

Kentucky Energy Profile

5th Edition • 2015



Kentucky Energy and Environment Cabinet

Department for Energy Development and Independence

energy.ky.gov

Executive Summary

The Commonwealth of Kentucky remains a leader in energy production and consumption. The Kentucky Energy and Environment Cabinet (EEC) offers the Kentucky Energy Profile 2015 to serve as an impartial point of reference for the general public and as a foundation for discussing Kentucky's energy future.

In 2015, after more than two centuries of commercial mining operations, Kentucky's domestic supply of coal remains the Commonwealth's primary source of energy and an important component of the Commonwealth's economy. Kentucky is the third-largest coal producing state in the United States, producing the coal needed to fuel 109 power plants in 17 states, see [pages 60-61](#). Coal accounts for 92 percent of Kentucky's own electricity portfolio, see [page 24](#), and 50 percent of our total energy consumption, see [page 45](#). Although coal is Kentucky's primary energy source, the Commonwealth also produces small amounts of oil, see [page 63](#), and enough natural gas to meet our home heating and industrial requirements, see [page 66](#). Kentucky also has limited, but growing, renewable energy resources and opportunities, as shown on [pages 68-75](#). For more detailed information on coal production in Kentucky, please see our sister publication [Kentucky Coal Facts](#).

Kentucky's low energy costs stimulate economic growth by lowering the costs of doing business in Kentucky. Kentucky maintained the fourth-lowest industrial electricity price in the United States in 2014 and the lowest east of the Mississippi River, see [pages 12-13](#). In 2014, 40 percent of the energy and electricity consumed in Kentucky went to manufacturing, see [page 24](#), which remains Kentucky's largest source of revenue and a leading source of employment, see [page 5](#). In addition to large flagship manufacturers, such as General Electric, Toyota, and Ford, who have located in Kentucky—in part due to the low energy costs and central location—Kentucky is also home to particularly energy-intensive manufacturing processes including; aluminum smelting, iron and steel mills, paper mills, chemical production, and glass manufacturing. Furthermore, Kentucky is a transportation and logistics hub for companies like UPS and DHL, which consume large amounts of transportation fuels to ship manufactured goods around the United States and the world. For more information on the importance of low energy costs for economic growth, please read our associated [white paper](#).

While our abundant supply of coal has enabled Kentucky to maintain one of the lowest electricity prices in the United States, see [pages 12-13](#), electricity prices do vary across the Commonwealth and between utilities, see maps on [pages 17 to 21](#). Electricity prices affect every family and business, and in poorer rural and urban areas in Kentucky, average expenditures on electricity are already 15 percent of average household income, see maps on [pages 14-15](#). Electric heat is the primary means of home heating across the Commonwealth, see maps on [pages 8-11](#). In addition, thirteen percent of Kentucky families live in manufactured homes, which almost exclusively rely on electric heat. We believe that these data underline the importance of maintaining low-cost energy for Kentucky families and for families to use energy wisely and efficiently to lower their own expenses.

Electricity in Kentucky is supplied by 145 individual electricity generating units at 40 power plants across the state, as shown on [pages 28-29](#). Our power plants average 43 years of age, with our oldest hydroelectric station being built in 1925 and newest natural gas combined cycle (NGCC) units coming online in 2015 and 2016. Electricity is sold by six major electric utilities and dozens of smaller municipalities, as shown on the maps on [pages 22-23](#). We have profiled each major electric utility on [pages 32-43](#), and profiled each coal-fired power plant on [pages 76-115](#). Kentucky's power plants have reduced emissions of pollutants such as sulfur dioxide and nitrogen oxides by more than 70 percent since 1995, as shown on [page 31](#) and is shown on the profile for each utility and power plant.

We hope that you will find this report informative and useful. We welcome your questions and feedback. Please direct all inquiries to Aron Patrick (Aron.Patrick@ky.gov) or Adam Blandford (Adam.Blandford@ky.gov) or by telephone at 502-564-7192. This publication received no funding beyond staff time, and—as a cost-saving measure—will not be printed with public funds. All of the data in this report are public information aggregated from a variety of state and federal government agencies, which are also available for download at: <http://energy.ky.gov/Programs/Pages/data.aspx>

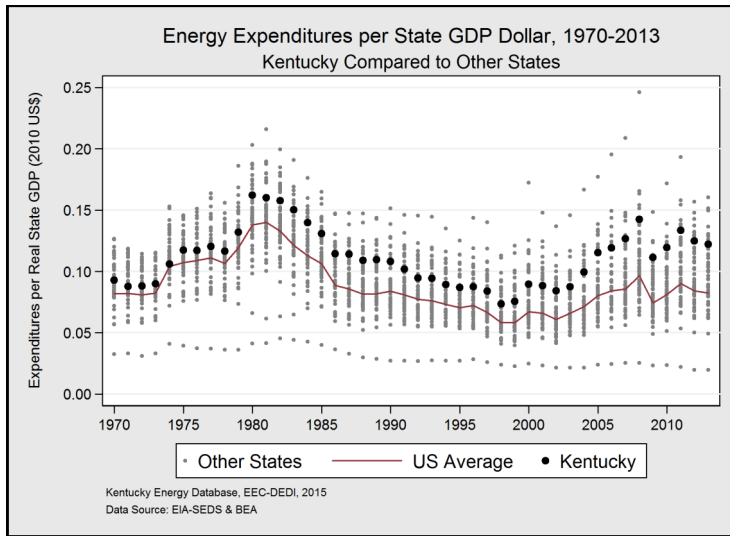
Cover Photos

Front Top: The new 640 MW Natural Gas Combined Cycle unit at [Cane Run Generating Station](#) on the Ohio River in Louisville with the older coal units that were retired from service in 2015 in the background courtesy of [LG&E and KU](#). Front Bottom Left: [LG&E and KU Power lines](#) in Shillito Park in Lexington taken by the University of Kentucky for the EEC. Front Bottom Right: [Mother Ann Lee Hydroelectric Station](#) at Lock and Dam 7 on the Kentucky River taken by EEC staff. Back: The [John Sherman Cooper Station](#) on the Cumberland River near Somerset courtesy of [EKPC](#).

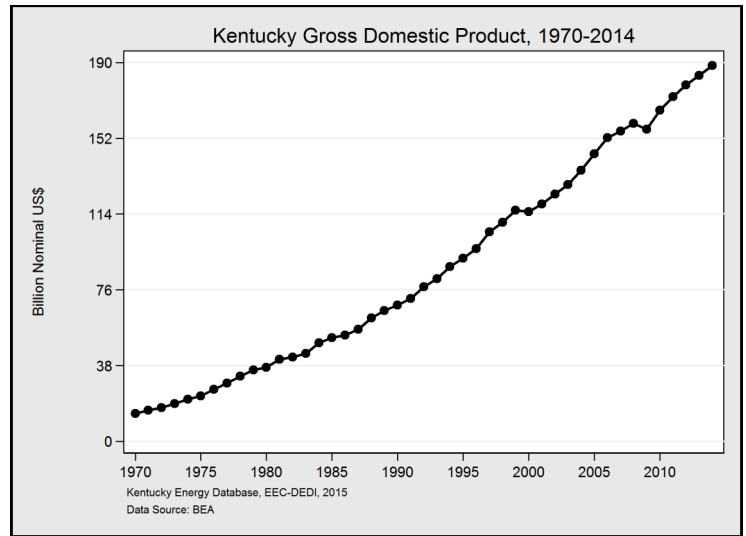
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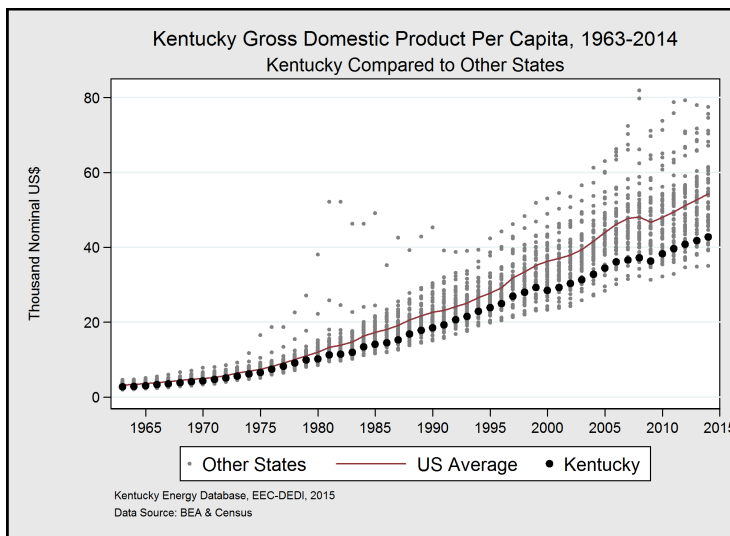
General Statistics



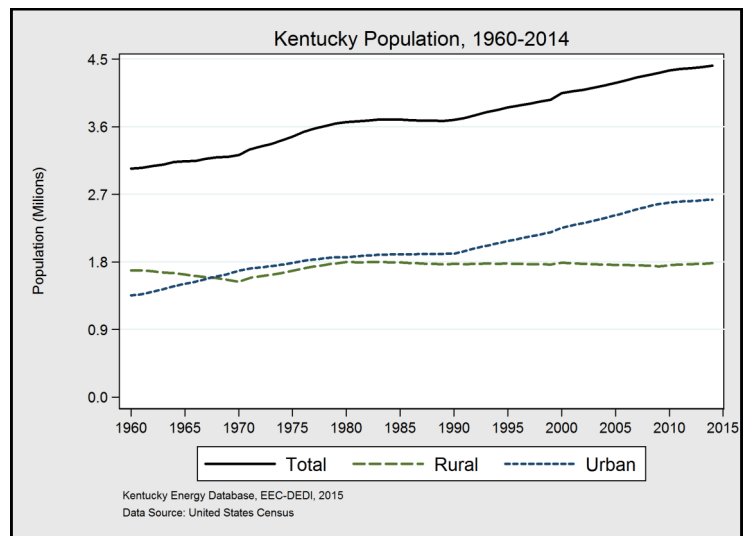
In 2013, on average \$0.12 was spent in Kentucky on energy to produce one dollar of state Gross Domestic Product (GDP). Kentucky ranked tenth in energy intensity of GDP in 2013, and decreased its intensity by two percent from 2012. Kentucky is home to large, energy-intensive, manufacturing operations, which cause Kentucky's electricity intensity to be higher than other states.



In 2014, the Gross Domestic Product of Kentucky was \$189 billion, an increase of 2.8 percent from 2013, or \$5 billion. Kentucky has the 28th largest GDP in the United States. Since 1970, the inflation adjusted GDP of Kentucky has had a compound annual growth rate of 1.8 percent.

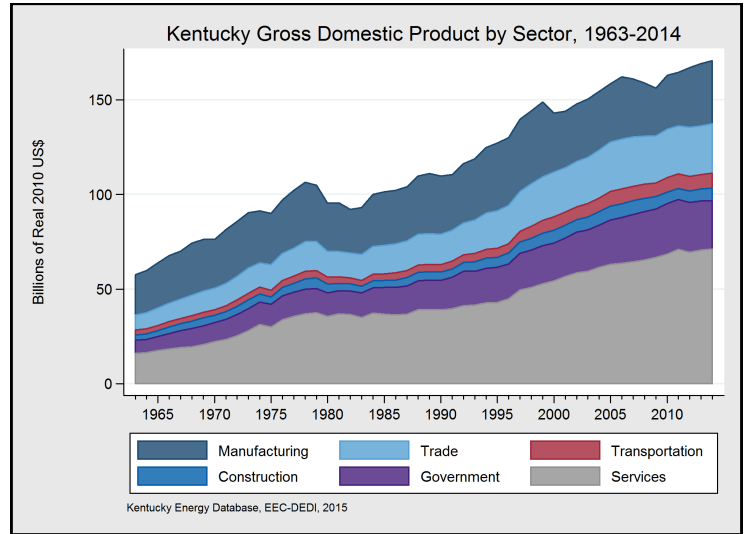
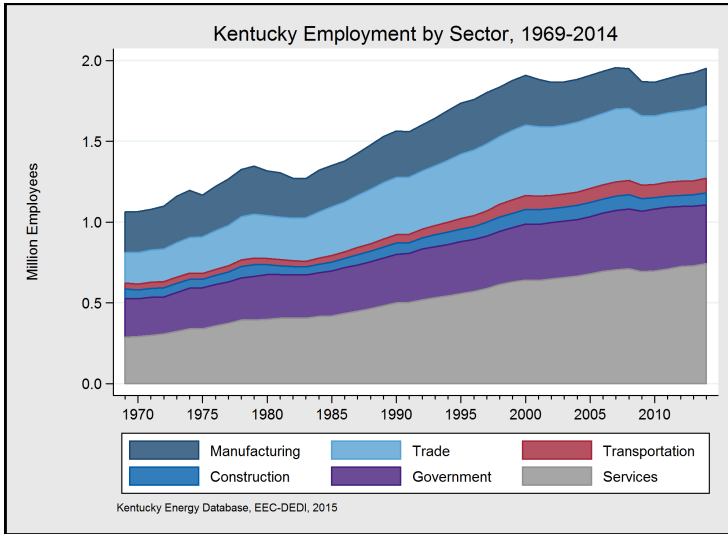


In 2014, Kentucky's GDP per capita was \$42,733, an increase of 2.3 percent from 2013, or \$965 per person. Kentucky ranked 41st in the nation in terms of GDP per capita and below the national average of \$54,308 in 2014.



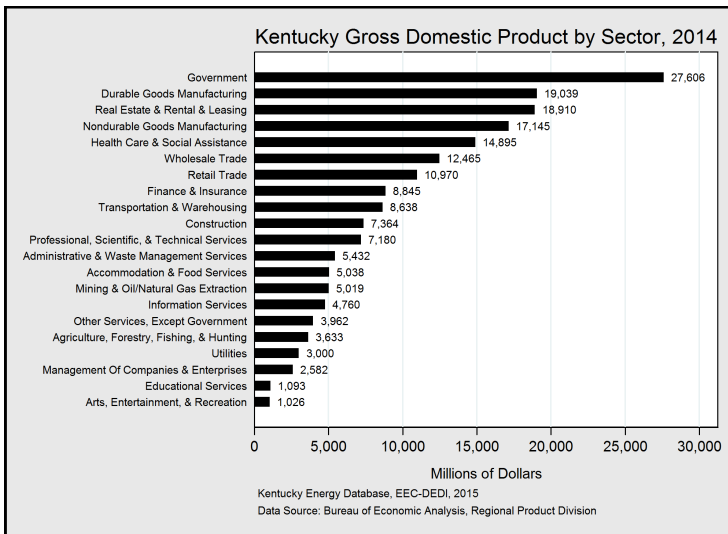
In 2014, Kentucky's population was approximately 4.4 million people, an increase of 18 thousand people, or 0.4 percent since 2014. From 1960 to 2014, Kentucky's urban population has doubled while its rural population increased by 5.3 percent.

Kentucky's Economy

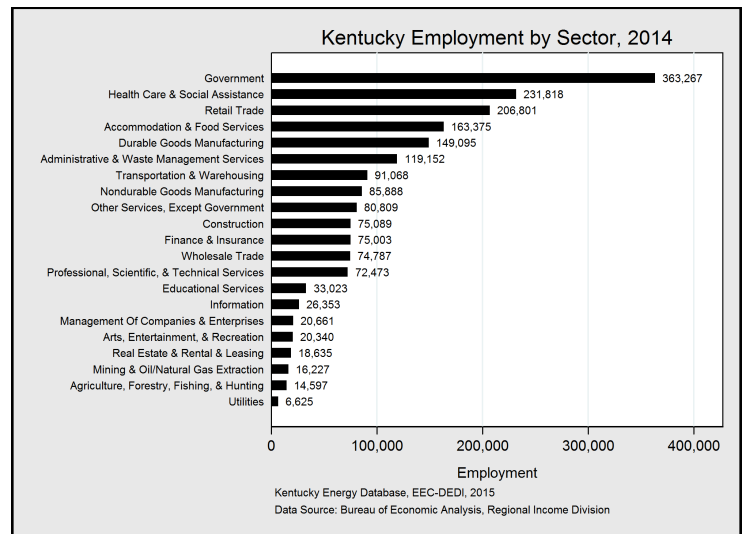


GDP from most sectors has risen gradually in the last 50 years, with output from the service sector rising the most. Manufacturing GDP has been relatively more volatile than that from other sectors, with peaks of output in 1999 and 2006 followed by significant decreases thereafter. After adjusting for inflation, manufacturing output in 2014 reached its highest level ever, surpassing 2006 levels.

With the exception of manufacturing, employment in all sectors of the Kentucky economy remained stable until 2008, when most sectors experienced decreases in employment. Manufacturing employment, at 235 thousand, grew by 2.7 percent from the year prior, but remains 24 percent below peak manufacturing employment of 310 thousand in 2000.

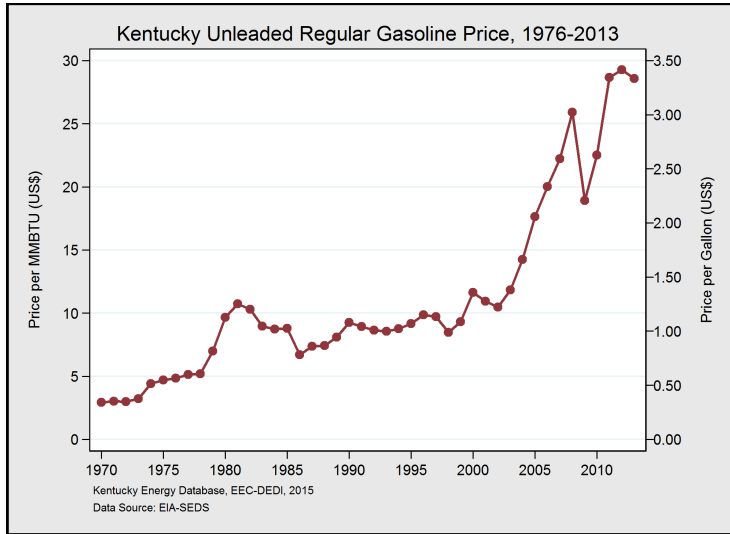


Government has the largest portion of state GDP with 15 percent, followed by durable goods manufacturing with approximately 10 percent of total. Nondurable goods manufacturing contributes 9 percent. Kentucky generates more of its GDP from manufacturing, transportation, and warehousing than most states—the state ranks 6th in terms of the percent of output earned from both transportation and manufacturing.



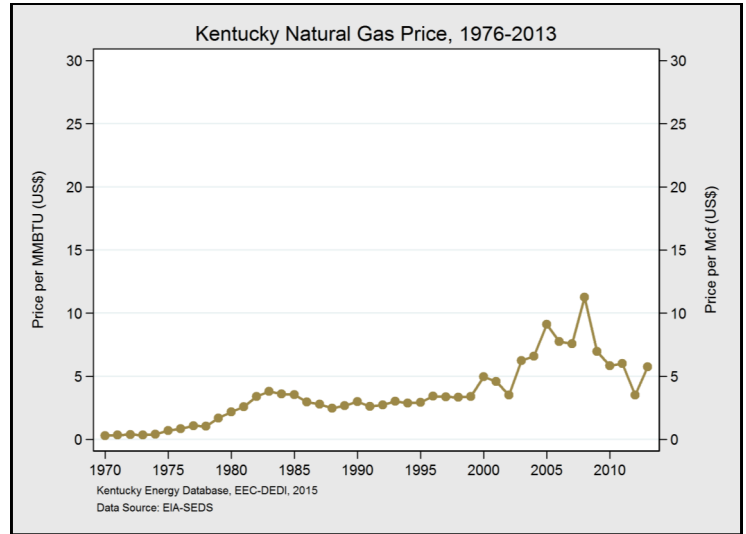
In 2014, the public sector was the single largest employer in the Commonwealth, with approximately half of government workers in local government, 28 percent in state government, 14 percent from the military, and 10 percent from federal civilian employment. Government employment was approximately 19 percent of total employment; healthcare was 12 percent, and retail trade 11 percent. Employment is defined as the average number of full-time and part-time jobs where wages or salaries are paid.

Kentucky Commodity Prices



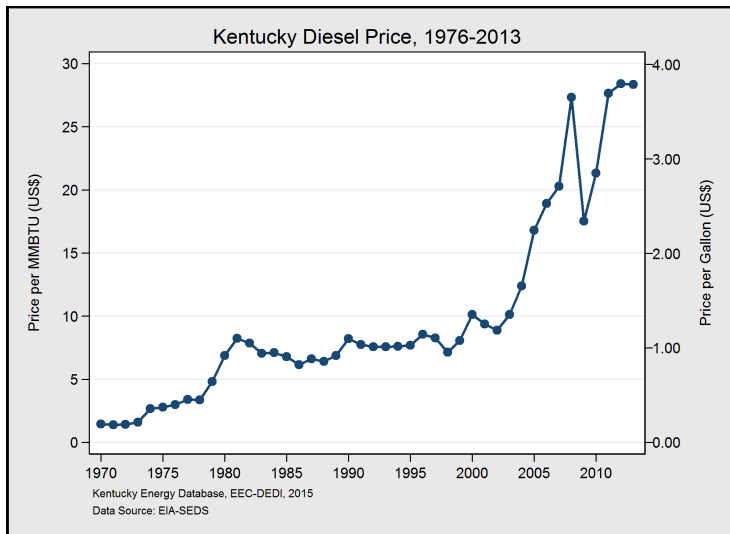
Fuel Type	U.S.\$/MMBtu	U.S.\$/Gallon
Gasoline	28.56	3.44

The average price of gasoline in Kentucky in 2013 was \$3.44 per gallon, a 2.5 percent decrease in the price of gasoline compared with 2012.



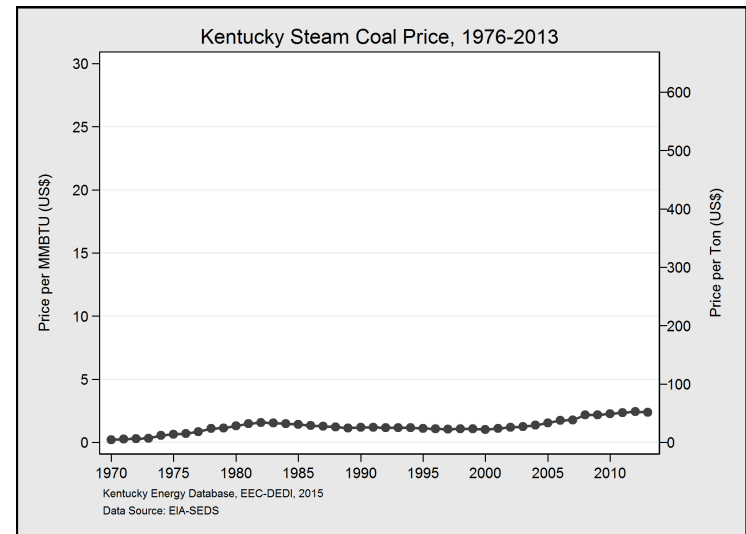
Fuel Type	U.S.\$/MMBtu	U.S.\$/Mcf
Natural Gas	5.74	5.91

The average citygate price of natural gas in Kentucky in 2013 was \$5.91 per thousand cubic feet, a 17 percent increase in the price of natural gas compared with 2012.



Fuel Type	U.S.\$/MMBtu	U.S.\$/Gallon
Diesel	27.6	3.79

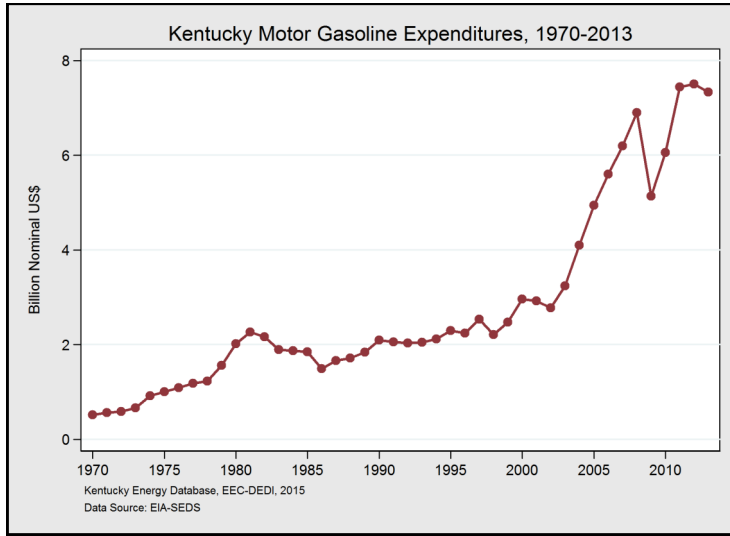
The average retail price of diesel in Kentucky in 2013 was \$3.79 per gallon, a 0.6 percent decrease in the price of diesel compared with 2012.



Fuel Type	U.S.\$/MMBtu	U.S.\$/Ton
Coal	2.4	52.97

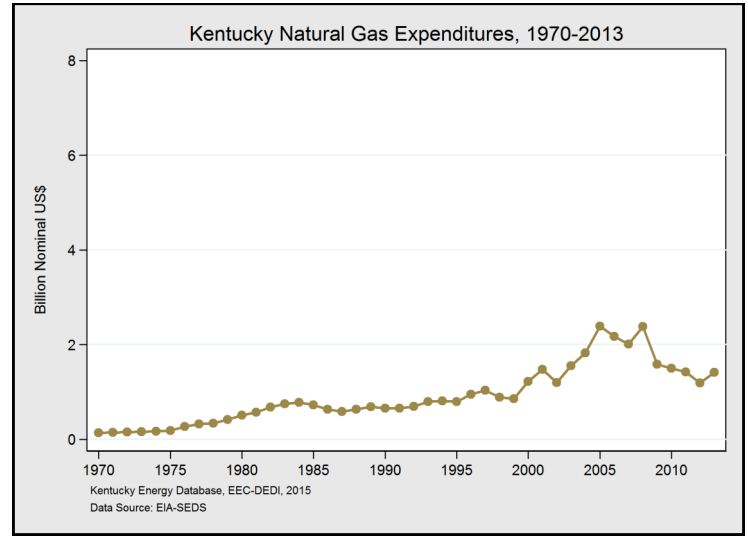
The average price of steam coal in Kentucky in 2013 was \$52.97 per ton, a three percent decrease in the price of steam coal compared with 2012.

Kentucky Commodity Expenditures



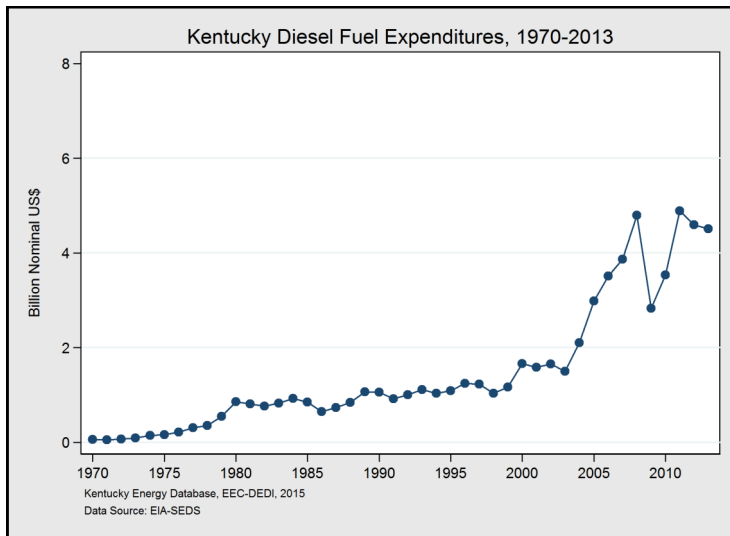
Fuel Type	Million U.S.\$	% of Total
Gasoline	7,337	33%

Gasoline expenditures in Kentucky were approximately \$7.3 billion in 2013; a two percent decrease in gasoline expenditures compared with 2012, and accounted for 33 percent of energy expenditures in the state.



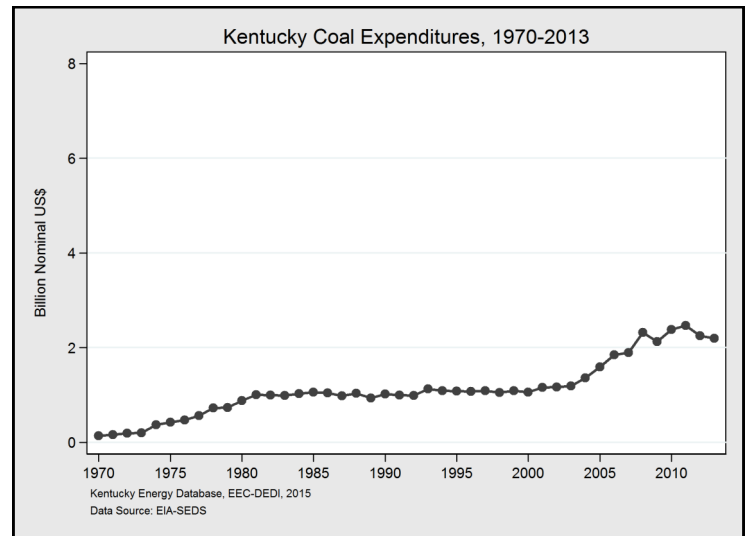
Fuel Type	Million U.S.\$	% of Total
Natural Gas	1,417	6%

Total natural gas expenditures in Kentucky were approximately \$1.4 billion in 2013; a 19 percent increase in natural gas expenditures compared with 2012, and accounted for six percent of energy expenditures in the state.



Fuel Type	Million U.S.\$	% of Total
Diesel	4,507	20%

Approximately \$4.5 billion was spent on diesel in Kentucky in 2013, a two percent decrease in diesel expenditures compared with 2012, and accounted for 20 percent of energy expenditures in the state.

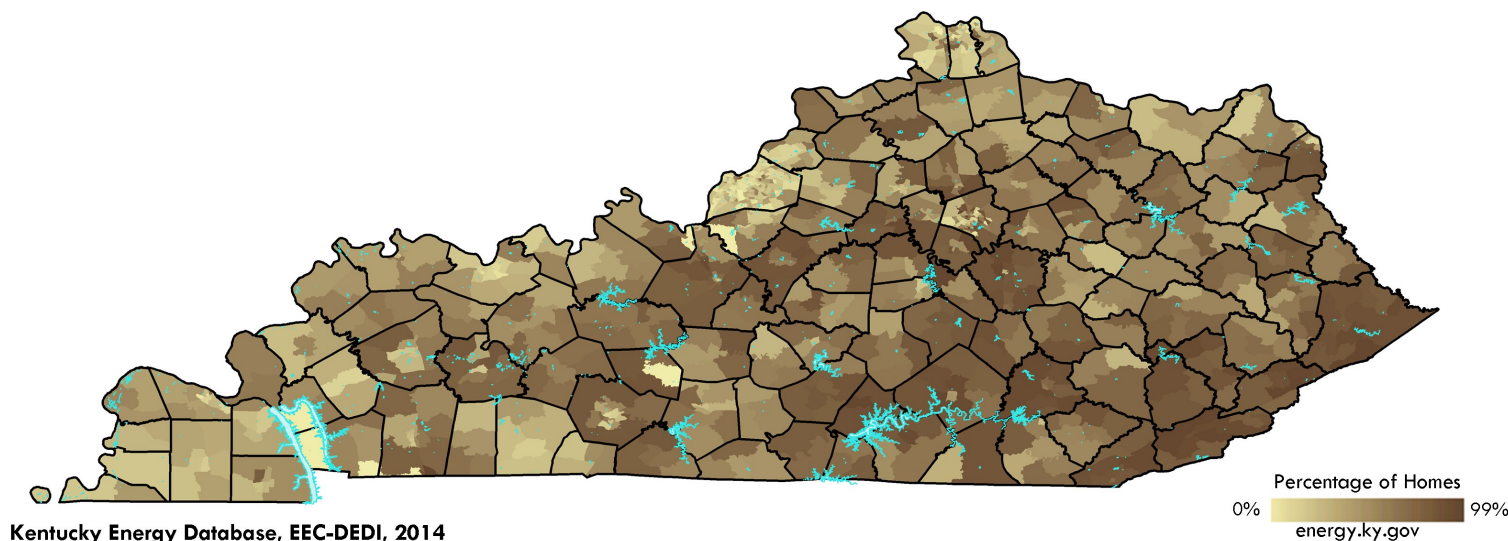


Fuel Type	Million U.S.\$	% of Total
Coal	2,200	10%

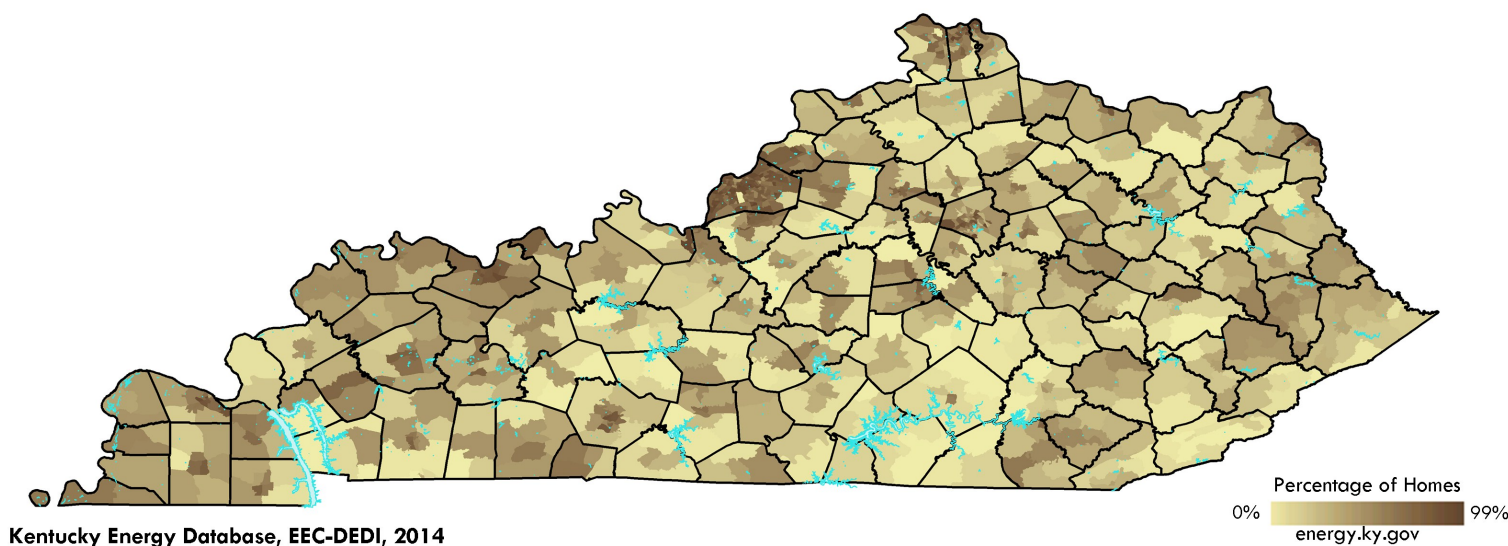
Coal expenditures in Kentucky were approximately \$2.2 billion in 2013. Spending on coal decreased by two percent from 2012 and accounted for 10 percent of energy expenditures in the state.

Kentucky Home Heating Fuels

Kentucky Households Heating with Electricity, 2012



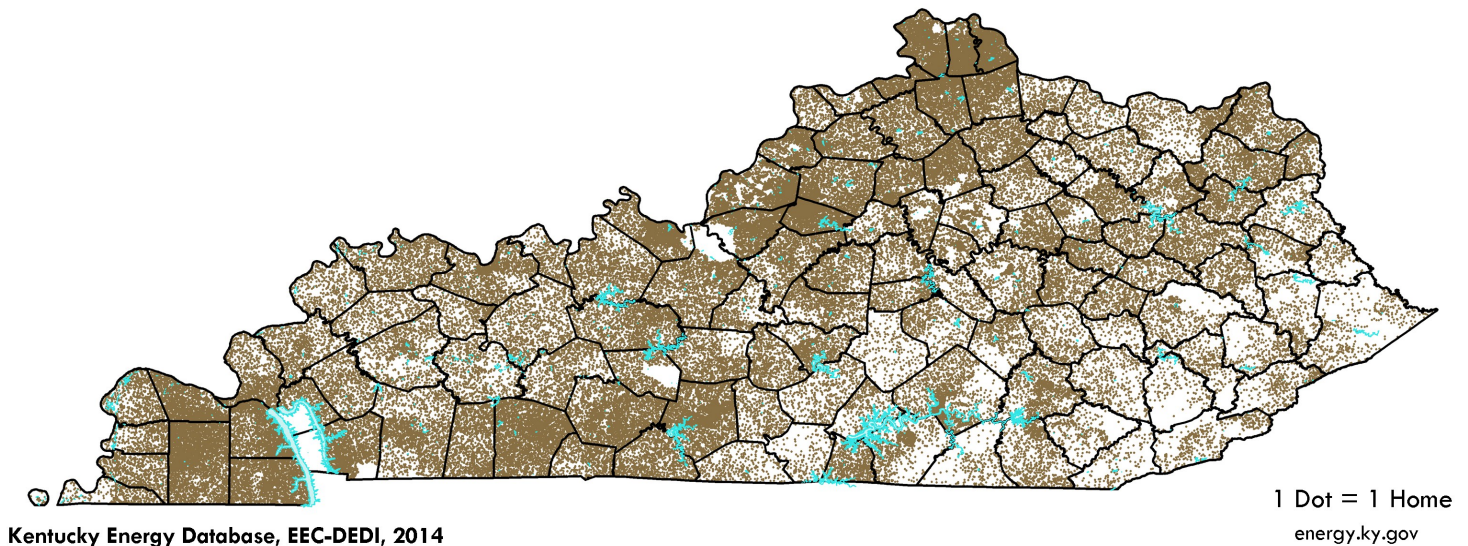
Kentucky Households Heating with Natural Gas, 2012



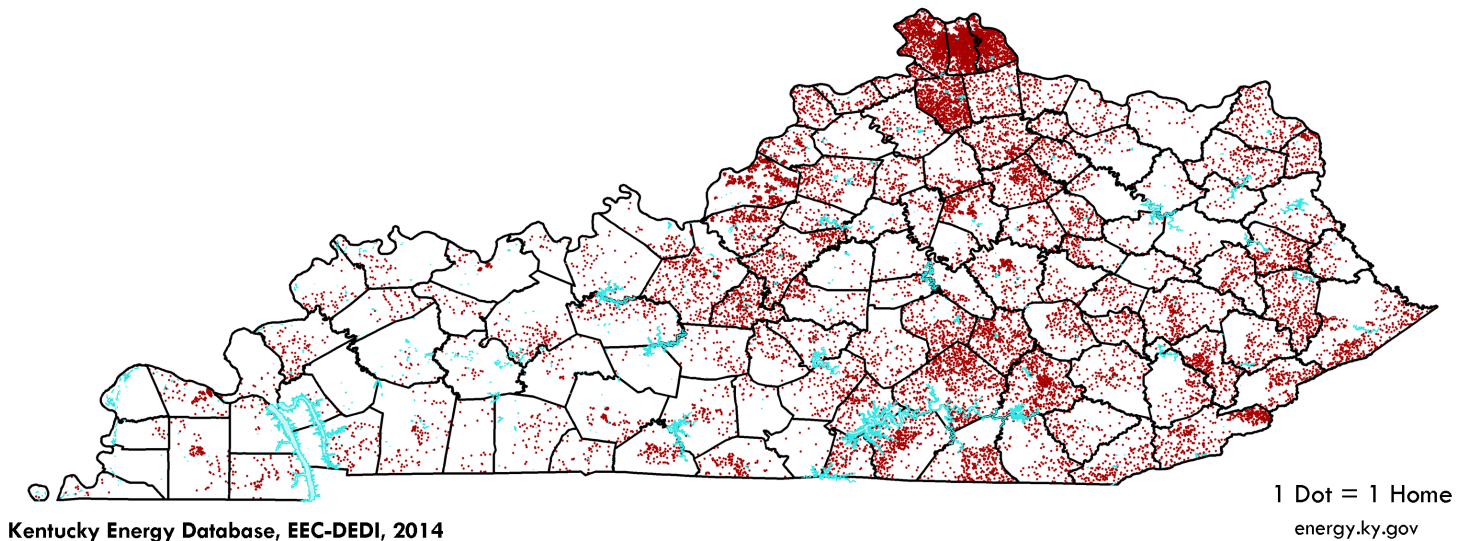
The maps above illustrate the proportion of homes heated with either electricity or natural gas by individual neighborhoods within counties across Kentucky. Electric heat is the primary means of home heating across the Commonwealth—nearly half Kentucky households heat with electricity. Electric heat is predominant in rural areas where there may be limited access to alternative fuels and where there are more manufactured homes. Thirteen percent of Kentucky families live in manufactured homes, which almost exclusively heat with electricity. Manufactured homes are more prevalent in the Appalachian Mountains of southeastern Kentucky, which is a main reason why electric heat is more common in this region. Approximately 51 percent of families in Lexington have electric heat, whereas 80 percent of the homes in Harlan, Letcher, and Pike counties heat with electricity. Utility natural gas serves as the primary method of home heating for nearly 40 percent of Kentucky families; however, pipeline natural gas is the most-common heating source in the urban population centers of Louisville, Owensboro, Paducah, Bowling Green, and Northern Kentucky.

Kentucky Home Heating Fuels

Kentucky Households Heating with Propane, 2012



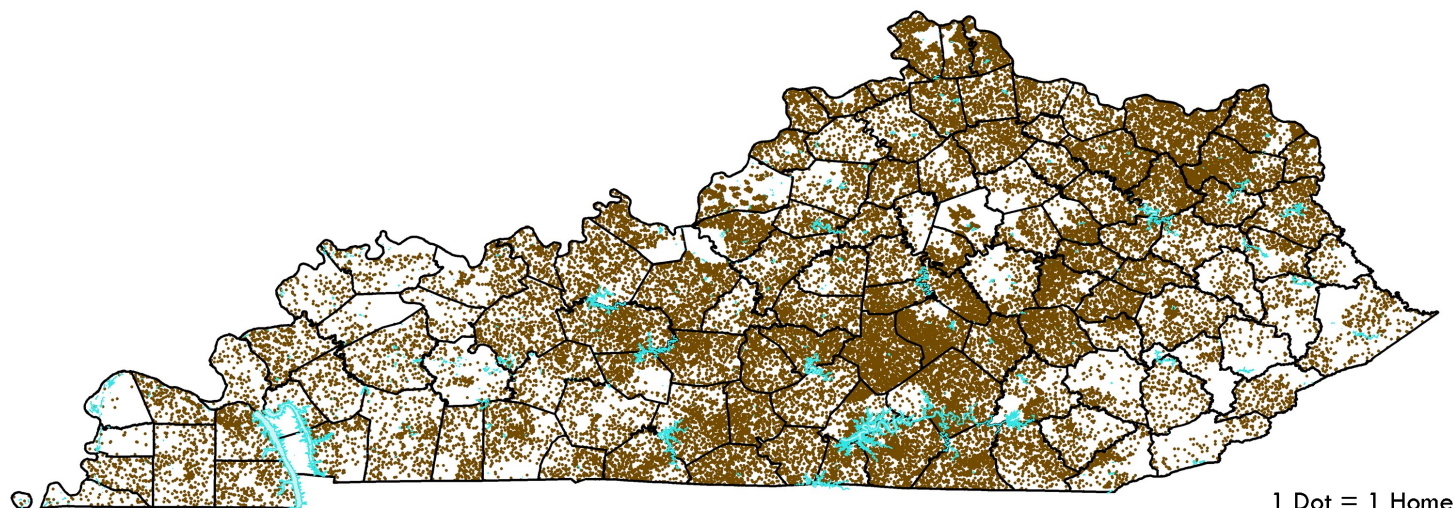
Kentucky Households Heating with Fuel Oil or Kerosene, 2012



The maps above show the number of homes that heat with propane, fuel oil, or kerosene—all of which are most commonly derived from petroleum. Each dot represents an individual Kentucky household and its approximate location within each county across the state. Approximately 6.8 percent of Kentucky families heat with propane and 1.2 percent heat with either fuel oil or kerosene. Propane, fuel oil, and kerosene are generally delivered to residences by truck. About 115,000 homes heat with propane, making propane the third most-common heating fuel in Kentucky. More than 20,000 homes in Kentucky, or 1.2 percent, heat with fuel oil or kerosene. The largest number homes that heat with fuel oil or kerosene are in Kenton, Boone, and Campbell counties in Northern Kentucky, but only represent approximately three percent of homes. The largest percentage of homes in any county that use these petroleum-based fuels are in Grant, Robertson, Owsley, and Rockcastle, and Larue counties at 5 to 10 percent of total homes.

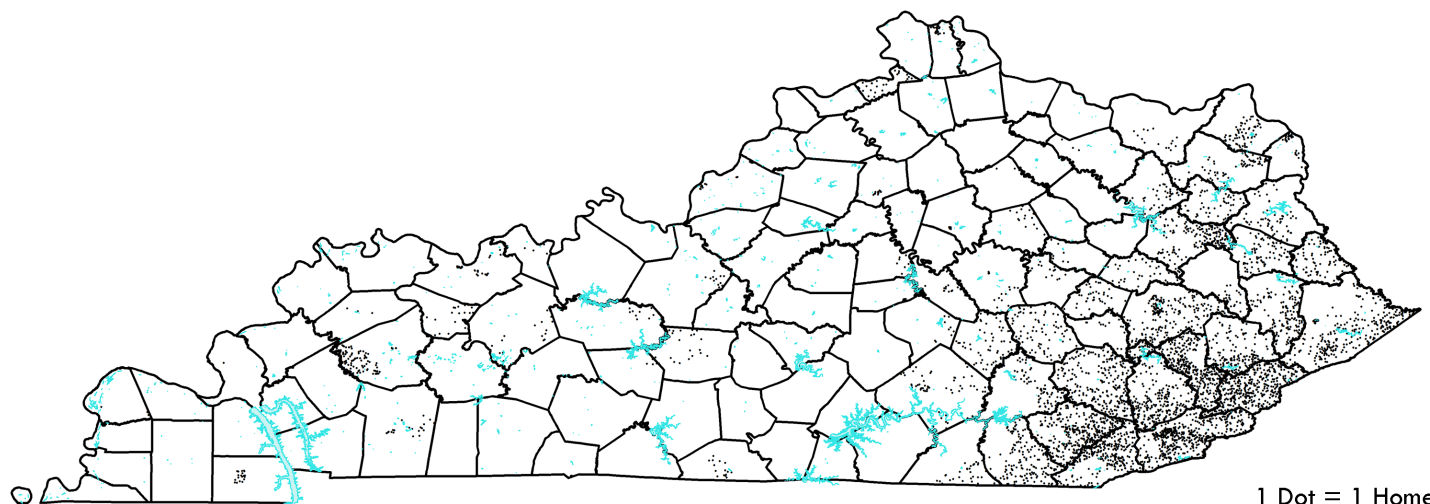
Kentucky Home Heating Fuels

Kentucky Households Heating with Wood, 2012



Kentucky Energy Database, EEC-DEDI, 2014

Kentucky Households Heating with Coal, 2012



Kentucky Energy Database, EEC-DEDI, 2014

The maps above show the number of Kentucky households that heat with wood or coal and their approximate location across the Commonwealth. Wood is the oldest source of home heating and has been burned for heat since the beginning of human history. While many, if not most, homes in Kentucky have a wood-burning fireplace—even if only for aesthetic reasons—more than 47,000 homes, or 2.8 percent, burn wood as their primary source of heat. Many of these homes are concentrated in the Daniel Boone National Forest of eastern Kentucky. In more than 18 Kentucky counties, homes that heat with wood represent more than 10 percent of total households. More than 20 percent of homes in Lewis and Casey counties heat with wood. The second-oldest source of home heating is coal and more than 5,000 Kentucky families heated their homes in 2012 by burning coal. Homes that heat with coal are concentrated in coal-producing counties in the eastern and western Kentucky coalfields. In Leslie County, 5.7 percent of homes heat with coal. In Harlan, Letcher, Morgan, Breathitt, Clay, Perry, Knott, Bell, Knox, Elliot, and Martin counties, more than 2 percent of homes burn coal for their primary method of home heating.

Kentucky Home Heating Fuels

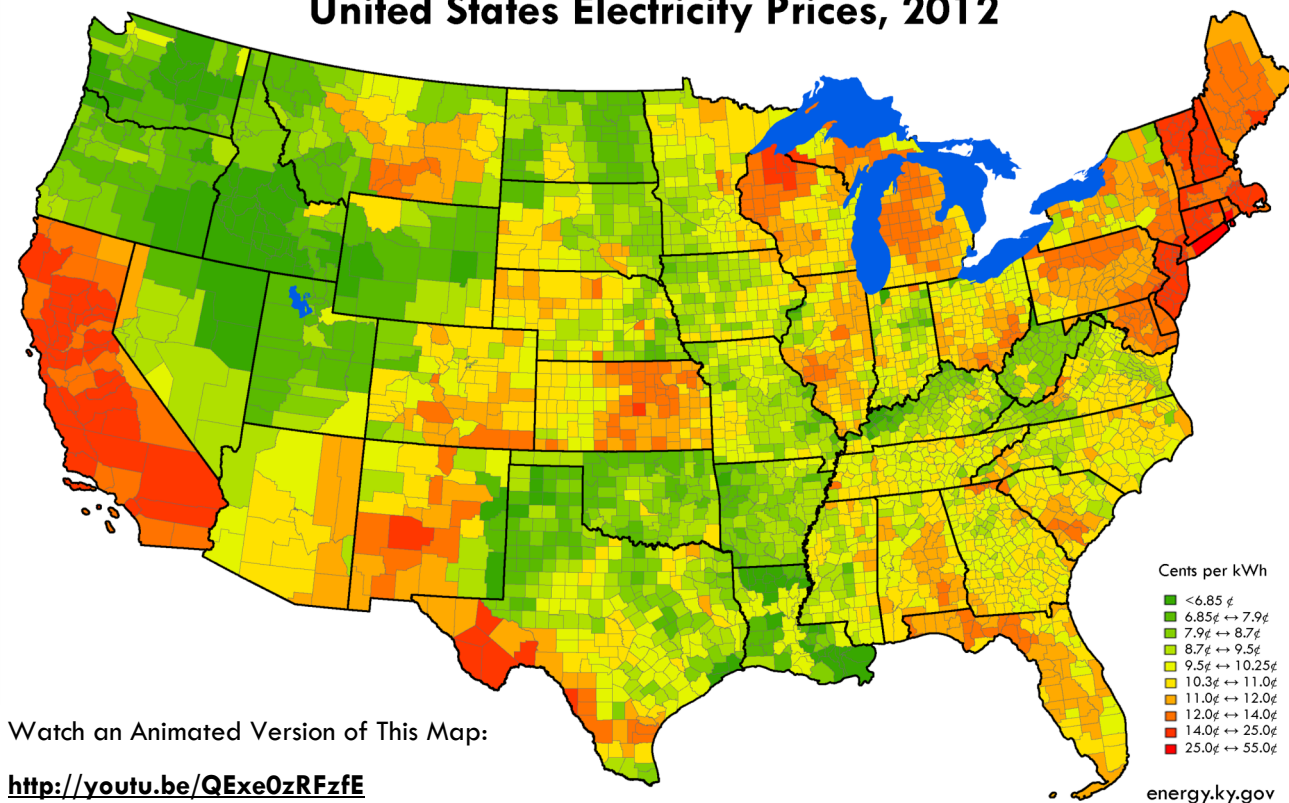
Location	Total	Electric	Gas	LP	Oil	Wood	Coal	Location	Total	Electric	Gas	LP	Oil	Wood	Coal
Kentucky	1,691,716	828,273	668,167	114,684	20,546	47,103	5,022	Kentucky	1,691,716	828,273	668,167	114,684	20,546	47,103	5,022
Adair	7,236	5,085	1,036	504	162	449	0	Knox	12,421	7,588	3,851	293	105	243	316
Allen	7,980	5,175	980	1,168	96	522	0	Larue	5,269	3,127	1,132	514	290	197	0
Anderson	8,369	5,725	1,940	388	42	268	0	Laurel	22,490	17,561	2,761	1,067	541	422	83
Ballard	3,379	1,568	1,085	707	0	11	4	Lawrence	5,666	3,321	1,137	471	89	556	61
Barren	16,848	8,124	5,026	2,797	91	698	0	Lee	2,828	1,370	379	548	80	396	49
Bath	4,421	2,392	767	823	33	406	0	Leslie	4,317	3,291	275	157	117	217	245
Bell	10,881	8,047	1,785	186	193	291	291	Letcher	9,324	7,611	455	378	181	219	403
Boone	42,617	17,949	20,070	2,594	1,197	490	0	Lewis	4,925	2,069	744	908	33	1,128	19
Bourbon	7,971	4,158	2,607	618	334	184	3	Lincoln	9,767	6,718	1,203	564	287	939	9
Boyd	19,608	9,116	9,328	526	157	280	34	Livingston	3,553	2,000	308	1,088	20	133	1
Boyle	11,143	4,968	5,170	498	45	407	0	Logan	10,899	3,939	3,251	3,188	56	444	0
Bracken	3,231	1,535	830	442	111	287	0	Lyon	3,278	1,624	984	568	10	74	0
Breathitt	5,297	3,203	629	511	251	466	209	McCracken	27,293	9,764	15,050	1,913	212	252	0
Breckinridge	7,405	3,527	1,618	1,551	61	584	0	McCreary	6,287	4,666	286	252	267	775	30
Bullitt	27,791	11,030	13,881	1,972	260	572	0	McLean	3,699	1,905	1,096	518	40	86	27
Butler	5,052	2,988	700	920	37	379	0	Madison	31,281	23,871	5,755	983	198	321	16
Caldwell	5,092	1,668	2,404	794	0	199	0	Magoffin	4,985	2,844	1,268	577	123	143	26
Calloway	14,998	7,066	5,006	2,467	81	315	19	Marion	7,423	3,876	1,873	973	143	510	0
Campbell	35,235	12,431	18,995	1,955	1,019	568	0	Marshall	12,272	4,909	4,965	1,994	25	354	0
Carlisle	2,085	778	782	468	18	22	0	Martin	4,408	2,514	1,471	194	61	83	77
Carroll	4,268	1,910	1,634	394	87	212	0	Mason	6,728	3,132	2,855	383	74	243	0
Carter	10,412	6,314	1,310	1,390	184	1,062	83	Meade	10,253	6,060	2,005	1,738	76	353	0
Casey	6,162	3,716	674	284	124	1,296	0	Menifee	2,352	1,280	297	494	26	250	0
Christian	26,100	14,479	9,099	1,814	95	416	20	Mercer	8,486	4,752	2,808	571	34	295	8
Clark	14,547	7,764	5,444	861	116	293	17	Metcalfe	3,947	1,935	851	509	23	595	0
Clay	6,971	4,192	1,712	460	129	186	251	Monroe	4,441	2,235	1,121	392	123	552	15
Clinton	3,908	2,496	232	702	133	345	0	Montgomery	10,093	6,177	2,978	469	140	295	0
Crittenden	3,835	1,703	758	896	94	335	0	Morgan	4,666	2,630	430	1,020	41	339	201
Cumberland	2,605	1,762	200	194	10	439	0	Muhlenberg	11,974	6,754	4,270	769	22	131	0
Daviess	37,582	10,724	24,553	1,761	75	308	35	Nelson	16,548	11,690	2,513	1,393	373	483	0
Edmonson	4,819	3,583	162	724	7	334	6	Nicholas	2,731	1,609	463	301	120	208	0
Elliott	2,508	1,177	148	713	32	351	55	Ohio	8,719	4,577	2,267	1,127	120	580	17
Estill	5,801	2,927	1,483	679	56	637	19	Oldham	19,446	7,685	10,232	1,059	117	306	0
Fayette	122,793	63,189	57,944	730	274	398	10	Owen	4,578	2,766	138	1,204	127	327	0
Fleming	5,468	3,445	455	643	68	812	3	Owsley	1,642	1,025	72	168	124	227	26
Floyd	15,602	9,378	5,107	392	361	167	144	Pendleton	5,477	2,450	829	1,456	220	391	0
Franklin	20,948	9,176	10,053	1,142	101	374	12	Perry	11,031	8,138	1,727	357	275	101	394
Fulton	2,961	1,162	1,327	377	20	59	0	Pike	26,822	21,007	4,260	510	387	322	278
Gallatin	3,019	1,600	422	700	94	154	34	Powell	4,678	2,062	1,559	579	100	317	14
Garrard	6,239	4,366	918	315	54	559	12	Pulaski	26,375	19,733	2,851	1,511	731	1,324	60
Grant	8,674	4,567	1,050	1,683	841	470	0	Robertson	824	351	108	183	63	89	0
Graves	14,699	5,232	5,434	3,581	76	304	0	Rockcastle	6,497	4,698	104	566	407	580	59
Grayson	9,945	6,077	1,254	1,665	114	791	10	Rowan	8,139	5,035	1,724	675	36	596	40
Green	4,480	2,218	866	777	82	532	0	Russell	7,364	6,131	249	374	154	446	0
Greenup	14,421	6,066	6,166	1,086	194	720	71	Scott	17,676	10,948	4,663	1,436	154	331	0
Hancock	3,255	1,232	1,368	410	18	223	4	Shelby	15,246	7,013	5,810	1,778	260	303	0
Hardin	38,908	25,907	9,452	2,048	335	1,018	13	Simpson	6,677	2,729	2,940	721	41	218	0
Harlan	11,058	9,306	221	443	433	132	491	Spencer	6,234	3,677	211	1,985	64	233	0
Harrison	7,243	3,772	1,469	1,123	289	525	0	Taylor	9,490	4,736	3,126	861	94	630	0
Hart	6,957	3,745	1,254	1,077	77	763	24	Todd	4,689	2,265	849	1,279	31	265	0
Henderson	18,665	8,388	8,663	1,356	44	159	0	Trigg	6,034	3,100	1,035	1,574	74	251	0
Henry	6,018	3,301	1,217	1,213	38	197	0	Trimble	3,464	2,118	550	376	129	253	0
Hickman	1,980	567	505	728	0	169	0	Union	5,410	2,665	1,893	645	59	108	0
Hopkins	18,556	8,618	8,344	1,055	17	358	93	Warren	43,801	21,657	19,061	2,511	118	375	0
Jackson	5,739	3,931	250	553	159	764	82	Washington	4,541	2,557	760	919	13	268	0
Jefferson	303,915	88,341	209,329	3,231	668	553	12	Wayne	8,296	5,884	156	783	388	1,036	0
Jessamine	17,960	11,190	5,863	508	39	314	0	Webster	4,995	2,702	1,609	564	47	70	3
Johnson	9,329	6,249	2,012	457	250	249	87	Whitley	13,330	6,841	4,750	786	136	550	167
Kenton	62,260	20,733	36,521	2,194	1,925	482	28	Wolfe	2,686	1,388	378	475	43	354	42
Knott	5,855	3,423	1,768	305	128	71	160	Woodford	9,847	5,054	4,141	482	75	87	0

Average Price of Electricity by State

Rank	State	Primary Generation Source	2014 Industrial Price (Cents/kWh)	2014 Total Price (Cents/kWh)	Inflation Adjusted 1 Year Change	Inflation Adjusted 5 Year Change
1	Washington	Hydroelectric	4.32	7.15	-0.4%	-1.9%
2	West Virginia	Coal	5.87	7.65	-5.0%	+4.1%
3	Wyoming	Coal	6.62	7.78	+1.2%	+15.8%
4	Arkansas	Coal	5.93	7.85	-1.4%	-6.2%
5	Idaho	Hydroelectric	6.42	7.95	+2.7%	+10.6%
6	Oklahoma	Coal	5.61	8.10	+1.9%	+5.6%
7	Louisiana	Natural Gas	6.00	8.11	-0.4%	+4.0%
8	Kentucky	Coal	5.67	8.13	+5.9%	+12.9%
9	Iowa	Coal	5.77	8.24	-0.3%	+1.2%
10	Utah	Coal	6.07	8.41	+1%	+12.4%
11	North Dakota	Coal	7.80	8.49	+1.8%	+15.9%
12	Montana	Coal	5.47	8.62	-1.4%	+3.0%
13	Oregon	Hydroelectric	6.08	8.78	+2.9%	+6.2%
14	Nebraska	Coal	7.30	8.80	-0.4%	+10.6%
15	Illinois	Nuclear	6.35	8.87	+9.0%	-11.6%
16	Indiana	Coal	6.87	8.97	+2.1%	+6.5%
17	Texas	Natural Gas	6.16	8.99	+0.6%	-17.6%
18	South Dakota	Hydroelectric	6.19	9.06	+0.7%	+11%
19	Missouri	Coal	7.05	9.06	-0.6%	+11.6%
20	Virginia	Nuclear	6.97	9.25	+0.8%	-6.3%
21	Alabama	Natural Gas	6.21	9.30	+1.3%	-4.7%
22	North Carolina	Coal	6.43	9.32	-0.1%	-0.4%
23	Tennessee	Coal	6.58	9.50	+1.3%	-1.1%
24	South Carolina	Nuclear	6.25	9.56	+2.8%	+2.8%
25	Minnesota	Coal	7.03	9.63	-0.6%	+7.1%
26	Mississippi	Natural Gas	6.75	9.66	+3.7%	-1.2%
27	Ohio	Coal	6.62	9.67	+3.7%	-2.9%
28	New Mexico	Coal	6.48	9.69	+3.1%	+8.4%
29	Nevada	Natural Gas	7.08	9.76	+6.0%	-14.8%
30	Georgia	Coal	6.52	9.94	+2.4%	+2.1%
31	Colorado	Coal	7.28	10.04	+0.7%	+9.3%
32	Kansas	Coal	7.47	10.04	+3.2%	+13.9%
33	Arizona	Coal	6.64	10.24	-0.9%	-3.0%
34	Pennsylvania	Coal	7.42	10.29	+2.9%	-3.0%
	United States	Coal	7.01	10.45	+1.8%	-3.7%
35	Wisconsin	Coal	7.65	10.73	-0.9%	+3.6%
36	Florida	Natural Gas	8.06	10.87	+3.6%	-14.4%
27	Michigan	Coal	7.71	11.10	-3.1%	+6.9%
38	Delaware	Natural Gas	8.60	11.33	+1.4%	-15.6%
39	Maryland	Coal	9.01	12.12	+2.2%	-16.1%
	District of Columbia	Natural Gas	8.19	12.17	+0.9%	-15.1%
40	Maine	Natural Gas	9.01	12.66	+4.9%	-12.5%
41	New Jersey	Nuclear	11.55	14.01	+0.5%	-12.7%
42	Vermont	Nuclear	10.12	14.58	-0.9%	+3.5%
43	California	Natural Gas	11.93	15.23	+2.8%	+4.1%
44	New Hampshire	Nuclear	11.90	15.25	+4.7%	-8.8%
45	Massachusetts	Natural Gas	12.57	15.34	+3.9%	-10.2%
46	Rhode Island	Natural Gas	12.83	15.57	+10%	-0.9%
47	New York	Natural Gas	6.50	16.25	+2.3%	-5.2%
48	Connecticut	Nuclear	12.95	16.98	+6.4%	-14.9%
49	Alaska	Natural Gas	15.78	17.58	+4.6%	+5.5%
50	Hawaii	Petroleum	30.22	33.53	-0.9%	+43.0%

Average Price of Electricity by State

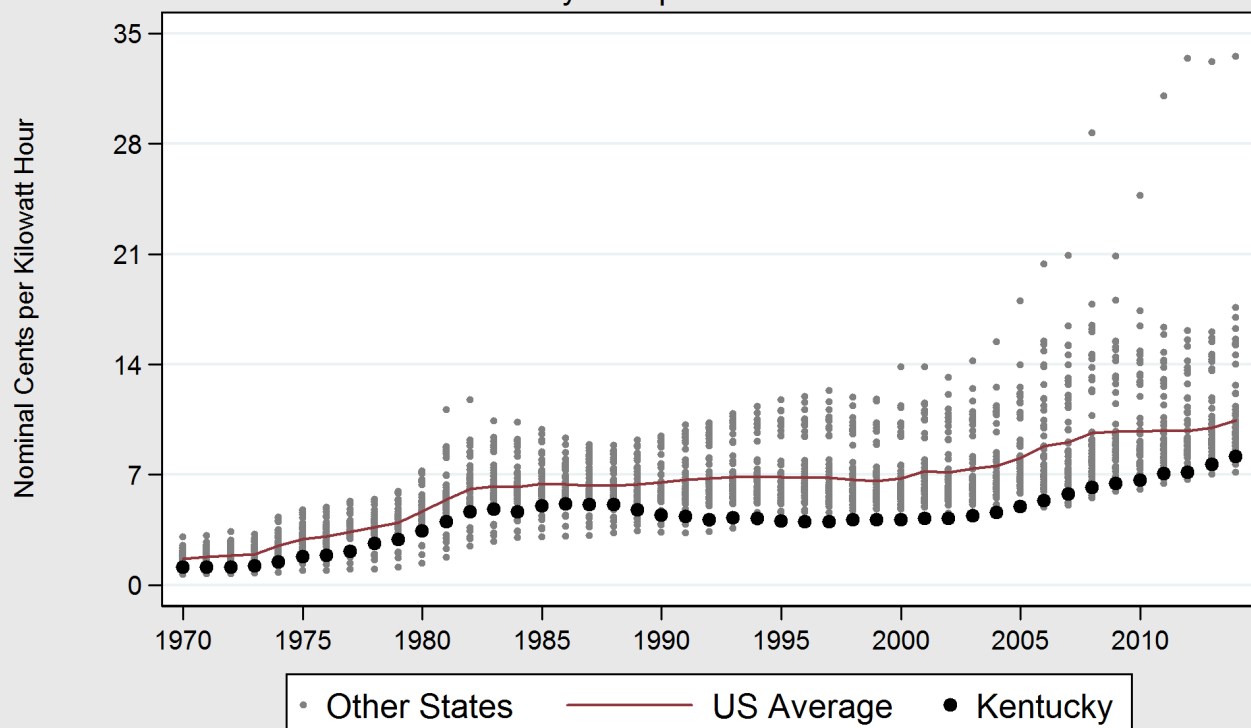
United States Electricity Prices, 2012



Watch an Animated Version of This Map:

<http://youtu.be/QExe0zRFzfE>

Kentucky Average Electricity Price, 1970-2014
Kentucky Compared to Other States

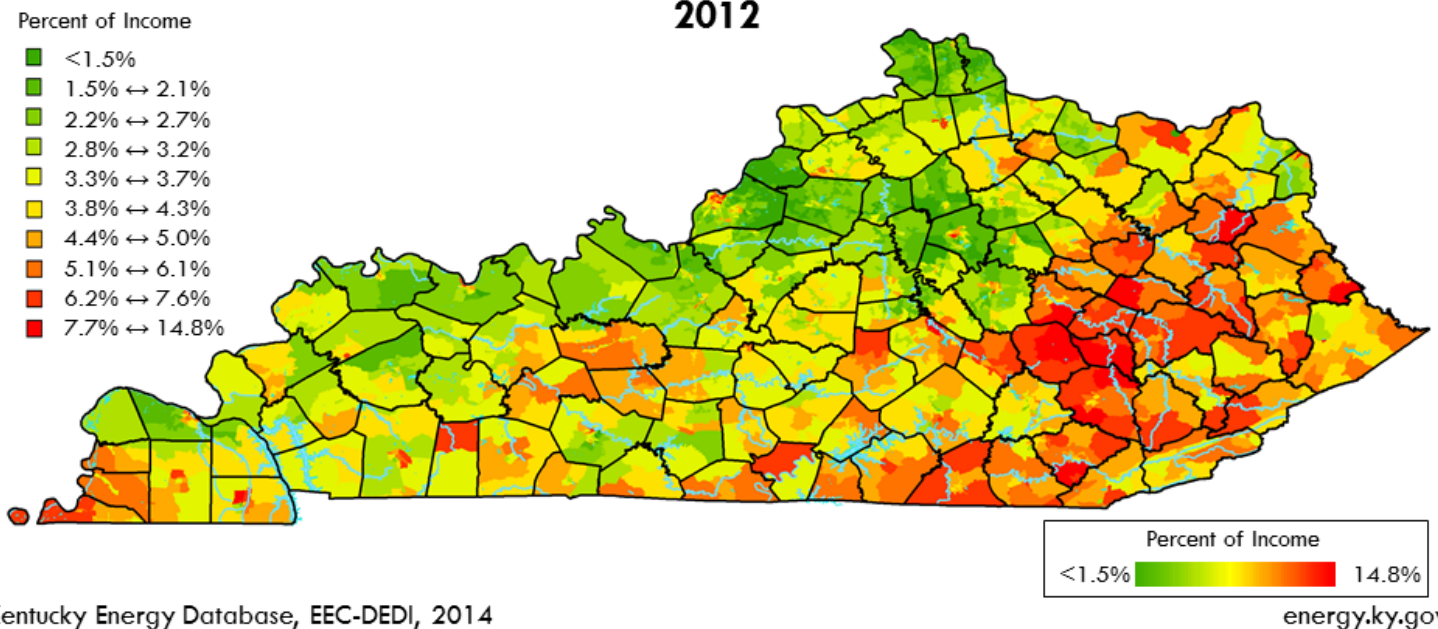


Kentucky Energy Database, EEC-DEDI, 2015

Data Source: EIA Form 861 & 826

Kentucky Electricity Expenditures

Kentucky Household Electricity Expenditures as a Percentage of Income 2012



Kentucky Energy Database, EEC-DEDI, 2014

These maps summarize the percentage of household income that is spent on electricity within the Commonwealth of Kentucky and throughout the United States. Red areas show where average electricity expenditures represent a larger portion of household income in a given area. The maps display electricity expenditures as a percentage of household income, which combines data from the Energy Information Administration's surveys of electric utilities with median household income data from the Census Bureau's American Community Survey. The Kentucky map above varies by electric service territories and individual neighborhoods within counties while the United States maps on the adjacent page are shown by county.

As shown on page 24 and 25, residential consumers in Kentucky pay among the lowest prices for electricity in the country, but Kentucky is home to some of the nation's poorest households. Electricity expenditures as a percentage of household income are more significant in rural areas and poorer urban areas such as the western part of Louisville and the northern Lexington. Additionally, southeastern Kentucky contains the largest clustering of low-income counties in the United States, five of the ten lowest in terms of median household income. Many of Kentucky's manufactured homes with electric heat are also concentrated in this area. Thirteen percent of Kentucky families live in mobile homes, which are cheaper to purchase but more costly over the long-term due to electricity costs.

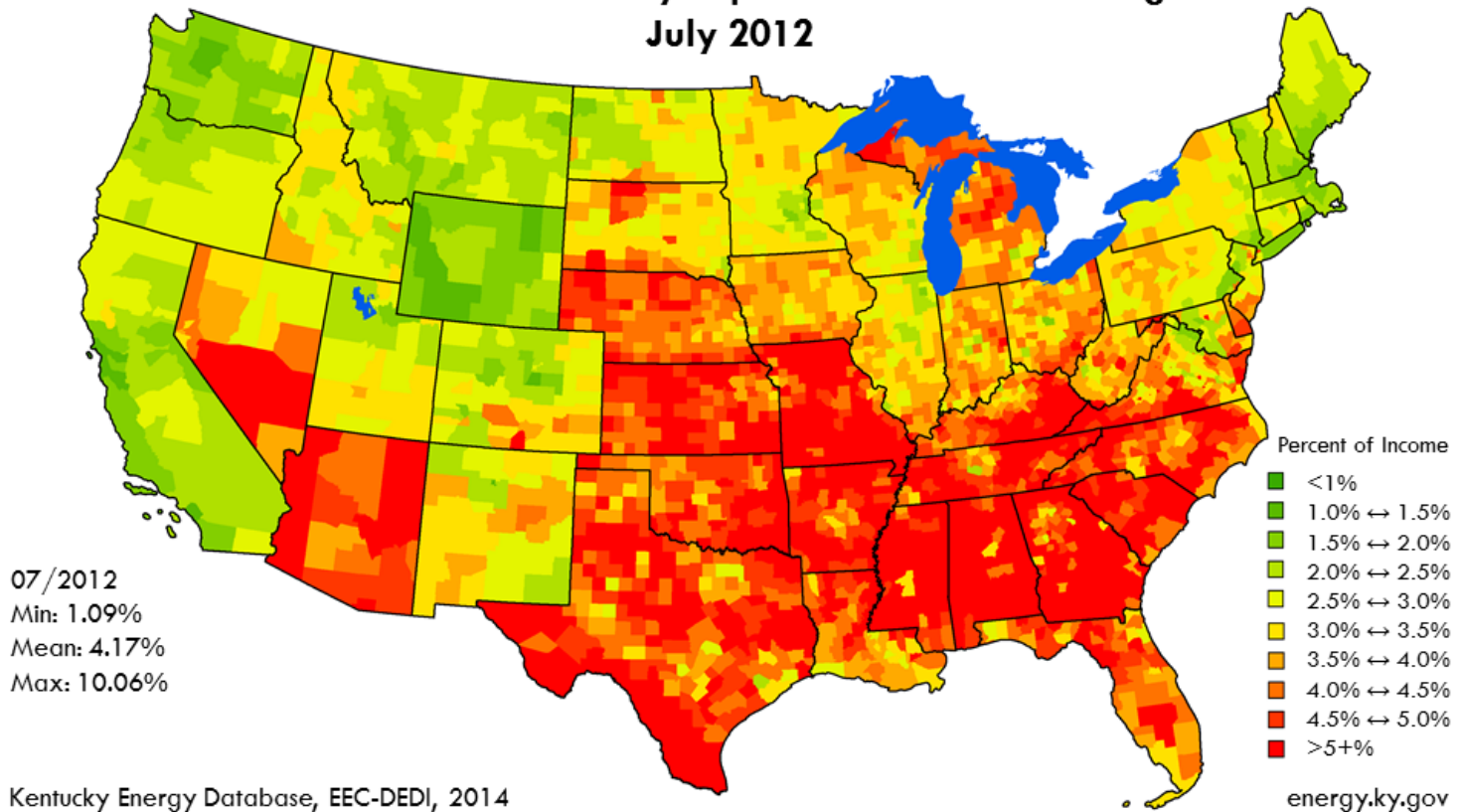
The maps on page 15 show 2012 July and December electricity expenditures as a percentage of household income by county throughout the United States. During summer, air conditioning requirements cause increased electricity costs that are particularly visible in poverty-stricken regions of the Appalachian Mountains, the Deep South, and parts of Texas. During winter, home heating requirements increase electricity costs again across the Deep South and through the Appalachian Mountains where there are many manufactured homes and where electricity is the primary method of home heating. Regardless of the season, higher income metropolitan areas in otherwise relatively rural states across the south appear to be sheltered from seasonal weather trends, including central Kentucky, Nashville, Memphis, Atlanta, Raleigh, Charlotte, and Birmingham. Winter electricity intensity is lower in New England, where the primary method of home heating is fuel oil. Likewise, in the upper Midwest, winter electricity intensity is lower because the primary heating source is natural gas.

Electricity expenditure data were collected by electric service provider by the Energy Information Administration in Form 826 and 861, median household income data collected by the Census Bureau American Community Survey. Residential electricity bills vary with electricity prices, weather, housing quality, home size, occupancy, usage, and method of home heating. Household expenditures for direct heating with fossil fuels such as natural gas, propane, or others are not reflected in these data.

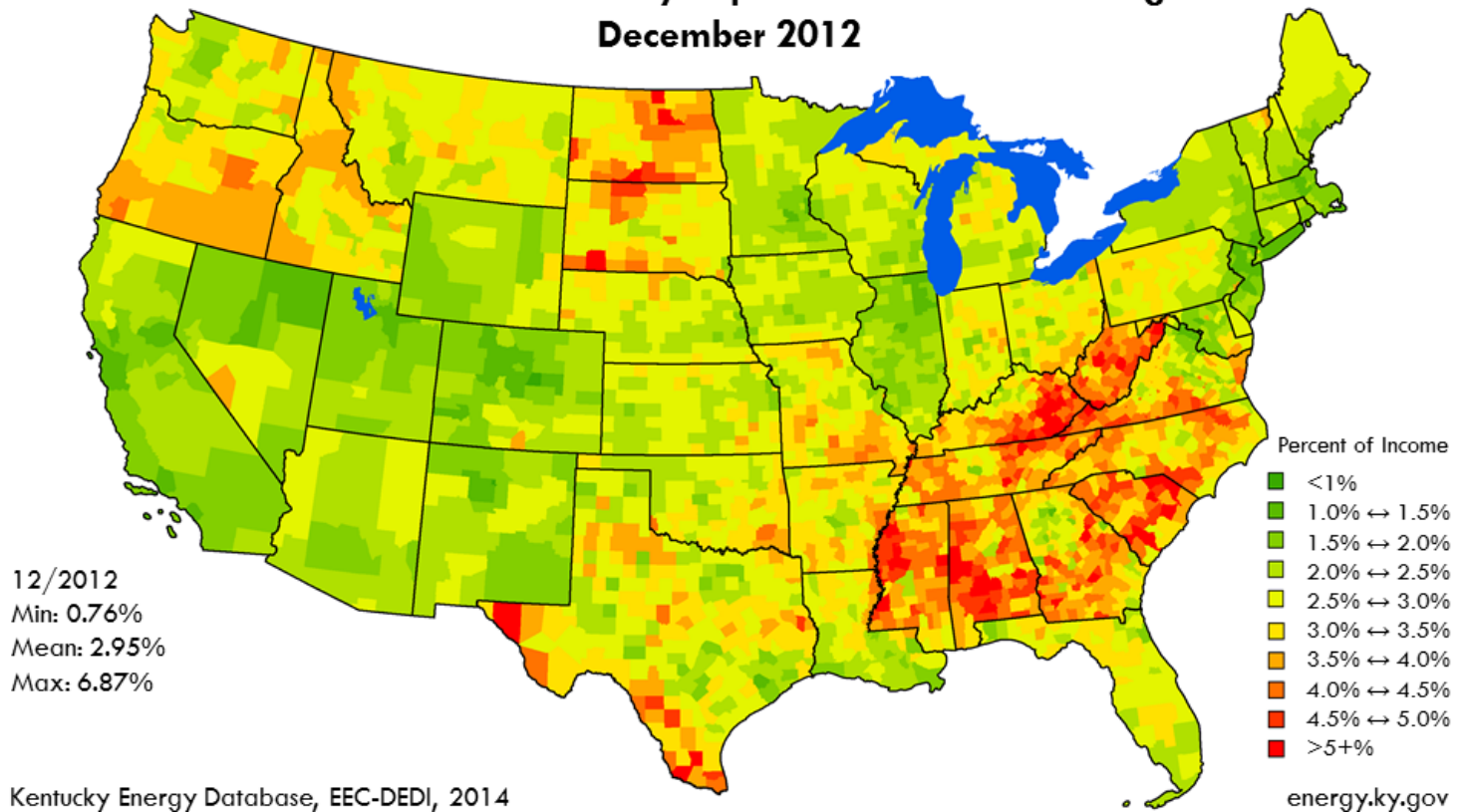
Download Detailed Maps: <http://1.usa.gov/1rFQ1xh> Watch Animated Version of Maps: <http://youtu.be/mGI1DKJCaSA>
energy.ky.gov

United States Electricity Expenditures

United States Household Electricity Expenditures as a Percentage of Income
July 2012

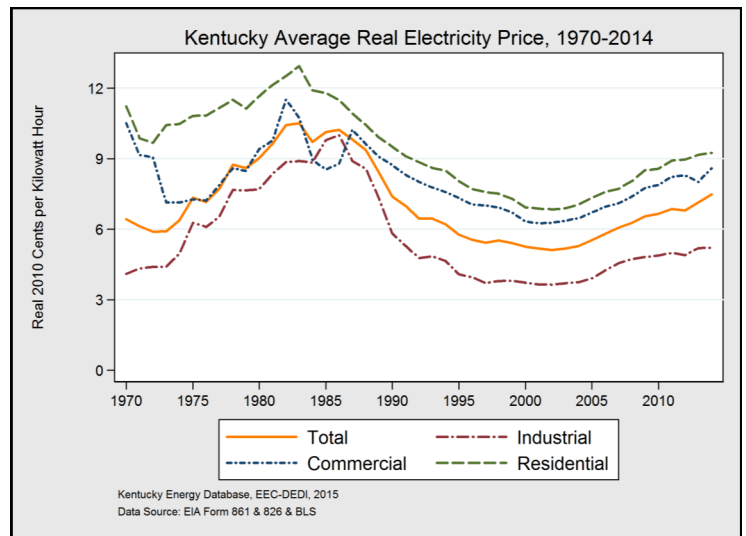
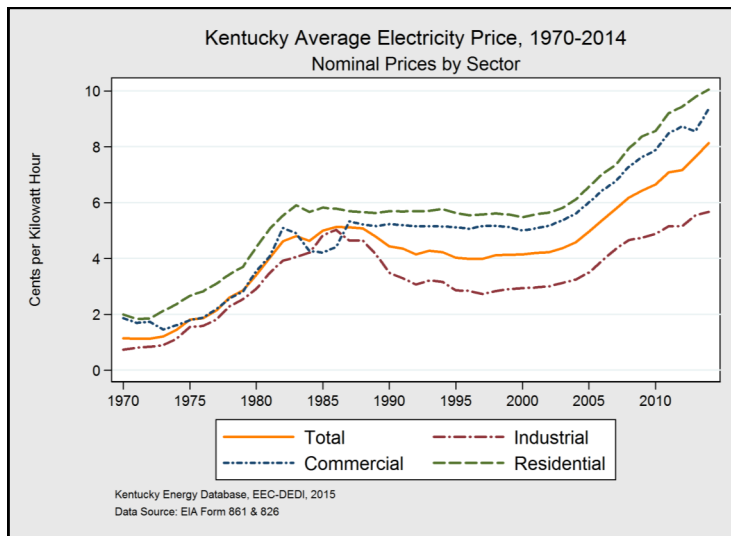


United States Household Electricity Expenditures as a Percentage of Income
December 2012



Download Detailed Maps: <http://1.usa.gov/1rFQ1xh> Watch Animated Version of Maps: <http://youtu.be/mGI1DKJCaSA>

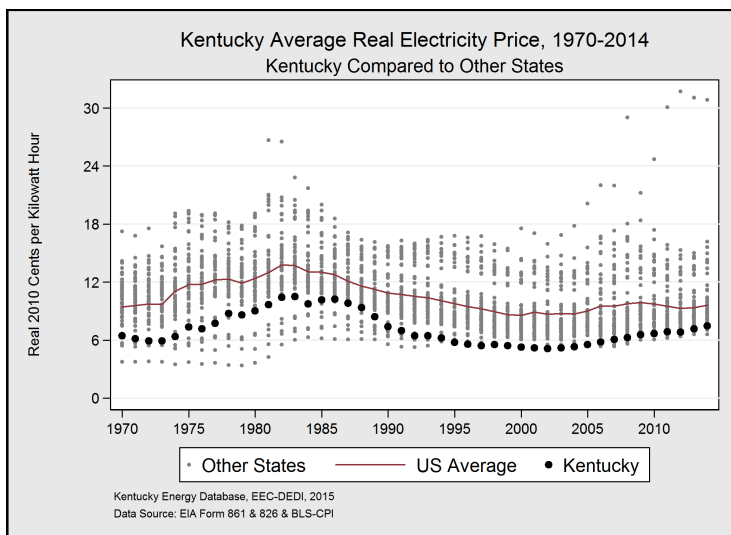
Kentucky Electricity Prices



Sector	Nominal Cents/kWh	Since 2000
Average	8.13¢	+94%
Residential	10.05¢	+84%
Commercial	9.34¢	+87%
Industrial	5.67¢	+88%

Sector	Real* Cents/kWh	Since 2000
Average	7.48¢	+41%
Residential	9.25¢	+34%
Commercial	8.60¢	+36%
Industrial	5.22¢	+37%

*Real 2010 \$US



In 2014, the average price of electricity across economic sectors in Kentucky was 8.13¢ per kilowatt-hour. This average price ranked Kentucky electricity prices the eighth lowest in the country. The residential sector paid the highest price for electricity at 10.05¢ per kilowatt-hour, followed by the commercial sector at 9.34¢ per-kilowatt hour, and the industrial sector at 5.67¢ per kilowatt-hour, fourth lowest in the country. Since 1970, the average price of electricity in Kentucky has been among the lowest in the United States and well below the national average.

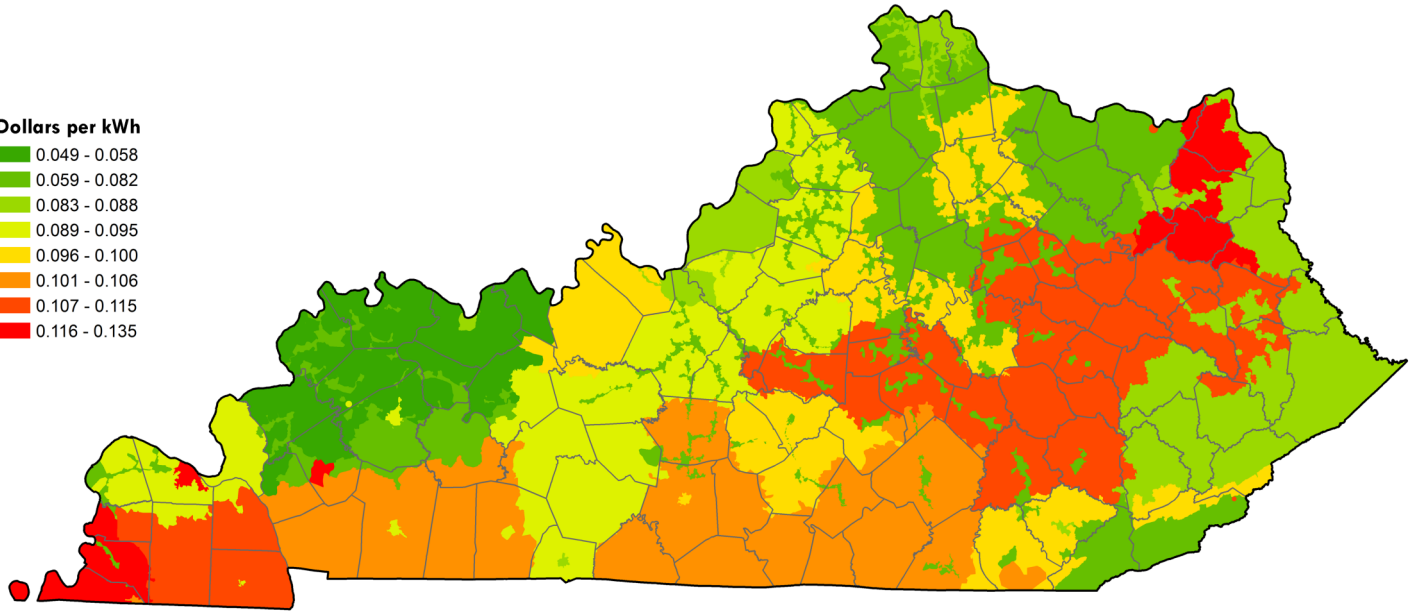
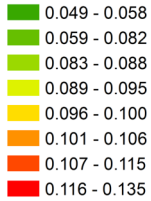
After, adjusting for inflation, the trends of electricity prices in Kentucky between 1970 and 2014 are notably different from the adjacent, nominal graphic. In inflation-adjusted dollars, the price of electricity in Kentucky actually decreased from 1980 through 2002. However, the real price of electricity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

Retail electricity rates are set by either the PSC, the owner or board governing a municipal utility, or TVA. Rates are generally established to cover the operating expenses and the capital costs of the utilities to maintain generation infrastructure and supply electricity. Operating expenses typically include personnel costs, fuel costs, generation costs, and maintenance costs. Capital costs typically include the costs to construct facilities, environmental equipment, and transmission lines, service the outstanding interest on debt, and earn a scheduled return on equity.

Kentucky Electricity Prices

Kentucky Average Retail Electricity Prices, 2014

Dollars per kWh



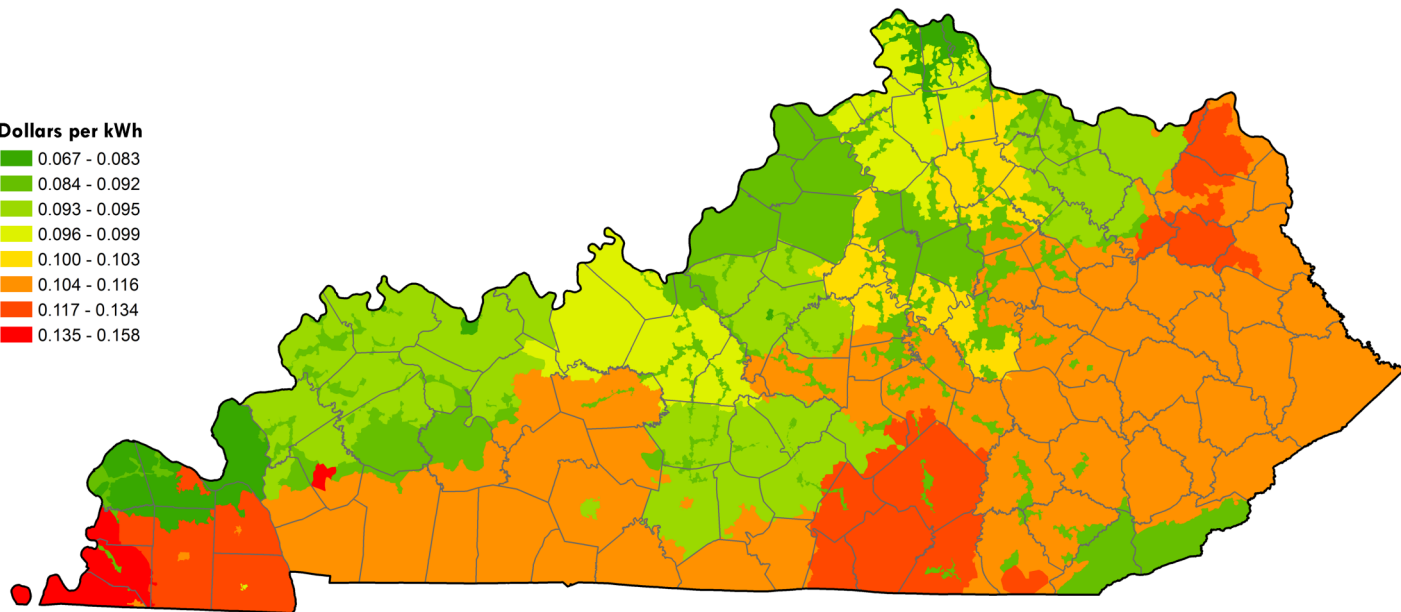
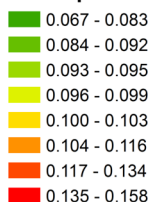
Kentucky Energy Database, EEC-DEDI, 2015

Kenergy Corp.	4.87¢	Taylor County RECC	9.63¢
Henderson	5.84¢	Cumberland Valley RECC	9.66¢
Falmouth City Utilities	7.21¢	Blue Grass ECC	9.74¢
Bardstown	7.46¢	Glasgow	9.81¢
Nicholasville	7.81¢	Williamstown Utility Commission	9.85¢
Frankfort	7.85¢	Meade County RECC	9.95¢
<u>Kentucky Utilities</u>	7.97¢	Fulton	10.07¢
Owen ECC	8.01¢	Farmers RECC	10.08¢
Fleming-Mason ECC	8.08¢	Paris Combined Utilities	10.15¢
Berea	8.16¢	Pennyrile RECC	10.17¢
Bardwell City Utilities	8.34¢	South Kentucky RECC	10.24¢
<u>Duke Energy Kentucky, Inc.</u>	8.34¢	Tri-County Elec Member Corp.	10.42¢
Barbourville	8.47¢	Jellico	10.59¢
Corbin	8.49¢	Benton	10.83¢
Owensboro	8.51¢	Mayfield Plant Board	10.89¢
<u>Kentucky Power</u>	8.52¢	Vanceburg Electric & Gas Systems	10.91¢
Franklin	8.60¢	Big Sandy RECC	10.92¢
<u>Louisville Gas & Electric</u>	8.82¢	Inter County ECC	10.92¢
Hopkinsville	8.94¢	Benham City Utilities	11.01¢
Jackson Purchase Energy Corp.	9.07¢	Olive Hill Municipal Lighting and Gas	11.19¢
Russellville	9.14¢	Licking Valley RECC	11.36¢
Murray	9.18¢	Clark ECC	11.41¢
Madisonville	9.19¢	Jackson ECC	11.47¢
Salt River ECC	9.19¢	West Kentucky RECC	11.52¢
Shelby Energy Co-op, Inc.	9.31¢	Grayson RECC	12.46¢
Providence Electric & Gas Dept.	9.36¢	Hickman	13.19¢
Bowling Green	9.37¢	Hickman-Fulton Counties RECC	13.25¢
Warren RECC	9.38¢	Paducah	13.45¢
Nolin RECC	9.49¢	Princeton	13.54¢

Commercial Electricity Prices

Kentucky Commercial Electricity Prices, 2014

Dollars per kWh

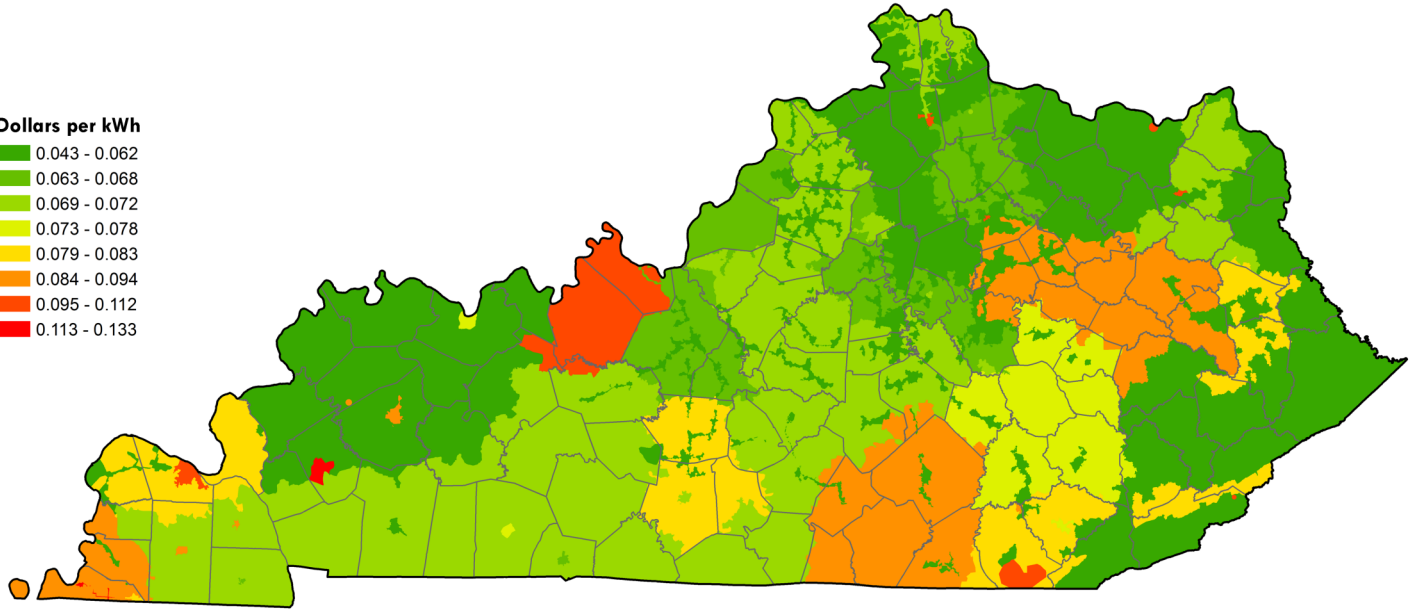
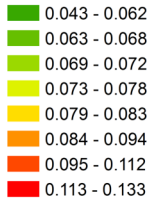


Henderson	6.68¢	Blue Grass ECC	10.26¢
Falmouth City Utilities	7.21¢	Franklin	10.63¢
Bardstown	7.34¢	Mayfield Plant Board	10.63¢
Owensboro	7.70¢	Russellville	10.65¢
Jackson Purchase Energy Corp.	8.18¢	Inter County ECC	10.68¢
Duke Energy Kentucky, Inc.	8.26¢	Hopkinsville	10.72¢
Bardwell City Utilities	8.34¢	Glasgow	10.75¢
Corbin	8.49¢	Jackson ECC	10.78¢
Nicholasville	8.65¢	Fulton	10.79¢
Berea	8.69¢	Big Sandy RECC	10.83¢
Madisonville	8.77¢	Kentucky Power	10.89¢
Kentucky Utilities	9.03¢	Vanceburg Electric & Gas Systems	10.91¢
Louisville Gas & Electric	9.03¢	Benham City Utilities	11.01¢
Frankfort	9.08¢	Cumberland Valley RECC	11.10¢
Barbourville	9.12¢	Benton	11.11¢
Shelby Energy Co-op, Inc.	9.16¢	Olive Hill Municipal Lighting and Gas	11.19¢
Taylor County RECC	9.31¢	Licking Valley RECC	11.37¢
Providence Electric & Gas Dept.	9.36¢	Tri-County Elec Member Corp.	11.38¢
Fleming-Mason ECC	9.38¢	Clark ECC	11.44¢
Bowling Green	9.41¢	Pennyryle RECC	11.47¢
Salt River ECC	9.45¢	Warren RECC	11.60¢
Farmers RECC	9.45¢	Grayson RECC	11.87¢
Kenergy Corp.	9.52¢	Jellico	12.03¢
Murray	9.66¢	South Kentucky RECC	12.56¢
Owen ECC	9.67¢	Paducah	13.35¢
Williamstown Utility Commission	9.85¢	West Kentucky RECC	13.37¢
Meade County RECC	9.93¢	Hickman	14.38¢
Nolin RECC	9.94¢	Princeton	14.80¢
Paris Combined Utilities	10.15¢	Hickman-Fulton Counties RECC	15.83¢

Industrial Electricity Prices

Kentucky Industrial Electricity Prices, 2014

Dollars per kWh



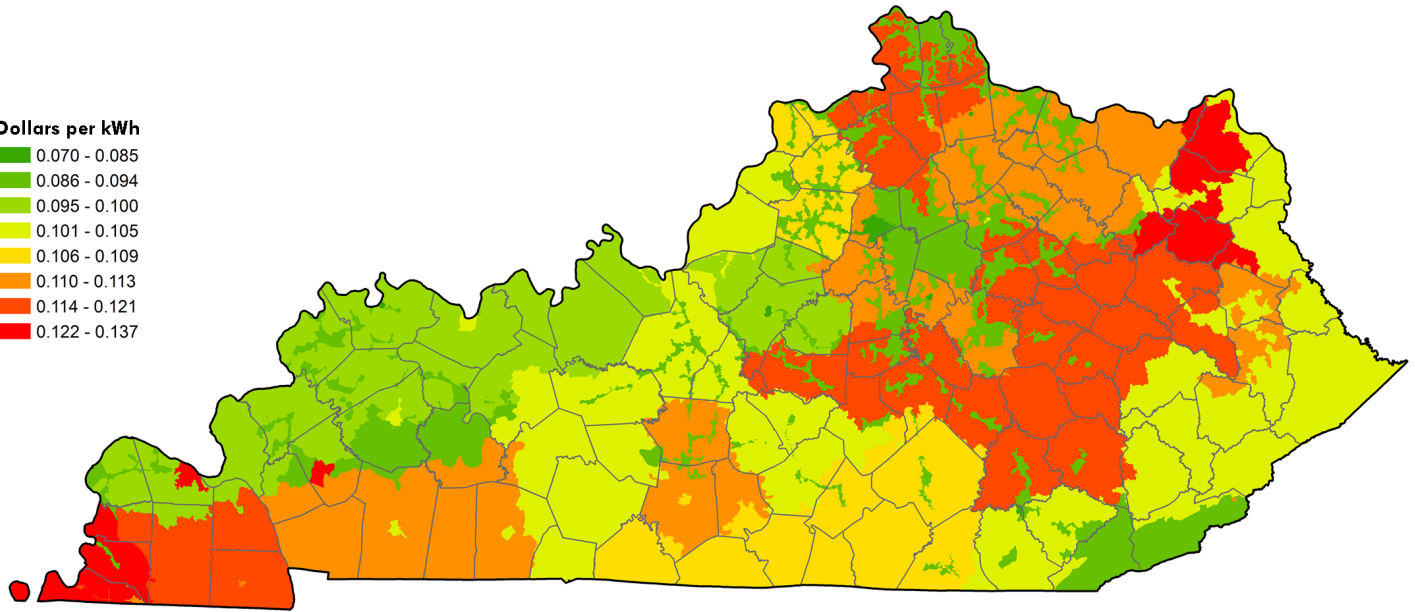
Kenergy Corp.	4.26¢	Russellville	7.43¢
Hopkinsville	4.63¢	Barbourville	7.54¢
Henderson	5.07¢	Jackson ECC	7.57¢
Owen ECC	5.55¢	Owensboro	7.81¢
Kentucky Utilities	5.93¢	Big Sandy RECC	7.93¢
Kentucky Power	6.05¢	Jackson Purchase Energy Corp.	8.05¢
Fleming-Mason ECC	6.16¢	Fulton	8.17¢
Nolin RECC	6.31¢	Farmers RECC	8.18¢
Murray	6.33¢	Cumberland Valley RECC	8.23¢
Louisville Gas & Electric	6.57¢	Bardwell City Utilities	8.34¢
Blue Grass ECC	6.58¢	Corbin	8.49¢
Franklin	6.78¢	Benton	8.56¢
Grayson RECC	6.91¢	South Kentucky RECC	8.61¢
Bowling Green	6.93¢	Hickman-Fulton Counties RECC	8.61¢
West Kentucky RECC	6.98¢	Licking Valley RECC	8.90¢
Berea	7.00¢	Mayfield Plant Board	9.14¢
Shelby Energy Co-op, Inc.	7.03¢	Madisonville	9.19¢
Taylor County RECC	7.03¢	Clark ECC	9.20¢
Bardstown	7.09¢	Providence Electric & Gas Dept.	9.36¢
Salt River ECC	7.10¢	Williamstown Utility Commission	9.85¢
Nicholasville	7.11¢	Meade County RECC	9.95¢
Glasgow	7.11¢	Paris Combined Utilities	10.15¢
Frankfort	7.12¢	Paducah	10.21¢
Pennyriple RECC	7.14¢	Jellico	10.59¢
Inter County ECC	7.20¢	Vanceburg Electric & Gas Systems	10.91¢
Falmouth City Utilities	7.21¢	Benham City Utilities	11.01¢
Duke Energy Kentucky, Inc.	7.22¢	Olive Hill Municipal Lighting and Gas	11.19¢
Tri-County Elec Member Corp.	7.22¢	Hickman	13.19¢
Warren RECC	7.24¢	Princeton	13.26¢

Residential Electricity Prices

Kentucky Residential Electricity Prices, 2014

Dollars per kWh

- 0.070 - 0.085
- 0.086 - 0.094
- 0.095 - 0.100
- 0.101 - 0.105
- 0.106 - 0.109
- 0.110 - 0.113
- 0.114 - 0.121
- 0.122 - 0.137



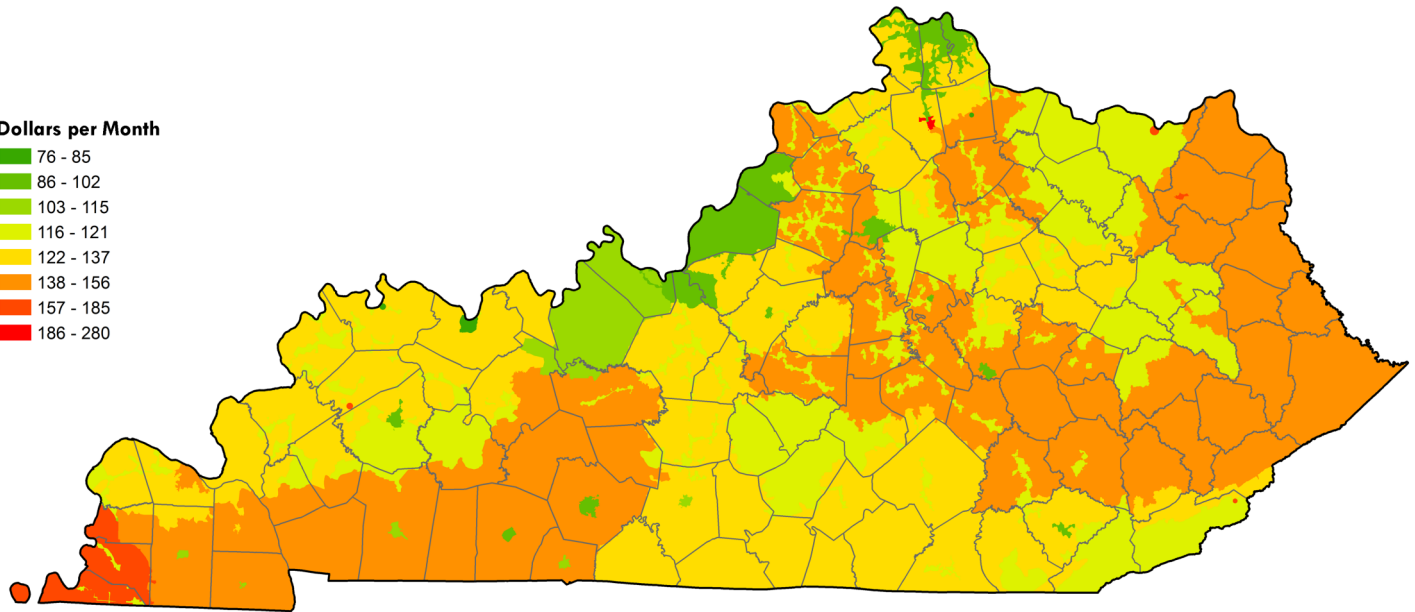
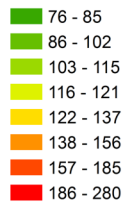
Kentucky Energy Database, EEC-DEDI, 2015

Henderson	6.97¢	Warren RECC	10.48¢
Falmouth City Utilities	7.21¢	Nolin RECC	10.49¢
Nicholasville	8.24¢	Tri-County Elec Member Corp.	10.55¢
Bardstown	8.33¢	South Kentucky RECC	10.77¢
Bardwell City Utilities	8.34¢	Glasgow	10.78¢
Corbin	8.49¢	Shelby Energy Co-op, Inc.	10.87¢
Frankfort	8.52¢	Vanceburg Electric & Gas Systems	10.91¢
Berea	8.78¢	Blue Grass ECC	10.92¢
Duke Energy Kentucky, Inc.	9.07¢	Farmers RECC	10.93¢
Kentucky Utilities	9.33¢	Fleming-Mason ECC	10.93¢
Providence Electric & Gas Dept.	9.36¢	Benham City Utilities	11.01¢
Barbourville	9.37¢	Murray	11.01¢
Jackson Purchase Energy Corp.	9.65¢	Pennyrile RECC	11.13¢
Salt River ECC	9.68¢	Fulton	11.13¢
Kenergy Corp.	9.78¢	Olive Hill Municipal Lighting and Gas	11.19¢
Williamstown Utility Commission	9.85¢	Big Sandy RECC	11.27¢
Meade County RECC	9.95¢	Inter County ECC	11.43¢
Russellville	10.04¢	Clark ECC	11.47¢
Louisville Gas & Electric	10.08¢	Benton	11.52¢
Kentucky Power	10.09¢	Licking Valley RECC	11.57¢
Cumberland Valley RECC	10.11¢	Owen ECC	11.65¢
Paris Combined Utilities	10.15¢	Mayfield Plant Board	11.68¢
Taylor County RECC	10.17¢	West Kentucky RECC	11.78¢
Jellico	10.32¢	Jackson ECC	11.98¢
Franklin	10.33¢	Hickman	12.14¢
Bowling Green	10.33¢	Hickman-Fulton Counties RECC	13.13¢
Madisonville	10.37¢	Grayson RECC	13.51¢
Hopkinsville	10.45¢	Princeton	13.51¢
Owensboro	10.45¢	Paducah	13.75¢

Residential Electricity Bills

Kentucky Average Monthly Residential Electricity Bills, 2014

Dollars per Month



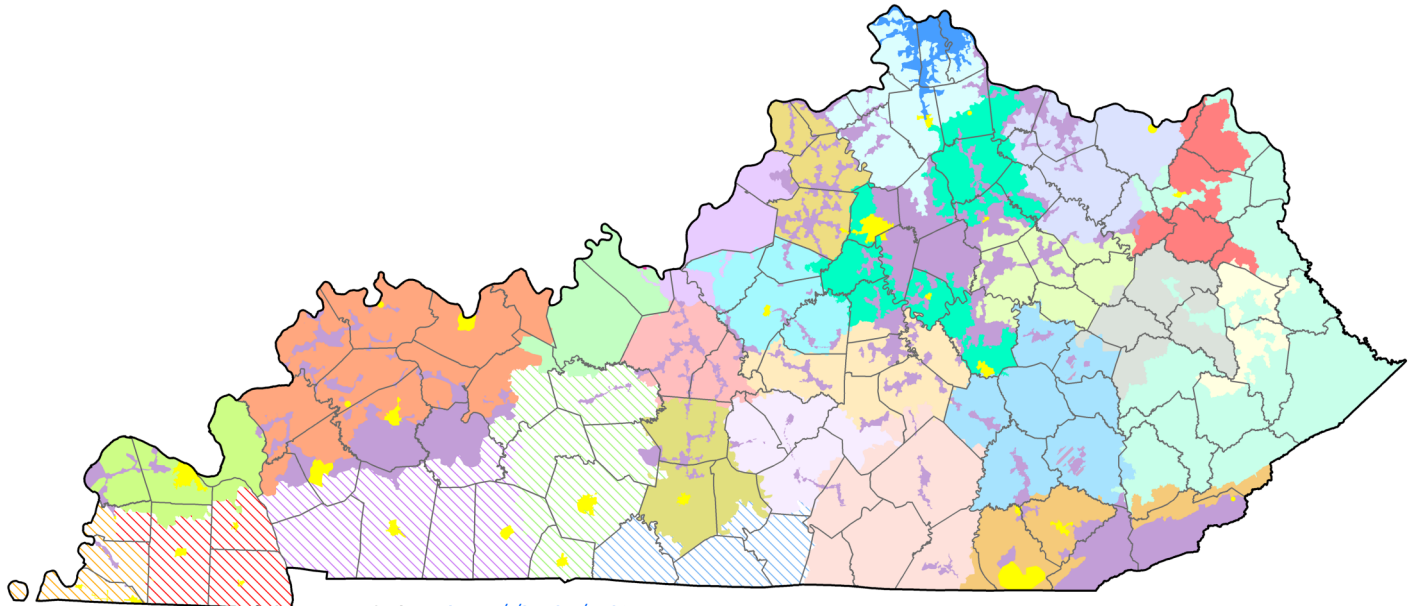
Kentucky Energy Database, EEC-DEDI, 2015

Henderson	\$76.13	Jackson Purchase Energy Corp.	\$126.77
Falmouth City Utilities	\$78.30	Farmers RECC	\$127.37
Owensboro	\$84.55	Princeton	\$127.44
Duke Energy Kentucky, Inc.	\$91.40	Corbin	\$128.31
Madisonville	\$92.88	Owen ECC	\$129.37
Frankfort	\$93.01	Salt River ECC	\$129.85
Barbourville	\$94.93	Benton	\$131.59
Nicholasville	\$95.71	Clark ECC	\$135.06
Bardstown	\$95.97	Tri-County Elec Member Corp.	\$135.14
Russellville	\$96.98	Kenergy Corp.	\$136.27
Bowling Green	\$99.23	Nolin RECC	\$136.97
Louisville Gas & Electric	\$99.61	Big Sandy RECC	\$141.16
Berea	\$102.08	Paducah	\$141.61
Mayfield Plant Board	\$106.25	Blue Grass ECC	\$141.63
Murray	\$109.75	Kentucky Power	\$142.23
Glasgow	\$112.22	Grayson RECC	\$144.12
Meade County RECC	\$113.99	Shelby Energy Co-op, Inc.	\$144.45
Hopkinsville	\$114.30	Inter County ECC	\$145.56
Bardwell City Utilities	\$114.34	Jackson ECC	\$148.29
Franklin	\$114.68	Warren RECC	\$149.51
Fulton	\$116.57	Pennyriple RECC	\$149.96
Kentucky Utilities	\$116.76	West Kentucky RECC	\$150.37
Taylor County RECC	\$117.04	Paris Combined Utilities	\$156.48
Licking Valley RECC	\$117.77	Hickman-Fulton Counties RECC	\$162.34
Hickman	\$119.10	Olive Hill Municipal Lighting and Gas	\$167.45
Fleming-Mason ECC	\$120.65	Providence Electric & Gas Dept.	\$181.68
Jellico	\$120.91	Vanceburg Electric & Gas Systems	\$182.50
Cumberland Valley RECC	\$124.22	Benham City Utilities	\$184.89
South Kentucky RECC	\$124.29	Williamstown Utility Commission	\$280.10

This table shows annual average monthly electricity bills by utility. Residential electricity bills actually vary by household and month not only with electricity prices, but also weather, housing quality, house size, method of home heating, occupancy, and personal usage.

Kentucky Electric Service Areas

Kentucky Electricity Service Areas, 2015



Explore Interactive Version of this Map Online: <http://bit.ly/1rIAoHK>

Kentucky Energy Database, EEC-DEDI, 2015

All Municipal Utilities		Kentucky Utilities*	
Big Sandy RECC†		Licking Valley RECC†	
Blue Grass ECC†		Louisville Gas & Electric*	
Clark ECC†		Meade County RECC‡	
Cumberland Valley RECC†		Nolin RECC†	
Duke Energy Kentucky*		Owen ECC†	
Farmers RECC†		Pennyrile RECC§	
Fleming-Mason ECC†		Salt River ECC†	
Grayson RECC†		Shelby ECC†	
Hickman-Fulton Counties RECC§		South Kentucky RECC†	
Inter-County ECC†		Taylor County RECC†	
Jackson ECC†		Tri-County Electric Member Corporation§	
Jackson Purchase Energy Corporation ‡		Warren RECC§	
Kenergy Corporation‡		West Kentucky RECC§	
Kentucky Power*			

The Commonwealth of Kentucky is divided into certified electric service territories as determined by the Kentucky Public Service Commission (KRS 278.016). Within these certified electric service areas, electricity service and delivery is restricted to one electricity provider per service area. Providers of electricity in Kentucky are either Investor-Owned Utilities (IOU), Municipal Utilities, Electric Cooperative Corporations (ECC), or Rural Electric Cooperative Corporations (RECC). Municipal Utilities and TVA Distributors are not subject to Kentucky Public Service Commission regulation.

*Investor-Owned Utilities

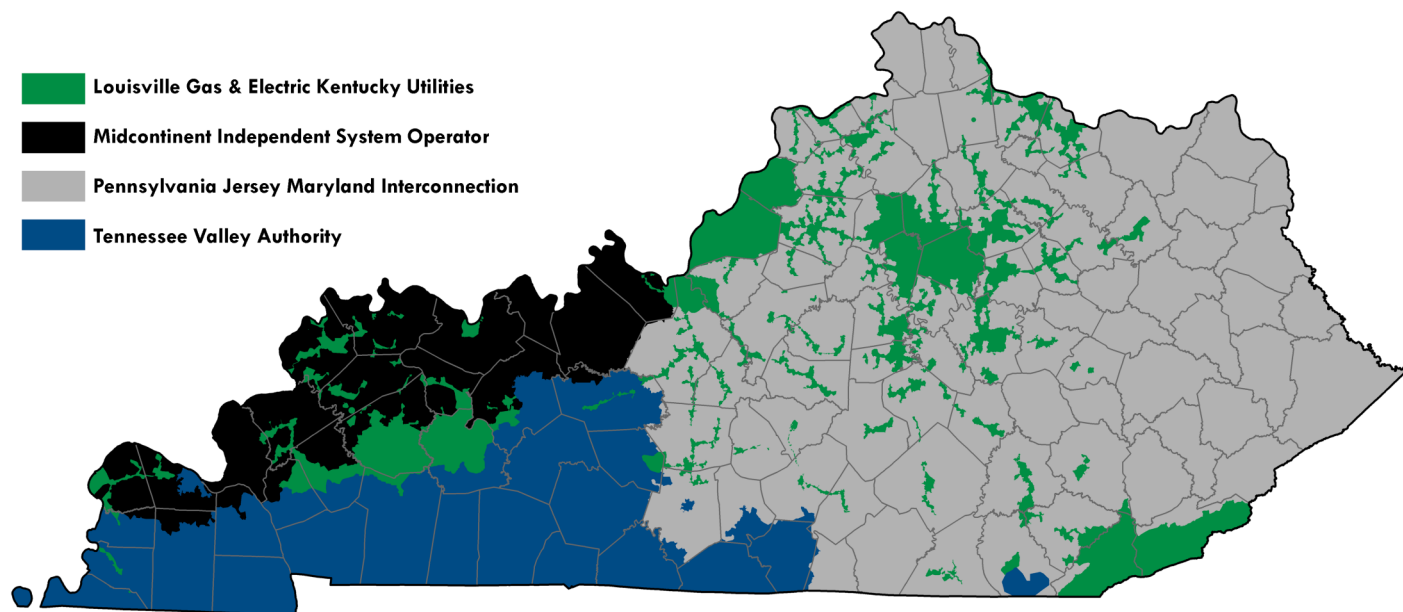
†EKPC Owner-Member Cooperative

‡BREC Member Cooperative

§TVA Distributor

Kentucky Balancing Authority Areas

Kentucky Balancing Authority Areas, 2015



Kentucky Energy Database, EEC-DEDI, 2015

Retail Service:

Electricity in Kentucky is provided to customers by one of the following types of entities that have the exclusive right to serve the customers within its territory:

- Retail electric suppliers that are regulated by the Kentucky Public Service Commission (PSC), which include:
 1. Investor-Owned Utilities (IOUs)
 2. Rural Electric Cooperative Companies (RECCs)
- Municipal Utilities
- The Tennessee Valley Authority (TVA) and its associated distributors within the state

Electric suppliers fall into two categories: IOUs and RECCs. There are four investor-owned companies in Kentucky: Duke Energy Kentucky, Kentucky Power Company (aka. American Electric Power), Kentucky Utilities (KU), and Louisville Gas and Electric (LG&E). Each of these companies generates or purchases the power required to meet its respective customers' electricity demands. RECCs are owned by their individual ratepayers and are non-profit entities that reinvest profits into energy infrastructure or return profits to ratepayers.

There are 19 RECCs that are regulated by the PSC. Sixteen of these jointly own and purchase power from East Kentucky Power Cooperative (EKPC) and the remaining three jointly own and purchase power from Big Rivers Electric Corporation (BREC). A distribution cooperative typically receives power from its respective generation and transmission cooperative at a substation in the distributor's service territory.

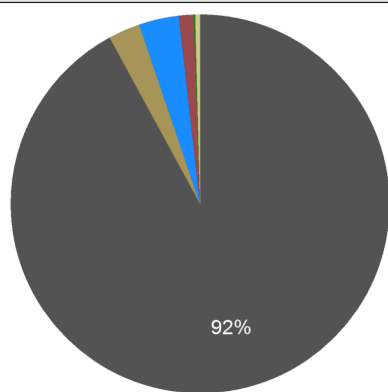
Eighteen municipal electric suppliers purchase power from various sources or self-generate electricity by owning and/or operating generating facilities. In the case of purchased power, a municipality may negotiate a guaranteed delivery of electricity from an investor owned utility or independent power producer, or purchase electricity on the market for distribution within its service area.

Five RECCs and ten municipal utilities purchase electricity from TVA. These RECCs and municipalities then resell and distribute electricity to customers within their service territories. TVA also directly serves several large industrial customers within Kentucky.

*The Tennessee Valley Authority sets the wholesale rate for electricity supplied to its distributors, and approves the distributors' retail rate.

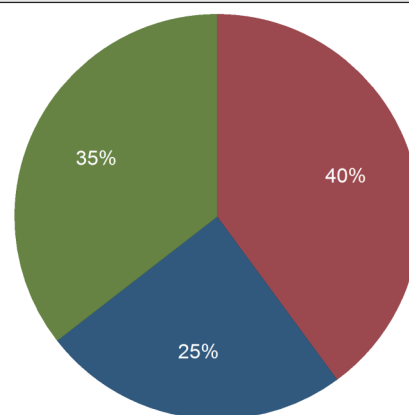
Kentucky Electricity

Kentucky Electricity Generation by Fuel, 2014



Kentucky Energy Database, EEC-DEDI, 2015

Kentucky Electricity Consumption by Sector, 2014

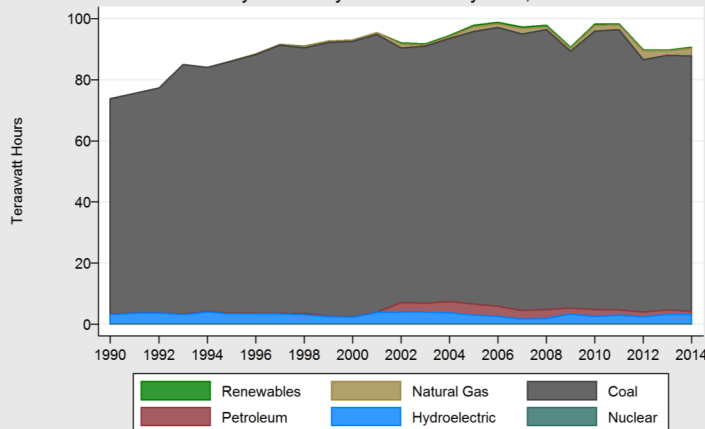


Kentucky Energy Database, EEC-DEDI, 2015

Fuel Type	Gigawatt Hours	1 Year Change
Total	90,737	+1%
Coal	83,497	+<1%
Hydro	3,090	-6%
Natural Gas	2,478	+75%
Petroleum	1,161	-18%
Wood & Biomass	461	+41%

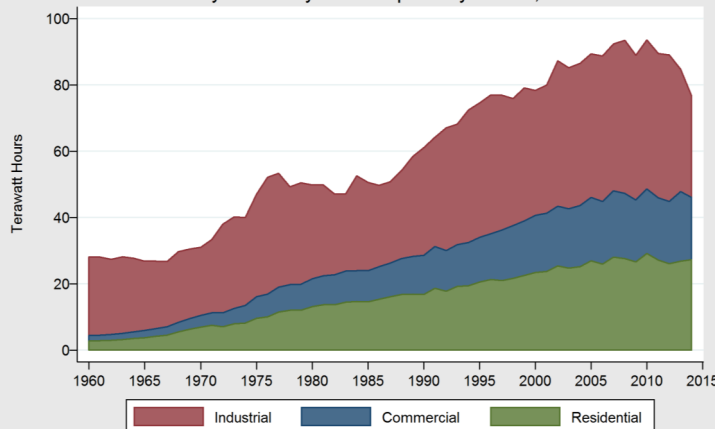
Sector	Gigawatt Hours	1 Year Change
Total*	76,717	-9%
Industrial	30,617	-17%
Residential	27,223	+2%
Commercial	18,877	-10%

Kentucky Electricity Generation by Fuel, 1990-2014



Kentucky Energy Database, EEC-DEDI, 2015
Data Source: EIA Electric Power Annual

Kentucky Electricity Consumption by Sector, 1960-2014



Kentucky Energy Database, EEC-DEDI, 2015
Data Source: EIA SEDS & EIA Form 861 & 826

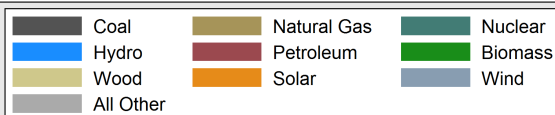
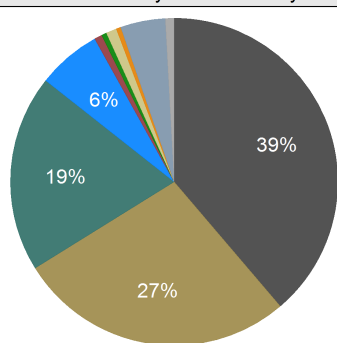
Of the electricity generated in Kentucky in 2014, 92 percent was derived through the combustion of coal. Coal-fired electricity generation increased marginally. Hydroelectric power decreased slightly and produced the second most of all fuels. Natural gas facilities were the third-largest source of electricity and were used primarily for peak load periods. Due to plentiful coal resources and low costs, Kentucky has consistently used coal to meet the vast majority of electricity demand within the state.

*The difference between generation and consumption are exports and transmission losses.

Electricity consumption in Kentucky during 2014 totaled 78 terawatt-hours, a decrease of nine percent compared with 2013. The industrial sector remained the largest consumer of electricity in Kentucky, representing nearly 40 percent of total electricity consumption while the national average was 27 percent in 2014. The residential sector was the second-largest consumer of electricity with 35 percent of consumption, followed by the commercial sector with 25 percent.

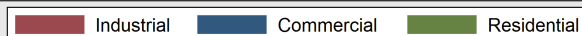
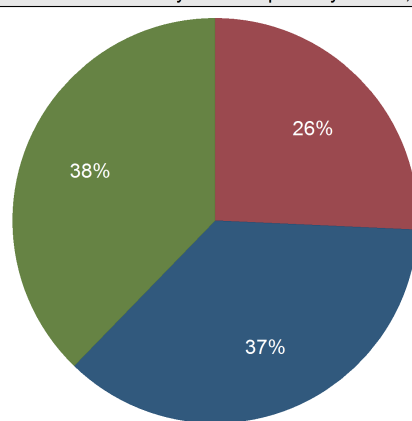
United States Electricity

United States Electricity Generation by Fuel, 2014



Kentucky Energy Database, EEC-DEDI, 2015

United States Electricity Consumption by Sector, 2014

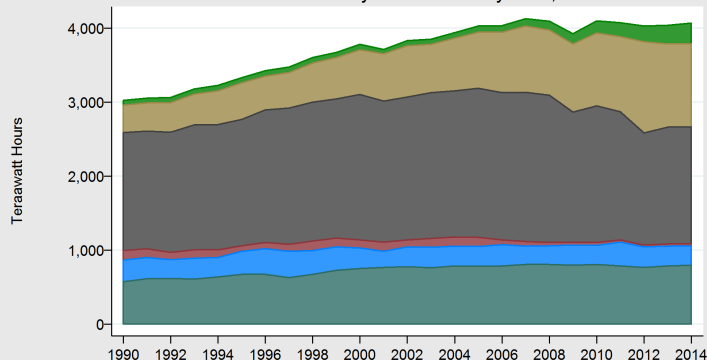


Kentucky Energy Database, EEC-DEDI, 2015

Fuel Type	Gigawatt Hours	1 Year Change
Total	4,092,935	+0.7%
Coal	1,585,697	+0.3%
Natural Gas	1,121,928	-0.3%
Nuclear	797,068	+1.0%
Hydro	258,748	-3.7%
Wind	181,791	+8.3%

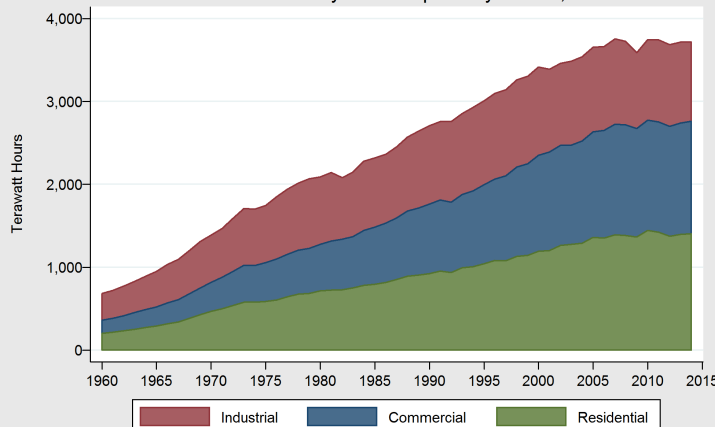
Sector	Gigawatt Hours	1 Year Change
Total	4,092,935	+0.7%
Residential	1,402,911	+0.6%
Commercial	1,357,505	+1%
Industrial	955,488	-2%

United States Electricity Generation by Fuel, 1990-2014



Kentucky Energy Database, EEC-DEDI, 2015
Data Source: EIA Electric Power Annual

United States Electricity Consumption by Sector, 1960-2014

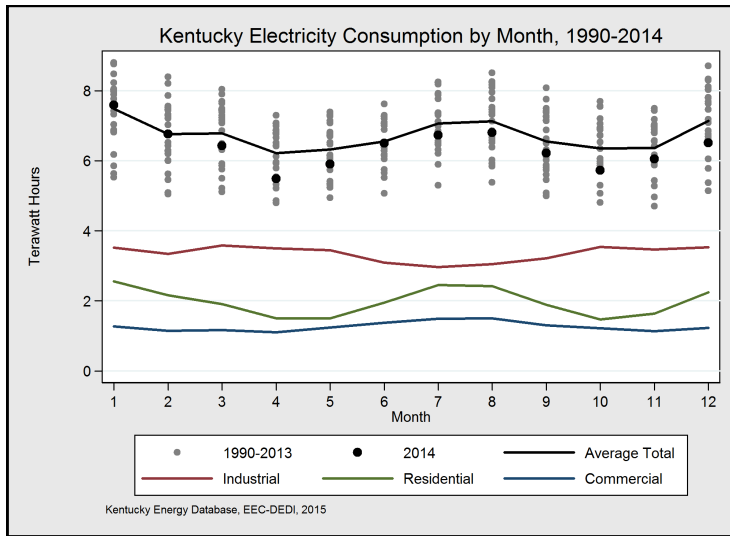


Kentucky Energy Database, EEC-DEDI, 2015
Data Source: EIA SEDS & EIA Form 861 & 826

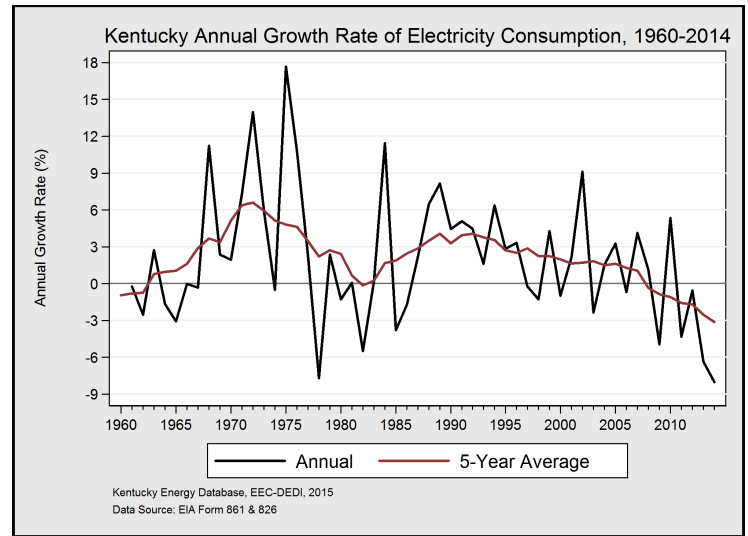
The United States generated more than four petawatt-hours in 2014, an increase of 0.7 percent. Coal-fired electricity generation remained the largest source of electricity at 39 percent of total, and increased by 0.3 percent compared to 2012. Wind electricity generated eight percent, more than any other fuel, and supplied four percent of total electricity requirements. Nuclear and hydroelectricity generation have remained relatively constant for decades, supplying 19 and six percent respectively.

Total electricity consumption increased by 0.7 percent in 2014 to four petawatt-hours. In contrast to Kentucky's manufacturing-intensive industrial electricity load, nationally, residential consumers are the largest share of electricity demand, 38 percent in 2014. Residential, which is highly responsive to changes in weather, grew by 0.6 percent in 2014. Industrial demand fell two percent to 956 terawatt-hours.

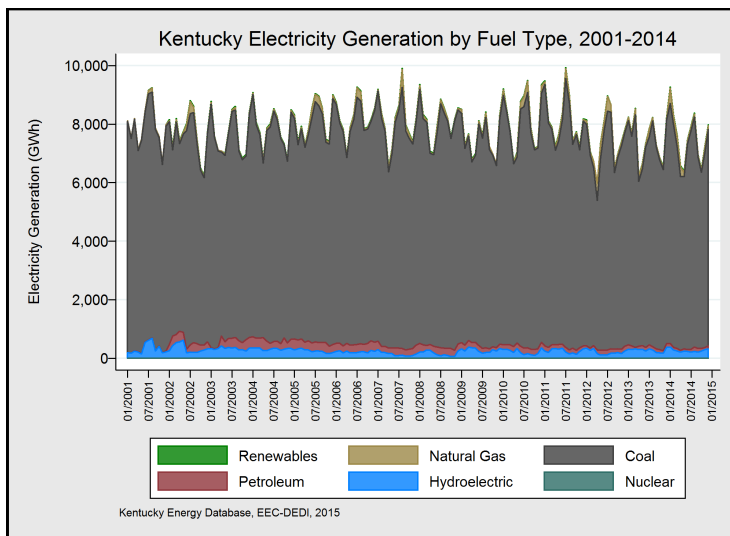
Kentucky Monthly Electricity



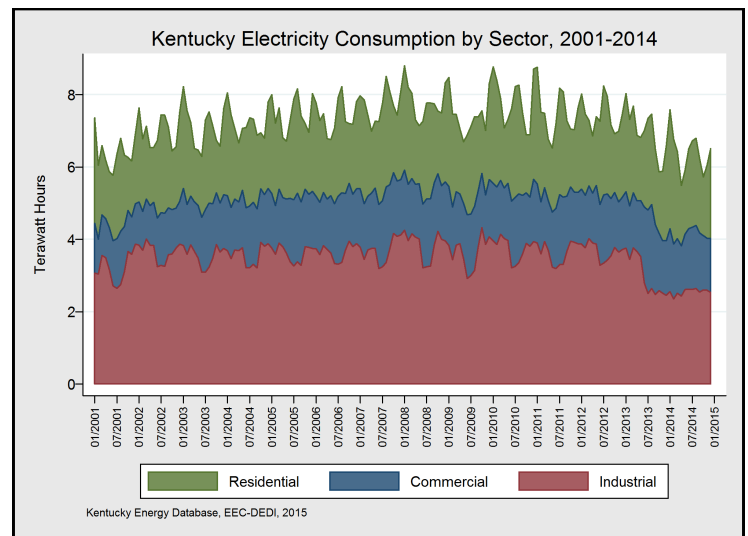
Seasonal fluctuations in Kentucky's electricity consumption are largely the result of the residential sector, which utilizes electricity for air conditioning in the summer and heating in the winter. On average, the highest demand for electricity in Kentucky occurs in summer and winter. Kentucky experienced lower than average electricity demand throughout 2014.



Kentucky electricity demand grew rapidly in the late 1960s to the early 1970s and again from the late 1980s to the early 1990s, but has decreased overall since 2008.

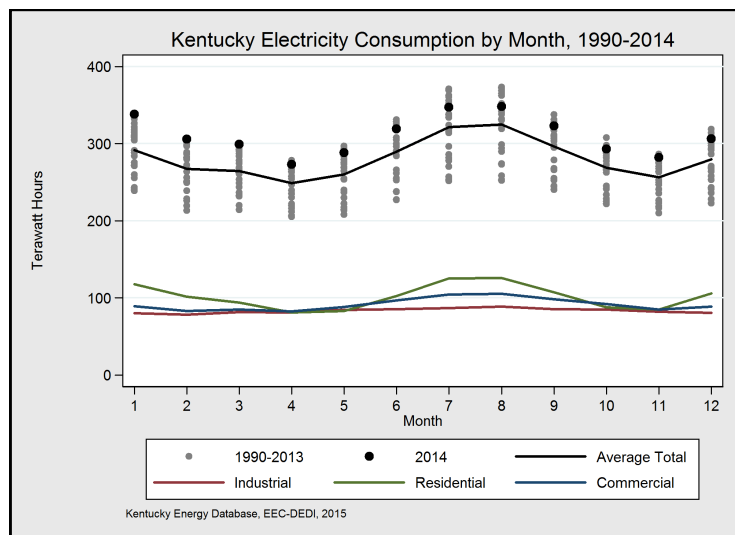


Coal-fired generation supplies the vast majority of electricity in Kentucky throughout the year, with hydroelectric generation fluctuating along with seasonal river flows and natural gas utilized during time of peak demand, mostly during hot summer and cold winter days. During the spring and fall, electricity demand is lower, and some coal plants go offline for maintenance.

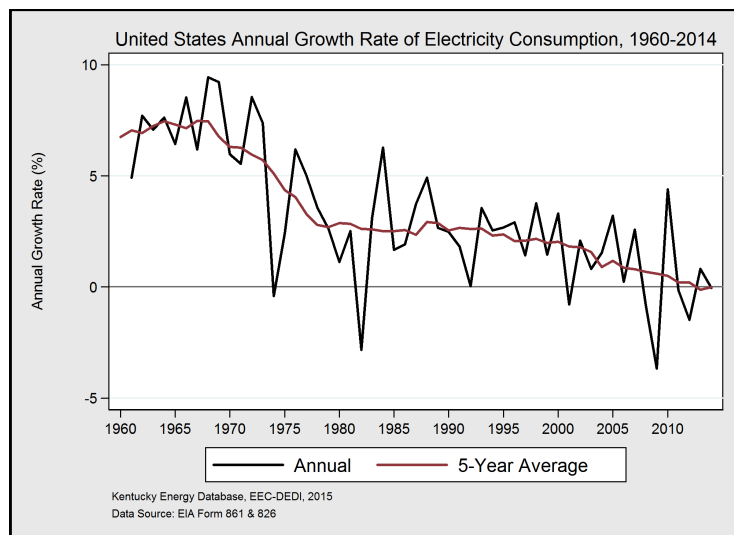


Commercial and industrial electricity demand in Kentucky tends to vary little relative to the residential sector. Industrial electricity demand had decreased between June and August, when the United States Enrichment Corporation in Paducah—approximately 15 percent of Kentucky's total electricity demand—would shut down for annual maintenance. However, since the facility's closure in May, 2013 industrial sales have remained steady.

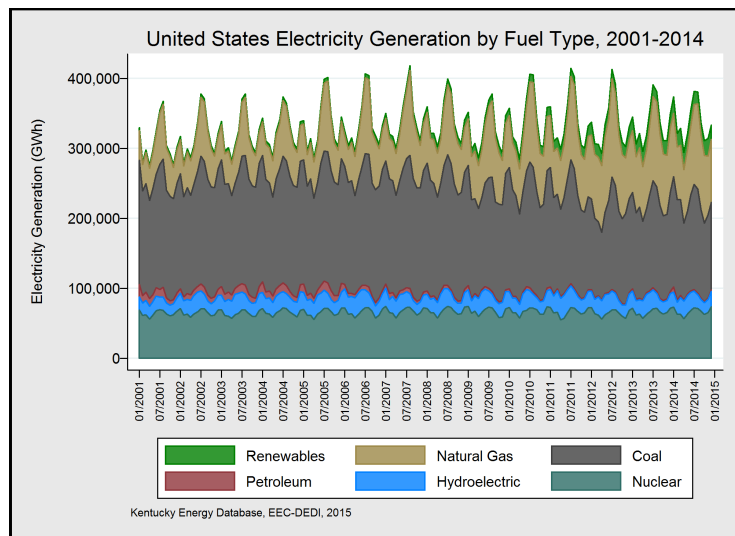
United States Monthly Electricity



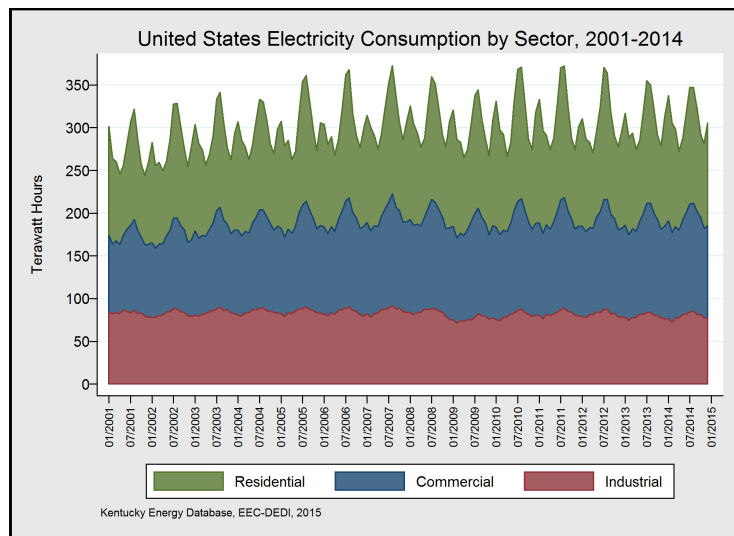
Electricity demand in the United States is approximately the same across all sectors during spring and fall, but demand for heating and air conditioning increases residential and commercial electricity demand in the summer and winter. In contrast, industrial demand is fairly constant throughout the year. The United States consumed more electricity than average in 2014, but cooler months in the summer decreased consumption, relative to other years.



Although, electricity demand has grown in the United States for decades, the rate at which electricity demand has grown has decreased over time—from an average of seven percent in the 1960s to less than one percent over the last 10 years. Since 2005, many states have experienced no growth or even decreases in electricity consumption.



Nuclear generation is relatively constant with the exception of regular shutdowns for maintenance, but renewable generation facilities depend on the presence of their respective resources. Coal and natural gas tend to make up the difference between electricity demand and electricity generated by renewables, nuclear, and hydroelectric generation. The United States has natural gas simple cycle turbines as well as combined cycle units, which are flexible and can be quickly ramped up during periods of peak electricity demand.



United States electricity demand is highest during the hotter summer, though there is a smaller increase in demand during colder winter months. Whereas summer heat can only be met with air conditioning, winter heating requirements can be remedied with a variety of non-electric fuels such as natural gas, wood, propane, and diesel fuel. Industrial demand varies somewhat, with increases in the summer months.

Kentucky Generation Infrastructure

Electricity Generating Capacity

Capacity is the maximum amount of electricity that can be produced at any one moment in time and is measured in watts, or joules per second. Kentucky has 40 power plants that operate 145 individual electricity generating units. There are approximately 17 gigawatts of electric generation capacity in Kentucky that are expected to remain online through 2020. Nearly 5.4 gigawatts of coal-fired generating capacity have recently been retired, or will be retired before 2020. Of total capacity expected to be online in 2020, approximately 11 gigawatts (65 percent) are coal fired, 4.9 gigawatts (30 percent) are natural gas-fired, 824 Megawatts (4.8 percent) are hydro power, and 69 Megawatts (~0.4 percent) are biomass units.

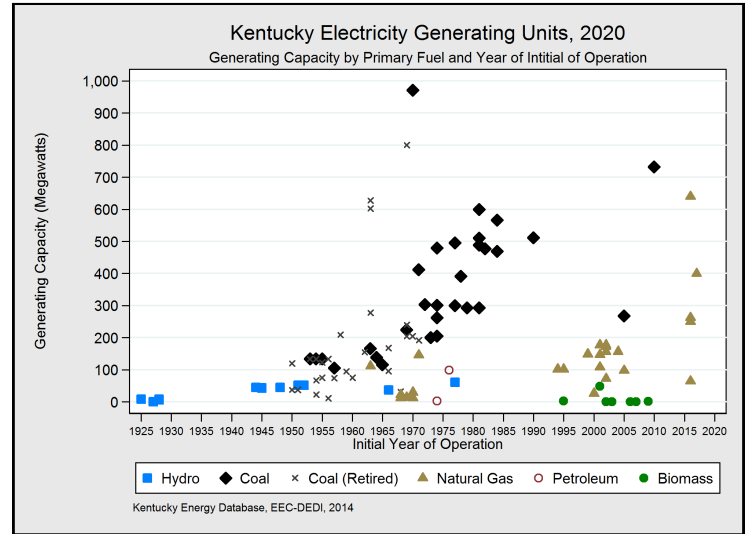
Generation

Of the electricity generated in Kentucky in 2014, 92 percent was derived through the combustion of coal. The amount of coal-based electricity generation increased in 2014. Natural gas facilities were the third-largest source of electricity and were used primarily for peak load periods. Due to the presence of coal resources, and the low price of coal, Kentucky has consistently used coal to meet the vast majority of electricity demand within the Commonwealth.

Capacity Factor

The capacity factor of a generating unit is a ratio of actual power output from a unit versus the maximum possible output from a unit over a period of time. To calculate the maximum possible output of a unit, the rated nameplate capacity (MW) is multiplied by time (typically, hours per year). The actual output (MWh) is then divided by the maximum possible output (MWh) to determine the capacity factor of the unit.

Many variable factors influence the actual capacity factor of a given generating unit including operational costs, operational design, age of a unit, emissions of criteria pollutants, electricity demand fluctuations, and the particular generation and environmental plans of individual power producers.

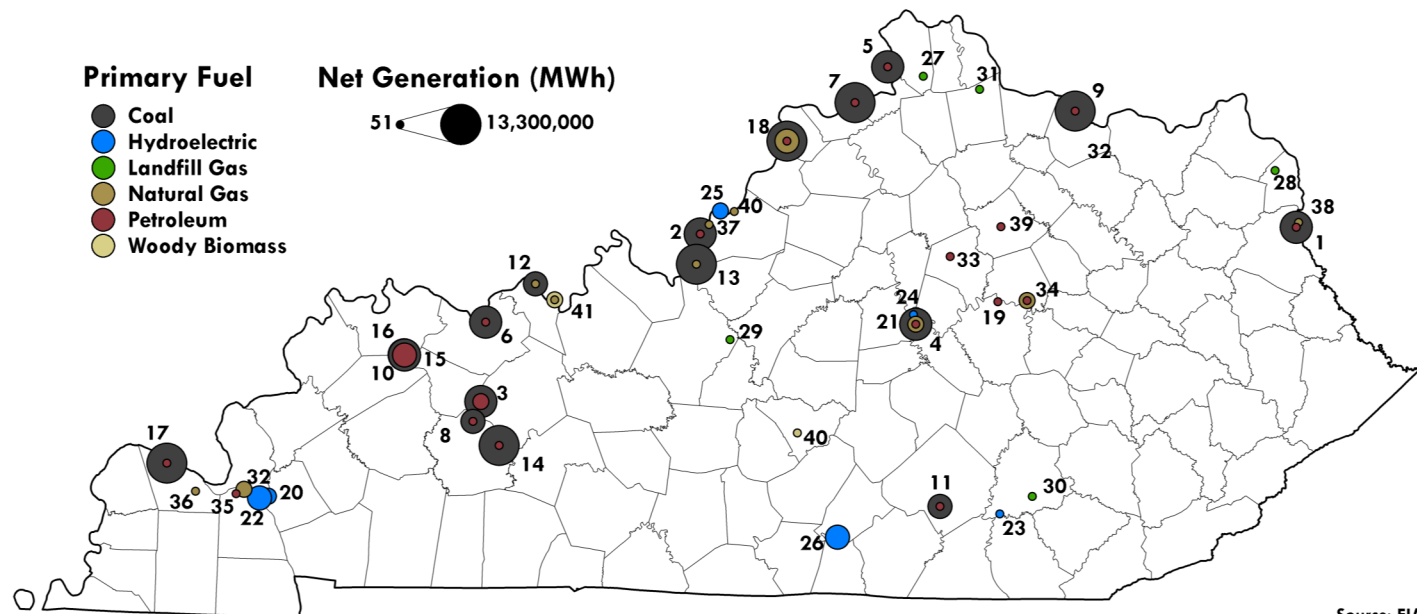


Primary Fuel	Unit Count	Average Age	Average Capacity	Total Capacity
All Active Units	145	43	127	17,052
Coal	32	45	346	11,083
Coal (Retired)	31	61	170	5,282
Natural Gas	54	25	104	4,971
Petroleum	6	55	65	105
Hydro	30	78	28	824
Biomass	23	16	3	69

Coal-fired, hydroelectric, and biomass-fired generators provide all of the baseload electricity in Kentucky because of their low operating costs. The coal fleet consists of large generators that were constructed between the mid-1950s and 2010. Most of these plants have been retrofitted with environmental controls to meet air quality emissions standards but many may need further upgrades as the standards have become more stringent. Peaking power—the additional electricity needed for short periods of high demand—is generated by natural gas and petroleum. Utilities typically satisfy these short periods of high demand (peaks) with simple cycle natural gas or petroleum generators because they are relatively cheap to build, and can rapidly power up and power down to balance electricity demand. However, peaking units are costlier to operate than baseload generators due to their designs, and are not optimized for baseload generation. These “peaking” generators account for approximately 24 percent of the installed generating capacity in Kentucky but provide less than 5 percent of electricity generation.

Power Plants in Kentucky

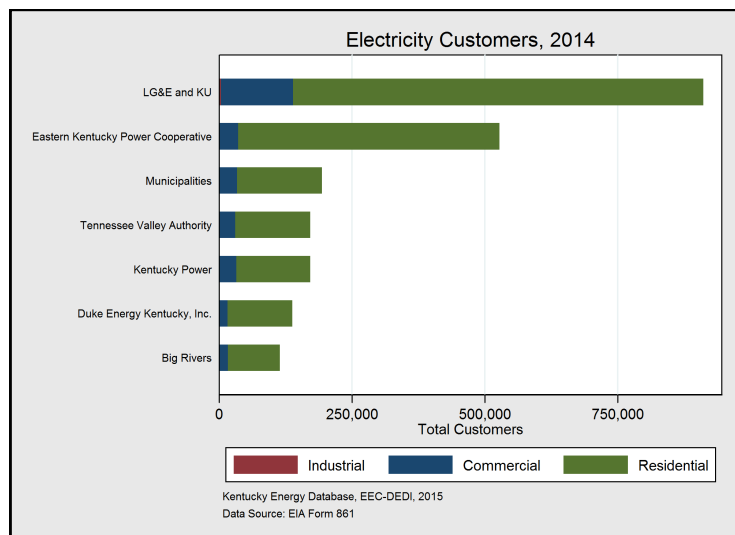
Power Plants in Kentucky, 2014



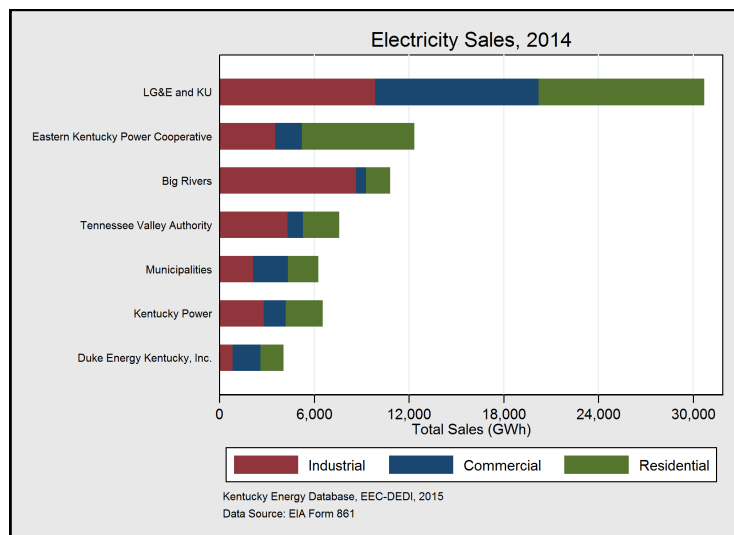
Source: EIA-923
Kentucky Energy Database, EEC-DEDI, 2015

Number	Name	Initial Year of Operation	Owner	Number	Name	Initial Year of Operation	Owner
1	<u>Big Sandy</u>	1963	<u>Kentucky Power</u>	22	<u>Kentucky Dam</u>	1948	<u>TVA</u>
2	<u>Cane Run</u>	1954	<u>LG&E and KU</u>	23	<u>Laurel</u>	1977	U.S. Army CoE
3	<u>D. B. Wilson</u>	1984	<u>Big Rivers</u>	24	<u>Mother Ann Lee</u>	1927	Lock 7 Partners
4	<u>E. W. Brown</u>	1955	<u>LG&E and KU</u>	25	<u>Ohio Falls</u>	1927	<u>LG&E and KU</u>
5	<u>East Bend</u>	1981	<u>Duke Energy</u>	26	<u>Wolf Creek</u>	1928	U.S. Army CoE
6	<u>Elmer Smith</u>	1964	Owensboro	27	Bavarian	2003	<u>EKPC</u>
7	<u>Ghent</u>	1973	<u>LG&E and KU</u>	28	Green Valley	2003	<u>EKPC</u>
8	<u>Green River</u>	1950	<u>LG&E and KU</u>	29	Hardin County	2006	<u>EKPC</u>
9	<u>H. L. Spurlock</u>	1977	<u>EKPC</u>	30	Laurel Ridge	2003	<u>EKPC</u>
10	<u>HMP&L Station 2</u>	1973	Henderson	31	Pendleton County	2007	<u>EKPC</u>
11	<u>John S. Cooper</u>	1965	<u>EKPC</u>	32	Calvert City	1999	DTE Energy
12	<u>Kenneth Coleman</u>	1969	<u>Big Rivers</u>	33	Haefling	1970	<u>LG&E and KU</u>
13	<u>Mill Creek</u>	1972	<u>LG&E and KU</u>	34	J. K. Smith	1995	<u>EKPC</u>
14	<u>Paradise</u>	1963	<u>TVA</u>	35	Marshall	2002	<u>TVA</u>
15	<u>R. D. Green</u>	1979	<u>Big Rivers</u>	36	Paddy's Run	1968	<u>LG&E and KU</u>
16	<u>Robert Reid</u>	1966	<u>Big Rivers</u>	37	Paducah Power	2010	Paducah Power
17	<u>Shawnee</u>	1953	<u>TVA</u>	38	Riverside Gen.	2001	Riverside Gen.
18	<u>Trimble County</u>	1990	<u>LG&E and KU</u>	39	Paris	1952	Paris
19	<u>William C. Dale</u>	1954	<u>EKPC</u>	40	Domtar Corp.	2001	Domtar Corp.
20	<u>Barkley</u>	1966	U.S. Army CoE	41	Cox Waste to Energy	1995	Cox Waste to Energy
21	<u>Dix Dam</u>	1925	<u>LG&E and KU</u>				

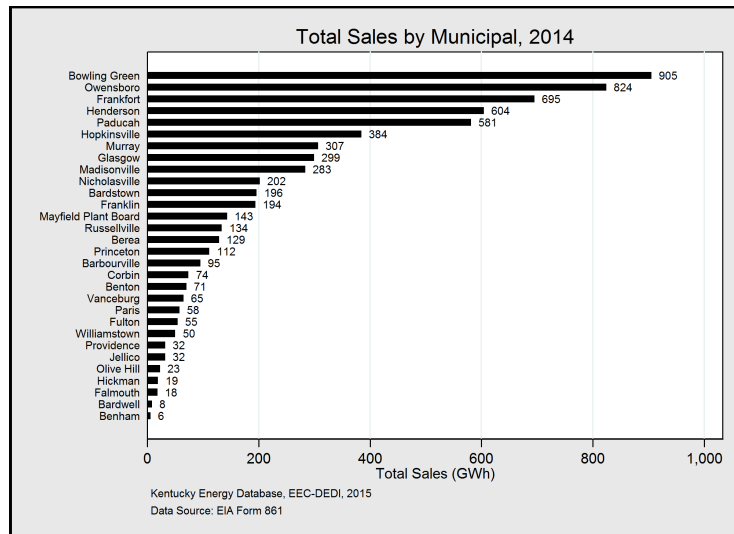
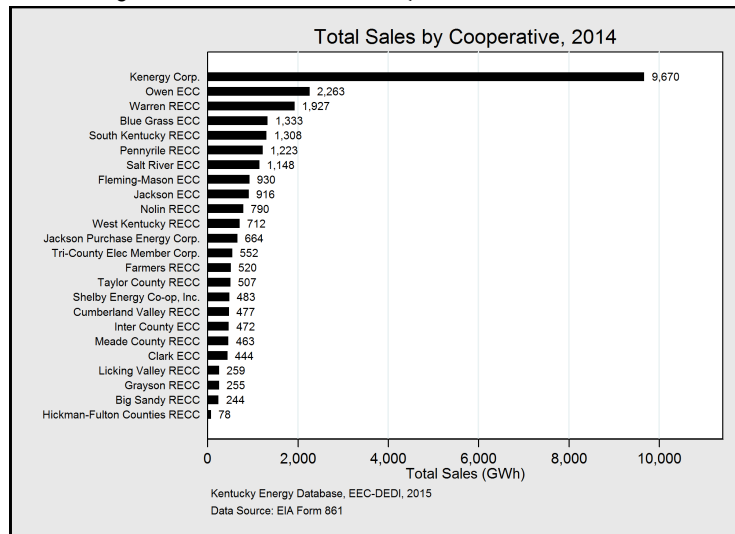
Electricity Utilities in Kentucky



Entity	Consumers	Percentage
Total	2,244,042	100%
LG&E and KU	911,738	41%
EKPC	527,360	23%
Municipalities	210,206	9%
TVA	171,618	8%
Kentucky Power	171,011	8%
Duke Energy	137,869	6%
Big Rivers	114,240	5%



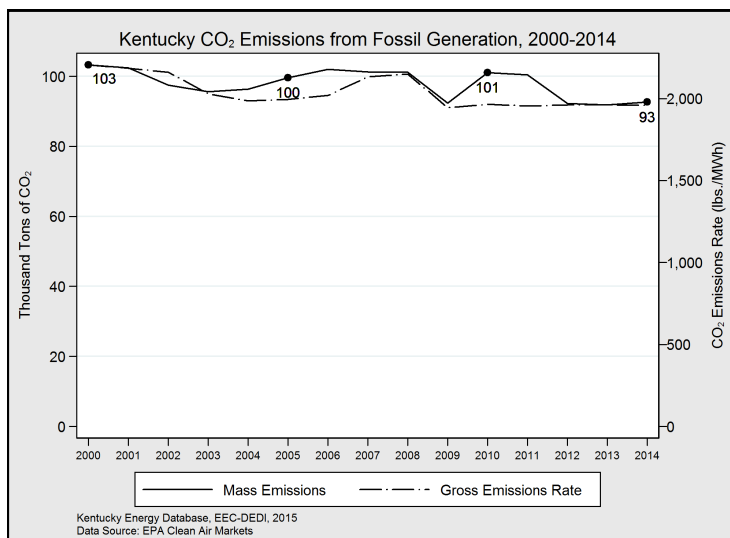
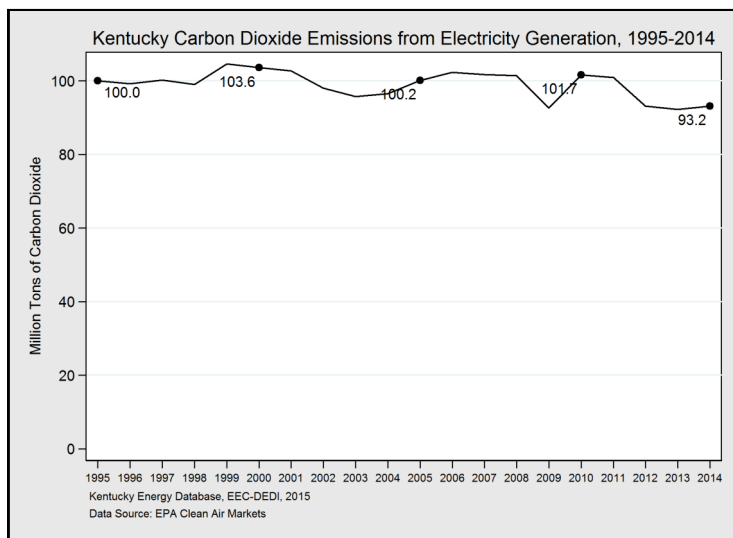
Entity	Sales (GWh)	Percentage
Total	78,618	100%
LG&E and KU	30,706	39%
EKPC	12,349	16%
Big Rivers	10,797	14%
TVA	7,571	10%
Municipalities	6,601	8%
Kentucky Power	6,532	8%
Duke Energy	4,062	5%



Utilities in Kentucky sold 79 TWh to 2.2 million consumers in 2014. Households accounted for 86 percent of consumers, but were 35 percent of consumption. The 7,258 industrial firms are less than one percent of total customers, but used 41 percent of all electricity consumed in Kentucky in 2014. LG&E and KU sell to 41 percent of consumers in the Commonwealth, while East Kentucky Power Cooperative sells to 24 percent, and the rest 35 percent.

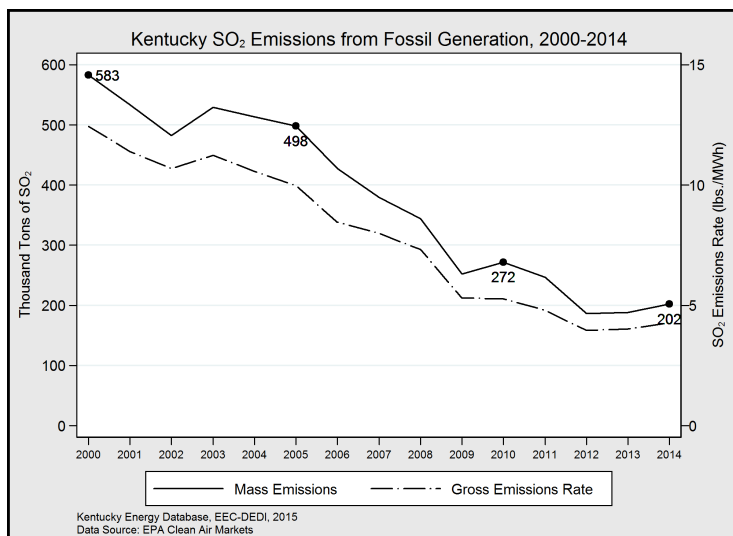
All of the sales from the Big Rivers Electric Corporation, and East Kentucky Power Cooperative and the majority from the Tennessee Valley Authority are to RECCs and municipalities. Together, cooperatives consume more than all investor-owned corporations except LG&E and KU. Kenergy Corporation, a cooperative, sells 12 percent of Kentucky's total—more electricity than Kentucky Power, all municipalities, the Tennessee Valley Authority, and Duke Energy.

Kentucky Electric Power Emissions

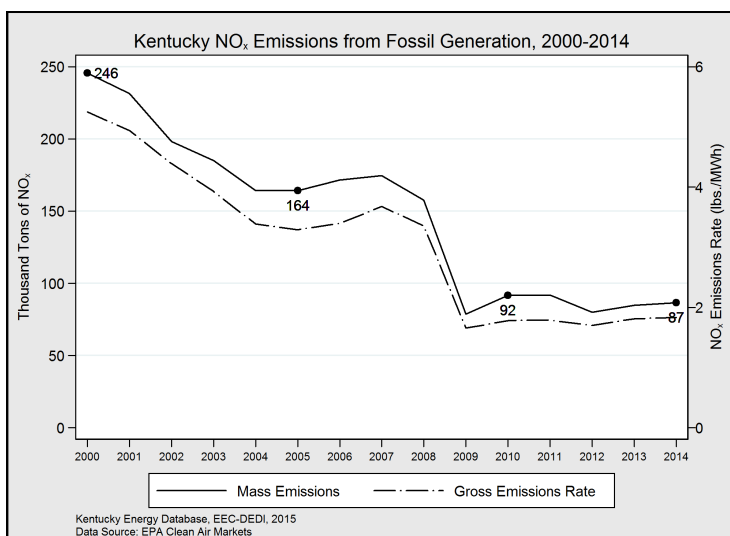


Emission	Tons	Since 1995
Carbon Dioxide	93,176,296	-7%
Sulfur Dioxide	202,041	-70%
Nitrogen Oxides	86,879	-76%

In 2014, power plants in Kentucky emitted 93 million tons of carbon dioxide, an increase of one percent compared with 2013. In terms of emissions rate, power plants emit almost 12 percent less carbon dioxide as they did in 1995.

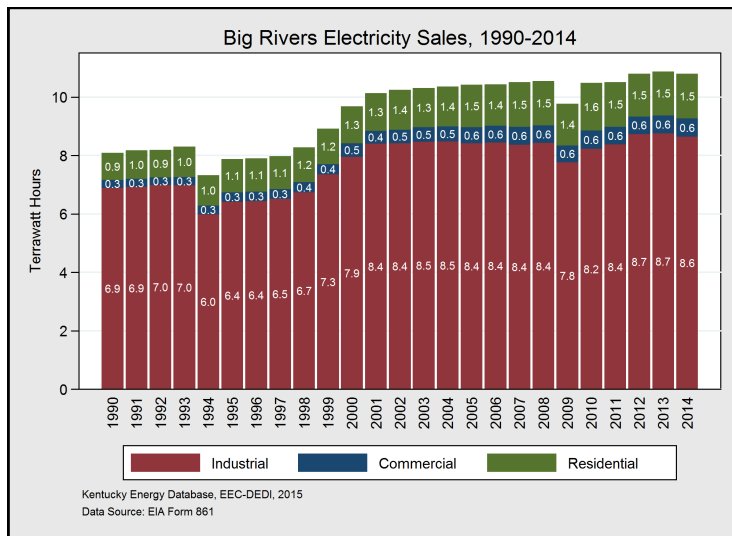
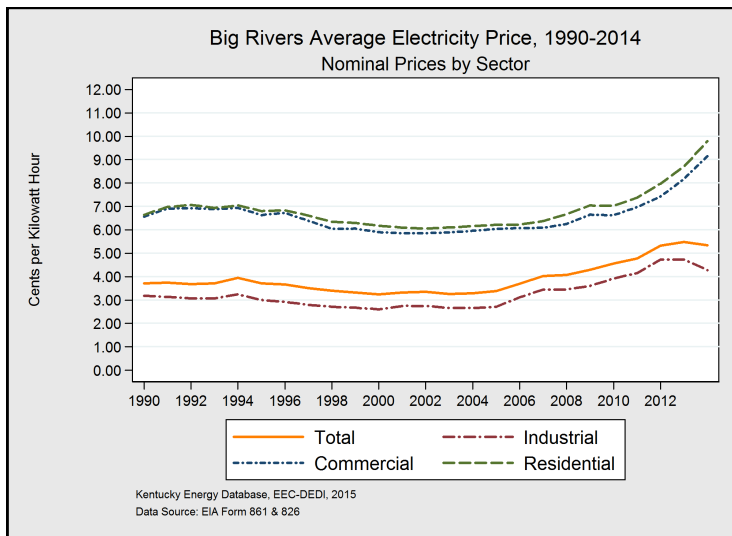


Sulfur dioxide (SO₂) is a highly reactive gas and major pollutant that is monitored and regulated by the state and federal government due to its connection to acid rain, incidence of asthma, and other respiratory problems. In 2014, the electric power sector of Kentucky emitted 202,041 tons of sulfur dioxide, a 70.1 percent decrease from 1995, but a seven percent increase from 2013.



Nitrogen oxides (NO_x) are a group of highly reactive regulated pollutants: Nitric Oxide (NO), Nitrogen Dioxide (NO₂), and Nitrous oxide (N₂O). Nitrogen oxide, which is displayed here, has been shown to cause acid rain and exacerbate respiratory disease, while nitrous oxide, or laughing gas, is a greenhouse gas 312 times more potent than carbon dioxide. In 2014, the electric power sector of Kentucky emitted 86,879 tons of nitrogen oxides, a decrease of 76.2 percent from 1995, but an increase of two percent from 2013.

Big Rivers

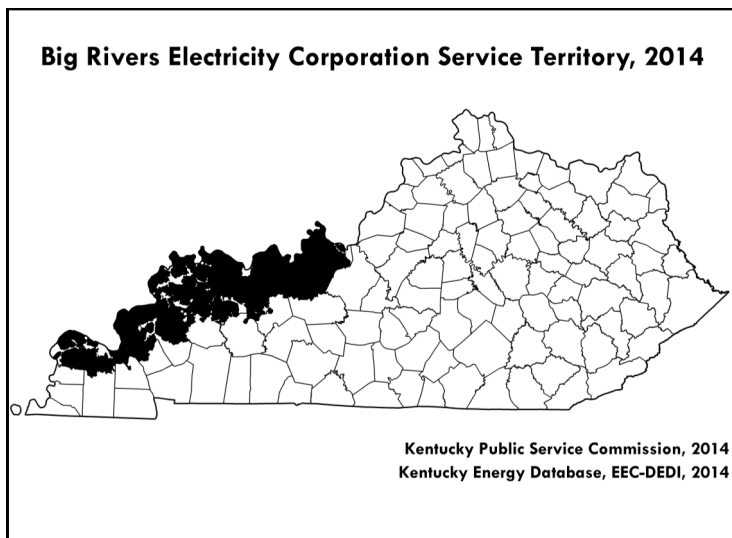


Sector	Price (Cents/kWh)	Since 2010*
Total†	5.34	+8%
Residential	9.79	+28%
Commercial	9.15	+27%
Industrial	4.28	+0.5%

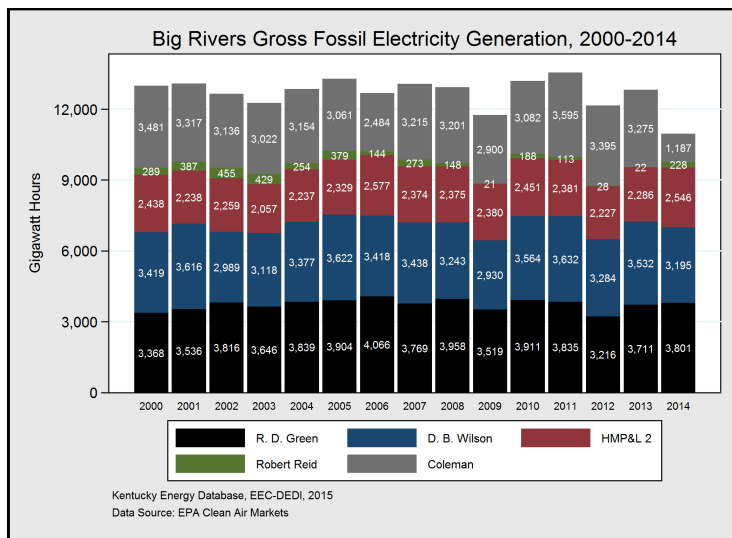
*Change in real 2010 U.S.\$

Sector	Sales (GWh)	Percentage
Total†	10,797	100%
Industrial	8,641	80%
Residential	1,532	14%
Commercial	624	6%

†Includes direct sales and sales to rural electric cooperatives



Big Rivers Electric Corporation generates and sells electricity in northwestern Kentucky. Total electricity prices in 2014 were 5.34 cents per kWh and have increased by eight percent since 2010 in inflation-adjusted dollars. Big Rivers serves three RECCs: Kenergy Corporation, Meade County RECC, and Jackson Purchase Energy Corporation. Big Rivers operates five coal-fired generating stations.

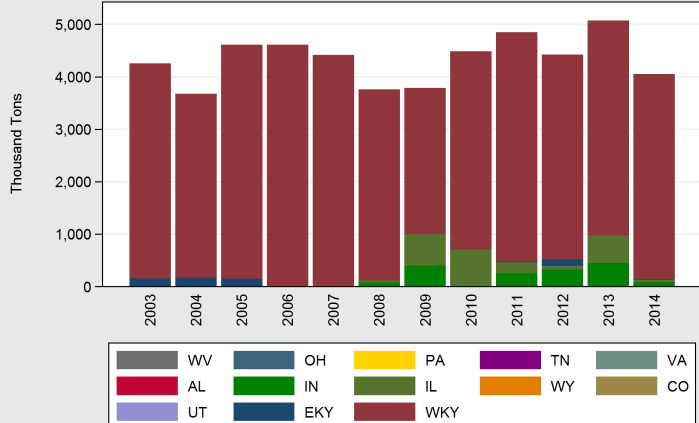


Electricity Generation	2014	Since 2000
Gigawatt Hours	10,957	-15.7%

Big Rivers generated 11 TWh and sold 10.8 TWh of electricity in 2014. Big Rivers has sold the bulk of its electricity load to industrial firms.

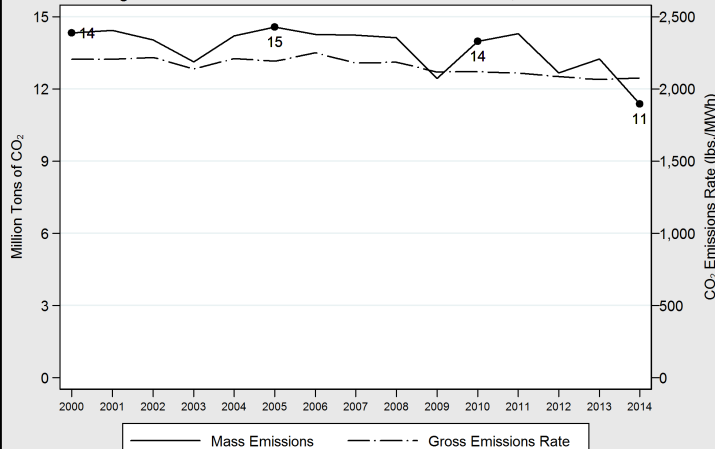
Big Rivers

Big Rivers Coal Consumption by Origin, 2003-2014



Kentucky Energy Database, EEC-DEDI, 2015
Data Source: FERC-423 & EIA-923

Big Rivers CO₂ Emissions from Fossil Generation, 2000-2014



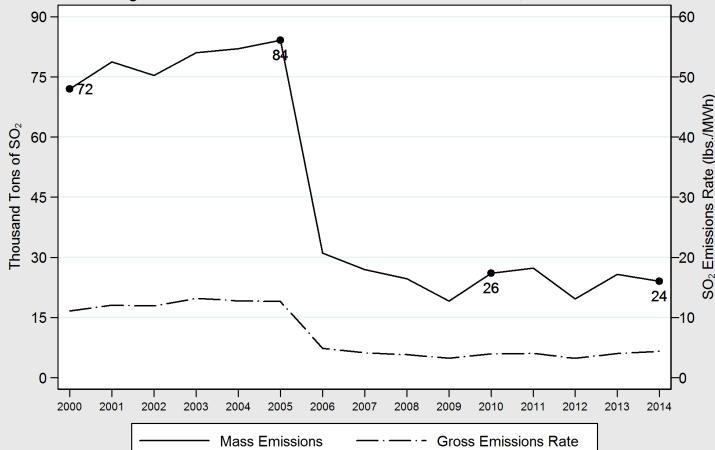
Kentucky Energy Database, EEC-DEDI, 2015
Data Source: EPA Clean Air Markets

State	2014 Tons	Percentage
Total	4,051,924	100%
Western Kentucky	3,909,774	96%
Indiana	76,380	2%
Illinois	51,238	1%
Eastern Kentucky	14,532	0%

Carbon Dioxide	2014	Since 2000
Emissions (Tonnage)	11,375,564	-20.6%
Rate (lbs./MWh)	2,076	-5.9%

Big Rivers Electric Corporation emitted 11.4 million tons of CO₂ in 2014, a decrease of 21 percent since 2000. The rate of CO₂ emissions has decreased by six percent during that period.

Big Rivers SO₂ Emissions from Fossil Generation, 2000-2014

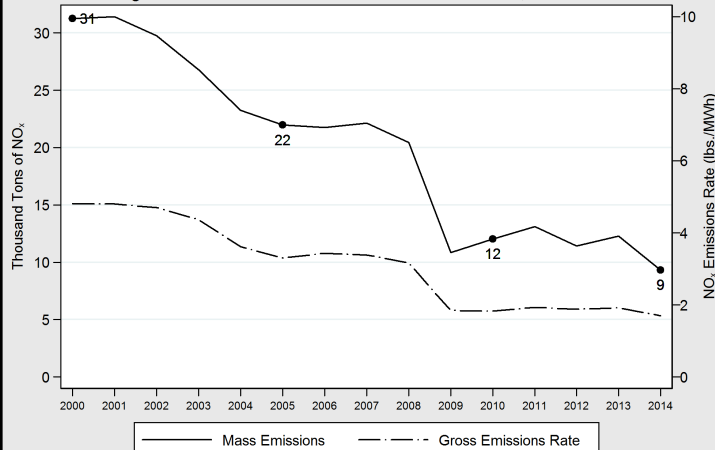


Kentucky Energy Database, EEC-DEDI, 2015
Data Source: EPA Clean Air Markets

Sulfur Dioxide	2014	Since 2000
Emissions (Tonnage)	24,024	-66.7%
Rate (lbs./MWh)	4.39	-60.4%

Big Rivers Electric Corporation emitted 24 thousand tons of SO₂ in 2014, a decrease of two-thirds since 2000. The rate of SO₂ emissions decreased by 60 percent during that period.

Big Rivers NO_x Emissions from Fossil Generation, 2000-2014

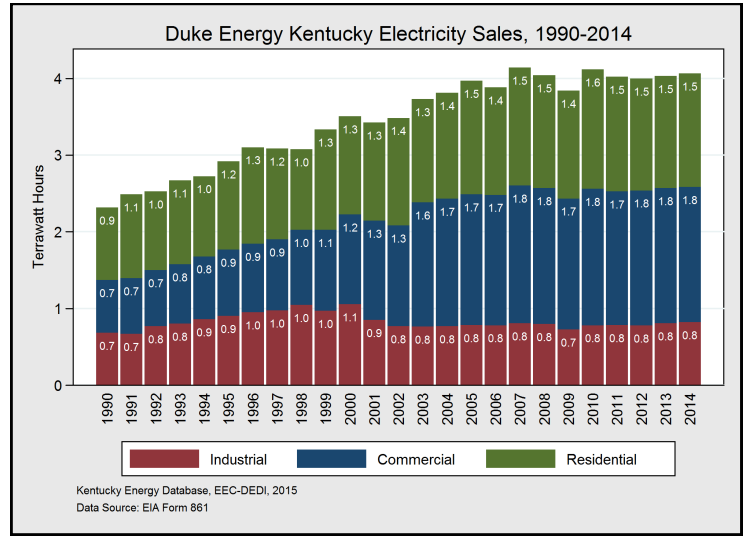
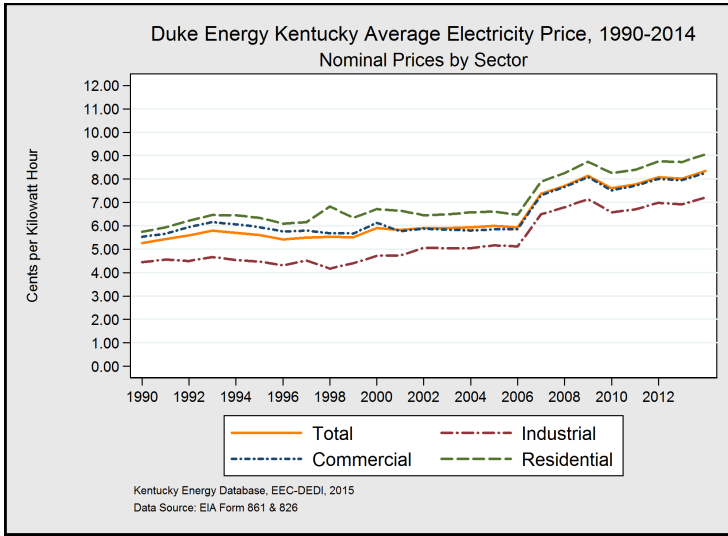


Kentucky Energy Database, EEC-DEDI, 2015
Data Source: EPA Clean Air Markets

Nitrogen Dioxide	2014	Since 2000
Emissions (Tonnage)	9,317	-70.2%
Rate (lbs./MWh)	1.70	-64.7%

Big Rivers Electric Corporation emitted nine thousand tons of NO_x in 2014, a reduction of 70 percent since 2000. The rate of NO_x emissions decreased by 65 percent during that period.

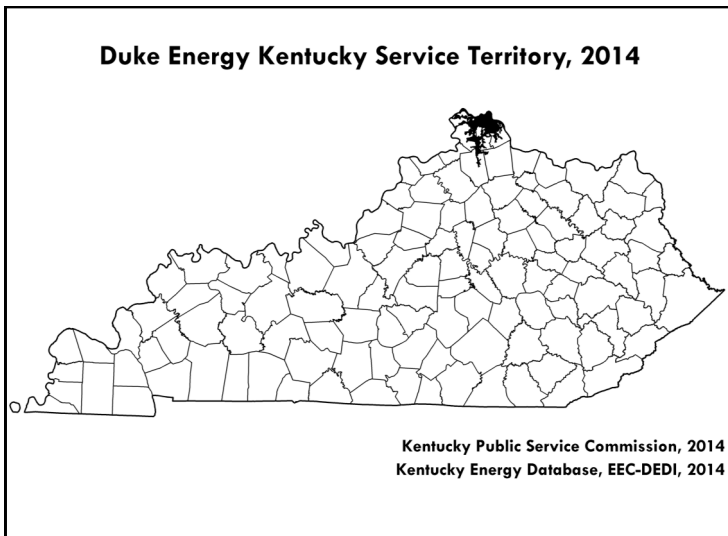
Duke Energy Kentucky



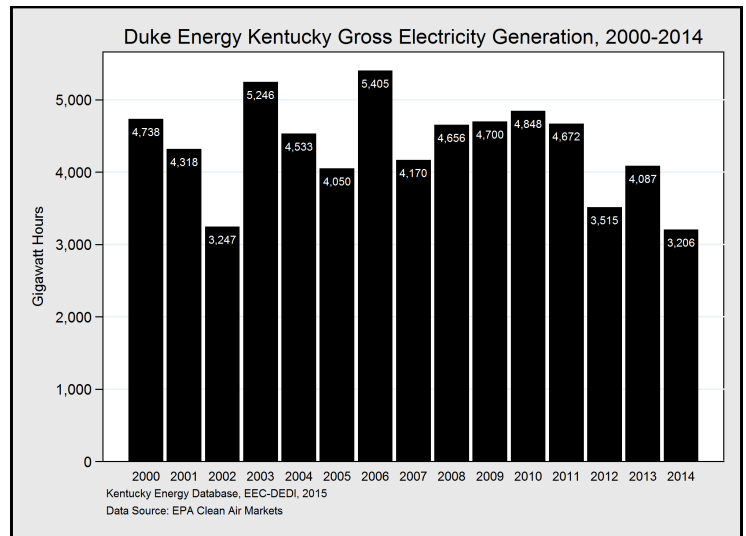
Sector	Price (Cents/kWh)	Since 2010*
Total†	8.34	+1%
Residential	9.07	+1%
Commercial	8.26	+1%
Industrial	7.22	+1%

*Change in real 2010 U.S.\$

Sector	Sales (GWh)	Percentage
Total†	4,062	100%
Commercial	1,760	43%
Residential	1,480	37%
Industrial	822	20%



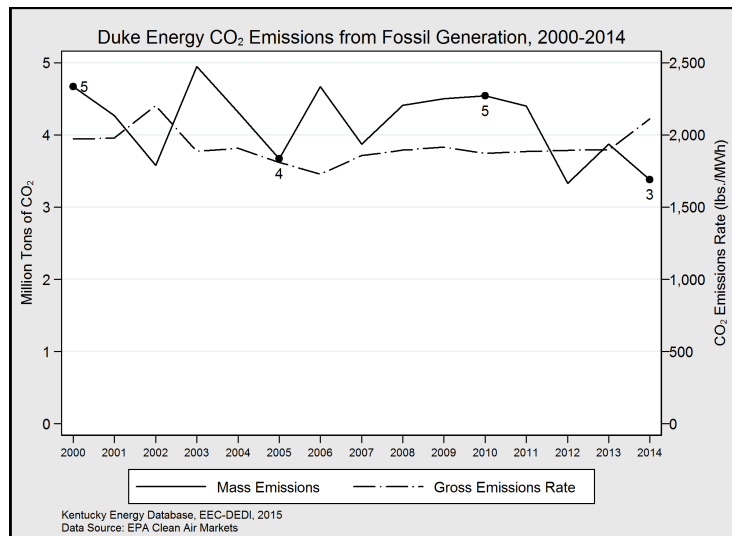
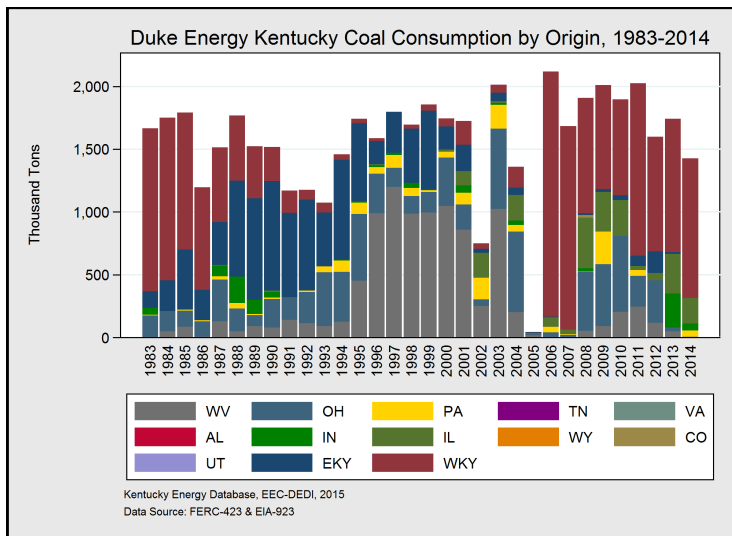
Duke Energy Kentucky generates and sells electricity in northern Kentucky and is owned and operated by Duke Energy. Total electricity prices in 2014 were 8.3 cents per kWh and have increased by one percent since 2010 in inflation-adjusted dollars. Duke Energy owns and operates the East Bend coal-fired power plant in Boone County. Duke Energy also sells electricity throughout North and South Carolina, Indiana, and southwest Ohio.



Electricity Generation	2014	Since 2000
Gigawatt Hours	3,206	-32.3%

Duke Energy Kentucky generated three TWh of electricity in 2014, a decrease of 22 percent from 2013, when it generated four TWh. Duke sold four TWh of electricity in 2014.

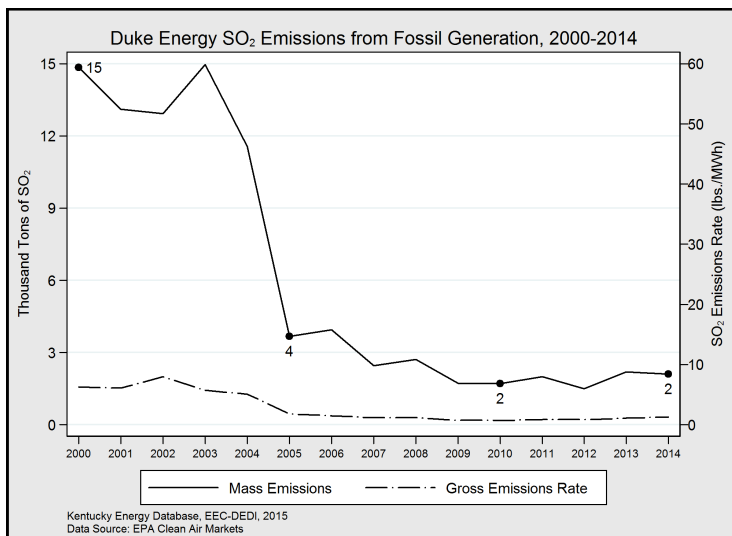
Duke Energy Kentucky



State	2014 Tons	Percentage
Total	1,426,557	100%
Western Kentucky	1,110,137	78%
Illinois	206,939	15%
Indiana	53,316	4%
Pennsylvania	51,477	4%
West Virginia	4,688	<1%

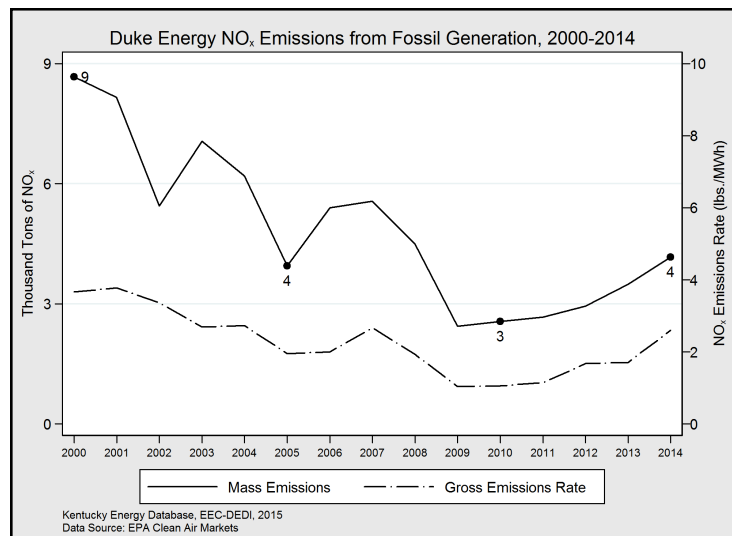
Carbon Dioxide	2014	Since 2000
Emissions (Tonnage)	3,384,263	-27.5%
Rate (lbs./MWh)	2,111	+7.1%

Duke Energy Kentucky emitted 3.4 million tons of CO₂ in 2014, a decrease of 29 percent since 2000. The rate of CO₂ emissions has increased by seven percent during that period, and had the highest rate of CO₂ emissions in 2014.



Sulfur Dioxide	2014	Since 2000
Emissions (Tonnage)	2,102	-85.8%
Rate (lbs./MWh)	1.31	-79.1%

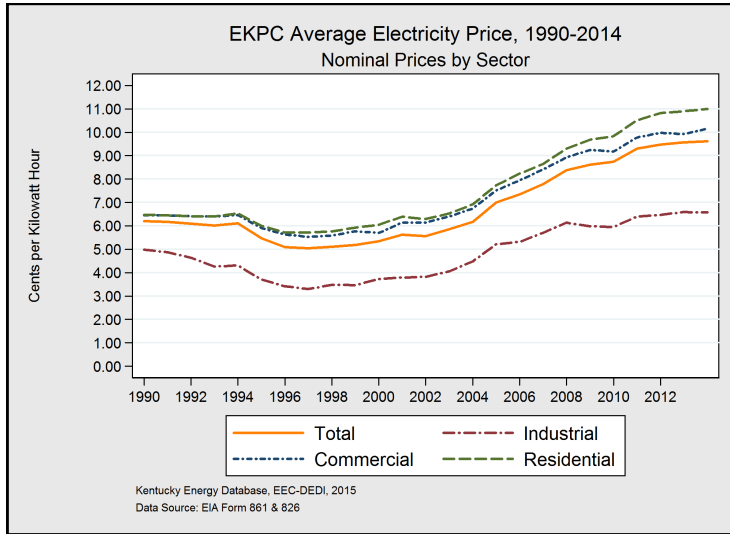
Duke Energy Kentucky emitted 2,102 tons of SO₂ in 2014, a decrease of 86 percent since 2000. The rate of SO₂ emissions reduced by 80 percent during that period and the utility's rate of SO₂ emissions is the lowest in Kentucky.



Nitrogen Dioxide	2014	Since 2000
Emissions (Tonnage)	4,166	-52.0%
Rate (lbs./MWh)	2.60	-29.0%

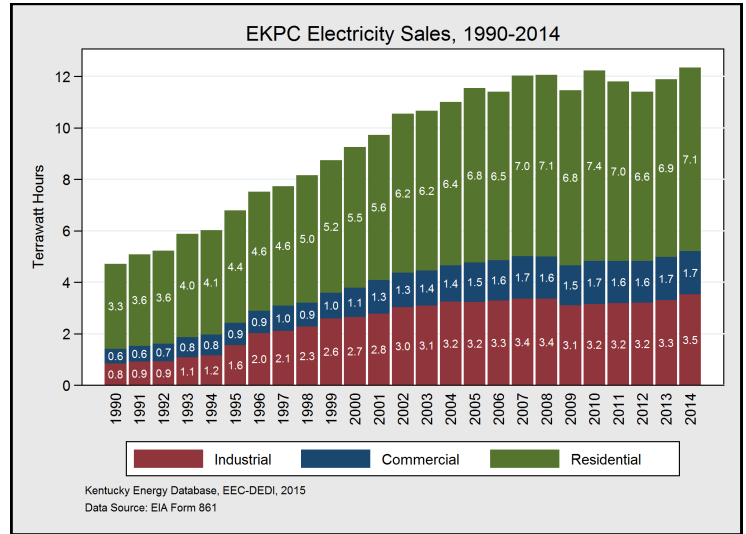
Duke Energy Kentucky emitted four thousand tons of NO_x in 2014, a reduction of 52 percent since 2000. The rate of NO_x emissions decreased by 29 percent during that period, but was the most intensive electricity utility in terms of nitrogen dioxide in the Commonwealth.

East Kentucky Power Cooperative



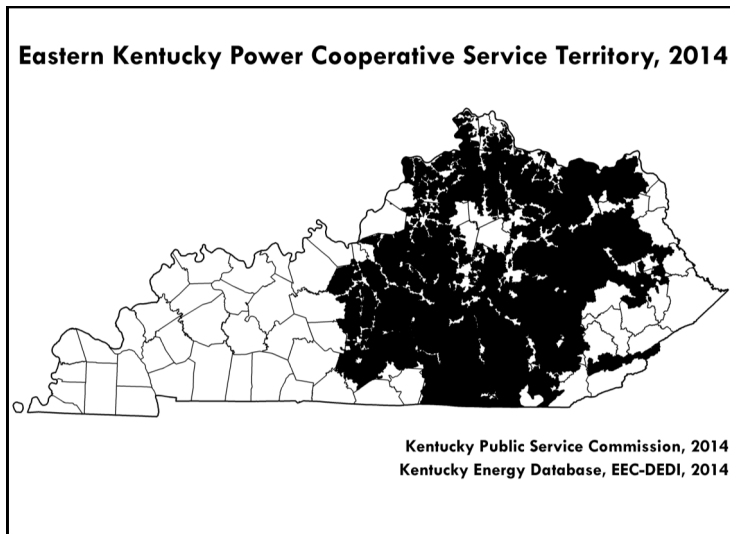
Sector	Price (Cents/kWh)	Since 2010*
Total	9.62	+1%
Residential	11.0	+3%
Commercial	10.2	+2%
Industrial	6.58	+2%

*Change in real 2010 U.S.\$

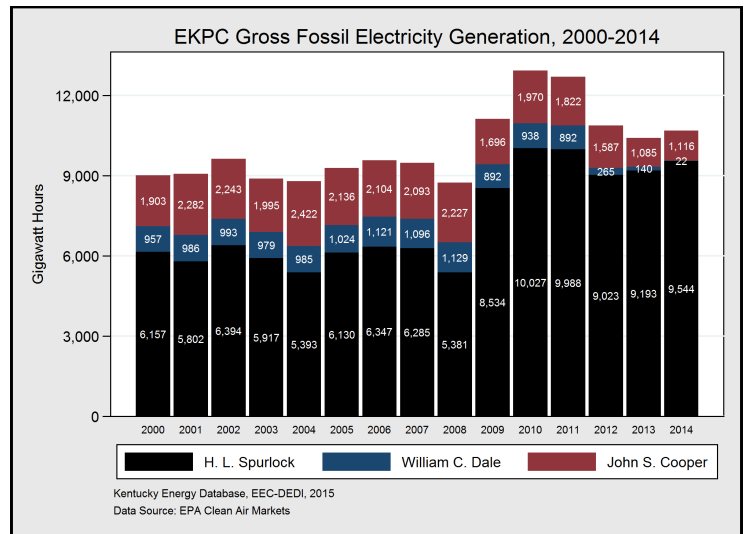


Sector	Sales (GWh)	Percentage
Total	12,349	100%
Residential	7,139	58%
Industrial	3,529	28%
Commercial	1,681	14%

†Includes direct sales and sales to rural electric cooperatives



East Kentucky Power Cooperative serves central and eastern Kentucky where 16 RECCs jointly own and purchase electricity from EKPC. Total electricity prices in 2014 were 9.62 cents per kWh and have increased by one percent since 2010 in inflation-adjusted dollars. EKPC owns and operates three coal-fired power plants, one natural gas electricity generating station, and six landfill gas generating stations.

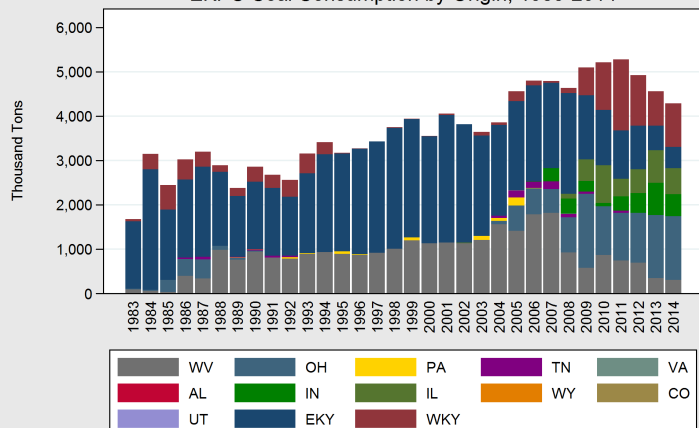


Electricity Generation	2014	Since 2000
Gigawatt Hours	10,682	+18.5%

East Kentucky Power Cooperative generated 11 TWh and sold 12 TWh of electricity in 2014. Since 2013, generation has increased by three percent and sales have increased by four percent.

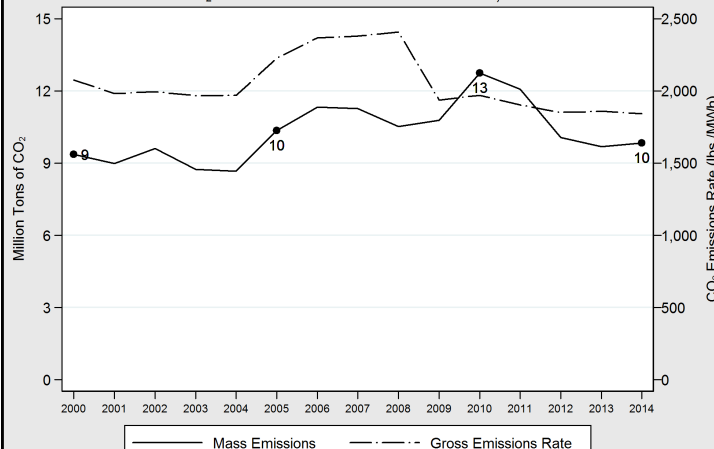
East Kentucky Power Cooperative

EKPC Coal Consumption by Origin, 1983-2014



Kentucky Energy Database, EEC-DEDI, 2015
Data Source: FERC-423 & EIA-923

EKPC CO₂ Emissions from Fossil Generation, 2000-2014



Kentucky Energy Database, EEC-DEDI, 2015
Data Source: EPA Clean Air Markets

State	2014 Tons	Percentage
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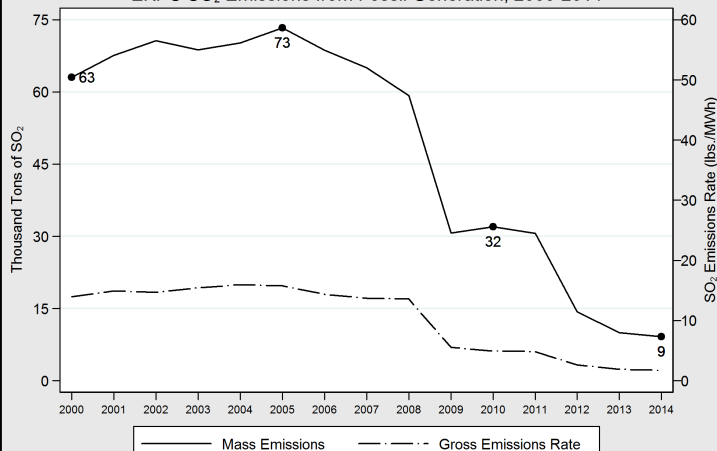
Total	4,288,957	100%
Ohio	1,432,105	33%
Western Kentucky	985,592	23%
Illinois	588,114	14%
Indiana	497,504	12%
Eastern Kentucky	477,513	11%
West Virginia	308,129	7%

Carbon Dioxide	2014	Since 2000
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Emissions (Tonnage)	9,841,052	+5.1%
Rate (lbs./MWh)	1,843	-11.3%

East Kentucky Power Cooperative emitted almost 10 million tons of CO₂ in 2014, an increase of five percent since 2000. The rate of CO₂ emissions has decreased by 11 percent during that period.

EKPC SO₂ Emissions from Fossil Generation, 2000-2014



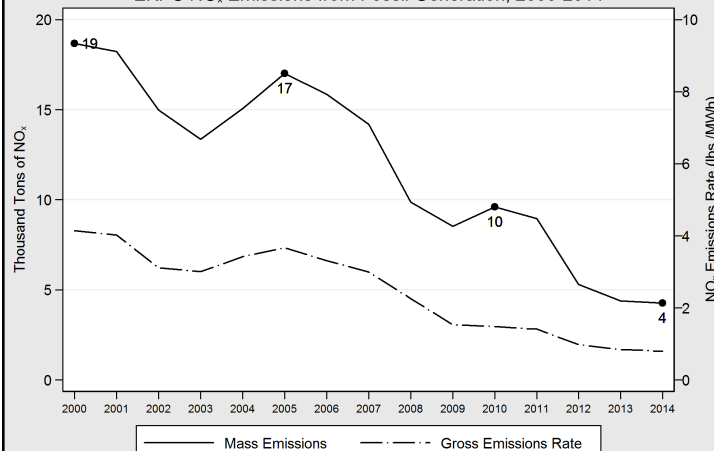
Kentucky Energy Database, EEC-DEDI, 2015
Data Source: EPA Clean Air Markets

Sulfur Dioxide	2014	Since 2000
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Emissions (Tonnage)	9,152	-85.5%
Rate (lbs./MWh)	1.71	-87.7%

East Kentucky Power Cooperative emitted 9,152 tons of SO₂ in 2014, a decrease of 86 percent since 2000. The rate of SO₂ emissions reduced by 88 percent during that period.

EKPC NO_x Emissions from Fossil Generation, 2000-2014



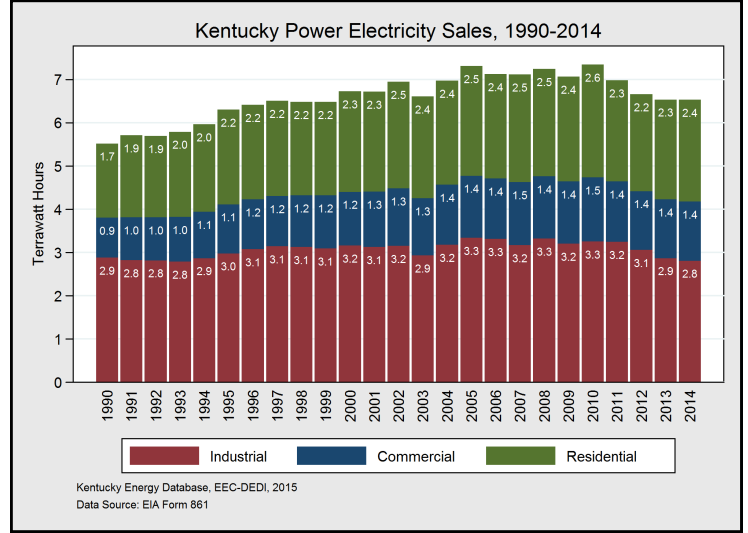
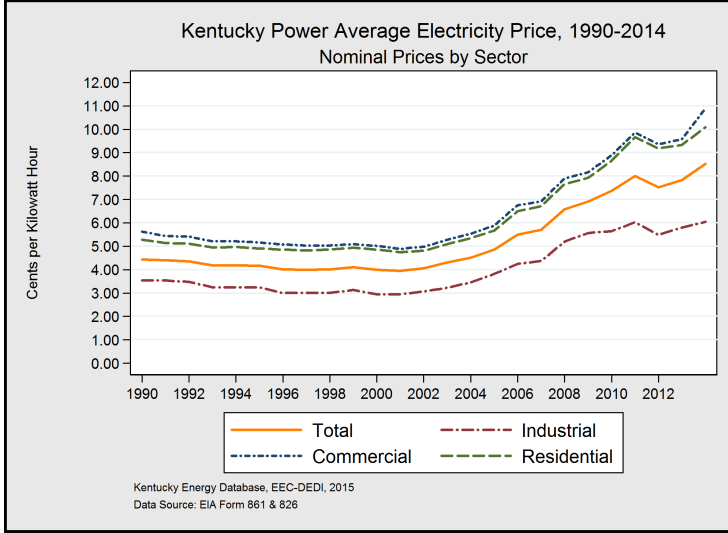
Kentucky Energy Database, EEC-DEDI, 2015
Data Source: EPA Clean Air Markets

Nitrogen Dioxide	2014	Since 2000
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Emissions (Tonnage)	4,257	-77.2%
Rate (lbs./MWh)	0.80	-80.8%

East Kentucky Power Cooperative emitted four thousand tons of NO_x in 2014, a reduction of 77 percent since 2000. The rate of NO_x emissions decreased by 81 percent during that period and is the lowest in Kentucky.

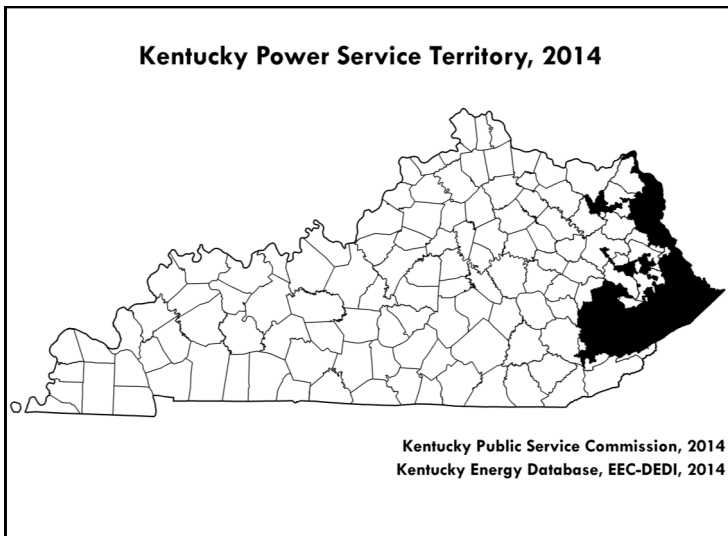
Kentucky Power



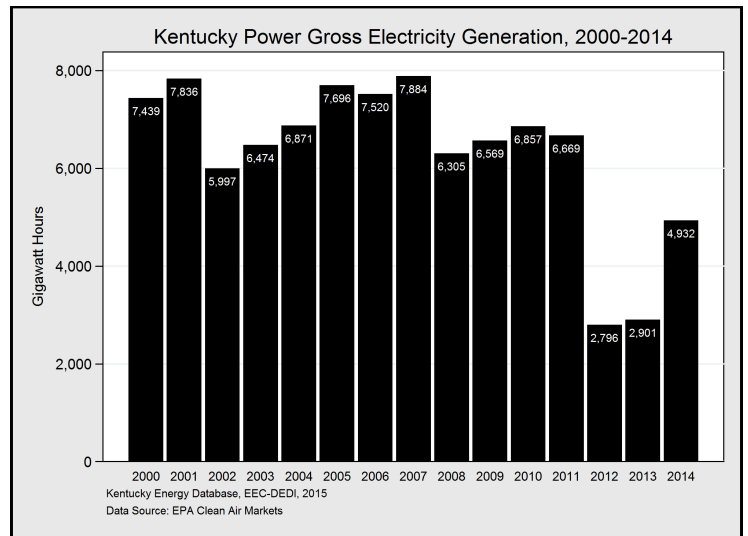
Sector	Price (Cents/kWh)	Since 2010*
Total	8.52	+6%
Residential	10.1	+7%
Commercial	10.9	+13%
Industrial	6.05	-2%

*Change in real 2010 U.S.\$

Sector	Sales (GWh)	Percentage
Total†	6,531	100%
Industrial	2,810	43%
Residential	2,350	36%
Commercial	1,371	21%



Kentucky Power, a subsidiary of American Electric Power, generates and distributes electricity in eastern Kentucky. Total electricity prices in 2014 were 8.5 cents per kWh and have increased by six percent since 2010 in inflation-adjusted dollars. Kentucky Power operates the Big Sandy power plant in Louisa Kentucky.

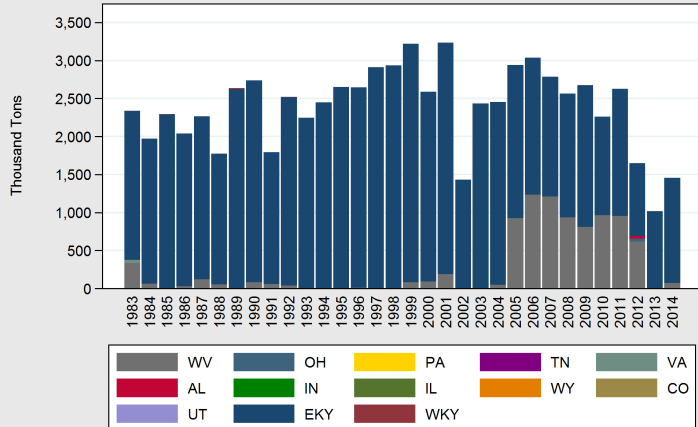


Electricity Generation	2014	Since 2000
Gigawatt Hours	4,932	-33.7%

Kentucky Power generated almost five TWh and sold 6.5 TWh of electricity in 2014. Since 2013, generation has increased by 70 percent and sales have decreased by less than one percent.

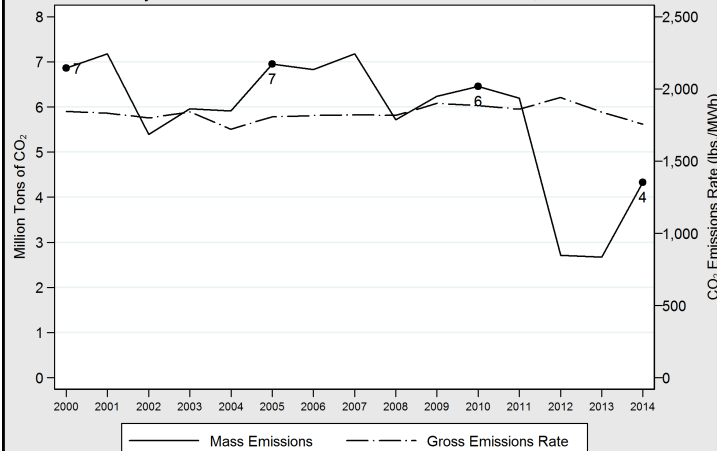
Kentucky Power

Kentucky Power Coal Consumption by Origin, 1983-2014



Kentucky Energy Database, EEC-DEDI, 2015
Data Source: FERC-423 & EIA-923

Kentucky Power CO₂ Emissions from Fossil Generation, 2000-2014



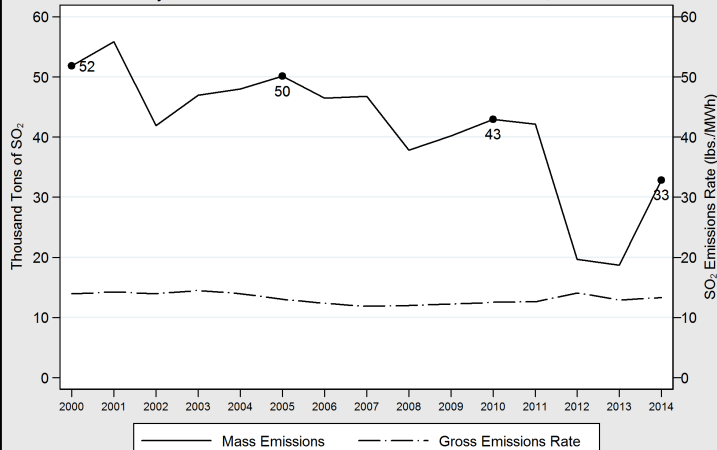
Kentucky Energy Database, EEC-DEDI, 2015
Data Source: EPA Clean Air Markets

State	2014 Tons	Percentage
Total	1,457,580	100%
Eastern Kentucky	1,387,116	95%
West Virginia	70,464	5%

Carbon Dioxide	2014	Since 2000
Emissions (Tonnage)	4,328,511	-36.9%
Rate (lbs./MWh)	1,755	-4.8%

Kentucky Power emitted 4.3 million tons of CO₂ in 2014, a decrease of 37 percent since 2000. The rate of CO₂ emissions is relatively unchanged, but is the lowest rate in the Commonwealth.

Kentucky Power SO₂ Emissions from Fossil Generation, 2000-2014

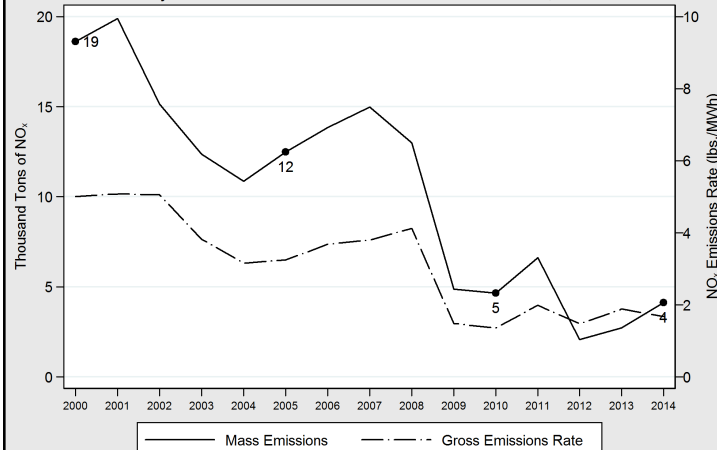


Kentucky Energy Database, EEC-DEDI, 2015
Data Source: EPA Clean Air Markets

Sulfur Dioxide	2014	Since 2000
Emissions (Tonnage)	32,834	-36.6%
Rate (lbs./MWh)	13.3	-4.41%

Kentucky Power emitted 33 thousand tons of SO₂ in 2014, a decrease of 37 percent since 2000. The rate of SO₂ emissions reduced by four percent during that period and was the highest in the Commonwealth.

Kentucky Power NO_x Emissions from Fossil Generation, 2000-2014

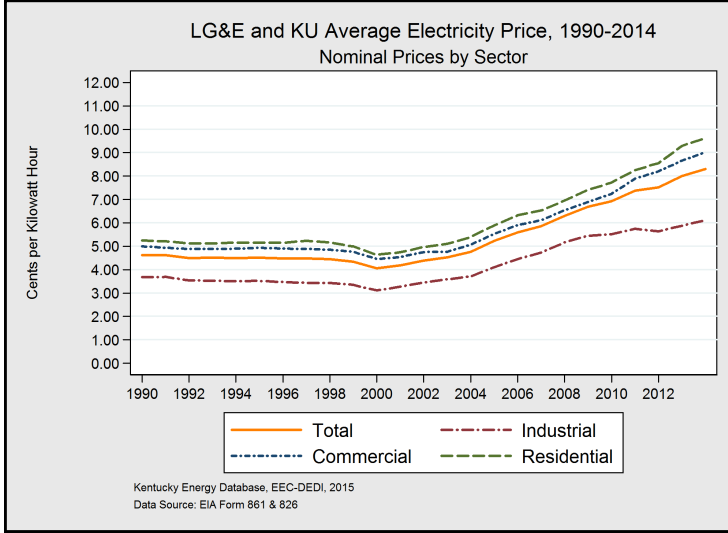


Kentucky Energy Database, EEC-DEDI, 2015
Data Source: EPA Clean Air Markets

Nitrogen Dioxide	2014	Since 2000
Emissions (Tonnage)	4,127	-77.8%
Rate (lbs./MWh)	1.67	-66.6%

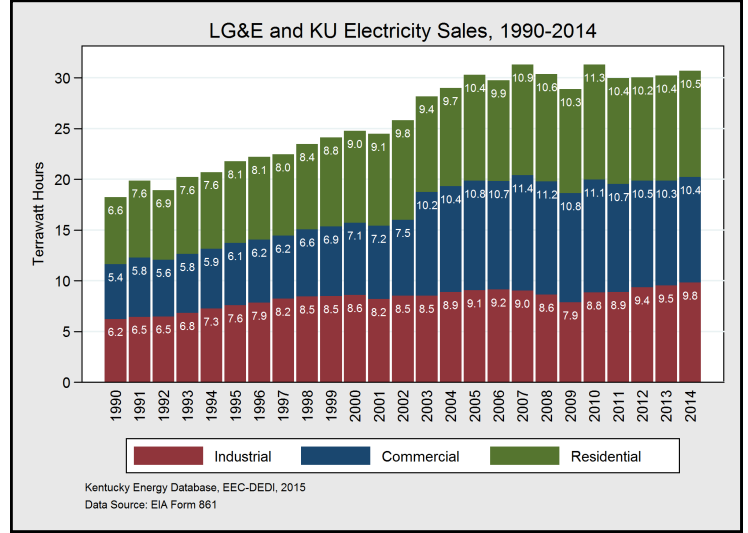
Kentucky Power emitted four thousand tons of NO_x in 2014, a reduction of 78 percent since 2000. The rate of NO_x emissions decreased by two-thirds during that period.

LG&E and KU

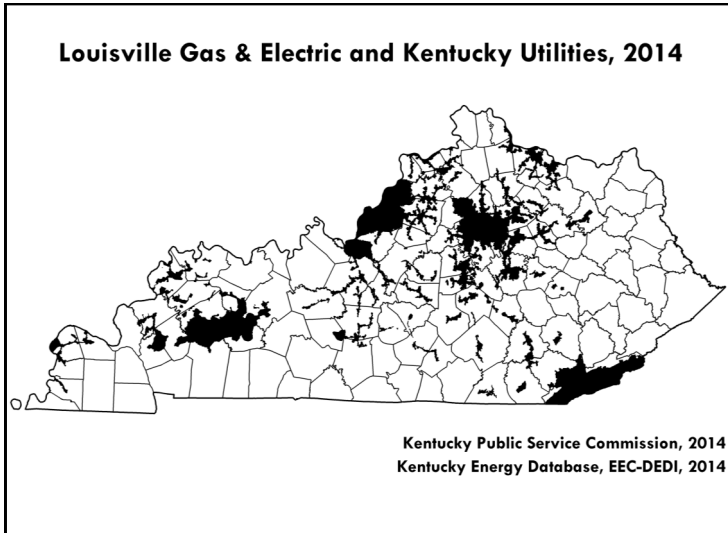


Sector	Price (Cents/kWh)	Since 2010*
Total	8.30	+10%
Residential	9.63	+15%
Commercial	9.03	+15%
Industrial	6.11	+2%

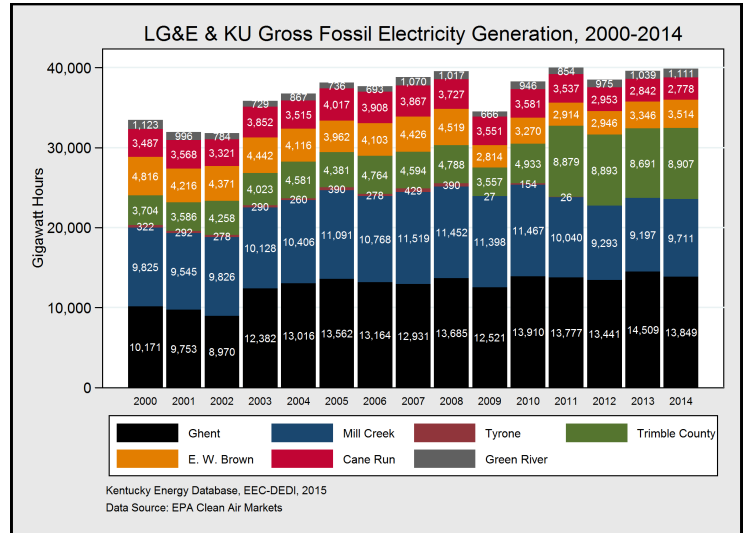
*Change in real 2010 U.S.\$



Sector	Sales (GWh)	Percentage
Total	30,706	100%
Residential	10,492	34%
Commercial	10,369	34%
Industrial	9,845	32%



LG&E and KU is the single largest utility by sales in Kentucky and sells electricity throughout the state, primarily in densely populated areas. Total electricity prices in 2014 were 8.3 cents per kWh and have increased by 10 percent since 2010 in inflation-adjusted dollars. LG&E and KU operate numerous electricity generation facilities throughout the state including seven coal-fired power plants, two hydroelectric dams, and four natural gas facilities.

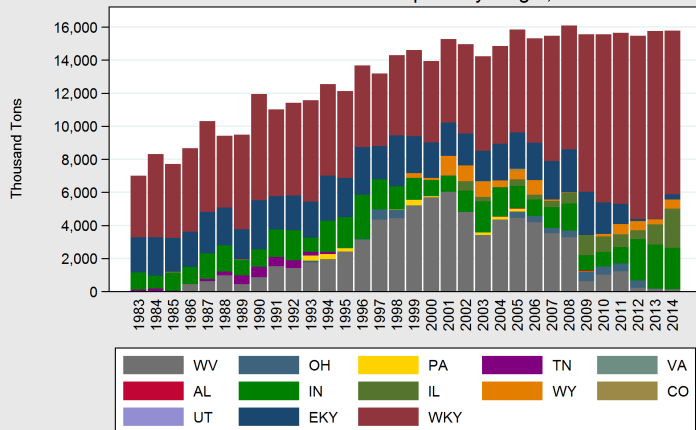


Electricity Generation	2014	Since 2000
Gigawatt Hours	39,871	+19.2%

LG&E and KU generated almost 40 TWh and sold 31 TWh of electricity in 2014. Since 2013, generation has increased by less than one percent and sales have increased by two percent. The utility is the largest utility in the state, generating 42 percent of the state's fossil-based generation and selling 39 percent of all investor owned or federal utilities in the state.

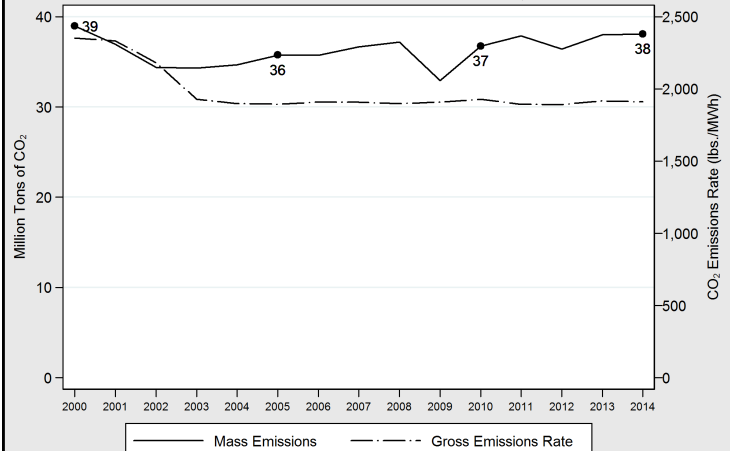
LG&E and KU

LG&E and KU Coal Consumption by Origin, 1983-2014



Kentucky Energy Database, EEC-DEDI, 2015
Data Source: FERC-423 & EIA-923

LG&E & KU CO₂ Emissions from Fossil Generation, 2000-2014



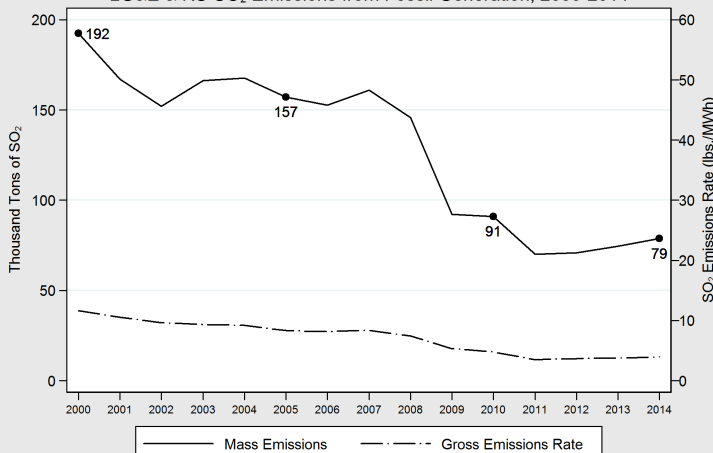
Kentucky Energy Database, EEC-DEDI, 2015
Data Source: EPA Clean Air Markets

State	2014 Tons	Percentage
Total	15,776,242	100%
Western Kentucky	9,900,897	63%
Indiana	2,519,136	16%
Illinois	2,374,404	15%
Wyoming	555,436	4%
Eastern Kentucky	303,672	2%
West Virginia	122,697	1%

Carbon Dioxide	2014	Since 2000
Emissions (Tonnage)	38,084,208	-2.3%
Rate (lbs./MWh)	1,910	-18.8%

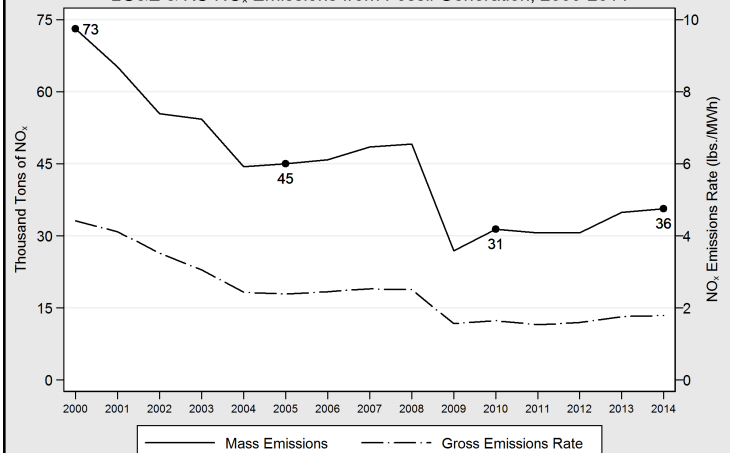
LG&E and KU emitted 38 million tons of CO₂ in 2014, a decrease of 2.3 percent since 2000. The rate of CO₂ emissions has decreased by almost 19 percent during that period.

LG&E & KU SO₂ Emissions from Fossil Generation, 2000-2014



Kentucky Energy Database, EEC-DEDI, 2015
Data Source: EPA Clean Air Markets

LG&E & KU NO_x Emissions from Fossil Generation, 2000-2014



Kentucky Energy Database, EEC-DEDI, 2015
Data Source: EPA Clean Air Markets

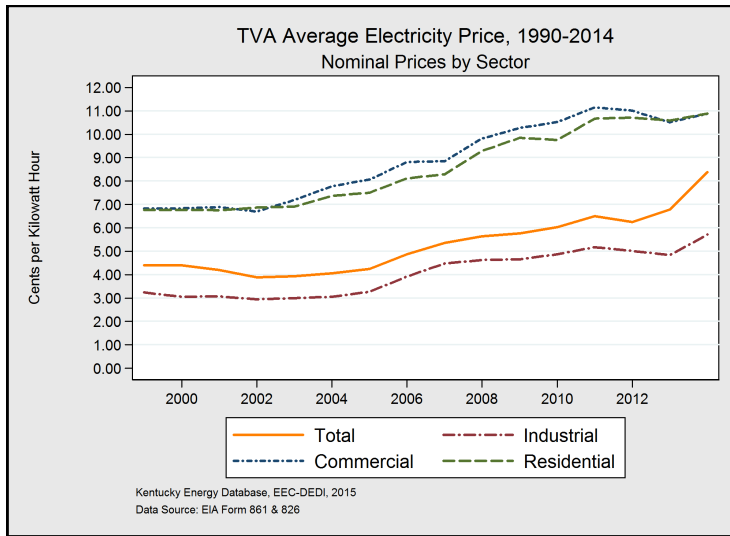
Sulfur Dioxide	2014	Since 2000
Emissions (Tonnage)	78,692	-59.1%
Rate (lbs./MWh)	3.95	-66.0%

LG&E and KU emitted 79 thousand tons of SO₂ in 2014, a decrease of 60 percent since 2000. The rate of SO₂ emissions reduced by two-thirds during that period.

Nitrogen Dioxide	2014	Since 2000
Emissions (Tonnage)	35,641	-51.2%
Rate (lbs./MWh)	1.79	-59.5%

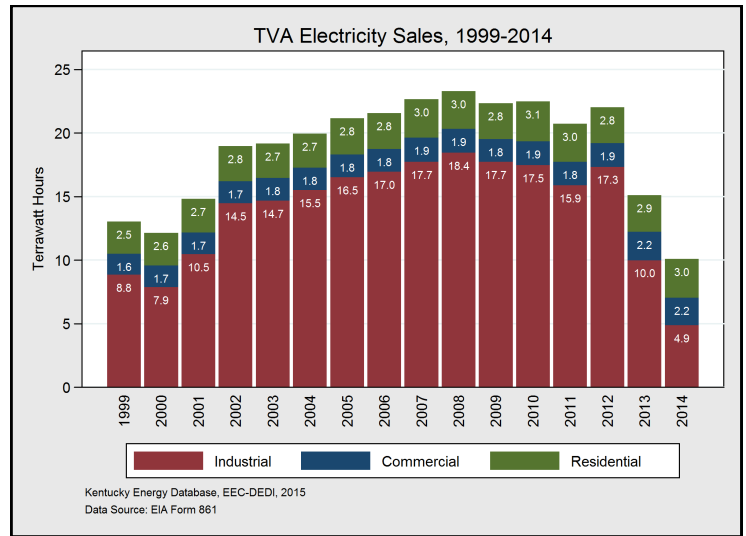
LG&E and KU emitted 36 thousand tons of NO_x in 2014, a reduction of 51 percent since 2000. The rate of NO_x emissions decreased by 60 percent during that period.

Tennessee Valley Authority



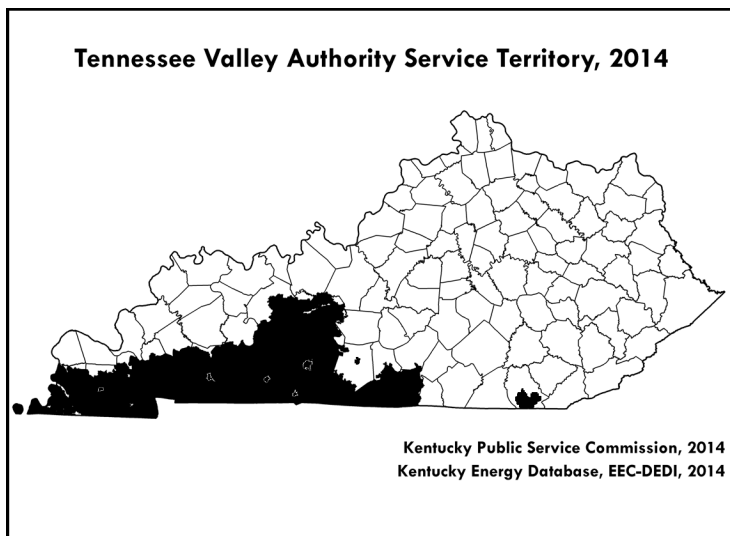
Sector	Price (Cents/kWh)	Since 2010*
Total†	8.38	+28%
Residential	10.9	+3%
Commercial	10.9	-4%
Industrial	5.71	+8%

*Change in real 2010 U.S.\$

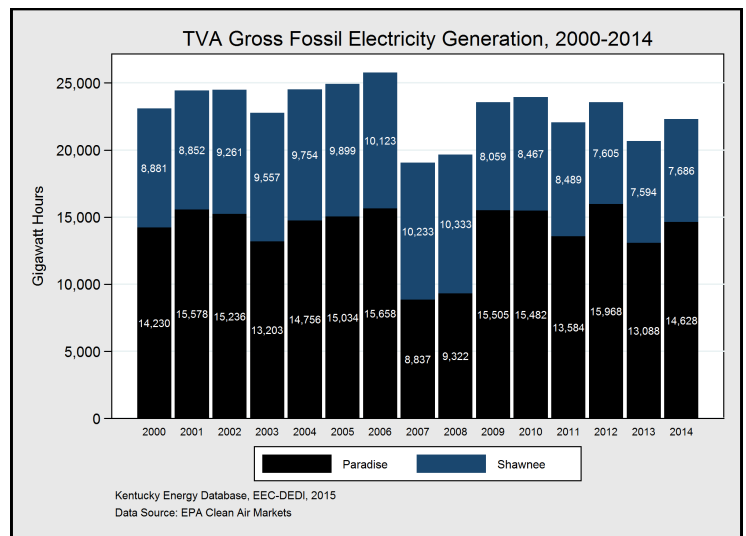


Sector	Sales (GWh)	Percentage
Total†	10,084	100%
Industrial	4,890	49%
Residential	3,038	30%
Commercial	2,156	21%

†Includes direct sales and sales to rural electric cooperatives



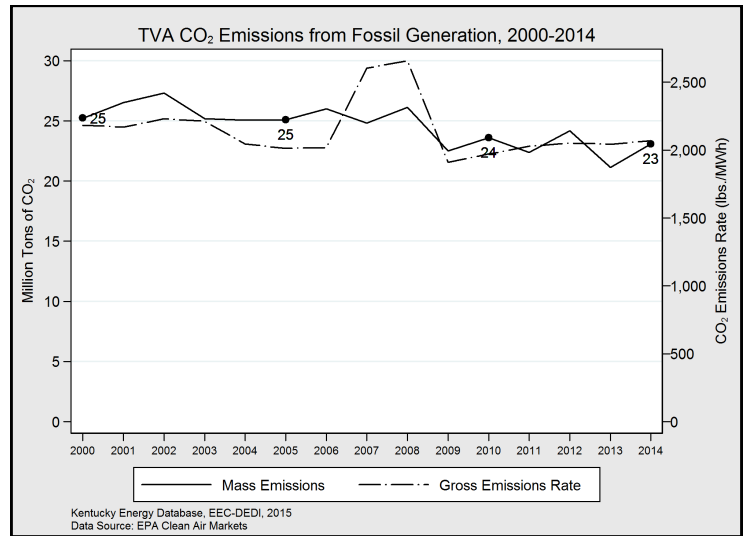
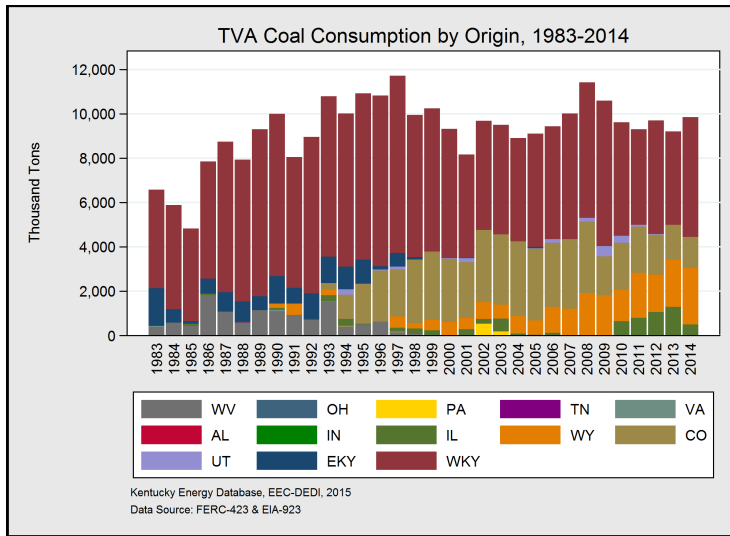
The Tennessee Valley Authority generates and sells electricity to five RECCs, 10 municipalities, and several industrial consumers in southwest Kentucky. Total electricity prices in 2014 were 8.38 cents per kWh and have increased by 28 percent since 2010 in inflation-adjusted dollars. In Kentucky, TVA operates the Marshall Combustion Turbine Plant near Calvert City as well as the coal-fired power plants of Paradise and Shawnee. TVA's electric service territory also extends to parts of Alabama, Georgia, Mississippi, North Carolina, Virginia, and most of Tennessee.



Electricity Generation	2014	Since 2000
Gigawatt Hours	22,314	-3.4%

TVA generated 22 TWh and sold 10 TWh of electricity in 2014. Since 2013, generation has increased by eight percent and sales have decreased by 33 percent. TVA directly sells electricity to a number of industrial manufacturers and five RECCs. The 10 municipalities TVA supplies are not shown in the figures above.

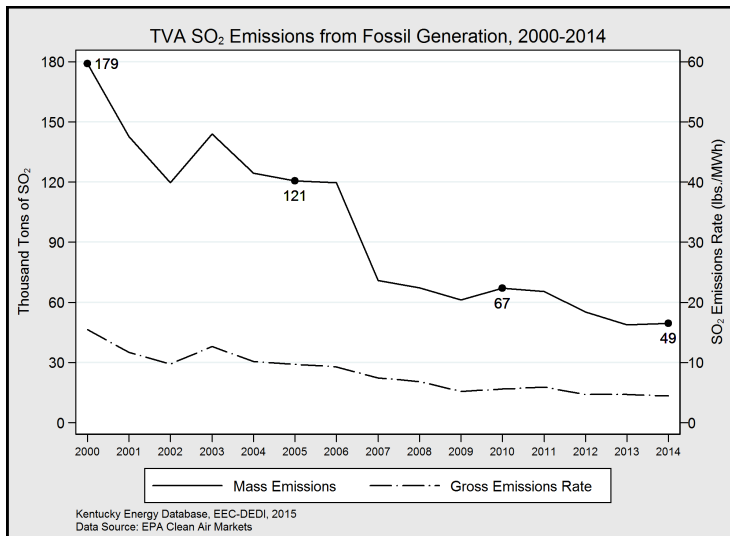
Tennessee Valley Authority



State	2014 Tons	Percentage
Total	9,855,997	100%
Western Kentucky	5,414,270	55%
Wyoming	2,532,750	26%
Colorado	1,407,814	14%
Illinois	501,163	5%

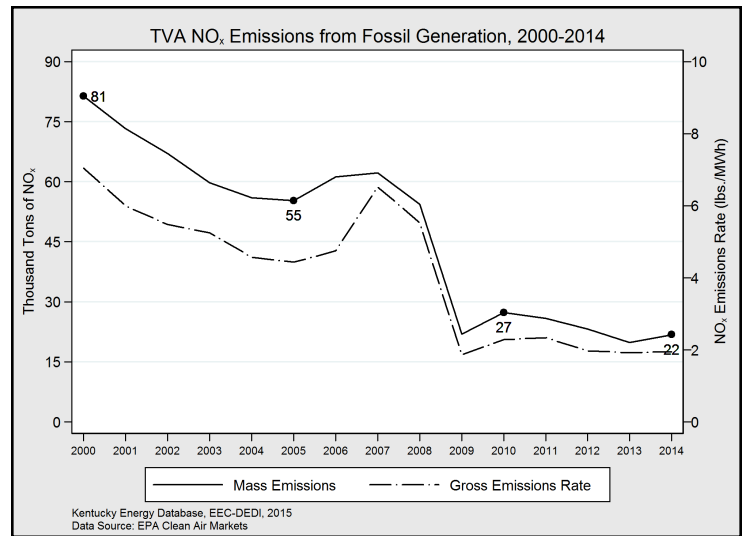
Carbon Dioxide	2014	Since 2000
Emissions (Tonnage)	23,090,202	-8.5%
Rate (lbs./MWh)	2,070	-5.2%

The Tennessee Valley Authority emitted 23 million tons of CO₂ in Kentucky in 2014, a decrease of 9 percent since 2000. The rate of CO₂ emissions has decreased by five percent during that period.



Sulfur Dioxide	2014	Since 2000
Emissions (Tonnage)	49,492	-72.4%
Rate (lbs./MWh)	4.44	-71.4%

The Tennessee Valley Authority emitted 49 thousand tons of SO₂ in 2014, a decrease of 73 percent since 2000. The rate of SO₂ emissions reduced by 71 percent during that period.

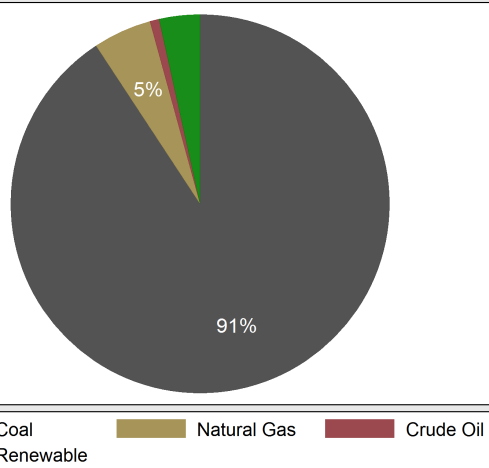


Nitrogen Dioxide	2014	Since 2000
Emissions (Tonnage)	21,797	-73.2%
Rate (lbs./MWh)	1.95	-72.3%

The Tennessee Valley Authority emitted 22 thousand tons of NO_x in 2014, a reduction of 73 percent since 2000. The rate of NO_x emissions decreased by 72 percent during that period.

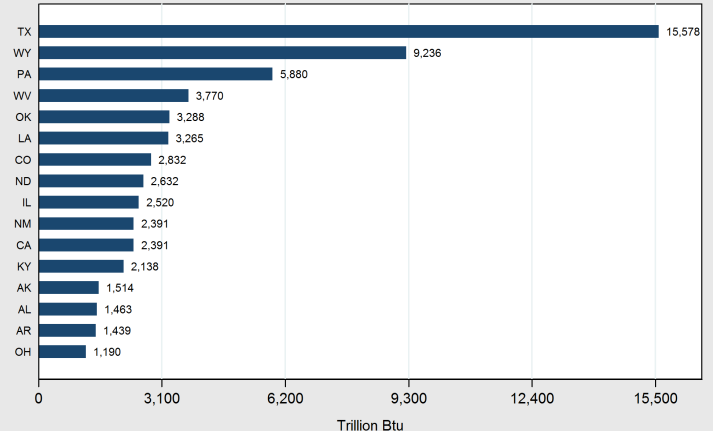
Kentucky Energy Production

Kentucky Energy Production by Fuel, 2013



Kentucky Energy Database, EEC-DEDI, 2015

Energy Production Among Top 15 Producing States, 2013



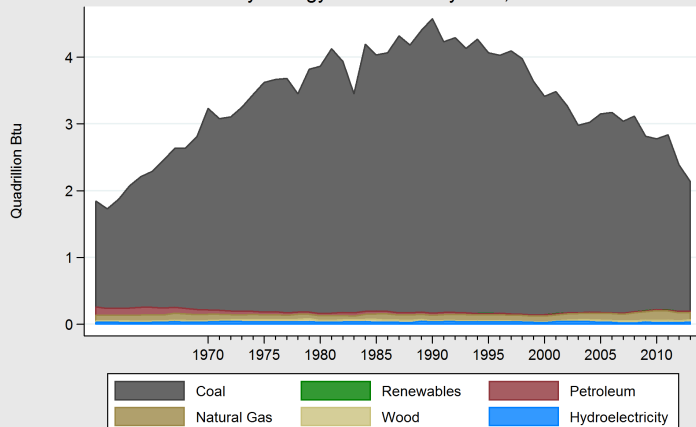
Kentucky Energy Database, EEC-DEDI, 2015
Data Source: EIA-SEDS

Fuel Type	Billion Btu	1 Year Change
Total	2,138,300	-11%
Coal	1,940,060	-12%
Natural Gas	107,053	-10%
Renewable	74,408	+24%
Crude Oil	16,779	-10%

State	Quadrillion Btu	Rank
Texas	15,578	1st
Kentucky	2,138	12th

Kentucky was the 12th largest producer of energy in 2013. As recently as 2009, Kentucky ranked 4th among all states; however, the increased adoption of horizontal hydraulic fracturing has increased production in other states and the decline of coal mining has decreased production in Kentucky.

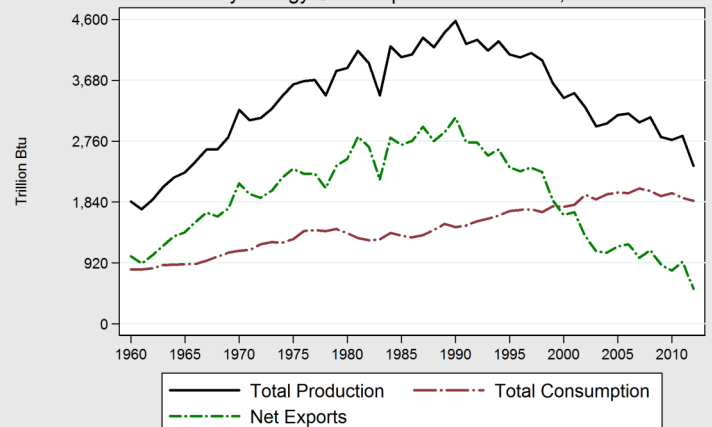
Kentucky Energy Production by Fuel, 1960-2013



Kentucky Energy Database, EEC-DEDI, 2015
Data Source: EIA-SEDS

Kentucky produced 2.14 quadrillion Btu of energy in 2013. Kentucky remains the third-largest coal producing state in the United States. Despite declining production since 1990, coal supplies the vast majority of energy production in Kentucky at 1.94 quadrillion Btu, or 92 percent of all energy produced. Natural gas, renewable resources, and crude oil—despite significant growth in recent years—combined only account for 8 percent of energy production.

Kentucky Energy Consumption & Production, 1960-2012

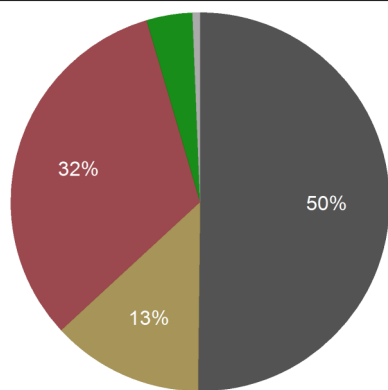


Kentucky Energy Database, EEC-DEDI, 2015
Data Source: EIA-SEDS

Due to abundant coal resources, Kentucky has historically been a net exporter of energy. The trend in coal production in Kentucky has always driven the trend in overall energy production. However, with decreasing coal production and stable demand, Kentucky's net exports of energy have declined since 1990.

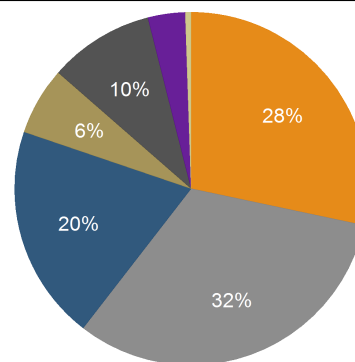
Kentucky Energy Consumption

Kentucky Energy Consumption by Fuel, 2013



Kentucky Energy Database, EEC-DEDI, 2015

Kentucky Energy Expenditures by Fuel, 2013



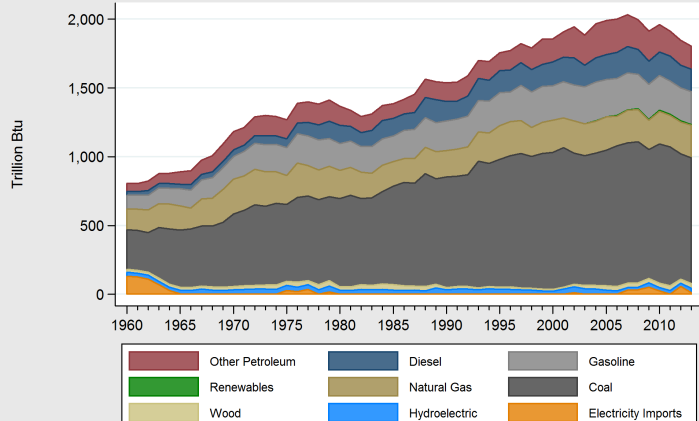
Kentucky Energy Database, EEC-DEDI, 2015

Fuel Type	Billion Btu	1 Year Change
Total	1,822,719	-2%
Coal	914,774	+1%
Petroleum	588,874	-2%
Natural Gas	236,062	+1%
Renewables	71,351	+16%
All Other	11,658	-78%

Fuel Type*	Million (\$ US)	1 Year Change
Total	22,423	+0.5%
Gasoline	7,337	-2.2%
Electricity	6,471	+1.5%
Diesel	4,507	-1.9%
Coal	2,200	-2.2%
Natural Gas	1,417	+18.9%

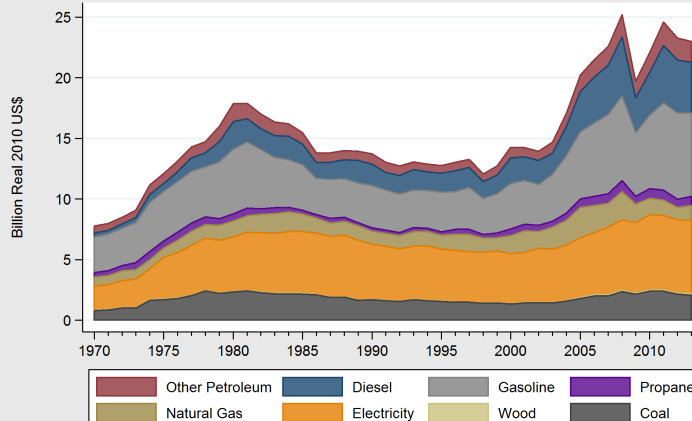
*Only top five sources listed

Kentucky Energy Consumption by Fuel, 1960-2013



Kentucky Energy Database, EEC-DEDI, 2015
Data Source: EIA-SEDS

Kentucky Energy Expenditures by Fuel, 1970-2013



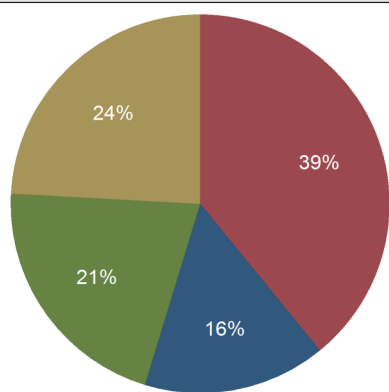
Kentucky Energy Database, EEC-DEDI, 2015
Data Source: EIA-SEDS

During 2013, Kentucky consumed 1.8 quadrillion Btu of energy, a decrease of two percent compared with 2012. The combustion of coal for electricity remained Kentucky's primary energy source, providing half of the state's energy requirements. Petroleum products were the second largest source of energy at 32 percent. The remainder of energy consumption was supplied by natural gas, at 13 percent, and renewable energy sources at five percent. Kentucky imported less than one percent of total energy use in 2013.

More than \$22 billion was spent on energy in Kentucky in 2013, a marginal increase in energy expenditures compared with 2012. During the year, gasoline was 32 percent of energy expenditures and electricity was 28 percent. Diesel fuel accounted for 20 percent of energy expenditures. Coal and natural gas consumption, other than electricity, together accounted for approximately 16 percent of energy expenditures.

Kentucky Energy Consumption

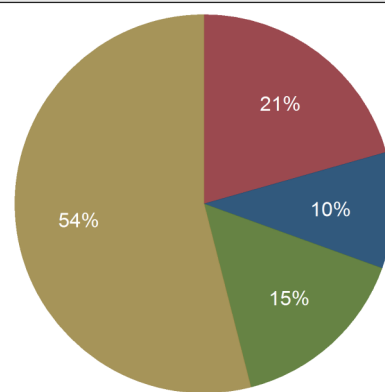
Kentucky Energy Consumption by Sector, 2013



Industrial Commercial
Residential Transportation

Kentucky Energy Database, EEC-DEDI, 2015

Kentucky Energy Expenditures by Sector, 2013



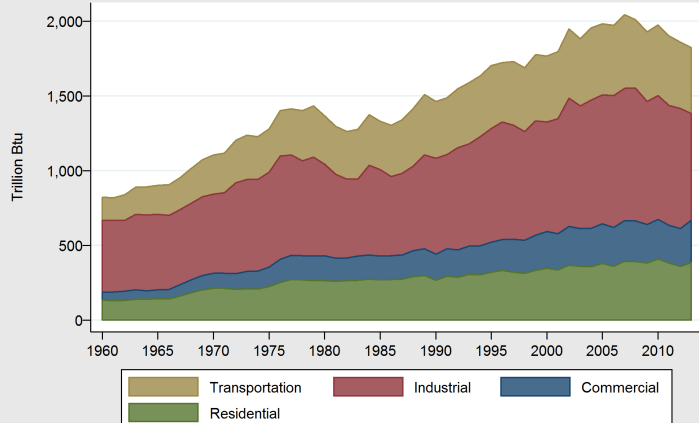
Industrial Commercial
Residential Transportation

Kentucky Energy Database, EEC-DEDI, 2015

Sector	Billion Btu	1 Year Change
Total	1,822,719	-2%
Industrial	712,936	-11%
Transportation	440,223	-1%
Residential	385,197	+7%
Commercial	284,362	+13%

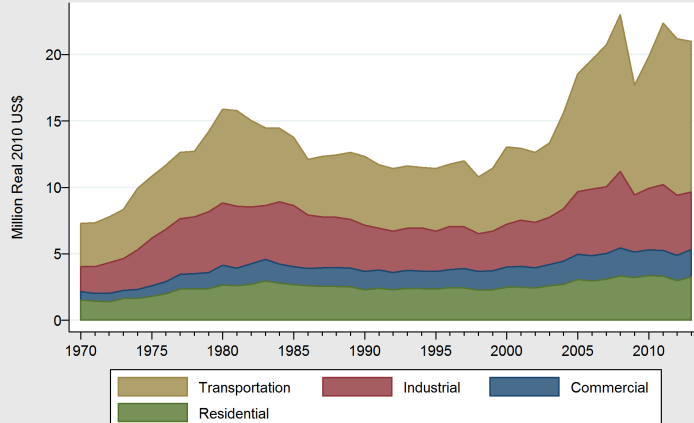
Sector	Million Dollars	1 Year Change
Total	22,423	+0.5%
Transportation	12,104	-2.5%
Industrial	4,620	-2.6%
Residential	3,470	+10.0%
Commercial	2,229	+11.5%

Kentucky Energy Consumption by Sector, 1960-2013



Kentucky Energy Database, EEC-DEDI, 2015
Data Source: EIA-SEDS

Kentucky Energy Expenditures by Sector, 1970-2013

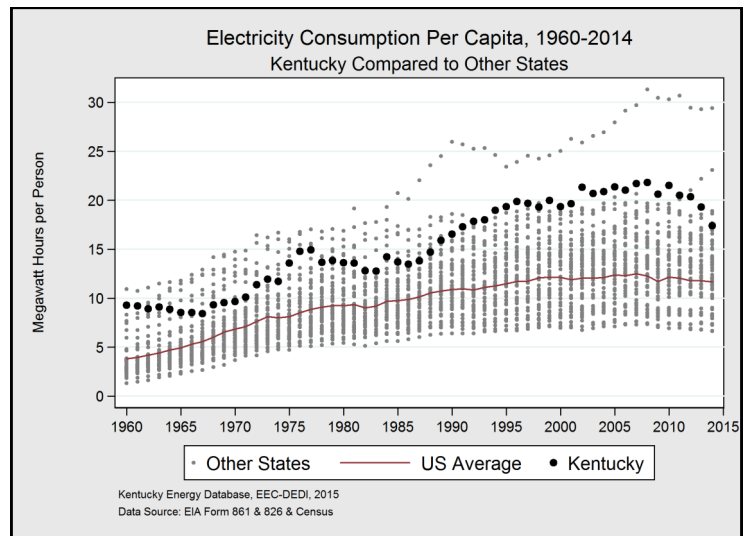
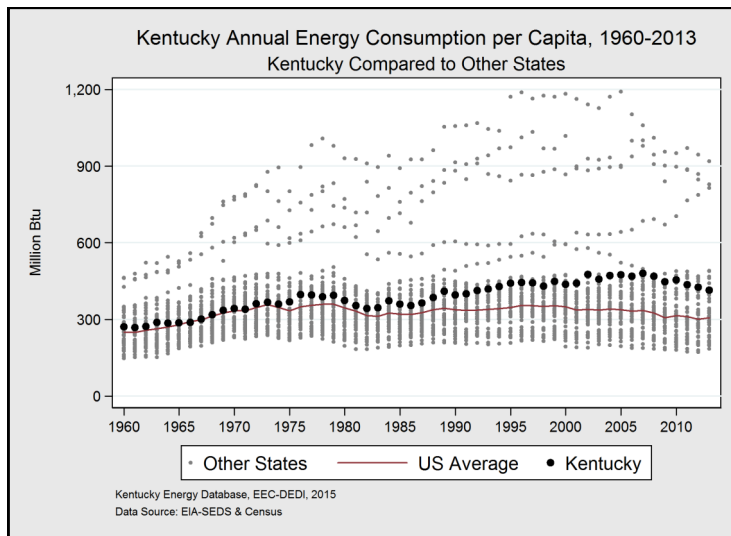


Kentucky Energy Database, EEC-DEDI, 2015
Data Source: EIA-SEDS

During 2013, manufacturing operations in Kentucky consumed 39 percent of all energy consumed within the Commonwealth. Kentucky's industrial energy use was proportionally larger than the national average of 32 percent in 2013, because Kentucky's low cost have attracted energy-intensive manufacturers. After manufacturing, transportation was the second largest use of energy, with 24 percent of total energy demand, followed by residential energy use at 21 percent. The commercial sector accounted for 16 percent of energy consumption.

Despite being the second-largest consumer of energy in 2013, the Kentucky transportation energy use was the majority of energy expenditures in the state during the year, due the higher cost of petroleum products. A total of \$12.1 billion was spent in 2013 on transportation fuels—primarily on gasoline and diesel. Manufacturers spent \$4.6 billion on various energy commodities, while the residential and commercial sectors spent \$3.4 billion and \$2.2 billion, respectively.

Kentucky Energy Intensity

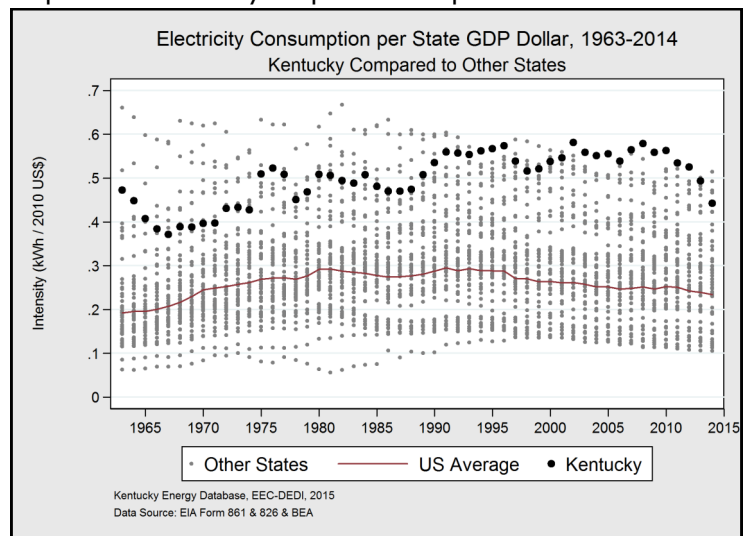
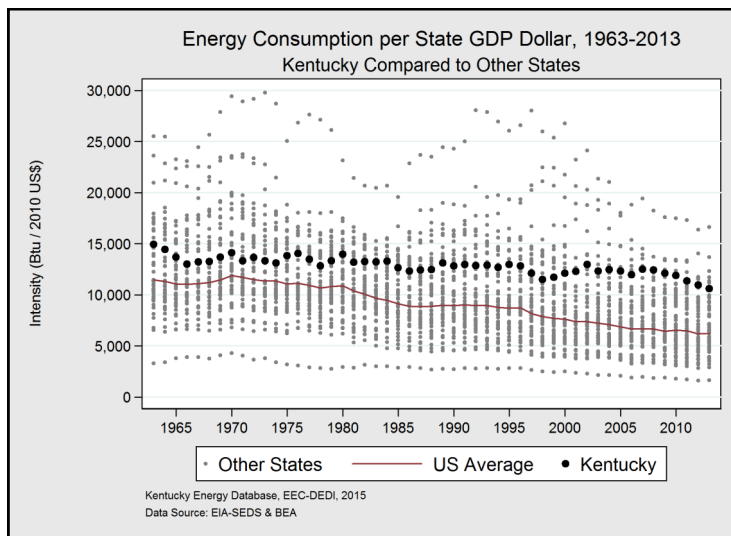


State	MMBtu per Capita	Rank
Wyoming	919	1st
Kentucky	415	11th
U.S. Average	307	-
Rhode Island	184	50th

Kentucky total energy consumption per capita decreased by 2.4 percent compared in 2013, which is 11th highest of all states.

State	MWh per Capita	Rank
Wyoming	29.4	1st
Kentucky	17.4	6th
U.S. Average	11.7	-
California	6.6	50th

In 2014, Kentucky ranked 6th in terms of total electricity consumption per capita. Total electricity consumption per capita decreased by 10 percent compared with 2013.



State	Btu/\$U.S. GDP	Rank
Louisiana	16,610	1st
Kentucky	10,607	7th
U.S. Average	6,228	-
New York	2,887	50th

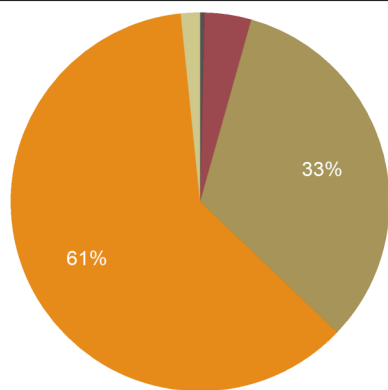
Kentucky ranked 7th in terms of total energy consumption per dollar of state GDP in 2013. Total energy intensity decreased by 4 percent compared with 2012.

State	kWh/\$U.S. GDP	Rank
Mississippi	0.51	1st
Kentucky	0.44	5th
U.S. Average	0.23	-
New York	0.11	50th

In 2014, Kentucky had the 5th most electricity-intensive economy in the United States, and total electricity intensity decreased by 10 percent compared with 2013.

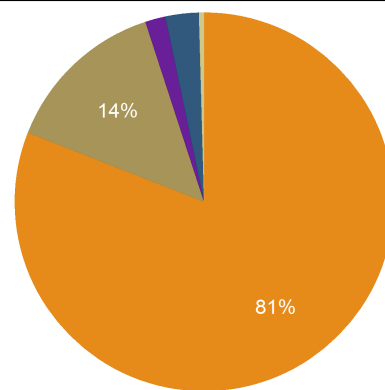
Commercial Energy Consumption

Kentucky Commercial Energy Consumption by Fuel, 2013



Kentucky Energy Database, EEC-DEDI, 2015

Kentucky Commercial Energy Expenditures by Fuel, 2013

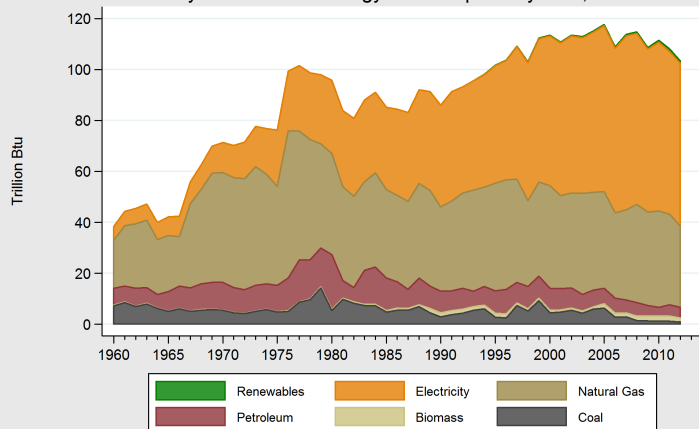


Kentucky Energy Database, EEC-DEDI, 2015

Fuel Type	Billion Btu	1 Year Change
Total Net	117,849	+14%
Electricity	71,666	+12%
Natural Gas	38,317	+21%
Petroleum	4,693	+13%
Wood	1,910	+16%
Coal	416	-52%

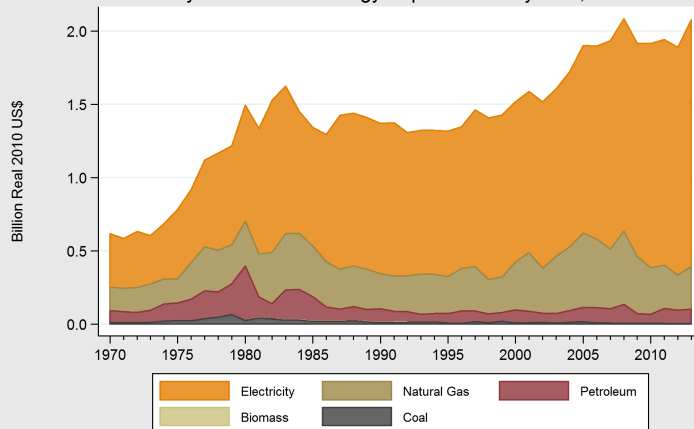
Fuel Type	Million Dollars	1 Year Change
Total	2,229	+12%
Electricity	1,798	+9%
Natural Gas	311	+22%
Diesel	64	+11%
Propane	38	+22%
Wood	9	+15%

Kentucky Commercial Energy Consumption by Fuel, 1960-2013



Kentucky Energy Database, EEC-DEDI, 2015
Data Source: EIA-SEDS

Kentucky Commercial Energy Expenditures by Fuel, 1970-2013

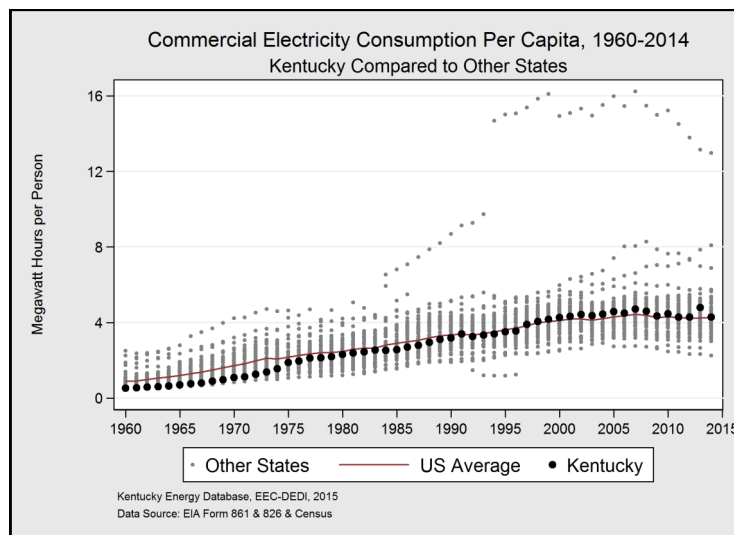
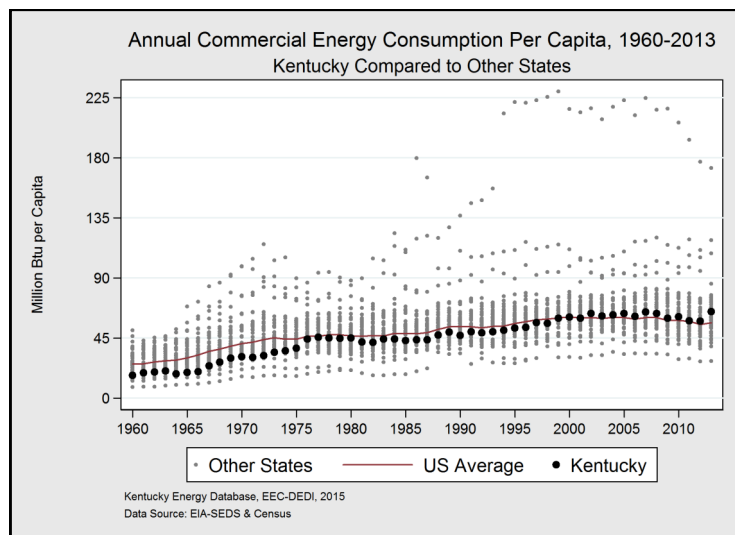


Kentucky Energy Database, EEC-DEDI, 2015
Data Source: EIA-SEDS

In 2013, non-manufacturing businesses in Kentucky consumed 117,849 billion Btu of energy, a 14 percent increase in net commercial energy consumption compared with 2012. Electricity constituted 61 percent of commercial energy consumption, followed by natural gas at 33 percent. Other commodities such as petroleum products, wood, coal, and ethanol accounted for approximately six percent of commercial energy consumption in 2013. The commercial sector, which includes service industries, primarily uses natural gas for heating during the winter and cooking.

In 2013, non-manufacturing businesses in Kentucky spent more than \$2.2 billion on energy consumption—an increase of 12 percent in commercial energy expenditures compared with 2012. Electricity was the largest energy expenditure, at 81 percent. Natural gas was 14 percent of commercial energy expenditures. The increase in energy expenditures by the commercial sector is more a reflection of increased utilization because the price for energy decreased in 2013.

Commercial Energy Intensity

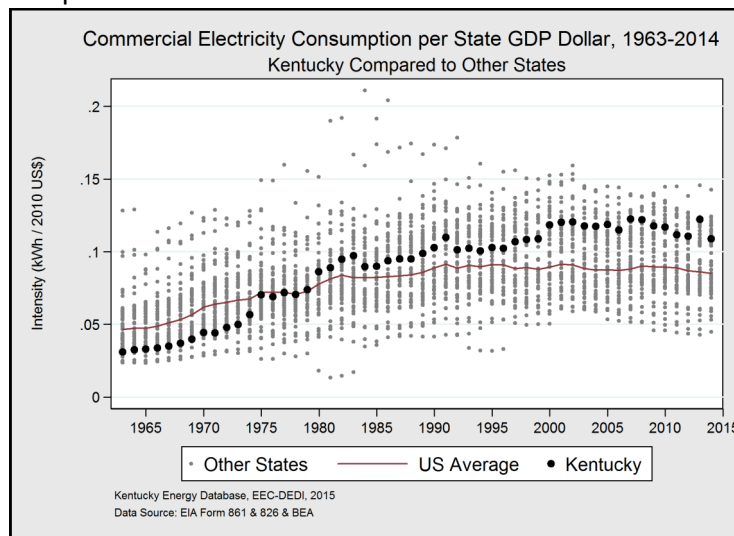
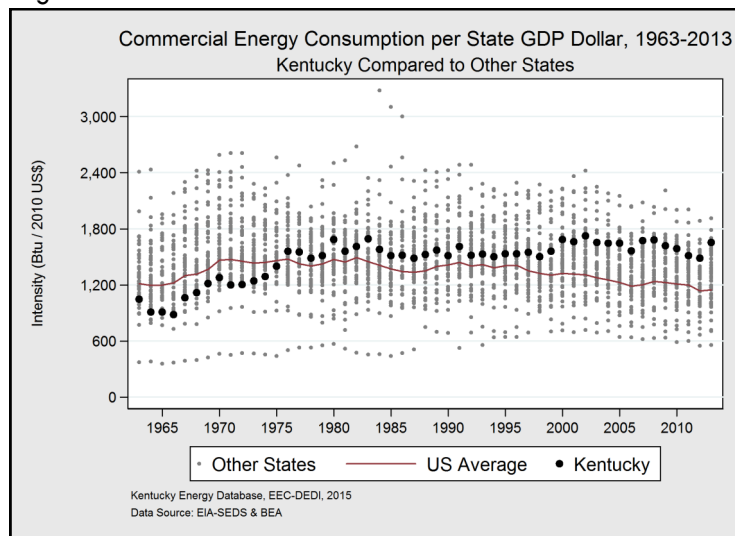


State	MMBtu per Capita	Rank
North Dakota	118	1st
Kentucky	65	16th
U.S. Average	57	-
Hawaii	28	50th

Kentucky commercial energy consumption per capita increased by 12 percent compared with 2012, and is 16th highest of all states.

State	MWh per Capita	Rank
North Dakota	8.1	1st
Kentucky	4.3	24th
U.S. Average	4.3	-
Hawaii	2.2	50th

Kentucky ranked 24th in terms of commercial electricity consumption per capita in 2014, a decrease of 11 percent compared with 2013.



State	Btu/\$U.S. GDP	Rank
Montana	1,911	1st
Kentucky	1,655	4th
U.S. Average	1,147	-
Hawaii	555	50th

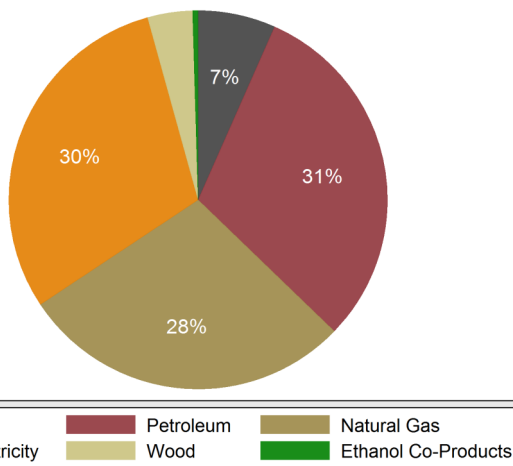
Kentucky ranked 4th highest in terms of commercial energy consumption per dollar of state GDP in 2013. Commercial energy intensity increased by 10 percent compared with 2012.

State	kWh/\$U.S. GDP	Rank
Mississippi	0.14	1st
Kentucky	0.11	15th
U.S. Average	0.09	-
Hawaii	0.04	50th

In 2014, Kentucky ranked 15th in terms of commercial electricity use per dollar of state GDP. Commercial electricity intensity decreased by 11 percent compared with 2013.

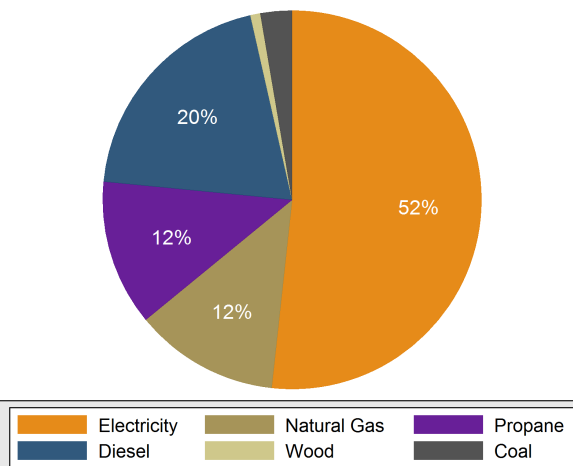
Industrial Energy Consumption

Kentucky Industrial Energy Consumption by Fuel, 2013



Kentucky Energy Database, EEC-DEDI, 2015

Kentucky Industrial Energy Expenditures by Fuel, 2013

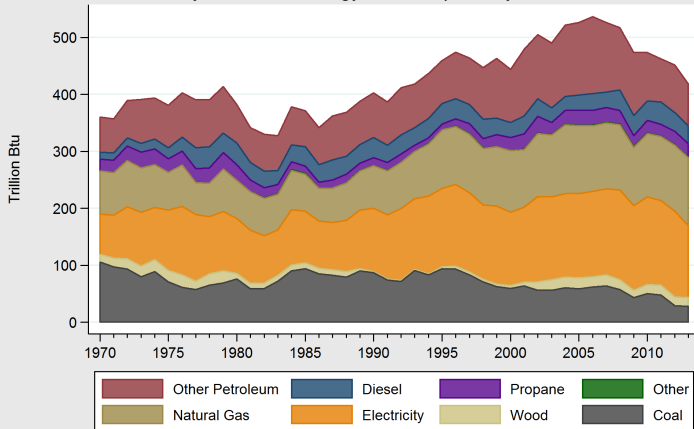


Kentucky Energy Database, EEC-DEDI, 2015

Fuel Type	Billion Btu	1 Year Change
Total Net	419,840	-7%
Petroleum	128,408	-8%
Electricity	126,147	-16%
Natural Gas	119,506	+3%
Coal	27,797	-4%
Wood	16,074	+2%

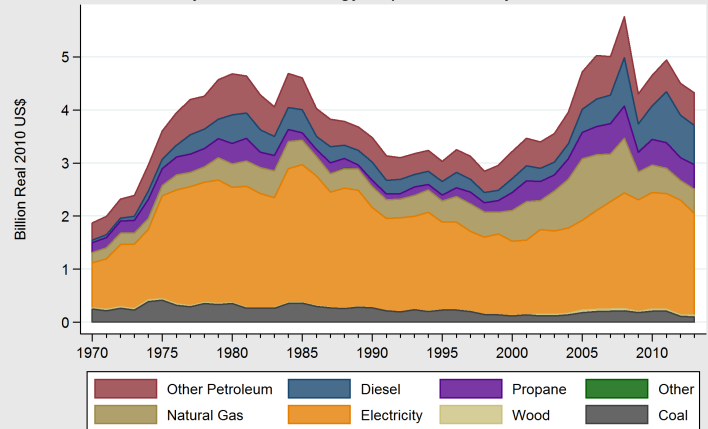
Fuel Type	Million Dollars	1 Year Change
Total	4,620	-3%
Electricity	2,050	-10%
Diesel	789	-6%
Propane	495	+9%
Natural Gas	489	+27%
Coal	107	-6%

Kentucky Industrial Energy Consumption by Fuel, 1970-2013



Kentucky Energy Database, EEC-DEDI, 2015
Data Source: EIA-SEDS

Kentucky Industrial Energy Expenditures by Fuel, 1970-2013

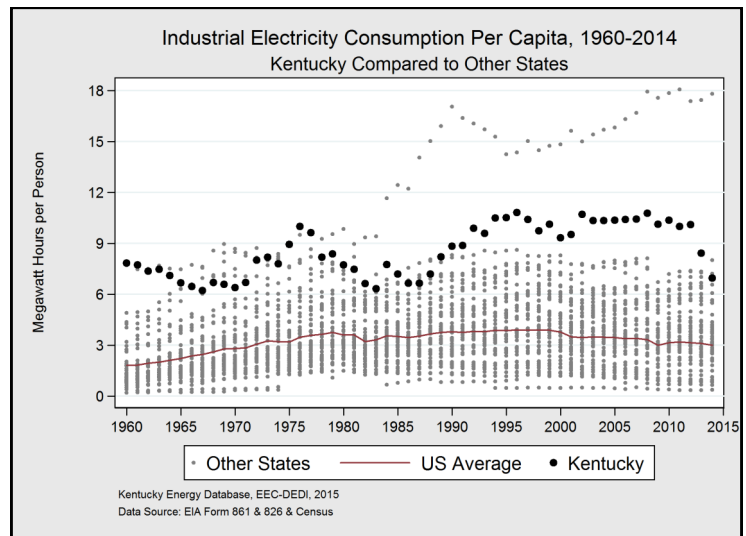
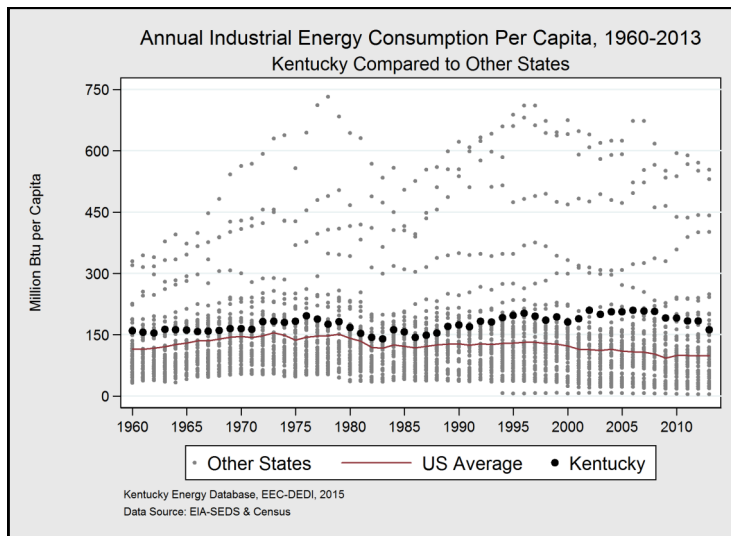


Kentucky Energy Database, EEC-DEDI, 2015
Data Source: EIA-SEDS

Kentucky-based manufacturing operations and farms consumed 420 trillion Btu of energy in 2013, a decrease of seven percent from 2012. This decrease was a result of the closure of the United States Enrichment Facility in Paducah. Petroleum was the largest component of industrial energy use in 2013, or 31 percent of total industrial energy consumption. Electricity and natural gas accounted for 30 percent and 28 percent of industrial energy consumption, respectively.

Kentucky spent more than \$4.6 billion to fuel factories and farms within the Commonwealth, which was a three percent decrease in industrial energy spending compared with 2012. Electricity was the largest expenditure—52 percent of industrial energy spending. Diesel and propane accounted for 20 percent and 12 percent of industrial expenditures, respectively. Natural gas, coal, wood, and ethanol accounted for the remainder of industrial energy expenditures in 2012.

Industrial Energy Intensity

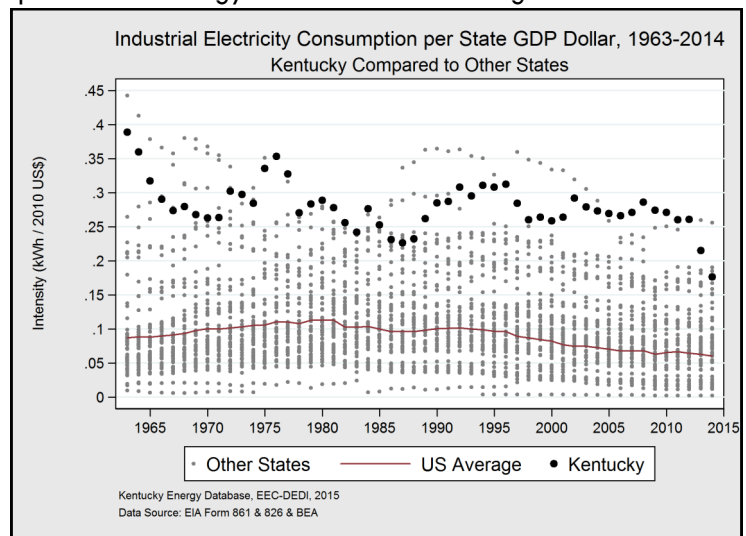
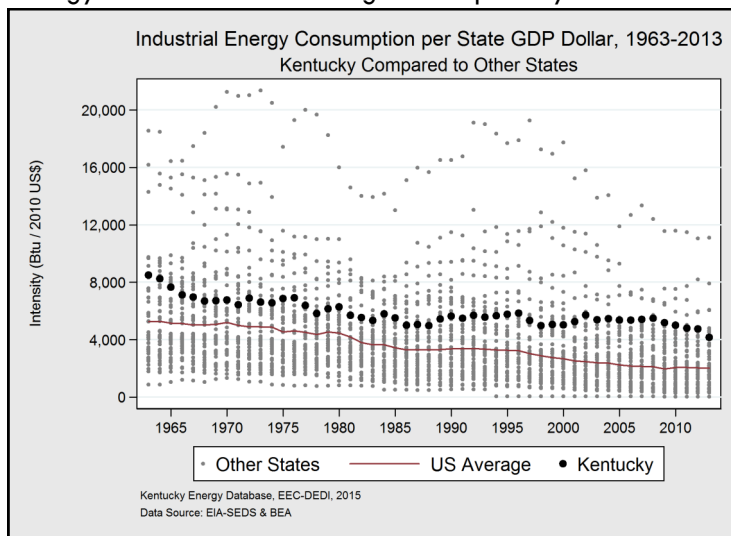


State	MMBtu per Capita	Rank
Louisiana	554	1st
Kentucky	162	11th
U.S. Average	99	-
Rhode Island	19	50th

Kentucky industrial energy consumption per capita decreased by 11.6 percent in 2013, but remains above average due to energy-intensive manufacturing such as primary metals.

State	MWh per Capita	Rank
Wyoming	17.8	1st
Kentucky	6.9	5th
U.S. Average	3.0	-
Maryland	0.6	50th

Industrial electricity consumption per capita decreased by 18 percent in 2014, but remains above average due to the presence of energy-intensive manufacturing.



State	Btu/\$U.S. GDP	Rank
Louisiana	11,097	1st
Kentucky	4,149	10th
U.S. Average	2,012	-
New York	300	50th

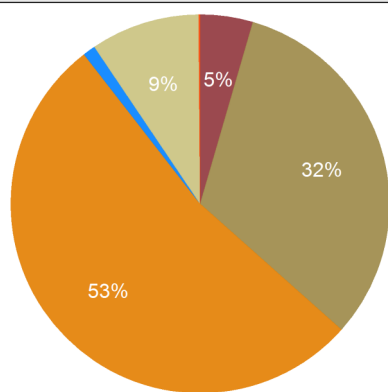
Kentucky industrial energy intensity decreased by 14 percent compared with 2012, and is decreasing significantly faster than the national average.

State	kWh/\$U.S. GDP	Rank
Wyoming	0.26	1st
Kentucky	0.18	4th
U.S. Average	0.06	-
Maryland	0.01	50th

In 2014, Kentucky was 4th in terms of industrial electricity use per dollar of GDP, but decreased by 18 percent compared with 2013, due primarily to the closure of the United States Enrichment Corporation in Paducah.

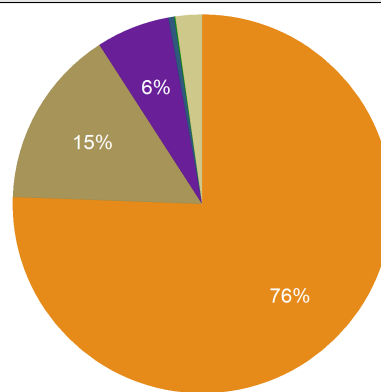
Residential Energy Consumption

Kentucky Residential Energy Consumption by Fuel, 2013



Kentucky Energy Database, EEC-DEDI, 2015

Kentucky Residential Energy Expenditures by Fuel, 2013

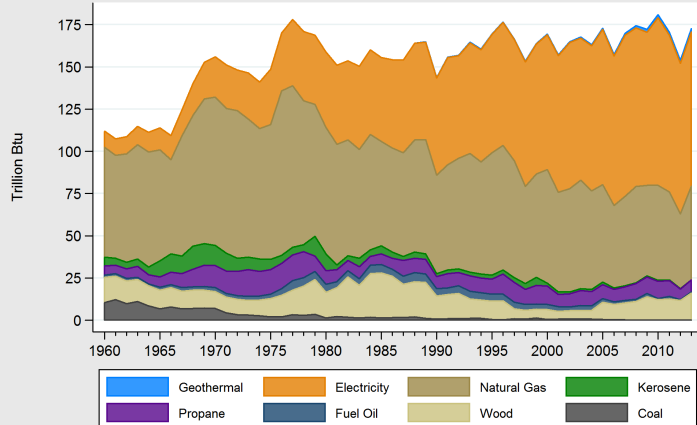


Kentucky Energy Database, EEC-DEDI, 2015

Fuel Type	Billion Btu	1 Year Change
Total Net	172,832	+12%
Electricity	91,401	+3%
Natural Gas	55,470	+25%
Wood	16,132	+38%
Petroleum	7,788	+13%
Geothermal	1,860	+0%

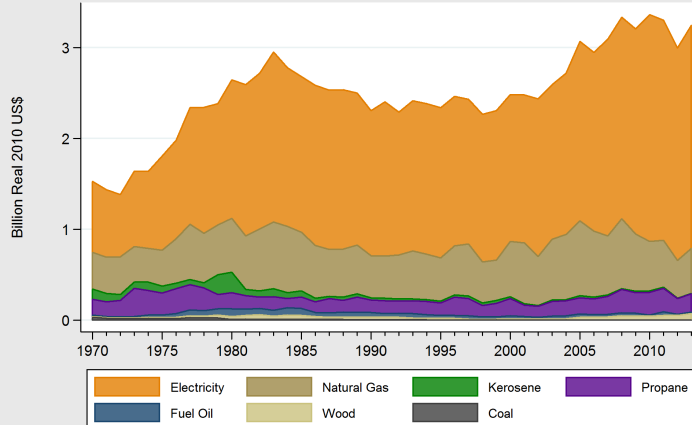
Fuel Type	Million Dollars	1 Year Change
Total	3,470	+10%
Electricity	2,623	+7%
Natural Gas	531	+21%
Liquid Propane Gas	217	+20%
Wood	78	+36%
Kerosene	4	+6%

Kentucky Residential Energy Consumption by Fuel, 1960-2013



Kentucky Energy Database, EEC-DEDI, 2015
Data Source: EIA-SEDS

Kentucky Residential Energy Expenditures by Fuel, 1970-2013

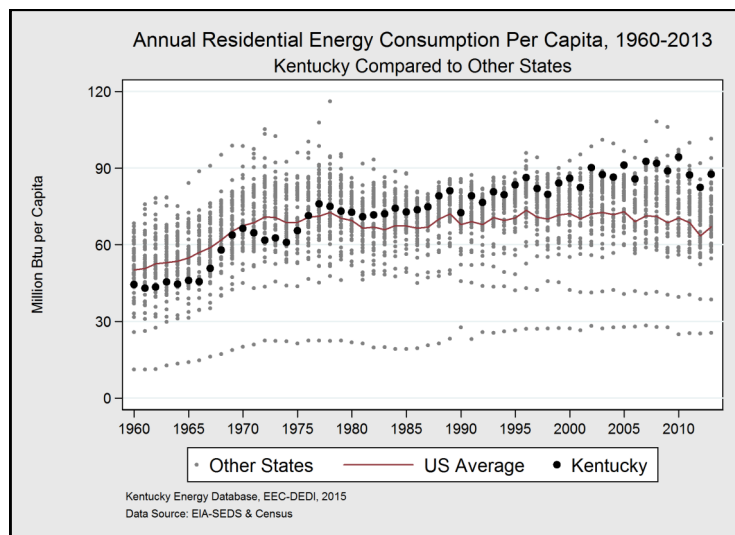


Kentucky Energy Database, EEC-DEDI, 2015
Data Source: EIA-SEDS

Households in Kentucky consumed 173 trillion Btu of energy in 2013, a 12 percent increase in net residential energy consumption compared with 2012. The largest portion of energy used in the residential sector—53 percent—was through electricity and the second largest was natural gas. Over time, electricity has increased its share of domestic energy consumption while natural gas, primarily used for home heating, has decreased. Residential energy use has remained relatively stagnant since the late 1970s despite population having grown by approximately 24 percent.

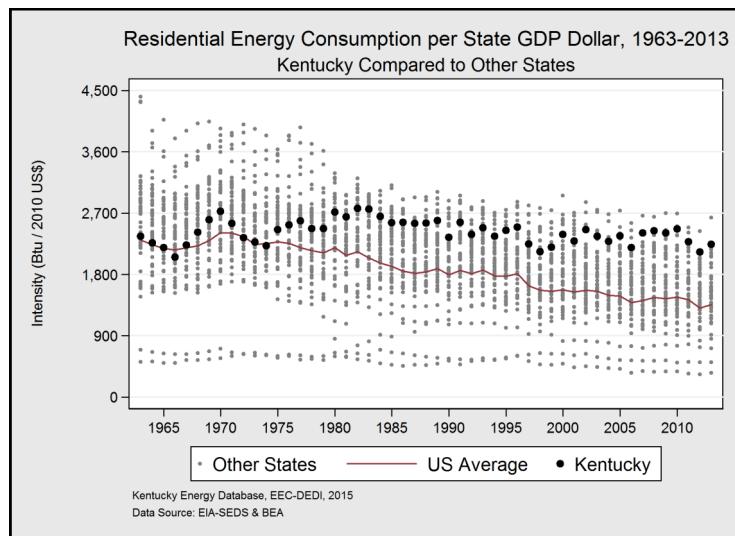
Kentucky households spent nearly \$3.5 billion on energy commodities and energy consumption in 2013, a 10 percent increase in residential energy expenditures compared with 2012. Electricity expenditures comprised 76 percent of spending, which totaled \$2.6 billion during the year. Expenditures on all residential energy sources increased in 2013 as winter temperatures were colder relative to the year before, and as energy costs were, in some cases, higher in 2013 than in 2012.

Residential Energy Intensity



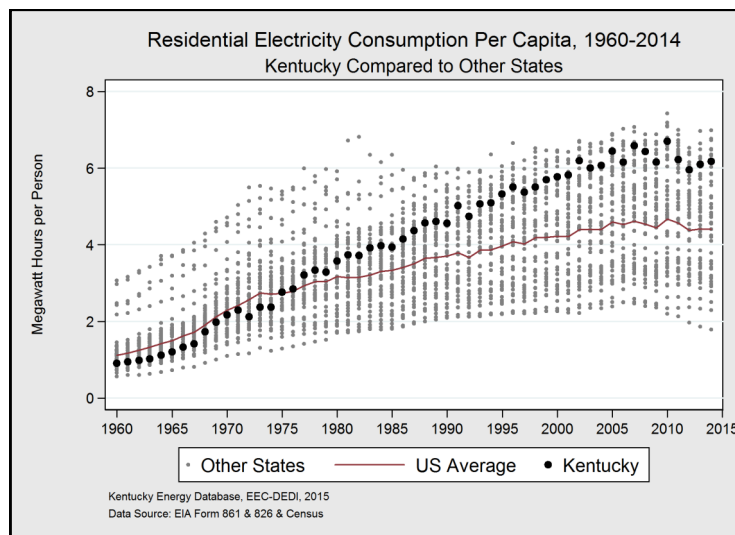
State	MMBtu per Capita	Rank
North Dakota	102	1st
Kentucky	88	5th
U.S. Average	67	-
Hawaii	25	50th

Kentucky residential energy consumption per capita increased in 2013 by 6.3 percent, and is 5th highest of all states.



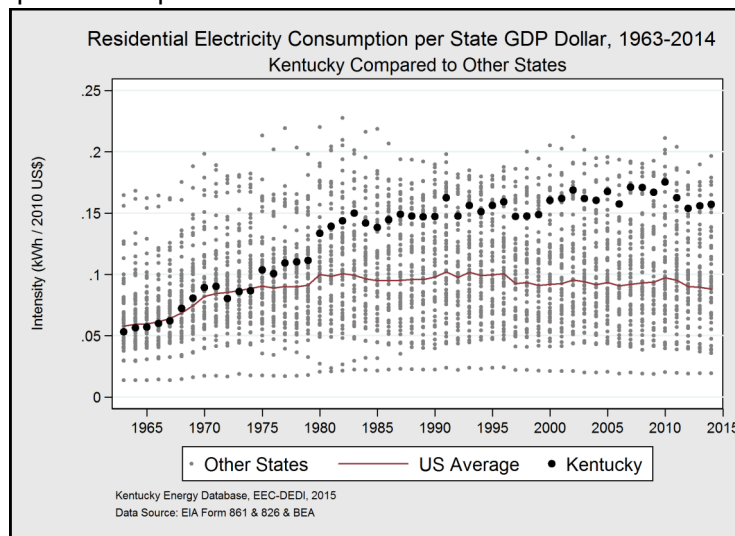
State	Btu/\$U.S. GDP	Rank
West Virginia	2,635	1st
Kentucky	2,242	2nd
U.S. Average	1,358	-
Hawaii	508	50th

Kentucky ranked 2nd in terms of residential energy consumption relative to one dollar of state GDP. Residential energy intensity increased by five percent compared with 2012. More than 12 percent of Kentucky families live in mobile homes with inefficient electric heat.



State	MWh per Capita	Rank
North Dakota	7.0	1st
Kentucky	6.2	9th
U.S. Average	4.4	-
Hawaii	2.1	50th

In 2014, Kentucky ranked 9th nationally in terms of residential electricity use per capita, an increase of one percent compared with 2013.

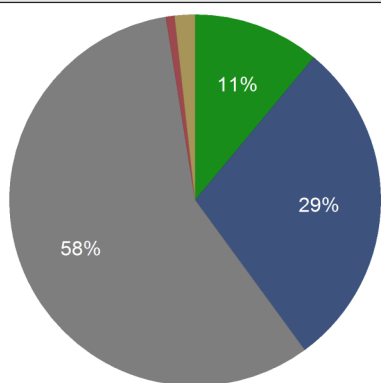


State	kWh/\$U.S. GDP	Rank
Mississippi	0.20	1st
Kentucky	0.16	6th
U.S. Average	0.09	-
Hawaii	0.04	50th

In 2014, Kentucky ranked 6th in terms of residential electricity use relative to one dollar of state GDP, an increase of 0.7 percent. Higher energy intensity is a result of relatively low GDP and low incomes, and the number of mobile homes, which use electric heat.

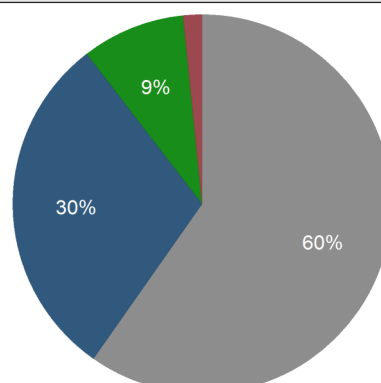
Transportation Energy Consumption

Kentucky Transportation Energy Consumption by Fuel, 2013



DEDI Energy Database, 2012

Kentucky Transportation Energy Expenditures by Fuel, 2013

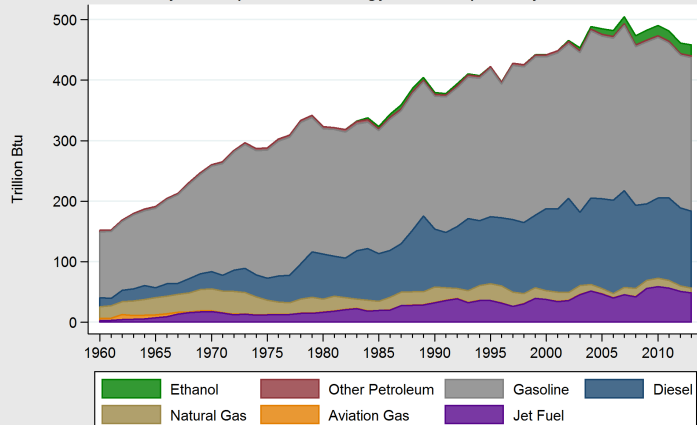


Kentucky Energy Database, EEC-DEDI, 2015

Fuel Type	Billion Btu	1 Year Change
Total	440,223	-1%
Gasoline	253,179	+0%
Diesel	127,325	-1%
Jet Fuel	48,539	-5%
Natural Gas*	7,796	-12%
Other Petroleum	3,254	+11%

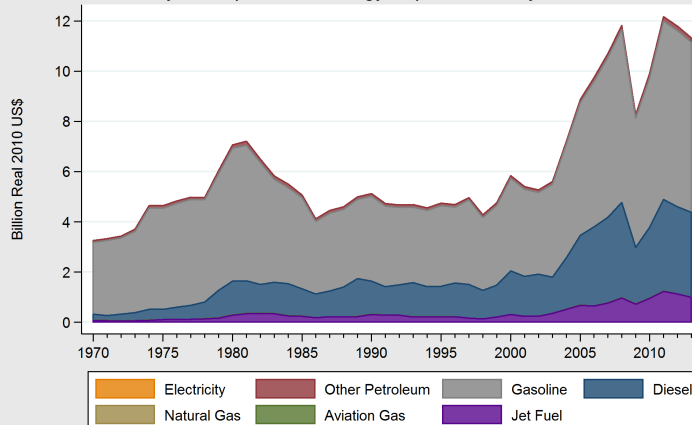
Fuel Type	Million Dollars	1 Year Change
Total	12,104	-2%
Gasoline	7,230	-2%
Diesel	3,608	-1%
Jet Fuel	1,069	-9%
Other Petroleum	193	+6%

Kentucky Transportation Energy Consumption by Fuel, 1960-2013



Kentucky Energy Database, EEC-DEDI, 2015
Data Source: EIA-SEDS

Kentucky Transportation Energy Expenditures by Fuel, 1970-2013



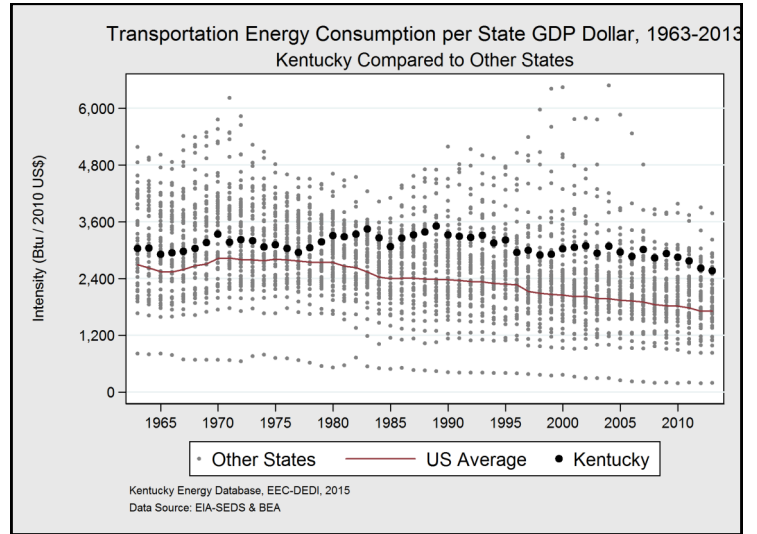
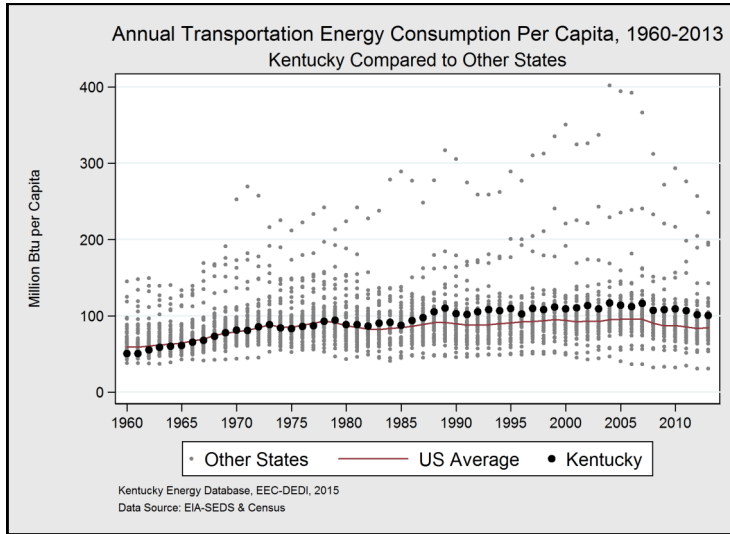
Kentucky Energy Database, EEC-DEDI, 2015
Data Source: EIA-SEDS

Transportation sector energy consumption in Kentucky was 440 trillion Btu in 2013, a one percent decrease compared with 2012. Gasoline was 58 percent of transportation energy consumption in 2013, followed by diesel at 29 percent. Between 6 and 10 percent of all gasoline, and two percent of all diesel, sold in Kentucky was derived from renewable biofuels such as ethanol or biodiesel.

*Natural gas use for transportation is predominantly consumption by pipelines. Vehicle fuel consumption of natural gas in Kentucky is very small; in 2013, it was one billion Btu.

Transportation energy expenditures were approximately \$12.1 billion in Kentucky in 2013. Compared with 2012, transportation energy expenditures decreased by two percent. Gasoline was the largest component of transportation energy expenditures with 60 percent of spending in 2013. Diesel expenditures were 30 percent of transportation energy costs in Kentucky in 2013. (Consumption of natural gas by way of transmission pipelines is not tabulated in terms of transportation sector energy expenditures).

Transportation Energy Intensity



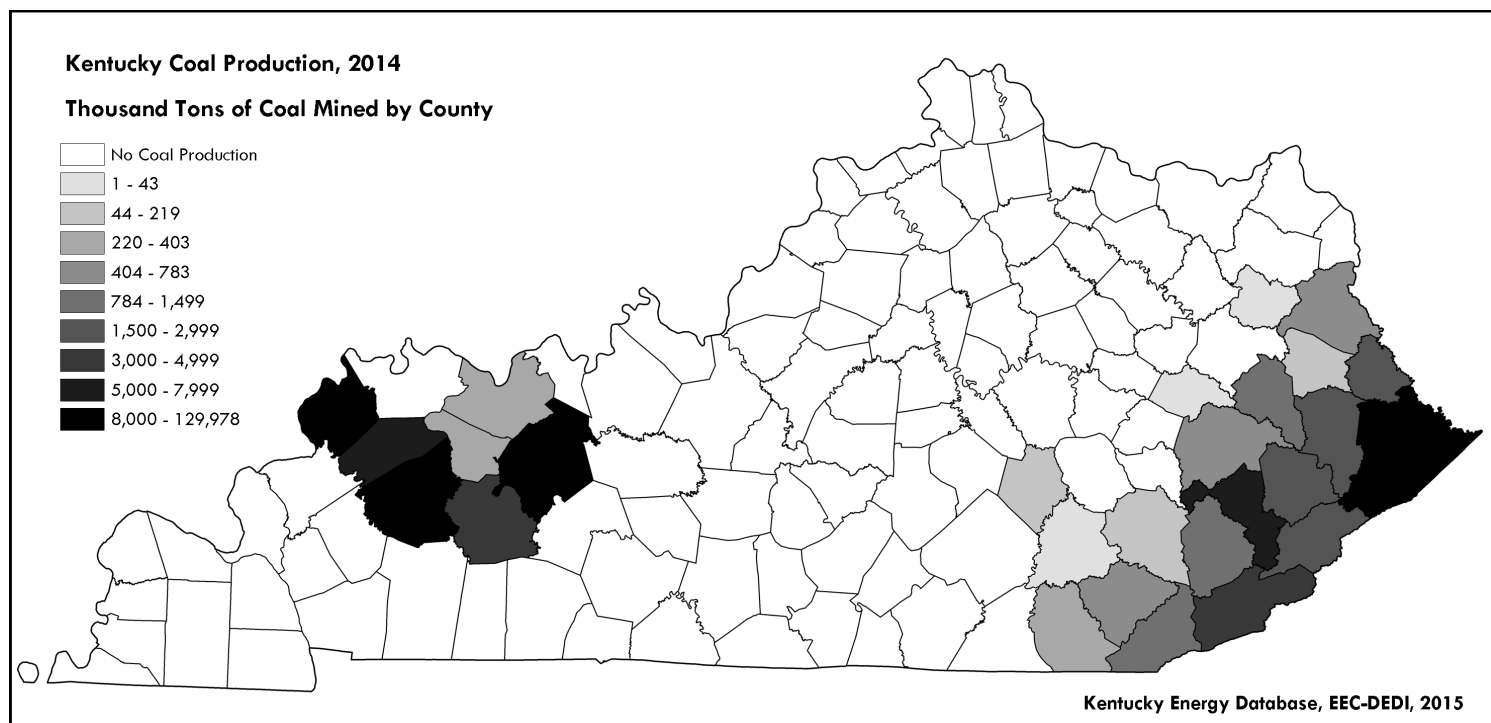
State	MMBtu per Capita	Rank
Alaska	235	1st
Kentucky	100	12th
U.S. Average	84	-
New York	53	50th

In 2013, Kentucky transportation energy consumption per capita decreased by 1.2 percent compared with 2012, which is 12th highest of all states.

State	Btu/\$U.S. GDP	Rank
Mississippi	3,778	1st
Kentucky	2,562	11th
U.S. Average	1,711	-
New York	830	50th

In 2013, Kentucky ranked 11th in terms of transportation energy consumption per dollar of state GDP. Transportation energy intensity decreased by two percent compared with 2012.

Kentucky Coal Production



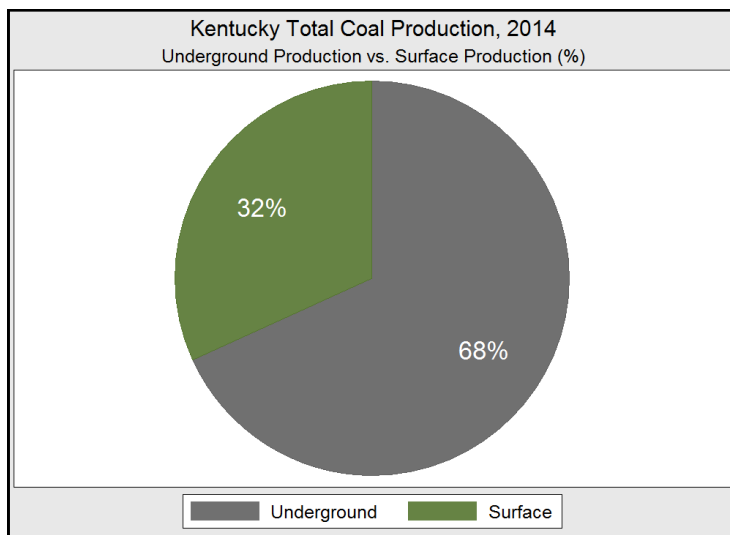
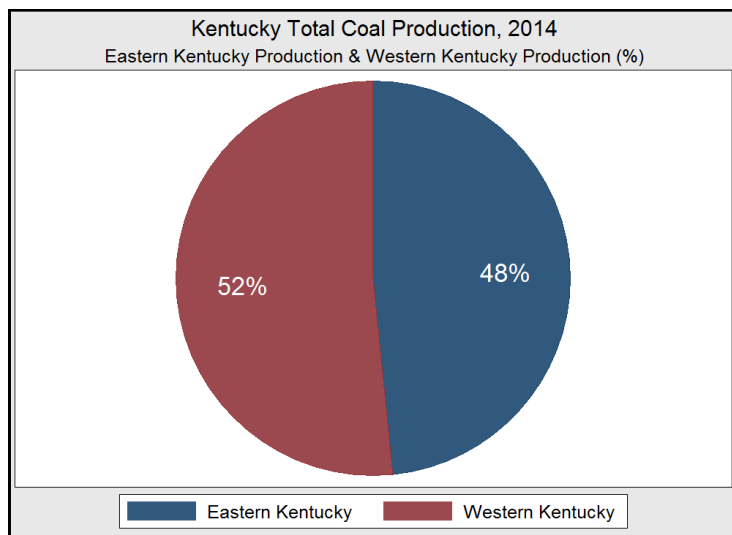
County	Tons	1 Year Change	Percentage
Total	77,427,361	-3.6%	100%
Union	12,977,904	-2.2%	16.8%
Pike	10,373,272	-3.9%	13.4%
Ohio	8,336,969	+1.7%	10.8%
Hopkins	8,080,823	-9.9%	10.4%
Perry	7,475,878	-1.1%	9.7%
Webster	6,398,494	+8.8%	8.3%
Harlan	4,779,629	+4.7%	6.2%
Muhlenberg	3,630,122	-10.9%	4.7%
Floyd	2,528,209	+8.3%	3.3%
Martin	2,043,375	-31.6%	2.6%
Knott	1,990,109	+4.6%	2.6%
Letcher	1,648,782	-25.5%	2.1%
Bell	1,418,107	+22.6%	1.8%

County	Tons	1 Year Change	Percentage
Leslie	1,403,285	-34.3%	1.8%
Magoffin	1,204,438	-22.4%	1.6%
Lawrence	783,698	+21.7%	1.0%
Breathitt	564,817	+213.4%	0.7%
Knox	404,407	+6.4%	0.5%
Whitley	381,602	+33.5%	0.5%
Daviess	323,807	-33.2%	0.4%
McLean	220,910	—	0.3%
Johnson	203,359	-38.6%	0.3%
Clay	174,620	-3.8%	0.2%
Rockcastle	44,336	+229.9%	0.1%
Wolfe	15,540	—	<0.1%
Laurel	12,185	-49.6%	<0.1%
Elliott	8,684	-81.3%	<0.1%

During 2014, coal production in the Commonwealth decreased to 77.4 million tons, the lowest level of recorded annual production since 1962. In 2014, Union County remained the top producer of coal in Kentucky throughout the entire year. Pike County, the largest producer from 1978 to 2011, mined the most in eastern Kentucky.

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

Kentucky Coal Production

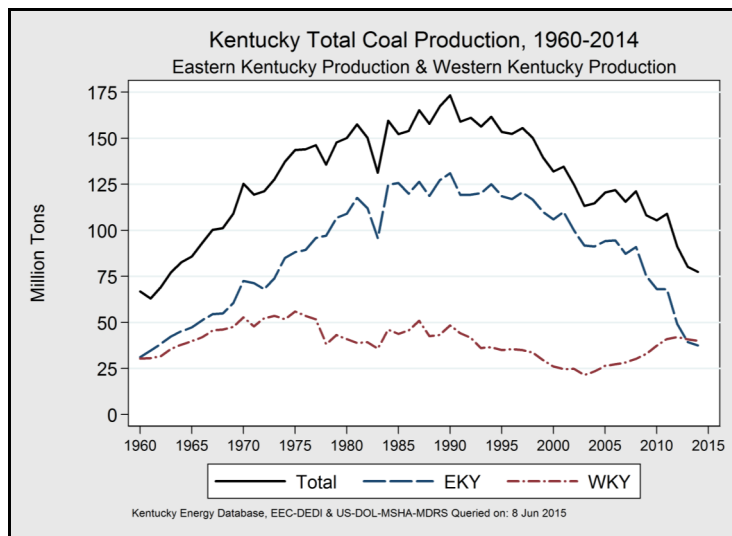


Region	2014 Tonnage	Annual Change
Total	77,427,361	-3.6%
Western Kentucky	39,969,029	-2.2%
Eastern Kentucky	37,458,332	-4.9%

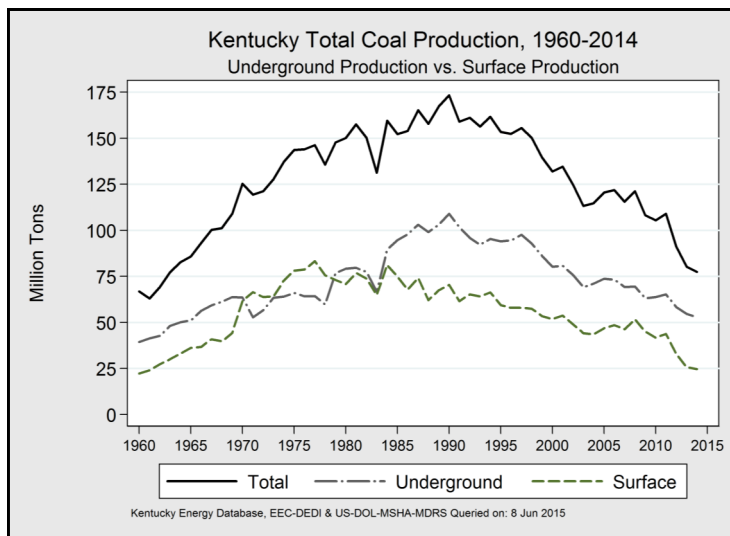
Mine Type	2014 Tonnage	Annual Change
Total	77,427,361	-3.6%
Underground	52,807,276	-3.3%
Surface	24,620,085	-4.0%

Kentucky coal mines produced 77.4 million tons in 2014, a decrease of 3.6 percent from 2013. Production declined in both the eastern and western coalfields in 2014.

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



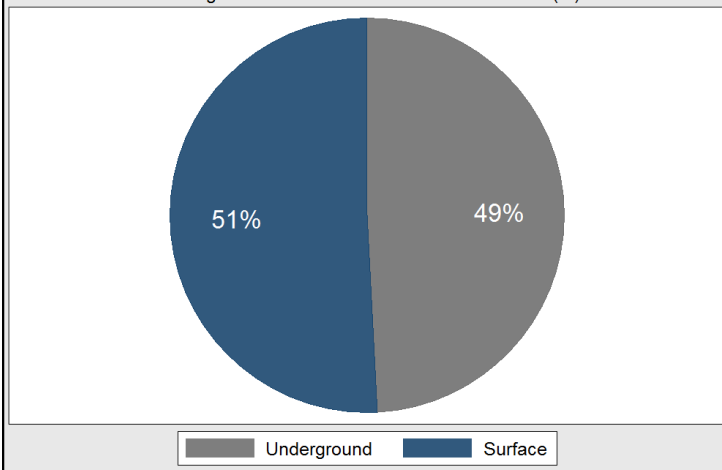
Eastern Kentucky has been the top-producing region in Kentucky since 1912, when eastern Kentucky overtook western Kentucky. Western Kentucky coal mines have produced the majority of coal in the Commonwealth since the third quarter of 2013 and were the main source of Kentucky coal from 1886 to 1911.



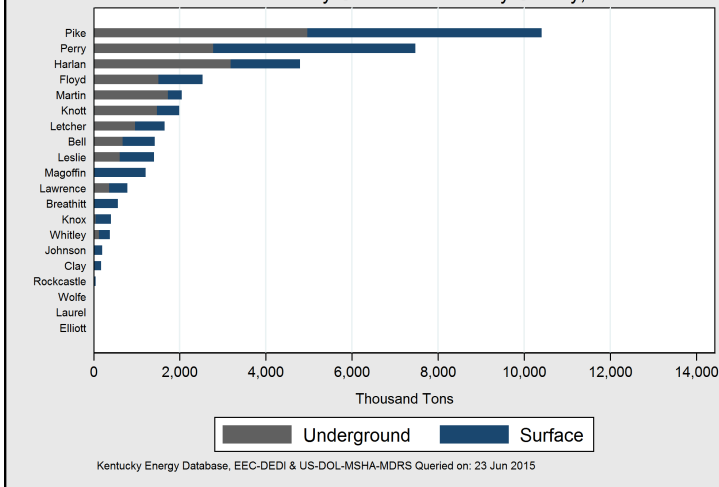
Underground coal mines produced 52.8 million tons of coal, or 68 percent of total Kentucky production in 2014, a decrease of 3.3 percent from 2013. Surface mining operations, which mined 24.6 million tons of coal, decreased production by four percent since 2013. Production declines in both surface and underground mining since 1990 have been concentrated in the eastern coalfield.

Eastern Kentucky Coal Production

Eastern Kentucky Total Coal Production, 2014
Underground Production vs. Surface Production (%)



Eastern Kentucky Coal Production by County, 2014

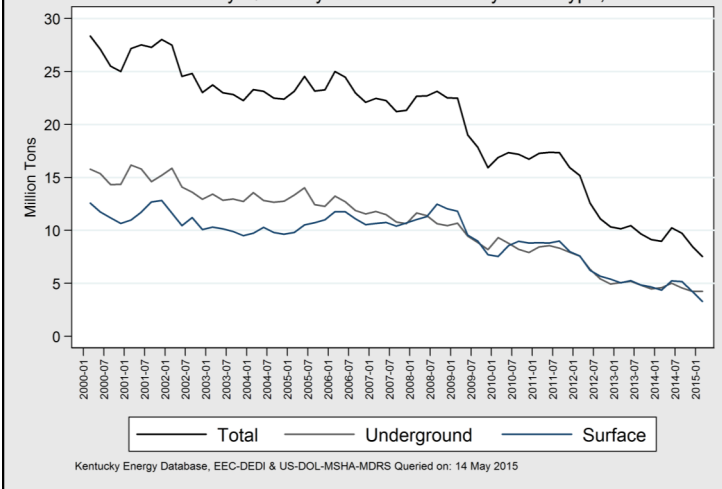


Mine Type	2014 Tonnage	Annual Change
Total	37,458,332	-4.9%
Surface	19,044,387	-3.9%
Underground	18,413,945	-5.9%

Eastern Kentucky coal production decreased in 2014 by 4.9 percent to 37.5 million tons of coal—51 percent from surface mines and 49 percent from underground mines.

Eastern County	2014 Tonnage	Annual Change
Pike	10,373,272	-3.9%
Perry	7,475,878	-1.1%
Harlan	4,779,629	+4.7%
Floyd	2,528,209	+8.3%
Martin	2,043,375	-31.6%
Knott	1,990,109	+4.6%
Letcher	1,648,782	-25.5%
Bell	1,418,107	+22.6%
Leslie	1,403,285	-34.3%
Magoffin	1,204,438	-22.4%
Lawrence	783,698	+21.7%
Breathitt	564,817	+213.4%
Knox	404,407	+6.4%
Whitley	381,602	+33.5%
Johnson	203,359	-38.6%
Clay	174,620	-3.8%
Rockcastle	44,336	+229.9%
Wolfe	15,540	—
Laurel	12,185	-49.6%
Elliott	8,684	-81.3%

Eastern Kentucky Quarterly Coal Production by Mine Type, 2000-2015

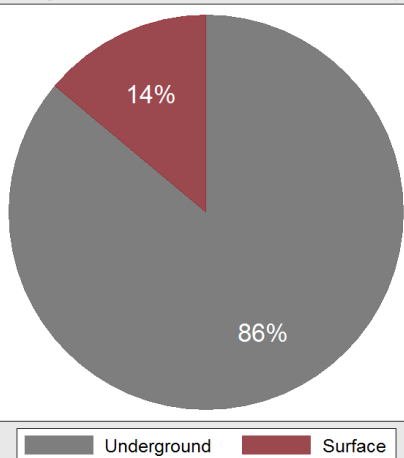


Production decreased at both surface and underground mining operations in 2014 by 3.9 and 5.9 percent, respectively. Eastern Kentucky coal production has decreased by 65 percent since 2000 and by 71 percent since peak Kentucky production in 1990.

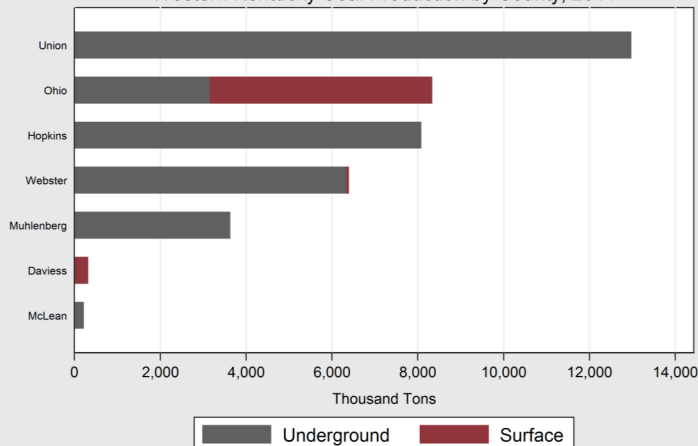
Pike County yielded the most coal of any county in eastern Kentucky and was the second-largest producing county overall, mining approximately 10.4 million tons during 2014. Pike County was the highest coal-producing county in Kentucky from 1978 to 2012 and produced the most coal of any county in Kentucky history in 1996 with 36 million tons of coal mined.

Western Kentucky Coal Production

Western Kentucky Total Coal Production, 2014
Underground Production vs. Surface Production (%)



Western Kentucky Coal Production by County, 2014



Kentucky Energy Database, EEC-DEDI & US-DOL-MSHA-MDRS Queried on: 23 Jun 2015

Mine Type	2014 Tonnage	Annual Change
Total	39,969,029	-2.2%
Underground	34,393,331	-1.9%
Surface	5,575,698	-4.4%

Western Kentucky mined 40 million tons in 2014, a decrease of 2.2 percent from the year prior. Of this, 86 percent of regional coal production was from underground mines.

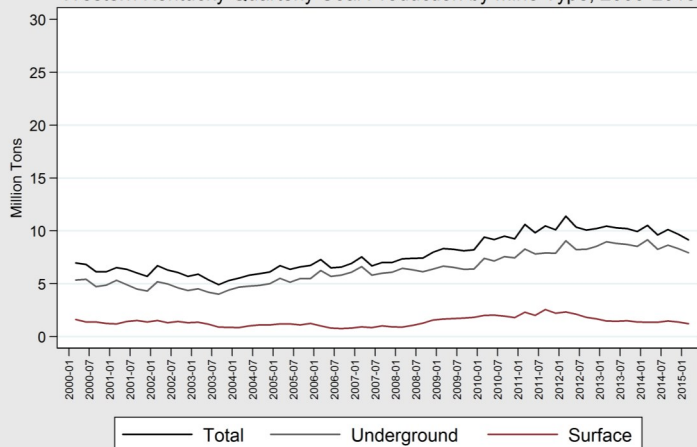
Western County	2014 Tonnage	Annual Change
Union	12,977,904	-2.2%
Ohio	8,336,969	+1.7%
Hopkins	8,080,823	-9.9%
Webster	6,398,494	+8.8%
Muhlenberg	3,630,122	-10.9%
Daviess	323,807	-33.2%
McLean	220,910	—

Union County remained Kentucky's leading coal producing county, mining nearly 13 million tons during 2014, though production in the county decreased by two percent from the year prior.

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

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

Western Kentucky Quarterly Coal Production by Mine Type, 2000-2015

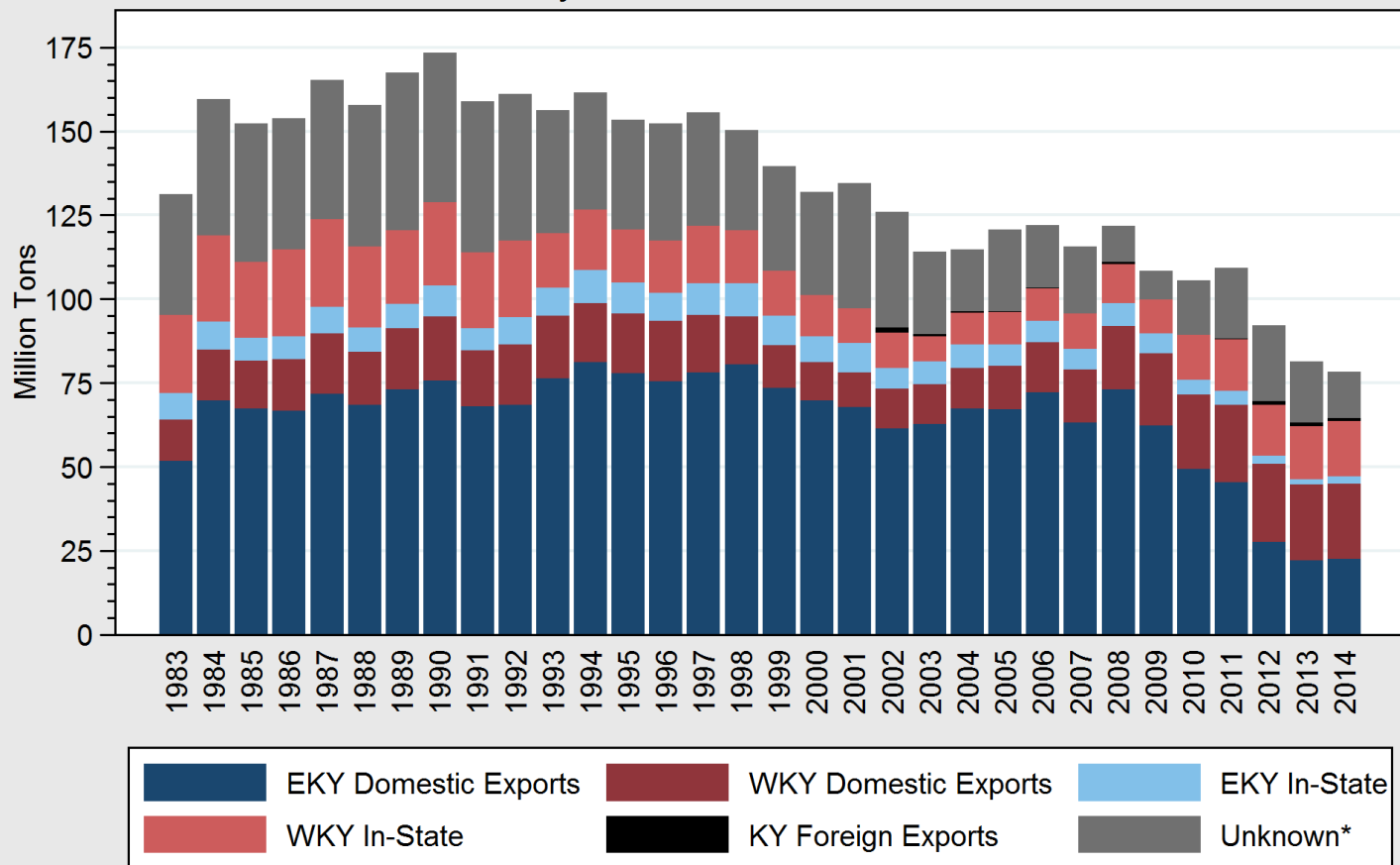


Kentucky Energy Database, EEC-DEDI & US-DOL-MSHA-MDRS Queried on: 14 May 2015

Underground mining in western Kentucky decreased by two percent in 2014, while surface mining decreased by 4.4 percent. Western Kentucky annual coal production has decreased by 17.4 percent since 1990, but has increased by 53.4 percent since 2000.

Kentucky Coal Distribution, 2014

Kentucky Coal Distribution, 1983-2014



Kentucky Energy Database, EEC-DEDI, 2015

*Combination of Industrial, Institutional, & Unknown

Coal Distribution by Destination, 2014

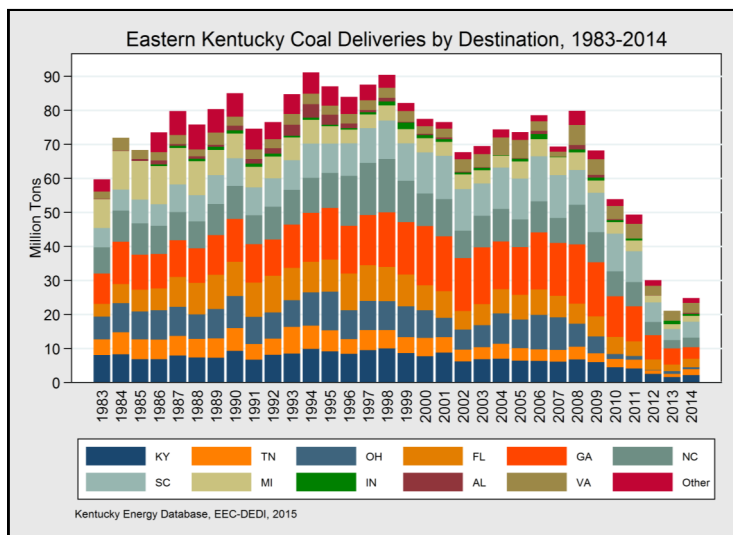
Coal and Destination	Thousand Tons	Percentage
Total Production	77,427	100%
EKY Out-of-State†	22,600	29%
WKY In-State	22,275	29%
WKY Out-of-State†	16,448	21%
Industrial/Unknown	12,981	17%
EKY In-State	2,183	3%
Foreign Exports	940	1%

†Totals labeled "Out-of-State" represent shipments of coal to consumers within the United States, and may be considered domestic exports. A difference of approximately 13 million tons exists between total production and total distribution in the table above—a product of coal stockpiling, lags in data reporting, calendar year parameters, comparison of statistics across multiple data sources, and reporting errors.

The annual distribution of coal mined in Kentucky is a combination of in-state consumers, out-of-state power plants, factories, and foreign exports. Demand from out-of-state consumers has consistently been the largest component of Kentucky coal deliveries since 1990.

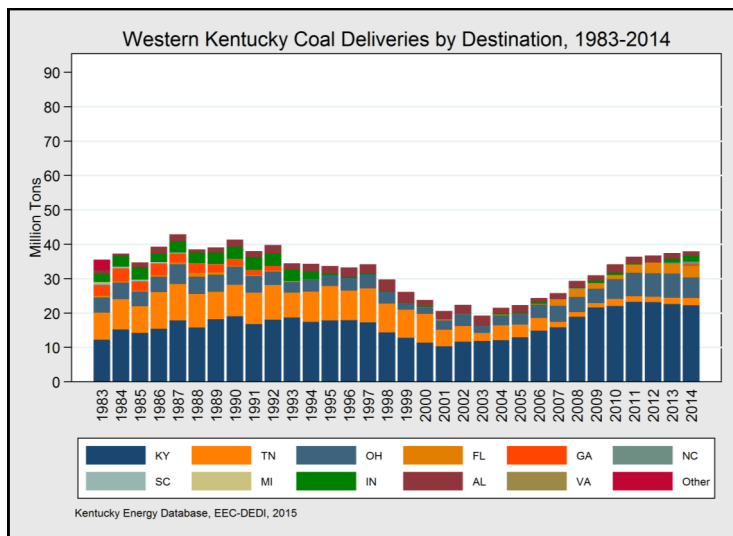
Eastern Kentucky coal has predominantly been sold to states in the southeastern United States. Conversely, western Kentucky coal has mostly been mined for in-state consumption. Kentucky remains the single-largest consumer of Kentucky coal, increasing its consumption as other states have decreased their consumption of coal from Kentucky. Big Sandy (64%), Cooper (22%), and E. W. Brown (10%) power plants consume most of the eastern Kentucky coal consumed in Kentucky. Known foreign exports in 2014 reached 940 thousand tons, or 1.5 percent of known coal deliveries, and decreased by 18 percent from the year prior.

Kentucky Coal Deliveries



Known shipments of steam coal from eastern Kentucky to power plants within the United States increased by 4.4 percent in 2014 from 23.7 to 24.8 million tons. The largest markets for eastern Kentucky coal are traditionally located in the southeast, and were led by South Carolina, Georgia, and Virginia during the year. Overall, coal mined in the region was shipped to 15 different states in 2014.

Eastern Kentucky Coal Deliveries, 2014		
Destination	Tons	Percentage
Total	24,783	100%
South Carolina	4,700	19.0%
Georgia	3,421	13.8%
Virginia	2,906	11.7%
North Carolina	2,767	11.2%
Florida	2,462	9.9%
Kentucky	2,183	8.8%
Michigan	1,703	6.9%
Tennessee	1,681	6.8%
West Virginia	1,261	5.1%
Ohio	631	2.5%
Indiana	617	2.5%
Alabama	282	1.1%
Maryland	71	0.3%
New York	56	0.2%
Mississippi	43	0.2%
Wisconsin	0.5	<0.1%



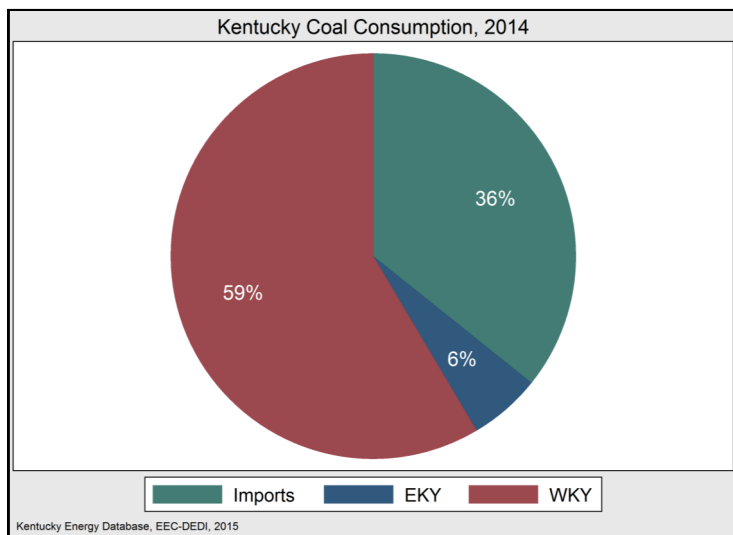
Known shipments of steam coal from western Kentucky to power plants within the United States increased by one percent in 2014 from 38.3 to 38.7 million tons. The largest market for western Kentucky coal is consistently Kentucky, which represented 57.5 percent of western Kentucky coal deliveries during the year. Overall, coal mined in western Kentucky was shipped to 11 different states in 2014. Western Kentucky shipped 8.2 million more tons than in 2008, or an increase of 27 percent.

Western Kentucky Coal Deliveries, 2014		
Destination	Tons	Percentage
Total	38,723	100%
Kentucky	22,275	57.5%
Florida	5,985	15.5%
Ohio	3,285	8.5%
Tennessee	2,115	5.5%
Indiana	1,731	4.5%
Alabama	1,273	3.3%
North Carolina	732	1.9%
West Virginia	661	1.7%
Georgia	536	1.4%
Mississippi	128	0.3%
Illinois	3	0.0%

Kentucky Coal Deliveries, 2014		
Origin	Thousand Tons	1 Year Change
Total	62,506	+2.3%
WKY	38,723	+1.0%
EKY	23,783	+4.4%

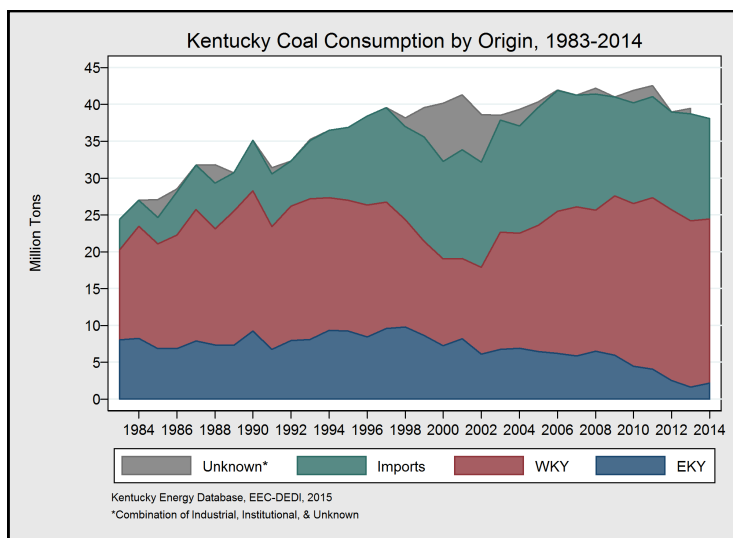
Total Kentucky coal deliveries have decreased by 46.9 million tons, or by 43 percent since 2008, primarily because of reduced shipments from eastern Kentucky.

Kentucky In-State Coal Consumption

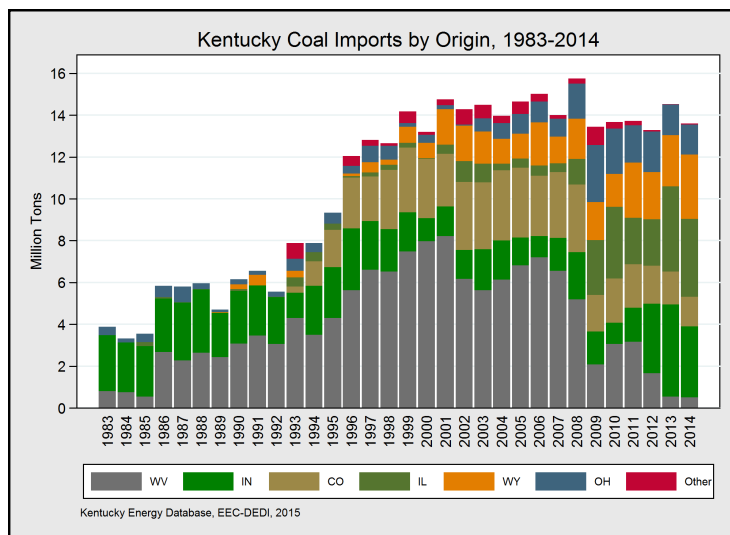


Origin of Coal	Thousand Tons	1 Year Change
Total	38,063	-1.7%
Western Kentucky	22,275	-1.3%
Imports	13,605	-6.3%
Eastern Kentucky	2,183	+34.2%

All values have been rounded to the nearest thousand tons.



Coal consumption in Kentucky decreased by 1.7 percent in 2014 to 38.1 million tons. Coal mined in western Kentucky was by far the largest source of coal used within the Commonwealth, representing 59 percent of coal consumption. Conversely, coal from eastern Kentucky accounted for six percent of the coal consumed in Kentucky in 2014. Kentucky imported coal from eight different states during 2014, totaling 13.6 million tons, or 35 percent of coal consumption.

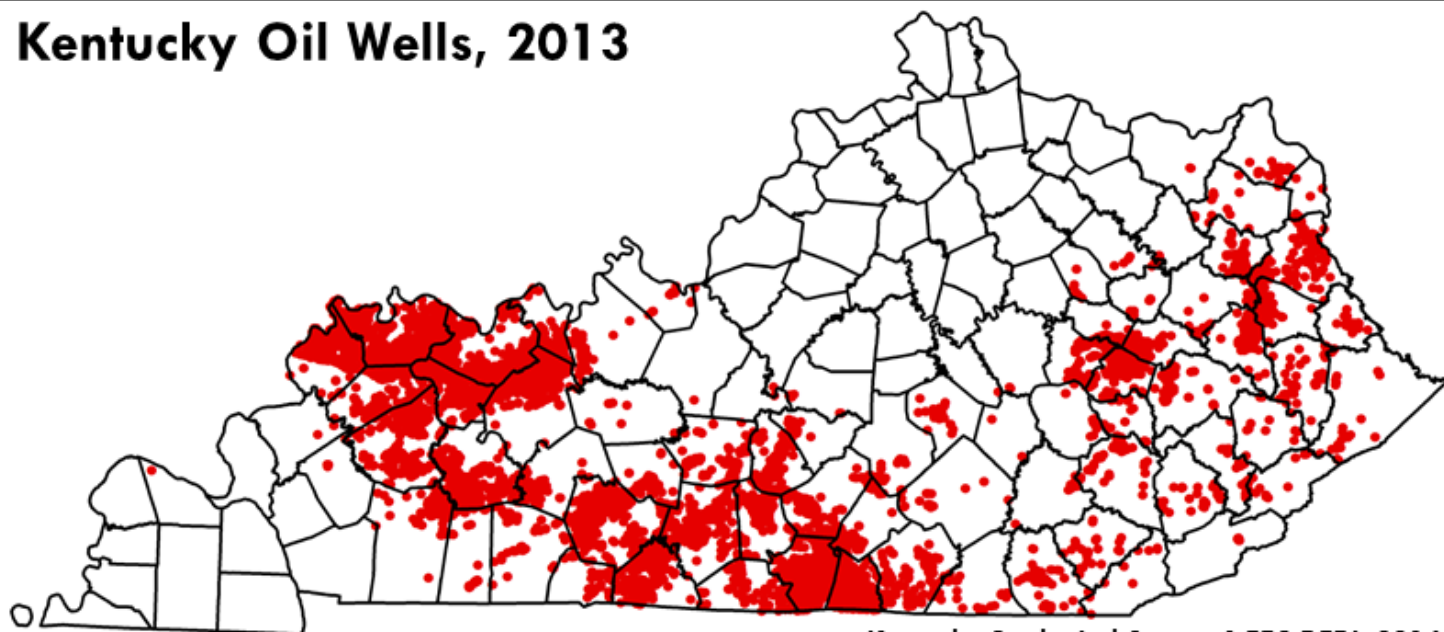


Imported Coal	Thousand Tons	1 Year Change
Total Imports	13,605	-6.3%
Illinois	3,722	-8.6%
Indiana	3,395	-23.1%
Wyoming	3,088	+26.7%
Ohio	1,432	-3.5%
Colorado	1,408	-10.3%
West Virginia	505	-6.4%
Pennsylvania	52	—
Tennessee	3	+70.5%

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

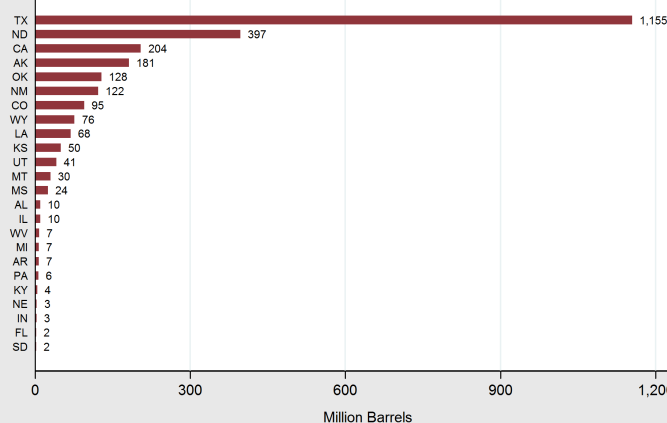
Kentucky Crude Oil Production

Kentucky Oil Wells, 2013



Kentucky Geological Survey & EEC-DEDI, 2014

Crude Oil Production by Producing States, 2014

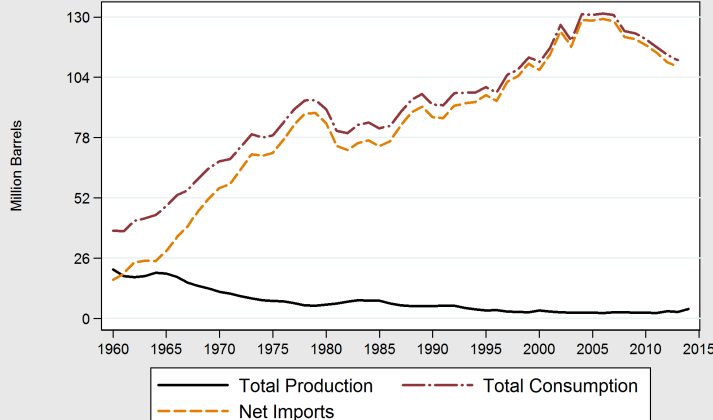


Kentucky Energy Database, EEC-DEDI, 2015
Data Source: EIA-SEDS

Production	2014 Million Barrels	Rank
Texas	1,155	1st
Kentucky	4.1	20th

Crude oil production in Kentucky increased by 28 percent in 2013 to produce 4.1 million barrels. Annual crude oil production in Kentucky had remained between 2.4 and 2.9 million barrels since the year 2000, but has recently increased with more widespread application of horizontal wells and nitrogen foam and hydraulic fracture stimulations. Despite this increase, in-state crude oil production contributes to less than one percent of total U.S. production.

Kentucky Petroleum Consumption & Production, 1960-2014



Kentucky Energy Database, EEC-DEDI, 2015
Data Source: EIA-SEDS

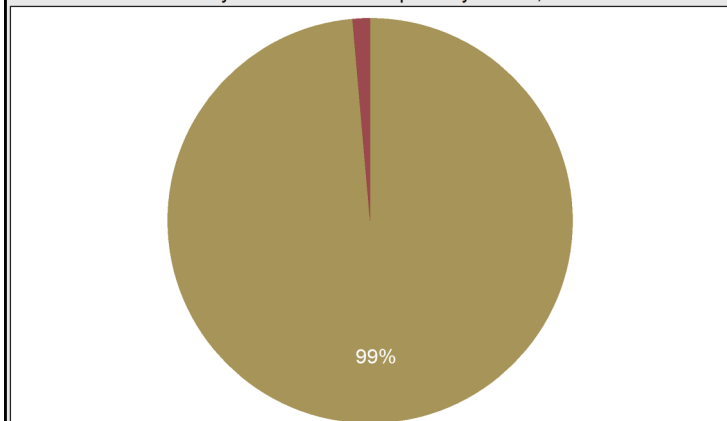
Though Kentucky is a producer of petroleum, on average it has imported 88 percent of petroleum supplies since 1960. As statewide consumption has increasingly outstripped production, petroleum imports have increased from 44 to 98 percent between 1960 and 2013. Since 2006, petroleum consumption has reversed trends and decreased by 15 percent.

Additional information on the location of oil fields and wells is available from the Kentucky Geological Survey Geologic Map Information Service at:

<http://kgs.uky.edu/kgsmap/kgsgeoserver/viewer.asp>

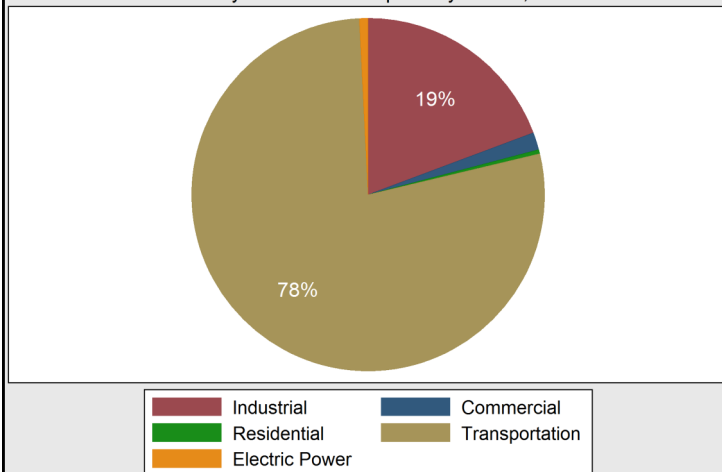
Kentucky Liquid Fuel Consumption

Kentucky Gasoline Consumption by Sector, 2013



Kentucky Energy Database, EEC-DEDI, 2015

Kentucky Diesel Consumption by Sector, 2013

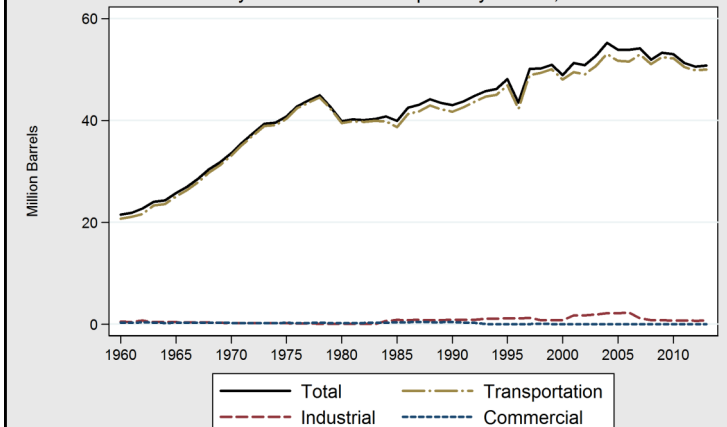


Kentucky Energy Database, EEC-DEDI, 2015

Sector	Thousand Barrels	Percentage
Total	50,759	100%
Transportation	50,016	99%
Industrial	699	1%
Commercial	44	<1%

Sector	Thousand Barrels	Percentage
Total	28,288	100%
Transportation	22,051	78%
Industrial	5,457	19%
Commercial	451	2%
Electric Power	222	1%
Residential	106	<1%

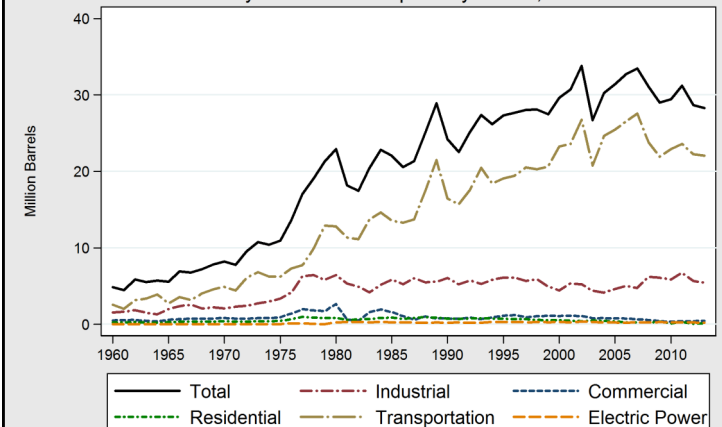
Kentucky Gasoline Consumption by Sector, 1960-2013



Kentucky Energy Database, EEC-DEDI, 2015
Data Source: EIA-SEDS

In 2013, Kentucky consumed 50.8 million barrels of gasoline, with almost 99 percent used for transportation. Compared with 2012, total gasoline consumption in Kentucky increased by less than one percent.

Kentucky Diesel Consumption by Sector, 1960-2013

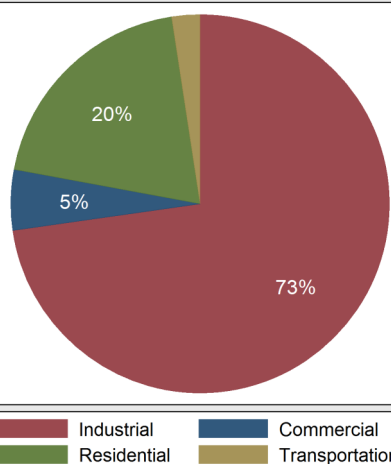


Kentucky Energy Database, EEC-DEDI, 2015
Data Source: EIA-SEDS

In 2013, Kentucky consumed 28.3 million barrels of diesel fuel, a 13 percent decrease in overall consumption from 2012. The vast majority of diesel consumption—78 percent—was consumed by the transport sector, mostly for trucking on highways, marine vessels, and railroad consumers. Industrial users, predominately manufacturing facilities and farms, consumed 19 percent. The commercial, residential, and electric power sectors made up the remaining three percent in 2013.

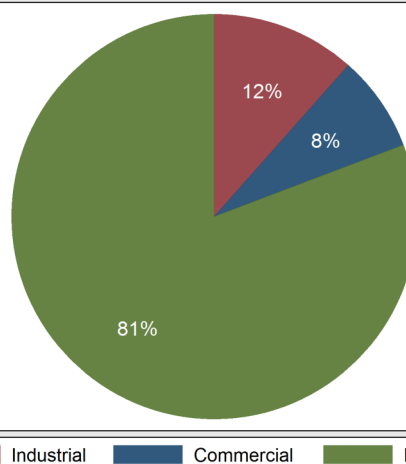
Kentucky Liquid Fuel Consumption

Kentucky Propane Consumption by Sector, 2013



Kentucky Energy Database, EEC-DEDI, 2015

Kentucky Kerosene Consumption by Sector, 2013

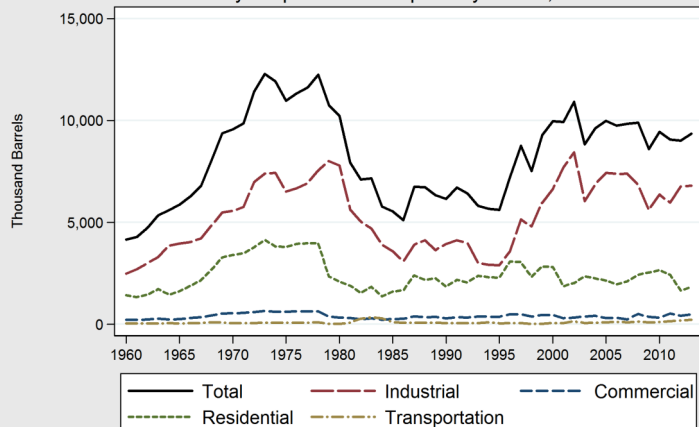


Kentucky Energy Database, EEC-DEDI, 2015

Sector	Thousand Barrels	Percentage
Total	9,358	100%
Industrial	6,808	73%
Residential	1,840	20%
Commercial	483	5%
Transportation	227	2%

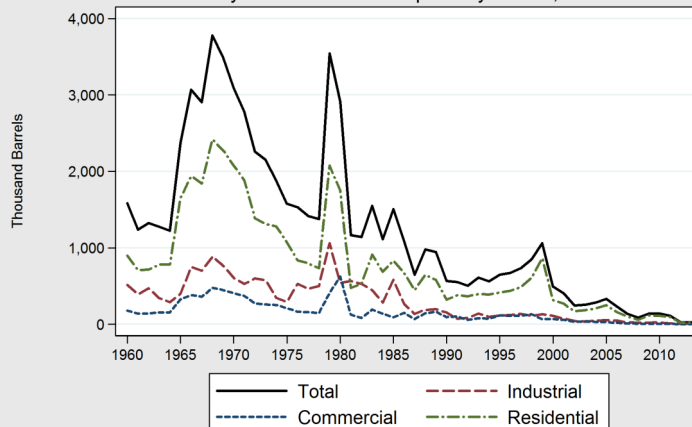
Sector	Thousand Barrels	Percentage
Total	26	100%
Residential	21	81%
Industrial	3	12%
Commercial	2	8%

Kentucky Propane Consumption by Sector, 1960-2013



Kentucky Energy Database, EEC-DEDI, 2015
Data Source: EIA-SEDS

Kentucky Kerosene Consumption by Sector, 1960-2013



Kentucky Energy Database, EEC-DEDI, 2015
Data Source: EIA-SEDS

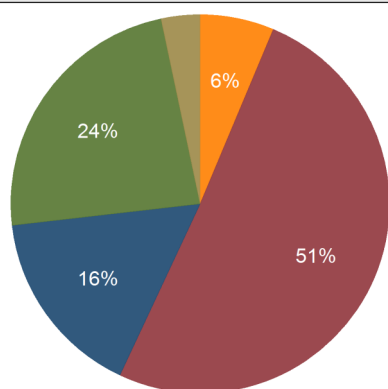
In 2013, more than nine million barrels of liquid petroleum gas (LPG), which is mostly propane, but also includes ethane and butane, was consumed in Kentucky. Since 2012, consumption decreased by four percent. With 73 percent of total consumption, the industrial sector was the largest end-user of LPG, followed by the residential sector with 20 percent. The commercial and transportation sectors comprised the remaining eight percent of LPG consumption in 2013.

In 2013, Kentucky consumed 26 thousand barrels of kerosene. The residential sector was by far the largest consumer of kerosene, consuming 81 percent of the total for home heating. The industrial sector was the next largest consumer with 12 percent of consumption. The commercial sector constituted the remaining eight percent. Compared with 2012, Kentucky kerosene consumption remained static.

*These quantities exclude kerosene-type jet fuel, which is itemized in transportation energy consumption.

Kentucky Natural Gas Consumption

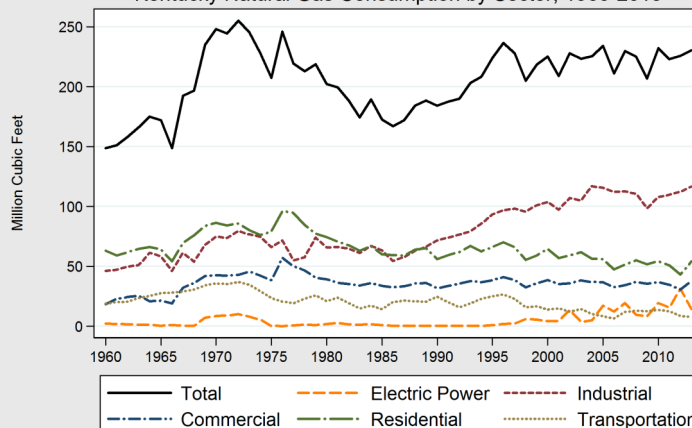
Kentucky Natural Gas Consumption by Sector, 2013



■ Electric Power
 ■ Industrial
 ■ Commercial
 ■ Residential
 ■ Transportation*

Kentucky Energy Database, EEC-DEDI, 2015

Kentucky Natural Gas Consumption by Sector, 1960-2013



Kentucky Energy Database, EEC-DEDI, 2015
Data Source: EIA-SEDS

Sector	Million Cubic Feet	1 Year Change
Total	230,304	+2%
Industrial	116,630	+4%
Residential	54,135	+26%
Commercial	37,395	+22%
Electric Power	14,536	-53%
Transportation*	7,608	-12%

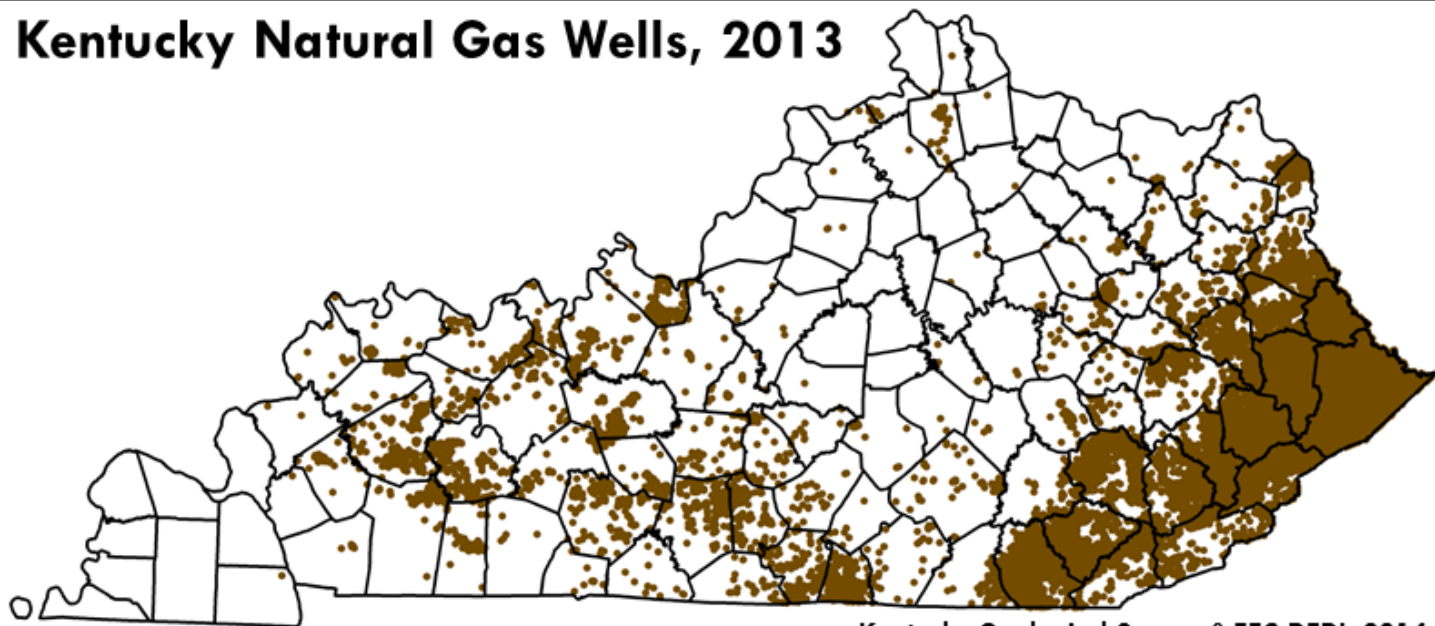
*Natural gas consumption by the transportation sector is the summation of vehicle fuel usage and natural gas used in the movement of natural gas resources through transmission and distribution pipelines. In Kentucky in 2013, direct vehicle fuel usage of natural gas was approximately one million cubic feet. The remainder (7,607 MMcf) was consumed as natural gas pipeline fuel.

Kentucky's consumption of natural gas grew by two percent in 2013 to consume a total of 230,304 million cubic feet, approximately one percent of United States total consumption. The industrial sector was by far the largest consumer of natural gas, using 51 percent of the state total. The residential sector was the next largest consumer of natural gas with 24 percent of consumption. The electric power sector—with six percent of total natural gas consumption in 2013—is approximately the same as 2011 levels. Consumption of natural gas for electricity will likely increase in the future, as natural gas combined cycle (NGCC) plants replacing coal-fired boilers at the Cane Run, Big Sandy, and Paradise power plants and NGCC turbines are installed at Riverside. The commercial and transportation sectors consumed 16 percent and three percent of statewide consumption respectively.

The commercial and residential sectors consume natural gas to generate heat while industrial consumers, which include agriculture, primarily use natural gas as a process feedstock in manufacturing operations. As a result, residential and commercial consumption follows a seasonal pattern, with notable fluctuation due to weather while industrial consumption is more consistent throughout the year. The sizeable consumption by the industrial sector is reflective of the large presence of industrial firms within Kentucky.

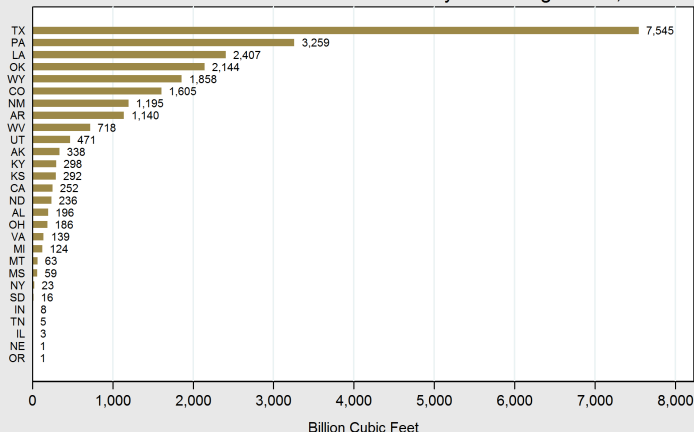
Kentucky Natural Gas Production

Kentucky Natural Gas Wells, 2013



Kentucky Geological Survey & EEC-DEDI, 2014

Annual Marketed Natural Gas Production by Producing States, 2013



Kentucky Energy Database, EEC-DEDI, 2015
Data Source: EIA-SEDS

State	2013 BCF	Rank
Texas	~8,200	1st
Kentucky	~300	18th

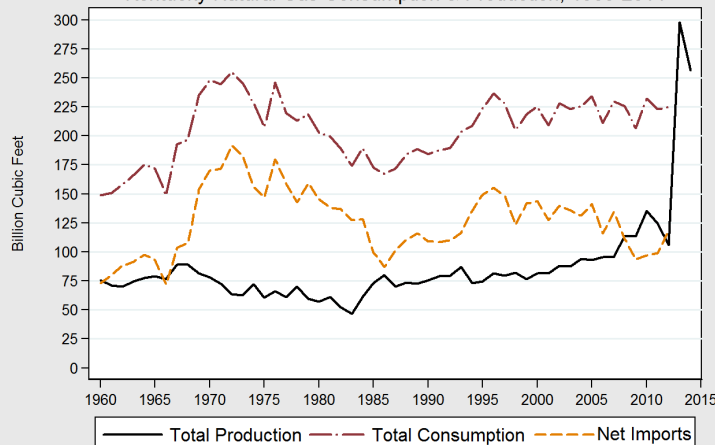
The Commonwealth of Kentucky produced a record 257 billion cubic feet (Bcf) of natural gas in 2014, a 146 percent increase in natural gas production from 2012, but a 14 percent decrease from 2013. As shown in the map above, the majority of economically extractable natural gas is located in eastern Kentucky. Given a favorable price of natural gas, statewide production has the capacity to increase substantially, but production is expected to remain less than other states.

Though Kentucky is a natural gas producer, the state only began net exporting natural gas in 2012. Prior to 2012, Kentucky was a net importer of natural gas. During this period, Kentucky needed to import between 42 percent and 75 percent of annual natural gas consumption, as statewide consumption has outstripped statewide production.

Additional information on the location of natural gas fields and wells is available from the Kentucky Geological Survey Geologic Map Information Service at:

<http://kgs.uky.edu/kgsmap/kgsgeoserver/viewer.asp>

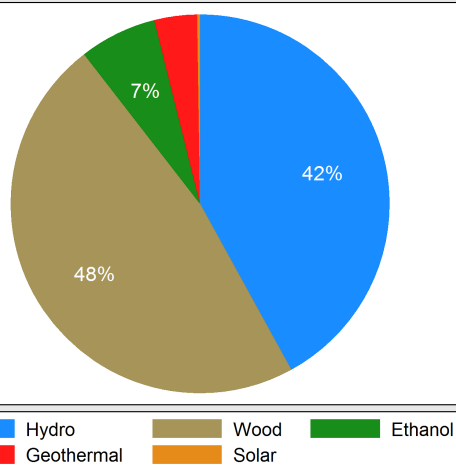
Kentucky Natural Gas Consumption & Production, 1960-2014



Kentucky Energy Database, EEC-DEDI, 2015

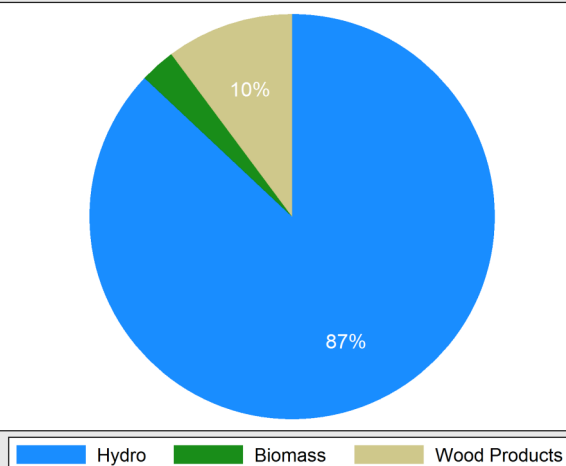
Kentucky Renewable Energy

Kentucky Renewable Energy Production by Fuel Type, 2013



Kentucky Energy Database, EEC-DEDI, 2015

Kentucky Renewable Electricity Generation by Fuel Type, 2014

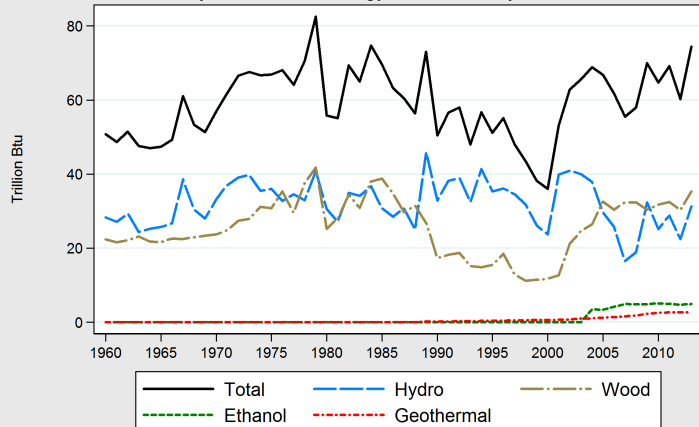


Kentucky Energy Database, EEC-DEDI, 2015

Fuel Type	Billion Btu	Percentage
Total	74,408	100%
Wood & Biomass	35,346	48%
Hydroelectric*	31,249	42%
Ethanol†	4,913	7%
Geothermal	2,712	3%
Solar	188	<1%

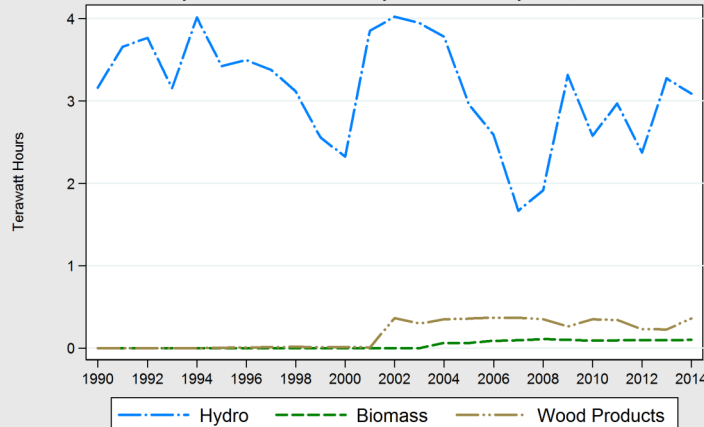
Fuel Type	Gigawatt Hours	1 Year Change
Total	3,551	-1%
Hydroelectric*	3,090	-6%
Woody Biomass	361	+58%
Biomass	100	+1%

Kentucky Renewable Energy Production by Fuel, 1960-2013



Kentucky Energy Database, EEC-DEDI, 2015
Data Source: EIA-SEDS

Kentucky Renewable Electricity Generation by Fuel, 1990-2014



Kentucky Energy Database, EEC-DEDI, 2015
Data Source: EIA Electric Power Annual

In 2012, Kentucky produced 74 trillion Btu of energy from renewable resources, a 23 percent increase compared with 2012. Year-to-year fluctuations are mostly due to variations in hydroelectric power, which itself is a reflection of rainfall. Wood and biomass waste was almost half of all renewable energy produced in Kentucky in 2013 with hydroelectric producing 42 percent, and the rest 10 percent.

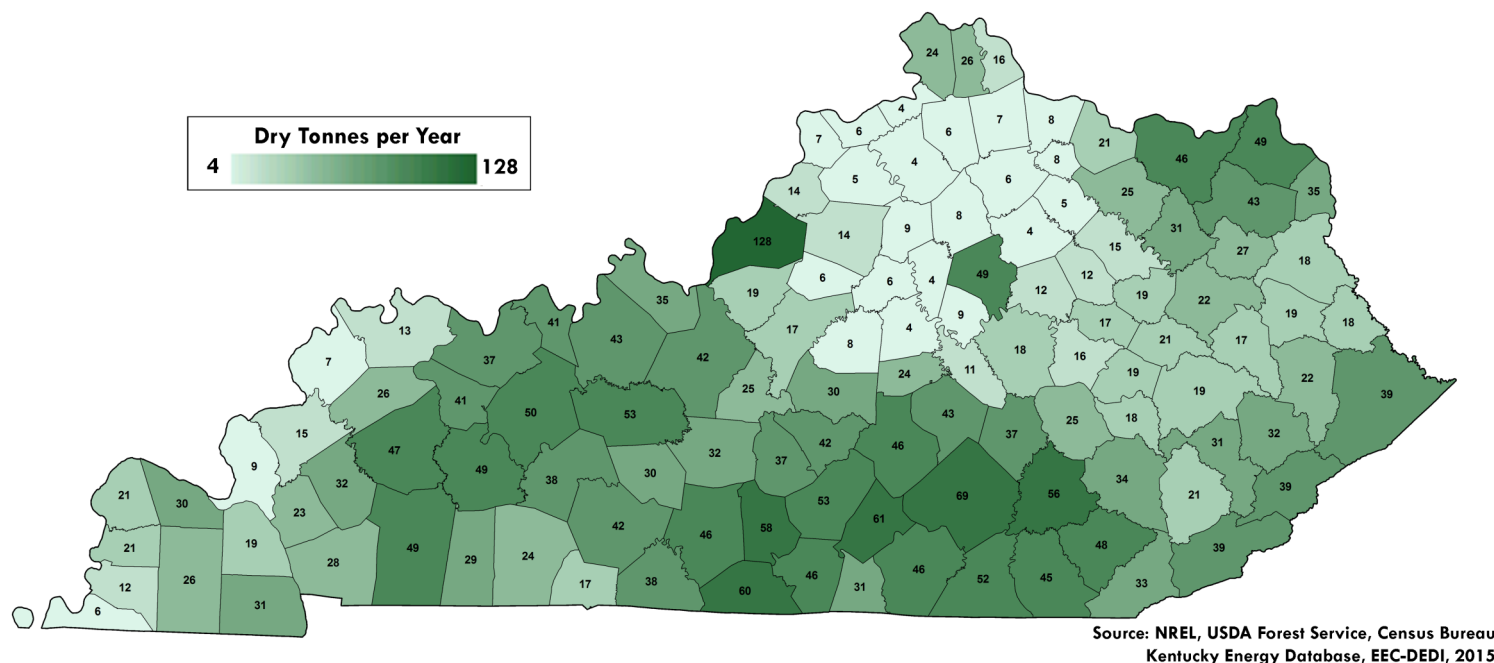
†Ethanol includes the biomass inputs used in the production of ethanol. These data exclude the energy losses associated with making ethanol and the co-products gleaned during production and thereafter sold.

Hydroelectric power generated 87 percent of renewable electricity in Kentucky in 2014, or 3,551 gigawatt-hours of electricity. Total renewable electricity generation decreased by one percent compared with 2013 as hydroelectric generation decreased from less rainfall from the year prior.

*Hydroelectric generation is directly accounted through gigawatt-hour consumption, whereas hydroelectric production (billion Btu) is a calculated fossil fuel displacement conversion, or the amount of fossil fuel energy required to generate an equal amount of electricity.

Kentucky Biomass Resource Potential

Woody Biomass Resources, 2014



Kentucky has considerable existing biomass resources and areas suitable for development in every region of the state. Kentucky's climate provides an environment in which a variety of renewable energy sources can be produced, including woody biomass resources and crop harvests. The map above displays sustainably harvested woody biomass from primary and secondary wood mill residues, urban wood waste, and forest residues. Mill residues are the wood scraps, materials, and bark generated at wood product manufacturers, which are predominant in the southern and western part of Kentucky. Urban wood waste includes utility tree removal and trimming as well as trees removed for construction. Urban wood waste is most common near Louisville, Lexington, northern Kentucky, Elizabethtown, and Bowling Green. Forest Residues are the unused parts of trees left after logging and exist in southern, eastern, and western Kentucky.

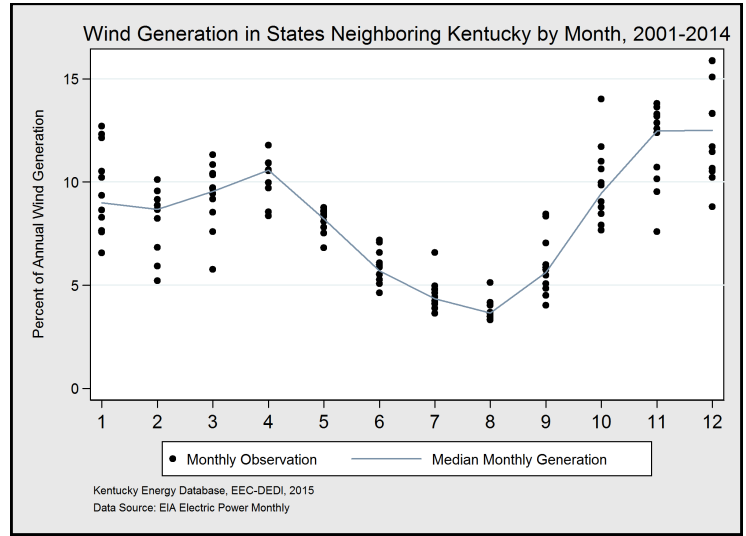
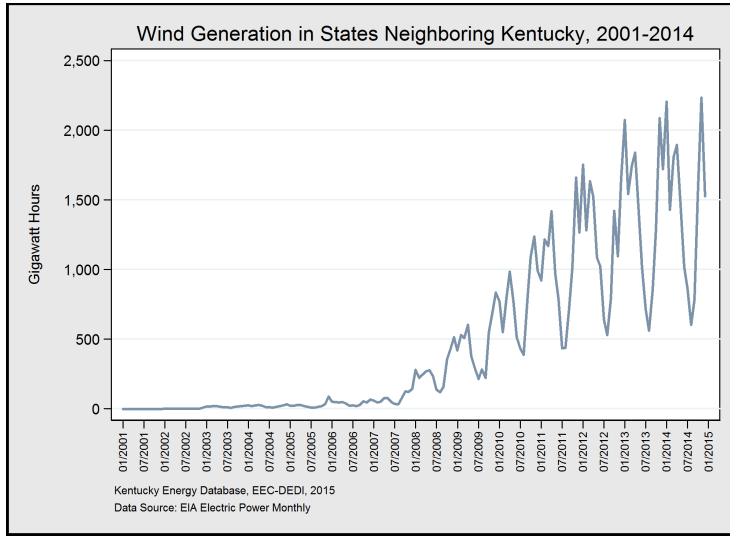
Under proper management, biomass resources can provide annual yields of primary energy commodities that can be converted into liquid fuels or electricity. In Kentucky, the refinement of biodiesel and ethanol from soybeans and corn grown on Kentucky's cropland is the most prominent

source of biomass-based energy production. During 2013, the state produced more than 861 thousand barrels of ethanol. Existing production and refinement capacity coupled with infrastructure assets that include interstates, navigable rivers, railroads, and other energy industries makes Kentucky an ideal location for future development.

Beyond biofuel production, Kentucky also utilizes biomass resources to generate electricity on an annual basis. For example, in 2014 wood, wood wastes, crop residues, and landfill gas resources generated 361 gigawatt-hours of electricity in Kentucky. However, this biomass-based electricity generation remains less than one percent of total electricity generation in Kentucky, and reflects the current market challenges faced by biomass commodities.

Many of Kentucky's universities are involved in research efforts that are designed to test the scalability of various biomass projects and promote the commercialization of existing biomass resources.

Kentucky Wind Power Potential

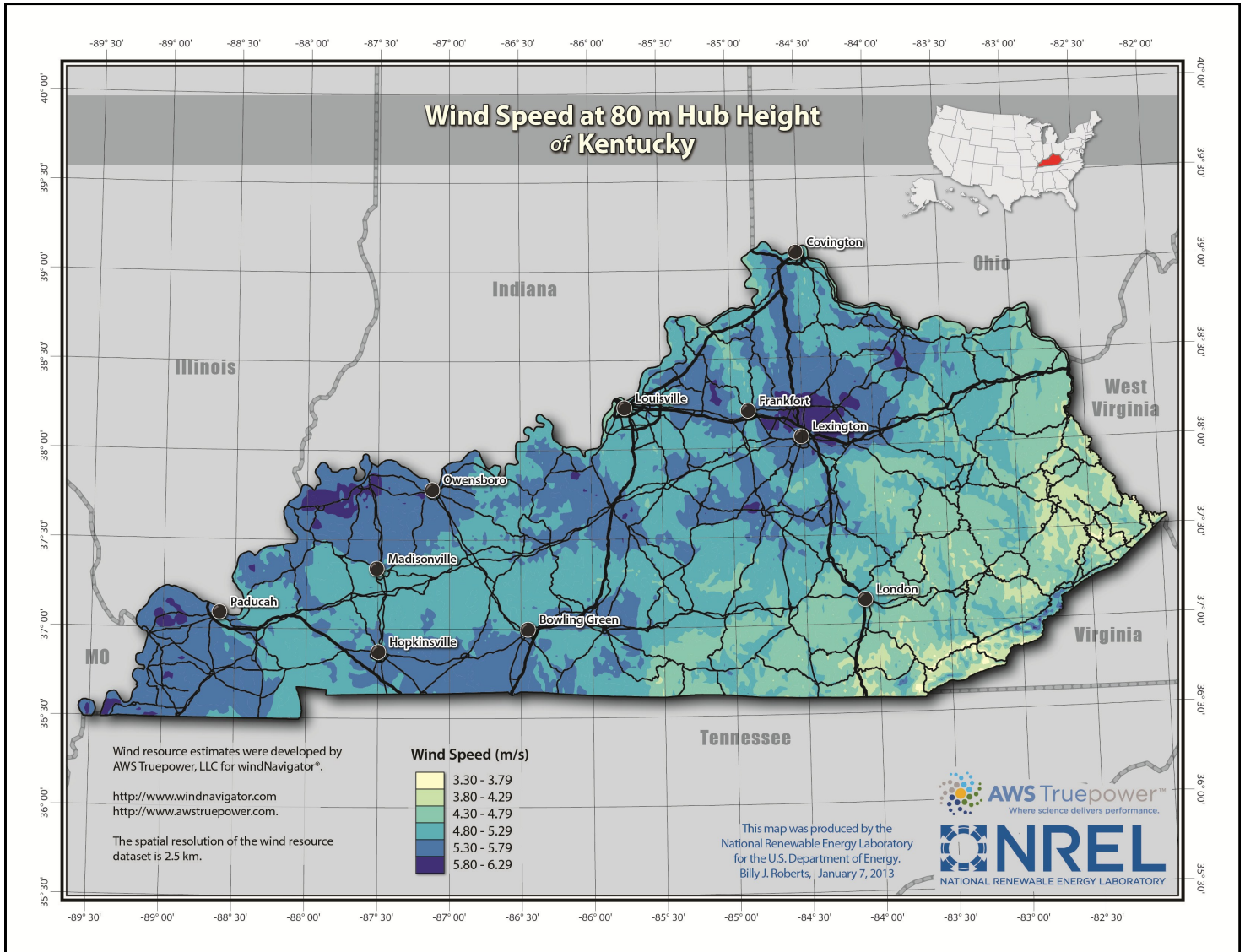


Wind Mill Hub Height	Potential Capacity (MW)	Percent of United States
80m	0	0%
110m	76,606	0.7%
140m	128,123	1.3%

There are no utility-scale wind electricity generation projects in Kentucky. However, states neighboring Kentucky possess some wind electricity generation and may prove illustrative for the seasonal variation in Kentucky should a utility-scale wind farm be constructed in Kentucky. As shown above, wind speeds are lowest during the hot summer months and highest in the fall through springtime. The photos below were taken by Kentucky EEC staff at Buffalo Mountain, a reclaimed coal mine in neighboring Tennessee that has been turned into a wind farm by the Tennessee Valley Authority with 18 turbines, with 29 MW, and 22 percent capacity factor.



Kentucky Wind Power Potential

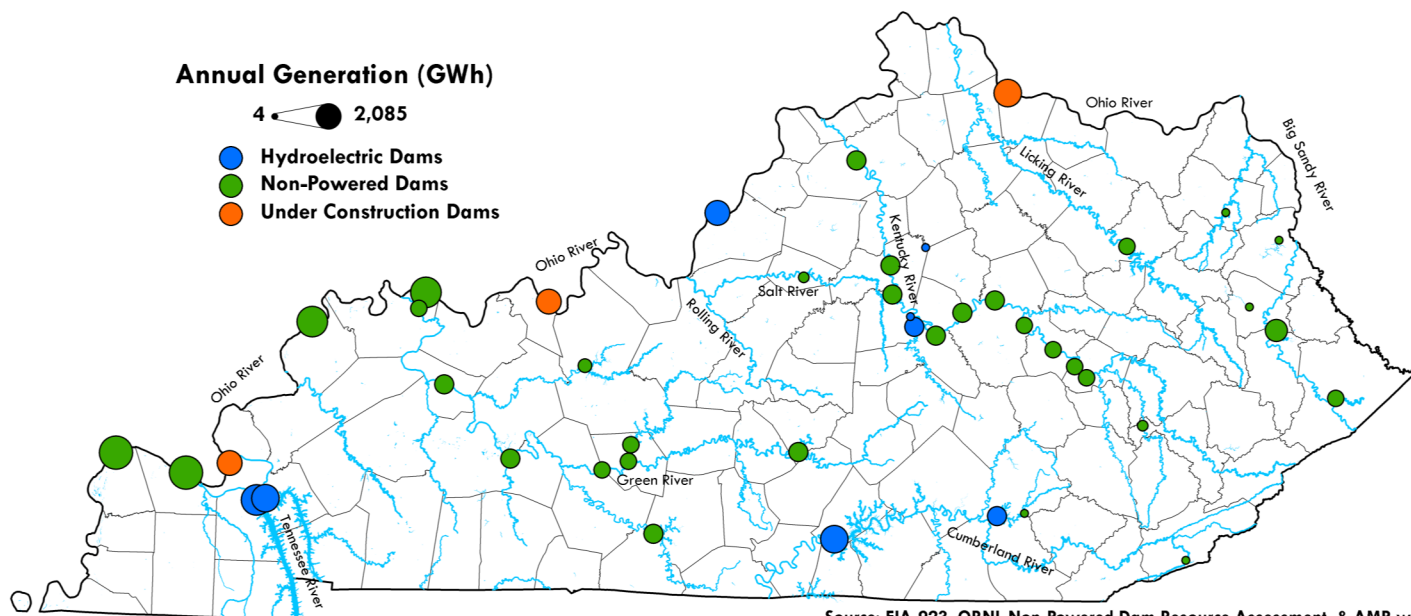


Kentucky's wind resource is yet undetermined, but limited relative to most states including Indiana, Ohio and West Virginia. Wind maps published by the National Renewable Energy Lab (NREL) in 2010 provide an initial assessment of the potential resource and establish areas of Kentucky that may be developable for utility-scale wind. This initial assessment was intended to direct wind developers to the windiest parts of the state. Developers have installed wind speed monitoring equipment in two areas. Over time, the collection of higher resolution data on wind speeds and wind patterns will help determine the economic feasibility of wind turbine construction within these areas.

According to The National Renewable Energy Laboratory (NREL) areas generally considered to have suitable wind resources for wind development are those with annual average wind speeds of greater than or equal to 6.5 meters per second (m/s) at a height of 80 meters. These windy areas identified by NREL would support wind farms with a gross capacity factor of 30 percent and higher. As a result, Kentucky's wind energy potential is 61 MW—less than .001 percent of the nearly 11 million MW potential nationally. At 100 meters, Kentucky's wind energy potential increases to 699 MW, which ranks 42nd nationally. The NREL assessment does provide wind energy potentials at lower wind speeds. However, NREL does not generally characterize low wind speed areas as suitable for wind development.

Hydroelectricity

Hydroelectric and Non-Powered Dams in Kentucky, 2014



Source: EIA-923, ORNL Non-Powered Dam Resource Assessment, & AMP website
Kentucky Energy Database, EEC-DEDI, 2015

Name	Units	Capacity (MW)	2014 Generation (MWh)	Initial Year of Operation	Owner
Barkley	4	130	601,111	1966	U.S. Army CoE
Laurel Dam	1	61	71,960	1977	U.S. Army CoE
Wolf Creek	6	270	880,013	1928	U.S. Army CoE
Dix Dam	3	24	72,287	1925	LG&E and KU
Ohio Falls	8	80	271,888	1927	LG&E and KU
Mother Ann Lee	3	2	9,303*	1927	Lock 7 Hydro Partners
Kentucky Dam	5	184	1,238,564	1948	TVA

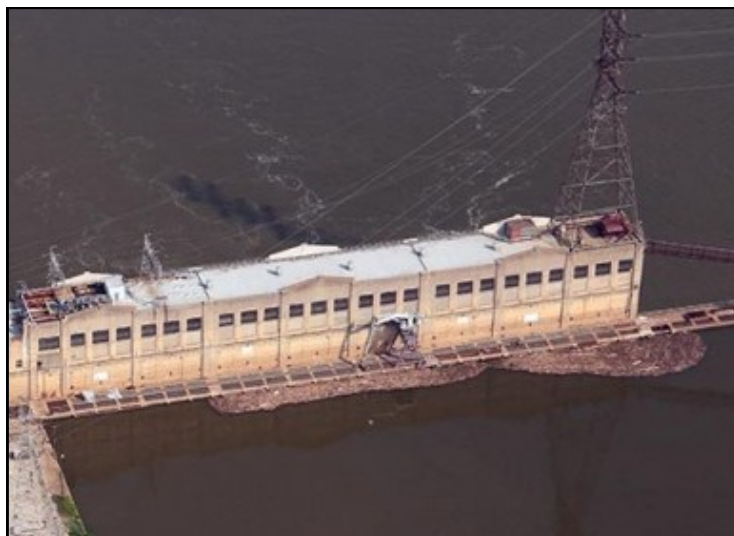
Kentucky has six hydroelectric facilities that combined generated 3.6 terawatt-hours (TWh) in 2014 or 3.4 percent of Kentucky's total electricity generation. Five of Kentucky's hydroelectric dams were constructed to mitigate flooding and to ensure navigation and Dix Dam is the lone exception, which originally provided electricity to the area. These facilities generate electricity throughout the year, though most generation occurs in the winter and spring when rainfall is more common. The United States Army Corps Of Engineers operates the Barkley, Wolf Creek, and Laurel Dams, as well as Louisville Gas & Electric's Ohio Falls Dam. Kentucky Utilities operates Dix Dam and the Tennessee Valley Authority operates the Kentucky Dam.

American Municipal Power, Inc. is constructing three dams in Kentucky along the Ohio River. Smithland, Cannelton, and Meldahl will divert water from dams operated by the United States Army Corps. of Engineers and will operate along with seasonal river flows. Once completed, these dams are expected to generate 1.4 TWh annually.

Kentucky has 33 dams within its borders or along the Ohio River that do not have hydroelectric facilities. According to the Oak Ridge National Lab (ORNL), these facilities have the potential to generate 8.7 TWh annually, which would quadruple Kentucky's annual hydroelectric generation. The vast majority—82 percent—of this potential resides in four dams along the Ohio River between the Commonwealth's borders with Indiana and Illinois.

*2013

Hydroelectricity



Pictured above: The 102 MW Ohio Falls on the Ohio River, which began operation in 1927. Photo courtesy of LG&E and KU.



Pictured above: The 2.4 MW Mother Anne Lee Hydroelectric Station at Lock 7 on the Kentucky River. Photo taken by EEC staff.

River	Existing Dams			Non-Powered Dams			Potential	
	Facilities	Capacity	Generation (MWh)	Facilities	Capacity	Generation (MWh)	Capacity	Generation (MWh)
Total	6	749	3,135,823	33	2,087	8,775,604	662	3,244,254
Big Sandy				5	51	215,900	112.8	517,627
Cumberland	2	331	951,973	2	1	9,671	195.7	960,886
Green				9	140	587,258	76.1	386,285
Kentucky-Licking	1	24	72,287	12	184	772,331	160.7	764,354
Ohio	1	80	271,888	4	1,705	7,164,925	29.7	143,771
Salt-Rolling				1	6	25,519		
Tennessee	2	314	1,839,675					

An assessment by the Oak Ridge National Laboratory identified 662 MW of potential run-of-river hydroelectric resources in Kentucky, representing 3.24 TWh of generation annually. Most of this potential is along the Cumberland, Kentucky, and Big Sandy River watersheds.

The further adoption of hydroelectricity faces numerous environmental, technological, and land use concerns. Federal laws protecting the areas covering the Mammoth Cave National Park and Daniel Boone National Forest prohibit hydroelectric development and numerous species protected under the Endangered Species Act have critical habitats within the Cumberland River watershed. Other areas may be limited to development due water quality concerns or because those areas are used for fishing and boating.

Pumped Storage Hydropower (PSH) is a technology where water is pumped to a higher elevation when electricity is less expensive and is then released downward to generate electricity when the price is higher. Currently, PSH accounts for 97% of electricity storage in the United States; however, no PSH facility currently exists in Kentucky. There are 42 plants, 158 units, and 21.6 GW of capacity throughout the United States and largely in the Southeast. Recently, interest in constructing PSH has increased to mitigate the variability of non-dispatchable renewable generation technologies, such as solar and wind.

Sources: Department of Energy, 2014 Hydropower Market Report, April 2015

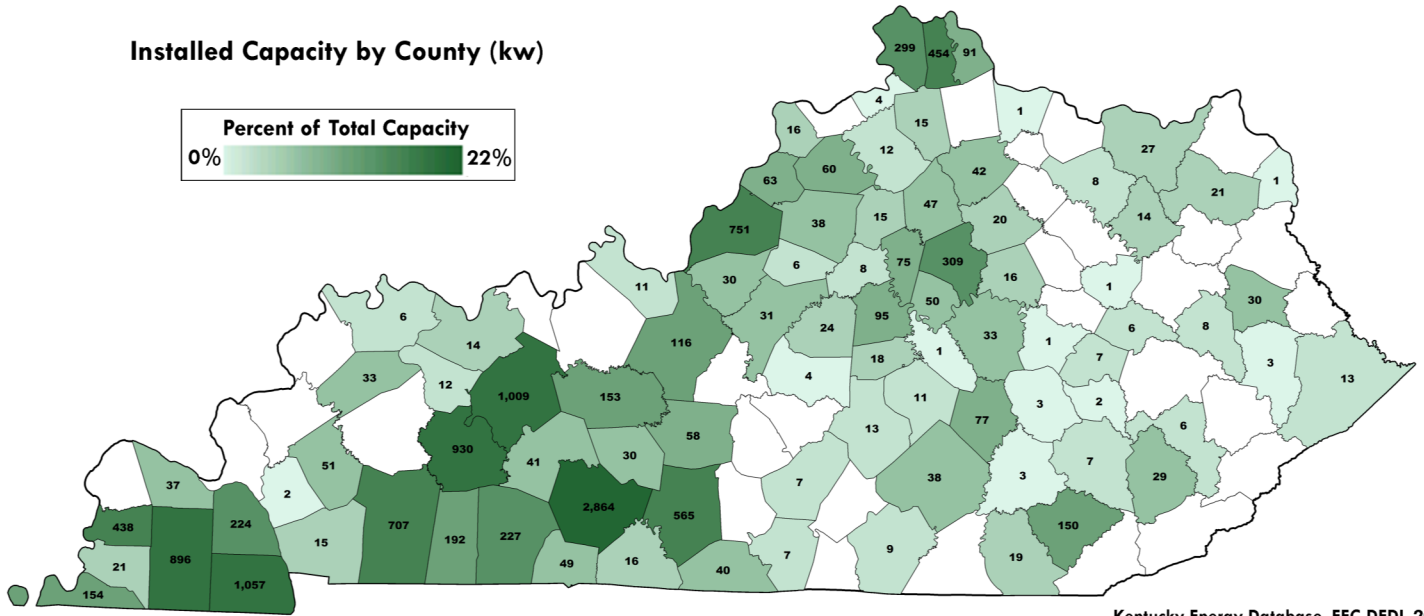
Department of Energy, An Assessment of Energy Potential at Non-Powered Dams in the United States, April 2012

Department of Energy, New Stream-reach Development, April 2014

Distributed Renewable Energy

Renewable Energy Interconnections, 2014

Installed Capacity by County (kw)



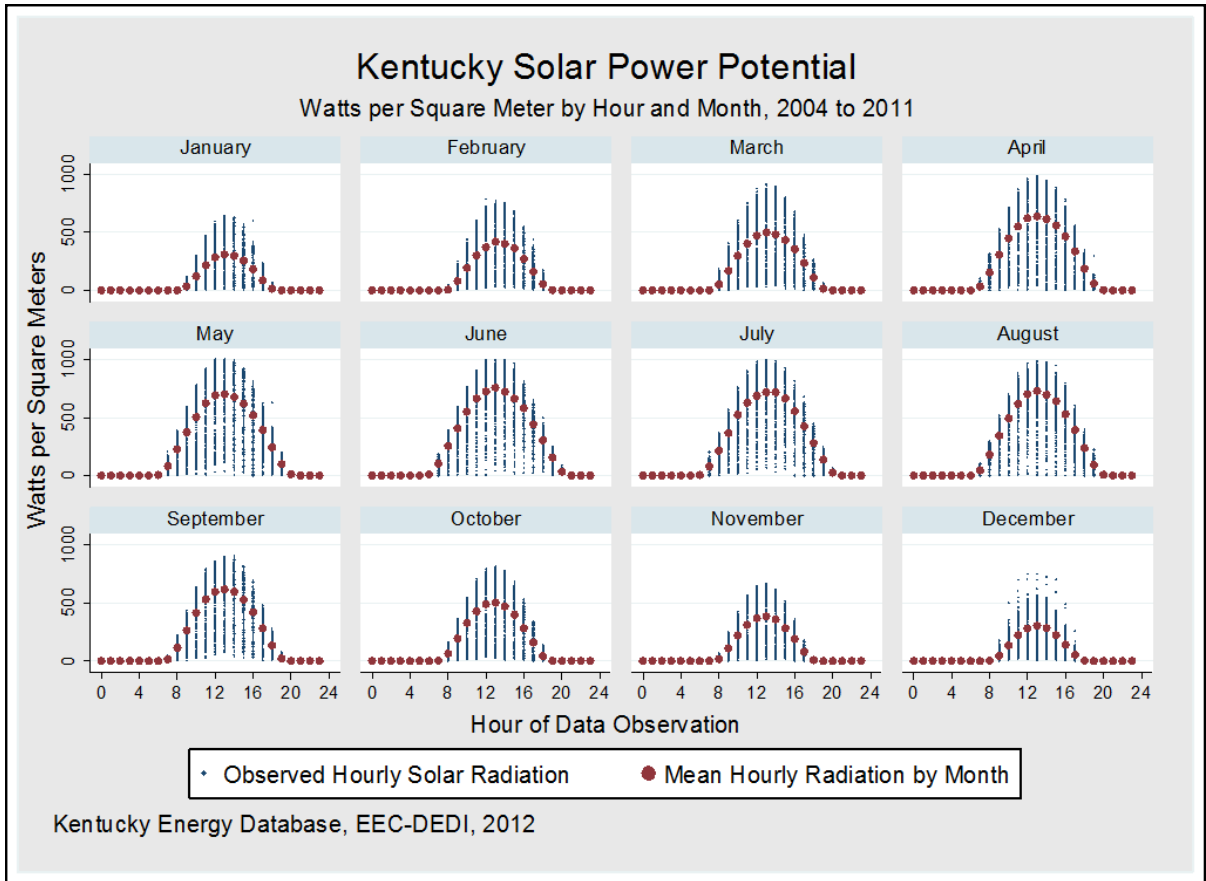
Kentucky Energy Database, EEC-DEDI, 2015

Fuel Type	Kilowatts	Percentage
Total	13,146	100%
Solar	12,041	92%
Wood & Biomass	999	8%
Wind	56	<1%
Hydroelectric	50	<1%

The above map shows the number and distribution of 13.1 MW of renewable energy projects in Kentucky. Pictured below are the 25 kW tracking solar photovoltaic arrays on top of the University of Kentucky Davis Marksbury Building, with the Patterson Office Tower in the background. *Photo taken for the Kentucky EEC by the University of Kentucky.*



Kentucky Solar Power Potential

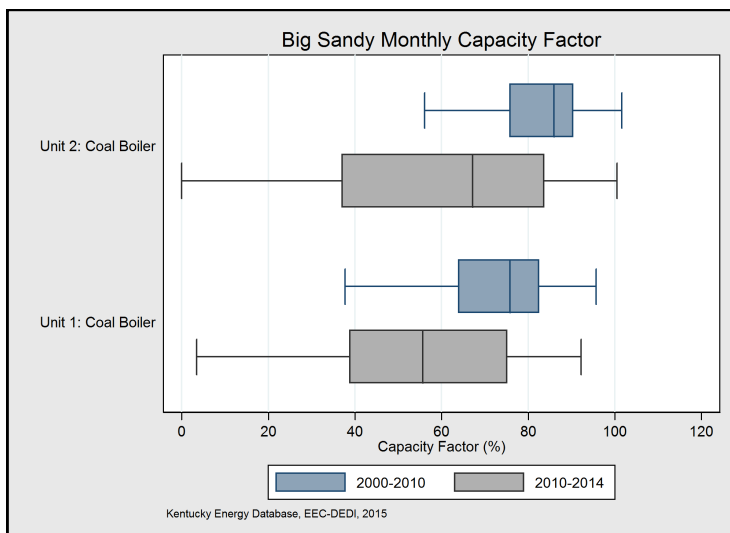
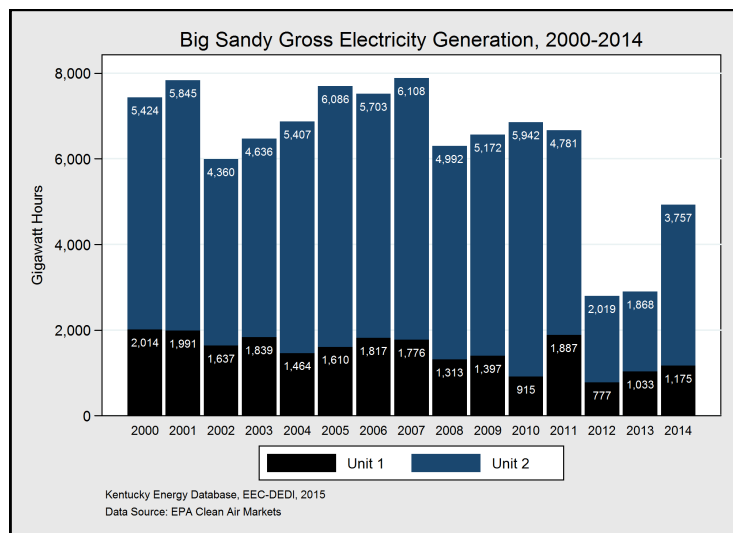


A well-maintained solar photovoltaic panel in central Kentucky could be expected to achieve an annual capacity factor of 14.85 percent. This means that one kilowatt of installed capacity would, on average, produce just under 15 percent of the panel's rated capacity, for a total of 1,295 kilowatt-hours annually. The above graphic and table below illustrate how actual generation potential has varied in Kentucky by month and time of day for the past eight years, ranging from 0 to 100 percent of rated capacity.

Kentucky Average Maximum Achievable Solar Capacity Factors, 2004-2011

Hour	Annual	January	February	March	April	May	June	July	August	September	October	November	December
24/7	14.85%	6.60%	9.60%	12.87%	18.20%	21.10%	23.34%	22.09%	20.91%	16.56%	12.27%	8.47%	6.14%
5:00	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%
6:00	0.196%	0.000%	0.000%	0.000%	0.012%	0.673%	1.192%	0.525%	0.024%	0.000%	0.000%	0.000%	0.000%
7:00	2.997%	0.000%	0.000%	0.115%	3.261%	8.242%	10.378%	7.927%	4.402%	1.355%	0.259%	0.000%	0.000%
8:00	10.651%	0.210%	0.656%	4.967%	15.233%	22.615%	25.471%	21.379%	17.934%	11.319%	6.276%	1.541%	0.080%
9:00	22.358%	3.412%	7.930%	16.790%	30.558%	37.324%	40.458%	36.529%	34.413%	26.143%	19.309%	10.667%	4.435%
10:00	35.151%	12.071%	19.269%	29.657%	44.536%	50.266%	54.952%	52.302%	49.250%	41.347%	32.614%	21.920%	13.331%
11:00	45.633%	21.521%	30.015%	40.180%	54.893%	62.083%	66.078%	62.548%	61.545%	52.872%	42.529%	30.914%	22.198%
12:00	52.219%	28.232%	37.108%	46.994%	62.072%	68.977%	72.146%	68.565%	69.879%	59.308%	48.674%	36.653%	27.839%
13:00	54.647%	30.928%	41.754%	49.742%	63.652%	69.912%	75.576%	71.583%	72.809%	61.501%	50.065%	38.182%	29.999%
14:00	52.430%	29.661%	40.038%	48.129%	61.288%	67.462%	71.968%	71.549%	69.383%	59.444%	46.759%	35.593%	28.040%
15:00	46.760%	25.494%	36.249%	43.110%	55.708%	61.769%	66.218%	66.383%	63.844%	52.556%	39.604%	28.153%	21.972%
16:00	37.260%	18.213%	26.923%	36.366%	46.214%	51.793%	57.906%	55.296%	52.742%	41.795%	28.159%	18.733%	13.908%
17:00	25.275%	8.653%	16.055%	23.433%	33.288%	39.210%	44.043%	42.394%	39.128%	28.148%	15.850%	7.701%	5.212%
18:00	13.378%	1.339%	5.230%	10.832%	18.635%	24.233%	33.032%	27.881%	23.669%	13.263%	4.091%	0.588%	0.209%
19:00	4.833%	0.000%	0.150%	1.492%	5.810%	9.846%	15.339%	13.753%	9.173%	2.097%	0.055%	0.000%	0.000%
20:00	0.669%	0.000%	0.000%	0.000%	0.095%	1.144%	3.249%	2.722%	0.765%	0.002%	0.000%	0.000%	0.000%
21:00	0.001%	0.000%	0.000%	0.000%	0.000%	0.000%	0.005%	0.003%	0.000%	0.000%	0.000%	0.000%	0.000%
22:00	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%

Big Sandy Power Plant



Unit Number	Online Year	Retire Year	Fuel	Capacity (MW)	Capacity Factor* (%)	Gross Generation* (GWh)	Net Generation* (GWh)	CO ₂ Rate* (lbs./MWh)	SO ₂ Rate* (lbs./MWh)	NO _x Rate* (lbs./MWh)
Plant	1963		Coal	1,078	52%	4,932	4,708	1,755	13.32	1.67
1	1963	2016†	Coal	278	48%	1,175	1,124	1,803	14.07	2.4
2	1969	2016	Coal	800	54%	3,757	3,584	1,740	13.08	1.45

The Big Sandy Power Plant, near Louisa in Lawrence County, is 52 years old and consists of two coal-fired electricity generating units, which came online in 1963 and 1969, respectively. The plant has a total nameplate capacity of 1,078 MW and is owned by Kentucky Power, a subsidiary of American Electric Power. In 2014, the plant generated 4.9 GWh of electricity, down from nearly eight GWh in 2007, but up from 2.9 GWh in 2013. Big Sandy's two coal-fired units will retire in 2016 and Unit 1 will be converted to a 268 MW natural gas combined cycle unit. Big Sandy's plant-wide capacity factor was 58 percent in 2014. The plant primarily burned coal trucked from eastern Kentucky in 2014, from Pike, Magoffin, Floyd, and Johnson counties. The picture below is of the Big Sandy Power Plant taken by Kentucky EEC staff.

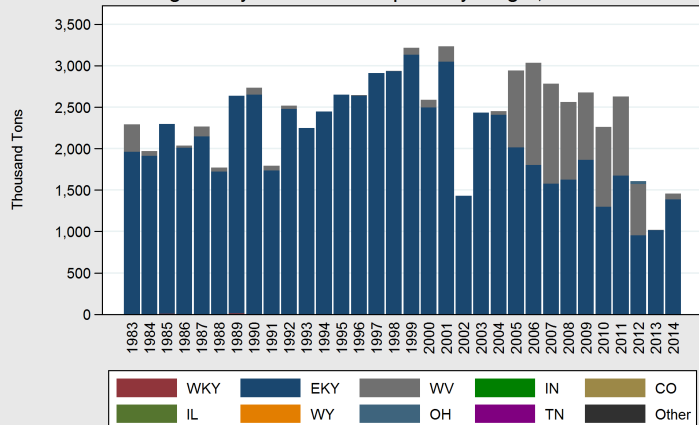


*2014

†Converting to Natural Gas Combined Cycle

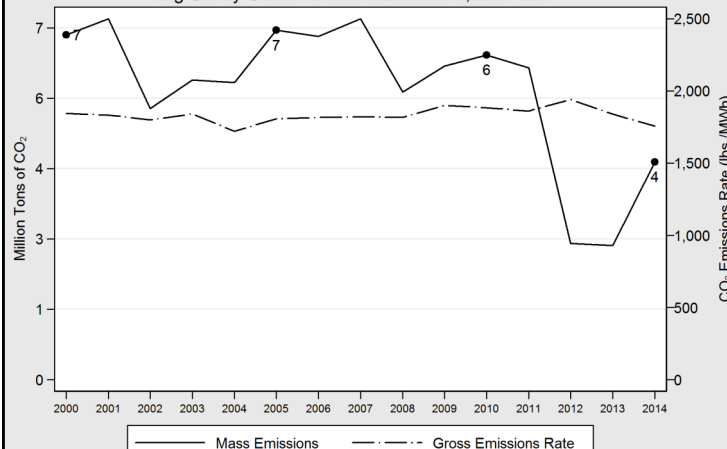
Big Sandy Power Plant

Big Sandy Coal Consumption by Origin, 1983-2014



Kentucky Energy Database, EEC-DEDI, 2015
Data Source: FERC-423 & EIA-923

Big Sandy Carbon Dioxide Emissions, 2000-2014



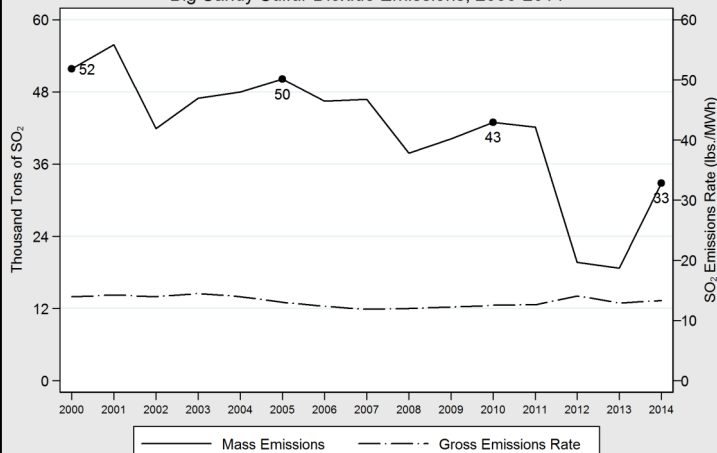
Kentucky Energy Database, EEC-DEDI, 2015
Data Source: EPA Clean Air Markets

State	2014 Tons	Percentage
Total	1,457,580	100%
Eastern Kentucky	1,387,116	95%
West Virginia	70,464	5%

Carbon Dioxide	2014 Value	Since 2000
Emissions (Tonnage)	4,328,511	-37%
Rate (lbs./MWh)	1,755	-5%

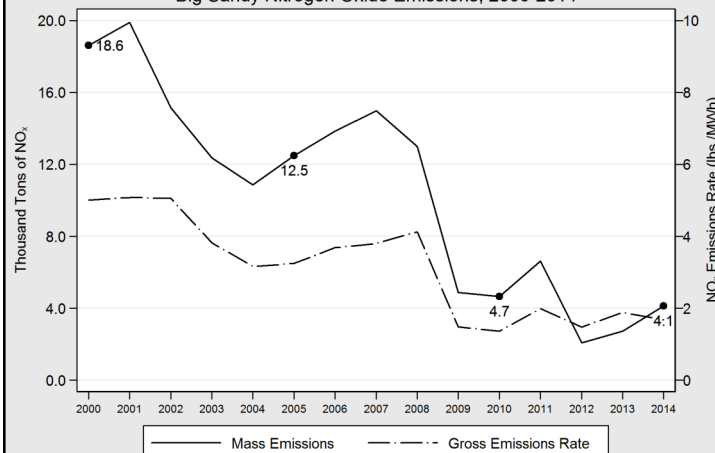
The Big Sandy Power Plant emitted 4.3 million tons of CO₂ in 2014, a decrease of 37 percent since 2000. The rate of CO₂ emissions is relatively unchanged and the decrease in emissions results from the decreased utilization of the plant's coal units in preparation for their closure in 2015.

Big Sandy Sulfur Dioxide Emissions, 2000-2014



Kentucky Energy Database, EEC-DEDI, 2015
Data Source: EPA Clean Air Markets

Big Sandy Nitrogen Oxide Emissions, 2000-2014



Kentucky Energy Database, EEC-DEDI, 2015
Data Source: EPA Clean Air Markets

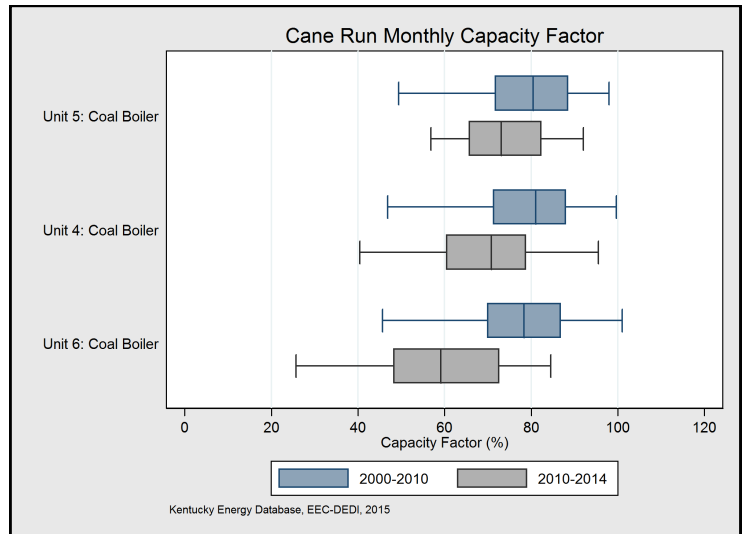
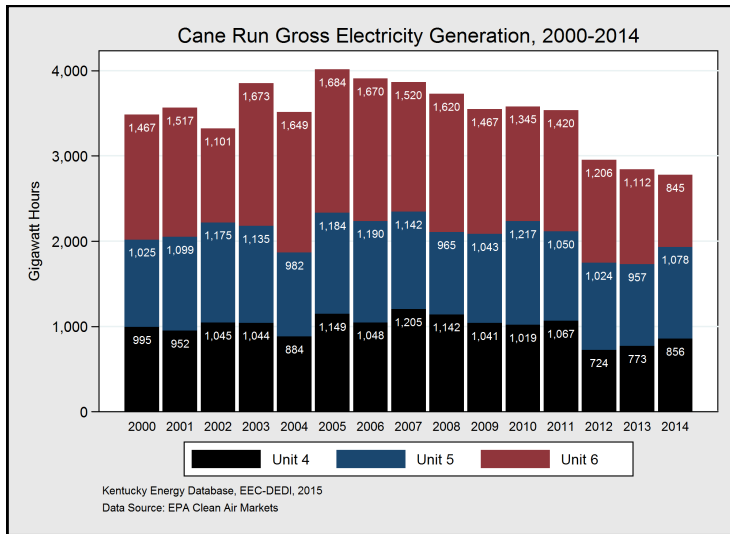
Sulfur Dioxide	2014 Value	Since 2000
Emissions (Tonnage)	32,834	-37%
Rate (lbs./MWh)	13.32	-4%

Nitrogen Dioxide	2014 Value	Since 2000
Emissions (Tonnage)	4,127	-78%
Rate (lbs./MWh)	1.67	-67%

The Big Sandy Power Plant emitted 33 thousand tons of SO₂ in 2014, more than any power plant in Kentucky that year, but a decrease of 37 percent since 2000. The SO₂ emissions rate has decreased at the plant by four percent during that period.

The Big Sandy Power Plant emitted four thousand tons of NO_x in 2014, a reduction of 78 percent since 2000. The rate of NO_x emissions decreased by 67 percent during that period.

Cane Run Station



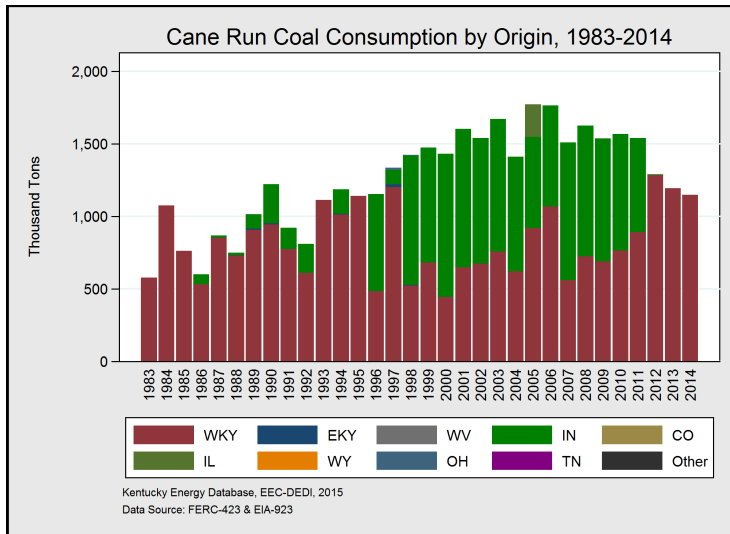
Unit Number	Online Year	Retire Year	Fuel	Capacity (MW)	Capacity Factor* (%)	Gross Generation* (GWh)	Net Generation* (GWh)	CO ₂ Rate* (lbs./MWh)	SO ₂ Rate* (lbs./MWh)	NO _x Rate* (lbs./MWh)
Plant	1954		Coal	563	56%	2,779	2,503	1,949	6.31	3.20
4	1962	2015	Coal	155	63%	856	770	1,895	6.65	3.19
5	1966	2015	Coal	168	73%	1,078	972	2,025	6.65	3.79
6	1969	2015	Coal	240	40%	845	761	1,905	5.52	2.47
7	2015		Natural Gas	640						

Cane Run Station, located southwest of Louisville in Jefferson County, began operation in 1954, and is in the process of retiring its coal units and utilizing its new natural gas combined cycle units. The plant had six units at one time, but the three oldest coal units were retired by 1987. The units operating as of 2015 came online in 1962, 1966, and 1969, respectively. The plant has a total coal-fired nameplate capacity of 563 MW and will have a natural gas-fired capacity of 640. In 2014, the plant generated 2.8 GWh of electricity, down from four GWh in 2005. Likewise, Cane Run's plant-wide capacity factor was 56 percent in 2014. As of June 2015, Units 4 and 5 were operating, Unit 6 had not been run since March 2015, and Unit 7 operated at a capacity factor of 45 percent. The plant burned only coal transported via railroad from Hopkins and Ohio counties in western Kentucky in 2014, a large change from the 2000s when it burned approximately 50 percent Indiana coal. Cane Run Station is owned and operated by Louisville Gas & Electric.

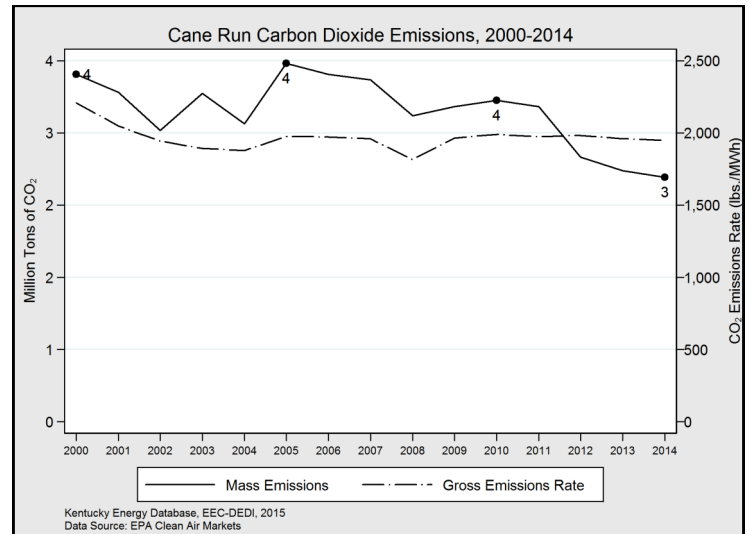
*2014

Source: EPA Clean Air Markets and Louisville Gas & Electric website

Cane Run Station

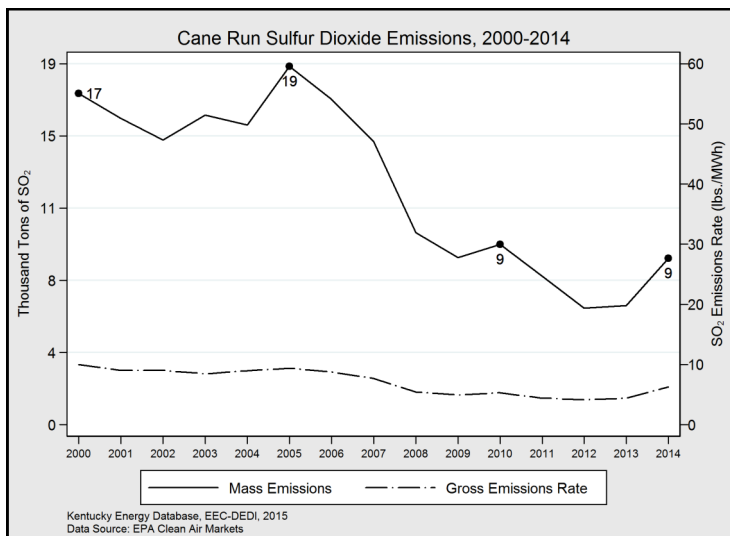


State	2014 Tons	Percentage
Total	1,147,537	100%
Western Kentucky	1,147,537	100%



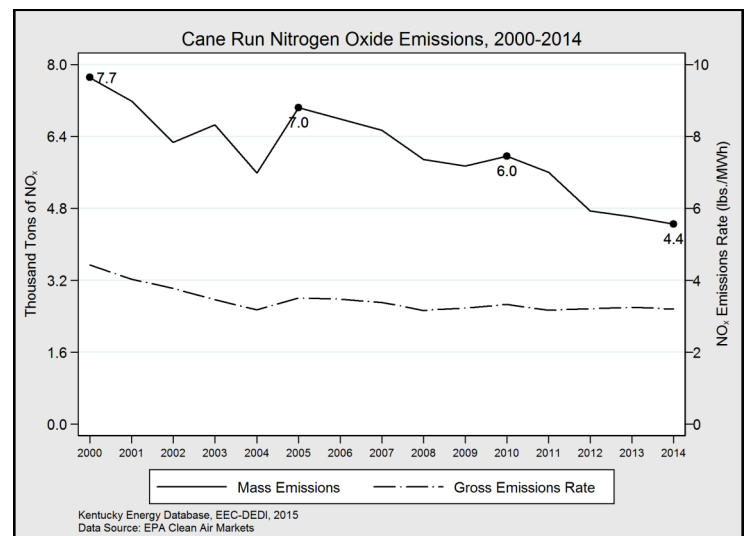
Carbon Dioxide	2014 Value	Since 2000
Emissions (Tonnage)	2,707,396	-30%
Rate (lbs./MWh)	1,949	-12%

Cane Run Station emitted 2.7 million tons of CO₂ in 2014, a decrease of 30 percent from 2000 levels. The rate of CO₂ emissions decreased by 12 percent over the same period.



Sulfur Dioxide	2014 Value	Since 2000
Emissions (Tonnage)	8,762	-50%
Rate (lbs./MWh)	6.31	-37%

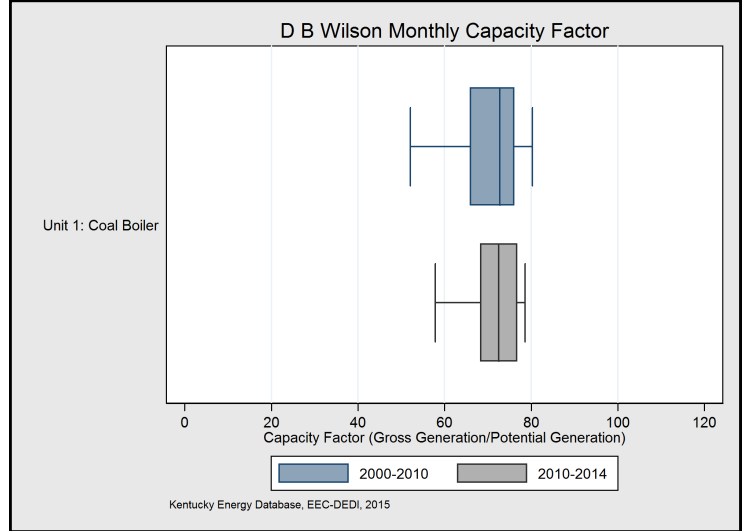
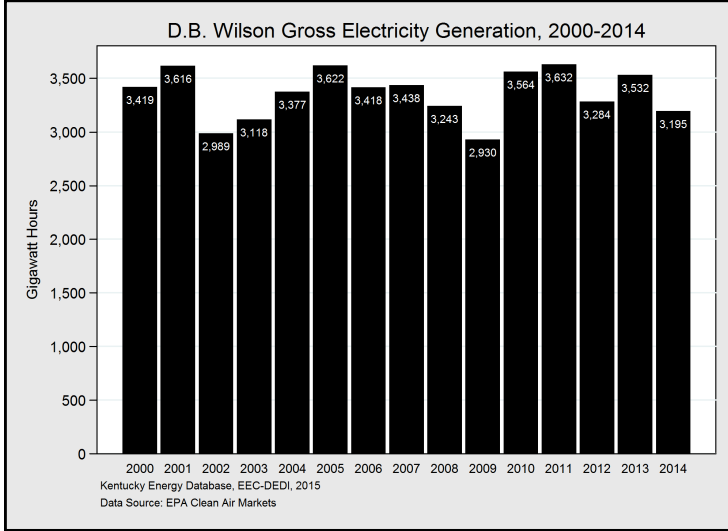
Cane Run Station emitted 8,762 tons of SO₂ in 2014, a decrease of 50 percent since 2000. The rate of SO₂ emissions decreased by 37 percent during that period.



Nitrogen Dioxide	2014 Value	Since 2000
Emissions (Tonnage)	4,448	-42%
Rate (lbs./MWh)	3.20	-28%

Cane Run Station emitted 4,448 tons of NO_x in 2014, a reduction of 42 percent since 2000. The rate of NO_x emissions decreased by 28 percent during that period.

D. B. Wilson Station

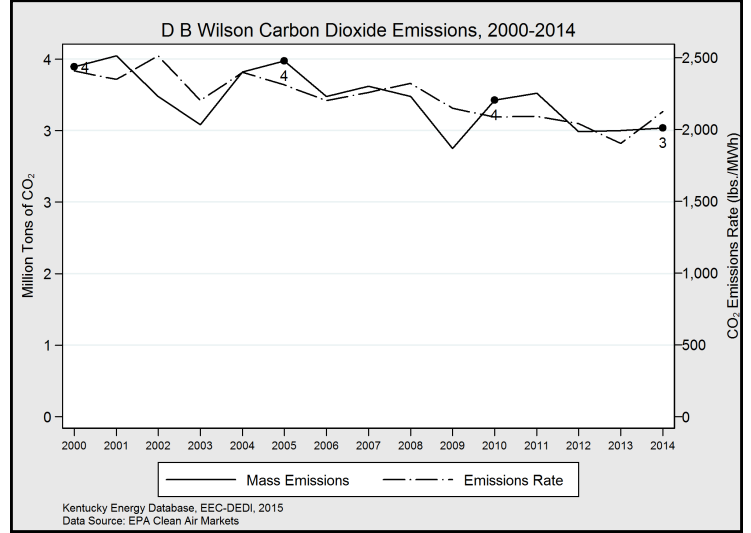
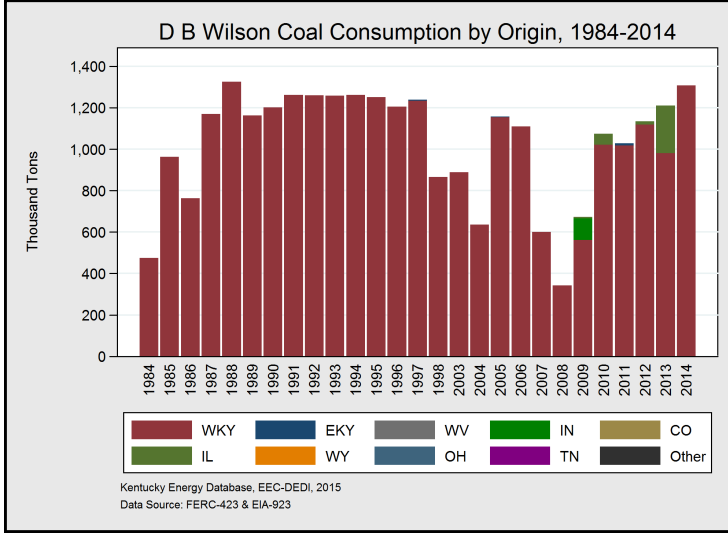


Unit Number	Online Year	Retire Year	Fuel	Capacity (MW)	Capacity Factor* (%)	Gross Generation* (GWh)	Net Generation* (GWh)	CO ₂ Rate* (lbs./MWh)	SO ₂ Rate* (lbs./MWh)	NO _x Rate* (lbs./MWh)
Plant 1	1984		Coal	566	64%	3,195	2,995	2,124	4.32	0.65
	1984		Coal	566	64%	3,195	2,995	2,124	4.32	0.65

D. B. Wilson Station, located in Ohio County, is 31 years old and consists of one coal-fired electricity generating unit. The unit came online in 1984 and has a nameplate capacity of 566 MW. In 2014, the plant generated 3.2 GWh of electricity and had a plant-wide capacity factor of 64 percent. Wilson burned predominantly western Kentucky coal in 2013 from Union, Webster, and Muhlenberg counties. Wilson Station is owned by Big Rivers Electric Corporation.

*2014

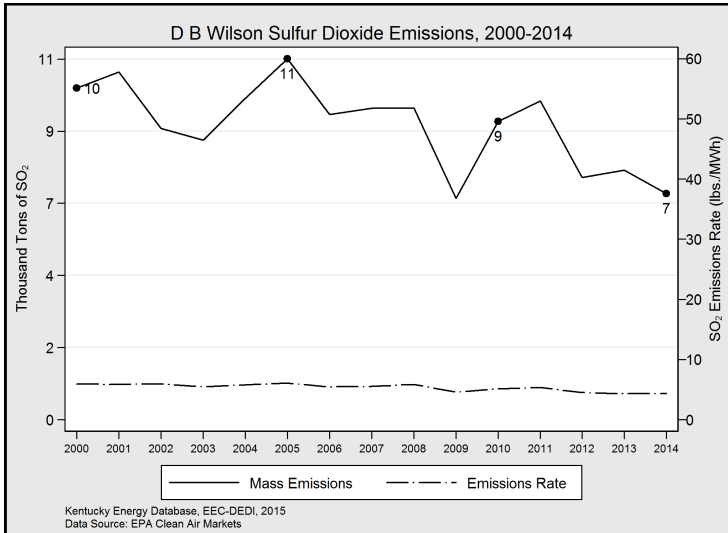
D. B. Wilson Station



State	2014 Tons	Percentage
Total	1,307,770	100%
Western Kentucky	1,307,770	100%

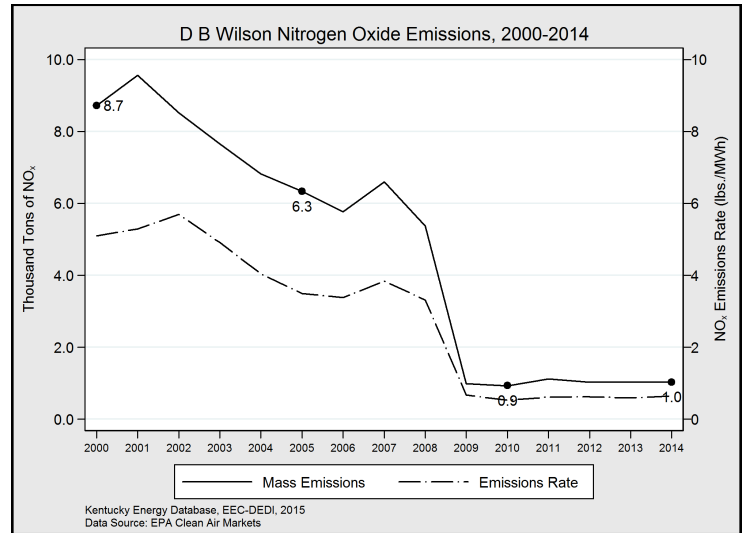
Carbon Dioxide	2014 Value	Since 2000
Emissions (Tonnage)	3,392,405	-18%
Rate (lbs./MWh)	2,124	-12%

The D. B. Wilson Station emitted 3.4 million tons of CO₂ in 2014, a decrease of 18 percent from 2000 levels. The rate of CO₂ emissions decreased by 12 percent during that period.



Sulfur Dioxide	2014 Value	Since 2000
Emissions (Tonnage)	6,901	-32%
Rate (lbs./MWh)	4.32	-27%

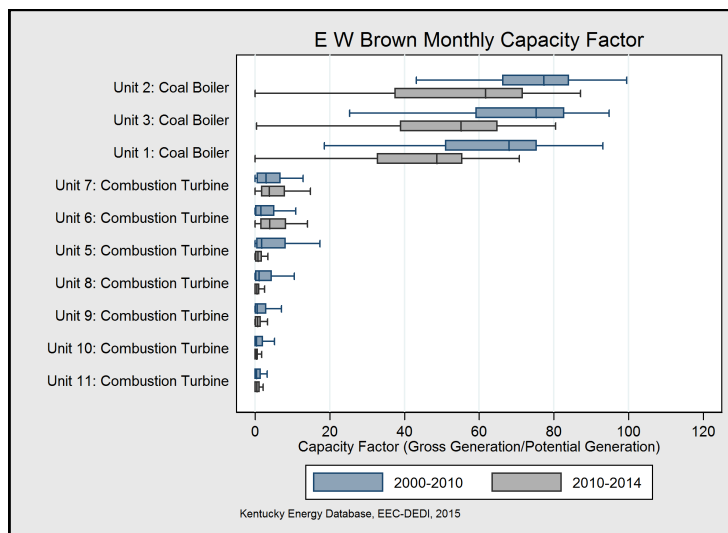
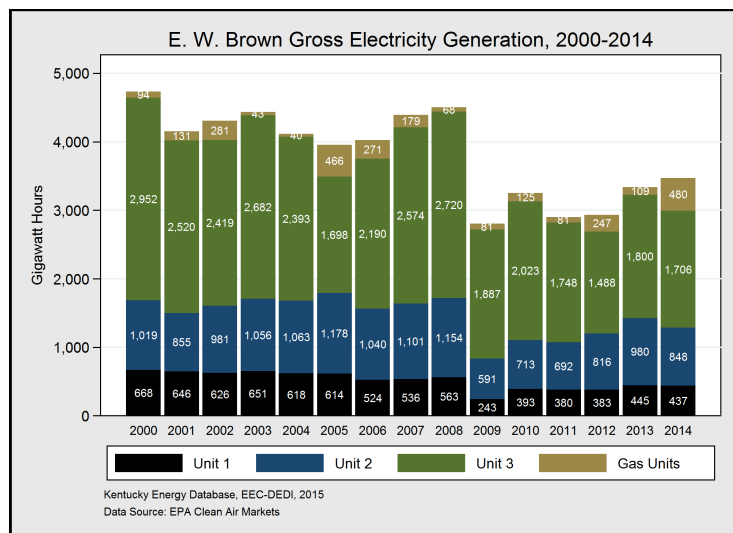
The D. B. Wilson Station emitted 6.9 thousand tons of SO₂ in 2014, a decrease of 32 percent since 2000. The rate of SO₂ emissions reduced by 27 percent during that period.



Nitrogen Dioxide	2014 Value	Since 2000
Emissions (Tonnage)	1,034	-88%
Rate (lbs./MWh)	0.65	-87%

The D. B. Wilson Station emitted 1,034 tons of NO_x in 2014, a reduction of 88 percent since 2000. The rate of NO_x emissions decreased by 87 percent during that period and is the lowest of Kentucky power plants

E. W. Brown Generating Station



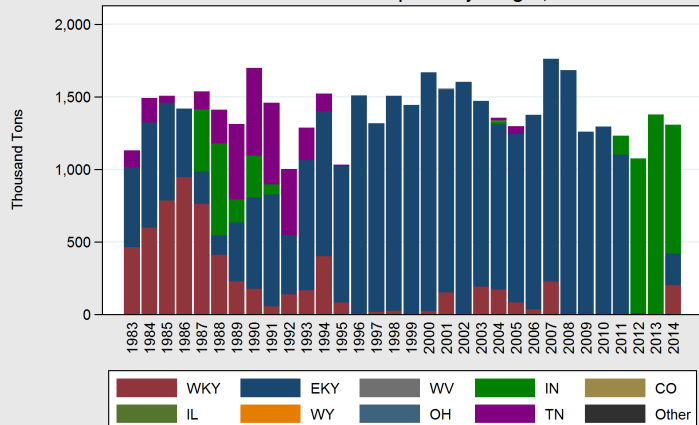
Unit Number	Online Year	Retire Year	Fuel	Capacity (MW)	Capacity Factor* (%)	Gross Generation* (GWh)	Net Generation* (GWh)	CO ₂ Rate* (lbs./MWh)	SO ₂ Rate* (lbs./MWh)	NO _x Rate* (lbs./MWh)
Plant	1955		Coal			3,516		2,070	1.08	1.92
1	1957		Coal	106	47%	437	371	2,190	0.78	2.35
2	1963		Coal	166	58%	848	754	2,165	2.45	2.53
3	1971		Coal	412	47%	1,706	1,511	2,169	0.81	1.83
5	2001		Natural Gas	112	4%	44		1,815	0.01	0.95
6	1999		Natural Gas	146	14%	179		1,455	0.01	0.56
7	1999		Natural Gas	146	17%	212		1,337	0.01	0.65
8	1995		Natural Gas	102	3%	25		1,726	0.01	2.17
9	1994		Natural Gas	102	2%	19		1,767	0.02	1.79
10	1995		Natural Gas	102	2%	21		1,755	0.02	2.00
11	1996		Natural Gas	102	3%	25		1,835	0.02	1.82

The E. W. Brown Generating Station, located in Mercer County, consists of three coal-fired electricity generating units as well as seven natural gas combustion turbines used to meet peak demand. The plant is 58 years old, and the coal units came online in 1957, 1963, and 1971, respectively. E. W. Brown's coal units have a total nameplate capacity of 684 MW and is owned and operated by [Kentucky Utilities](#). In 2014, the plant generated 3.5 GWh of electricity and its coal-units had a capacity factor of 50 percent. The plant installed scrubbers on its three coal fired units in 2010 to reduce sulfur dioxide emissions. E. W. Brown mostly burned Indiana-based coal in 2014, marking a dramatic shift from the previous decade, during which it relied heavily on coal from eastern Kentucky, primarily from Perry County, but also from Knott, Leslie, Floyd, and Magoffin counties. E. W. Brown received coal from the Kentucky counties of Estill, Harlan, Hopkins, Knott and Ohio in 2014. The plant typically pays a premium for the coal it consumes because of high transportation costs to central Kentucky relative to other plants located on the Ohio and Green Rivers.

*2014

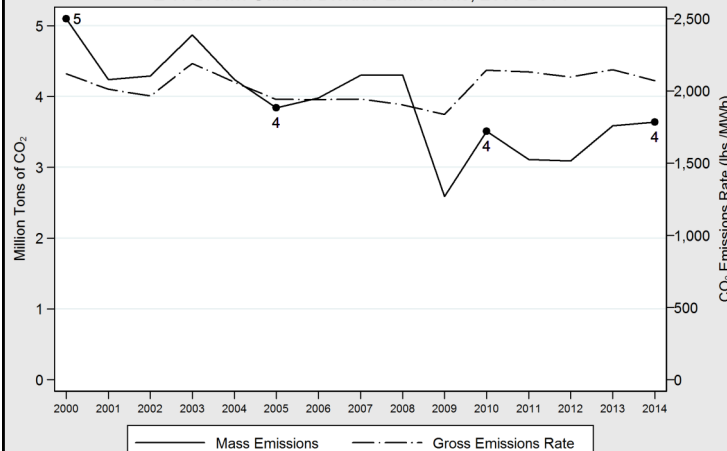
E. W. Brown Generating Station

E W Brown Coal Consumption by Origin, 1983-2014



Kentucky Energy Database, EEC-DEDI, 2015
Data Source: FERC-423 & EIA-923

E W Brown Carbon Dioxide Emissions, 2000-2014



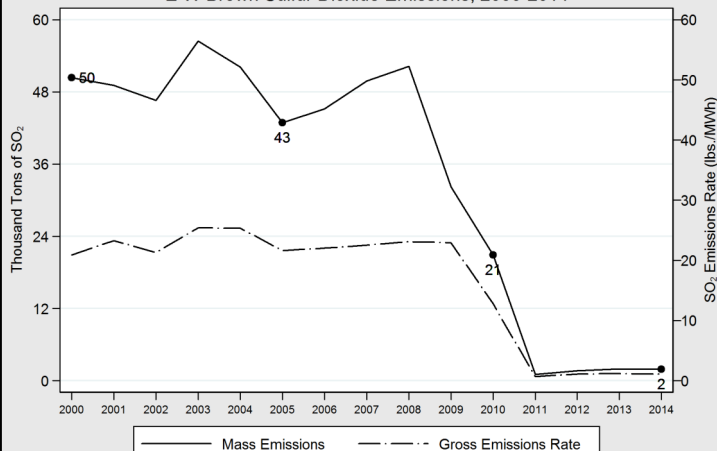
Kentucky Energy Database, EEC-DEDI, 2015
Data Source: EPA Clean Air Markets

State	2014 Tons	Percentage
Total	1,307,307	100%
Indiana	889,927	68%
Eastern Kentucky	215,969	17%
Western Kentucky	201,411	15%

Carbon Dioxide	2014 Value	Since 2000
Emissions (Tonnage)	3,637,150	-29%
Rate (lbs./MWh)	2,070	-2%

The E. W. Brown Generating Station emitted 3.6 million tons of CO₂ in 2014, a decrease of 29 percent since 2000. The rate of CO₂ emissions has remained relatively unchanged during that period and is the second highest of Kentucky coal plants.

E W Brown Sulfur Dioxide Emissions, 2000-2014

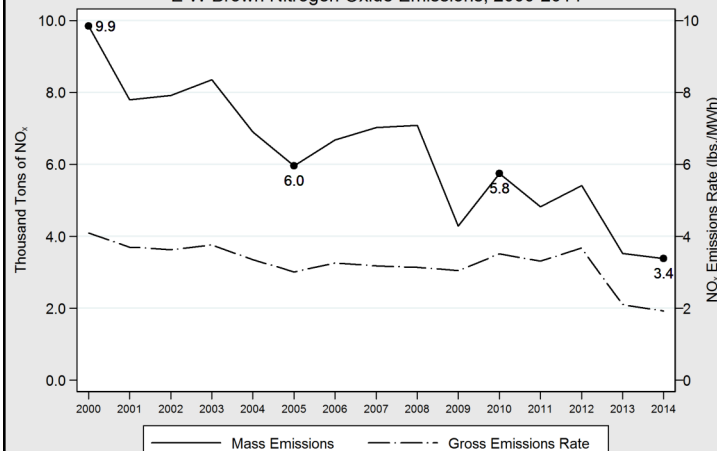


Kentucky Energy Database, EEC-DEDI, 2015
Data Source: EPA Clean Air Markets

Sulfur Dioxide	2014 Value	Since 2000
Emissions (Tonnage)	1,905	-96%
Rate (lbs./MWh)	1.08	-95%

The E. W. Brown Generating Station emitted 1,905 tons of SO₂ in 2014, a decrease of 96 percent since 2000. The rate of SO₂ emissions decreased by 95 percent during that period and is the third lowest of power plants in Kentucky.

E W Brown Nitrogen Oxide Emissions, 2000-2014

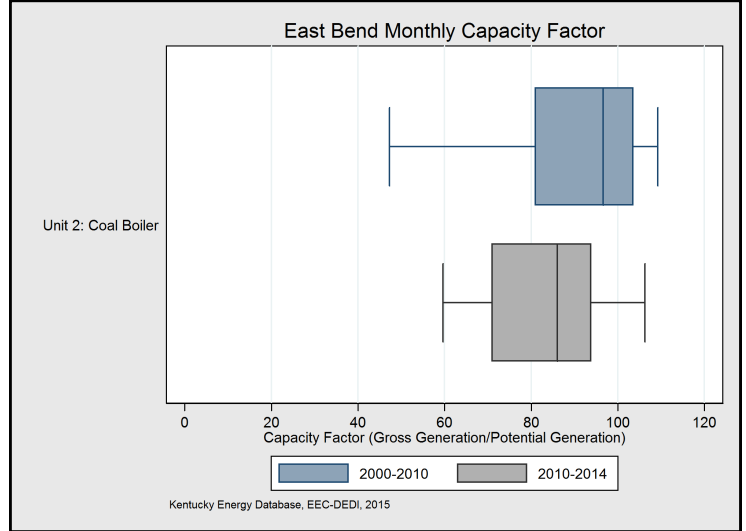
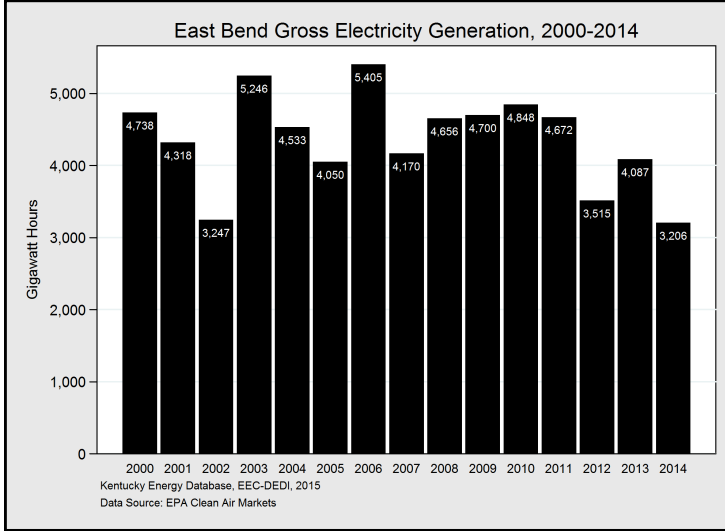


Kentucky Energy Database, EEC-DEDI, 2015
Data Source: EPA Clean Air Markets

Nitrogen Dioxide	2014 Value	Since 2000
Emissions (Tonnage)	3,375	-66%
Rate (lbs./MWh)	1.92	-53%

The E. W. Brown Generating Station emitted 3,375 tons of NO_x in 2014, a reduction of 66 percent since 2000. The rate of NO_x emissions decreased by 53 percent during that period.

East Bend Generating Station



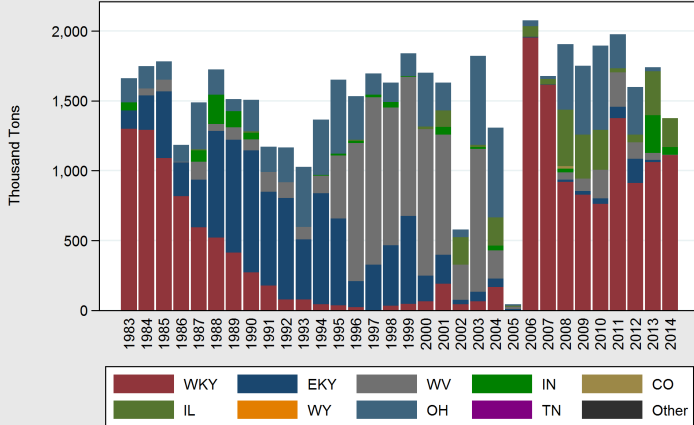
Unit Number	Online Year	Retire Year	Fuel	Capacity (MW)	Capacity Factor* (%)	Gross Generation* (GWh)	Net Generation* (GWh)	CO ₂ Rate* (lbs./MWh)	SO ₂ Rate* (lbs./MWh)	NO _x Rate* (lbs./MWh)
Plant	1981		Coal	600	61%	3,206	2,911	2,111	1.31	2.60
2	1981		Coal	600	61%	3,206	2,911	2,111	1.31	2.60

The East Bend Generating Station, located in Boone County, is 34 years old and consists of one coal-fired electricity generating unit. The unit came online in 1981 and has a nameplate capacity of 600 MW. The coal plant is owned by Duke Energy, but was originally constructed and owned jointly by Cincinnati Gas & Electric and Dayton Power & Light. In 2013, the plant generated 3.2 TWh of electricity and had a capacity factor of 61 percent. After the installation of sulfur dioxide scrubbers in 2005, East Bend began shifting its consumption of low-sulfur coal from West Virginia to that of western Kentucky, which has relatively higher sulfur content but a lower cost. In 2013, East Bend used a mix of coal from western Kentucky, Indiana, and Illinois. The western Kentucky coal East Bend consumed originated in Union and Webster County and was delivered via river barge.

*2014

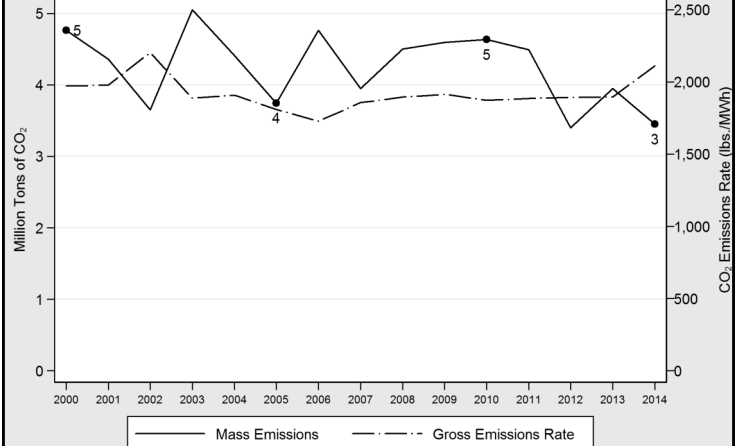
East Bend Generating Station

East Bend Coal Consumption by Origin, 1983-2014



Kentucky Energy Database, EEC-DEDI, 2015
Data Source: FERC-423 & EIA-923

East Bend Carbon Dioxide Emissions, 2000-2014



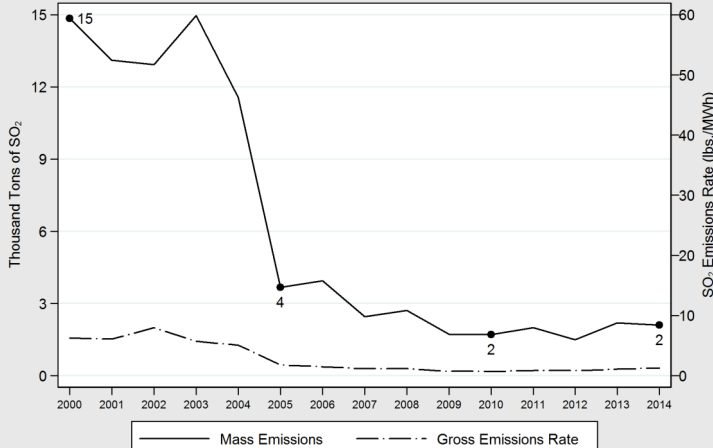
Kentucky Energy Database, EEC-DEDI, 2015
Data Source: EPA Clean Air Markets

State	2014 Tons	Percentage
Total	1,426,557	100%
Western Kentucky	1,110,137	78%
Illinois	206,939	15%
Indiana	53,316	4%
Pennsylvania	51,477	4%
West Virginia	4,688	0%

Carbon Dioxide	2014 Value	Since 2000
Emissions (Tonnage)	3,384,263	-28%
Rate (lbs./MWh)	2,111	+7%

The East Bend Generating Station emitted 3.4 million tons of CO₂ in 2014, a decrease of 28 percent from 2000 levels. The rate of CO₂ emissions increased by seven percent during that period.

East Bend Sulfur Dioxide Emissions, 2000-2014

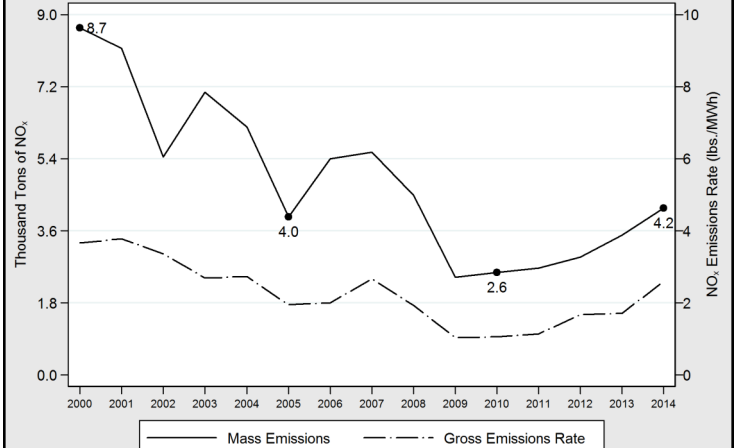


Kentucky Energy Database, EEC-DEDI, 2015
Data Source: EPA Clean Air Markets

Sulfur Dioxide	2014 Value	Since 2000
Emissions (Tonnage)	2,103	-86%
Rate (lbs./MWh)	1.31	-79%

The East Bend Generating Station emitted 2,103 tons of SO₂ in 2014, a decrease of 86 percent since 2000. The rate of SO₂ emissions reduced by 79 percent during that period.

East Bend Nitrogen Oxide Emissions, 2000-2014

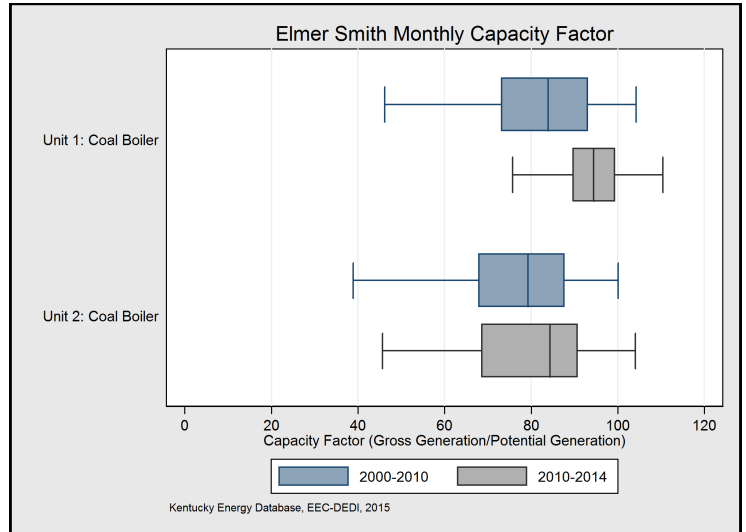
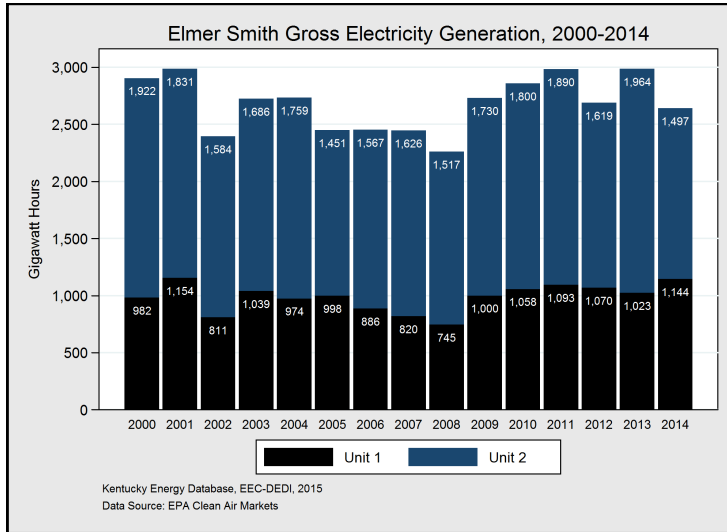


Kentucky Energy Database, EEC-DEDI, 2015
Data Source: EPA Clean Air Markets

Nitrogen Dioxide	2014 Value	Since 2000
Emissions (Tonnage)	4,166	-52%
Rate (lbs./MWh)	2.60	-29%

The East Bend Generating Station emitted 4,166 tons of NO_x in 2014, a reduction of 52 percent since 2000. The rate of NO_x emissions decreased by 29 percent during that period.

Elmer Smith Station



Unit Number	Online Year	Retire Year	Fuel	Capacity (MW)	Capacity Factor* (%)	Gross Generation* (GWh)	Net Generation* (GWh)	CO ₂ Rate* (lbs./MWh)	SO ₂ Rate* (lbs./MWh)	NO _x Rate* (lbs./MWh)
Plant	1964		Coal	401	75%	2,641	2,371	1,916	4.35	5.56
1	1964	2021	Coal	139	94%	1,144	1,019	1,940	4.29	9.29
2	1974		Coal	263	65%	1,497	1,352	1,899	4.39	2.72

Elmer Smith Station, located in Henderson County, is 51 years old and consists of two coal-fired electricity generating units, which began operating in 1964 and 1974, respectively. The plant has a total nameplate capacity of 401 MW. In 2014, the plant generated 2.64 GWh of electricity and had a plant-wide capacity factor of 75 percent. Slightly less than 80 percent of the coal used at Elmer Smith in 2014 was trucked from western Kentucky from Daviess, Muhlenberg, and Ohio counties. In September 2015, Owensboro Municipal Utilities, which operates Elmer Smith, announced Unit 1 would retire between 2019 and 2021. Elmer Smith Station is owned and operated by Owensboro Municipal Utilities. The picture below is of the Elmer Smith Station taken by Kentucky EEC staff.

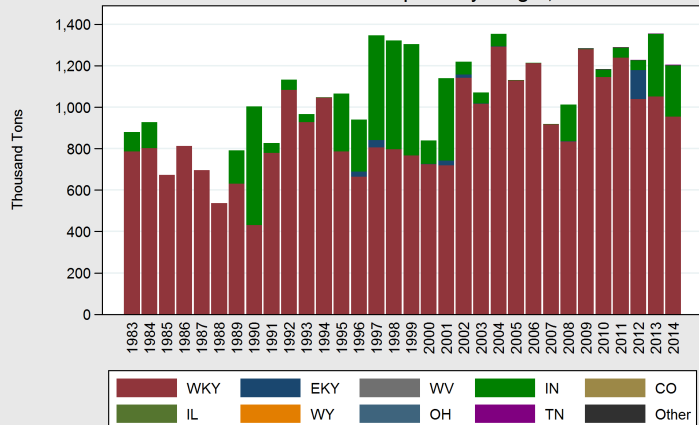


Photo by Kentucky EEC Staff

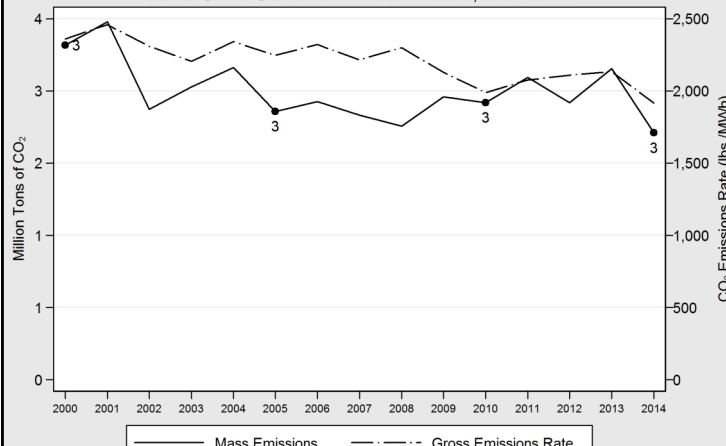
*2014

Elmer Smith Station

Elmer Smith Coal Consumption by Origin, 1983-2014



Elmer Smith Carbon Dioxide Emissions, 2000-2014

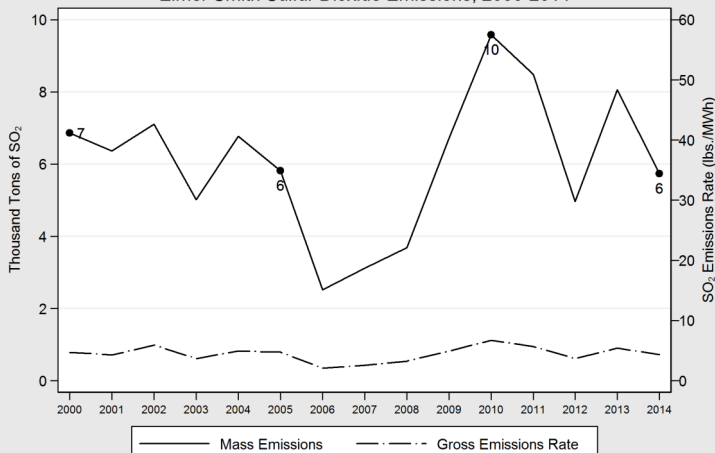


State	2014 Tons	Percentage
Total	1,205,618	100%
Western Kentucky	953,943	79%
Indiana	248,443	21%
Tennessee	3,232	<1%

Carbon Dioxide	2014 Value	Since 2000
Emissions (Tonnage)	2,531,031	-26%
Rate (lbs./MWh)	1,916	-19%

Elmer Smith Station emitted 2.5 million tons of CO₂ in 2014, a decrease of 26 percent from 2000 levels. The rate of CO₂ emissions decreased by 19 percent during that period.

Elmer Smith Sulfur Dioxide Emissions, 2000-2014



Sulfur Dioxide	2014 Value	Since 2000
Emissions (Tonnage)	5,741	-16%
Rate (lbs./MWh)	4.35	-8%

Elmer Smith Station emitted 5,741 tons of SO₂ in 2014, an increase of 16 percent since 2000. The rate of SO₂ emissions reduced by eight percent during that period.

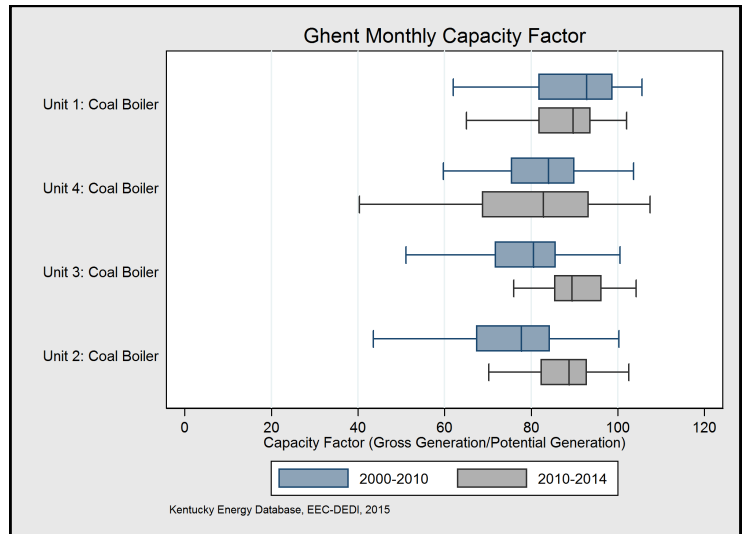
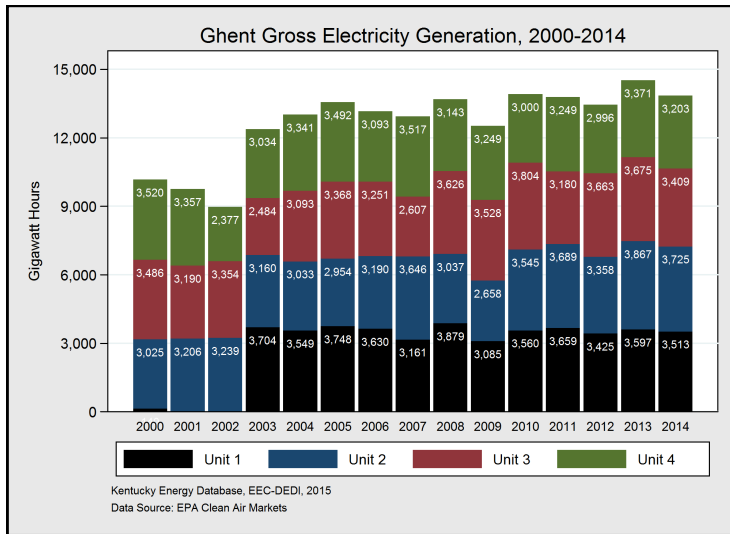
Elmer Smith Nitrogen Oxide Emissions, 2000-2014



Nitrogen Dioxide	2014 Value	Since 2000
Emissions (Tonnage)	7,348	-42%
Rate (lbs./MWh)	5.56	-36%

Elmer Smith Station emitted 7,348 tons of NO_x in 2014, a reduction of 42 percent since 2000. The rate of NO_x emissions decreased by 36 percent during that period, but as of 2014 had the highest rate of NO_x emissions in the state.

Ghent Generating Station



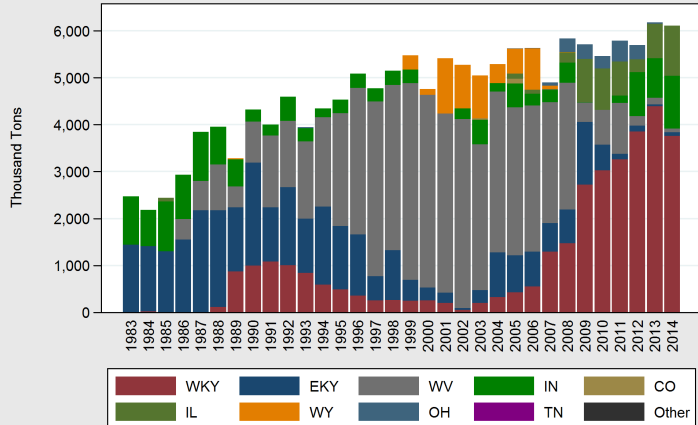
Unit Number	Online Year	Retire Year	Fuel	Capacity (MW)	Capacity Factor* (%)	Gross Generation* (GWh)	Net Generation* (GWh)	CO ₂ Rate* (lbs./MWh)	SO ₂ Rate* (lbs./MWh)	NO _x Rate* (lbs./MWh)
Plant	1973		Coal	1,932	82%	13,850	12,606	1.938	2.14	1.55
1	1974		Coal	479	84%	3,513	3,252	2,002	0.99	0.72
2	1977		Coal	495	86%	3,725	3,369	1,945	3.74	2.00
3	1981		Coal	489	80%	3,409	3,072	1,965	3.00	1.73
4	1984		Coal	469	78%	3,203	2,913	1,831	0.65	1.73

The Ghent Generating Station, located in Carroll County, began operation in 1973 and consists of four coal-fired electricity generating units. The units came online in 1974, 1977, 1981, and 1984, respectively. The plant is owned by Kentucky Utilities and has a total nameplate capacity of 1,932 MW, making it the largest of Kentucky Utilities' electricity plants. In 2014, the plant had a plant-wide capacity factor of 82 percent and generated 13.9 GWh of electricity, the second most generation of all Kentucky power plants. All four units at Ghent underwent retrofits to control for sulfur dioxide emissions from 2007 to 2009. The majority of coal consumed by Ghent in 2014 was transported by river barge from the western Kentucky counties: Union, Ohio, Magoffin, McLean, Webster, and Daviess. The plant burned smaller amounts of coal from Indiana, Illinois, West Virginia, and Perry County, in eastern Kentucky. This is a significant change from the 2000s, when it used mostly coal from West Virginia.

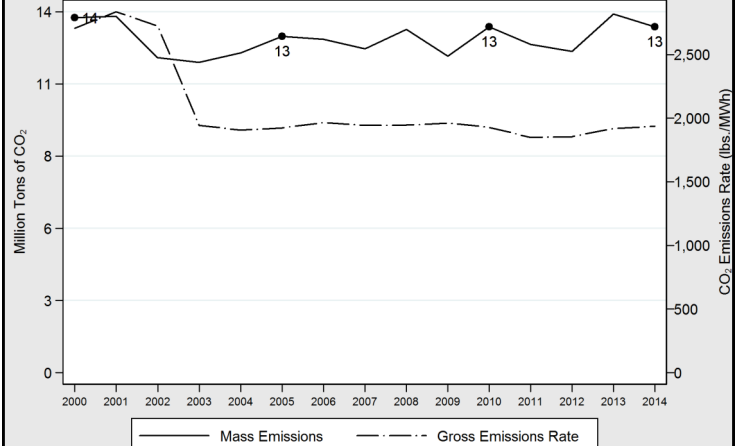
*2014

Ghent Generating Station

Ghent Coal Consumption by Origin, 1983-2014



Ghent Carbon Dioxide Emissions, 2000-2014



State	2014 Tons	Percentage
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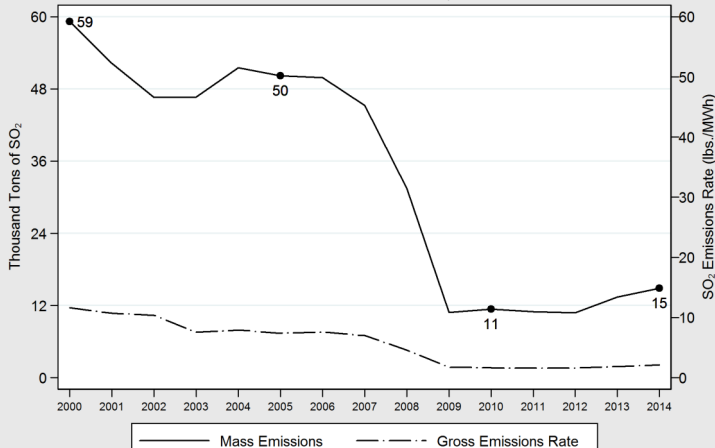
Total	6,113,933	100%
Western Kentucky	3,757,227	61%
Indiana	1,122,871	18%
Illinois	1,074,418	18%
Eastern Kentucky	81,467	1%
West Virginia	77,950	1%

Carbon Dioxide	2014 Value	Since 2000
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Emissions (Tonnage)	13,419,350	-3%
Rate (lbs./MWh)	1,938	-28%

The Ghent Generating Station emitted 13.4 million tons of CO₂ in 2014, a decrease of three percent from 2000 levels, but second most of all plants in Kentucky. The rate of CO₂ emissions decreased by 28 percent during that period.

Ghent Sulfur Dioxide Emissions, 2000-2014

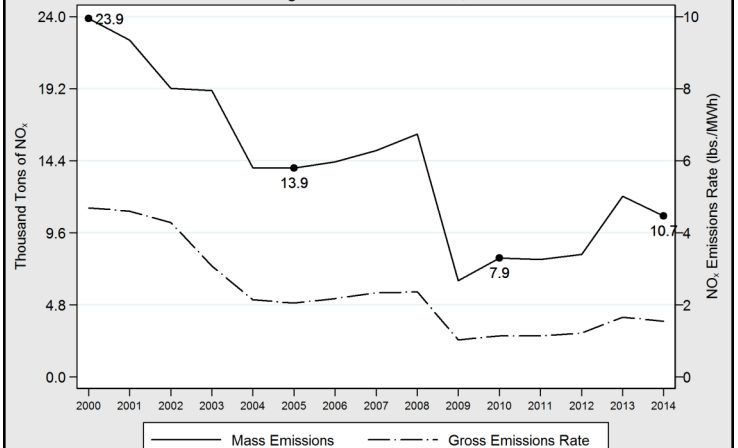


Sulfur Dioxide	2014 Value	Since 2000
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Emissions (Tonnage)	14,851	-75%
Rate (lbs./MWh)	2.14	-82%

The Ghent Generating Station emitted 14,851 tons of SO₂ in 2014, a decrease of 75 percent since 2000. The rate of SO₂ emissions reduced by 82 percent during that period.

Ghent Nitrogen Oxide Emissions, 2000-2014

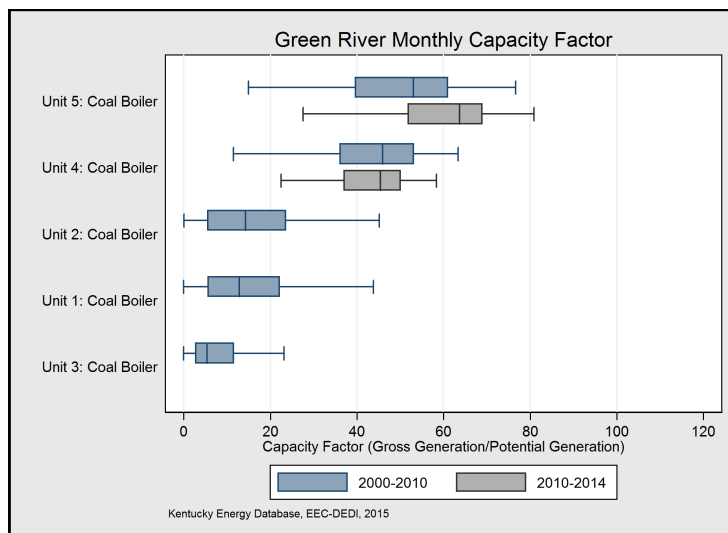
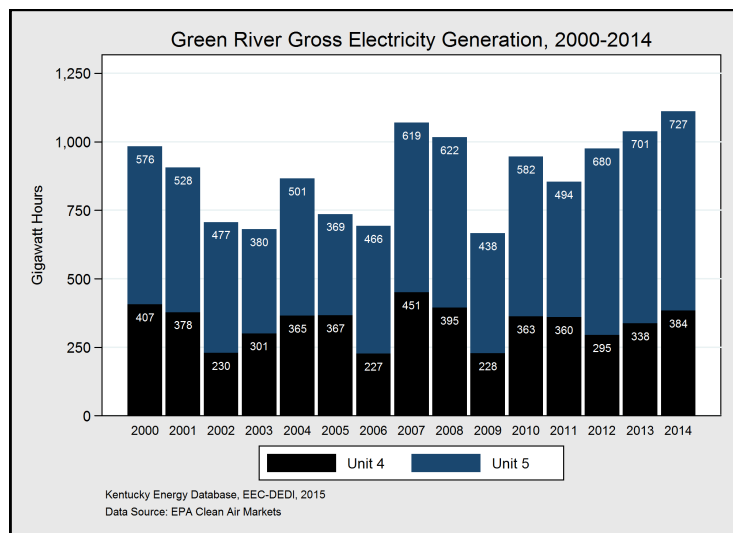


Nitrogen Dioxide	2014 Value	Since 2000
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Emissions (Tonnage)	10,721	-55%
Rate (lbs./MWh)	1.55	-67%

The Ghent Generating Station emitted 10,721 tons of NO_x in 2014, a reduction of 55 percent since 2000, but the third highest emitter in the Commonwealth. The rate of NO_x emissions decreased by 67 percent since 2000.

Green River Generating Station



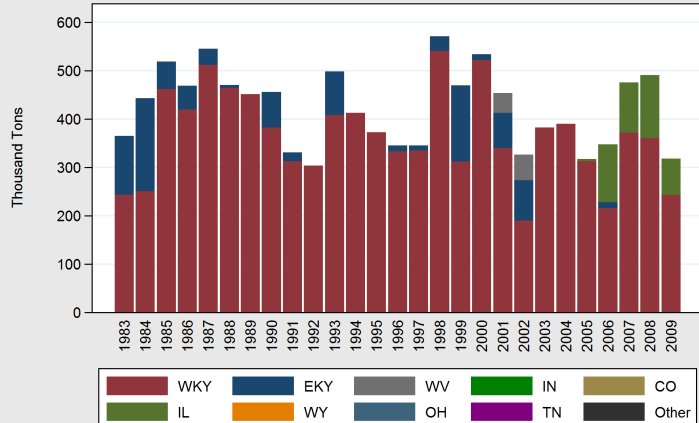
Unit Number	Online Year	Retire Year	Fuel	Capacity (MW)	Capacity Factor* (%)	Gross Generation* (GWh)	Net Generation* (GWh)	CO ₂ Rate* (lbs./MWh)	SO ₂ Rate* (lbs./MWh)	NO _x Rate* (lbs./MWh)
Plant	1950	2015	Coal	215	59%	1,111	1,028	2,135	39.55	4.54
4	1959	2015	Coal	95	46%	384	353	2,534	46.16	5.40
5	1954	2015	Coal	120	69%	727	675	1,924	36.06	4.08

The Green River Generating Station, located in Muhlenberg County, was 65 years old in 2015 and consisted of two coal-fired electricity generating units. The units have ceased operation and were retired at the end of September 2015. The units came online in 1950 and 1959, respectively. The plant had a total nameplate capacity of 215 MW. In 2014, the plant generated slightly more than 1.11 GWh of electricity and had a plant-wide capacity factor of 59 percent. Most of the coal burned at Green River has originated in western Kentucky since at least 1990, but the plant has not registered coal deliveries since 2009. Green River Generating Station is owned and operated by Kentucky Utilities.

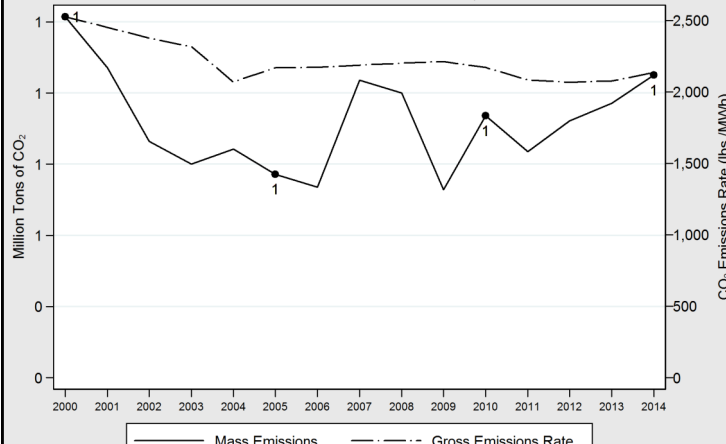
*2014

Green River Generating Station

Green River Coal Consumption by Origin, 1983-2014



Green River Carbon Dioxide Emissions, 2000-2014

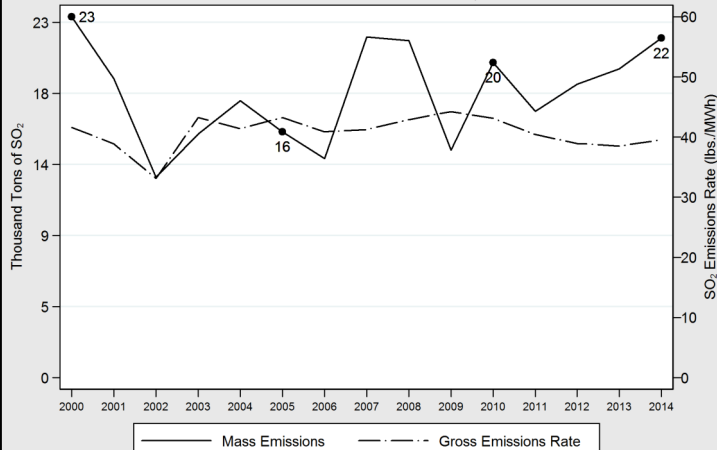


State	2009 Tons	Percentage
Total	318,193	100%
Western Kentucky	243,180	76%
Illinois	75,013	24%

Carbon Dioxide	2014 Value	Since 2000
Emissions (Tonnage)	1,185,794	-16%
Rate (lbs./MWh)	2,135	-15%

The Green River Generating Station emitted 1.2 million tons of CO₂ in 2014, a decrease of 16 percent from 2000 levels. The rate of CO₂ emissions decreased by 15 percent during that period, but is the third highest of Kentucky power plants.

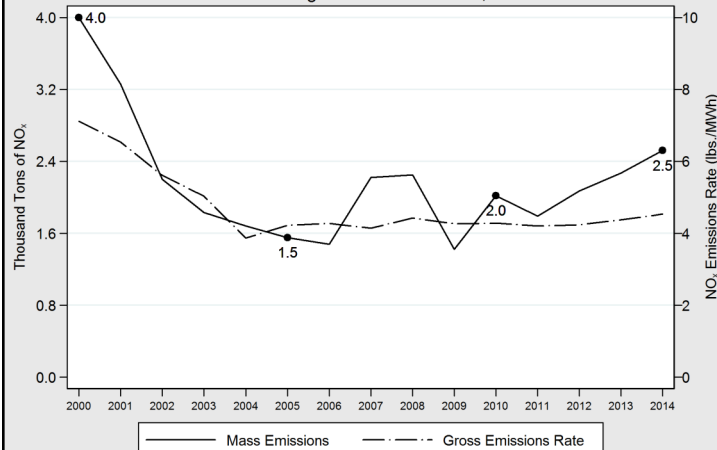
Green River Sulfur Dioxide Emissions, 2000-2014



Sulfur Dioxide	2014 Value	Since 2000
Emissions (Tonnage)	21,967	-6%
Rate (lbs./MWh)	39.55	-5%

The Green River Generating Station emitted 22 thousand tons of SO₂ in 2014, a decrease of six percent since 2000. The rate of SO₂ emissions reduced by five percent during that period, but is the second highest of Kentucky power plants.

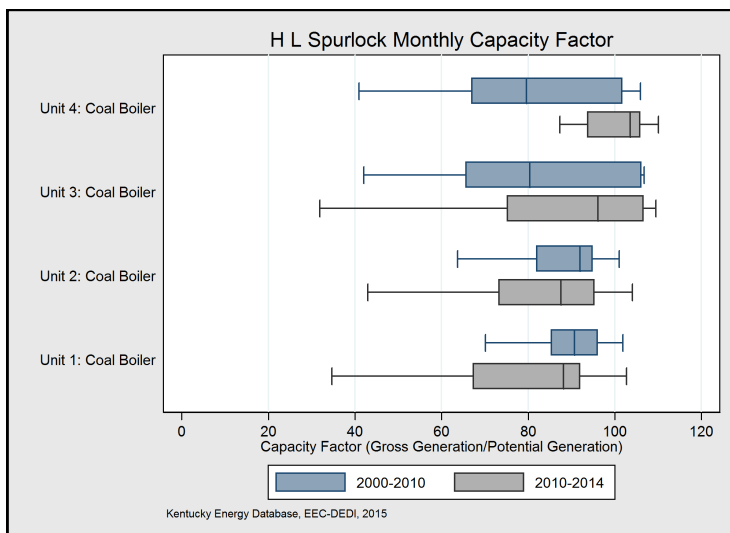
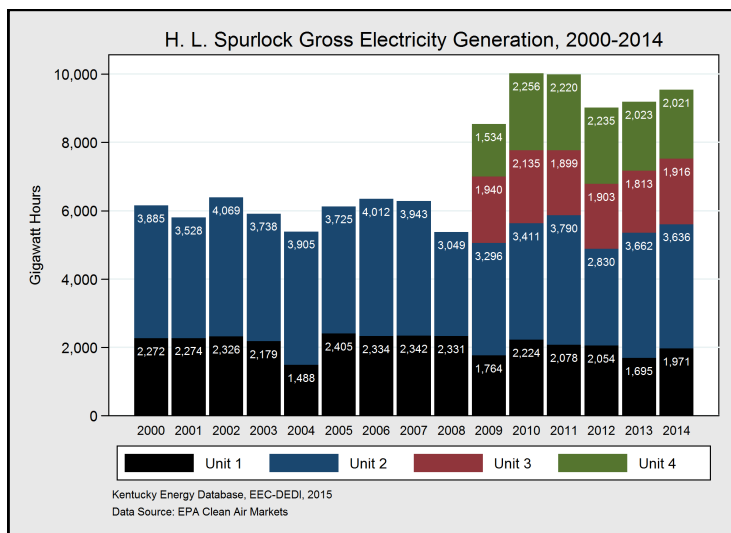
Green River Nitrogen Oxide Emissions, 2000-2014



Nitrogen Dioxide	2014 Value	Since 2000
Emissions (Tonnage)	2,519	-37%
Rate (lbs./MWh)	4.54	-36%

The Green River Generating Station emitted 2,519 tons of NO_x in 2014, a reduction of 37 percent since 2000. The rate of NO_x emissions decreased by 36 percent during that period.

H. L. Spurlock Power Station



Unit Number	Online Year	Retire Year	Fuel	Capacity (MW)	Capacity Factor* (%)	Gross Generation* (GWh)	Net Generation* (GWh)	CO ₂ Rate* (lbs./MWh)	SO ₂ Rate* (lbs./MWh)	NO _x Rate* (lbs./MWh)
Plant	1977		Coal	1,346	81%	9,544	8,592	1,850	0.98	0.70
1	1977		Coal	300	75%	1,971	1,785	1,796	0.92	0.76
2	1981		Coal	510	81%	3,636	3,353	1,982	0.96	0.87
3	2005		Coal	268	82%	1,916	1,686	1,776	1.22	0.52
4	2008		Coal	268	86%	2,021	1,768	1,735	0.86	0.50

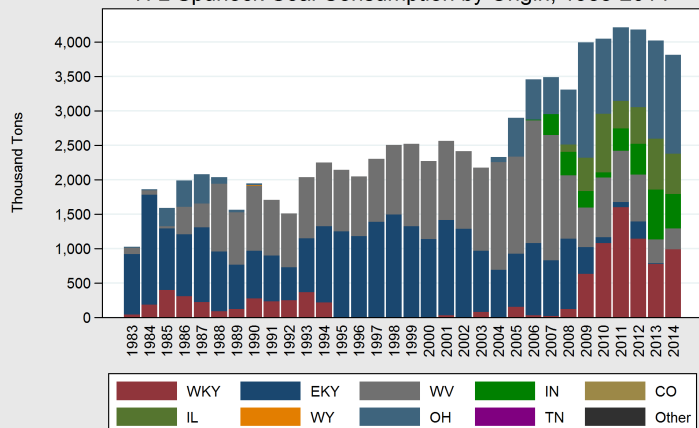
The H. L. Spurlock Power Station, located in Mason County, is 38 years old and consists of four coal-fired electricity generating units. The units came online in 1977, 1981, 2005, and 2009, respectively. Spurlock has a total nameplate capacity of 1,346 MW. In 2014, the plant generated 9.5 GWh of electricity and had a plant-wide capacity factor of 81 percent. To lower sulfur dioxide emissions, desulfurization scrubbers were installed on unit 3 in 2004, on unit 2 in 2008, and on units 1 and 4 in 2009. Spurlock used a mix of coal from Ohio and Union counties in western Kentucky, and from the states of Indiana, Illinois, Ohio, and West Virginia in 2014. From the 1990s through the mid-2000s, Spurlock used a mix of mostly eastern Kentucky and West Virginia coal. Spurlock Power Station is owned and operated by East Kentucky Power Cooperative. Photo courtesy of EKPC.



*2014

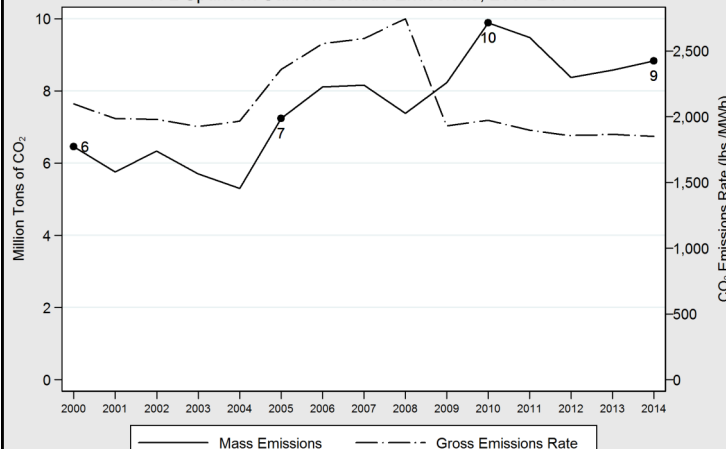
H. L. Spurlock Power Station

H L Spurlock Coal Consumption by Origin, 1983-2014



Kentucky Energy Database, EEC-DEDI, 2015
Data Source: FERC-423 & EIA-923

H L Spurlock Carbon Dioxide Emissions, 2000-2014



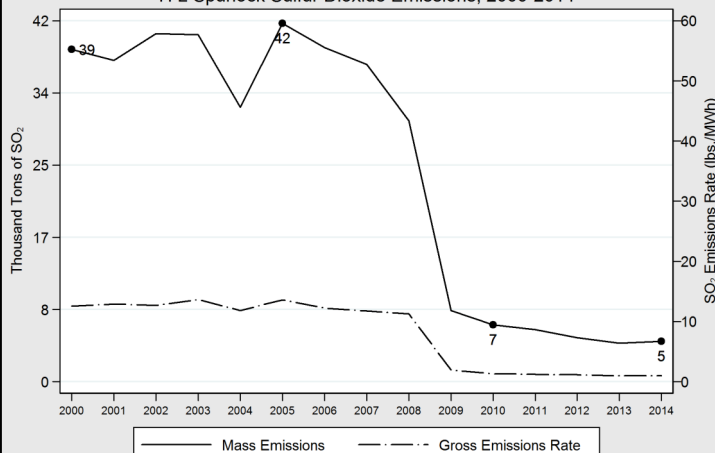
Kentucky Energy Database, EEC-DEDI, 2015
Data Source: EPA Clean Air Markets

State	2014 Tons	Percentage
Total	3,811,444	100%
Ohio	1,432,105	38%
Western Kentucky	985,592	26%
Illinois	588,114	15%
Indiana	497,504	13%
West Virginia	308,129	8%

Carbon Dioxide	2014 Value	Since 2000
Emissions (Tonnage)	8,828,145	+37%
Rate (lbs./MWh)	1,850	-12%

The H. L. Spurlock Power Station emitted 8.8 million tons of CO₂ in 2014, an increase of 37 percent from 2000 levels. The rate of CO₂ emissions decreased by 12 percent during that period and is the third lowest of coal plants in Kentucky.

H L Spurlock Sulfur Dioxide Emissions, 2000-2014

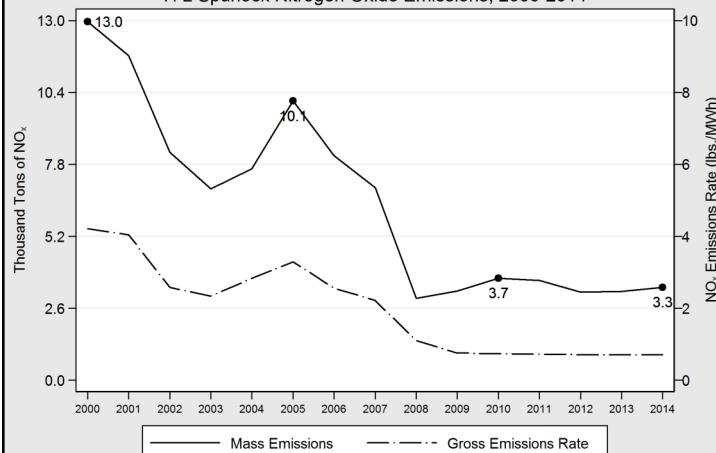


Kentucky Energy Database, EEC-DEDI, 2015
Data Source: EPA Clean Air Markets

Sulfur Dioxide	2014 Value	Since 2000
Emissions (Tonnage)	4,689	-88%
Rate (lbs./MWh)	0.98	-92%

The H. L. Spurlock Power Station emitted 4,689 tons of SO₂ in 2014, a decrease of 88 percent since 2000. The rate of SO₂ emissions reduced by 92 percent during that period and now has the second lowest rate of SO₂ emissions in the Commonwealth

H L Spurlock Nitrogen Oxide Emissions, 2000-2014

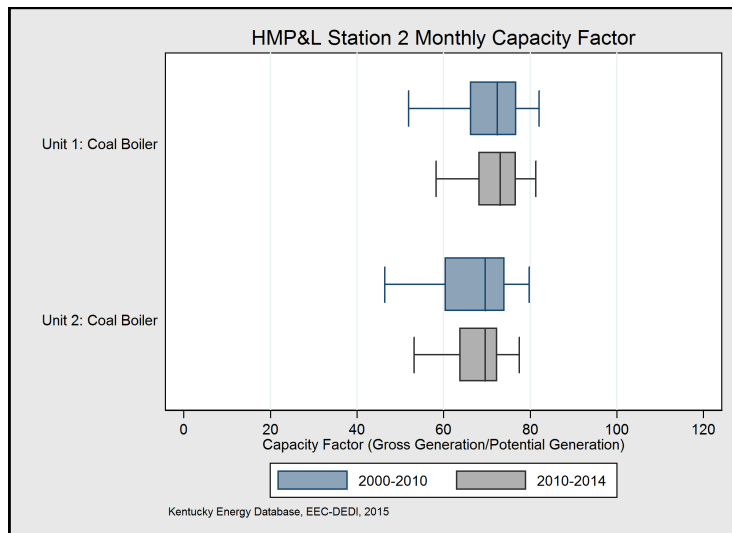
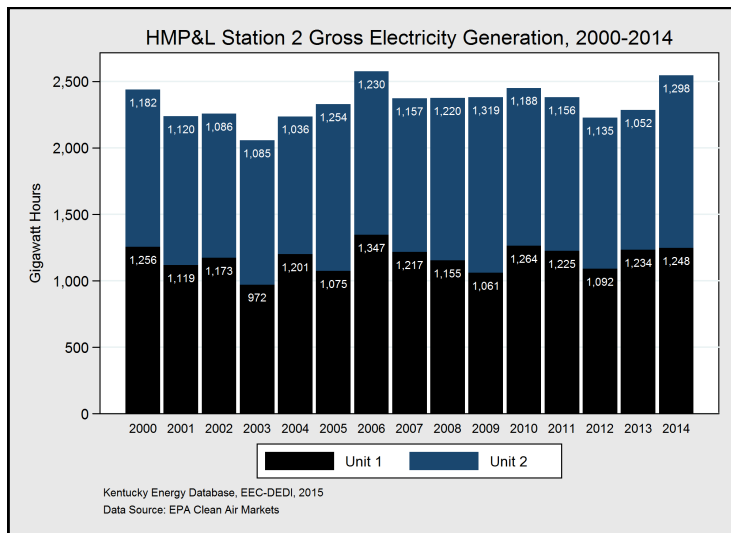


Kentucky Energy Database, EEC-DEDI, 2015
Data Source: EPA Clean Air Markets

Nitrogen Dioxide	2014 Value	Since 2000
Emissions (Tonnage)	3,352	-74%
Rate (lbs./MWh)	0.70	-83%

The H. L. Spurlock Power Station emitted 3,352 tons of NO_x in 2014, a reduction of 74 percent since 2000. The rate of NO_x emissions decreased by 83 percent during that period. In 2013, Spurlock had the second-lowest rate of NO_x emissions in the Kentucky.

Henderson Station

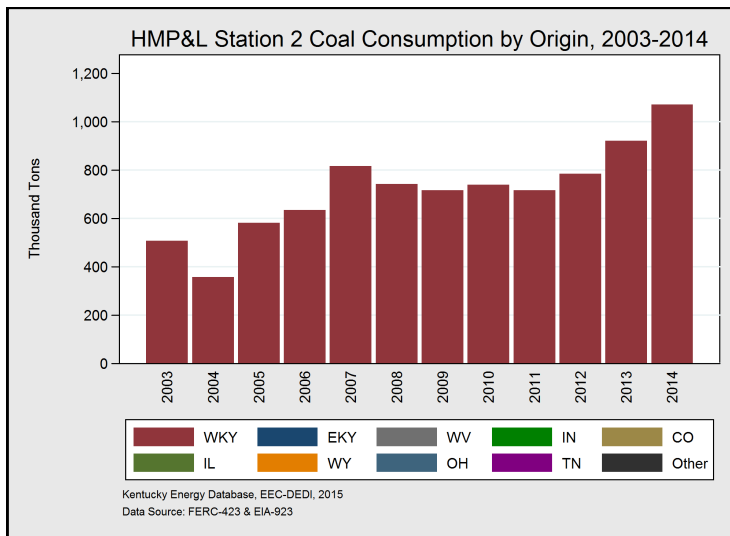


Unit Number	Online Year	Retire Year	Fuel	Capacity (MW)	Capacity Factor* (%)	Gross Generation* (GWh)	Net Generation* (GWh)	CO ₂ Rate* (lbs./MWh)	SO ₂ Rate* (lbs./MWh)	NO _x Rate* (lbs./MWh)
Plant	1973		Coal	405	72%	2,546	2,302	2,007	5.07	0.86
1	1973		Coal	200	71%	1,248	1,135	1,970	4.40	0.87
2	1974		Coal	205	72%	1,298	1,167	2,042	5.72	0.85

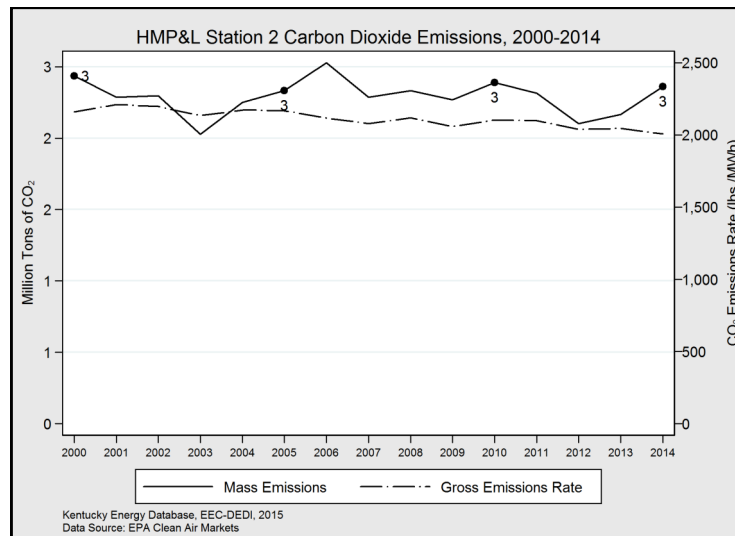
Henderson Municipal Power and Light (HMP&L) Station 2, located in Webster County, is 42 years old, and consists of two coal-fired electricity generating units. The plant is owned by Henderson Municipal Power & Light, is operated by Big Rivers Election Corporation, and its units came online in 1973 and 1974, respectively. The plant has a total nameplate capacity of 405 MW. In 2014, the plant generated 2.6 GWh of electricity and had a plant -wide capacity factor of 72 percent. HMP&L used only coal from western Kentucky in 2014, primarily trucked from Hopkins and Webster counties, just as it has since at least 2003.

*2014

Henderson Station

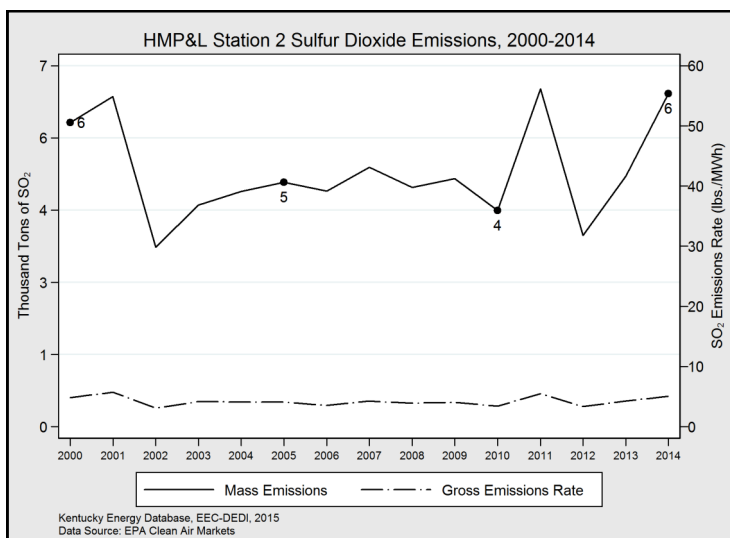


State	2014 Tons	Percentage
Total	1,070,604	100%
Western Kentucky	1,070,604	100%



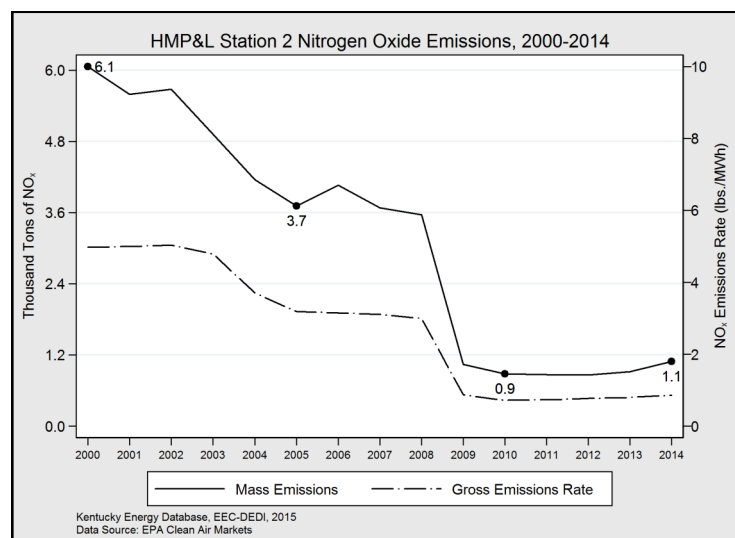
Carbon Dioxide	2014 Value	Since 2000
Emissions (Tonnage)	2,554,648	-3%
Rate (lbs./MWh)	2,007	-7%

Henderson Station emitted 2.6 million tons of CO₂ in 2014, a decrease of three percent from 2000 levels. The rate of CO₂ emissions decreased by seven percent during that period.



Sulfur Dioxide	2014 Value	Since 2000
Emissions (Tonnage)	6,459	+9%
Rate (lbs./MWh)	5.07	+5%

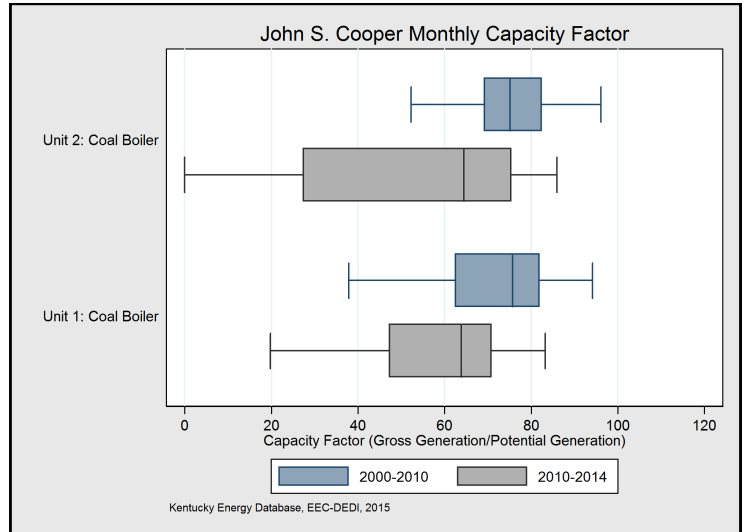
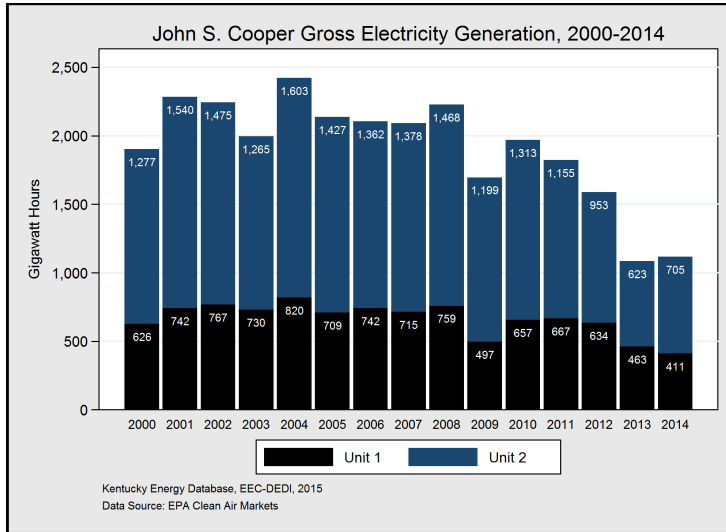
Henderson Station emitted 6,459 tons of SO₂ in 2014, an increase of nine percent since 2000. The rate of SO₂ emissions increased by five percent during that period.



Nitrogen Dioxide	2014 Value	Since 2000
Emissions (Tonnage)	1,093	-82%
Rate (lbs./MWh)	0.86	-83%

Henderson Station emitted 1,093 tons of NO_x in 2014, a reduction of 82 percent since 2000. The rate of NO_x emissions decreased by 83 percent during that period.

John S. Cooper Power Station



Unit Number	Online Year	Retire Year	Fuel	Capacity (MW)	Capacity Factor* (%)	Gross Generation* (GWh)	Net Generation* (GWh)	CO ₂ Rate* (lbs./MWh)	SO ₂ Rate* (lbs./MWh)	NO _x Rate* (lbs./MWh)
Plant	1965		Coal	341	37%	1,116	1,030	1,777	7.75	1.55
1	1965		Coal	116	40%	411	381	1,787	13.04	2.27
2	1969		Coal	225	36%	705	649	1,772	4.66	1.12

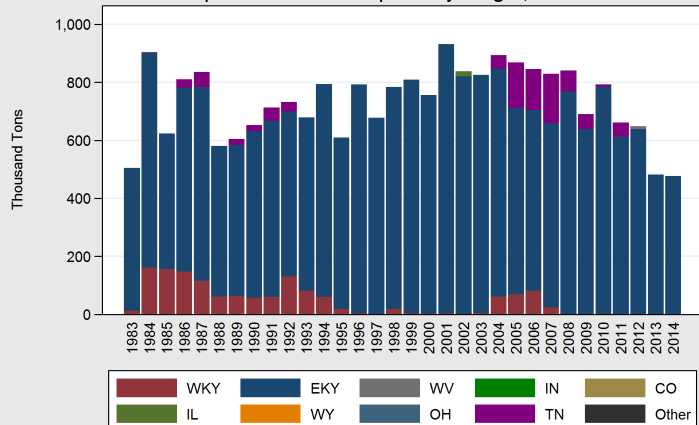
The John Sherman Cooper Power Station, located in Pulaski County, is 50 years old and consists of two coal-fired electricity generating units. The units came online in 1965 and 1969, respectively. The plant has a total nameplate capacity of 341 MW. In 2014, the plant generated 1.1 GWh of electricity and had a plant-wide capacity factor of 37 percent. A scrubber was installed on unit 2 in 2012 to lower sulfur dioxide emissions and a baghouse. Unit 1 is in the process of being tied into the Unit 2 controls. Cooper sourced all of its coal from eastern Kentucky in 2014 from Perry, Leslie, Bell, Estill, Rockcastle, and Knox counties. John S. Cooper Power Station is owned and operated by East Kentucky Power Cooperative. Photo courtesy of EKPC.

*2014



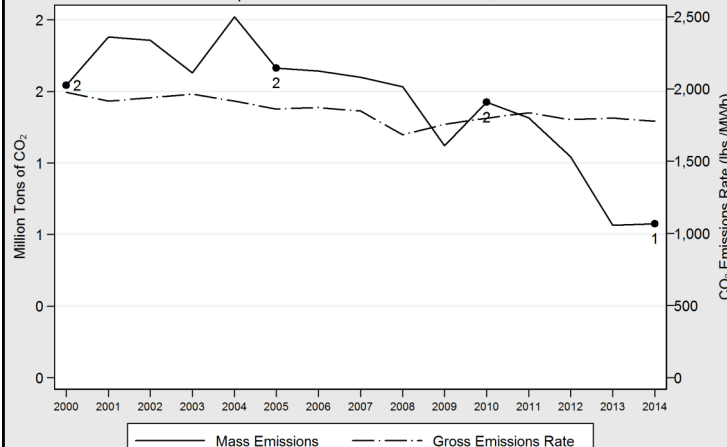
John S. Cooper Power Station

Cooper Coal Consumption by Origin, 1983-2014



Kentucky Energy Database, EEC-DEDI, 2015
Data Source: FERC-423 & EIA-923

John S. Cooper Carbon Dioxide Emissions, 2000-2014



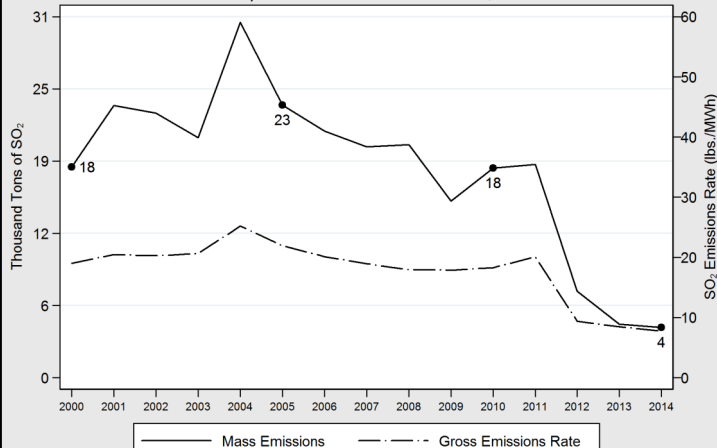
Kentucky Energy Database, EEC-DEDI, 2015
Data Source: EPA Clean Air Markets

State	2014 Tons	Percentage
Total	477,513	100%
Eastern Kentucky	477,513	100%

Carbon Dioxide	2014 Value	Since 2000
Emissions (Tonnage)	991,943	-47%
Rate (lbs./MWh)	1,777	-10%

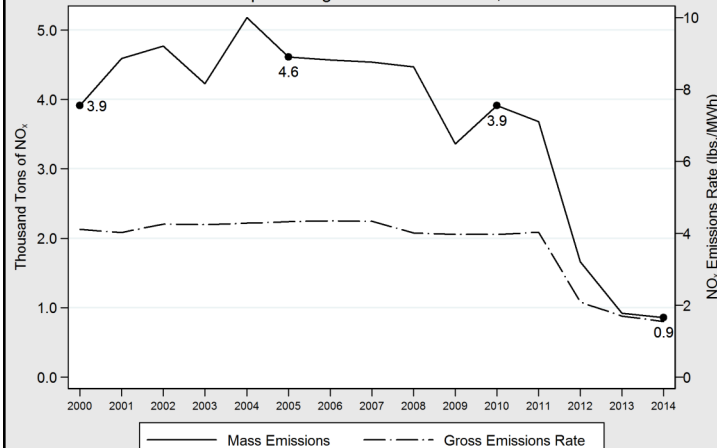
The John S. Cooper Power Station emitted 992 thousand tons of CO₂ in 2014, a decrease of 47 percent from 2000 levels. The rate of CO₂ emissions decreased by 10 percent during that period and is the lowest of all Kentucky coal plants.

John S. Cooper Sulfur Dioxide Emissions, 2000-2014



Kentucky Energy Database, EEC-DEDI, 2015
Data Source: EPA Clean Air Markets

John S. Cooper Nitrogen Oxide Emissions, 2000-2014



Kentucky Energy Database, EEC-DEDI, 2015
Data Source: EPA Clean Air Markets

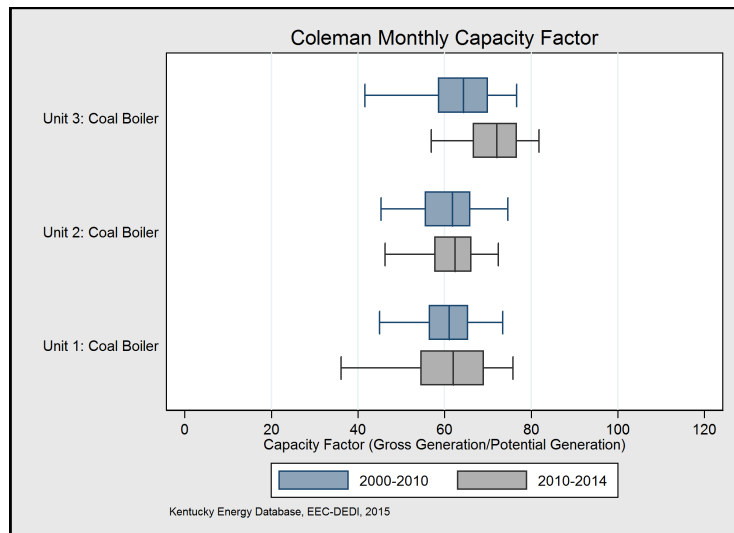
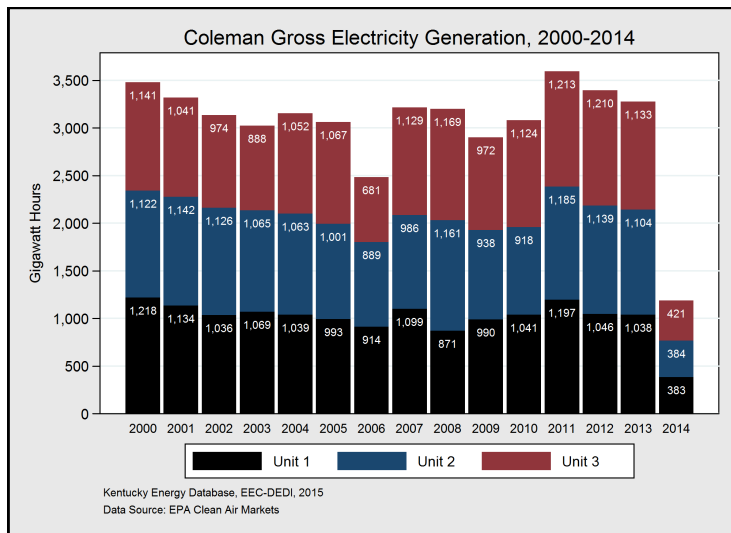
Sulfur Dioxide	2014 Value	Since 2000
Emissions (Tonnage)	4,324	-76%
Rate (lbs./MWh)	7.75	-59%

Nitrogen Dioxide	2014 Value	Since 2000
Emissions (Tonnage)	863	-78%
Rate (lbs./MWh)	1.55	-62%

The John S. Cooper Power Station emitted 4,324 tons of SO₂ in 2014, a decrease of 76 percent since 2000. The rate of SO₂ emissions reduced by 59 percent during that period.

The John S. Cooper Power Station emitted 863 tons of NO_x in 2014, a reduction of 78 percent since 2000. The rate of NO_x emissions decreased by 62 percent during that period.

Kenneth C. Coleman Station



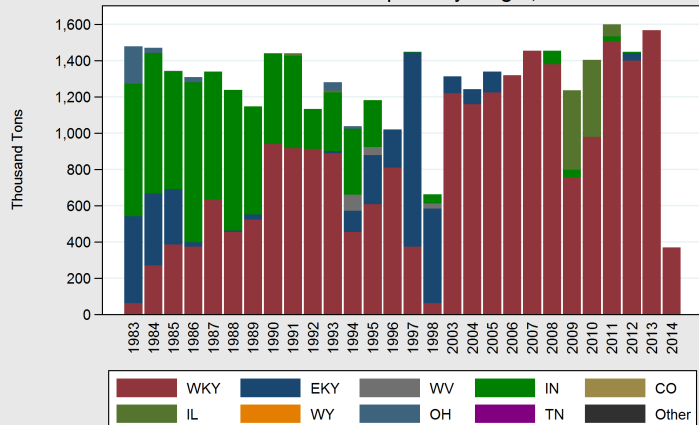
Unit Number	Online Year	Retire Year	Fuel	Capacity (MW)	Capacity Factor* (%)	Gross Generation* (GWh)	Net Generation* (GWh)	CO ₂ Rate* (lbs./MWh)	SO ₂ Rate* (lbs./MWh)	NO _x Rate* (lbs./MWh)
Plant	1969	Idled	Coal	602	23%	1,188	1,065	2,086	1.56	3.62
1	1969	Idled	Coal	205	21%	383	349	2,080	1.50	3.58
2	1970	Idled	Coal	205	21%	384	328	2,074	1.58	3.61
3	1971	Idled	Coal	192	25%	421	388	2,103	1.58	3.68

Kenneth C. Coleman Station, located in Hawesville in Hancock County, is 46 years old and consists of three coal-fired electricity generating units. The plant is owned by Big Rivers Electric Corporation and its units came online in 1969, 1970, and 1971, respectively. Coleman is currently idled, and has not produced electricity since May 2014. The plant has a total nameplate capacity of 602 MW. In 2014, the plant generated 1.2 GWh of electricity and had a plant-wide capacity factor of 23 percent. Coleman had upgrades to control the release of pollutants in 2005, which has greatly reduced plant-wide emissions of sulfur dioxide. The plant exclusively used coal from Muhlenberg, Union, and Webster counties in western Kentucky in 2014, and the region has been the major source of its coal for the past decade.

*2014

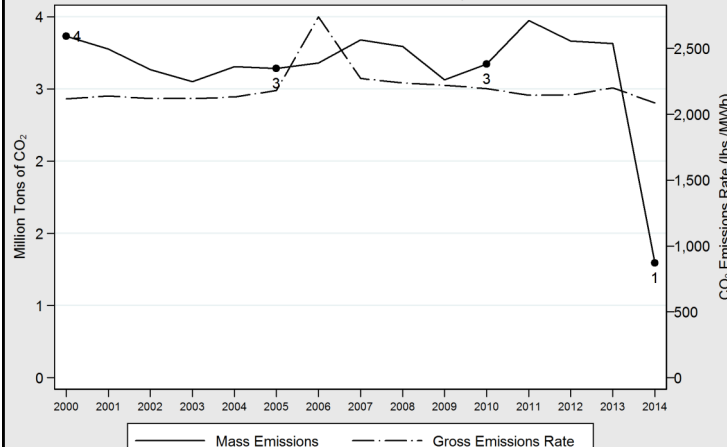
Kenneth C. Coleman Station

Coleman Coal Consumption by Origin, 2003-2014



Kentucky Energy Database, EEC-DEDI, 2015
Data Source: FERC-423 & EIA-923

Coleman Carbon Dioxide Emissions, 2000-2014



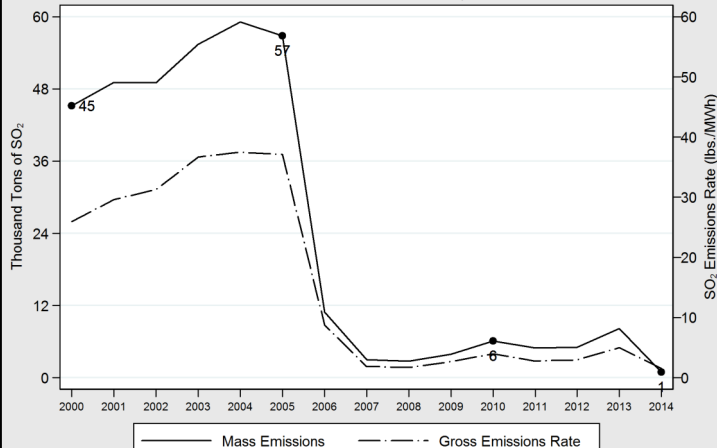
Kentucky Energy Database, EEC-DEDI, 2015
Data Source: EPA Clean Air Markets

State	2014 Tons	Percentage
Total	369,730	100%
Western Kentucky	369,730	100%

Carbon Dioxide	2014 Value	Since 2000
Emissions (Tonnage)	1,238,322	-66%
Rate (lbs./MWh)	2,086	-2%

The Kenneth C. Coleman Station emitted 1.2 million tons of CO₂ in 2014, a decrease of 66 percent from 2000 levels. The rate of CO₂ emissions decreased by 2 percent over the same period.

Coleman Sulfur Dioxide Emissions, 2000-2014

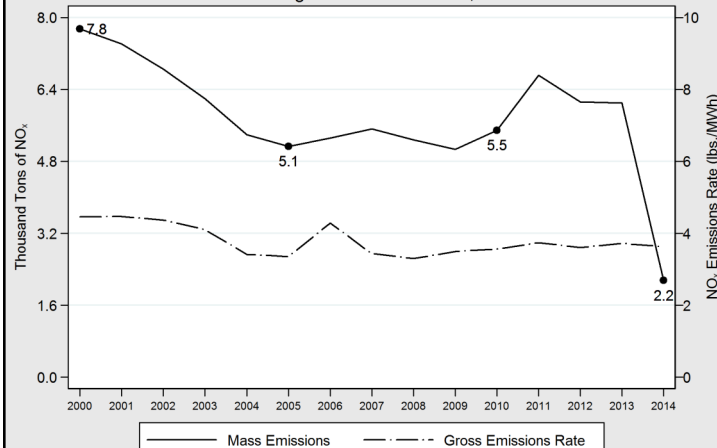


Kentucky Energy Database, EEC-DEDI, 2015
Data Source: EPA Clean Air Markets

Sulfur Dioxide	2014 Value	Since 2000
Emissions (Tonnage)	923	-98%
Rate (lbs./MWh)	1.56	-94%

The Kenneth C. Coleman Station emitted 923 tons of SO₂ in 2014, a decrease of 98 percent since 2000. The rate of SO₂ emissions decreased by 81 percent during that period.

Coleman Nitrogen Oxide Emissions, 2000-2014

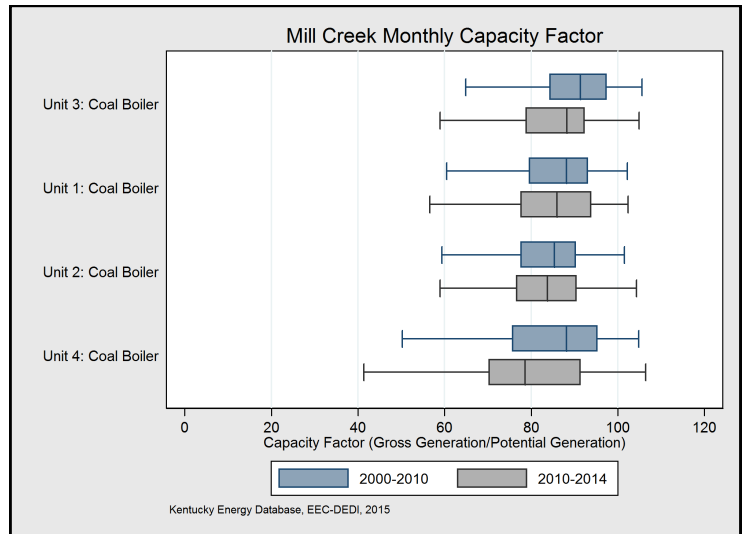
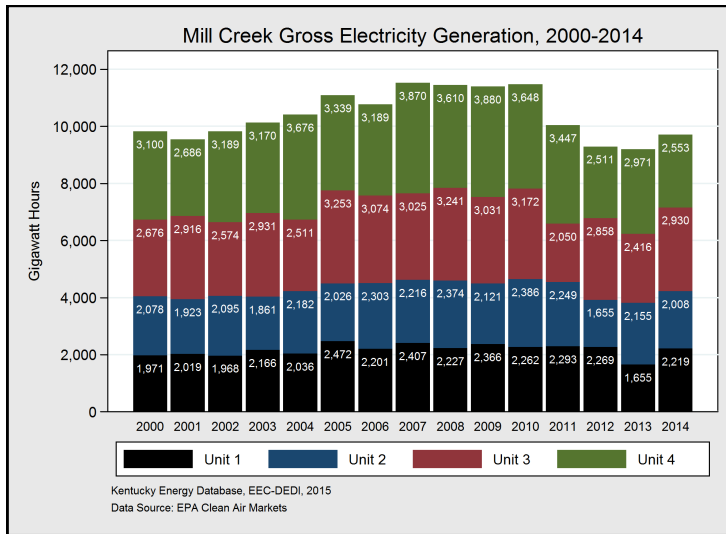


Kentucky Energy Database, EEC-DEDI, 2015
Data Source: EPA Clean Air Markets

Nitrogen Dioxide	2014 Value	Since 2000
Emissions (Tonnage)	2,152	-72%
Rate (lbs./MWh)	3.62	-19%

The Kenneth C. Coleman Station emitted 2,152 tons of NO_x in 2014, a reduction of 72 percent since 2000. The rate of NO_x emissions decreased by 19 percent during that period.

Mill Creek Generating Station



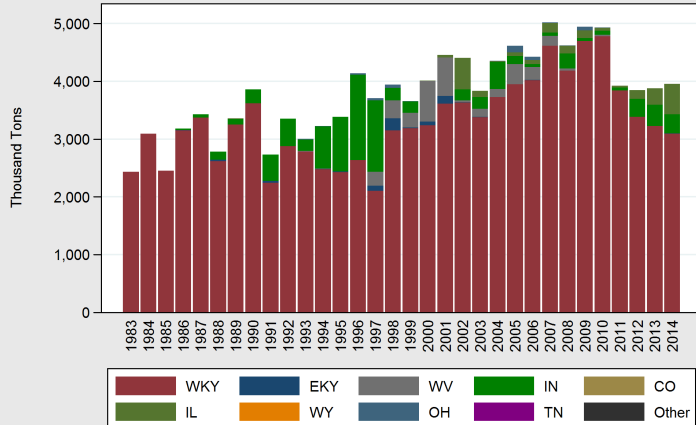
Unit Number	Online Year	Retire Year	Fuel	Capacity (MW)	Capacity Factor* (%)	Gross Generation* (GWh)	Net Generation* (GWh)	CO ₂ Rate* (lbs./MWh)	SO ₂ Rate* (lbs./MWh)	NO _x Rate* (lbs./MWh)
Plant	1972		Coal	1,472	75%	9,710	8,715	1,895	5.80	2.31
1	1972		Coal	303	84%	2,219	1,964	1,787	4.80	2.56
2	1974		Coal	301	76%	2,008	1,756	1,901	5.81	2.74
3	1978		Coal	391	85%	2,930	2,673	1,895	6.47	2.10
4	1982		Coal	477	61%	2,553	2,322	1,985	5.88	1.99

The Mill Creek Generating Station, located in Jefferson County, is 43 years old and consists of four coal-fired electricity generating units. The units came online in 1972, 1974, 1978, and 1982, respectively and are owned by Louisville Gas & Electric. The plant has a total nameplate capacity of 1,472 MW and is the third-largest power plant in Kentucky by capacity. In 2014, Mill Creek had a plant-wide capacity factor of 75 percent and generated 9.7 GWh of electricity, third most of all power plants in Kentucky. Almost 80 percent of Mill Creek's coal came from western Kentucky in 2013 from Webster, Ohio, Union, McLean, and Hopkins counties. A small amount of coal was also shipped from Perry County to Mill Creek in 2014.

*2014

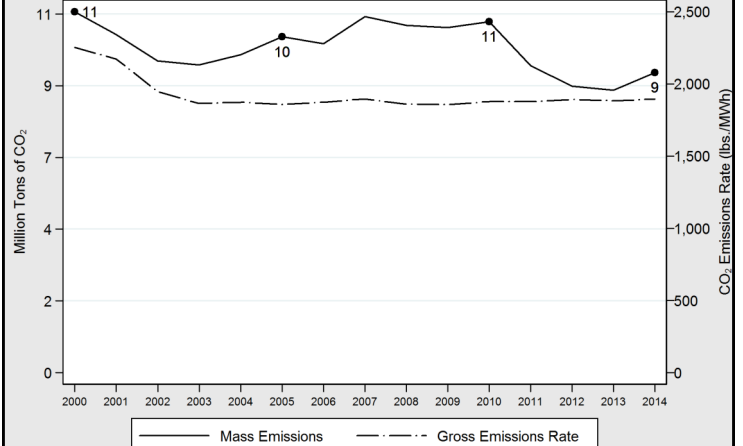
Mill Creek Generating Station

Mill Creek Coal Consumption by Origin, 1983-2014



Kentucky Energy Database, EEC-DEDI, 2015
Data Source: FERC-423 & EIA-923

Mill Creek Carbon Dioxide Emissions, 2000-2014



Kentucky Energy Database, EEC-DEDI, 2015
Data Source: EPA Clean Air Markets

State	2014 Tons	Percentage
Total	3,954,399	100%
Western Kentucky	3,095,324	78%
Indiana	522,728	13%
Illinois	333,227	8%
Eastern Kentucky	3,120	0%

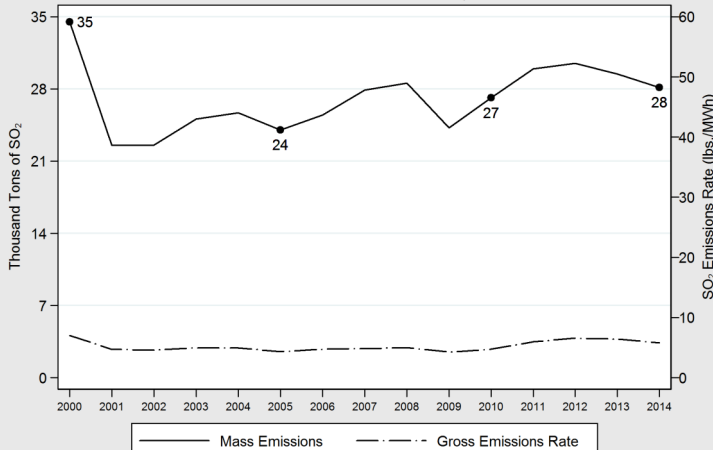
Total	3,954,399	100%
Western Kentucky	3,095,324	78%
Indiana	522,728	13%
Illinois	333,227	8%
Eastern Kentucky	3,120	0%

Carbon Dioxide	2014 Value	Since 2000
Emissions (Tonnage)	9,201,728	-17%
Rate (lbs./MWh)	1,895	-16%

Emissions (Tonnage)	9,201,728	-17%
Rate (lbs./MWh)	1,895	-16%

The Mill Creek Generating Station emitted 9.2 million tons of CO₂ in 2014, a decrease of 17 percent from 2000 levels, but third most of all power plants in Kentucky. The rate of CO₂ emissions decreased by 16 percent during that period.

Mill Creek Sulfur Dioxide Emissions, 2000-2014



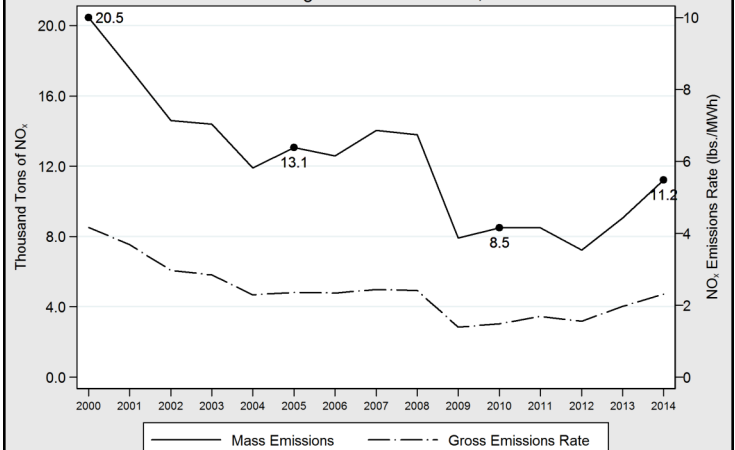
Kentucky Energy Database, EEC-DEDI, 2015
Data Source: EPA Clean Air Markets

Sulfur Dioxide	2014 Value	Since 2000
Emissions (Tonnage)	28,149	-18%
Rate (lbs./MWh)	5.80	-17%

Emissions (Tonnage)	28,149	-18%
Rate (lbs./MWh)	5.80	-17%

The Mill Creek Generating Station emitted 28 thousand tons of SO₂ in 2014, a decrease of 18 percent since 2000, but the third most of all power plants in Kentucky. The rate of SO₂ emissions reduced by 17 percent during that period.

Mill Creek Nitrogen Oxide Emissions, 2000-2014



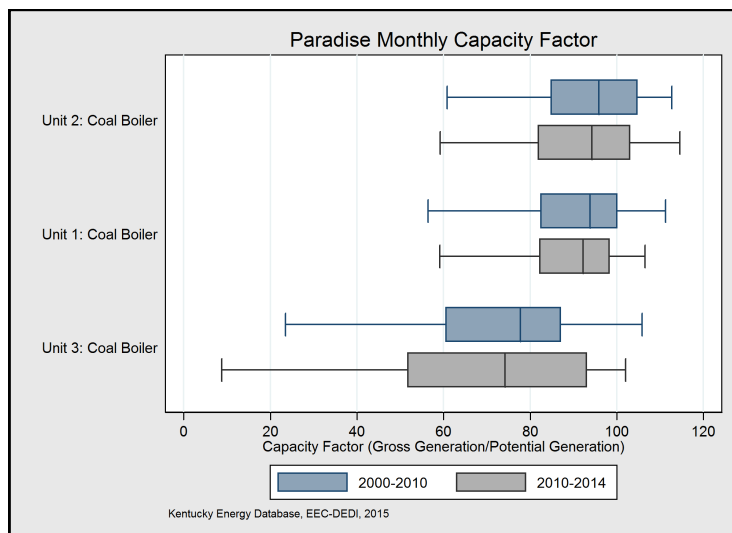
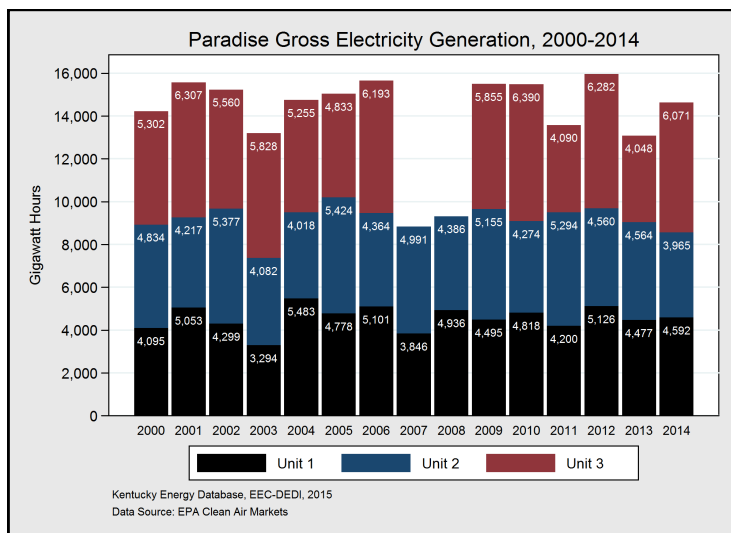
Kentucky Energy Database, EEC-DEDI, 2015
Data Source: EPA Clean Air Markets

Nitrogen Dioxide	2014 Value	Since 2000
Emissions (Tonnage)	11,213	-45%
Rate (lbs./MWh)	2.31	-45%

Emissions (Tonnage)	11,213	-45%
Rate (lbs./MWh)	2.31	-45%

The Mill Creek Generating Station emitted 11,213 tons of NO_x in 2014, a reduction of 45 percent since 2000, but the second most of all power plants in Kentucky. The rate of NO_x emissions decreased by 45 percent during that period.

Paradise Fossil Plant



Unit Number	Online Year	Retire Year	Fuel	Capacity (MW)	Capacity Factor* (%)	Gross Generation* (GWh)	Net Generation* (GWh)	CO ₂ Rate* (lbs./MWh)	SO ₂ Rate* (lbs./MWh)	NO _x Rate* (lbs./MWh)
Plant	1963		Coal	2,201	76%	14,628	13,335	2,043	2.69	1.29
1	1963	2017	Coal	628	83%	4,592	4,194	2,083	2.86	1.17
2	1963	2017	Coal	602	75%	3,965	3,563	2,102	4.08	1.04
3	1970		Coal	971	71%	6,071	5,578	1,975	1.65	1.55

The Paradise Fossil Plant, located in Muhlenberg County on the former site of Paradise, Kentucky, is 52 years old and consists of three coal-fired electricity generating units. The plant is owned by the Tennessee Valley Authority and its units came online in 1963, 1963, and 1970, respectively. The plant has a total nameplate capacity of 2,201 MW. In 2014, the plant had a plant-wide capacity factor of 76 percent and generated 14.6 GWh of electricity, more than any power plant in Kentucky. Units 1 and 2 at Paradise are expected to retire in 2017 and that a natural gas combined-cycle plant will be built with a total capacity of 1,100 MW. Unit 3 had sulfur dioxide scrubbers installed in 2006. Paradise predominantly burned western Kentucky coal in 2014 from Ohio, Hopkins, Muhlenberg, McLean, and Union counties, with Illinois supplying the remaining eight percent.

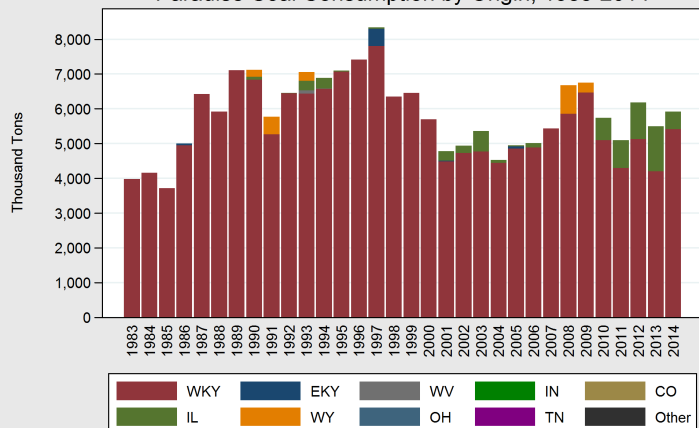


Photo by Kentucky EEC Staff 2015

*2014

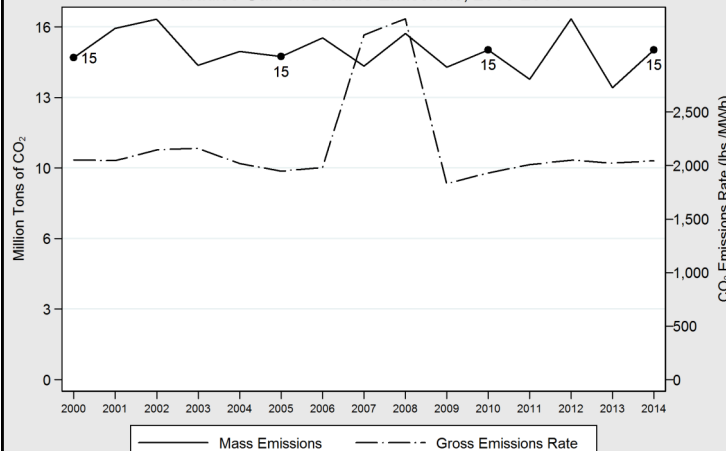
Paradise Fossil Plant

Paradise Coal Consumption by Origin, 1983-2014



Kentucky Energy Database, EEC-DEDI, 2015
Data Source: FERC-423 & EIA-923

Paradise Carbon Dioxide Emissions, 2000-2014



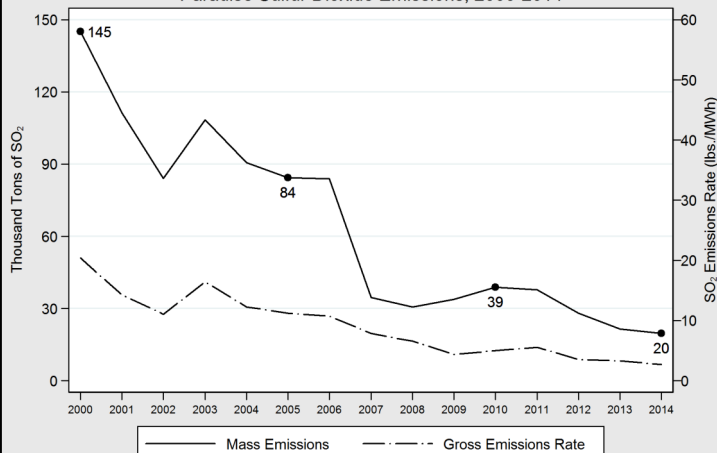
Kentucky Energy Database, EEC-DEDI, 2015
Data Source: EPA Clean Air Markets

State	2014 Tons	Percentage
Total	5,915,433	100%
Western Kentucky	5,414,270	92%
Illinois	501,163	8%

Carbon Dioxide	2014 Value	Since 2000
Emissions (Tonnage)	14,945,269	+2%
Rate (lbs./MWh)	2,043	+0%

The Paradise Fossil Plant emitted 15 million tons of CO₂ in 2014, an increase of two percent from 2000 levels. The rate of CO₂ emissions is unchanged relative to the year 2000.

Paradise Sulfur Dioxide Emissions, 2000-2014

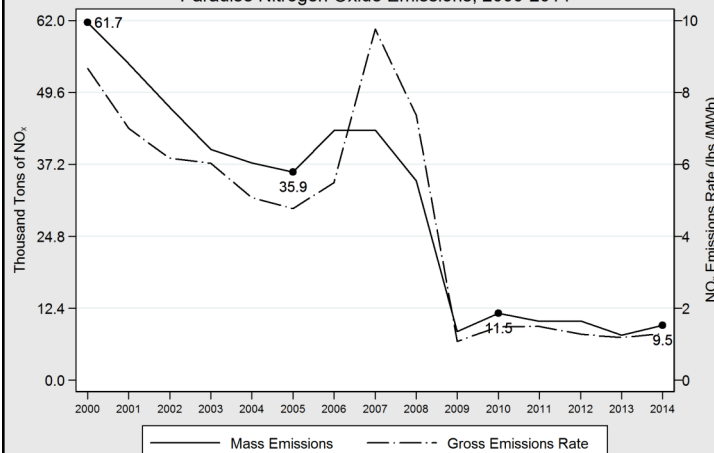


Kentucky Energy Database, EEC-DEDI, 2015
Data Source: EPA Clean Air Markets

Sulfur Dioxide	2014 Value	Since 2000
Emissions (Tonnage)	19,657	-86%
Rate (lbs./MWh)	2.69	-87%

The Paradise Fossil Plant emitted 19,657 thousand tons of SO₂ in 2014, a decrease of 86 percent since 2000. The rate of SO₂ emissions reduced by 87 percent during that period.

Paradise Nitrogen Oxide Emissions, 2000-2014

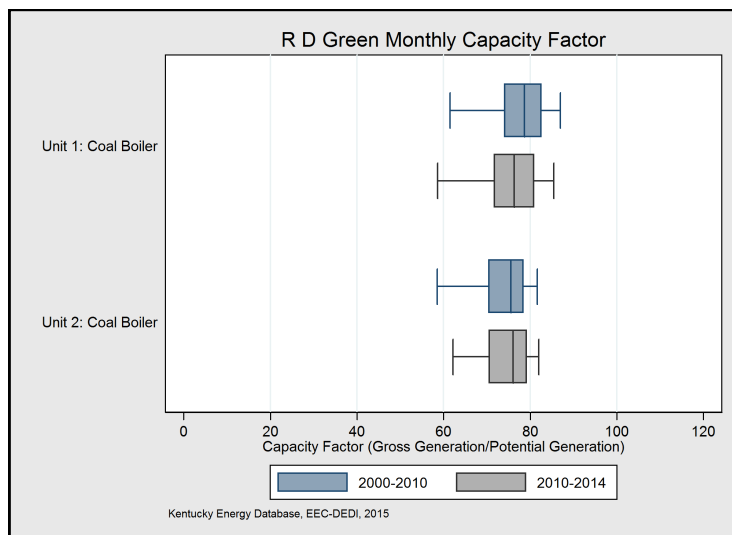
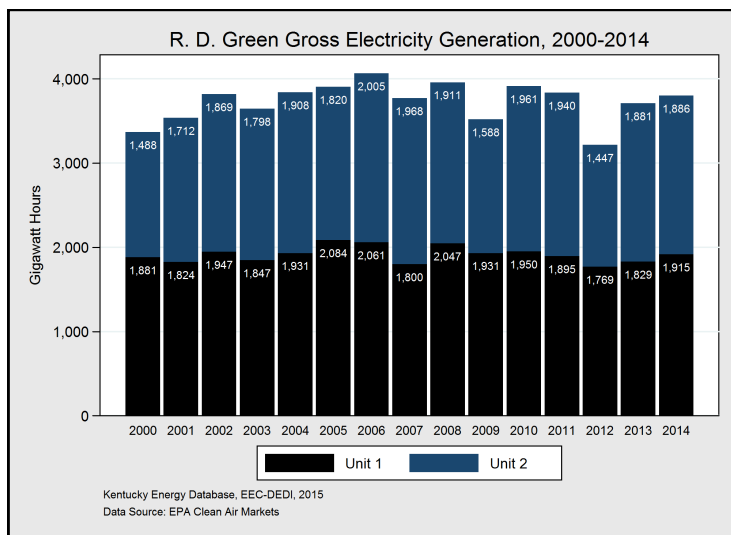


Kentucky Energy Database, EEC-DEDI, 2015
Data Source: EPA Clean Air Markets

Nitrogen Dioxide	2014 Value	Since 2000
Emissions (Tonnage)	9,465	-85%
Rate (lbs./MWh)	1.29	-85%

The Paradise Fossil Plant emitted 9,465 tons of NO_x in 2014, a reduction of 85 percent since 2000. The rate of NO_x emissions decreased by 85 percent during that period.

R. D. Green Station

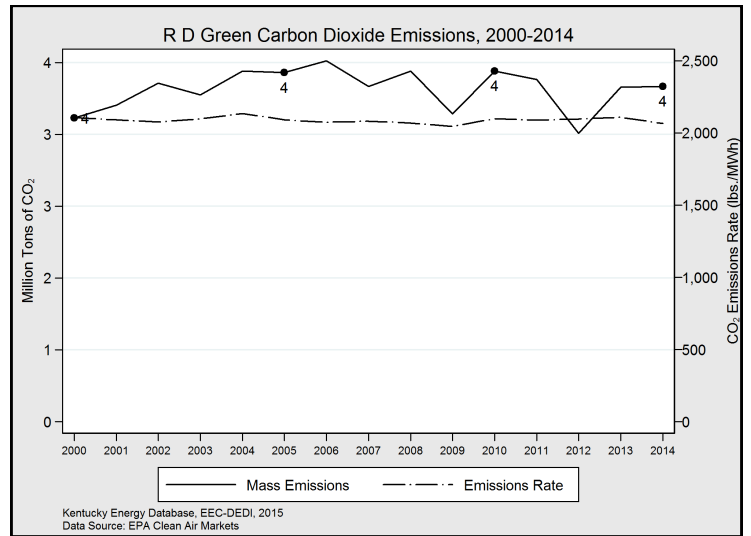
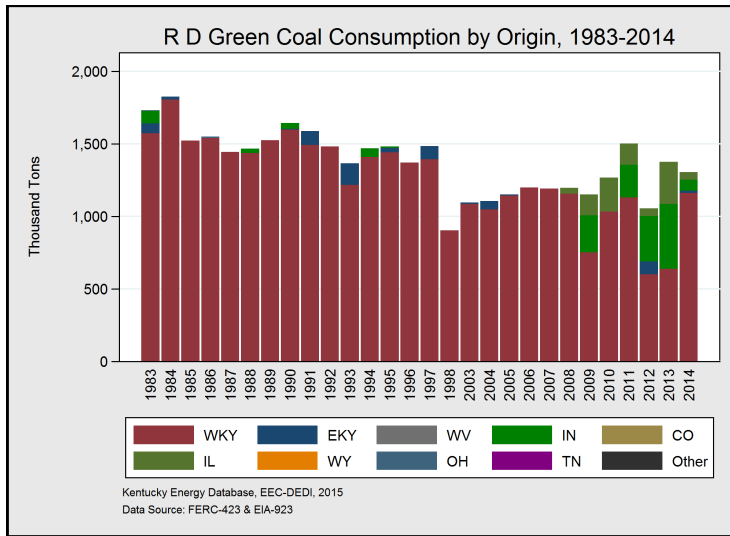


Unit Number	Online Year	Retire Year	Fuel	Capacity (MW)	Capacity Factor* (%)	Gross Generation* (GWh)	Net Generation* (GWh)	CO ₂ Rate* (lbs./MWh)	SO ₂ Rate* (lbs./MWh)	NO _x Rate* (lbs./MWh)
Plant	1979		Coal	586	74%	3,801	3,462	2,065	2.10	2.37
1	1979		Coal	293	75%	1,915	1,743	2,023	2.47	2.22
2	1981		Coal	293	73%	1,886	1,719	2,108	1.73	2.52

The R. D. Green Station, located in Webster County, is 36 years old and consists of two coal-fired electricity generating units. The units came online in 1979 and 1981, respectively. The plant is owned by [Big Rivers Electric Corporation](#) and has a total nameplate capacity of 586 MW. In 2014, the plant generated 3.8 GWh of electricity and had a plant-wide capacity factor of 74 percent. Green primarily used a mix of coal from western Kentucky (89 percent) from Union, Hopkins, Daviess, McLean, Muhlenberg, and Webster counties, from Indiana (six percent), Illinois (four percent), and two shipments representing one percent from Perry County, in eastern Kentucky in 2014. Green Station is operated by Big Rivers Electric Corporation.

*2014

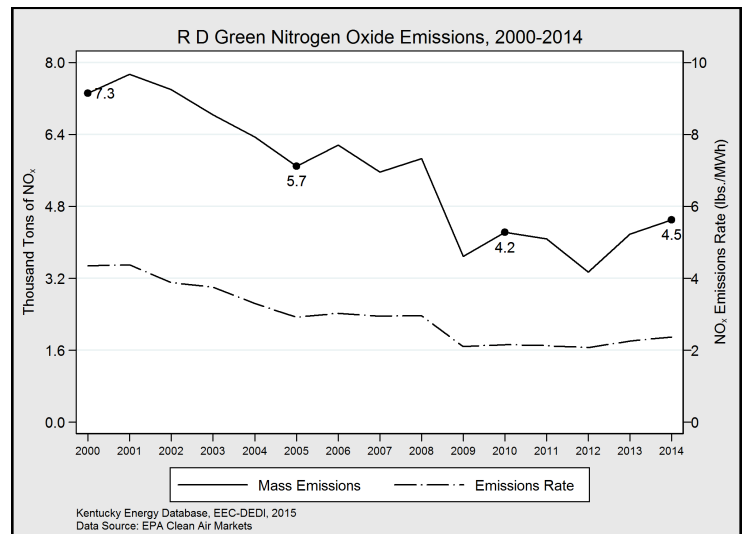
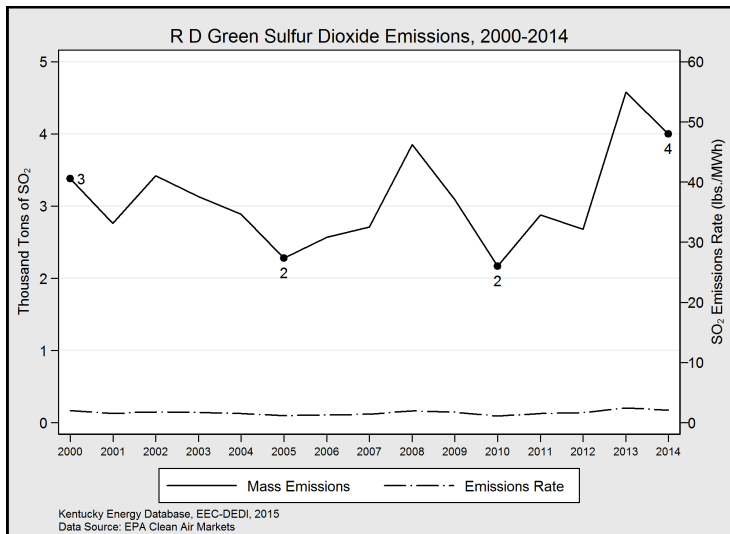
R. D. Green Station



State	2014 Tons	Percentage
Total	1,303,820	100%
Western Kentucky	1,161,670	89%
Indiana	76,380	6%
Illinois	51,238	4%
Eastern Kentucky	14,532	1%

Carbon Dioxide	2014 Value	Since 2000
Emissions (Tonnage)	3,924,957	+11%
Rate (lbs./MWh)	2,065	-2%

The R.D. Green Station emitted 3.9 million tons of CO₂ in 2014, an increase of 11 percent from 2000 levels. The rate of CO₂ emissions decreased marginally during that period.



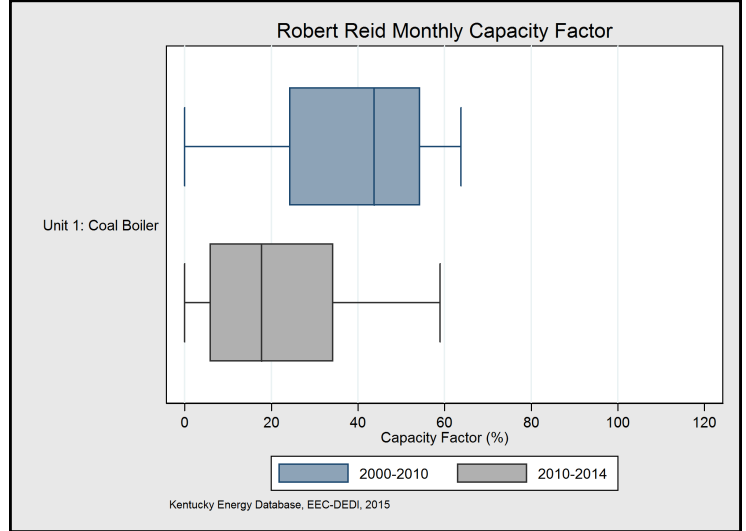
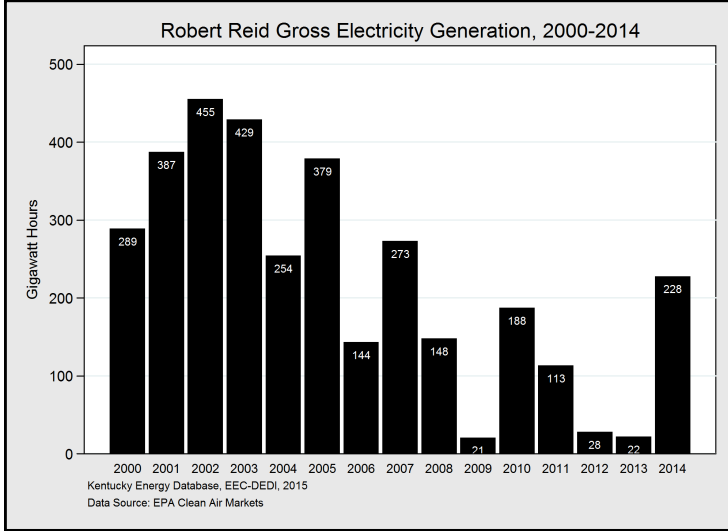
Sulfur Dioxide	2014 Value	Since 2000
Emissions (Tonnage)	3,999	+18%
Rate (lbs./MWh)	2.10	+5%

The R.D. Green Station emitted 3,999 tons of SO₂ in 2014, an increase of 18 percent since 2000. The rate of SO₂ emissions increased by five percent during that period.

Nitrogen Dioxide	2014 Value	Since 2000
Emissions (Tonnage)	4,499	-39%
Rate (lbs./MWh)	2.37	-46%

The R.D. Green Station emitted 4,499 tons of NO_x in 2014, a reduction of 39 percent since 2000. The rate of NO_x emissions decreased by 46 percent during that period.

Robert Reid Power Plant



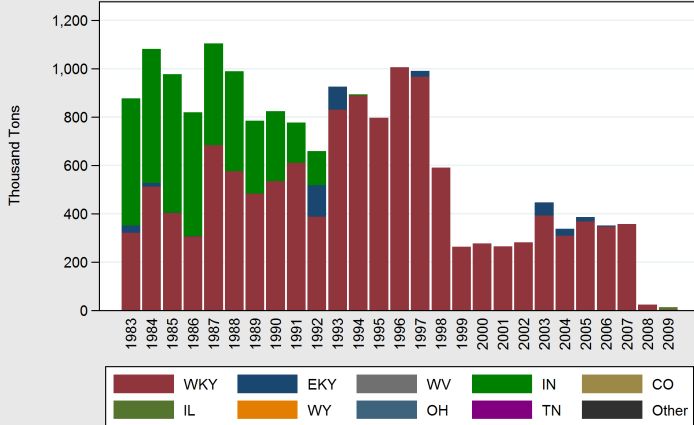
Unit Number	Online Year	Retire Year	Fuel	Capacity (MW)	Capacity Factor* (%)	Gross Generation* (GWh)	Net Generation* (GWh)	CO ₂ Rate* (lbs./MWh)	SO ₂ Rate* (lbs./MWh)	NO _x Rate* (lbs./MWh)
Plant	1966	2017	Coal	96	27%	228		2,327	50.37	4.72
1	1966	2017	Coal	96	27%	228		2,327	50.37	4.72

The Robert Reid Power Plant, located in Webster County, is 49 years old and consists of one coal-fired electricity generating unit. The unit came online in 1966, has a nameplate capacity of 96 MW, and is the original generating unit for [Big Rivers Electricity Corporation](#). In 2014, the plant generated 228 GWh of electricity, down from around 455 GWh in 2005. This decline in generation is consistent with announced retirements for the coal units at Robert Reid in 2017. Robert Reid's plant-wide capacity in 2014 was only 27 percent.

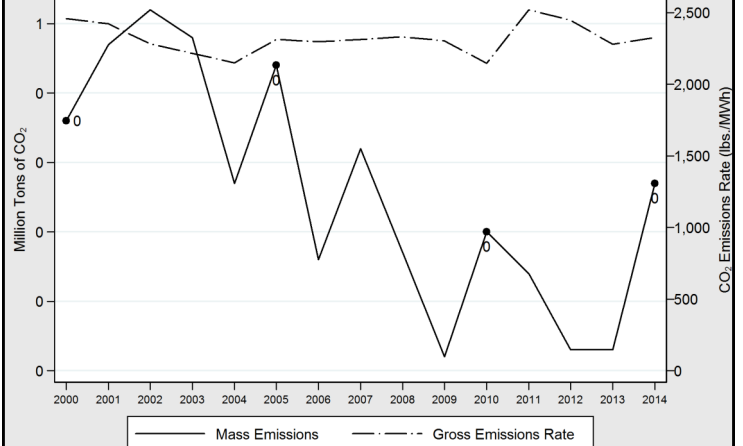
*2014

Robert Reid Power Plant

Robert Reid Coal Consumption by Origin, 1983-2014



Robert Reid Carbon Dioxide Emissions, 2000-2014

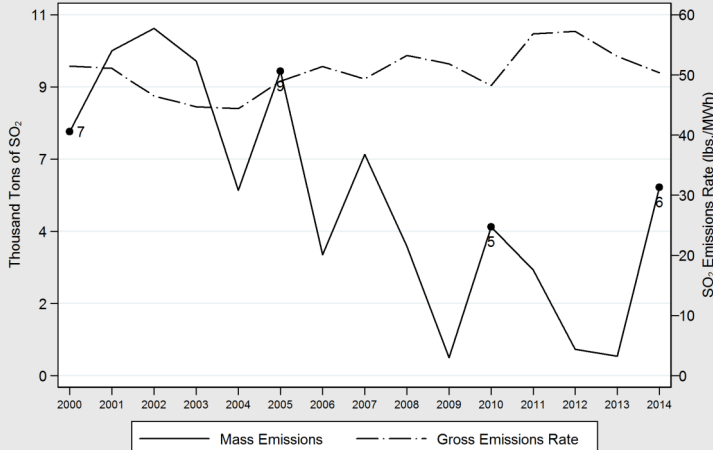


State	2009 Tons	Percentage
Total	12,643	100%
Illinois	9,664	76%
Western Kentucky	2,979	24%

Carbon Dioxide	2014 Value	Since 2000
Emissions (Tonnage)	265,232	-25%
Rate (lbs./MWh)	2,327	-5%

The Robert Reid Power Plant emitted 265 thousand tons of CO₂ in 2014, a decrease of 25 percent from 2000 levels. The rate of CO₂ emissions decreased by five percent during that period, but remains the highest of operating Kentucky power plants.

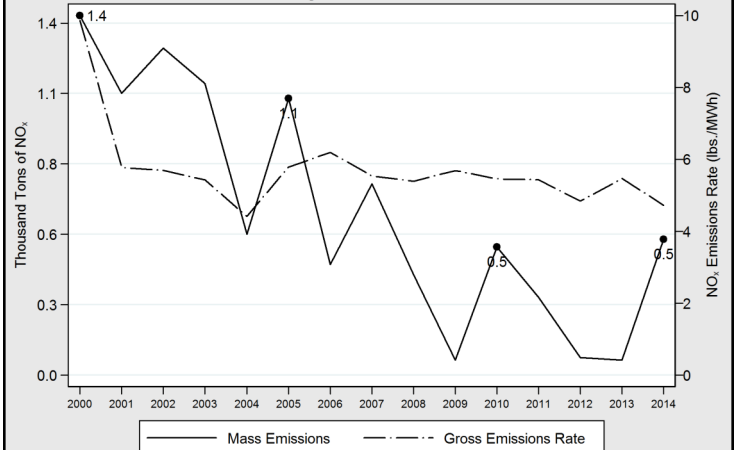
Robert Reid Sulfur Dioxide Emissions, 2000-2014



Sulfur Dioxide	2014 Value	Since 2000
Emissions (Tonnage)	5,742	-23%
Rate (lbs./MWh)	50.37	-2%

The Robert Reid Power Plant emitted 5,742 tons of SO₂ in 2014, a decrease of 23 percent since 2000. The rate of SO₂ emissions reduced by two percent during that period. Robert Reid has the highest rate of SO₂ emissions in the Commonwealth.

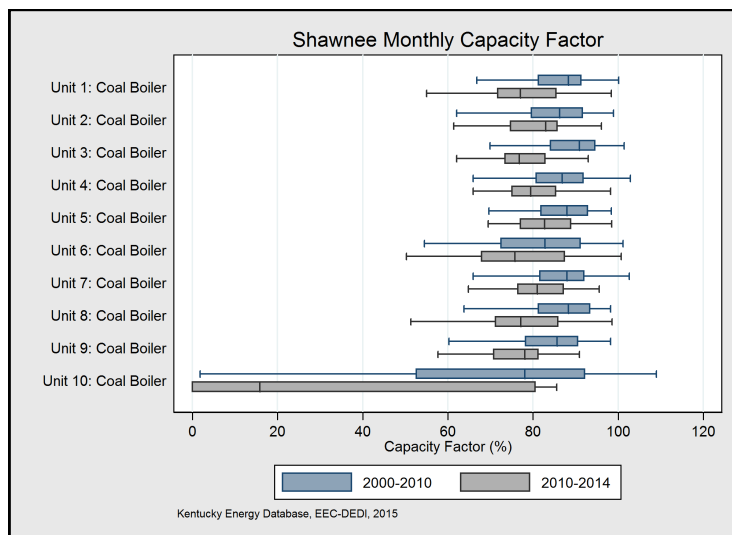
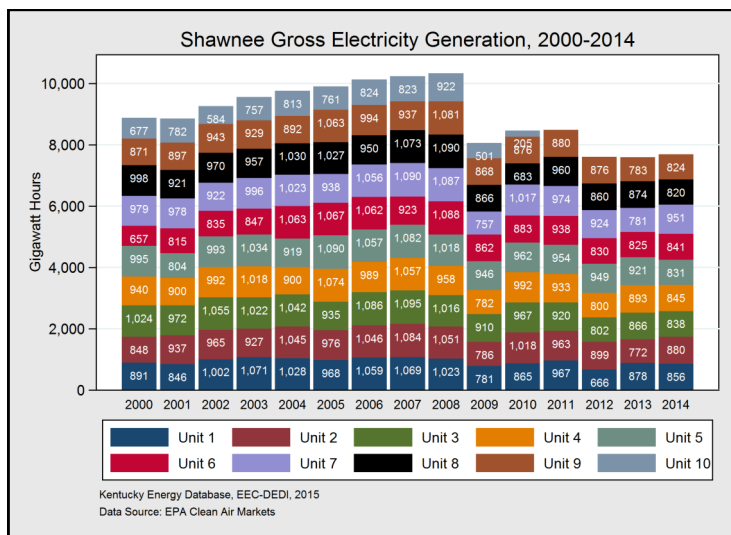
Robert Reid Nitrogen Oxide Emissions, 2000-2014



Nitrogen Dioxide	2014 Value	Since 2000
Emissions (Tonnage)	539	-62%
Rate (lbs./MWh)	4.72	-52%

The Robert Reid Power Plant emitted 539 tons of NO_x in 2014, a reduction of 62 percent since 2000. The rate of NO_x emissions decreased by 52 percent during that period, though Robert Reid has the highest rate of NO_x emissions in Kentucky.

Shawnee Fossil Plant



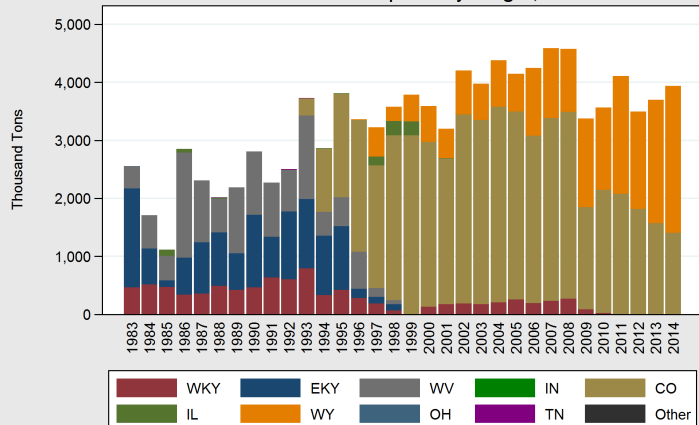
Unit Number	Online Year	Retire Year	Fuel	Capacity (MW)	Capacity Factor* (%)	Gross Generation* (GWh)	Net Generation* (GWh)	CO ₂ Rate* (lbs./MWh)	SO ₂ Rate* (lbs./MWh)	NO _x Rate* (lbs./MWh)
Plant	1953		Coal	1,206	73%	7,686	7,031	2,119	7.76	3.21
1	1953		Coal	134	73%	856	785	2,095	7.62	3.40
2	1956		Coal	134	75%	880	801	2,095	7.64	3.39
3	1953		Coal	134	71%	838	770	2,098	7.64	3.35
4	1953		Coal	134	72%	845	773	2,100	7.66	3.37
5	1954		Coal	134	71%	831	760	2,098	7.65	3.38
6	1954		Coal	134	72%	841	767	2,148	7.92	3.02
7	1954		Coal	134	81%	951	876	2,147	7.92	2.99
8	1954		Coal	134	70%	820	746	2,166	7.98	2.96
9	1955		Coal	134	70%	824	753	2,128	7.84	3.03
10	1955	2010	Coal	124		0				

The Shawnee Fossil Plant, located in McCracken County, is 62 years old and consists of 10 coal-fired electricity generating units, though Unit 10 has not been used since August 2010. The plant is owned by the Tennessee Valley Authority and the units came online in 1953, 1954, 1955, and 1956. The plant has a total nameplate capacity of 1,206 MW from operable units. In 2014, the plant generated 7.69 TWh of electricity and had a plant-wide capacity factor of 73 percent. Shawnee burned a mix of coal from Wyoming (64 percent) and Colorado (36 percent) in 2014, as it has for over a decade. Shawnee had been utilized to generate electricity for the United States Enrichment Corporation Paducah Gaseous Diffusion Plant until its closure in 2013, but now largely serves Tennessee's electricity demand.

*2014

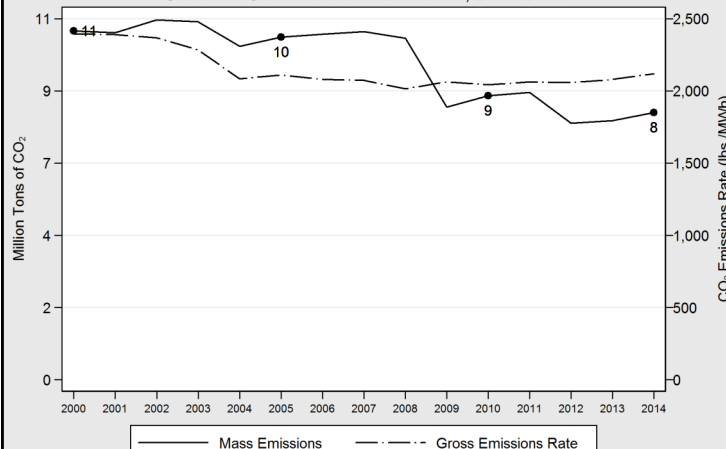
Shawnee Fossil Plant

Shawnee Coal Consumption by Origin, 1983-2014



Kentucky Energy Database, EEC-DEDI, 2015
Data Source: FERC-423 & EIA-923

Shawnee Carbon Dioxide Emissions, 2000-2014



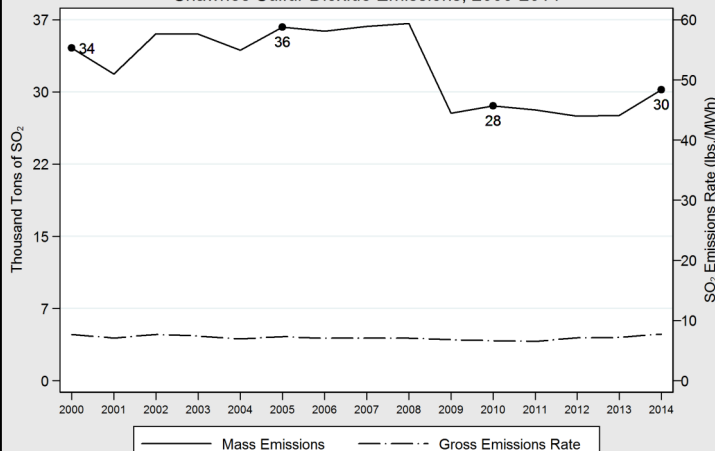
Kentucky Energy Database, EEC-DEDI, 2015
Data Source: EPA Clean Air Markets

State	2014 Tons	Percentage
Total	3,940,564	100%
Wyoming	2,532,750	64%
Colorado	1,407,814	36%

Carbon Dioxide	2014 Value	Since 2000
Emissions (Tonnage)	8,144,933	-23%
Rate (lbs./MWh)	2,119	-12%

The Shawnee Fossil Plant emitted 8.1 million tons of CO₂ in 2014, a decrease of 23 percent from 2000 levels. The rate of CO₂ emissions decreased by 12 percent during that period.

Shawnee Sulfur Dioxide Emissions, 2000-2014

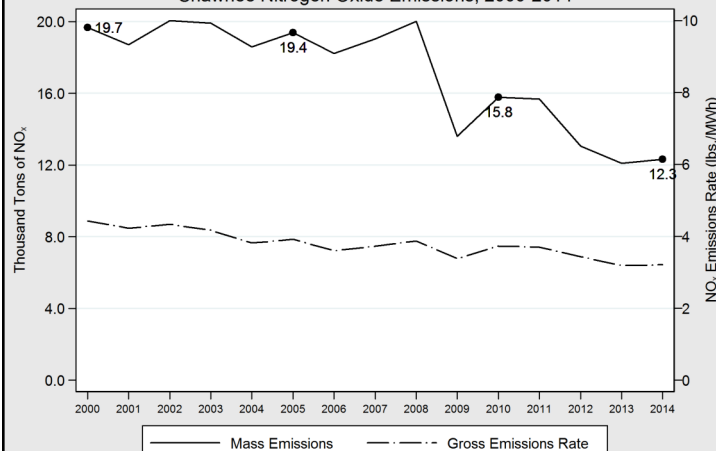


Kentucky Energy Database, EEC-DEDI, 2015
Data Source: EPA Clean Air Markets

Sulfur Dioxide	2014 Value	Since 2000
Emissions (Tonnage)	29,835	-12%
Rate (lbs./MWh)	7.76	+1%

The Shawnee Fossil Plant emitted 30 thousand tons of SO₂ in 2014, a decrease of 12 percent since 2000. Shawnee had the second highest SO₂ emissions in the Commonwealth in 2013. The rate of SO₂ emissions has increased by one percent since 2000.

Shawnee Nitrogen Oxide Emissions, 2000-2014

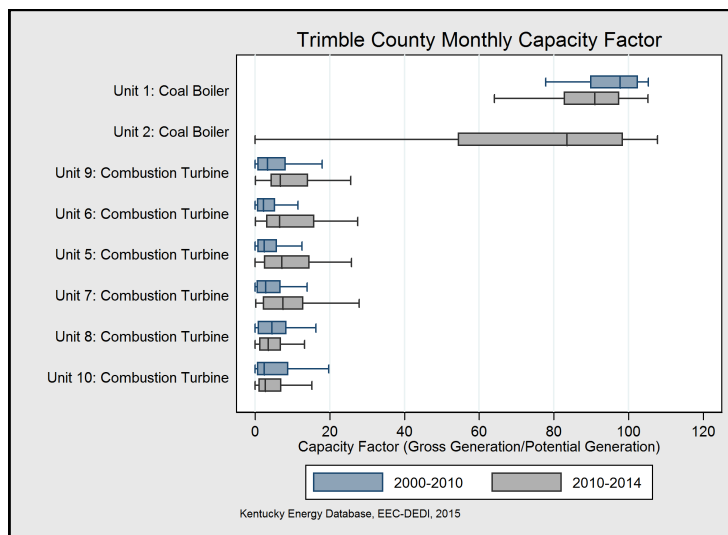
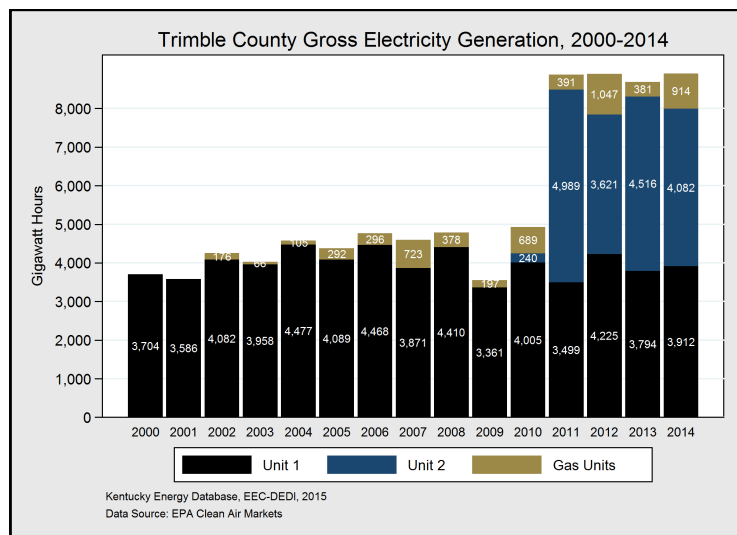


Kentucky Energy Database, EEC-DEDI, 2015
Data Source: EPA Clean Air Markets

Nitrogen Dioxide	2014 Value	Since 2000
Emissions (Tonnage)	12,331	-37%
Rate (lbs./MWh)	3.21	-28%

The Shawnee Fossil Plant emitted 12,331 tons of NO_x in 2014, a reduction of 37 percent since 2000, but the single largest emitter of NO_x in 2014. The rate of NO_x emissions decreased by 28 percent since 2000.

Trimble County Generating Station



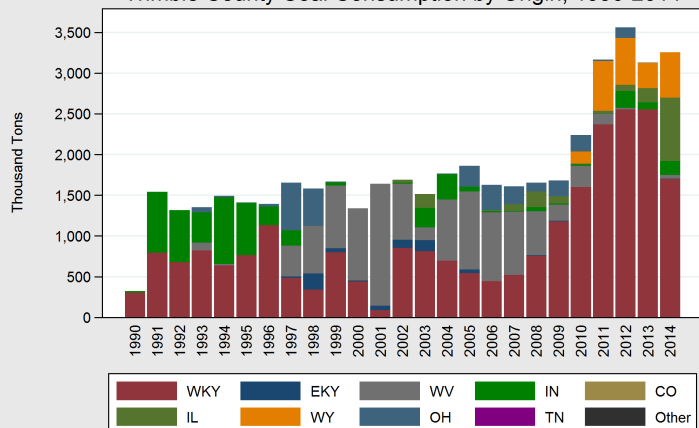
Unit Number	Online Year	Retire Year	Fuel	Capacity (MW)	Capacity Factor* (%)	Gross Generation* (GWh)	Net Generation* (GWh)	CO ₂ Rate* (lbs./MWh)	SO ₂ Rate* (lbs./MWh)	NO _x Rate* (lbs./MWh)
Plant	1990		Coal	4,370		17,816		1,781	0.69	0.76
1	1990		Coal	511	87%	3,912	3,578	1,819	0.97	1.23
2	2010		Coal	732	64%	4,082	3,772	1,819	0.57	0.39
5	2002		Natural Gas	157	14%	189		1,488	0.01	0.38
6	2002		Natural Gas	157	15%	205		1,402	0.01	0.41
7	2004		Natural Gas	157	13%	173		1,438	0.01	0.38
8	2004		Natural Gas	157	5%	65		1,460	0.01	0.32
9	2004		Natural Gas	157	14%	199		1,463	0.01	0.39
10	2004		Natural Gas	157	6%	83		1,465	0.01	0.34

The Trimble County Generating Station, near Bedford, consists of two coal-fired electricity generating units and six natural gas combustion turbines. The combustion turbines are used only to meet peak demand because they are more expensive to run, but are easily dispatched with electricity demand changes. The plant is 25 years old, making it the youngest coal-fired electricity generation plant in Kentucky. The coal units came online in 1990 and 2010, respectively. Trimble County Generating Station's coal units have a total nameplate capacity of 1,243 MW. In 2014, the plant generated 17.8 GWh of electricity, 7,994 GWh from coal and 914 GWh from natural gas. The plant's coal units had a combined capacity factor of 73 percent. Over half of the coal used at Trimble County was sourced from McLean, Ohio, Union, and Webster counties in western Kentucky and 47 percent came from Illinois, Indiana, West Virginia, and Wyoming. One of the shipments of coal to Trimble County was mined in Perry County, Kentucky. Trimble County is owned jointly by Louisville Gas & Electric, Illinois Municipal Electric Agency, and Indiana Municipal Power Agency.

*2014

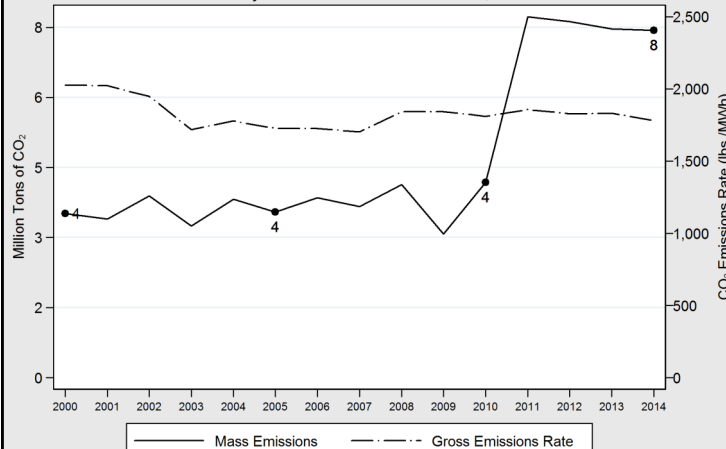
Trimble County Generating Station

Trimble County Coal Consumption by Origin, 1990-2014



Kentucky Energy Database, EEC-DEDI, 2015
Data Source: FERC-423 & EIA-923

Trimble County Carbon Dioxide Emissions, 2000-2014



Kentucky Energy Database, EEC-DEDI, 2015
Data Source: EPA Clean Air Markets

State	2014 Tons	Percentage
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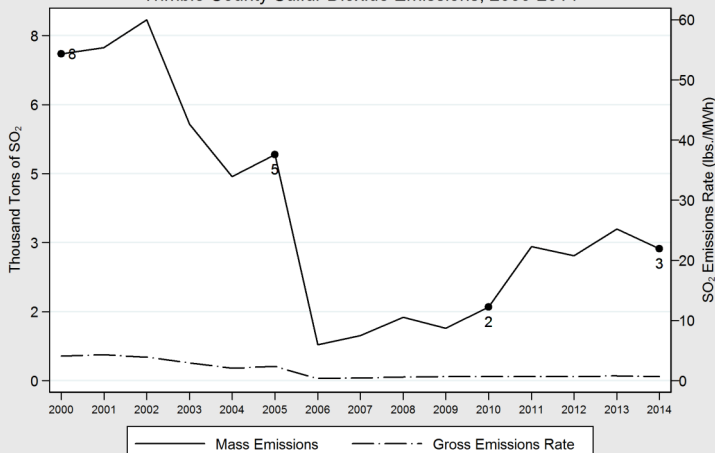
Total	3,253,066	100%
Western Kentucky	1,699,398	52%
Illinois	777,258	24%
Wyoming	555,436	17%
Indiana	173,111	5%
West Virginia	44,747	1%
Eastern Kentucky	3,116	0%

Carbon Dioxide	2014 Value	Since 2000
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Emissions (Tonnage)	7,932,791	+111%
Rate (lbs./MWh)	1,781	-12%

The Trimble County Generating Station emitted almost eight million tons of CO₂ in 2014, an increase of 111 percent since 2000. However, the rate of CO₂ emissions decreased by 12 percent during that period as Unit 2 started in 2010. Trimble County has the second lowest CO₂ intensity in Kentucky.

Trimble County Sulfur Dioxide Emissions, 2000-2014



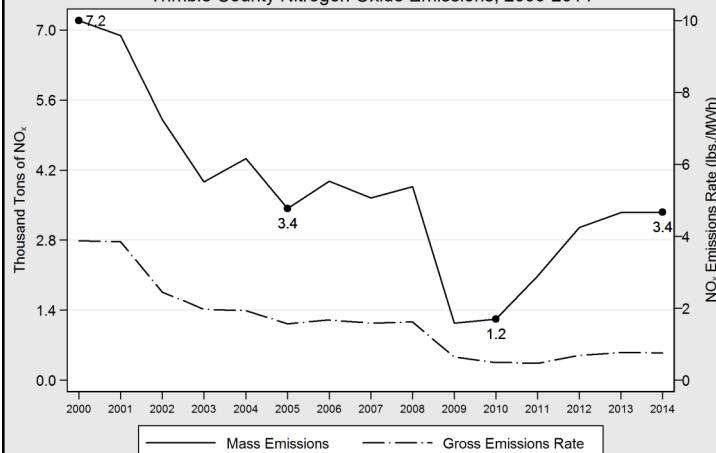
Kentucky Energy Database, EEC-DEDI, 2015
Data Source: EPA Clean Air Markets

Sulfur Dioxide	2014 Value	Since 2000
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Emissions (Tonnage)	3,056	-60%
Rate (lbs./MWh)	0.69	-83%

The Trimble County Generating Station emitted 3,056 tons of SO₂ in 2014, a decrease of 60 percent since 2000. The rate of SO₂ emissions decreased by 83 percent during that period and in 2014 had the lowest rate of SO₂ emissions in the state.

Trimble County Nitrogen Oxide Emissions, 2000-2014



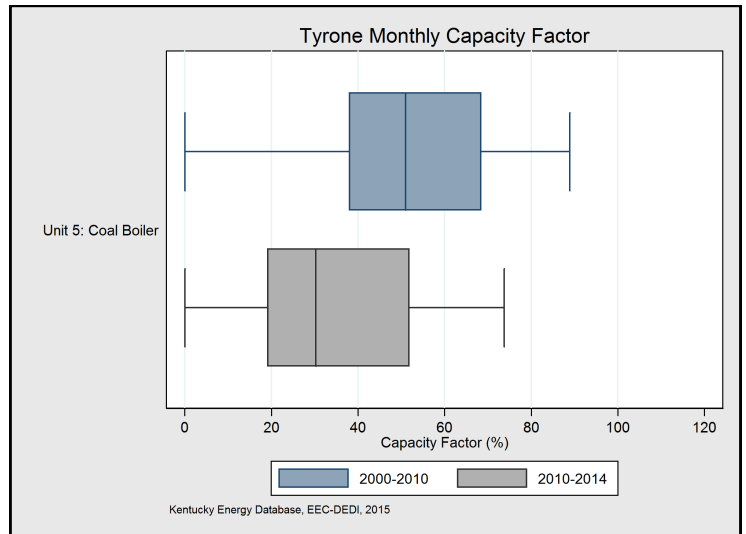
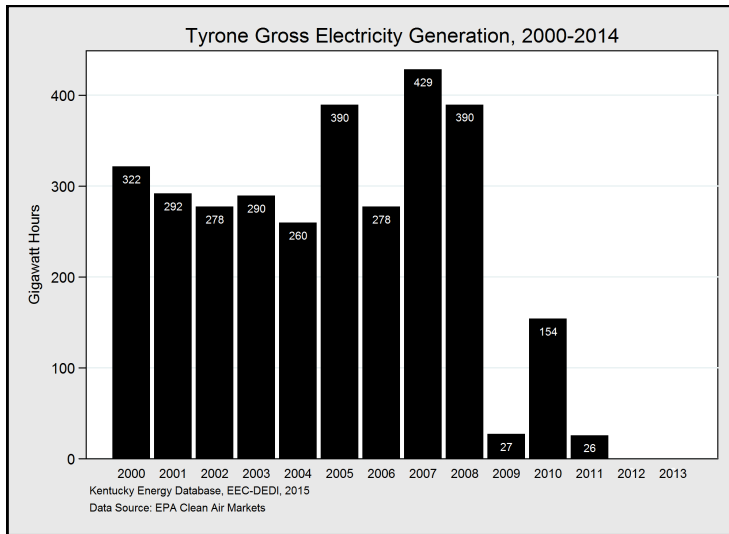
Kentucky Energy Database, EEC-DEDI, 2015
Data Source: EPA Clean Air Markets

Nitrogen Dioxide	2014 Value	Since 2000
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Emissions (Tonnage)	3,365	-53%
Rate (lbs./MWh)	0.76	-81%

The Trimble County Generating Station emitted 3,365 tons of NO_x in 2014, a reduction of 53 percent since 2000. The rate of NO_x emissions decreased by 81 percent during that period. In 2014, Trimble County had the third-lowest rate of NO_x emissions in the Commonwealth.

Tyrone Generating Station



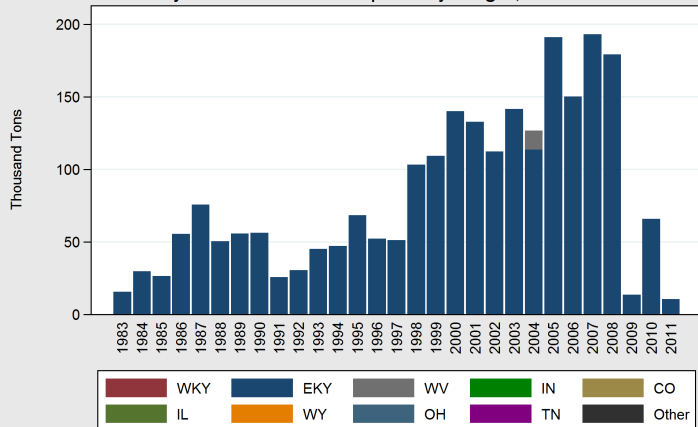
Unit Number	Online Year	Retire Year	Fuel	Capacity (MW)	Capacity Factor* (%)	Gross Generation* (GWh)	Net Generation* (GWh)	CO ₂ Rate* (lbs./MWh)	SO ₂ Rate* (lbs./MWh)	NO _x Rate* (lbs./MWh)
Plant 1	1947	2012	Coal	75	40%	26		2,341	15.48	4.88
	1955	2012	Coal	75	40%	26		2,341	15.48	4.88

The Tyrone Generating Station, located in Versailles in Woodford County, is 68 years old and consists of one coal-fired electricity generating unit. The unit came online in 1955 and has a nameplate capacity of 75 MW. Tyrone has not generated electricity since. Since 1990, Tyrone has used mostly eastern Kentucky coal trucked from Floyd, Pike, Perry, and Breathitt counties. Tyrone was operated by Kentucky Utilities.

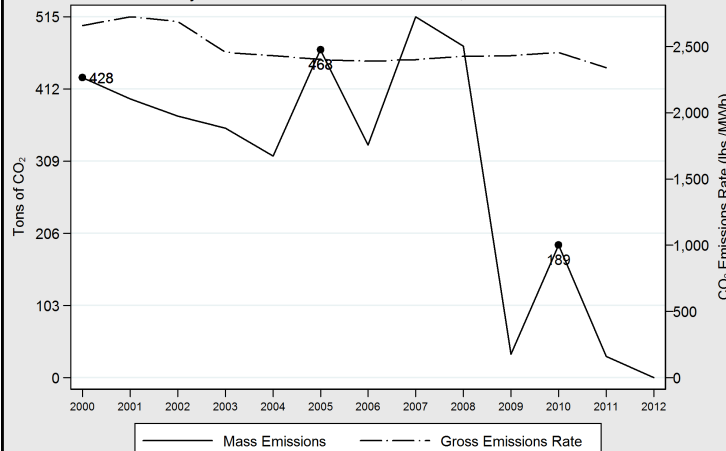
*2011

Tyrone Generating Station

Tyrone Coal Consumption by Origin, 1983-2014



Tyrone Carbon Dioxide Emissions, 2000-2014



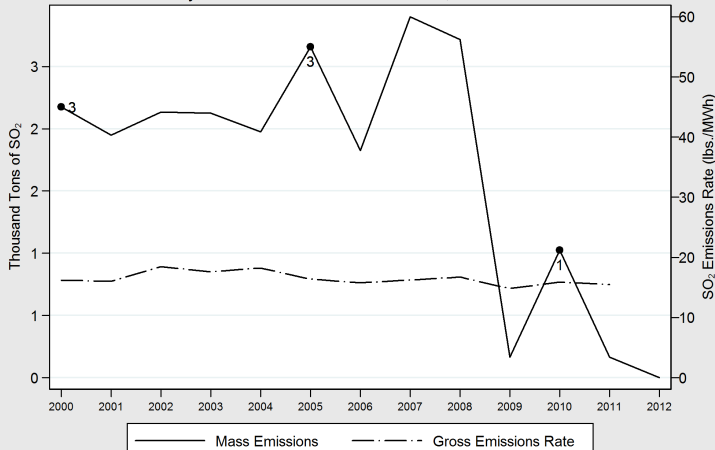
State	2011 Tons	Percentage
Total	10,437	100%
Eastern Kentucky	10,437	100%

The Tyrone Generating Station historically burned eastern Kentucky coal. Tyrone has not generated power since 2011, and has been retired.

Carbon Dioxide	2014 Value	Since 2000
Emissions (Tonnage)	0.00	-100%
Rate (lbs./MWh)	0.00	-100%

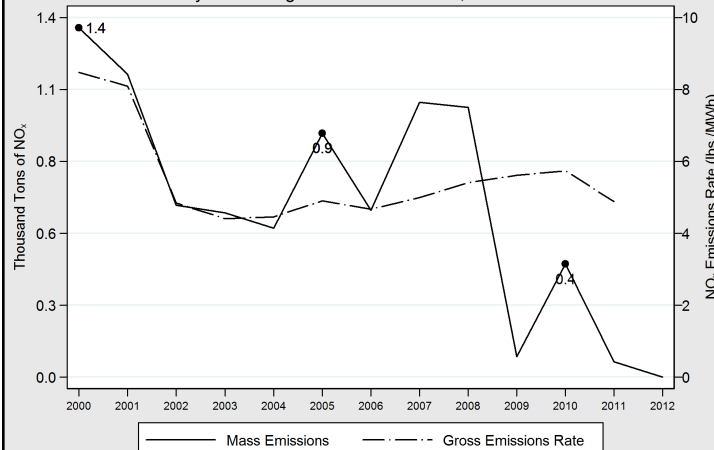
The Tyrone Generating Station emitted 0 tons of CO₂ in 2014, as the facility is no-longer generating power.

Tyrone Sulfur Dioxide Emissions, 2000-2014



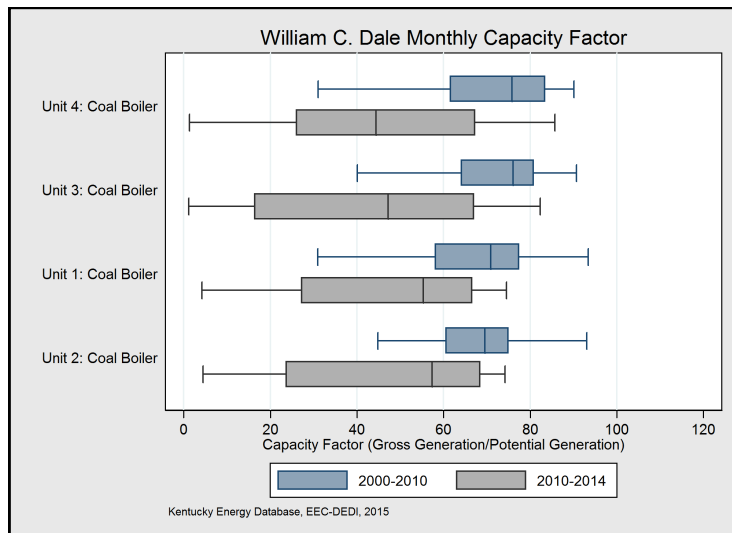
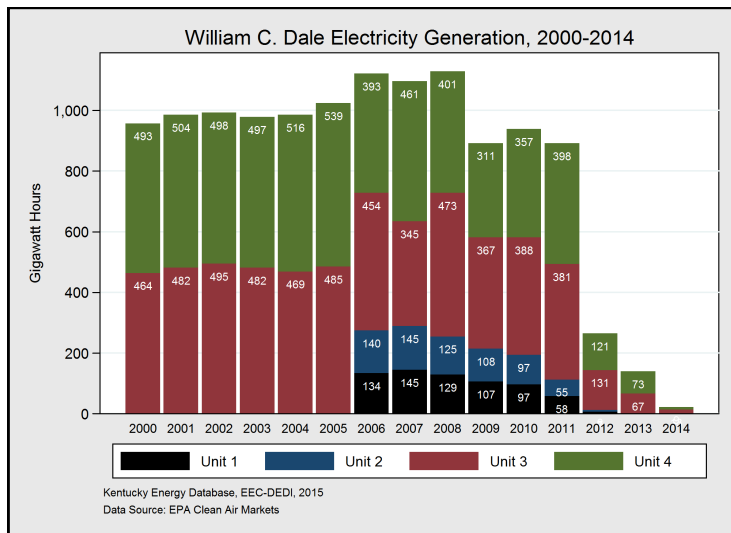
Sulfur Dioxide	2014 Value	Since 2000
Emissions (Tonnage)	0.00	-100%
Rate (lbs./MWh)	0	-100%

Tyrone Nitrogen Oxide Emissions, 2000-2014



Nitrogen Dioxide	2014 Value	Since 2000
Emissions (Tonnage)	0.00	-100%
Rate (lbs./MWh)	0	-100%

William C. Dale Power Station



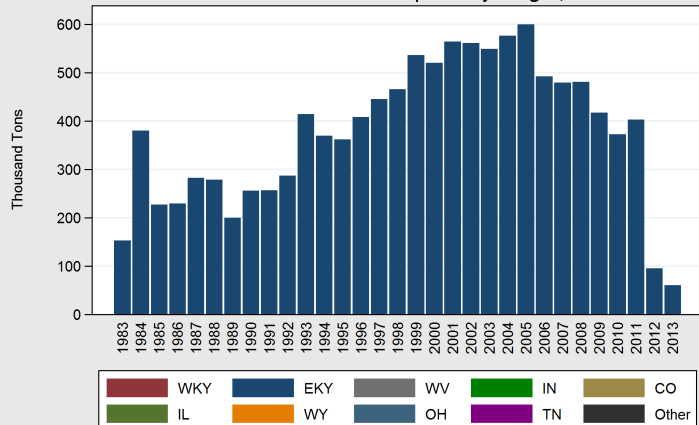
Unit Number	Online Year	Retire Year	Fuel	Capacity (MW)	Capacity Factor* (%)	Gross Generation* (GWh)	Net Generation* (GWh)	CO ₂ Rate* (lbs./MWh)	SO ₂ Rate* (lbs./MWh)	NO _x Rate* (lbs./MWh)
Plant	1954	2016	Coal	195	1%	22	16	1,887	12.50	3.75
1	1954	2014	Coal	23		0				
2	1954	2014	Coal	23		0				
3	1957	2016	Coal	74	2%	13	10	1,896	12.54	3.90
4	1960	2016	Coal	75	1%	9	6	1,873	12.44	3.52

The William C. Dale Power Station, located in Clark County, is 61 years old and consists of four coal-fired electricity generating units. The units came online in 1954, 1957, and 1960 and are owned by East Kentucky Power Cooperative. The plant has a total nameplate capacity of 195 MW. In 2014, the plant generated 22 GWh of electricity, down from 1.12 GWh in 2008. This decline in generation is consistent with plans to retire units 1 and 2 in 2014 and units 3 and 4 in 2016. Dale's capacity factor in 2014 was only one percent. Dale sources all of its coal from eastern Kentucky, which is driven by truck from coal mines in Magoffin and Perry County.

*2014

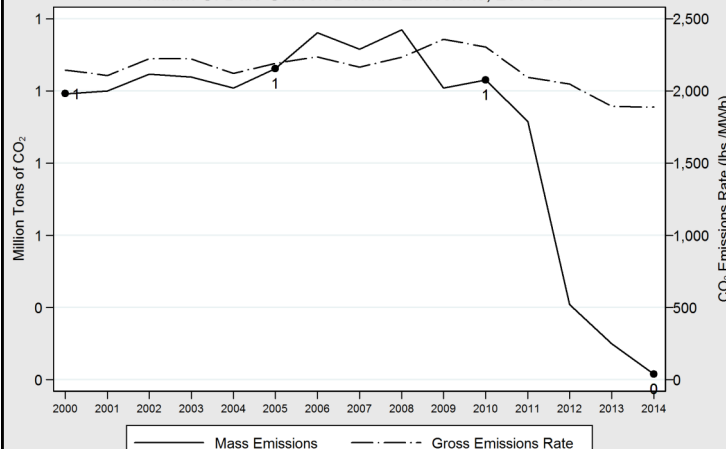
William C. Dale Power Station

William C. Dale Coal Consumption by Origin, 1983-2014



Kentucky Energy Database, EEC-DEDI, 2015
Data Source: FERC-423 & EIA-923

William C. Dale Carbon Dioxide Emissions, 2000-2014



Kentucky Energy Database, EEC-DEDI, 2015
Data Source: EPA Clean Air Markets

State	2013 Tons	Percentage
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Total	60,751	100%
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Eastern Kentucky	60,751	100%
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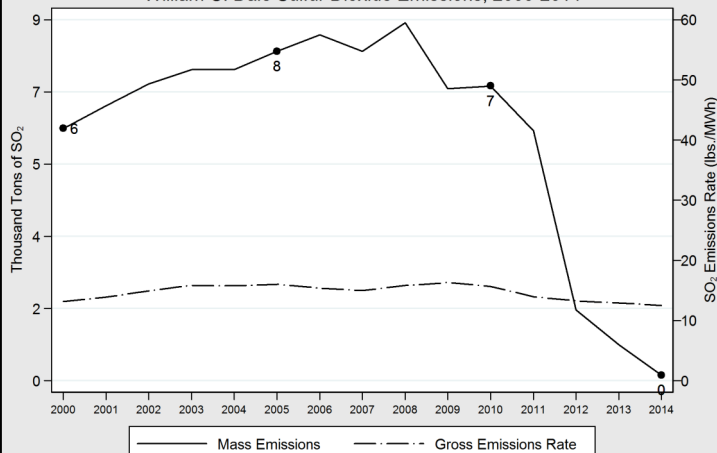
Carbon Dioxide	2014 Value	Since 2000
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Emissions (Tonnage)	20,964	-98%
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Rate (lbs./MWh)	1,887	-12%
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The William C. Dale Power Station emitted 21 thousand tons of CO₂ in 2014, a decrease of 98 percent from 2000 levels. The rate of CO₂ emissions decreased by 12 percent during that period.

William C. Dale Sulfur Dioxide Emissions, 2000-2014



Kentucky Energy Database, EEC-DEDI, 2015
Data Source: EPA Clean Air Markets

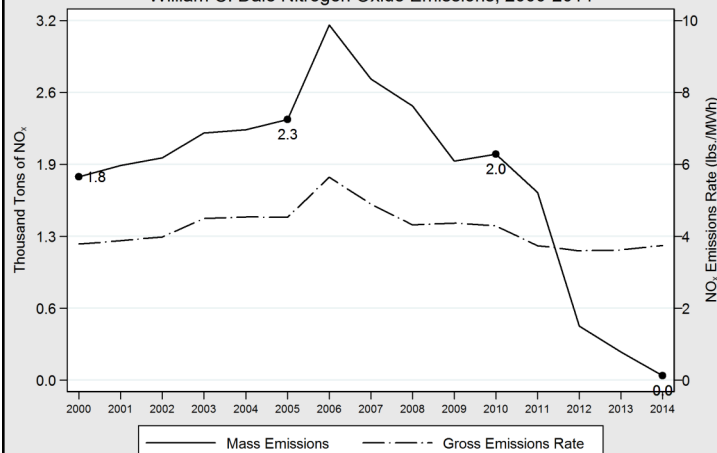
Sulfur Dioxide	2014 Value	Since 2000
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Emissions (Tonnage)	139	-98%
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Rate (lbs./MWh)	12.50	-5%
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The William C. Dale Power Station emitted 139 tons of SO₂ in 2014, a decrease of 98 percent since 2000. The rate of SO₂ emissions reduced by 5 percent during that period, but is the third highest of power plants in Kentucky.

William C. Dale Nitrogen Oxide Emissions, 2000-2014



Kentucky Energy Database, EEC-DEDI, 2015
Data Source: EPA Clean Air Markets

Nitrogen Dioxide	2014 Value	Since 2000
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Emissions (Tonnage)	42	-98%
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Rate (lbs./MWh)	3.75	-1%
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The William C. Dale Power Station emitted 42 tons of NO_x in 2014, a reduction of 98 percent since 2000. The rate of NO_x emissions decreased by one percent during that period.

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