky.gov/
Ms. Kim Tompkins (Kim.Tompkins@ky.gov): Coal severance tax

Kentucky Transportation Cabinet, Coal Haul Highway System
http://transportation.ky.gov/planning/maps/coalhaul/coalhaul.asp

Kentucky Transportation Cabinet, IRP
http://dmc.kytc.ky.gov/irp
Mr. Jeff Tipton (Jeff.Tipton@ky.gov): Truck Haulage

Environmental Protection Agency, Air Emission Sources
http://www.epa.gov/air/emissions/where.htm

History of Coal

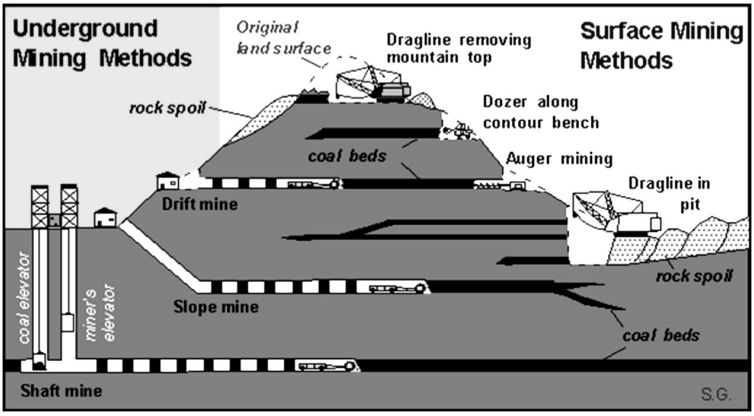
1701	Coal discovered in Virginia.
1748	First recorded U.S. coal production.
1750	April 13th-Dr. Thomas Walker was the first recorded person to discover and use coal in Kentucky.
1755	Lewis Evan's map showing coal in what is now the Greenup County and Boyd County area of Kentucky.
1758	First commercial U.S. coal shipment.
1820	First commercial mine, known as the "McLean drift bank" opened in Kentucky, near the Green River and Paradise in Muhlenberg County. 328 short tons mined and sold in Kentucky.
1850	Lexington and Big Sandy Railroad proposed. Kentucky Geological Survey established.
1860	Pre-Civil War Kentucky production record of 285,760 tons.
1866	Surface mining begins near Danville, Illinois.
1870	Post-Civil War Kentucky production decline to 150,582 tons. St. Louis & Southern Railroad completed from Henderson to Earlington, Kentucky.
1872	First train off the Big Sandy Railroad.
1877	Coal mined with steam-powered shovel.
1880	Mechanical stokers introduced. First coke ovens in West Kentucky. Mine Ventilation Law. First train from Williamson, West Virginia to Pike County, Kentucky. Coal mining machines come into general use.
1890	N&W Railroad's first mine at Goody in Pike County. Hopkins County in West Kentucky leading coal producer in the state for 18 straight years. Miner Pay Law. United Mine Workers of America formed. Machines developed to undercut coalbeds. 5,000 kilowatt steam turbine generates electricity.
1900	Child Labor Law. Edgewater Coal Company's first production in Pike County. First train off the Lexington and Eastern Railroad. Independent Geological Survey established.
1910	First train from the Cumberland Valley Railroad. Fordson Coal Company's first production at Pond Creek. Pike-Floyd Coal Company's first production at Betsy Layne.
1914	World War I increases demand for coal; Kentucky produced 20.3 million tons. Short-flame or "permissible" explosives developed. Mine Safety Law.
1918	First pulverized coal firing in electric power plants.
1920	Federal Mineral Leasing Act.
1923	All-time high U.S. employment of 704,793 bituminous coal and lignite miners. First dragline excavators built especially for surface mining.
1932	Walking dragline excavators developed.
1940	World War II - coal production in Kentucky rises to 72.4 million tons for the war effort. Auger surface mining introduced.
1942	Republic Steel Company's first production - Road Creek, Kentucky. Post-War Marshall Plan - production rose to 88.7 million tons in Kentucky. Continuous underground mining systems developed. Kentucky Water Contamination Legislation.
1947	Kentucky Coal Association founded.
1956	Fish and Wildlife Coordination Act. Railroads converting from coal to diesel fuel. Roof bolting introduced in underground mines.
1960	Railroads began using unit coal trains. First longwall mining with powered roof supports. Kentucky Surface Mining Legislation.
1966	National Historic Preservation Act. C&O Railroad to John's Creek constructed - Pike County.

History of Coal

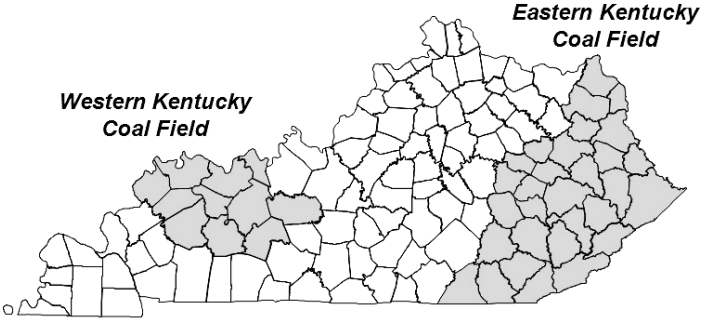
1969	Federal Coal Mine Health and Safety Act.
1970	Federal Clean Air Act.
1972	Kentucky Coal Severance Tax established. Federal Water Pollution Control Act. Kentucky becomes the leading coal production state.
1973	Endangered Species Act. OPEC oil embargo: Coal production and prices rise.
1976	Federal Coal Leasing Amendments Act.
1977	Federal Surface Mine Control and Reclamation Act.
1980	Congress enacts the National Acid Precipitation Assessment Program (NAPAP) Study, a 10 year research program, which invested $550 million for the study of "acid rain." Industries spend over $1 billion on Air Pollution Control Equipment during 1980.
1983	OPEC cuts oil prices for first time. U.S. Clean Coal Technology Demonstration Program established $2.5 billion in Federal matching funds committed to assist the private sector to develop and demonstrate improved clean coal technologies.
1988	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. TVA 160-MW Atmospheric Fluidized Bed Combustion Unit on line. Wyoming displaces Kentucky as the leading coal producing state.
1988	Broad Form Deed legislation passes in Kentucky.
1990	Federal Clean Air Act Amendments of 1990. U.S. coal production exceeds 1 billion tons.
1992	U.S. Energy Policy Act of 1992.
1993	CEDAR, Inc. (Coal Education Development and Resources) formed in Pike County.
1994	Western Kentucky CEDAR, Inc. was formed in Webster and Union Counties.
1996	Kentucky Coal Education (www.coaleducation.org) was introduced to the Internet. Workers' Comp Reform Laws are passed in Kentucky.
1997	The Kentucky Fish and Wildlife Commission voted to reintroduce elk into 14 eastern Kentucky counties on post-mined lands, citing mountaintop mining areas and old mine benches as good elk habitat. Kentucky has the only large free-ranging elk herd in the eastern United States.
1998	Federal synthetic fuel tax credit for use of coal fines begins.
2001	Natural gas prices increase more than 50% in one year. Electricity shortages result in rolling blackouts in California.
2005	East Kentucky Power Cooperative's Gilbert coal-fueled fluidized-bed power plant begins operation, the first coal-fired plant in over 15 years. Energy Policy Act of 2005 signed by President Bush; includes major Clean Coal Technology programs. EPA adopts Clean Air Mercury Rule to reduce power plant HG emissions to 15 tons by 2018.
2006	Kentucky Energy Security National Leadership Act (HB 299) enacted; Act calls for strategy for producing liquid and gaseous fuels from Kentucky coal. Kentucky Coal Academy founded to train new coal miners. Kentucky becomes the first coal state to adopt a drug testing program for certification of coal miners. Congress passes Mine Improvement & New Emergency Response Act, (MINER Act). The most significant federal mine safety legislation in 30 years, requiring underground coal operators to improve accident preparedness.
2007	First year with no underground coal mining fatalities in Kentucky since records began. House Bill 1, providing incentives for development in Kentucky of industries for producing transportation fuels and synthetic natural gas by gasification of coal enacted. U.S. Air Force flies B-52 bomber and C-17 transport aircraft on a 50-50 blend of conventional jet fuel and jet fuel produced by the Fischer-Tropsch process that converts gasified coal into liquid fuels and chemicals.
2009	EPA proposes rule making for regulating coal combustion residues as hazardous materials.
2010	EPA proposes Clean Air Transport Rule for reducing SO_2 and NO_x at power plants.
2011	EPA proposes to develop new standards for cooling water intake structures at power plants EPA proposes new rules for reductions in Mercury emissions.

Sources: Energy Information Administration, (www.eia.doe.gov), Kentucky Department of Mines and Minerals, Annual Reports, and Willard Rouse Jillson, Coal Industry in Kentucky, 1922.

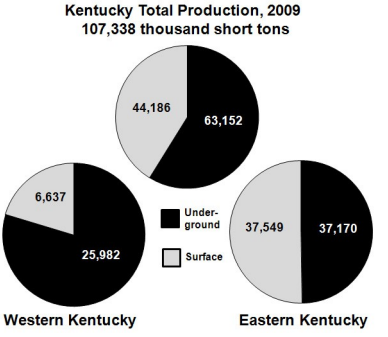
Types of Mining



Kentucky has two distinct coal fields, each containing numerous deposits of bituminous coal of various characteristics and mines of every type and size. In surface mining, the use of large mining equipment maximizes the recovery through the excavation of one or more coal seam deposits in the large area surface mines of the gently rolling **Western Kentucky** coal field and in the large mountain top mines in the steeper terrain of the **Eastern Kentucky** coal field. Both the eastern and western Kentucky coal fields have large, modern, and efficient underground mines (of various entry types) utilizing improved mining methods with increased mechanization including continuous miners, continuous haulage, and longwall mining. Of Kentucky's 107.3* million tons of 2009 coal production, 63.1 million tons were produced by underground mining methods and 44.2 million tons were produced by surface mining methods.



Mine Type	No. of Mines	Production (million tons)
Surface	**251**	**44.2**
E KY	239	37.5
W KY	12	6.6
Underground	**198**	**63.2**
E KY	186	37.2
W KY	12	25.9
E KY Total	425	74.7
W KY Total	24	32.6
State Totals	**449**	**107.3**



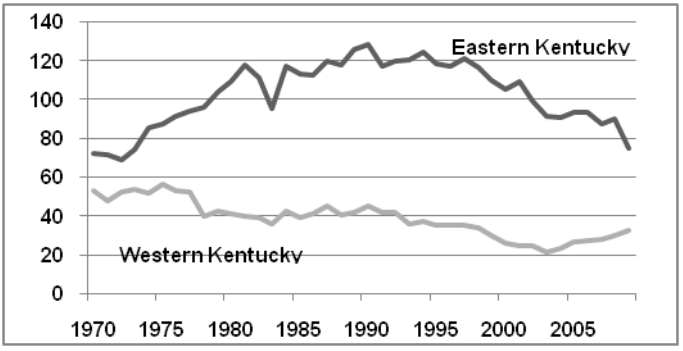
***NOTE**: This is the official USDOE production figure for Kentucky. State and Federal numbers typically differ.

Sources: Coal mining method graphic courtesy of Dr. Stephen F. Greb, Kentucky Geological Survey, University of Kentucky. 2009 production data is from USDOE/EIA Annual Coal Report, Table 1.

U.S. Coal Production

KY and U.S. Coal Production 1970—2009 (millions of tons)

Year	Kentucky Eastern	Kentucky Western	Kentucky Total	United States	KY as % of U.S.
1970	72.5	52.8	125.3	602.9	20.8
1975	87.3	56.4	143.6	648.4	22.1
1980	109.2	41.0	150.1	829.7	18.1
1985	113.3	39.0	152.3	883.6	17.2
1990	128.4	44.9	173.3	1,029.1	16.8
1995	118.5	35.2	153.7	1,033.0	14.9
2000	105.0	25.8	130.7	1,073.6	12.2
2001	109.1	24.7	133.8	1,125.9	11.9
2002	99.4	24.7	124.1	1,094.3	11.3
2003	91.3	21.5	112.8	1,071.8	10.5
2004	90.9	23.4	114.2	1,112.1	10.3
2005	93.3	26.4	119.7	1,131.5	10.6
2006	93.6	27.2	120.8	1,162.7	10.4
2007	87.1	28.2	115.3	1,146.6	10.1
2008	90.3	30.1	120.4	1,171.8	10.3
2009	74.7	32.6	107.3	1,074.9	10.0



Note: This chart contains the official U.S. DOE production numbers for Kentucky. Federal and state (page 8) production numbers typically differ.

U. S. Leading Coal Producers

Kentucky ranked third in the United States in coal production during 2009.

2009 Rank	State	Millions of Tons
1	Wyoming	431.1
2	West Virginia	137.0
3	**Kentucky**	**107.3**
4	Pennsylvania	58.0
5	Montana	39.5
6	Indiana	35.7
7	Texas	35.1
8	Illinois	33.7
9	North Dakota	29.9
10	Colorado	28.3

Sources: U. S. Bureau of Mines, Mineral Yearbook, 1970-1976; U.S. DOE/EIA; Coal Production, 1977-1992, Coal Industry Annual, 1993-2006, Annual Coal Reports, 2007-2009.

Kentucky Coal Production

Kentucky produced **112.9** million tons of bituminous coal in **2009** (KY data), down more than 66 million tons from the record 179.4 million tons set in 1990.

Year	Underground		Surface		State
	East KY	West KY	East KY	West KY	Total
1970	44,068,538	19,430,489	28,527,422	33,281,946	125,308,395
1975	41,280,096	24,757,456	46,957,448	31,209,511	144,204,511
1980	59,603,430	19,558,157	49,582,095	21,400,291	150,143,973
1985	75,530,607	21,188,598	52,294,115	22,602,743	171,616,063
1990	81,577,417	27,375,465	49,393,390	21,026,997	179,373,269
1995	73,922,358	24,763,534	47,288,817	11,812,973	157,787,682
2000	59,956,626	21,543,143	44,335,363	6,010,856	131,845,988
2005	52,679,423	21,751,538	45,073,132	4,903,482	124,407,575
2006	50,853,952	25,971,680	45,537,968	3,597,011	125,960,611
2007	46,016,208	26,021,994	44,166,862	4,037,956	120,243,020
2008	45,418,682	26,985,702	48,021,888	5,395,187	125,821,459
2009	37,811,510	28,515,085	38,718,788	7,813,818	112,859,201

Source: Kentucky Division of Mines & Minerals, Annual Reports, 1960-2002; Office of Mine Safety & Licensing, Annual Reports, 2003-2009.

Number of Kentucky Coal Mines, 1985-2009

Year	Underground		Surface		State
	East KY	West KY	East KY	West KY	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

Source: U.S. DOE-Energy Information Administration, Coal Industry Annual, 1993-2009; Coal Production, 1984-2004.

Number of Kentucky Mine Licenses, 1985-2009

Year	Underground		Surface		State
	East KY	West KY	East KY	West KY	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

Source: Kentucky Division of Mines & Minerals, Annual Reports, 1960-2002; Office of Mine Safety & Licensing, Annual Reports, 2003-2009. (The number of actual mines is smaller than the final number of mine licenses issued each year. A new license is required when the company name or ownership changes.)

County Coal Production

There were 449 mines in Kentucky during 2009. These 449 mines were issued 592 mine licenses and produced 112.9 million tons.

198 underground mines (245 licenses) accounted for 58.8% of Kentucky's production and 251 surface mines (347 licenses) accounted for 41.2% of Kentucky's production.

78.5% of western Kentucky and 49.4% of eastern Kentucky's coal production was from underground mines during 2009.

In 2009, 28 Kentucky counties produced coal; seven western Kentucky counties and 21 eastern Kentucky counties.

Production and Mine Licenses by County and Mine Type, 2009 (thousands of tons)

	Underground			Surface			Total		
Area/County	Mines	Licenses	Production	Mines	Licenses	Production	Mines	Licenses	Production
East KY									
Bell	7	10	686	22	31	2,323	29	41	3,009
Breathitt	2	2	767	5	6	110	7	8	877
Clay	-	1	-	7	11	443	7	12	443
Elliott	-	-	-	2	4	14	2	4	14
Floyd	20	28	1,113	14	30	3,799	34	58	4,912
Harlan	34	44	7,507	29	29	2,934	63	73	10,441
Jackson	-	-	-	1	1	30	1	1	30
Johnson	1	2	1,668	8	12	641	9	14	2,309
Knott	22	26	3,200	13	21	2,391	35	47	5,591
Knox	2	4	123	8	10	470	10	14	593
Lawrence	1	1	210	11	12	541	12	13	750
Lee	-	-	-	1	1	1	1	1	1
Leslie	6	8	1,912	7	12	1,778	13	20	3,690
Letcher	25	29	4,751	13	23	1,674	38	52	6,424
Magoffin	1	2	56	9	12	1,664	10	14	1,720
Martin	8	7	2,220	7	9	1,926	15	16	4,147
Morgan	-	-	-	1	3	104	1	3	104
Owsley	-	-	-	3	4	34	3	4	34
Perry	7	7	4,286	27	28	10,450	34	35	14,736
Pike	48	61	9,306	43	61	7,128	91	122	16,434
Whitley	2	1	6	6	8	264	8	9	271
East KY Total	**186**	**233**	**37,812**	**237**	**328**	**38,719**	**423**	**561**	**76,530**
West KY									
Daviess	-	-	-	1	1	407	1	1	407
Henderson	1	1	1,953	1	1	1,201	2	2	3,154
Hopkins	4	4	16,133	-	-	-	4	4	16,133
Muhlenberg	2	2	2,040	8	13	2,123	10	15	4,163
Ohio	1	1	589	2	2	3,973	3	3	4,561
Union	3	3	4,888	-	1	110	3	4	4,998
Webster	1	1	2,913	-	1	-	1	2	2,913
West KY Total	**12**	**12**	**28,515**	**12**	**19**	**7,814**	**24**	**31**	**36,329**
KY Total	**198**	**245**	**66,327**	**249**	**347**	**46,533**	**447**	**592**	**112,859**

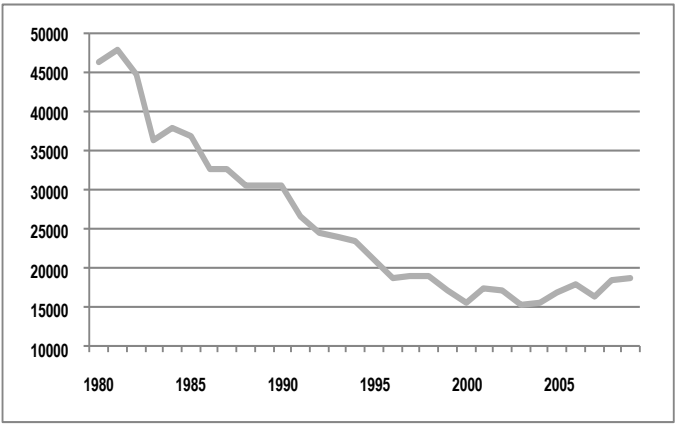
Source: Production and Licenses: Kentucky Office of Mine Safety and Licensing; Mines: USDOE/EIA, Annual Coal Report, 2009, Table 2.

The number of licenses is greater than the number of mines because a mine may be relicensed if the company changes name or ownership. Some columns do not total correctly due to rounding.

Employment

The Kentucky coal mining industry had a 2009 work force of approximately 18,850* people directly employed in coal mining jobs. The Western Kentucky coal field directly employs approximately 3,703 persons, while the Eastern Kentucky coal field provides 15,147 direct mining jobs.

Kentucky's Coal Mining Work Force Trends, 1980-2009



Eastern Kentucky averaged slightly more than 80% of Kentucky's coal mining work force and accounted for nearly 68% of Kentucky's total coal production in 2009. Western Kentucky averaged approximately 20% of Kentucky's coal mining work force and accounted for nearly 32% of Kentucky's total coal production in 2009.

Direct mining employment shows an upward trend since the year 2000, primarily as a result of increased employment at western Kentucky underground mines and eastern Kentucky surface mines.

Kentucky Coal Mining Employment, 1980 to 2009

Year	Western Kentucky			Eastern Kentucky			Kentucky Total
	Surface	Underground	Total	Surface	Underground	Total	
1980	3,995	7,879	11,874	11,819	22,702	34,521	46,395
1985	3,421	4,294	7,715	10,516	18,583	29,099	36,814
1990	2,095	3,491	5,586	7,505	17,407	24,912	30,498
1995	1,109	3,176	4,285	5,474	11,366	16,840	21,125
2000	450	2,060	2,510	4,162	8,828	12,990	15,500
2005	446	2,254	2,700	5,407	8,883	14,290	16,990
2006	350	2,599	2,949	5,707	9,303	15,010	17,959
2007	430	2,508	2,938	5,334	8,038	13,372	16,310
2008	505	2,793	3,298	6,423	8,853	15,276	18,574
2009	619	3,084	3,703	6,197	8,950	15,147	18,850

***Note:** State employment numbers on page 12 differ from these federal EIA employment numbers.
Source: U.S.DOE—EIA; Coal Industry Annual, 1993-2009, Coal Production 1979-1992.

Productivity

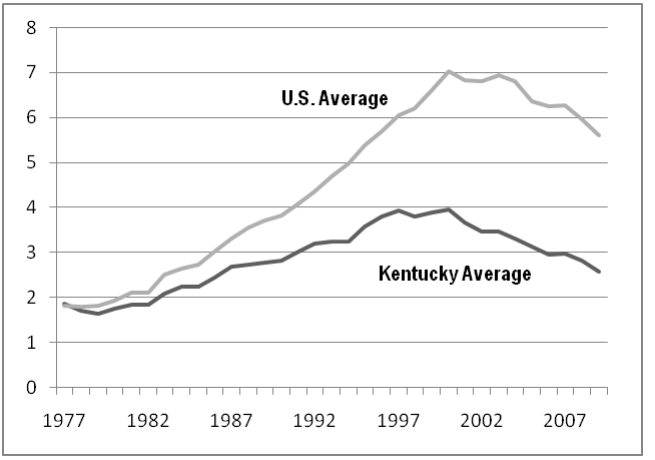
Kentucky Coal Mine Productivity

The average Kentucky and U.S. coal mine productivity increased steadily until 2000, and has since decreased at about the same rate. Mine productivity can be affected by individual seam or mine conditions as well as factors such as safety requirements. The declines over the past ten years are both a Kentucky and national trend, therefore is not likely to be primarily related to mine conditions but some other external factor.

Mine Productivity, 1980-2009 (tons/miner/hour)

Year	Kentucky			Appalachian Region	Interior Region	Western Region	U.S. Average
	Eastern	Western	Average				
1980	1.7	2.0	1.7	1.4	2.3	5.6	1.9
1985	2.1	2.6	2.2	1.9	2.8	8.6	2.7
1990	2.7	3.5	2.8	2.6	3.9	11.8	3.8
1995	3.5	4.0	3.6	3.3	5.0	15.7	5.4
2000	3.9	4.5	4.0	4.1	5.8	19.6	7.0
2005	2.9	4.1	3.1	3.3	5.3	20.5	6.4
2006	2.8	3.8	3.0	3.1	5.1	20.2	6.3
2007	2.8	4.0	3.0	3.1	4.9	20.4	6.3
2008	2.6	3.8	2.8	2.9	4.8	19.9	6.0
2009	2.3	3.7	2.6	2.7	4.5	18.3	5.6

Kentucky and U.S. Mine Productivity Trends, 1977-2009



Source: U.S. Department of Energy—EIA: Coal Industry Annual, 1993-2009, Coal Production: 1977-1992.

Employment / Wages by County

Coal County Employment and Wages, 2009

County[1]	Direct Mining Employ-ment	Percent of Labor Force	Miners as % of Total Employed	Mining Wages	Percent of Total County Wages	Average Weekly Mining Earnings[3]
Eastern Kentucky						
Bell	1,282	12.8	13.0	$66,738,178	29.1	$1,001
Boyd	181	0.8	0.7	12,789,548	1.3	1,359
Breathitt	110	1.9	3.4	6,484,222	10.0	1,134
Carter	110	0.8	1.8	4,987,627	4.3	884
Clay	89	1.3	2.5	4,025,230	5.9	878
Clark	31	0.2	0.2	1,162,216	0.3	721
Floyd	1,301	8.2	11.0	74,039,693	21.6	1,100
Harlan	1,693	15.8	20.6	119,979,404	46.7	1,355
Johnson	302	3.0	4.9	16,659,107	12.3	1,061
Knott	1,327	19.6	36.8	85,672,715	67.1	1,242
Knox	160	1.2	1.9	8,552,670	4.3	1,028
Laurel	316	1.2	1.4	19,813,627	3.2	1,206
Lawrence	70	1.1	2.1	3,175,928	3.7	925
Lee	104	3.7	5.7	3,221,216	8.9	596
Letcher	1,191	13.3	20.6	78,943,867	43.6	1,275
Magoffin	156	3.4	7.3	7,770,601	17.7	965
Martin	755	19.9	28.1	51,428,138	59.8	1,309
Perry	2,292	19.3	17.6	158,883,929	35.6	1,333
Pike	4,478	16.7	18.6	287,904,386	34.6	1,236
Pulaski	71	0.3	0.3	3,006,871	0.5	814
Whitley	139	0.9	1.2	4,589,232	1.6	647
EKY Total[2]	16,158			$1,019,828,405		$1,051
Western Kentucky						
Daviess	167	3.4	3.9	8,809,689	0.8	1,015
Hancock	15	0.3	0.4	513,281	0.3	658
Henderson	300	1.3	1.6	22,718,862	4.1	1,456
Hopkins	1,484	6.3	8.5	114,280,110	20.9	1,480
Muhlenberg	951	6.8	10.9	60,392,925	25.8	1,221
Union	823	10.5	14.5	61,757,188	35.5	1,443
Webster	91	1.4	3.2	3,764,037	4.7	798
WKY Total[2]	3,831			$272,236,092		$1,153
State Total[2]	**23,340**			**$1,473,008,254**		**$1,214**

Fayette & Jefferson Counties

Note: The direct mining employment classification does not include most of the administrative/professional employees of coal companies located in these Kentucky metropolitan areas and does not include any private services or indirect employment.

1 Counties with less than three employers or one employer with 80% of the total county miner workforce were withheld to avoid disclosure of individual company data. These counties are as follows: Boyle, Elliott, Fayette, Greenup, Jackson, Jefferson, Leslie, McCreary, McLean, Mason, & Ohio. It is suspected that multi-county mining employment attributes to some counties being under reported and others being over reported.

2 Columns do not add to the EKY & WKY totals due to withheld data and do not equal state totals due to county of employment being reported outside of coal field.

3 Variation in average weekly mining income affected greatly by hours worked per week as well as hourly wage rate. Values and methodologies used in this table may not be consistent with LGEDF regulations (page 15). Do not use these values for LGEDF estimates..

Source: Kentucky Office of Employment and Training, Research and Statistics Branch, Employment and Wage Section.

Safety and Training

Safety and health standards are highly regulated by the federal Mine Safety and Health Administration (MSHA) and the Kentucky Office of Mine Safety and Licensing (KOMSL).

All surface and underground mines are inspected regularly. 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 (KOMSL) 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 those 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 plus pass a written exam prior to starting work as an inexperienced miner.

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.

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.

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

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

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

Underground Miner Classifications

Experience Required	Underground Mining Position
5 yrs	Electrical Inspector* Mine Inspector/Mine Safety Analyst* Mine Foreman* Electrical Instructor*
3 yrs	Asst. Mine Foreman* Instructor
1 yr.	Electrical Worker* Hoisting Engineer*
45 days	Shot Firer* Certified Miners
1 yr.	Solid Blasting
SPECIAL TRAINING	
MET	Mine Emergency Technician or
EMT	Emergency Medical Technician First Aid

*Tests are required in addition to years of experience.

NOTE: Over 20,000 persons are trained or retrained annually for one or more surface and/or underground miner classification by the KOMSL to maintain the current Kentucky miner workforce of 18,235 miners.

Source: Kentucky Office of Mine Safety and Licensing (KOMSL).

MET/EMT - At least two (2) emergency medical or mine emergency technicians shall be employed on every shift engaged in the production of coal, and at least one (1) emergency medical or mine emergency technician shall be employed on every non production shift. For underground mines, at least one (1) of the two (2) emergency or mine emergency technicians shall be underground at all times while miners are working in the mines. An additional emergency medical technician or mine emergency technician shall be employed for every additional fifty (50), or any portion thereof, employees per shift who are actively engaged in the extraction, production, or preparation of coal.

METs are certified through training and examination administered by KOMSL under regulations established by the KOMSL. The MET certification requires 40 hours of initial training, a current CPR certification and eight hours of training annually.

Source: Kentucky Office of Mine Safety and Licensing

Severance Tax by County

Coal Severance Tax Revenue (dollars) by County, FY 2009-2010

County	Gross Value of Severed Coal	Tax on Severed Coal	Gross Value of Processing	Total Tax Receipts
East KY	(Elliott, Jackson, Laurel, Morgan, and Owsley data withheld)			
Bell	$158,730,060	$6,462,965	$22,217,916	$7,362,210
Boyd	-	-	208,502,871	533,345
Breathitt	203,068,964	9,139,955	6,379,602	9,427,037
Clay	22,388,094	745,374	8,386,146	1,096,369
Floyd	163,510,463	7,297,743	11,647,957	7,833,112
Harlan	659,987,635	29,269,635	80,486,084	32,598,573
Johnson	21,610,353	989,799	670,512	733,303
Knott	415,511,267	18,216,768	43,419,878	20,328,647
Knox	43,220,649	1,328,015	8,079,762	1,517,860
Lawrence	24,721,778	1,023,598	4,101,964	990,345
Leslie	241,525,031	10,868,670	32,827,311	12,325,238
Letcher	399,173,509	17,928,810	30,602,944	19,294,034
Magoffin	108,113,833	4,869,007	194,917	12,874,192
Martin	288,758,421	11,539,031	30,203,501	12,874,192
Perry	624,338,850	27,493,771	52,081,872	29,891,381
Pike	994,498,952	41,614,225	131,230,329	47,503,662
Whitley	10,974,174	357,581	1,019,894	323,820
East KY Total*	**$4,380,132,034**	**$189,144,948**	**$672,053,462**	**$217,507,319**
West KY	(Daviess, Hancock, Henderson, and Ohio data withheld)			
Hopkins	537,118,387	18,891,442	64,507,972	22,971,214
Muhlenburg	138,926,518	6,291,261	16,340,266	7,039,752
Union	178,165,690	8,023,187	21,543,116	9,007,868
Webster	156,347,913	6,985,500	23,234,069	8,245,840
West KY Total*	**$1,010,558,508**	**$40,191,390**	**$125,625,423**	**$47,264,674**
State Total	**$5,656,656,607**	**$241,305,000**	**$831,233,257**	**$270,341,379**

*The sum of eastern and western Kentucky severed coal is less than the state total of $5.65 billion, because data were withheld from the indicated counties having fewer than three filers. Total tax receipts exceed the annual tax due to collections of prior year assessments.

Source: Kentucky Revenue Cabinet

Coal Taxes Returned

Coal Severance Taxes Returned to Counties, FY 2001 - 2010

Fiscal Year	Local Govt. Economic Assistance Fund (LGEAF)*		Local Govt. Economic Development Fund (LGEDF)**		Total % Returned
2000-01	$15,279,384	13%	$29,105,903	27%	40%
2001-02	19,387,021	14%	37,017,575	30%	44%
2002-03	17,348,797	14.5%	35,041,129	32.5%	47%
2003-04	17,610,654	15%	38,215,684	35%	50%
2004-05	22,874,326	15%	38,183,105	35%	50%
2005-06	29,172,025	15%	51,727,887	35%	50%
2006-07	30,075,186	15%	55,425,935	35%	50%
2007-08	31,465,308	15%	57,751,827	35%	50%
2008-09	39,997,515	15%	73,801,285	35%	50%
2009-10	36,798,207	15%	60,533,908	35%	50%

* Established by the General Assembly fiscal years 1991-92.
** Established by the General Assembly FY 1992-93; does not include interest.

Coal Taxes Returned to Coal-producing Counties

East KY	**LGEAF* 2009-2010**	**LGEDF** 2009-2010**	**Unmined Minerals 2009**
Bell	$896,948	$1,303,183	$271,458
Boyd	0	147,109	3,561
Breathitt	1,069,342	1,270,666	691,372
Carter	0	0	414
Clay	383,833	468,616	26,933
Elliott	159,987	140,088	2,426
Floyd	1,712,023	1,714,200	1,303,741
Harlan	3,061,470	3,246,148	2,052,735
Jackson	255,868	322,564	525
Johnson	628,073	517,764	71,068
Knott	2,217,397	4,574,740	1,827,813
Knox	453,214	327,084	54,090
Laurel	367,903	148,793	160
Lawrence	910,681	520,355	60,910
Lee	108,649	452,650	1,059
Leslie	1,261,784	2,031,516	1,202,575
Letcher	2,056,022	2,724,356	1,287,252
McCreary	0	0	583
Magoffin	703,842	945,166	264,087
Martin	1,404,130	3,005,907	934,667
Menifee	0	200,101	0
Morgan	224,269	266,569	4,889
Owsley	178,333	344,748	8,415
Perry	2,939,848	3,063,834	2,097,777
Pike	4,901,613	5,708,438	2,486,880
Pulaski	0	104,258	12
Rockcastle	0	134,992	0
Whitley	342,990	220,261	13,072
Wolfe	0	285,352	7,730
East KY Total	**26,238,221**	**34,189,458**	**14,676,207**
West KY			
Crittenden	0	143.557	0
Daviess	$638,772	$88,079	$34,286
Hancock	38,432	49,824	1,949
Henderson	845,357	647,644	434,211
Hopkins	2,040,483	1,706,570	547,183
McLean	0	0	2,428
Muhlenberg	955,668	957,064	359,862
Ohio	598,466	248,125	288,434
Union	617,847	1,125,051	371,548
Webster	872,038	1,200,566	187,213
West KY Total	**6,607,063**	**6,166,480**	**2,227,213**
Multi - County* **		20,177,969	
State Total	**$32,845,283**	**$60,533,908**	**$16,903,420**

* County and municipal totals for FY2009-2010. Twenty seven (27) coal producing counties and incorporated cities.
** Includes interest and taxes collected. Includes 36 counties still qualifying for producer distributions.
*** Counties may jointly apply for multi-county LGEDF Funds. State Allocation Total is only partially authorized.

FY 2009 - 2010 Impacted Counties

The LGEAF table does not include non-producing counties impacted by coal transportation, referred to as "Impacted Counties."

Economic Impact

Direct Benefits

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

- Employed 18,850 miners in 2009, with 3,703 in Western Kentucky and 15,147 in Eastern Kentucky.
- Paid wages of $1.473 billion in 2009, resulting in an average weekly wage of $1,214 per miner.
- Produced over 107 million tons of coal with an approximate value of $6.3 billion dollars.
- Severance taxes on FY 2009-2010 coal production were $241 million with a total of $270 million being collected (includes some previous year assessments).
- $97.3 million in coal severance tax receipts were returned to coal-producing counties for infrastructure improvements and economic development projects.
- $16.9 million in unmined mineral taxes were collected in FY 2009-2010.

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% 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% would be spent in the transportation industry by rail or truck.
- 14% 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% would be spent in the petroleum industry, natural gas and electric power transmission.
- 9% would be spent in industries that sell or maintain commercial equipment and structures used to support the coal industry.

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.

Coal Prices

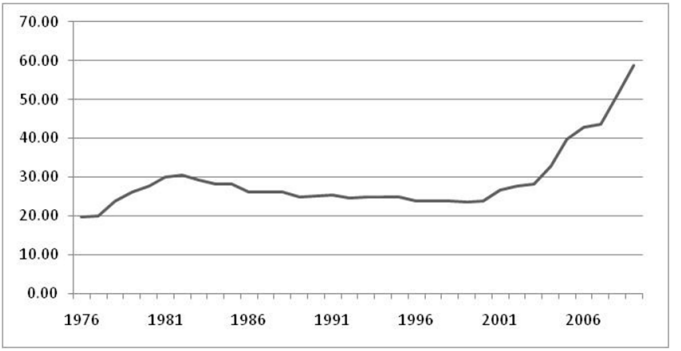
Coal Prices

There are as many coal price averages as there are coal qualities (i.e., sulfur, Btu), market types (i.e., steam coal, metallurgical or coking, industrial, export), sales conditions (i.e., spot market, extended spot market, short-term contract, long-term contract), sales locations and included costs (i.e. FOB—Free on Board the mine, railcar, river terminal, export terminal, FAS—Free Along Side, CIF—Cargo Cost/Insurance Freight, total delivered cost). Within each of these ways to sell coal, there are wide ranges of price. This page shows average delivered coal prices which are heavily weighted by electric utility sales.

Average Value of Delivered (FOB mine) Kentucky Coal 1980-2009 (dollars per short ton)

	Eastern Kentucky			Western Kentucky			KY
Year	Deep	Surface	Average	Deep	Surface	Average	Average
1980	30.98	26.23	28.73	27.40	22.28	24.72	27.62
1985	29.83	27.41	28.77	26.79	26.68	26.73	28.24
1990	25.49	26.44	25.84	24.42	22.01	23.32	25.19
1995	26.52	25.24	26.00	21.33	19.46	20.75	24.79
2000	25.32	23.59	24.58	21.42	17.91	20.69	23.80
2005	43.55	43.05	43.33	27.48	25.87	27.19	39.68
2006	46.88	46.46	46.68	30.52	24.29	29.76	42.73
2007	49.47	44.53	47.06	33.26	28.56	32.63	43.60
2008	57.81	55.49	56.63	36.07	32.44	35.53	51.32
2009	70.98	62.70	66.85	40.81	32.26	39.07	58.86

Kentucky Coal Price Trend, 1976-2009



Electric Utility Consumption of Coal, 2009

Of the 1,075 million tons of coal produced in the U.S. in 2009, the electric power sector used 981.5 million tons, or 91.3%. The average delivered price of coal to electric utilities in 2009 was $42.21 per ton.

Over 90% of all coal consumed in the U.S. was in the electric power sector, the driving force for all coal consumption. Coal consumption in the U.S. electric power sector decreased by 88.2 million tons from 2008. In 2009, 92.7% of Kentucky's electric power generation was from coal, 2.2% came from petroleum, 3.7% from hydro, 1.0% from natural gas, and 0.4% from other renewable sources. Presently, Kentucky has no nuclear power generation.

Sources: U.S. Bureau of Mines, Minerals Yearbook, 1976, USDOE/EIA, Bituminous Coal & Lignite Production and Mine Operations, 1977-1978, Coal Production, 1979-1992, Coal Data: A Reference, May 1989, Coal Industry Annual, 1993-2006, Annual Coal Report, 2009, and Electric Power Annual, 2009.

Transportation

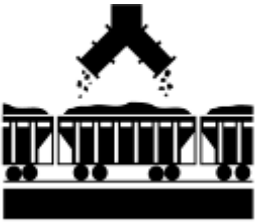
In multimodal coal transportation, the initial transportation mode from the mine site, is not always the primary mode of coal transportation due to the following:

Shipments of coal moved to consumers primarily by rail can include coal hauled to or away from a railroad siding by truck;

Shipments of coal moved to consumers via river by barge include coal hauled to or away from coal river terminals by truck, rail, or conveyor.

Coal Transportation by Rail in Kentucky

Kentucky has 2,621 miles of freight railroad lines along 13 individual lines. 70.9 million tons of Kentucky coal were transported over these lines in 2009 with an additional 15.1 million tons from other states (primarily West Virginia, Utah, and Wyoming).



There are two Class I railroads, one regional railroad, and two short line railroads that operate totally in Kentucky or originate coal in Kentucky.

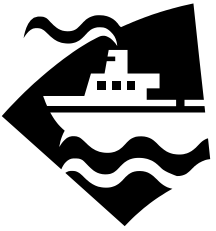
Kentucky has approximately 90 coal rail loading facilities, 47 of which are associated with preparation plants.

Almost all (90+%) rail shipment of Kentucky coal moves by unit train service.

Source: Association of American Railroad, U.S. Freight Railroad Industry Snapshot, 2008. U.S. DOE EIA Coal Industry Annual, 2009.

Coal Transportation by Barge in Kentucky

Kentucky has more than 1,000 miles of navigable rivers over which approximately 22.3 million tons of Kentucky coal were shipped in 2009.



Statewide, 45 coal river terminals on the Ohio River and its tributaries serve Kentucky coal shippers (34 within Kentucky). In total, 14 coal river terminals are located near Eastern Kentucky, 6 in Central Kentucky, and 25 near Western Kentucky.

Of these, 18 of the coal river terminals have rail access, 40 have truck access, 17 have barge off-loading access, and 5 have conveyor access. Automated blending is found in 27 of the coal river terminals with 29 having automatic sampling, 16 having some coal crushing equipment, and 7 having stoker preparation equipment.

Source: Division of Fossil Fuels, Kentucky Coal Marketing Updates-Coal River Terminals, 2007. U.S. DOE EIA Annual Coal Distribution, 2009

Coal Transportation by Truck in Kentucky

Approximately 3,374 miles of state-maintained highways are used for transporting coal.

Truck shipments are a very important mode of coal transportation in Kentucky. In 2009, approximately 1.11 billion ton-miles of coal transportation by truck were reported in at least one leg of the many different types of multimodal coal transportation market routes.

Over 2,615 coal trucks were registered during 2009 in Kentucky, indicating that over 2,615 coal truck drivers were employed in Kentucky. The sale of extended weight coal decals generated $803,808 in 2009.

Sources: Kentucky Transportation Cabinet, Official Coal Haul Highway System; Department of Vehicle Regulation—Division of Motor Vehicle Licensing.

Transportation Summary, 2009

Conveyance	1,000 Tons	Conveyance	1,000 Tons
Railroad	70,952	Tidewater Piers	12
River	22,268	Great Lakes	101
Truck	12,814	Export	4,871
	Total	**111,018**	

Uses of Coal

Distribution of Coal By Consuming Sector, 2009
(thousand short tons)*

U.S. Total Distribution 1,045,881

Electric power plants represent the dominant market for U.S. and Kentucky coal. The three major markets for coal are electric power, industrial and the export markets.

U.S. Total		**1,045,881**
Electricity Generation	88.8%	928,864
Exports	5.3%	55,601
Industrial Plants	4.2%	44,038
Coke Plants	1.3%	14,108
Commercial & Institutional	0.3%	3,270

Kentucky Total Distribution 111,018

Combining market sectors shows 95.6% of Kentucky's coal goes to the U.S. domestic market in 26 states. Kentucky's remaining coal is exported.

Kentucky Total		**111,018**
Electricity Generation	88.6%	98,368
Industrial Plants	5.9%	6,587
Exports	4.4%	4,871
Coke Plants	0.7%	724
Commercial & Institutional	0.4%	467

Eastern Kentucky Distribution 74,937

Eastern Kentucky's electric power plant market remains predominate at 89.4% while the industrial market, the export and coking markets have steadily decreased.

Eastern Kentucky		**74,937**
Electricity Generation	89.4%	66,978
Industrial Plants	7.5%	5,600
Exports	1.6%	1,194
Coke Plants	1.0%	724
Commercial & Institutional	0.6%	441

Western Kentucky Distribution 36,081

Western Kentucky has increased its export market to a level that exceeds eastern Kentucky and the nation.

Western Kentucky		**36,081**
Electricity Generation	87.0%	31,390
Exports	10.2%	3,677
Industrial Plants	2.7%	988
Commercial & Institutional	0.1%	26
Coke Plants	0.0%	0

*Distribution figures may differ from production figures due to the stockpiling of coal.

Source: U.S. DOE—Energy Information Administration, Annual Coal Distribution, 2009.

Coal Deliveries — State to State

In 2009, 106,147,054 tons of Kentucky coal was shipped to 26 states, including Kentucky. Georgia, South Carolina, and North Carolina were the largest purchasers of eastern Kentucky coal (50.4% combined). Kentucky was the principle consumer of western Kentucky coal (67%) and Florida, Ohio and Alabama were the principle out-of-state consumers (22.9% combined).

Destination of Coal Mined in Kentucky

Eastern Kentucky Coal

Destination State	Tons Shipped	Percent
Alabama	935,281	1.3%
Arkansas	4,769	0.0%
Delaware	572,077	0.8%
Florida	6,129,152	8.3%
Georgia	16,141,924	21.9%
Illinois	62,724	0.1%
Indiana	1,608,141	2.2%
Iowa	22,045	0.0%
Kentucky	**6,872,354**	**9.3%**
Louisiana	4,612	0.0%
Maryland	704,154	1.0%
Massachusetts	4,666	0.0%
Michigan	3,979,535	5.4%
Minnesota	143,198	0.2%
Mississippi	288,782	0.4%
Missouri	42,959	0.1%
New York	52,317	0.1%
North Carolina	9,137,388	12.4%
Ohio	5,961,403	8.1%
Oklahoma	10,869	0.0%
Pennsylvania	178,177	0.2%
South Carolina	11,893,458	16.1%
Tennessee	2,827,099	3.8%
Virginia	4,884,497	6.6%
West Virginia	1,033,146	1.4%
Wisconsin	248,074	0.3%
Total	**73,742,801**	**100.0%**

Western Kentucky Coal

Destination State	Tons Shipped	Percent
Alabama	1,560,766	4.8%
Florida	4,204,549	13.0%
Georgia	11,886	0.0%
Indiana	1,102,206	3.4%
Iowa	200,693	0.6%
Kentucky	**21,713,262**	**67.0%**
Missouri	395,493	1.2%
North Carolina	28,224	0.1%
Ohio	1,652,019	5.1%
Pennsylvania	116,458	0.4%
Tennessee	1,323,007	4.1%
Wisconsin	95,690	0.3%
Total	**32,404,253**	**100.0%**

Source of Coal Used in Kentucky

In 2009, 42,717,086 tons of coal were shipped to Kentucky from 11 states (including Kentucky). Of the 42.7 million tons delivered in Kentucky, 28.6 million tons (67%) originated in-state.

Origin State	Tons Shipped	Percent
Colorado	1,759,615	4.12%
Illinois	2,616,434	6.13%
Indiana	1,636,619	3.83%
Kentucky (East)	**6,872,354**	**16.09%**
Kentucky (West)	**21,713,262**	**50.83%**
Ohio	2,735,194	6.40%
Pennsylvania (Bituminous)	266,529	0.62%
Tennessee	53,367	0.12%
Utah	459,886	1.08%
Virginia	5,721	0.01%
West Virginia (Northern)	848,513	1.99%
West Virginia (Southern)	1,937,405	4.54%
Wyoming	1,812,187	4.24%
Total	**42,717,086**	**100.00%**

Source: U.S. DOE—Energy Information Administration, Annual Coal Distribution, 2009.

Electric Utility Shipments

In 2009, 99.8 million tons of Kentucky coal was shipped to electric utilities in 21 states.

Destination of Coal Mined in Kentucky and Used for Power Generation

Destination State	Amount (1,000 tons)	Heat Value (BTU/lb)	Sulfur Percent	Sulfur Emissions*	Ash Percent	Cost (cents/ MM BTU)	Cost ($/ ton)
Alabama	2,376	11,842	2.47	2.09	11.46	265	62.82
Delaware	572	12,488	0.71	0.57	10.49	--	--
Florida	10,123	12,321	1.86	1.51	9.53	335	82.72
Georgia	15,861	12,459	1.04	0.83	10.51	436	108.53
Illinois	115	7,348	2.25	3.06	23.98	131	19.24
Indiana	1,572	12,274	1.94	1.58	9.35	353	88.21
Kentucky	27,565	11,595	2.75	2.37	10.58	211	49.00
Maryland	610	12,648	1.24	0.98	9.03	--	--
Michigan	3,600	12,760	1.39	1.09	8.42	263	67.20
Minnesota	38	12,700	0.96	0.76	8.80	367	93.22
Mississippi	289	11,069	0.57	0.51	7.56	462	102.26
Missouri	436	12,128	2.88	2.38	8.78	234	56.71
New York	29	11,735	1.10	0.93	12.86	--	--
North Carolina	8,873	12,388	1.05	0.85	9.97	344	85.01
Ohio	6,559	11,831	1.47	1.24	12.04	239	56.55
Pennsylvania	125	12,320	1.85	1.50	9.74	--	--
South Carolina	11,574	12,375	1.43	1.16	10.49	374	92.57
Tennessee	3,887	12,108	1.54	1.27	10.29	264	63.32
Virginia	4,612	12,696	1.26	0.99	9.17	326	82.72
West Virginia	949	12,410	1.44	1.16	10.44	382	94.78
Wisconsin	10	13,379	0.91	0.68	6.10	432	115.46

Source of Coal Used in Kentucky Power Plants

Origin State	Amount (1,000 tons)	Heat Value (BTU/lb)	Sulfur Content	Sulfur Emissions*	Ash Content	Cost (cents/ MM BTU)	Cost ($/ ton)
Alabama	83	10,867	2.91	2.68	9.90	179	38.82
Colorado	1,760	11,601	0.50	0.44	9.59	266	61.79
Illinois	2,616	11,715	2.70	2.31	8.53	263	61.72
Indiana	1,565	11,051	2.95	2.67	9.46	208	46.06
Kentucky	27,565	11,595	2.75	2.37	10.58	211	49.00
Ohio	2,735	11,442	3.74	3.27	14.66	200	45.72
Pennsylvania	267	13,042	2.67	2.05	8.34	284	74.03
Tennessee	53	12,138	1.08	0.89	10.99	240	58.14
Utah	460	11,683	0.48	0.41	9.24	252	58.94
West Virginia	2,086	11,824	1.86	1.58	14.29	235	55.52
Wyoming	1,812	8,849	0.29	0.32	5.16	182	32.17

In 2009, electric utilities in Kentucky received 41 million tons of coal from 11 states, 67% of which was from Kentucky.

* Sulfur Emissions in the U.S. are expressed as pounds sulfur/million BTU, or "lbs S/MM BTU".

Source: U.S. DOE—Energy Information Administration, Electric Power Annual, 2009.

Coal Imports / Exports

Coal Imports, 1999—2009

Total imports of coal in 2009 were 22.6 million tons, only 2% of U.S. domestic production. Colombia, which has dominated the U.S. coal import market for many years, accounted for over three-fourths of all 2009 coal imports. The U.S. imported 17.8 million short tons of coal from Colombia in 2009, a drop of 8.5 million short tons, or 32.3%. The average price of Colombian coal into the U.S. was $60.66 per short ton, an increase of 6.4% over 2008. In 2009, total coal imports from Indonesia, the second largest supplier of coal imports, were 2.1 million short tons, a decrease of 1.3 million short tons, while the average price increased by 37.3% to $51.74 per ton. Coal imports from Venezuela declined by 43.9% to 1.3 million short tons, while the price of the coal imports increased by 8.5%. Canada was another source of U.S. coal imports in 2009 with a total of 1.3 million short tons, a decline of 0.7 million short tons. These four countries accounted for over 99% of total U.S. coal imports, the same share as in 2008. Although most coal imports are used for electric generation, metallurgical coal imports were one million short tons in 2009, almost all of them from Canada.

Year	Quantity (million tons)	Average price per ton
1999	9.1	$30.77
2000	12.5	30.10
2001	19.8	34.00
2002	16.9	35.51
2003	25.0	31.45
2004	27.3	37.52
2005	30.5	46.71
2006	36.2	49.10
2007	36.3	47.64
2008	34.2	59.83
2009	22.6	63.91

Coal Exports, 1999—2009

Total U.S. coal exports for 2009 were 59.1 million short tons, about the same level as in 2007 and a decrease of 22.4 million short tons from the 2008 level, or 27.5%. The average price of U.S. coal exports in 2009 was $101.44 per short ton, an increase of 3.8%. Metallurgical coal exports declined in 2009 to end the year at 37.3 million short tons, a decrease of 12.4%. In 2009, the average price of U.S. metallurgical coal exports decreased by 12.5% to a level of $117.73 per short ton, a drop of $16.89 per short ton from the 2008 level.

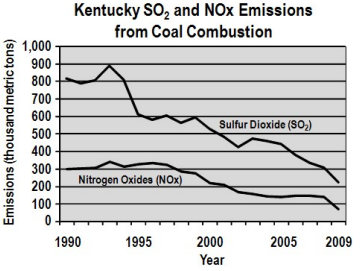
Year	Total Quantity (million tons)	Quantity met coal (million tons)	Average price/ton steam coal	Average price/ton met coal
1999	58.5	32.1	$29.91	$41.91
2000	58.5	32.8	29.67	38.99
2001	48.7	25.4	31.88	41.63
2002	39.6	21.5	34.51	45.41
2003	43.0	22.1	26.94	44.55
2004	48.0	26.8	42.03	63.63
2005	49.9	28.7	47.64	81.56
2006	49.6	27.5	46.25	90.81
2007	59.2	32.2	47.90	88.99
2008	81.5	42.5	57.35	134.62
2009	59.1	37.3	73.63	117.73

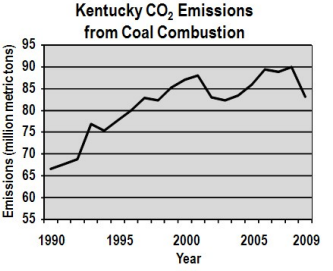
Source: U.S.DOE—EIA; Coal Industry Annual, 1999—2009.

Air Quality / By-Products

Coal Use and Sulfur Dioxide, Nitrogen Oxides and Carbon Dioxide Emissions from Electric Power Utility Plants

Coal is being burned more cleanly today than ever before. Air pollution from coal is decreasing, while coal use is increasing. In Kentucky, sulfur dioxide emissions from coal combustion decreased from 818,339 metric tons in 1990 to 224,824 metric tons in 2009, a decrease of 72.5%. Emissions of nitrogen oxides decreased from 300,802 metric tons in 1990 to 69,975 metric tons in 2009, a decrease of 76.7%, during the same time period. Emissions of carbon dioxide from coal combustion in Kentucky rose from 66.6 million metric tons in 1990 to 83.2 million metric tons in 2009, an increase of 20%.





Coal Combustion By-Products

Approximately 13 million tons of coal combustion products (CCP's) are generated annually in Kentucky from the combustion of coal, and treatment of flue gases to reduce sulfur dioxide emissions. Coal combustion products include boiler slag, bottom ash, fly ash and flue gas desulfurization gypsum. The twenty coal-fired power generation facilities in Kentucky currently have 43 impoundments and 13 landfills to manage CCP disposal. According to a 2006 University of Kentucky Center for Applied Energy Research survey, coal combustion in Kentucky produced 3.1 million tons of fly ash, 1.3 million tons of bottom ash, and 3.7 million tons of flue gas desulfurization (FGD) materials. 30.1% (2.5 million tons) of the 8.1 million tons coal combustion by-products produced within Kentucky were reused during that year. More recent information from the Kentucky Department for Environmental Protection (2010) indicates that approximately 46% of the CCP generated are landfilled, 34% are stored in ash ponds and 20% are beneficially reused. The American Coal Ash Association (ACAA, 2008) estimates that approximately 44% of CCP is reused nationally. Combustion materials generated within Kentucky do not include the coal combustion material generated from the combustion of Kentucky coal shipped to other states.

Existing Consumption

- Cement and concrete products
- Road base/subbase/pavement
- Snow and ice control
- Grouting/wallboard
- Coal mining applications
- Structural fill/flowable fill
- Embankments
- Mineral filler in asphalt
- Blasting grit/roofing granules
- Waste stabilization
- Agriculture
- Aggregate

ACAA 2008 U.S. Coal Combustion Product Production & Consumption (million tons)

	Production	Consumption	% Used
Fly Ash	72.5	30.1	41.5
Bottom Ash	18.4	8.1	44.0
Boiler Slag	2.0	1.7	85.0
FDG Material (combined)	35.1	11.8	33.6
FBC Ash	9.5	8.9	93.7
Totals	**137.5**	**60.6**	**44.1**

Sources: Environmental Protection Agency, Air Emmissions Sources; University of Kentucky Center for Applied Energy Research.

Reclamation

Mined land must be returned to its approximate original contour, with the exception of mountaintop mining operations, in accordance with the federal Surface Mining Control and Reclamation Act of 1977.

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 proper reclamation.

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 (see chart below).

As of September, 2010, the Kentucky mining industry had a total of 10,039 outstanding bonds valued at $839.9 million. The bonds assure timely and successful reclamation.

Mining reclamation bonds are released in the following phases:

Bond Release Phase	Reclamation Release Type	% of Bond Released	Time/Phase Requirement
Phase I	Backfilling, grading, seeding, & drainage	60%	Complete landscaping
Phase II	Vegetation	25%	Two years of successful reclamation
Phase III	Final	15%	Five years of consecutive successful reclamation

Successful Mining Reclamation/Primacy Bond Releases, 1990—2009

	Phase I			Phase II			Phase III		
Year	# of Releases	Acres Released	Bond Amount	# of Releases	Acres Released	Bond Amount	# of Releases	Acres Released	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
Total	**8,181**	**271,716**	**$472,851,353**	**5,167**	**177,245**	**$201,545,543**	**8,498**	**277,686**	**$268,861,383**

Source: Kentucky Energy and Environment Cabinet, Division of Mine Permits

Post-Mining Land Uses

Post-mining land use changes go hand-in-hand with economic development in Kentucky, especially in many parts of Eastern Kentucky where much needed level to gently rolling land for development is still at a premium.

Post-Mining Land Use and County

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
Medium Security Prison	Muhlenberg, Knott (in development)
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 & Wildlife

Duck Refuge Areas	Ohio, Perry, Breathitt, Knott, Martin, Muhlenberg
Catfish Farming	McLean
Wildlife Management Area	Muhlenberg, Ohio, Perry
Wetland Development	Muhlenberg

Elk in the Mountains of East Kentucky Again

Free-ranging elk returned to the mountains of East 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 kill an elk in Kentucky did so in 2001.

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

Industrial / Commercial

Electrical Construction Office and Shop	Hopkins
Electric Utility Operations Center	Hopkins
Industrial Scrubber Sludge Disposal	Ohio, Daviess, Webster
Explosive Manufacturing	Muhlenberg
Wood Fabrication Plant	Breathitt, Perry, Pike (proposed)
Apparel Manufacturing	Perry, Boyd
Mine Shops / Welding / Machine / Equip.	Johnson, Hopkins, Knox, Muhlenberg, Ohio, Union, Whitley
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

(Continued on page 26)

Post-Mining Land Uses cont.

(Continued from page 25)

Industrial / Commercial continued

Clay-Leslie Regional Industrial Park	Clay, Leslie
Coalfields Regional Industrial Park	Breathitt, Harlan, Leslie, Perry
Corbin Tri-County Industrial Park	Knox
EastPark 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
South McCreary Industrial Park	McCreary (in development)
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

Rail-to-Trails: Old coal haul rails have been removed to make walking trails in Hopkins, Muhlenberg, Union, and Webster counties.

R&R / Sport

Baseball Fields	Boyd
Coal Hollow Park	Floyd
Elkhorn Educational Recreation Park	Floyd
Golf Courses	Clay, Laurel, Letcher, Floyd, McLean, Owsley (proposed)
Recreational Area	Lee, Greenup
Red Fox Resort	Knott (in development)
Stonecrest Golf Course	Floyd
Wayland Park	Floyd
Golf (drive & putt)	Webster
Recreational Area & Fishing Lake	Pike
Athletic Facilities	Letcher
Fairgrounds	Morgan
Riding Stables & Trails	Muhlenberg
Campground (proposed)	Hopkins
Hunting Reserve	Webster

Mountaintop Mining: Mining is only a temporary land use. Mountaintop mining has created several sites for new schools, hospitals, shopping centers, parks, golf courses, housing, airports, industry, agriculture and timber in Eastern Kentucky.

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, Knox, Laurel, Lee, Leslie, Letcher, Martin, Perry, Pike
Church, Daycare	Laurel, Perry
Mobile Home Sales	Laurel
Shopping Centers	Breathitt, Clay, Knox, Laurel, Leslie, Letcher, Pike, Perry
Car / Truck / Equipment Sales	Perry
Motel / Hotel	Laurel, Perry
Office Complex	Boyd, Greenup, Morgan, Martin, Perry, Pike (proposed)
Storage Rental Facility	Hopkins, Perry
Off Track Betting	Perry
Telecommunications Call Center	Perry

Numerous small businesses in Eastern Kentucky

Sources: Environmental and Public Protection Cabinet, Area Development Districts.

AML Reclamation

Abandoned Mine Land (AML) Reclamation

The federal Surface Mining Control and Reclamation Act of 1977 established authority for the AML Fund. Production fees of $0.325 per ton for surface-mined coal and $0.125 per ton for underground-mined coal are collected from coal producers at all active coal mining operations. These funds reclaim pre-law (1977) and certain interim program (1977-1982) sites left abandoned, un-reclaimed, or insufficiently reclaimed.

The Kentucky coal industry (through FY 2009) has contributed $1.05 billion to the Abandoned Mine Land (AML) Reclamation Fund since 1978. Nationally, over $9 billion (through FY 2009) 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, $97.6 million (September, 2010) is unallocated due to the federal appropriation process (see Kentucky State Share Balance column in table below). In 2006 Congress passed amendments to the 1977 Act 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 three years. The increasing trend is expected to continue for the next several years.

Abandoned Mine Land Reclamation Fund (millions), 1985—2010

Year	Kentucky Collection	Kentucky State Share*	KY AML Grant Disbursement	KY 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
Total* **	**821.18**	**408.54**	**493.80**	**2,227.80**

*Includes reclamation fees, interest, and audit adjustment.
**Adding across the table will not equal balance, due to all adjustments not being included in table.
*** Totals greater than sum of columns because some years are not in the table.

AML Reclamation Accomplishments in Kentucky (through 2010)

Kentucky AML Projects	Federal AML Projects
1,194 Multi-site State AML Projects	Over 1,300 Multi-site AML Projects
$497 million in expenditures	$140.7 million in expenditures
74,883 acres reclaimed (GPRA acres)	Rural Abandoned Mine Program
(plus various projects currently under construction)	Emergency and Non-Emergency

From 1978-2010, AML projects undertaken in Kentucky by both the federal and state programs have reclaimed thousands of acres and expended over $600 million in AML funds.

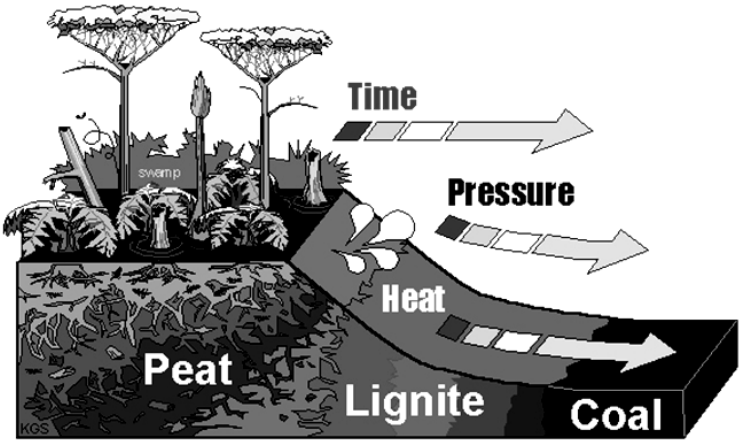
Some accomplishments to date of the state's AML projects in Kentucky are:

113 water line projects—$95.65 million.	2,168 mine portal closures.
over 35,568 feet of high wall eliminated.	210 vertical shafts sealed.
over 261 hazardous structures removed.	47.1 miles of stream restoration.
over 2,299 acres of landslide projects stabilized.	289.7 acres of mine fires controlled.

Today's coal industry in Kentucky is reclaiming mined land to uses as good as or better than before mining, and through contributions to the AML fund, helping to restore previously mined lands to current reclamation standards.

Sources: Energy and Environment Cabinet; Division of Abandoned Mine Lands; Office of Surface Mining (OSM); U.S. Department of Agriculture, RAMP

Coal Origin and Properties



Origin of Coal

Coal forms from peat that is buried and subsequently altered by a combination of time, pressure and heat. This metamorphic process is termed *coalification*. Peat is formed and preserved in *mires*, a collective term that includes all peat-forming ecosystems. Bogs, swamps, and marshes are all specific types of mires. All of the economically-important coal beds in Kentucky are *Pennsylvanian* in age, forming between 280 to 320 million years ago.

Coal Rank and Grade

Coal is generally classified in terms of *Rank* and *Grade*. Rank refers to the level of metamorphism, or alteration, the organic material in the original peat was subjected to after burial. As rank increases, moisture and volatile matter content decrease — fixed carbon content and calorific value increase. Very low rank coal is called lignite. Higher rank coals are classified as either sub-bituminous, bituminous, or anthracite, depending on their calorific value and (in higher rank coal) fixed carbon and volatile matter contents. All of the mineable coal in Kentucky is bituminous in rank.

Grade refers to the amount and type of impurities in coal, specifically *ash* and *sulfur.* Most of the coal mined in Kentucky contains <15% ash. Eastern Kentucky coal is typically lower in sulfur (<2%), than western Kentucky coal (>2%).

Steam Coal and Metallurgical Coal

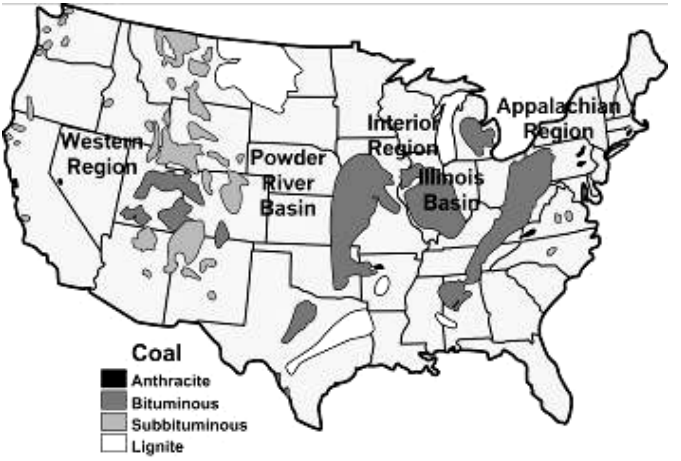
"Steam" coal refers to coal that is used by electric utilities to burn in large furnaces. The heat produced by the combustion of the coal is used to produce very high temperature/high pressure steam that drives turbines with generators to produce electricity. Most of the coal mined in Kentucky is sold as steam coal.

"Metallurgical" coal is used by the steel industry to produce "coke", a principle component of steel production. Coke is a carbon-rich material produced by heating coal to very high temperatures in special furnaces designed to exclude air. 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 (<10%) and sulfur (<1%), and have acceptable amounts of both "reactive" and "inert" organic components. Some eastern Kentucky coal is sold as metallurgical coal.

Sources: Swamp diagram courtesy of Dr. Stephen F. Greb, Kentucky Geological Survey, University of Kentucky. Coal classification chart is from ASTM International (ASTM D-388-05, Table 1).

U.S. National Coal Production

U.S. Coal Fields and Coal Producing Areas



Coal Production by State, 2009 (thousand tons)

State and Region	Total	Anthracite	Bituminous	Sub-Bituminous	Lignite
Alabama	18,796		18,796		
Alaska	1,860			1,860	
Arizona	7,474		7,474		
Arkansas	5		5		
Colorado	28,267		20,359	7,908	
Illinois	33,748		33,748		
Indiana	35,655		35,655		
Kansas	185		185		
Kentucky	**107,338**		**107,338**		
Eastern			**74,719**		
Western			**32,619**		
Louisiana	3,657				3,657
Maryland	2,305		2,305		
Mississippi	3,440				3,440
Missouri	452		452		
Montana	39,486			39,143	343
New Mexico	25,124			25,124	
North Dakota	29,945				29,945
Ohio	27,501		27,501		
Oklahoma	956		956		
Pennsylvania	57,979	1,731	56,248		
Tennessee	1,996		1,996		
Texas	35,093				35,093
Utah	21,718		21,718		
Virginia	21,175		21,175		
West Virginia	136,971		136,971		
Northern			38,395		
Southern			98,576		
Wyoming	431,107			431,107	
Appalachian Total	**341,443**	**1,731**	**339,712**		
Interior Total	**145,812**		**103,621**		**42,191**
Western Total	**584,981**		**49,558**	**505,135**	**30,288**
East of Miss. River	**446,906**	**1,731**	**441,735**		**3,440**
West of Miss. River	**625,330**		**51,156**	**505,135**	**69,039**
U.S. Subtotal	**1,072,236**	**1,731**	**492,891**	**505,135**	**72,479**
Refuse Recovery	2,687	190	2,497		
U.S. Total	**1,074,923**	**1,921**	**495,388**	**505,135**	**72,479**

Source: U.S. DOE—Energy Information Administration 2009 Coal Industry Annual.

U.S. Coal Reserves

U.S. Demonstrated Coal Reserve Base (DRB), 2009 (million tons)*

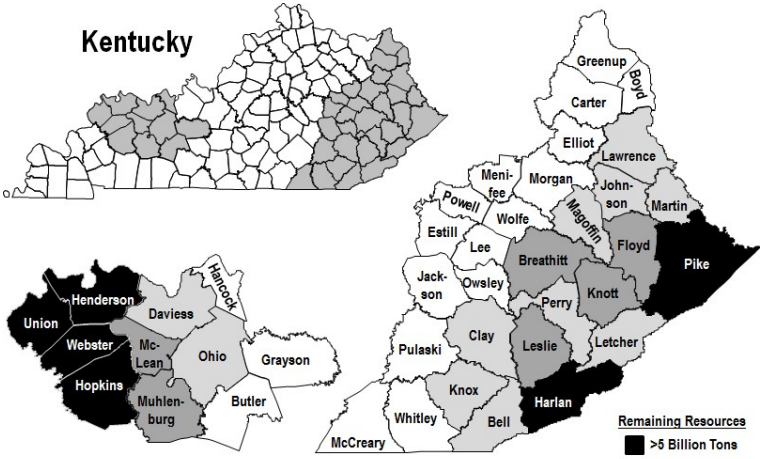
Coal Producing Region and State	Bituminous	Subbituminous	Lignite	Anthracite	Total
Appalachian Region					
Alabama	3,022.80		1,083.00		4,105.80
Georgia	3.60				3.60
Kentucky, East	10,073.37				10,073.37
Maryland	626.74				626.74
North Carolina	10.70				10.70
Ohio	23,174.31				23,174.31
Pennsylvania	19,914.13			7,192.44	27,106.57
Tennessee	762.42				762.42
Virginia	1,429.85			125.49	1,555.34
West Virginia	32,186.85				32,186.85
Appalachian Region Total	**91,204.77**	**0.00**	**1,083.00**	**7,317.93**	**99,605.70**
Interior Region					
Arkansas	287.05		25.37	104.00	416.42
Illinois	104,285.76				104,285.76
Indiana	9,325.31				9,325.31
Iowa	2,189.45				2,189.45
Kansas	971.01				971.01
Kentucky, West	19,342.24				19,342.24
Louisiana			407.65		407.65
Michigan	127.70				127.70
Missouri	5,988.08				5,988.08
Oklahoma	1,546.71				1,546.71
Texas	0.00		12,226.80		12,226.80
Interior Region Total	**144,063.31**	**0.00**	**12,659.82**	**104.00**	**156,827.13**
Western Region					
Alaska	697.51	5,393.26	14.00		6,104.77
Colorado	8,112.38	3,705.61	4,189.86	25.50	16,033.35
Idaho	4.42				4.42
Montana	1,385.38	101,926.76	15,754.75		119,066.89
New Mexico	3,541.65	8,475.98		2.30	12,019.93
North Dakota			8,940.63		8,940.63
Oregon		17.45			17.45
South Dakota			366.10		366.10
Utah	5,245.34	1.10			5,246.44
Washington	303.71	1,028.56	8.07		1,340.34
Wyoming	4,317.67	57,786.67			62,104.34
Western Region Total	**23,608.06**	**178,335.39**	**29,273.41**	**27.80**	**231,244.66**
U.S. Total	**258,876.14**	**178,335.39**	**43,016.23**	**7,449.73**	**487,677.50**
East of Mississippi River	**224,158.08**	**0.00**	**1,083.00**	**7,317.93**	**232,559.01**
West of Mississippi River	**34,718.06**	**178,335.39**	**41,933.23**	**131.80**	**255,118.49**

*The DRB is an estimate of economically-available coal. There is disagreement about the size of U.S. coal resources and of the coal resources of individual states. In 1974, the U.S. Geological Survey estimated total U.S. coal resources (identified and undiscovered) at 3,968.3 billion tons. In 1997, the U.S. EIA estimated that 507.7 billion tons of the total resource was technologically mineable; this was identified as the Demonstrated Reserve Base or DRB and has been updated by EIA in the table above as 487.7 billion tons. In 2004, the U.S. EIA estimated that about 54 percent of the DRB, or 275.1 billion tons, would meet accessibility and economic criteria for recovery by mining; this was designated as the Estimated Recoverable Reserves or ERR. The ERR is frequently cited by decision-makers as being the US coal endowment.

However, recent studies have indicated that both the total U.S. coal resources and the DRB (and consequently the ERR) might be substantially underestimated. The American Energy Security Study, done in 2006 by the Southern States Energy Board, states that the research reinforces the possibility that the 487.7 billion ton estimate of the DRB is a better approximation of ultimately recoverable U.S coal reserves than the 275 billion ton ERR. Kentucky coal resource values are considered by some to be too high, while the Eastern Kentucky "Demonstrated Coal Reserve Base" value is still openly rejected by many others as being too low.

Source: U.S. DOE—EIA, U.S. Coal Demonstrated Reserve Base: 2009 (October, 2009).

Kentucky Coal Resources



Western Kentucky Coal Field
41 Billion Tons Original Resource
35.4 Billion Tons Remaining Resource
32.6 Million Tons Mined in 2009

Eastern Kentucky Coal Field
64.1 Billion Tons Original Resource
50.0 Billion Tons Remaining Resource
74.7 Million Tons Mined in 2009

Western Kentucky Coal Field — 2009

The Western Kentucky coal field covers 6,400 square miles and contains over 35.4 billion tons of remaining resources. (Part of this cannot be mined economically using today's technology).

There are 35 named coal beds, of which seven principal coal beds contain about 94% of the resources in Western Kentucky. Currently, production is mainly restricted to three beds, the Springfield, Herrin and Baker.

Over 5.44 billion tons of coal have been mined or lost due to mining, amounting to only about 13.3% of total Western Kentucky coal resources.

Eastern Kentucky Coal Field — 2009

The Eastern Kentucky coal field covers 10,500 square miles and contains approximately 51.0 billion tons of remaining resources. (Part of this cannot be mined economically using today's technology).

There are more than 80 named coal beds in the Eastern Kentucky coal field which covers parts of 37 counties. Although mining occurs in many of these beds, production is highest from the Fire Clay, Upper Elkhorn #3 and Lower Elkhorn coal beds.

Approximately 12.56 billion tons of coal have been mined or lost due to mining, amounting to only about 19.6% of total Eastern Kentucky coal resources.

How To Calculate Tons of Coal Using Average Coal Thickness and Density

Total Tons = _____ Acres **x** _____ Inches **x** 150 tons per acre - inch
(acres of coal) **x** (height of coal) **x** (density of coal)

Source: Brant and Others, Coal Resource Series, 1980-1983. (Kentucky Geological Survey)

Kentucky Coal Resources

Original resource estimates for Western and Eastern Kentucky were 41 and 64 billion tons respectively. The resources currently remaining after 220 years of mining are estimated to be 35.4 billion tons in Western Kentucky and 51.0 billion tons in Eastern Kentucky. As shown in the Demonstrated Reserve Base (DRB) tables on page 30, assumptions on the percentage available for development reduce those values even further.

Kentucky coal resource numbers reflect all known coal greater than 14 in regardless of potential minability considerations. As such, much of the original resource (e.g., coal <28 inches thick) is not considered to have economic potential by the USDOE, and therefore is excluded from the Demonstrated Reserve Base estimates. At the same time, much of the coal being mined in Kentucky today falls outside the DRB reserve, so that estimate is considered by some to be too low.

Western Kentucky Remaining Resources, 2009 (million tons)

County	Original Resource	Mined And Lost**	Remaining Resource
Butler	414	61	353
Daviess	1,330	127	1,204
Henderson	6,853	184	6,669
Hopkins	8,815	1,699	7,115
McLean	3,576	39	3,537
Muhlenburg	4,724	1,544	3,180
Ohio	1,825	549	1,276
Union	6,507	672	5,835
Webster	6,323	705	5,618
Other*	623	52	571
West KY Total	**40,990**	**5,632**	**35,358**

* includes Breckinridge, Caldwell, Christian, Crittenden, Edmonson, Grayson, Hancock and Warren counties.

Eastern Kentucky Remaining Resources, 2009 (million tons)

County	Original Resource	Mined and Lost**	Remaining Resource
Bell	3,195	636	2,559
Boyd	631	40	591
Breathitt	4,112	434	3,678
Carter	502	38	464
Clay	1,536	128	1,408
Elliot	316	20	296
Floyd	4,168	972	3,196
Greenup	205	21	184
Harlan	7,881	1,946	5,935
Jackson	376	23	353
Johnson	1,419	218	1,201
Knott	4,385	748	3,637
Knox	1,382	156	1,226
Laurel	408	73	335
Lawrence	2,025	63	1,961
Lee	364	17	347
Leslie	3,555	561	2,994
Letcher	3,693	1,177	2,516
McCreary	445	111	334
Magoffin	1,969	128	1,841
Martin	3,320	826	2,494
Morgan	849	31	818
Owsley	574	21	554
Perry	3,597	1,330	2,267
Pike	11,392	3,073	8,319
Whitley	987	185	803
Wolfe	444	14	430
Other*	335	68	267
East KY Total	**64,065**	**13,058**	**51,007**

* includes Bath, Clinton, Estill, Lewis, Madison, Menifee, Montgomery, Powell, Pulaski, Rockcastle, Rowan, and Wayne counties

** Assumes average 50% mining and processing losses

Sources: Smith and Brant (Kentucky Geological Survey, 1983), Office of Mine Safety and Licensing Annual Reports, USDOE/EIA Coal Industry Annual Reports (through 2009) and USDOE/EIA Annual Coal Reports.

Coal Properties / Improvements

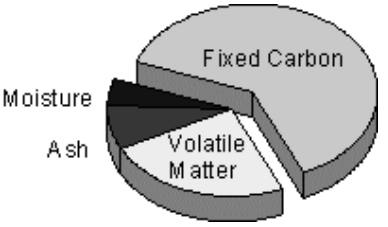
There are two common types of analyses used to determine the properties of coal:

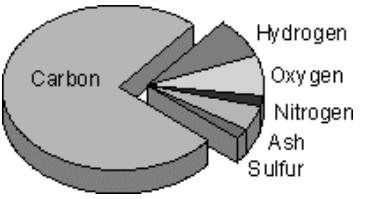
Proximate and Ultimate analysis

Proximate Analysis

Determines (on an as-received basis):

- **Moisture content**
- **Volatile matter** (organic material released when coal is heated in an oxygen-deficient environment).
- **Ash** (impurities consisting of silica, iron, alumina, and other incombustible matter).
- **Fixed carbon** (solid fuel left after the volatile matter is driven off).





Ultimate Analysis

Determines the amount of carbon, hydrogen, oxygen, nitrogen, and sulfur.

Calorific Value

Heating value is determined in terms of Btu/lb both on an as-received basis (including moisture) and on a dry basis.

Elemental Analysis

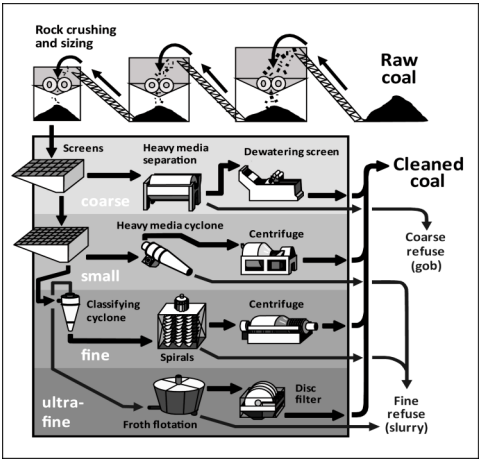
Element oxide (e.g., CaO)concentrations are determined by X-ray Fluorescence analysis.

Improving the Properties of Mined Coal

Kentucky coal is improved by the partial removal of the impurities—sulfur and ash. The cleaning process to remove impurities from the coal is often called *beneficiation, coal preparation,* or *coal washing.*

In general, coal cleaning is accomplished by separating and removing inorganic impurities from organic coal particles. The inorganic ash impurities are predominantly more dense than the coal particles. This property is generally the basis for separating the coal particles from the ash impurities.

Western Kentucky had 13,120 tons per hour of coal preparation design capacity at approximately 18 coal preparation plants during 2007. **Eastern Kentucky** had 43,670 tons per hour of coal preparation design capacity at approximately 64 coal preparation plants during 2007.



Each coal seam has a different washability characteristic. The range of improvement to a particular seam by mechanical washing varies from plant to plant and location to location.

In Western Kentucky, sulfur (inorganic sulfur) and ash are the two main impurities removed. Considering the seven potentially mineable seams in this area, 0.5% to 2.5% can be subtracted from the average sulfur content and 9% to 13% can be subtracted from the ash content after the coal washing process.

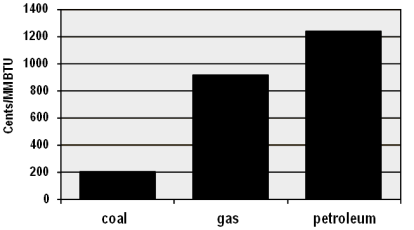
In Eastern Kentucky, coals with very high ash contents are washed. High ash content results from seam impurities, splits, or partings in the seam, or ash accumulating mining methods. In these seams the ash is the main impurity removed—10% to 15% can be subtracted from the ash content after the coal washing process and with only a slight reduction in the sulfur content.

Source: Kentucky Office of Energy Policy, Division of Fossil Fuels and Utility Services (2008); Kentucky Geological Survey.

Why We Use Coal

Coal

We use coal to generate electricity in Kentucky because it is a low cost, abundant and reliable fuel source. In 2009, 92.7% of the electricity generated in Kentucky came from coal, which provided consumers in the Commonwealth with the third lowest average retail electricity rates in the country. On a heat-equivalent basis, coal is much less expensive than other fossil fuels, namely natural gas and fuel oil. Emissions of sulfur dioxide (SO_2) and nitrogen oxides (NOx) have decreased dramatically since thanks to the widespread installation of emissions control technologies at coal-burning power plants throughout the State. In addition, technologies specifically designed to capture and permanently store carbon dioxide emissions from power plants are currently being researched and tested at various locations across the U.S., including Kentucky.



Natural Gas

Natural gas has seen an expanded role in electricity generation, especially as a "peak load" fuel. The implementation, and expanded use, of horizontal drilling technology in Devonian-age shales that occur in the subsurface across most of Kentucky has resulted in a two-fold increase in gas production, from 114 bcf in 2006 to 228 bcf in 2009. Although natural gas is a "cleaner" burning fuel than coal, it nonetheless produces significant quantities of CO_2, which like that produced from coal combustion, will have to be captured and sequestered. In 2009, 1% of the electricity generated in Kentucky was produced from natural gas.

Petroleum

In 2009, 2.2% of the electricity generated in Kentucky came from petroleum. Petroleum generators are primarily used for "peak load" generation, because they have the advantage of very rapid start-up, and shut-down, times. They have the disadvantage of using fuel oil (diesel), which is considerably more expensive than coal on a heat-equivalent basis.

Nuclear

Although nuclear power plants are currently prohibited from being constructed and operated in Kentucky, there has been some discussion, recently, about lifting this ban. Nuclear power, by its very nature, produces essentially no airborne emissions, which makes it an attractive option in a carbon-constrained world. The greatest detriment to nuclear power is that it produces a highly-radioactive by-product, which remains dangerous to all forms of life for thousands of years. Currently, the U.S. has no disposal plan, and no permanent storage area for the radioactive material left in spent uranium fuel rods. As such, they are stored on-site at the generation facility. Another issue is uranium ore availability. In 2009, 84% of the uranium ore needed to produce fissionable uranium-235 was imported. Although the U.S. does have deposits of uranium ore (principally in western states), any increased extraction and milling of the ore will have definite environmental impacts.

Renewables

Unlike some other states, Kentucky is geographically-situated in an area where the wind doesn't blow, and the sun doesn't shine consistently enough to generate reliable electric power. As such, large-scale electricity generation from wind and solar are not currently realistic alternatives to coal. However, smaller-scale (home and office buildings) generation (especially solar) has considerable potential. Kentucky does have a small, but nonetheless significant, amount of hydroelectric generation, the largest being from dams on Lake Cumberland in eastern Kentucky and Lake Barkley in western Kentucky. Biomass (switchgrass, timber industry by-products, and other materials) may have future potential as a renewable energy source. In 2009, 3.7% of the electric power generated in Kentucky came from hydroelectric. 0.4% came from other renewable sources.

Electricity Costs

Average retail electricity costs in Kentucky were 6.03 cents per kilowatt-hour during 2009, **the lowest** in the United States. There are thirteen states that have average electricity costs that are at least two times the average electricity costs in Kentucky. Kentucky's retail electricity cost is 36% lower than the national average (9.43 cents/kilowatt-hour). Kentucky's low average costs are due both to its use of coal and large base of industrial use.

Of the top ten states with the least expensive retail electricity rates, seven rely on coal to produce low-cost power.

State	principal fuel
Kentucky	coal
Wyoming	coal
Utah	coal
Louisiana	gas
Missouri	coal
Idaho	hydroelectric
Iowa	coal
Oklahoma	coal
Nebraska	coal
Washington	hydroelectric

In contrast, the top ten states with the most expensive retail electricity rates do not use coal as a principle energy source.

State	principal fuel
Hawaii	petroleum
Connecticut	nuclear
Alaska	gas
New York	gas
Massachusetts	gas
New Hampshire	nuclear
Rhode Island	gas
New Jersey	nuclear
District of Columbia	fuel oil
Maine	gas

Average		Residential		Commercial		Industrial	
KY	6.03	LA	7.52	MO	6.08	UT	4.19
WY	6.04	ND	7.56	UT	6.48	LA	4.29
UT	6.18	MO	7.60	OK	6.65	ID	4.53
LA	6.21	WA	7.81	ID	6.70	WA	4.54
MO	6.40	ID	7.83	IA	6.74	IA	4.65
ID	6.50	UT	8.00	ND	6.85	OK	4.65
IA	6.50	NE	8.02	NE	6.99	KY	4.69
OK	6.60	KY	8.03	SD	7.07	MO	4.76
NE	6.68	OK	8.25	KY	7.15	WY	4.87
WA	6.77	WV	8.38	WA	7.26	NM	5.04
ND	6.79	SD	8.49	LA	7.28	NE	5.13
WV	7.02	WY	8.53	WY	7.35	WV	5.42
IN	7.19	MT	8.81	AR	7.42	AL	5.43
AR	7.31	OR	8.83	WV	7.48	SD	5.46
MT	7.33	TN	8.87	MN	7.56	IN	5.55
SD	7.33	IA	9.13	OR	7.73	MT	5.56
NM	7.62	IN	9.15	KS	7.79	GA	5.57
MN	7.68	AR	9.28	IN	7.90	AR	5.59
OR	7.76	KS	9.56	MT	7.93	SC	5.70
KS	7.81	MN	9.57	VA	8.00	ND	5.81
TN	8.05	GA	9.59	NC	8.01	OR	5.86
AL	8.09	NM	9.60	IL	8.12	NC	5.86
GA	8.22	AZ	9.86	NM	8.26	NV	5.90
SC	8.28	AL	10.08	GA	8.79	MN	5.93
NC	8.31	NC	10.16	CO	8.85	KS	5.93
MS	8.46	MS	10.29	AZ	8.88	MS	6.03
OH	8.67	CO	10.40	TN	8.93	MI	6.04
VA	8.74	VA	10.51	SC	9.03	AZ	6.16
CO	8.76	OH	10.61	WI	9.24	OH	6.21
AZ	8.77	SC	10.64	PA	9.32	TN	6.26
IL	8.87	IL	11.10	MS	9.50	CO	6.39
WI	9.00	WI	11.55	OH	9.54	WI	6.43
NV	9.12	MI	11.58	AL	9.61	TX	6.46
MI	9.31	PA	11.59	TX	9.73	VA	6.67
PA	9.41	TX	12.42	MI	9.76	PA	7.11
TX	9.57	FL	12.43	NV	10.64	IL	7.18
FL	11.46	DC	12.66	FL	10.81	DC	7.89
DE	11.96	NV	13.72	DE	11.84	NY	8.93
CA	12.36	MD	14.23	MD	12.04	DE	8.95
MD	12.66	DE	14.57	CA	12.07	FL	8.99
VT	12.67	CA	14.60	ME	12.36	VT	9.21
ME	12.73	VT	14.93	VT	12.94	ME	9.29
DC	12.96	RI	15.11	NJ	13.06	MD	9.39
NJ	13.77	ME	15.54	DC	13.19	CA	9.46
RI	14.00	NJ	15.63	RI	13.54	NJ	11.57
NH	14.59	MA	15.89	NH	13.91	NH	12.57
MA	14.63	NH	16.25	AK	14.27	RI	12.60
NY	14.84	AK	16.73	MA	14.50	MA	13.63
AK	15.29	NY	16.98	NY	14.68	CT	14.78
CT	17.92	CT	20.42	CT	16.73	AK	15.14
HI	23.24	HI	26.23	HI	23.92	HI	20.15

Note: The average revenue per kilowatt-hour of electricity sold is calculated by dividing revenue* by sales. Horizontal lines in tables indicate U.S. average prices. Revenue includes energy charges, demand charges, consumer service charges, environmental surcharges, fuel adjustments, and other miscellaneous charges. Taxes assessed on the consumer, "pass through" taxes, are not recorded in the operating revenues of the utility and are not included; however, taxes assessed on the utility are included in the electric utility's operating revenue.

Source: U.S. DOE—Energy Information Administration, Electric Sales and Revenue, November 2009.

Utility Market Share

Kentucky shipped 99.8 million tons of steam coal to U.S. electric power plants in 2009.

Kentucky shipped 29 million tons less steam coal to the U.S. electric utilities than in 1990.

Kentucky's share of the U.S. steam coal market declined to 10.2% in 2009, compared to 23.2% in 1973.

In 2009, Wyoming shipped 424 million tons of coal to electric utilities, 248 million tons more than the amount shipped in 1990. In doing so, Wyoming increased its market share to 43.2% of the U.S. electric utility steam coal market, compared to 3.5% in 1973.

U.S. Electric Power Plant Shipments

Millions of Tons

Year	KY	WV	WY	U.S.
1973	87	47	13	375
1974	90	42	18	385
1975	101	44	22	432
1976	102	45	26	455
1977	110	44	42	490
1978	99	38	53	476
1979	111	50	69	557
1980	112	53	90	594
1981	112	51	101	579
1982	106	64	102	601
1983	95	66	107	593
1984	119	74	127	684
1985	111	65	138	667
1986	115	73	138	687
1987	124	81	142	721
1988	116	80	158	728
1989	120	83	166	753
1990	129	89	176	787
1991	114	85	184	770
1992	117	85	182	776
1993	120	75	202	769
1994	127	93	226	832
1995	121	91	254	827
1996	117	102	269	863
1997	122	104	269	881
1998	120	106	305	929
1999	115	105	328	942
2000	106	105	324	905
2001	98	111	351	935
2002	84	101	360	884
2003	67	87	365	849
2004	76	84	383	892
2005	88	79	393	1,013
2006	109	107	437	1,032
2007	111	102	430	1,055
2008	110	101	453	1,070
2009	100	90	424	981

Market Share Percent

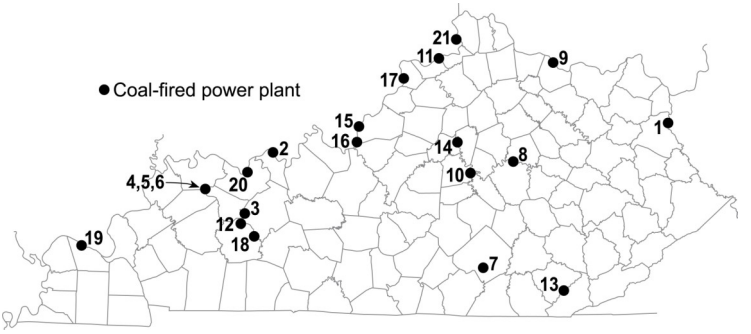
Year	KY	WV	WY
1973	23.2	12.6	3.5
1974	23.4	10.8	4.7
1975	23.5	10.2	5.0
1976	22.5	9.8	5.7
1977	22.4	9.0	8.6
1978	20.7	8.0	11.2
1979	19.9	8.9	12.4
1980	18.9	8.9	15.1
1981	19.4	8.8	17.5
1982	17.7	10.6	17.0
1983	16.1	11.1	18.1
1984	17.4	10.8	18.6
1985	16.6	9.7	20.7
1986	16.7	10.6	20.1
1987	17.2	11.2	19.8
1988	15.9	11.0	21.7
1989	16.0	11.1	22.0
1990	16.4	11.3	22.4
1991	14.8	11.0	24.0
1992	15.1	10.9	23.4
1993	15.6	9.8	26.3
1994	15.2	11.1	27.2
1995	14.6	11.0	30.7
1996	13.6	11.8	31.2
1997	13.9	11.8	30.7
1998	13.0	11.4	32.8
1999	12.2	11.2	34.8
2000	11.7	11.6	35.9
2001	10.5	11.9	37.5
2002	9.5	11.4	40.7
2003	7.9	10.2	43.0
2004	8.5	9.4	43.0
2005	8.7	7.8	38.8
2006	10.6	10.4	42.4
2007	10.5	9.7	40.8
2008	10.3	9.4	42.3
2009	10.2	9.2	43.2

Note: Shipment numbers are rounded to nearest million ton.

Source: U.S. DOE/EIA—Cost and Quality for Fuels for Electric Utility Plants, 1973-1998, Coal Industry Annual, 1999-2009.

Coal-Fired Power Plants

Educational tours are available at most Kentucky coal-fired power plants across the state.

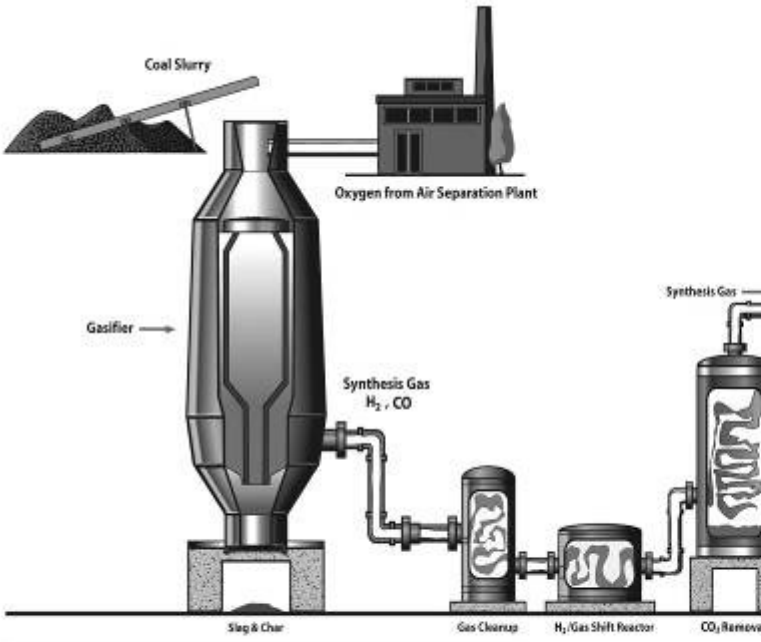


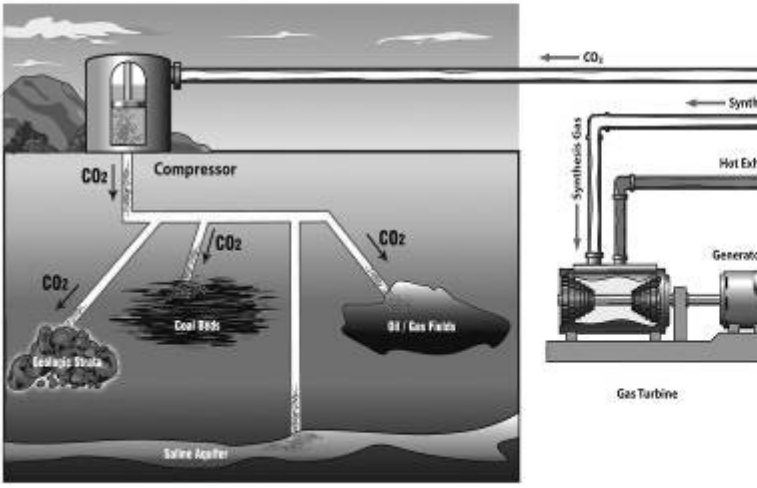
The following table lists contact information for groups interested in scheduling a tour of a coal-fired power plant. Not all power plants offer tours on a regular basis or for all age groups.

Coal-Fired Power Plant		Plant/County	Phone	Age Group
Kentucky Power Company (AEP) Contact: Belinda Stacy bastacy@AEP.com	1	Big Sandy/Lawrence	606-686-1403,	all ages
East Kentucky Power Co-op. Contact: Nick Comer nick.comer@ekpc.coop	7 8 9	Cooper/Pulaski Dale/Clark H.L. Spurlock/Mason	859-745-9450	5th grade & up
Kentucky Utilities Company Contact: Cliff Feltham Cliff.Feltham@LGE-KU.com	10 11 12 13 14	Brown/Mercer Ghent/Carroll Green River/Muhlenberg Pineville/Bell Tyrone/Woodford	859-367-1105	6th grade & up
Louisville Gas & Electric Co. Contact: Sandy Gentry	15 16 17	Cane Run/Jefferson Mill Creek/Jefferson Trimble County/Trimble	502-627-2713	5th grade & up (others considered upon request)
Tennessee Valley Authority Contact: Janet Tingley jltingley@TVA.gov Kirk Anderson kbanderson@TVA.gov	18 19	Paradise/Muhlenberg Shawnee/McCracken	270-476-3301 270-575-8162	middle school & up
Big Rivers Electric Corp. Contact: Marty Littrel Marty.Littrel@BigRivers.com	2 3 4 5 6	Coleman/Hancock D.B. Wilson/Ohio Green/Webster Henderson/Webster Reid/Webster	270-844-6153	6th grade & up
Owensboro Municipal Contact: Public Relations	20	Smith/Henderson	270-926-3200	
Duke Energy Contact: Public Relations	21	East Bend	513-467-4830	

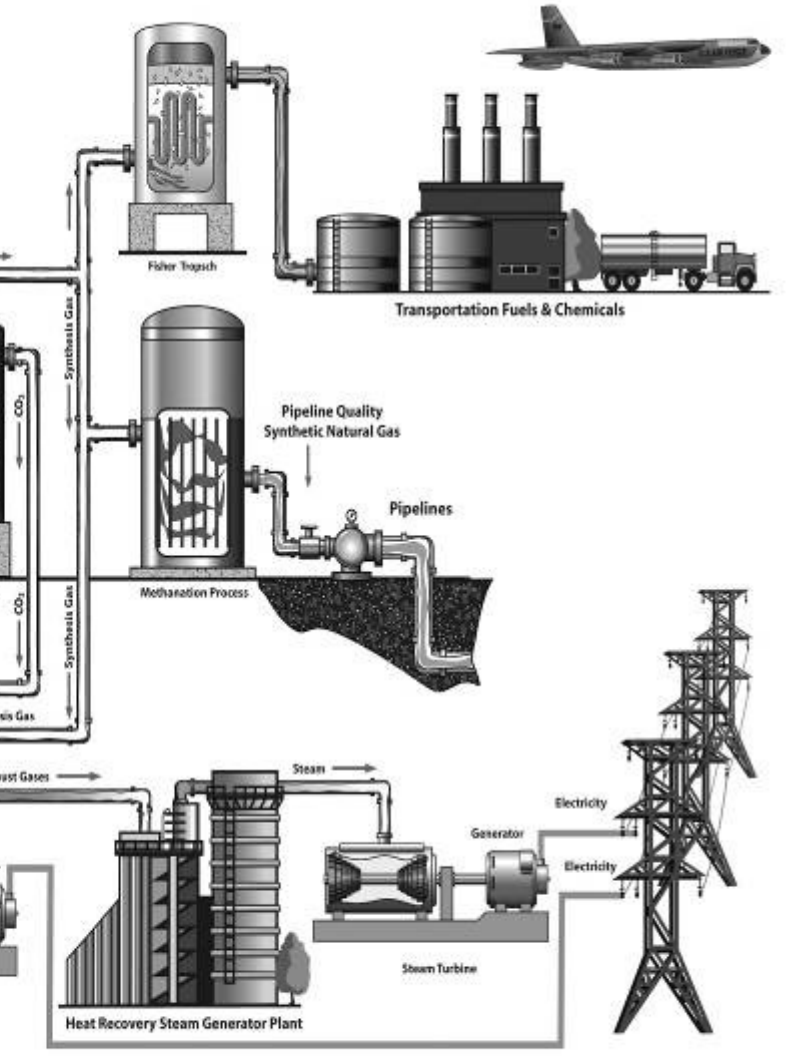
Coal–Super-Clean Fuels and Power for America's Energy Future

If America is to decrease its growing dependence on imported petroleum and natural gas and have sufficient electricity for its growing economy, it must turn to coal, the nation's most abundant energy resource. Coal can be gasified into a mix of hydrogen and carbon monoxide, or syngas. The syngas can be converted in a Fischer-Tropsch unit into super clean transportation fuels or chemicals, or it may be converted in a methanation unit into pipeline quality substitute natural gas (SNG). Either syngas or SNG may then be burned to drive a gas turbine electricity generator. Hot gas from the gas turbine and heat produced in the gasification and conversion





processes can be used to make steam to drive a steam electricity generator. This highly efficient electricity generation process is known as Integrated Gasification Combined Cycle. The gasification technology makes possible highly efficient separation and capture of carbon dioxide (CO_2). The CO_2 can be used to enhance recovery of oil and natural gas or it can be stored, or sequestered, in depleted oil or gas reservoirs, in unminable coal seams, in deep geological formations, or in deep saline aquifers. Thus, coal can ensure for America an energy future with greatly reduced emissions of carbon dioxide thought by many to contribute to global climate change.



State Contacts

Governor's Office	Phone:	502-564-2611
700 Capitol Ave., Capitol Building, Frankfort, KY 40601	FAX:	502-564-2517
Department for Local Government	Phone:	502-573-2382
1024 Capital Center Dr., Suite 340, Frankfort, KY 40601	FAX:	502-573-2939
Kentucky Energy and Environment Cabinet	Phone:	502-564-5525
Capital Plaza Tower, 5th Floor, Frankfort, KY 40601	FAX:	502-564-3969
Department for Energy Development and Independence	Phone:	502-564-7192
Capital Plaza Tower, 5th Floor, Frankfort, KY 40601	FAX:	502-564-7484
Office of Administrative Hearings	Phone:	502-564-7312
35-56 Fountain Place, Frankfort KY 40601	FAX:	502-564-4973
Department for Environmental Protection	Phone:	502-564-0323
300 Fair Oaks Lane, Frankfort, KY 40601	FAX:	502-564-4245
Division of Waste Management	Phone:	502-564-6716
200 Fair Oaks Lane, 2nd Floor, Frankfort, KY 40601	FAX:	502-564-4049
Division of Water	Phone:	502-564-3410
200 Fair Oaks Lane, 4th Floor, Frankfort, KY 40601	FAX:	502-564-0111
Division for Air Quality	Phone:	502-564-3999
200 Fair Oaks Lane, 1st Floor, Frankfort, KY 40601	FAX:	502-564-4666
Department for Natural Resources	Phone:	502-564-6940
#2 Hudson Hollow Road, Frankfort, KY 40601	FAX:	502-564-5698
Division of Abandoned Mine Lands	Phone:	502-564-2141
2521 Lawrenceburg Road, Frankfort, KY 40601	FAX:	502-564-6544
Division of Mine Permits	Phone:	502-564-2320
#2 Hudson Hollow Road, Frankfort, KY 40601	FAX:	502-564-6764
Division of Mine Reclamation and Enforcement	Phone:	502-564-2340
#2 Hudson Hollow Road, Frankfort, KY 40601	FAX:	502-564-5848
Office of Mine Safety & Licensing	Phone:	502-573-0140
1025 Capital Center Dr., Suite 201, Frankfort, KY 40601	FAX:	502-573-0152
Independent Commissions		
Mine Safety Review Commission	Phone:	502-573-0316
132 Brighton Park Boulevard, Frankfort, KY 40601	FAX:	502-573-0344
Department of Revenue		
Division of Minerals Taxation and GIS Services, Severance Tax Unit,	Phone:	502-564-6993
501 High Street, Frankfort, KY 40601	FAX:	502-564-5977
Office of Property Valuation	Phone:	502-564-8338
501 High Street, Frankfort, KY 40601	FAX:	502-564-8368
Transportation Cabinet		
Division of Planning, Coal Haul Section	Phone:	502-564-7183
200 Mero Street, 5th Floor, Frankfort, KY 40622	FAX:	502-564-2865
UK Center for Applied Energy Research	Phone:	859-257-0305
2540 Research Park Drive, Lexington, KY 40511	FAX:	859-257-0220
Kentucky Geological Survey		
228 Mining and Mineral Research Building	Phone:	859-257-5500
University of Kentucky	FAX:	859-257-1147
Lexington, Kentucky 40506		

Information Assistance

Kentucky Coal Association **859-233-4743**
340 South Broadway, Suite # 100 Fax 859-233-4745
Lexington, KY 40508 (www.kentuckycoal.org)
Bill Bissett, President bbissett@kentuckycoal.com

Kentucky Energy and Environment Cabinet **502-564-5525**
500 Mero Street, Capital Plaza Tower, Frankfort, KY 40601 Fax 502-564-3969
Office of Communications and Outreach cynthia.schafer@ky.gov
Department for Energy Development and Independence (www.energy.gov)

Kentucky Cabinet for Economic Development **502-564-7140**
Old Capitol Annex, 300 West Broadway, Frankfort, KY 40601 (www.thinkkentucky.com)
Larry Hayes, Secretary larry.hayes@ky.gov

Kentucky Geological Survey **859-257-3896**
228 Mining and Mineral Resources Bldg., University of Kentucky Fax 859-257-1147
Lexington, KY 40506 (www.uky.edu/kgs)
James C. Cobb, Director and State Geologist cobb@uky.edu

Coal Education Programs

University of Kentucky Mining Engineering Department **859-257-8026**
230 Mining & Mineral Resources Building Fax 859-323-1962
Lexington, KY 40506 (www.engr.uky.edu/mng)
Rick Honaker, Chair honaker@uky.edu

Midway College Mining Magagement and Safety Program **800-952-4122**
512 East Stephens St. (www.midway.edu/academic-programs/
Midway, KY 40347 business/mining-mgt-safety)
Shannon Lusk, Coordinator slusk@midway.edu

CEDAR, Inc. **606-477-3456**
Box 2152, Pikeville, KY 41502 jjustice@setel.com
John F. Justice, President (www.cedarinc.org)

CEDAR WEST, Inc. **270-333-2839**
Box 23, Sturgis, KY 42459 Fax 270-333-3443
Ben Spears, Chairman (www.wkycedar.org)

Kentucky Coal Academy **859-246-0041**
Kentucky Community & Technical College System Fax 859/246-0048
2780 Research Park Drive, Lexington, KY 40511 (http://coalacademy.kctcs.edu)
Bill Higginbotham, Executive Director bill.higginbotham@kctcs.edu

Kentucky NEED Project **866/-736-8941**
Box 176055, Covington, KY 41017 (www.need.org/states/kentucky)
Karen Reagor, Coordinator kreagor@need.org

Coal Teaching Materials

American Coal Foundation
(www.teachcoal.org)

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

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

Office of Surface Mining
(www.osmre.gov/topic/edu/Edu.shtm)

American Coalition for Clean Coal Energy
(www.cleancoalusa.org)

UK Kentucky Geological Survey
(www.uky.edu/KGS/coal/coal_information.htm)

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

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