NASEO National Association of State Energy Officials

Transforming America's Energy Future

Kentucky Energy Statistics

Developed by DEDI

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Summary

The first edition of Kentucky Energy Statistics is offered by the National Association for State Energy Officials (NASEO) to function as a quick reference for energy information particular to the Commonwealth of Kentucky. Assembled from a variety of sources such as the Energy Information Administration (EIA), the U.S. Environmental Protection Agency (EPA), the Bureau for Economic Analysis (BEA), the Bureau of Labor Statistics (BLS), and the U.S. Census, this document provides data on the dynamics of energy expenditures, energy consumption, energy production, and electricity generation that define the economy of Kentucky. Collating these numerous sources of data, this document seeks to relay summary statistics for a state in aggregate, as well as for specific sectors of the economy. Overall, Kentucky enjoys some of the lowest electricity rates in the nation, maintains an Industrial Sector that consumes the majority of energy resources relative to the rest of the economy, and stands as a net exporter of energy due to its production of coal, natural gas, and crude oil.

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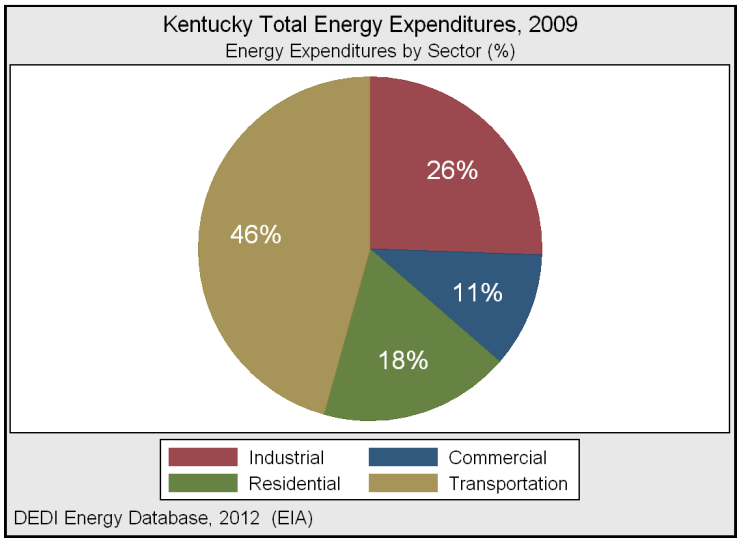
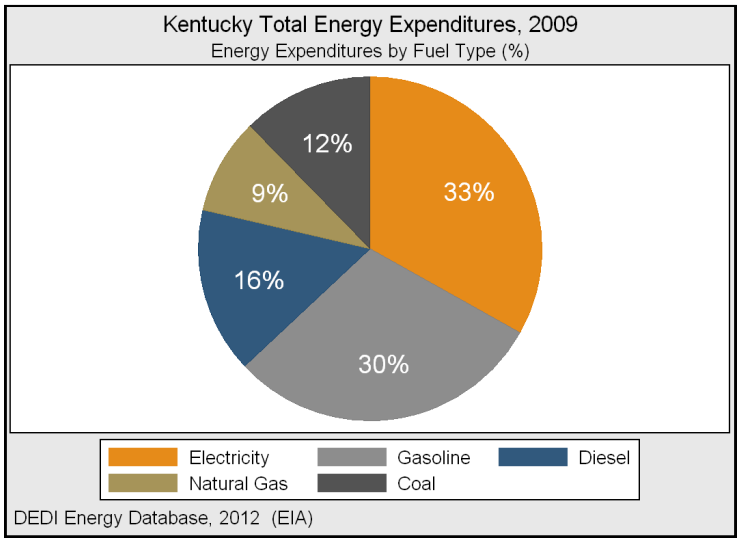
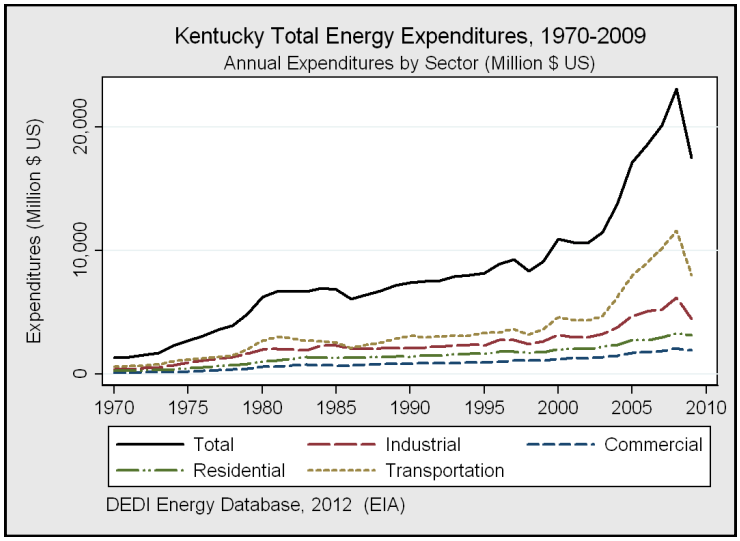
Kentucky Energy Expenditures

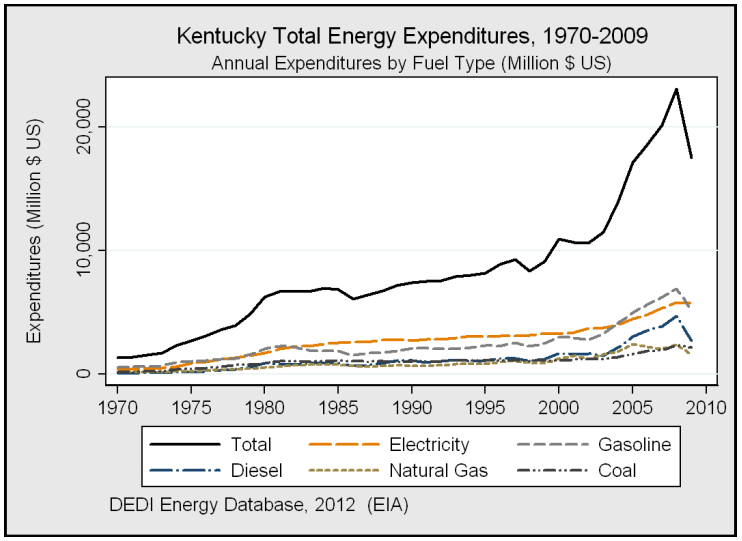




Sector	Million ($ US)	Percentage
Total	17,477	100%
Transporation	7,979	46%
Industrial	4,471	26%
Residential	3,140	18%
Commercial	1,887	11%

Fuel Type	Million ($ US)	Percentage
Total	17,477	100%
Electricity	5,713	33%
Gasoline	5,153	29%
Diesel	2,697	15%
Coal	2,123	12%
Natural Gas	1,560	9%

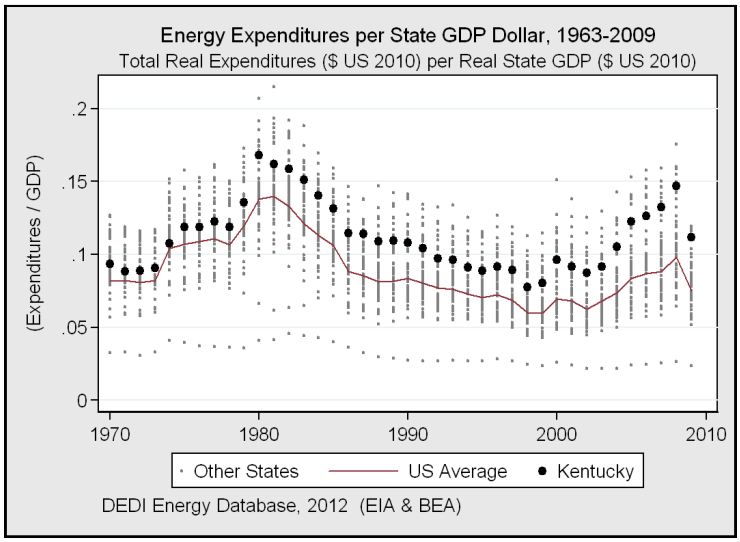




In 2009, total energy expenditures in Kentucky reached 17 billion dollars, a decrease of -24% from 2008. Dividing these costs by economic sector, the transporation sector accounted for the largest amount of energy expenditures in 2009.

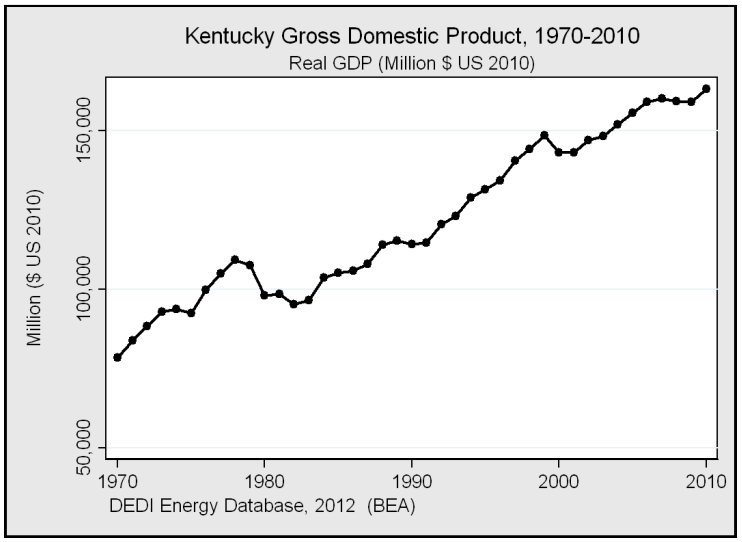
Analyzing energy expenditures by fuel type, the purchase of electricity was the highest concentration of expenditures in Kentucky in 2009. Compared with 2008, total electricity expenditures displayed a decrease of -1% in 2009.

Kentucky Energy Expenditures



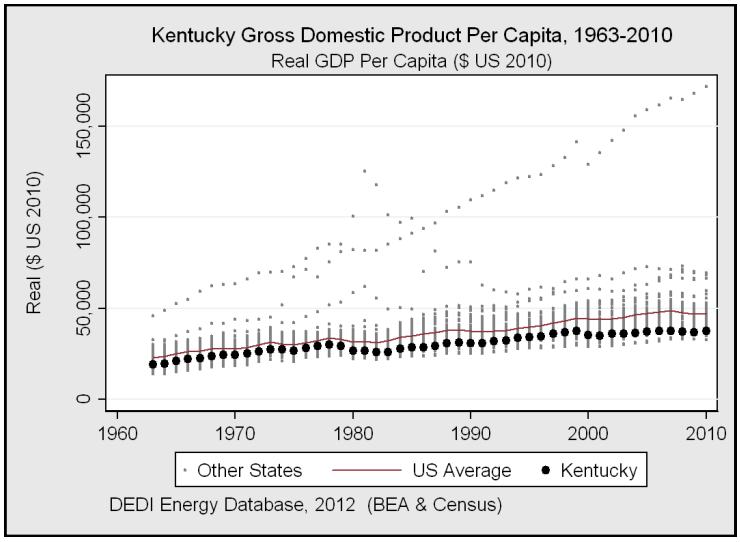
Energy Expenditures & GDP

In 2009, citizens, insitutions, and firms in Kentucky on average spent $0.11 on energy commodities and/or energy consumption to produce $1 of state gross domestic product. This energy expenditure level per dollar of economic output fell by -24% compared with 2008.



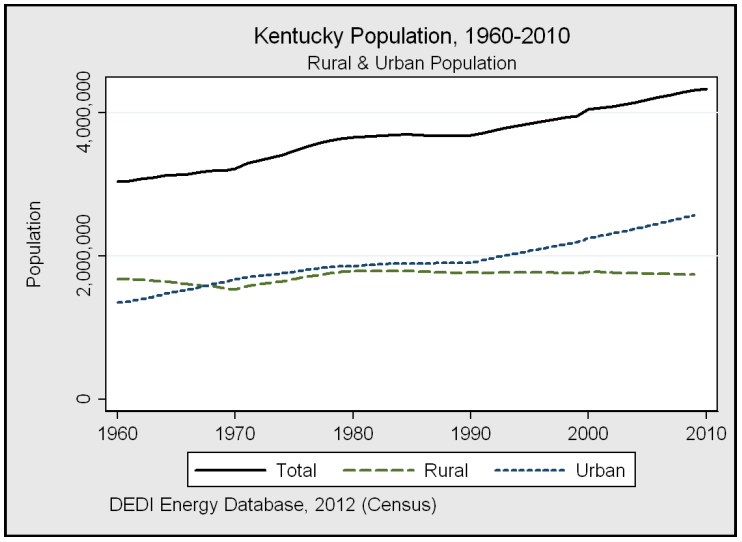
Gross Domestic Product

The state gross domestic product of Kentucky was $163.3 billion in 2010. Over a year, the state gdp of Kentucky rose by 3% in inflation-adjusted 2010 dollars. Since the year 2000, the state gross domestic product of Kentucky has risen by 14%.



Gross Domestic Product per Capita

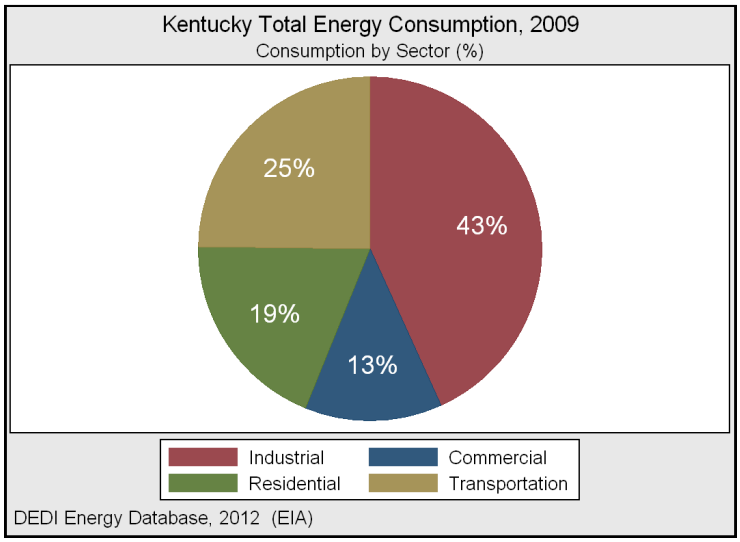
The state gross domestic product per capita of Kentucky in 2010 was $36,884. Compared with 2009, state gross domestic product per capita fell by -1%. This statistic utilizes nominal income data adjusted for inflation to 2010 dollars.

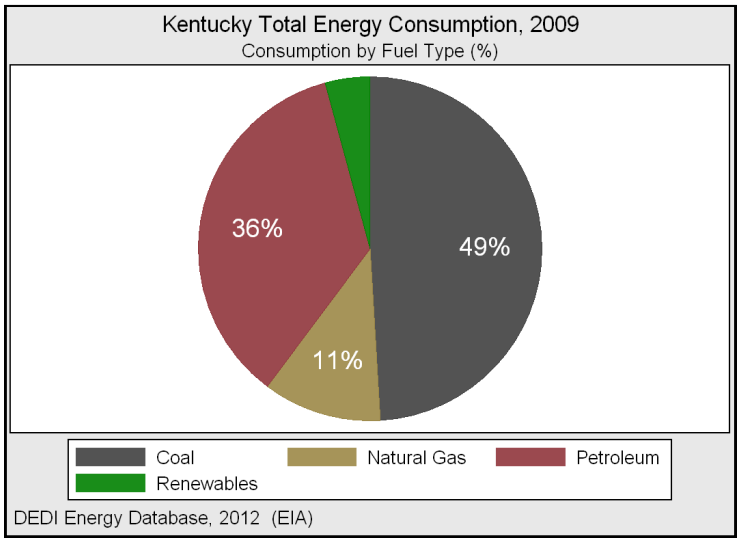


Rural & Urban Population

In 2010, the population of Kentucky was estimated to be around 4.34 million. Displaying a trend of increasing urbanization, the population of Kentucky has risen by 7% since the year 2000.

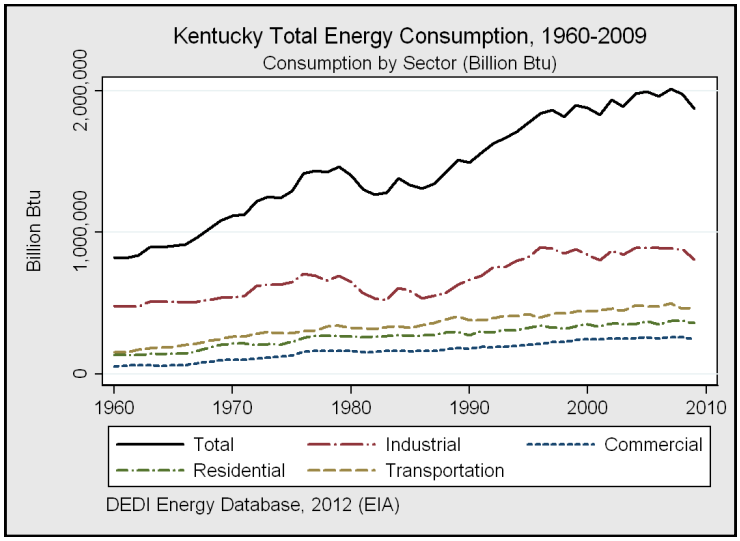
Kentucky Energy Consumption

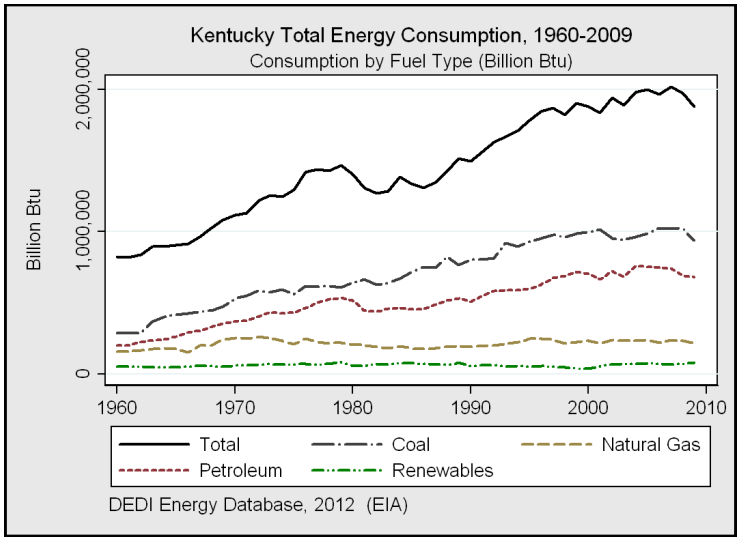




Sector	Billion Btu	Percentage
Total	1,876,629	100%
Industrial	811,058	43%
Transporation	465,189	25%
Residential	358,057	19%
Commercial	242,325	13%

Fuel Type	Billion Btu	Percentage
Total	1,876,629	100%
Coal	937,106	50%
Petroleum	680,093	36%
Natural Gas	213,970	11%
Renewables	80,125	4%

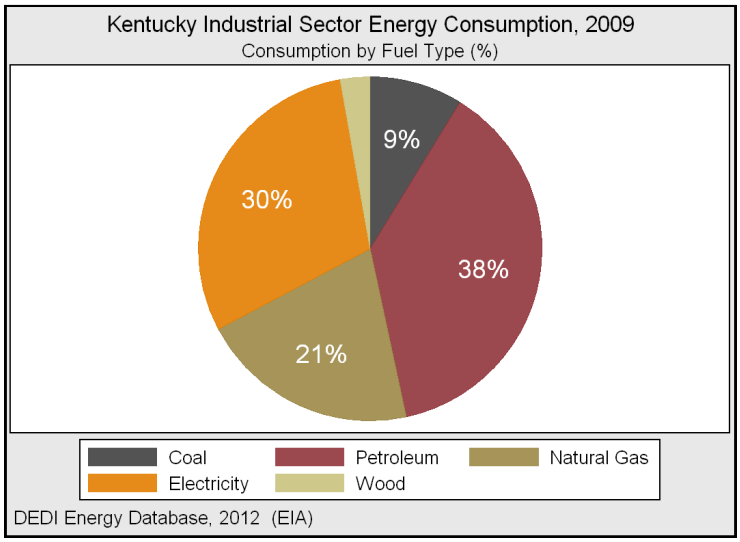


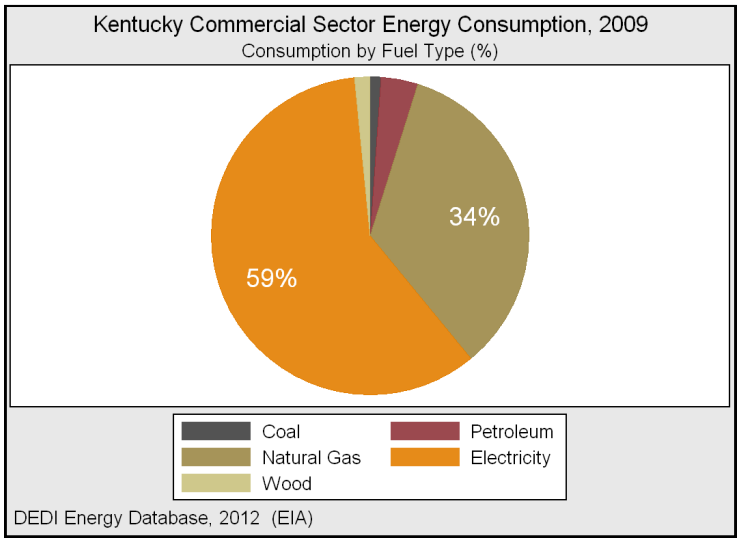


In 2009, total energy consumption in Kentucky reached 1.88 quadrillion Btu, a decrease of -5% from 2008. Dividing this consumption by economic sector, the industrial sector accounted for the largest amount of energy consumption in 2009.

Characterizing energy consumption by fuel type or commodity, the use of coal was the highest concentration of energy consumption in Kentucky in 2009. Compared with 2008, the consumption of coal displayed a decrease of -9% in 2009. Additionally, net electricity imports are included in energy consumption, and can explain the difference in the summed value and stated value for total energy consumption.

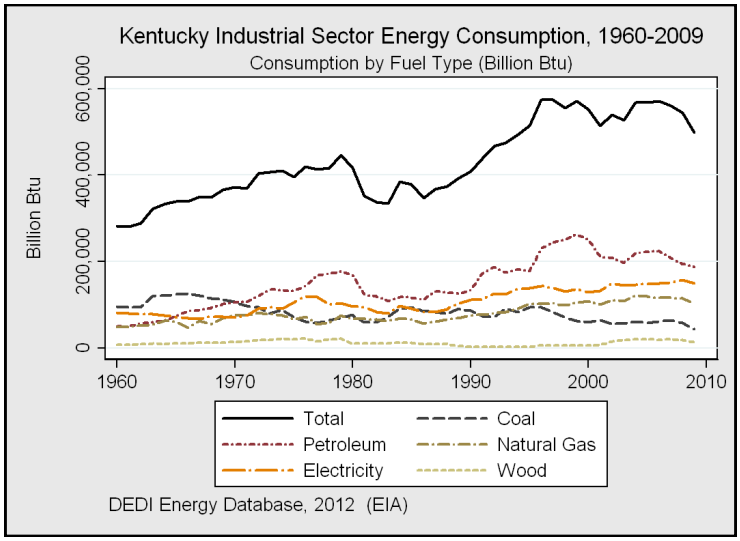
Kentucky Energy Consumption

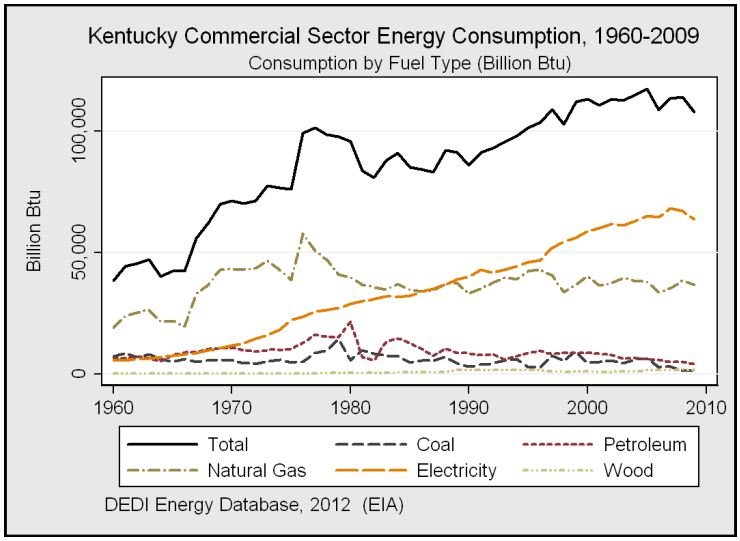




Fuel Type	Billion Btu	Percentage
Total	498,100	100%
Petroleum	187,954	38%
Electricity	148,722	30%
Natural Gas	102,210	21%
Coal	43,407	9%
Wood Products	13,824	3%

Fuel Type	Billion Btu	Percentage
Total	108,091	100%
Electricity	63,790	59%
Natural Gas	36,733	34%
Petroleum	4,040	4%
Wood Products	1,686	2%
Coal	1,178	1%

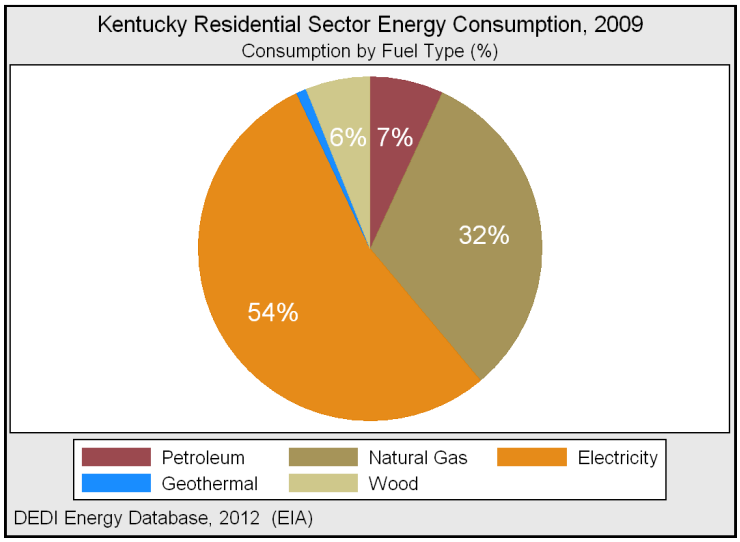


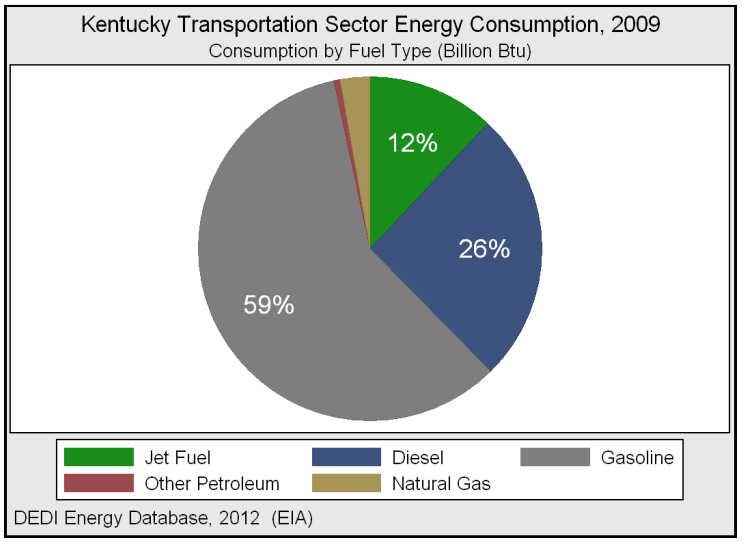


In 2009, industrial energy consumption in Kentucky reached 498,100 billion Btu, a decrease of -9% from 2008. Accounting for energy use across fuels or resources, petroleum represented the largest amount of industrial energy consumption in 2009.

Commercial energy consumption in Kentucky fell by -5% in 2009 to over 108,091 billion Btu. During 2009, electricity constituted the largest portion of commercial energy consumption and displayed a decrease of -5% compared with 2008.

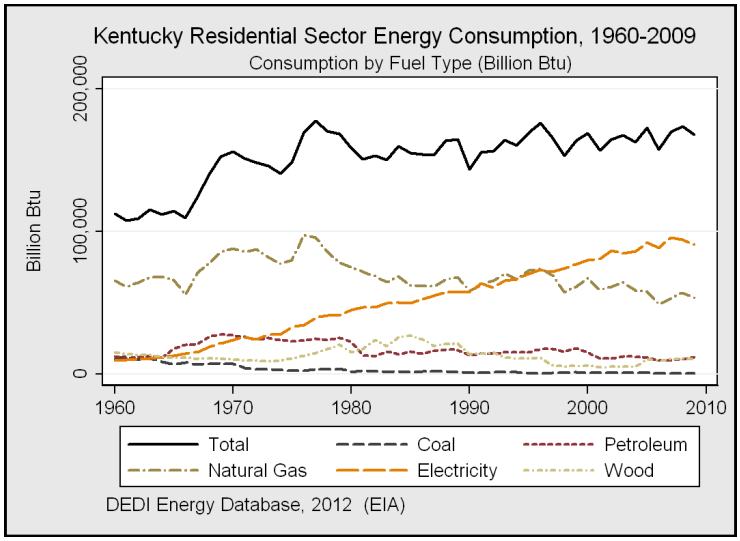
Kentucky Energy Consumption

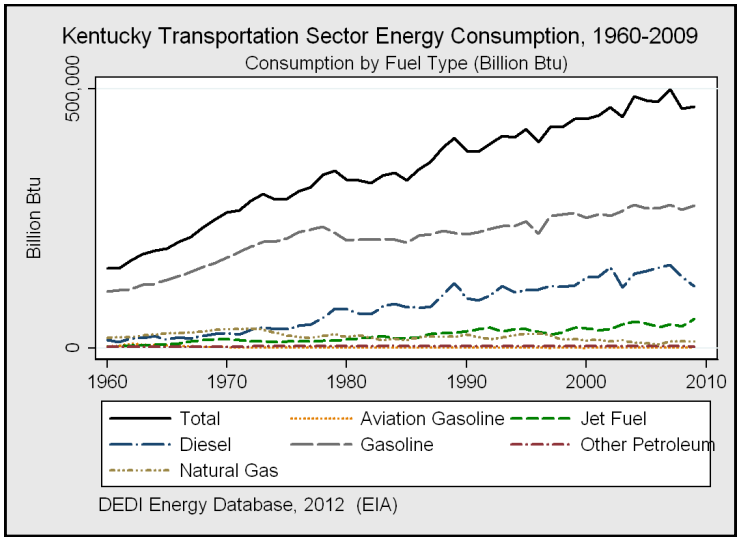




Fuel Type	Billion Btu	Percentage
Total	167,606	100%
Electricity	90,505	54%
Natural Gas	53,499	32%
Petroleum	11,586	7%
Wood	10,204	6%
Geothermal	1,590	1%

Fuel Type	Billion Btu	Percentage
Total	465,189	100%
Gasoline	274,411	59%
Diesel	119,192	26%
Jet Fuel	55,814	12%
Natural Gas	12,925	3%
Other Petroleum	2,639	1%

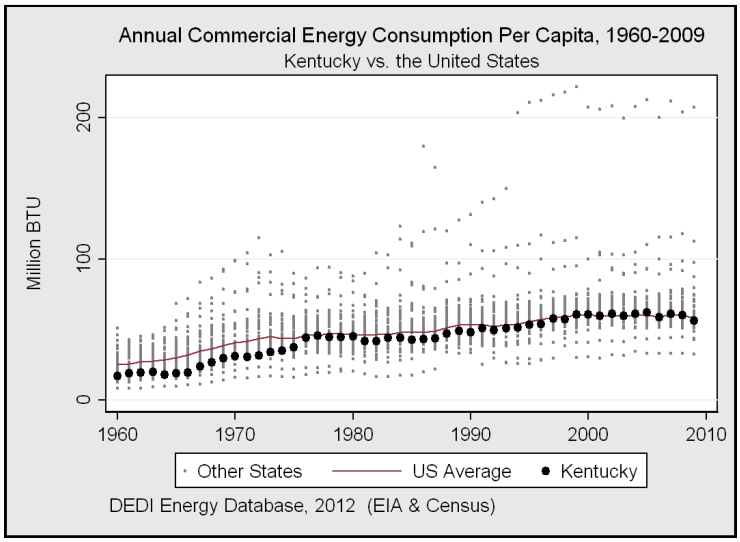




Residential sector energy consumption reached 167,606 billion Btu in Kentucky in 2009. This amount was a decrease of -4% compared with 2008. Overall, residential energy consumption was led by electricity consumption in 2009.

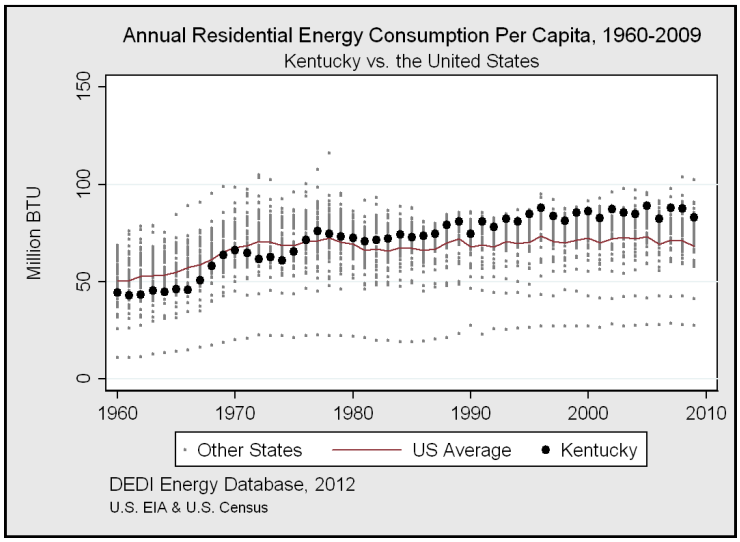
In 2009, the transportation sector of Kentucky consumed 465,189 billion Btu of energy commodities. This total reflected an increase of 1% in transportation energy consumption compared with the previous year. Unsurprisingly, gasoline was the largest source of transportation sector energy consumption in 2009.

Kentucky Energy Intensity



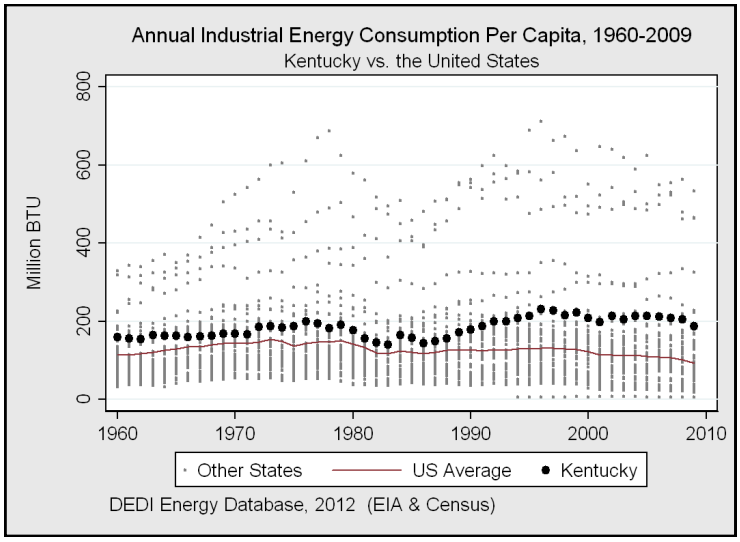
State	MMBtu per Capita	Rank
Wyoming	113	1st
Kentucky	56	34th
Hawaii	32	50th

Kentucky ranked 34th lowest nationally for commercial energy consumption per capita in 2009. This commercial measurement fell by -7% compared with 2008.



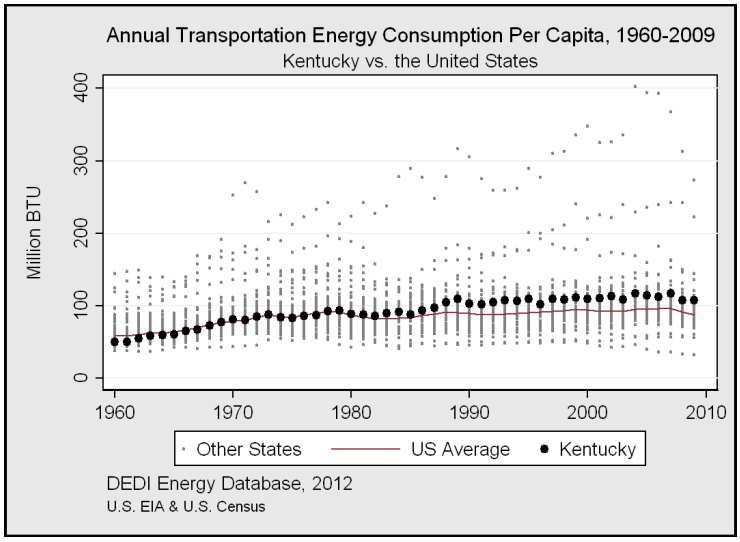
State	MMBtu per Capita	Rank
North Dakota	102	1st
Kentucky	83	9th
Hawaii	28	50th

Kentucky's residential sector consumed 83 MMBtu of energy per capita in 2009. Displaying a decrease of -5% this amount ranked Kentucky 9th highest by state.



State	MMBtu per Capita	Rank
Wyoming	533	1st
Kentucky	188	7th
New York	19	50th

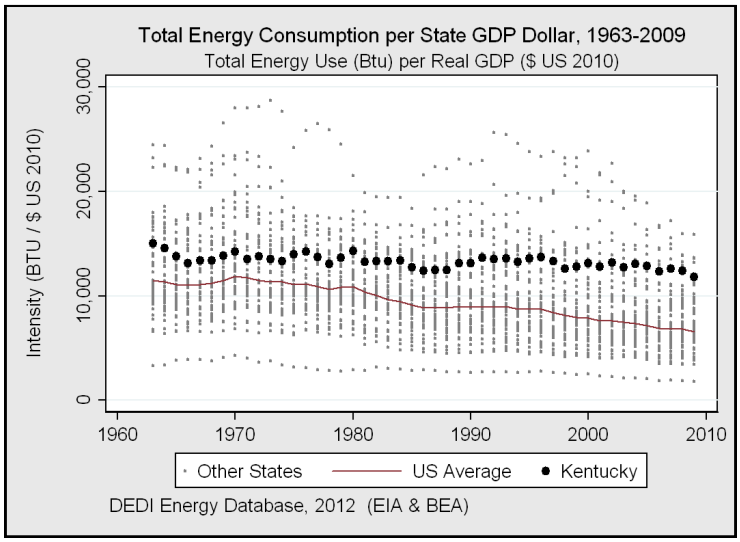
Industrial energy consumption per capita in Kentucky was 7th highest in the country in 2009. Compared with 2008, industrial energy use per capita fell by -9%.



State	MMBtu per Capita	Rank
Alaska	273	1st
Kentucky	108	10th
New York	56	50th

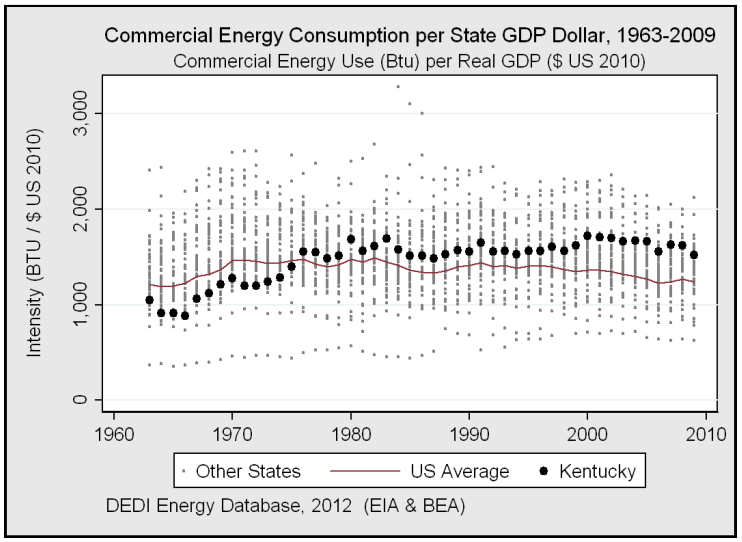
Transportation energy consumption per capita in Kentucky rose by less than 1% in 2009. Overall, Kentucky ranked 10th highest in the country for this metric.

Kentucky Energy Intensity



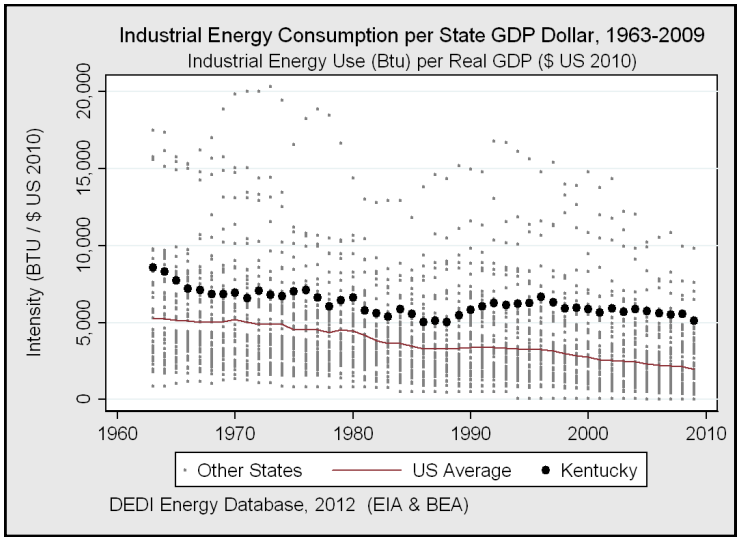
State	MMBtu per Capita	Rank
Louisiana	15,894	1st
Kentucky	11,794	5th
Connecticut	3,411	50th

Kentucky ranked 5th highest for energy consumption used to produce one dollar of state GDP in 2009. This measurement fell by less than 1% compared with 2008.



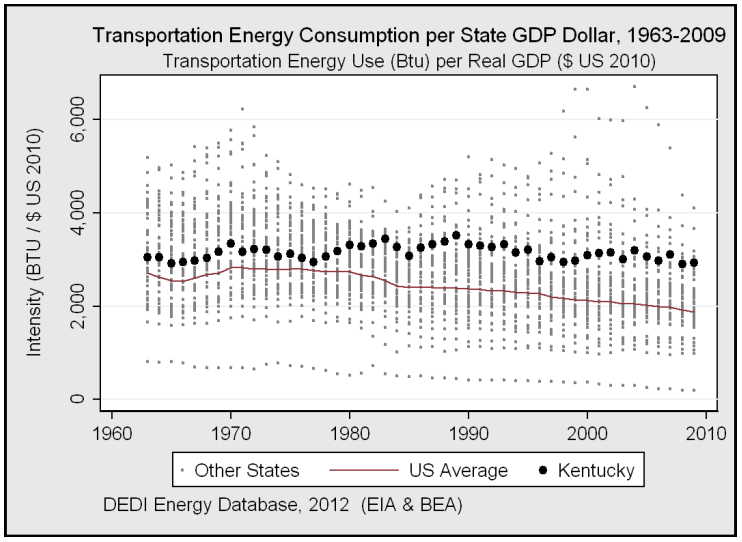
State	MMBtu per Capita	Rank
Montana	2,124	1st
Kentucky	1,523	17th
Hawaii	623	50th

Kentucky's commercial sector ranked 17th highest for the ratio of energy use to state GDP dollar in 2009. Against 2008, this ratio fell by -6%.



State	MMBtu per Capita	Rank
Louisiana	9,817	1st
Kentucky	5,097	5th
New York	329	50th

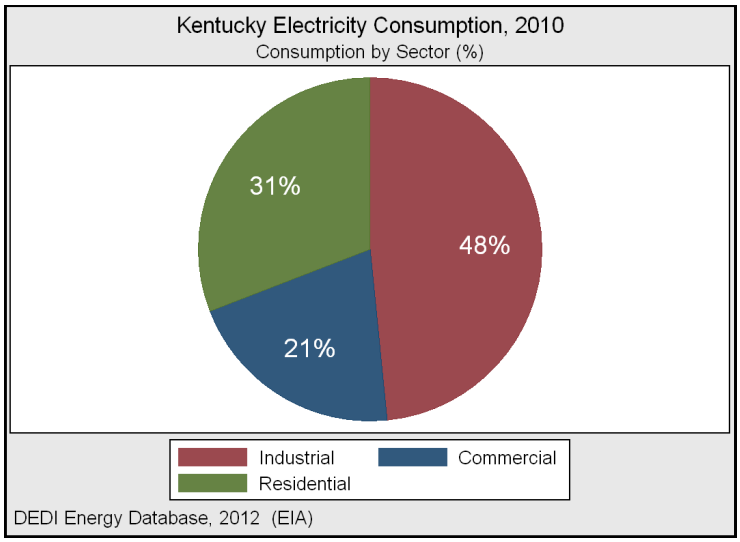
Industrial energy consumption per dollar of state GDP in Kentucky was 5th highest in 2009. Compared with 2008, industrial energy intensity fell by -8%.

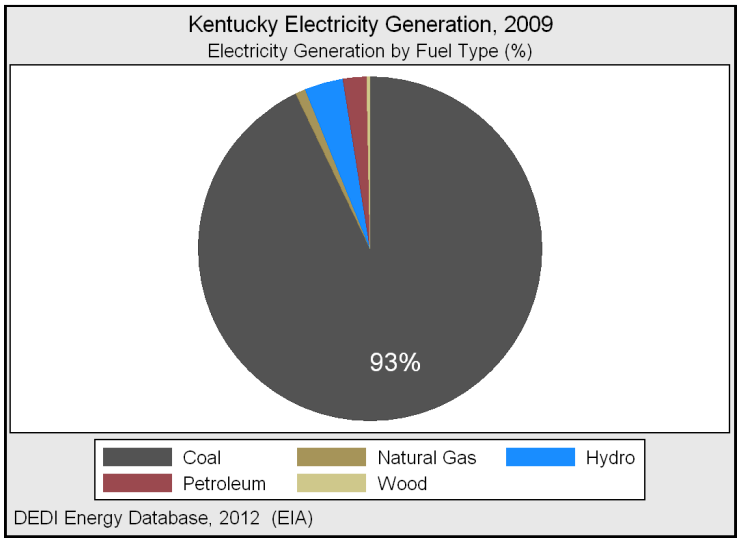


State	MMBtu per Capita	Rank
Alaska	4,103	1st
Kentucky	2,923	5th
New York	982	50th

Transportation sector energy intensity per state GDP dollar in Kentucky rose by 1% in 2009. Overall, Kentucky ranked 5th highest in the country for this metric.

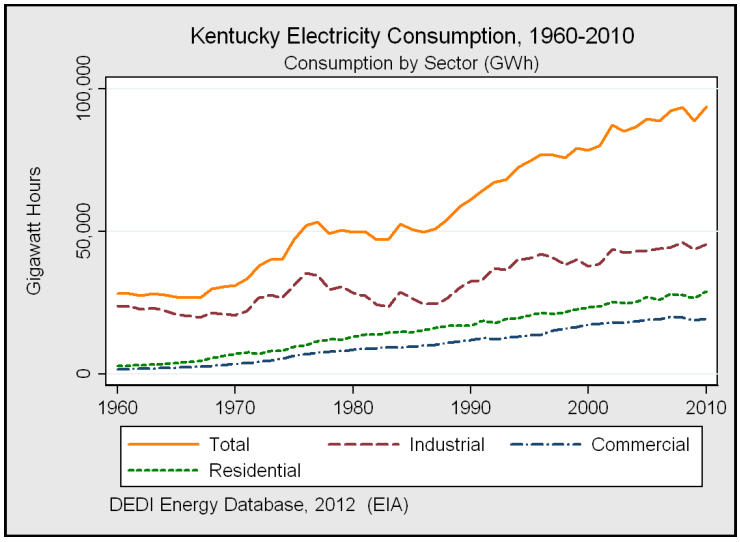
Kentucky Electricity

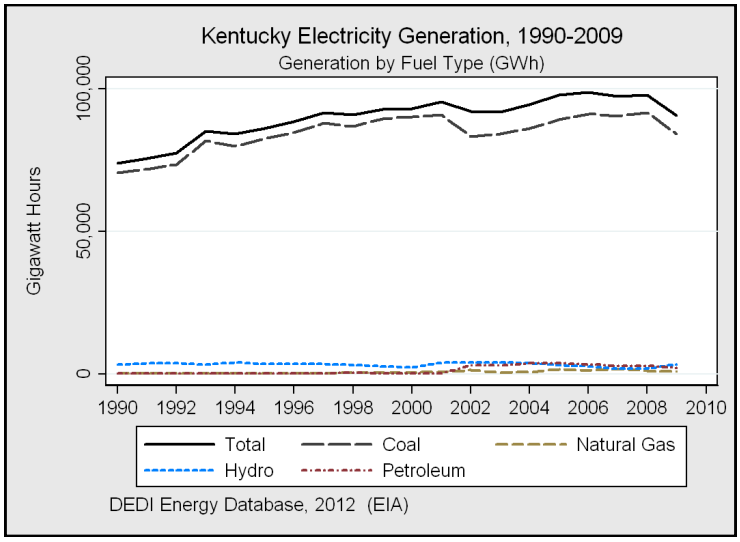




Sector	Gigawatt Hours	Percentage
Total	93,608	100%
Industrial	45,332	48%
Residential	28,887	31%
Commercial	19,389	21%

Fuel Type	Gigawatt Hours	Percentage
Total	98,218	100%
Coal	91,054	93%
Hydro	2,580	3%
Petroleum	2,285	2%
Natural Gas	1,841	2%
Wood	349	0%

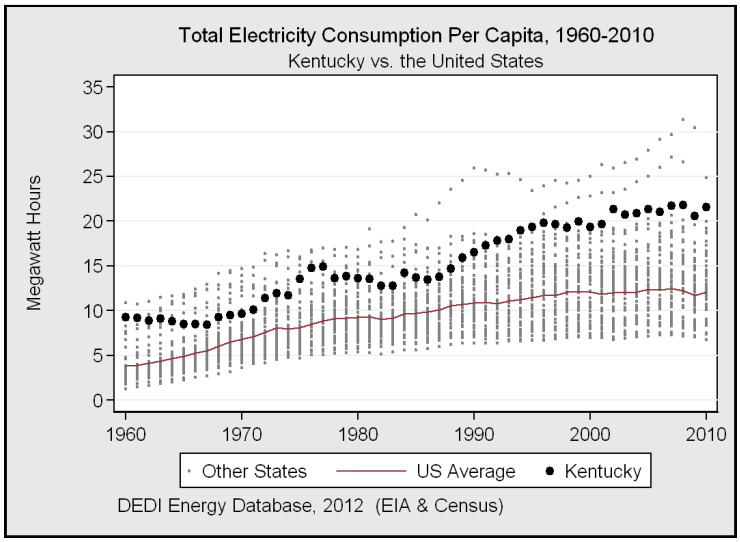




In 2010, citizens, institutions, and firms in Kentucky consumed 93,608 gigawatt-hours of electricity. Compared with 2009, total electricity consumption rose by 5%. Dividing electricity consumption by economic sector, industrial customers were the largest consumers of electricity in Kentucky in 2010.

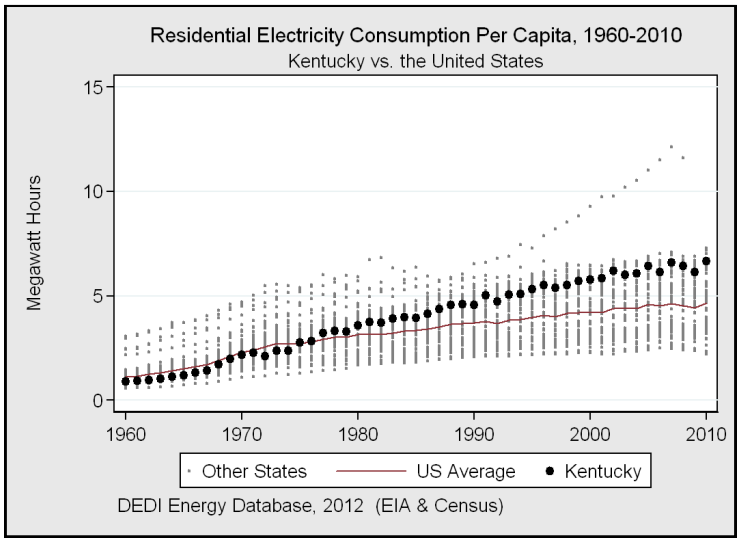
Electric power facilities in Kentucky generated over 98,218 gigawatt-hours of electricity in 2010. The use of coal represented the largest portion of this electricity, accounting for 91,054 gigawatt-hours. Overall, electricity generation rose by 8% verus the previous year.

Kentucky Electricity Intensity



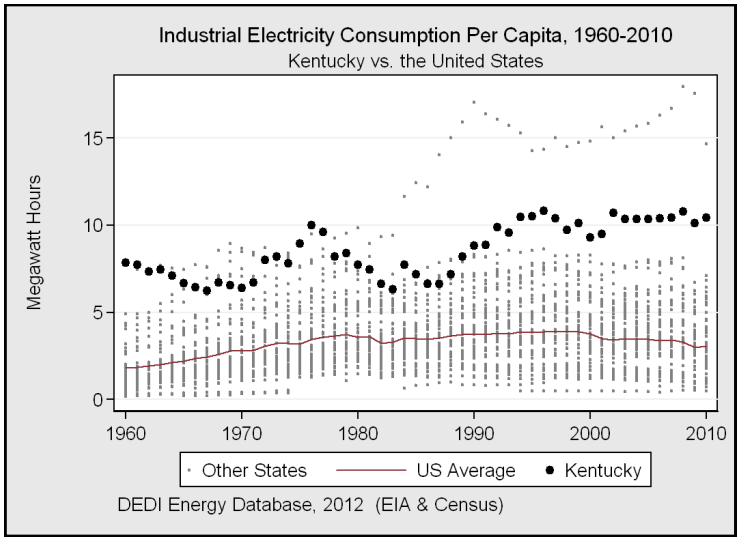
State	MWh per Capita	Rank
Wyoming	24.9	1st
Kentucky	21.6	2nd
California	6.7	50th

Kentucky ranked 2nd highest nationally for total electricity consumption per capita in 2010. This amount rose by 5% to 21.6 MWh per citizen for the year.



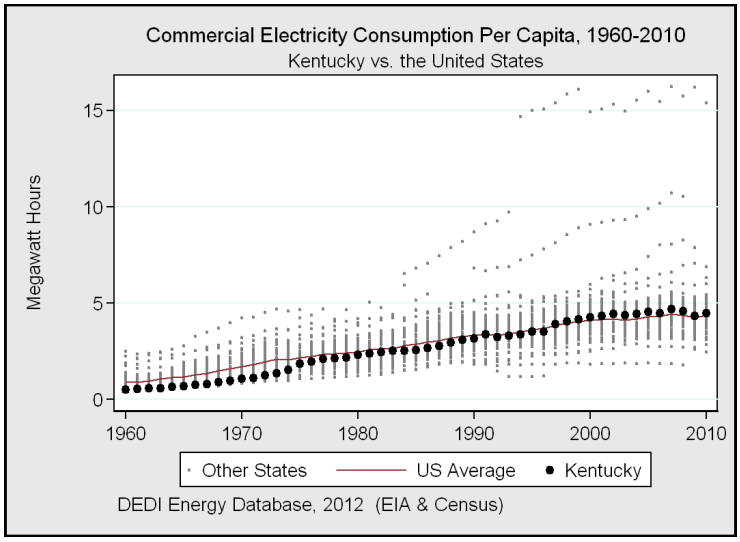
State	MWh per Capita	Rank
Alabama	7.3	1st
Kentucky	6.7	6th
Hawaii	2.2	50th

Residents of Kentucky used on average 6.7 MWh of electricity in 2010. Representing an increase of 8%, this amount ranked Kentucky 6th highest by state.



State	MWh per Capita	Rank
Wyoming	14.7	1st
Kentucky	10.4	2nd
New York	0.7	50th

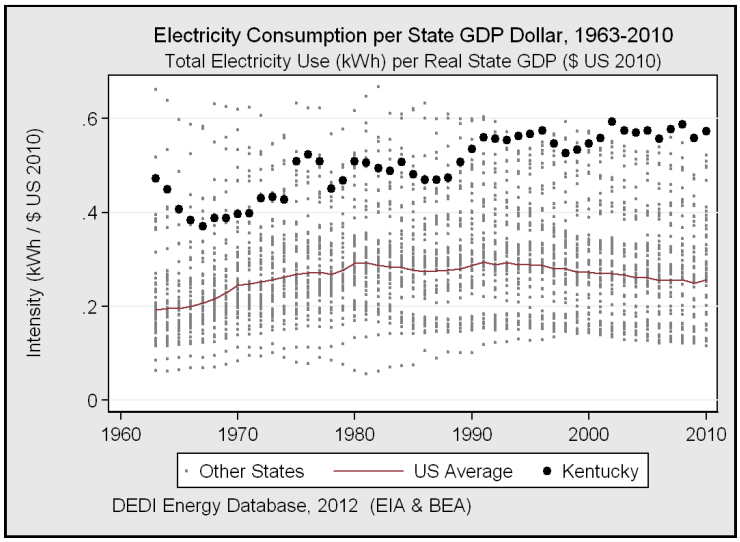
Industrial electricity consumption per capita in Kentucky was 2nd highest in 2010. Versus 2009, industrial electricity consumption per capita rose by 3%.

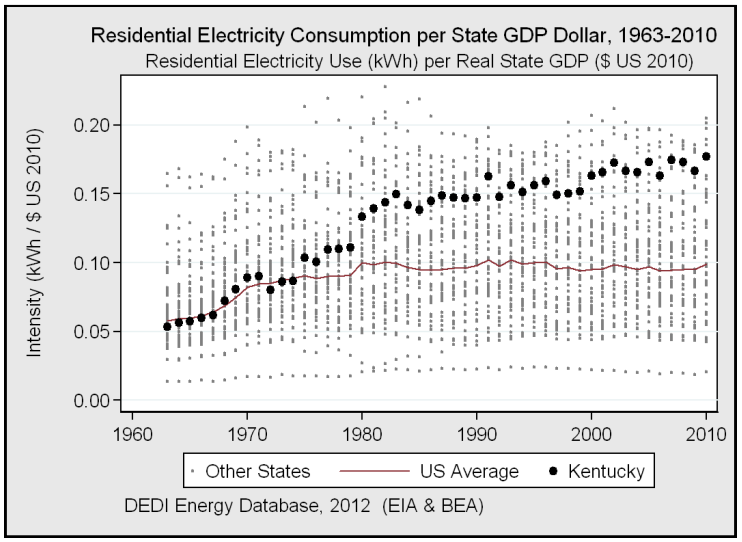


State	MMBtu per Capita	Rank
North Dakota	6.9	1st
Kentucky	4.5	24th
Hawaii	2.5	50th

Kentucky's commercial electricity consumption per capita rose by 3% in 2010 to 4.5 MWh. Overall, Kentucky ranked 24th highest in the country for this metric.

Kentucky Electricity Intensity



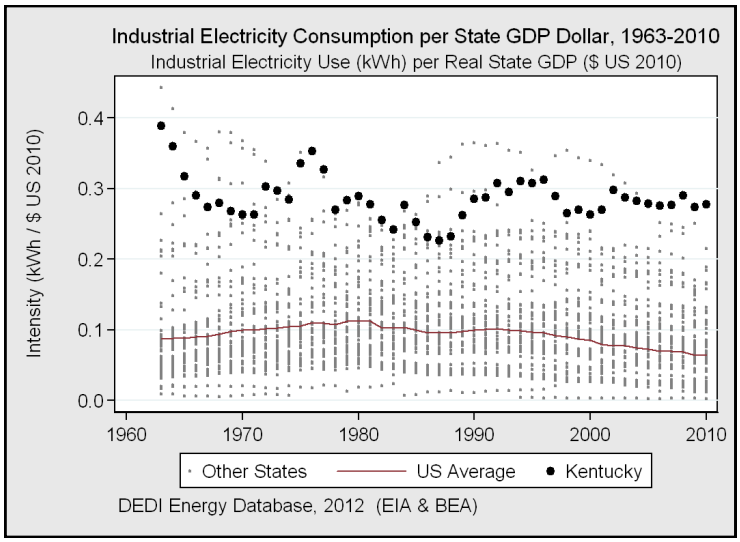


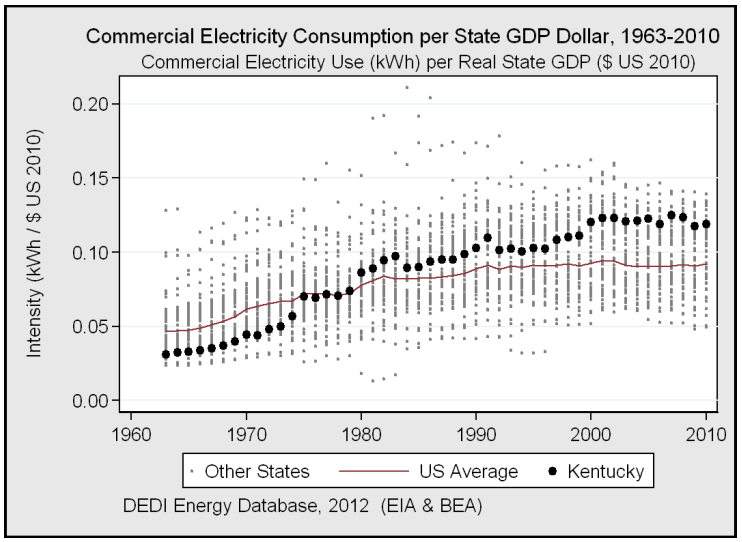
State	kWh / $ US GDP	Rank
Kentucky	0.57	1st
New York	0.13	50st

Kentucky ranked the highest nationally for total electricity consumption per state gdp dollar in 2010. This amount rose by 3% to 0.57 kWh per dollar for the year.

State	kWh / $ US GDP	Rank
Mississippi	0.20	1st
Kentucky	0.18	6th
Alaska	0.04	50th

In 2010, Kentucky ranked 6th highest for residential electricity use relative to one dollar of state gdp. This metric rose by 6% compared to 2009.





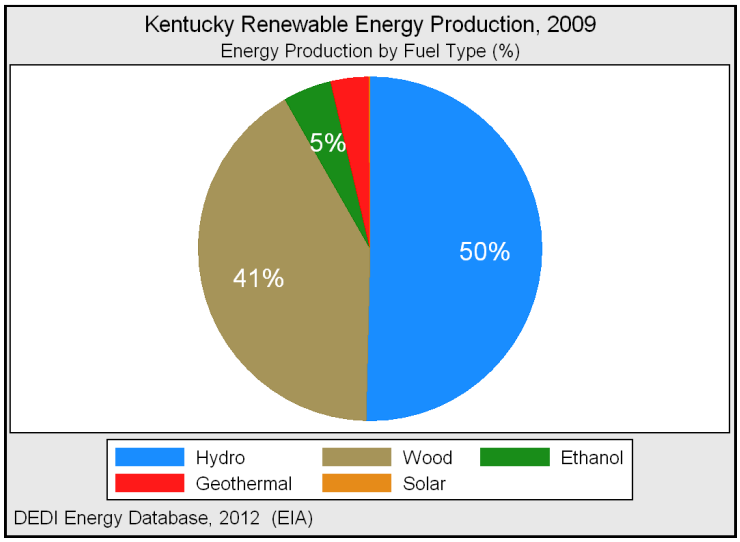
State	kWh / $ US GDP	Rank
Kentucky	0.28	1st
New York	0.01	50st

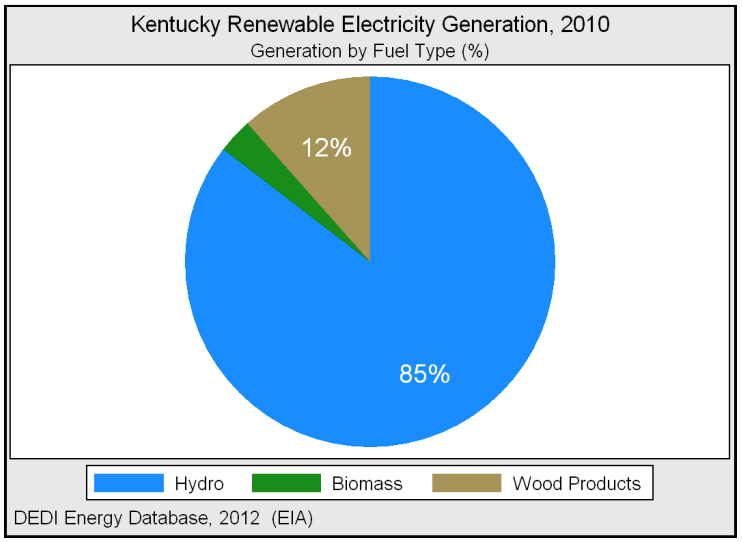
Industrial electricity consumption per state gdp dollar in Kentucky was the highest in the country 2010. Versus 2009, industrial electricity intensity rose by 1%.

State	kWh / $ US GDP	Rank
Mississippi	0.14	1st
Kentucky	0.12	11th
Massachusetts	0.05	50th

Kentucky's commercial sector used 0.12 kWh of electricity to generate one dollar of economic output. An increase of 1%, this ratio ranked the state 11th highest.

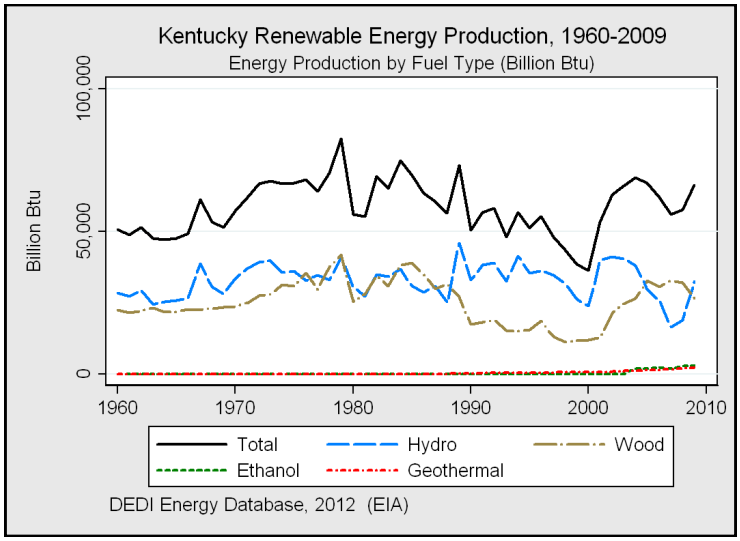
Kentucky Renewable Energy

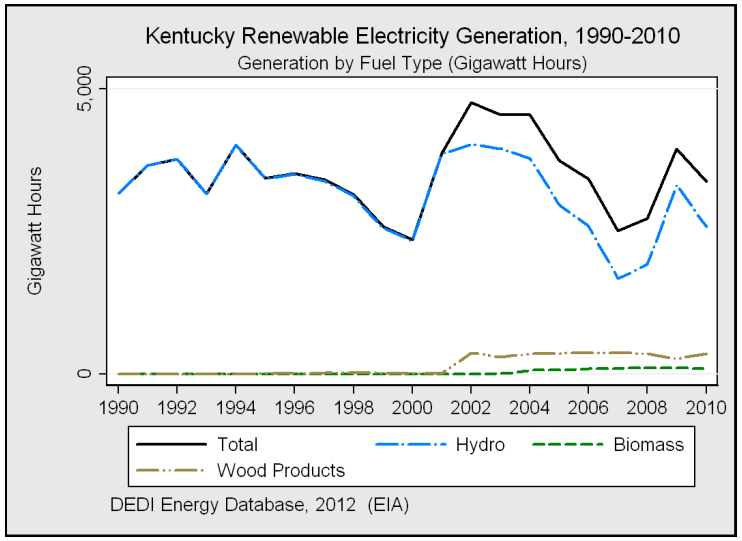




Fuel Type	Billion Btu	Percentage
Total	66,193	100%
Hydro	32,380	49%
Wood & Biomass	26,552	40%
Ethanol	2,947	4%
Geothermal	2,258	3%
Solar	97	0%

Fuel Type	Gigawatt Hours	Percentage
Total	3,111	100%
Hydro	2,580	83%
Wood	349	11%
Biomass	91	3%

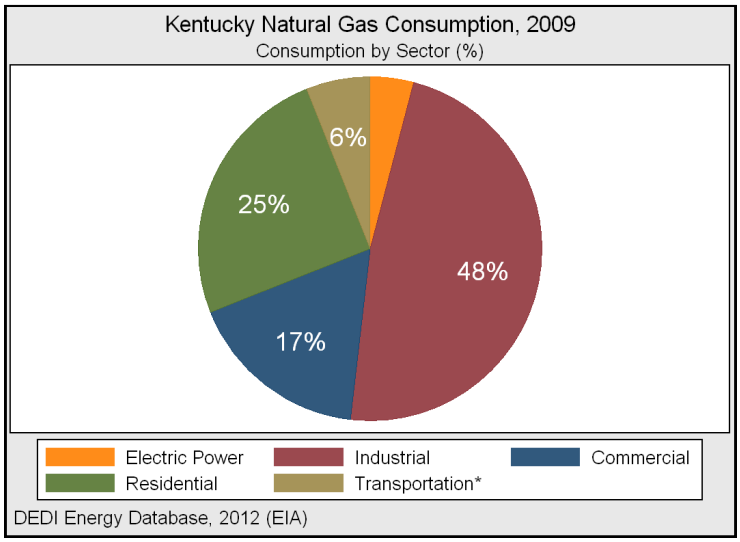


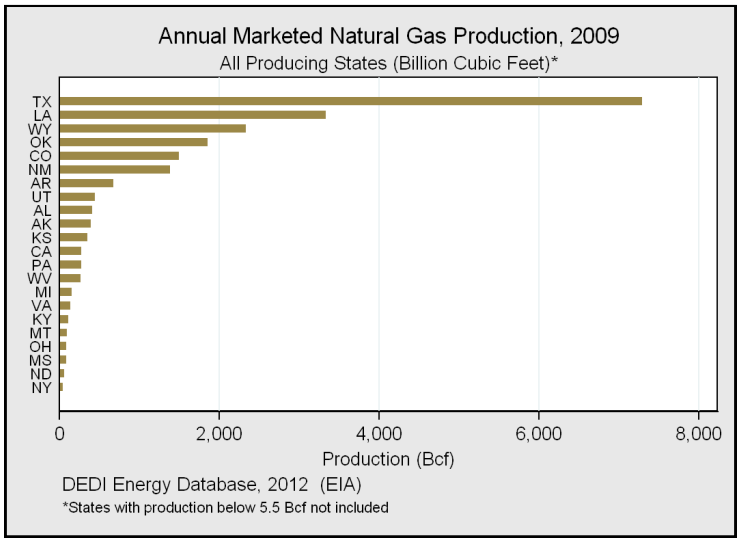


In 2009, renewable energy production in Kentucky reached 66,193 billion Btu, an increase of 15% from 2008. Dividing this production by fuel type, hydroelectric resources accounted for the largest amount of energy production in 2009.

Describing renewable electricity generation by fuel type or commodity, the production of hydroelectric facilities was the largest portion of renewable electricity generation in Kentucky in 2010. Compared with 2009, the electrical output of hydroelectric facilities displayed a decrease of -22% in 2010.

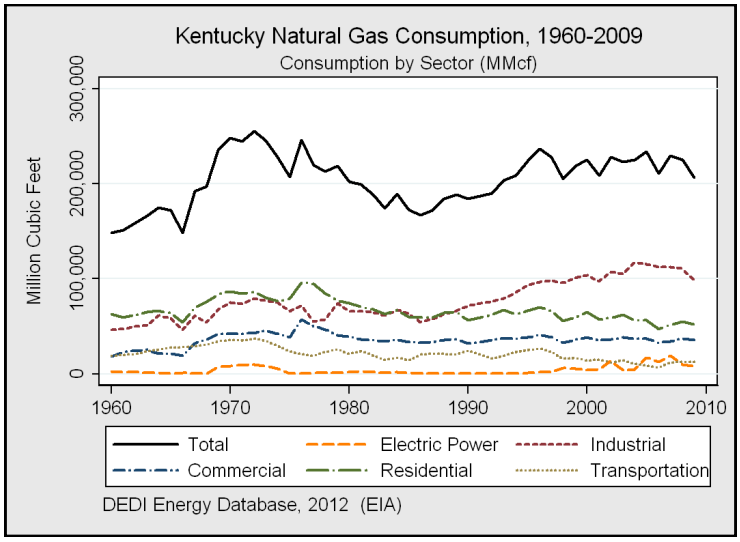
Kentucky Natural Gas

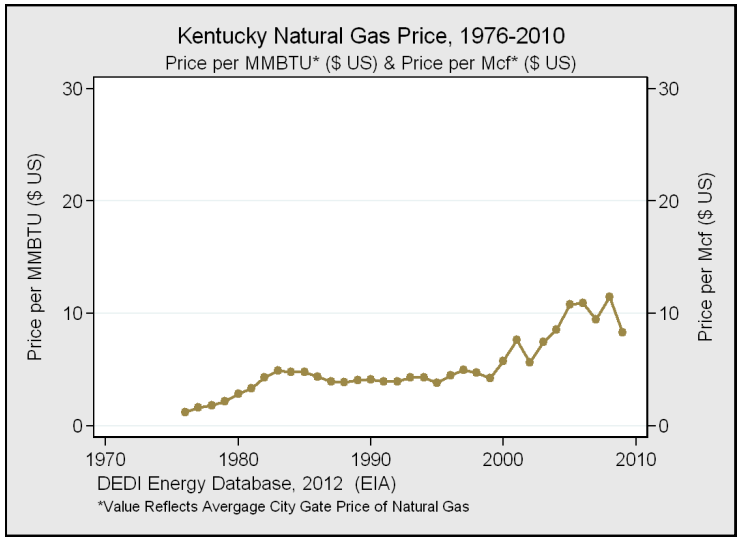




Sector	Million Cubic Feet	Percentage
Total	206,534	100%
Industrial	98,611	48%
Residential	51,615	25%
Commercial	35,439	17%
Transportation	12,470	6%
Electric Power	8,399	4%

Kentucky registered 113.3 billion cubic feet of marketed natural gas production in 2009. Against 2008, natural gas production in the state fell by -1% through 2009. Comparing in-state production levels with in-state consumption levels, Kentucky was a net importer of natural gas for the year.

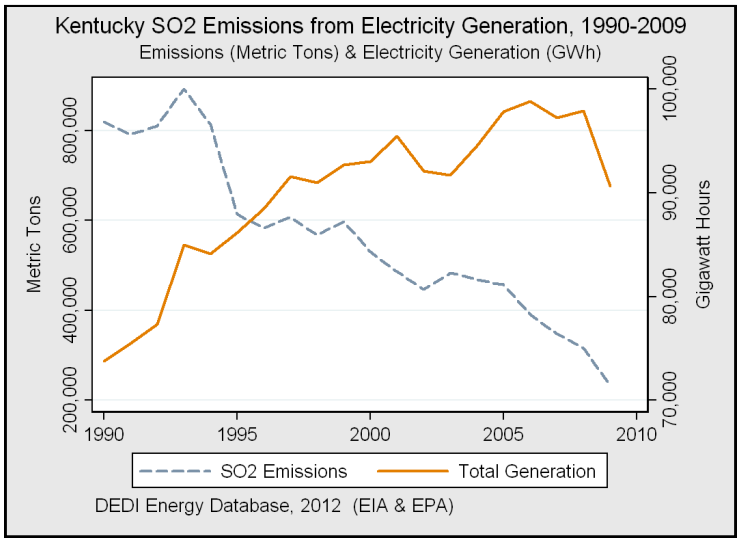


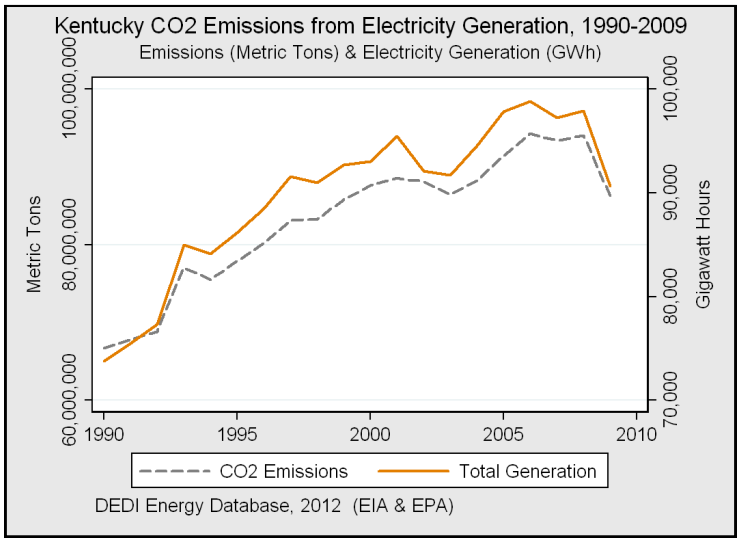


In 2009, natural gas consumption in Kentucky reached 206,534 million cubic feet. Compared with 2008, total natural gas consumption fell by -8% on the year. Dividing natural gas use by economic sector, the industrial sector was the largest consumer of natural gas in Kentucky in 2009.

The average city gate price of natural gas in Kentucky was $8.32 per thousand cubic feet in 2009. Versus the previous year, this average annual price fell by -28%. The city gate price of natural gas is typically reported at the connection where a natural gas distribution company or utility takes control of natural gas delivered by a pipeline or transmission company.

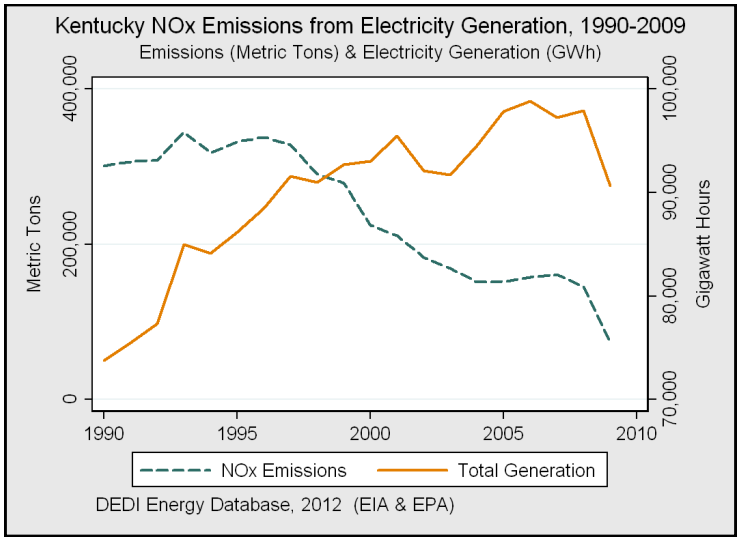
Kentucky Power Plant Emissions





Emission	Metric Tons	Since 1990
Carbon Dioxide	86,155,115	29%
Sulfur Dioxide	232,401	-72%
Nitrogen Oxides	73,900	-75%

Sulfur Dioxide is a highly reactive gas and major pollutant that is monitored and regulated at the State and Federal level. In 2009, the electric power sector of Kentucky emitted 232,401 metric tons of sulfur dioxide, representing a decrease of -27% compared with 2008. Overall, the electric power sector of Kentucky has decreased sulfur dioxide emissions by -72% since 1990.

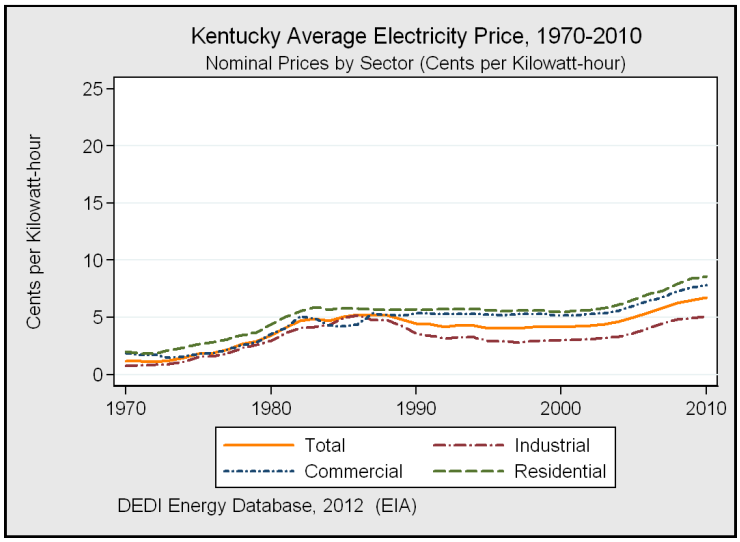


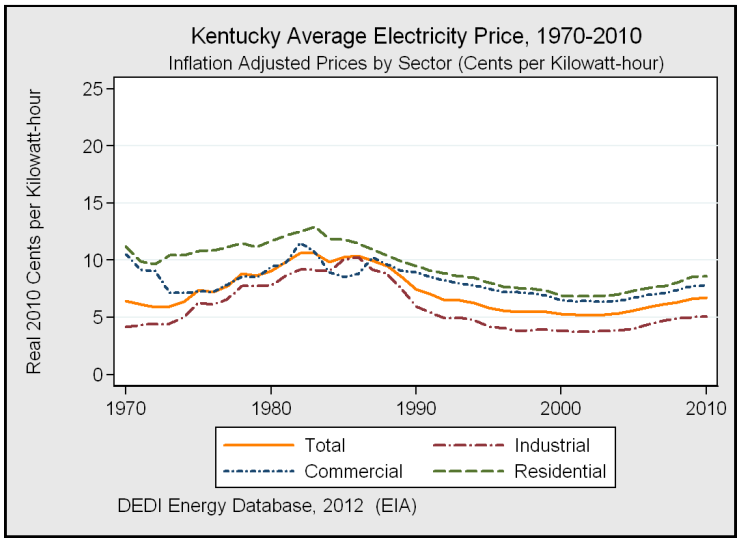
Nitrogen Oxides are a group of highly reactive gases that are monitored and regulated at the State and Federal level. In 2009, the electric power sector of Kentucky emitted 73,900 metric tons of nitrogen oxides, representing a decrease of -49% compared with 2008. Overall, the electric power sector of Kentucky has decreased sulfur dioxide emissions by -75% since 1990.

Carbon Dioxide emssisions from fossil fuel power plants have been monitored over time at the State and Federal level. In 2009, the electric power sector of Kentucky emitted 86,155,115 metric tons of carbon dioxide, representing a decrease of -8% compared with 2008.

The last major amendments to the Clean Air Act were implemented in 1990. These amendments focused on National Ambient Air Quality Standards and the mechanisms which would ensure attainment and compliance with emission reduction targets. Subsequently, the emission of Sulfur Dioxide (SO_2) and Nitrogen Oxides (NO_x) from electric generating plants were regulated and scheduled for reduction. The dual display of electricity generation and regulated emissions indicates that over time, though electricity demand and generation have increased, the release of targeted pollutants has actually decreased. Therefore, both the aggregate emission as well as intensity of emission per gigawatt-hour of criteria pollutants, such as Suflur Dioxide and Nitrogen Oxides, have been decreasing nationally since 1990. The reductions have been made by a combination of fuel switching and the installation of pollution mitigation systems at power plants.

Kentucky Electricity Prices





Sector	Cents / kWh	Since 2000
Average	6.75	61%
Industrial	5.07	68%
Commercial	7.82	52%
Residential	8.58	57%

Prices and percent changes above are displayed and calculated in terms of nominal prices ($ US) for the period 1970-2010.

Fuel Type	Real Cents / kWh	Since 2000
Average	6.72	27%
Industrial	5.07	33%
Commercial	7.80	20%
Residential	8.61	24%

Prices and percent changes above are displayed and calculated in terms of real, inflation-adjusted dollars (Real $ US 2010) for the period 1970-2010.

Electricity usage in Kentucky is billed in terms of cents per kilowatt-hour of electricity consumed. Due to the variations between economic sectors, electric utilities, and electric power producers, the price of electricity is not uniform across Kentucky. As a result, each economic sector in Kentucky encounters a different average price for the consumption of electricity.

In 2010, the average price of electricity across economic sectors in Kentucky was 6.75¢ per kilowatt-hour. With an increase of 4% versus 2009, this overall, weighted-average price ranked Kentucky 47th lowest in the country in terms of electricity. Since 2000, the average price of electricity in Kentucky has risen by 61%.

Adjusting for inflation over time, the trends in the real cost of electricity in Kentucky between 1970 and 2010 can be placed in context to the adjacent, nominal graphic. Resetting historical price data to inflation-adjusted 2010 values, the price of electricity in real economic terms in Kentucky has risen by 27% since the year 2000. Additionally, in 2010 Kentucky ranked 47th lowest in the nation for the real price of electricity.

Since 1990, the two most influential factors explaining the changes in both nominal and real electricity prices have been the type of generation portfolio developed within a state, and the price of fossil fuel inputs for the electric power sector. Specifically, these factors involve the type of generation technology (i.e. coal, gas, nuclear) used within a state, the share of each technology in supplying baseload electricity, and the price of the primary fossil fuels.