SOUTHERN STATES ENERGY BOARD

Transcending Boundaries

Southern States Regional Energy Profiles

2016

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2016 Regional Energy Profiles

July 2016

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June 28, 2016

Dear Board Members, Associate Members and Colleagues:

The Southern States Energy Board is pleased to present this third edition of *Southern States Energy Profiles*, a report that provides an overview of the changing patterns of energy consumption across the South. This is a cooperative venture between the Southern States Energy Board and the Kentucky Department for Energy Development and Independence in the Energy and Environment Cabinet. Both organizations are indebted to the United States Department of Energy's Office of Fossil Energy, which provided grant funding to perform the assessments contained in the report.

As with previous editions, this report serves as a foundation for the discussion of energy programs, policies, and technologies that can enhance economic development and the quality of life in the region. These state energy profiles show the importance of energy to the South. In 2015, the 16 member states and 2 territories in the SSEB region consumed more than 46 percent of the electricity used nationwide. Energy consumption per capita and per unit of gross domestic product (GDP) continues to be substantially higher in the South than in the rest of the nation. Total energy consumption in member states has risen by 181 percent from 1960, to more than 44 Quadrillion Btu in 2014.

Energy-intensive industrial and manufacturing processes found in the South continue to consume more energy than other economic sectors. Residential and commercial energy consumption rates also are growing faster than industrial demand due in part to an increase in population and as business is relocated to the SSEB region.

For the first time, electricity in the region is primarily supplied by natural-gas fired power plants. In 2015, natural gas was used to generate 773 TWh, 40 percent of electricity generation, compared with 34 percent two years ago. While the South remains the leader in energy consumption, electricity prices in 2015 were lower than the national average. Even though residential prices were considerably lower in the region, consumption per household remains higher than the national average partially due to those lower prices, weather requiring a heavy air-conditioning load, and housing stock.

We would like to recognize the public sources used in aggregating data for this report. The Energy Information Administration of the U.S. Department of Energy; U.S. Environmental Protection Agency; the Bureau of Labor Statistics; the Bureau of Economic Analysis; and the Census Bureau have all provided data used in the report. The document compares energy consumption, energy sources, electricity consumption, electricity generation and emissions, electricity prices, and energy exports between all SSEB member states, the SSEB region, and the United States.

Kenneth J. Nemeth
Secretary and Executive Director

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Southern States Energy Board

About Southern States Energy Board

The Southern States Energy Board (SSEB) is a non-profit interstate compact organization created in 1960 and established under Public Laws 87-563 and 92-440. The Board's mission is to enhance economic development and the quality of life in the South through innovations in energy and environmental policies, programs and technologies. Sixteen southern states and two territories comprise the membership of SSEB: Alabama, Arkansas, Florida, Georgia, Kentucky, Louisiana, Maryland, Mississippi, Missouri, North Carolina, Oklahoma, Puerto Rico, South Carolina, Tennessee, Texas, U.S. Virgin Islands, Virginia and West Virginia. Each jurisdiction is represented by the governor and a legislator from the House and Senate. A governor serves as the chair and legislators serve as vice-chair and treasurer. Ex-officio non-voting Board members include a federal representative appointed by the president of the United States and SSEB's executive director, who serves as secretary.

SSEB was created by state law and consented to by Congress with a broad mandate to contribute to the economic and community well-being of the southern region. The Board exercises this mandate through the creation of programs in the fields of energy and environmental policy research, development and implementation, science and technology exploration and related areas of concern. SSEB serves its members directly by providing timely assistance designed to develop effective energy and environmental policies and programs and represents its members before governmental agencies at all levels.

Long-term Goals

- Perform essential services that provide direct scientific and technical assistance to state governments;
- Develop, promote and recommend policies and programs on energy, environment and economic development that encourage sustainable development;
- Provide technical assistance to executive and legislative policy-makers and the private sector in order to achieve synthesis of energy, environment and economic issues that ensure energy security and supply;
- Facilitate the implementation of energy and environmental policies between federal, state and local governments and the private sector;
- Sustain business development throughout the region by eliminating barriers to the use of efficient energy and environmental technologies; and
- Support improved energy efficient technologies that reduce environmental impacts and contribute to a clean global environment while protecting indigenous natural resources for future generations.

Executive Summary

This is the third edition of *Southern States Energy Profiles,* a report that provides an overview of electricity generation and energy consumption within the SSEB region. The *Profiles* also serve as a foundation for discussing energy and environmental policies, programs, and technologies that can help SSEB states assess trends in the energy landscape and help them to identify economic development opportunities.

This report is a collaboration between the SSEB and the Kentucky Department for Energy Development and Independence (DEDI), Energy and Environment Cabinet. All of the data summarized in this report were aggregated from public sources, specifically the following agencies of the U.S. government: Energy Information Administration (EIA); Environmental Protection Agency (EPA); Bureau of Labor Statistics (BLS); Bureau of Economic Analysis (BEA); and the Census Bureau. Data compares the SSEB region and individual states with national averages for energy and electricity consumption, electricity generation and emissions from that generation, electricity prices, and energy exports. Note that comparable data for Puerto Rico and the U.S. Virgin Islands was limited at the time of publication. Data available is represented in energy consumption by sector.

Changing Electricity Generation Portfolio

The electricity generation portfolios of both the SSEB region and the United States are rapidly changing, influenced by market conditions, environmental regulations, and state and federal policies related to energy production. The most notable change is the regional shift from coal to natural gas as the dominant source for electricity generation. Since the second edition of these *Profiles* two years ago, electricity generated by natural gas has increased from 34 percent to 40 percent. During this same time period, coal-fired generation has decreased from 40 percent to 33 percent. Renewable electricity generation increased by 17 percent in the SSEB region in 2015. Wind power remains the fastest growing and is now the dominant source, at 43 percent, of renewable electricity generation in the region. Hydroelectric generation, which varies from year to year due to rainfall and temperature, represents 33 percent of the renewable electricity in the region. Solar generation exhibited the largest proportional gain, increasing 67 percent in 2015.

Emissions Reductions

Pollution mitigation measures at regional power plants include the use of lower-sulfur fuels and the installation of clean coal technologies. In the SSEB region, sulfur dioxide (SO_2) emissions from electricity generation have been reduced 81 percent since 1995. Despite a 32 percent increase in electricity consumption since 1995, carbon dioxide (CO_2) emissions in the SSEB region have increased by only 1.1 percent. Regionally, CO_2 emissions from electricity generation peaked at 1.3 billion tons in 2007 and were reduced to 1.049 billion tons in 2015, a 17 percent decrease in the past ten years.

Stable Electricity Prices

Electricity prices in the SSEB region in 2015 were 11 percent lower than the national average and have remained approximately stable over the past decade (in real terms). Industrial and residential prices averaged 6.0 and 11.3 cents/ kWh while commercial rates were 8.9 cents in 2015. Monthly electricity bills paid by residential consumers averaged $129.13 in 2015, which was 13.4 percent higher than the national average.

Energy Consumption

The 16 member states and 2 territories in the SSEB region consumed 46 percent of the total energy used in the United States in 2014 (the last year for available data on total energy consumption). Petroleum, used primarily for transportation fuels such as diesel and motor gasoline, continues to be the region's primary energy source, accounting for 39 percent of all energy consumed. Natural gas is the second largest energy source, supplying 27 percent of energy demand and is used primarily for industrial processes, electricity generation and home heating. Coal is the region's third largest energy source, supplying 19 percent of energy requirements. Nuclear power supplied 8 percent of the regional energy requirements. Finally, renewable energy sources, primarily electricity generated from wind and hydroelectric power, and wood waste, supplied 6 percent of the energy consumed in the region in 2014. Solar power exhibited the largest annual increase, 67 percent, in renewable energy resources in the region. With low natural gas prices and increased environmental regulations, along with dramatic reduction in the cost of renewable resources, a number of changes are occurring in the traditional energy mix.

SSEB Region States

This document is intended to provide an overview of energy in the following states, both individually and as a region.

ALABAMA

ARKANSAS

FLORIDA

GEORGIA

KENTUCKY

LOUISIANA

MARYLAND

MISSISSIPPI

MISSOURI

NORTH CAROLINA

OKLAHOMA

PUERTO RICO

SOUTH CAROLINA

TENNESSEE

TEXAS

U.S. VIRGIN ISLANDS

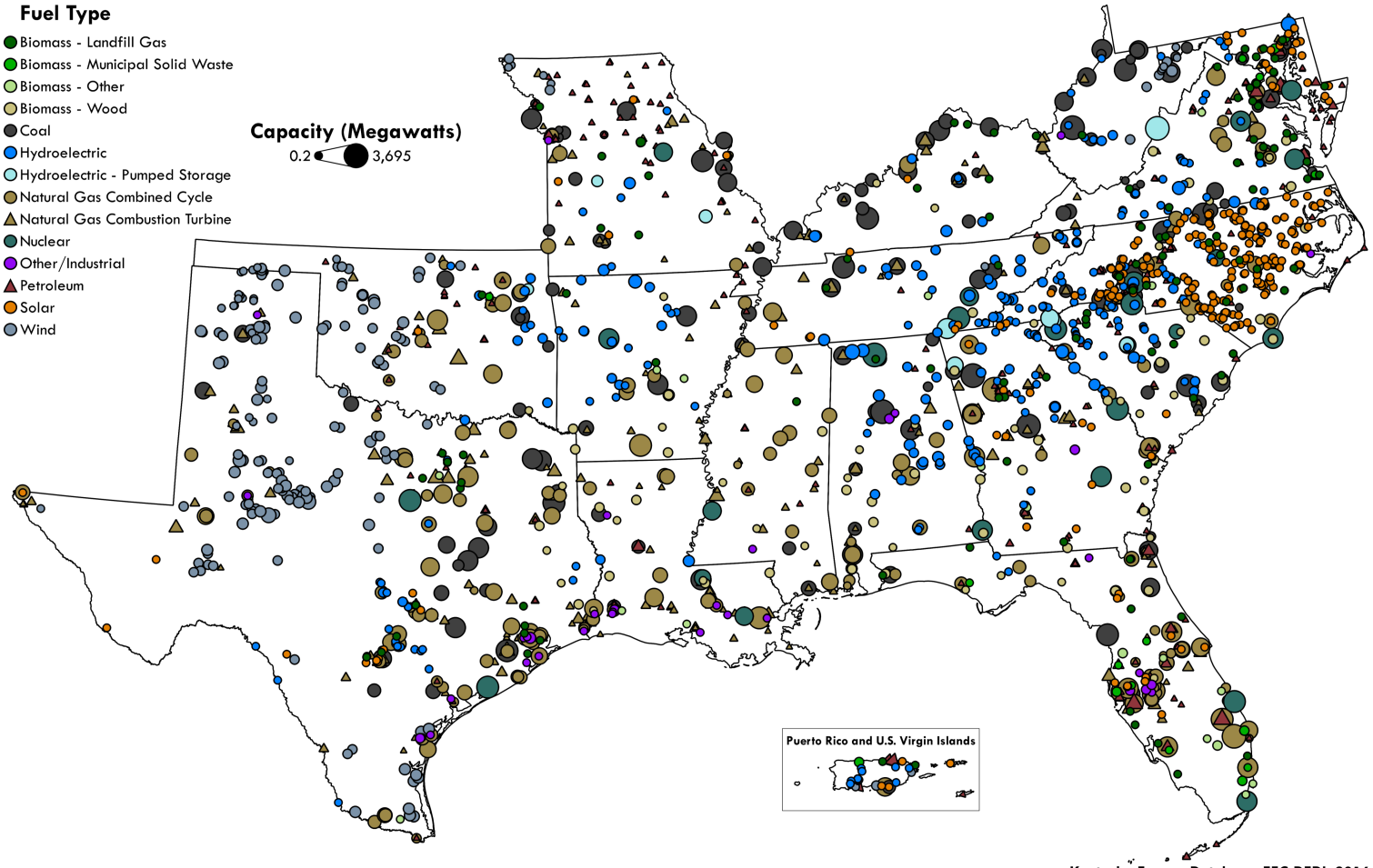
VIRGINIA

WEST VIRGINIA

Puerto Rico and the U.S. Virgin Islands are represented in this document only partially due to the limited availability of comparable data.

Electricity Generation Capacity

Power Plants in the SSEB Region, 2015

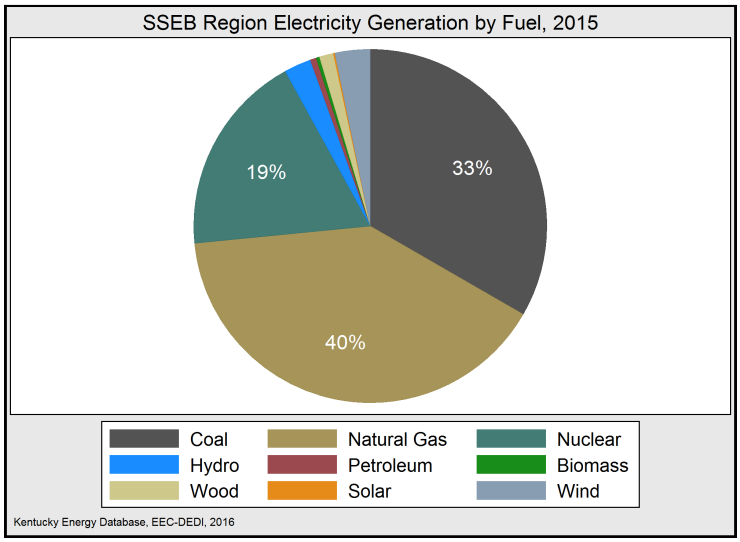


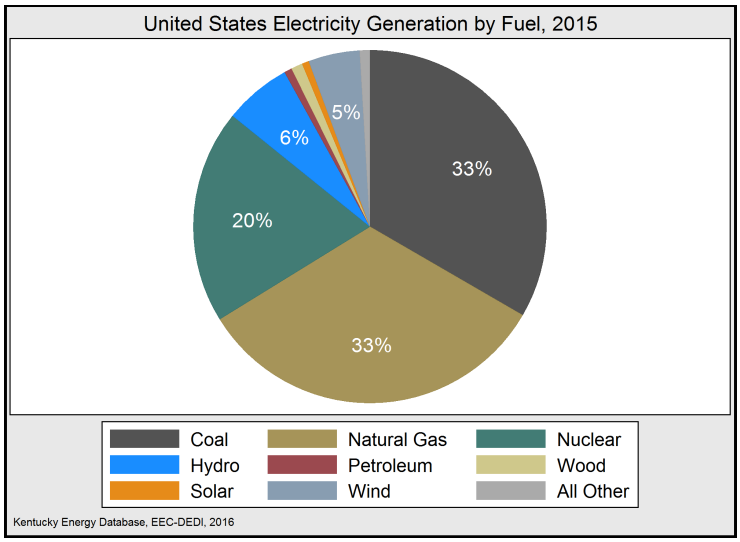
Kentucky Energy Database, EEC-DEDI, 2016

State	Coal	Biomass	Hydro	Pumped Storage	Natural Gas	Nuclear	Other	Petroleum	Solar	Wind
Alabama	10,919	649	3,271		11,250	5,066	100	27		
Arkansas	5,125	308	1,352		6,134	1,820		12		
Florida	9,702	1,228	55		37,133	5,508	349	5,226	81	
Georgia	9,469	913	1,975	1,935	16,544	4,061	84	1,014	89	
Kentucky	13,825	70	837		5,441			12	7	
Louisiana	2,385	539	192		19,460	2,133	301	1,557		
Maryland	5,125	148	590		1,989	1,708		2,568	76	190
Mississippi	3,638	275			10,591	1,409	1	25		
Missouri	12,955	14	541	684	4,975	1,193	1	991	12	459
North Carolina	11,128	622	2,063		10,443	5,094	54	424	1,001	
Oklahoma	6,167	76	863	260	13,028			42		4,428
Puerto Rico	454	77	54		1,492			2,679	66	163
South Carolina	5,628	427	1,424	2,716	5,836	6,556		235	3	
Tennessee	9,917	194	2,619	1,616	3,116	3,401		63	45	29
Texas	25,280	495	671		68,235	4,960	531	32	216	16,887
Virgin Islands								130	1	
Virginia	4,653	892	1,103	3,003	10,392	3,569		1,777		
West Virginia	13,092	2	301		1,071		2			615
SSEB Total	**149,008**	**6,852**	**17,857**	**10,214**	**225,638**	**46,478**	**1,423**	**14,005**	**1,523**	**22,608**

*Megawatts (MW) of Summer Generating Capacity

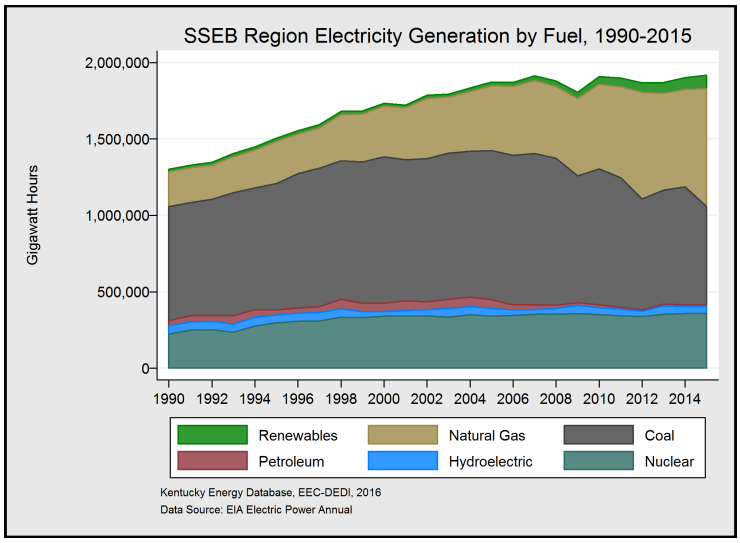
SSEB Region Electricity Generation

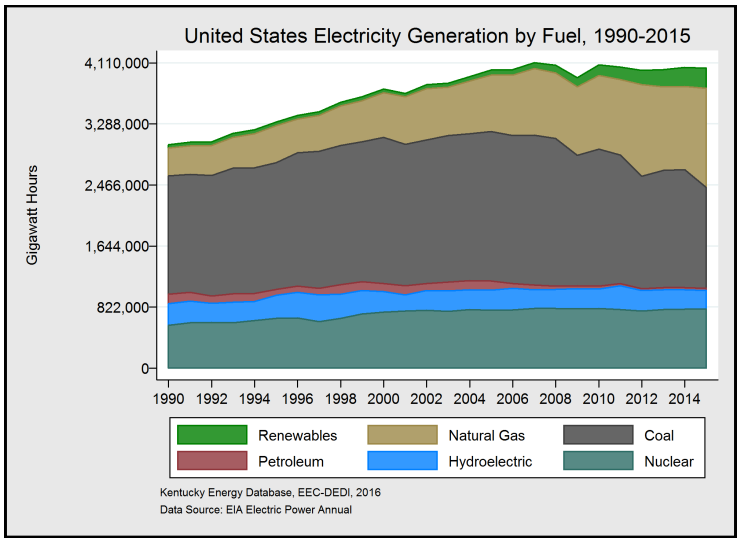




Source Type	Gigawatt-hours	2015 Change
Total	1,934,091	+0.9%
Natural Gas	772,612	+21.4%
Coal	642,023	-16.9%
Nuclear	357,477	-0.9%
Hydroelectric	47,787	+7.5%
Wind	61,867	+14.2%

Source Type	Gigawatt Hours	2015 Change
Total	4,087,382	-0.2%
Coal	1,356,057	-14.3%
Natural Gas	1,335,068	+18.5%
Nuclear	797,178	+0.0%
Hydro	251,168	-3.16%
Wind	190,927	+5.10%

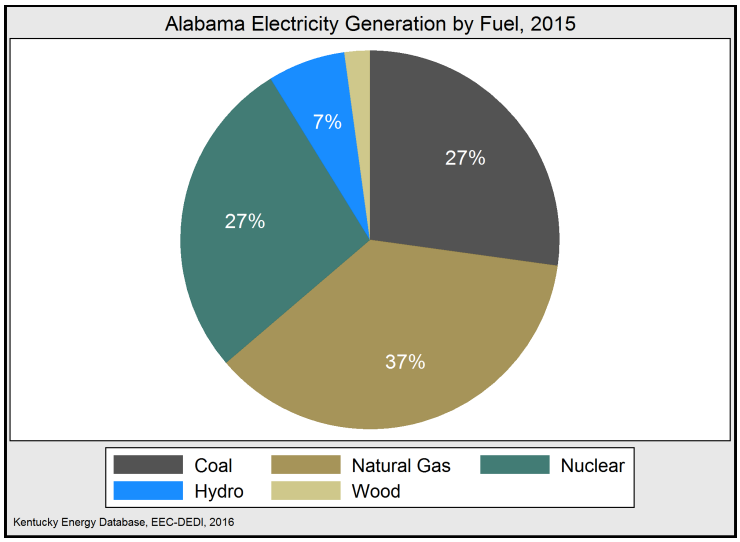


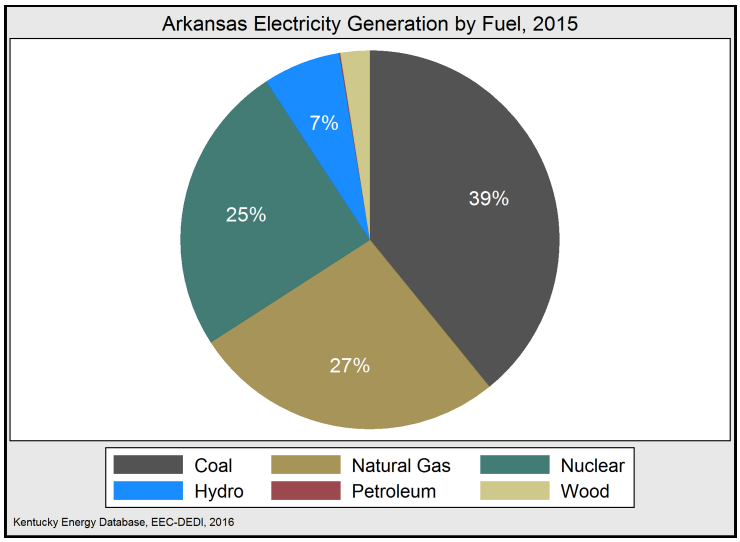


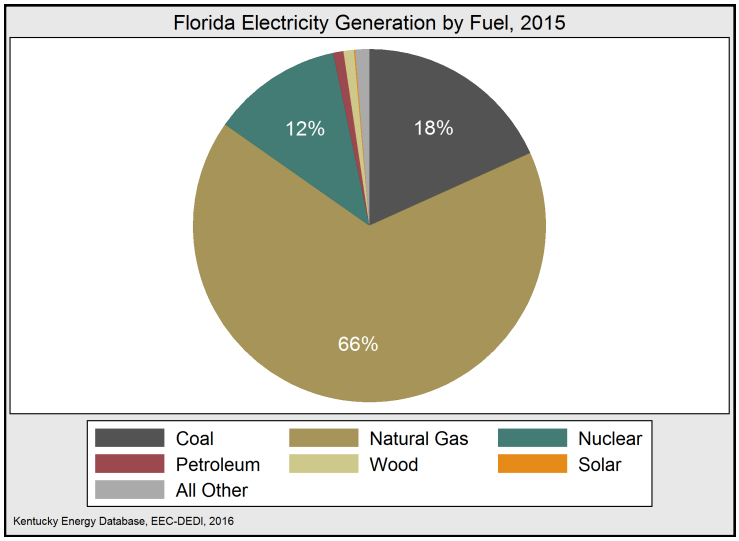
The electricity generation portfolios of both the SSEB region and the United States as a whole are rapidly changing. Coal-fired electricity generation in the SSEB region has declined by 35 percent since peaking in 2007; notably, natural gas has outpaced coal electricity generation within the SSEB region at 40 percent of total generation, as coal's contribution continues to decline. During the same period, natural gas-fired generation has increased by 62 percent and renewable generation has increased by 106 percent.

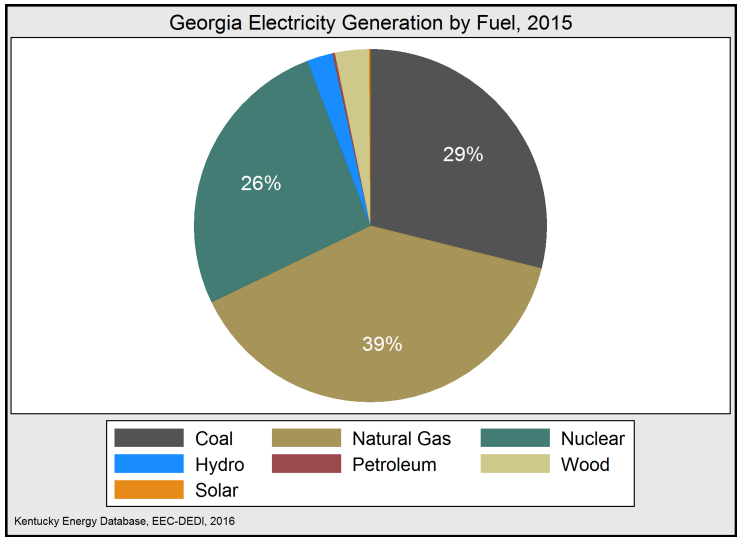
Total electricity generation in the United States slightly decreased by less than a two-tenth of a percent from the prior year to 4,087 TWh in 2015. Coal-fired generation has fallen more than 14 percent in the past year — but still represents 33 percent of 2015 total generation. In contrast, natural gas generation has grown by 19 percent since 2014 to over 1,335 TWh in 2015. Nuclear and hydroelectric generation have remained fairly constant nationally as well as in the SSEB region.

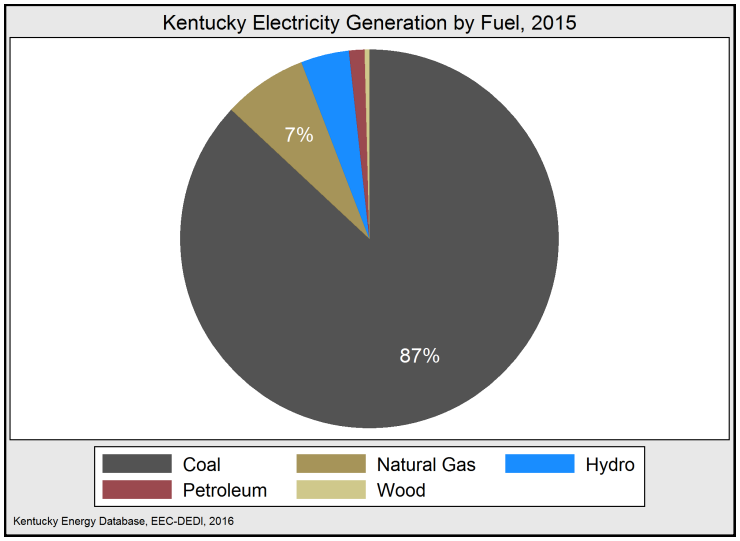
Electricity Generation

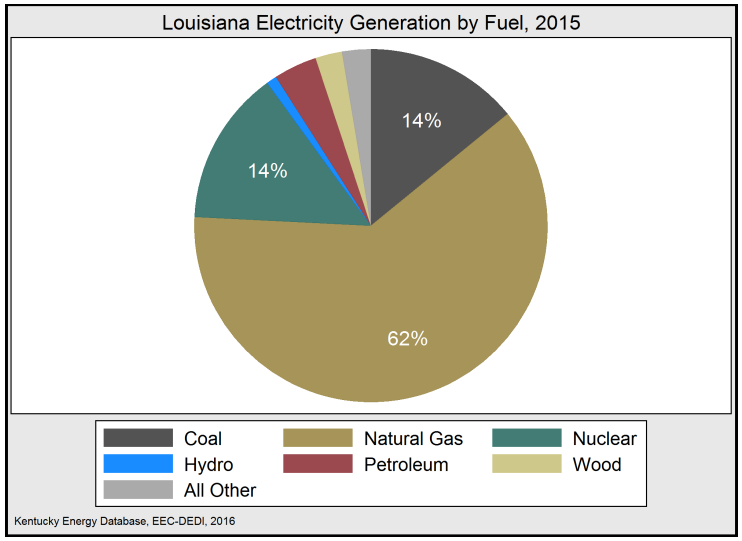




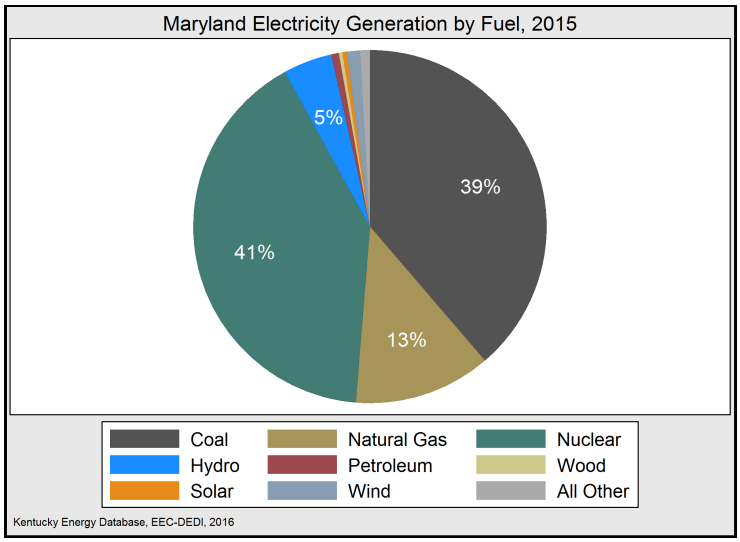


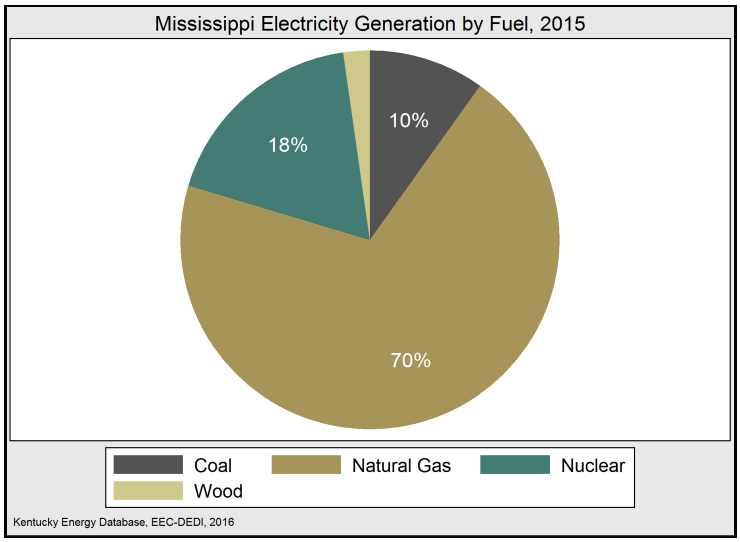


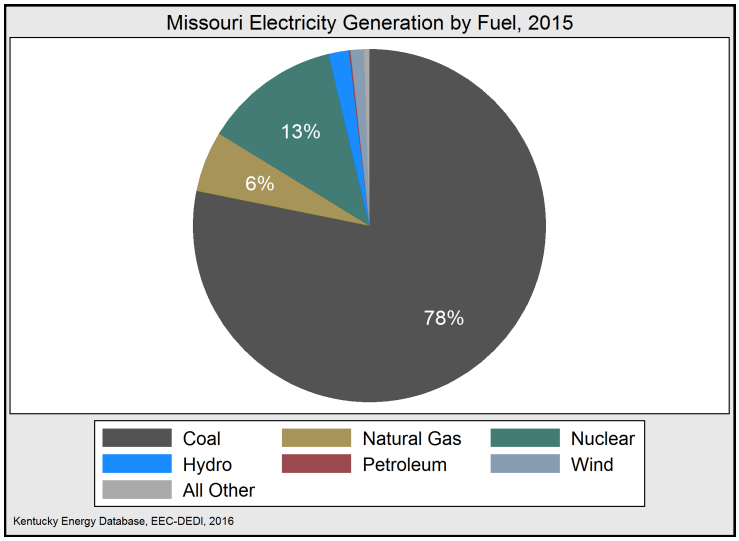


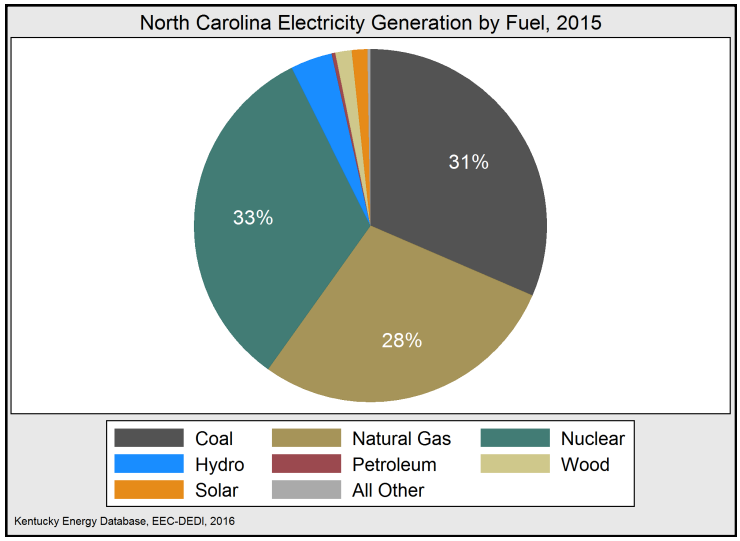


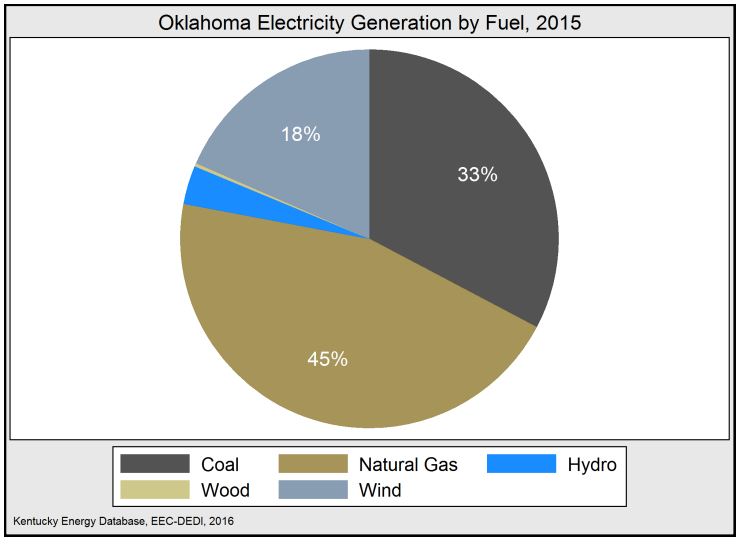
Electricity Generation

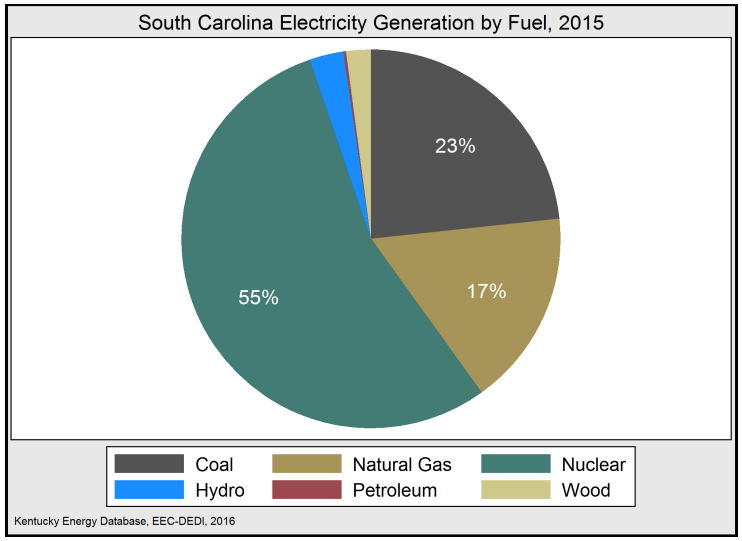












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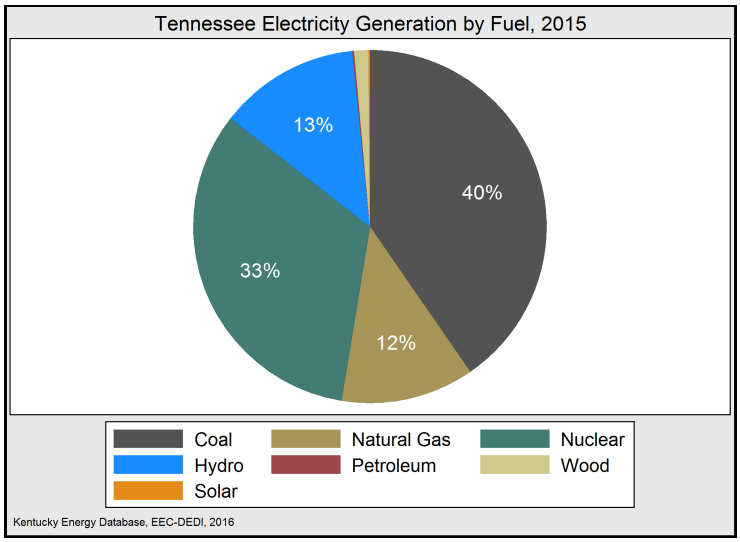
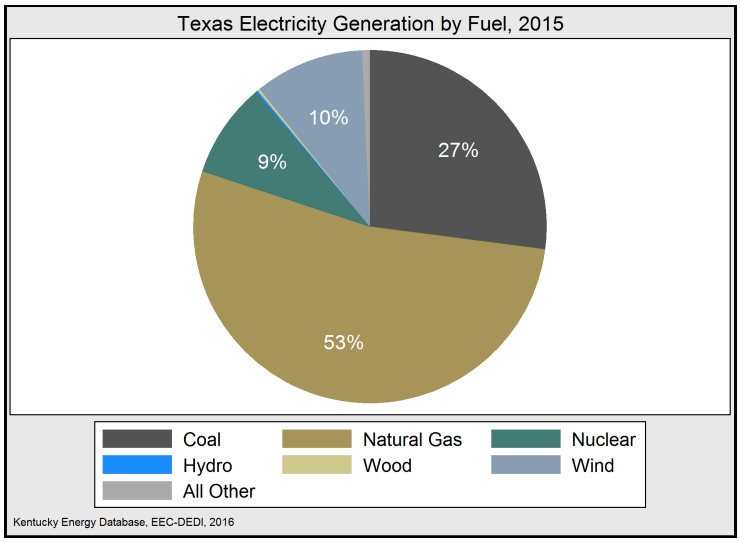
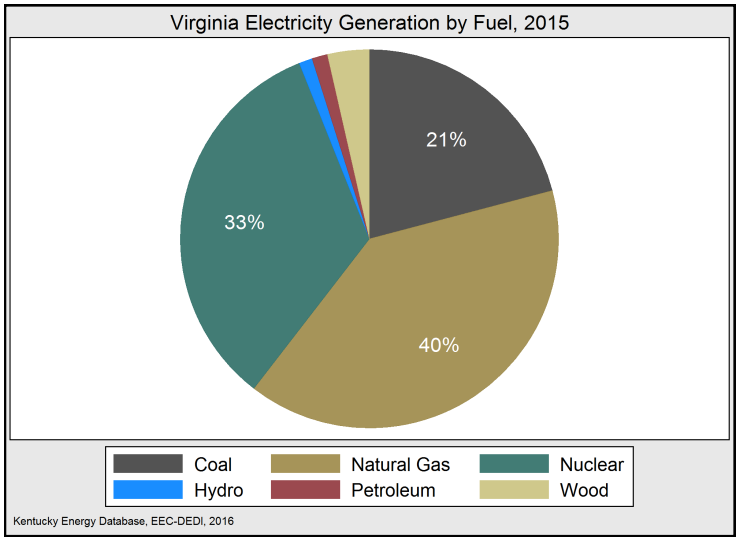
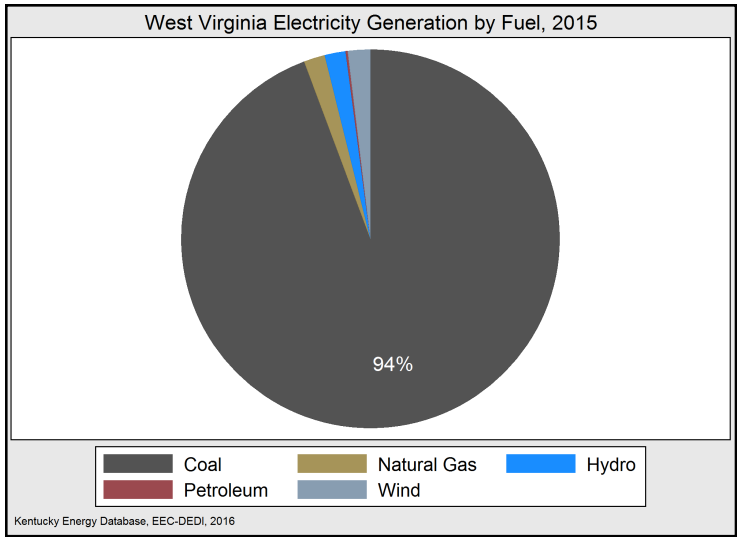
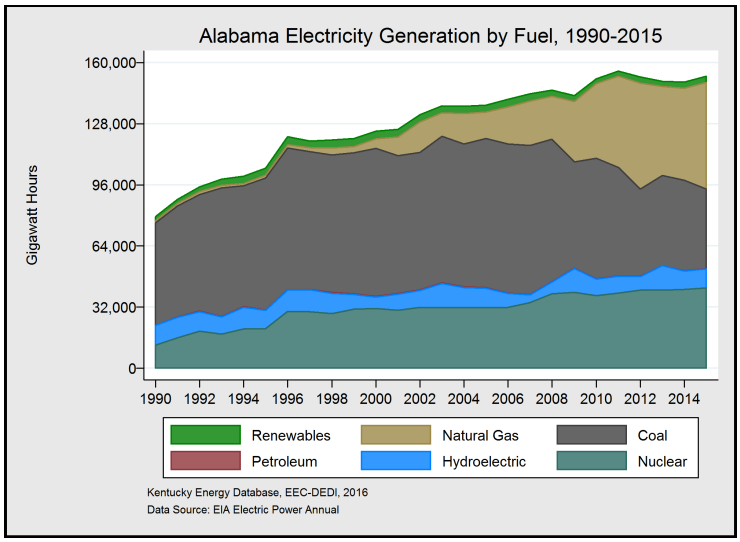


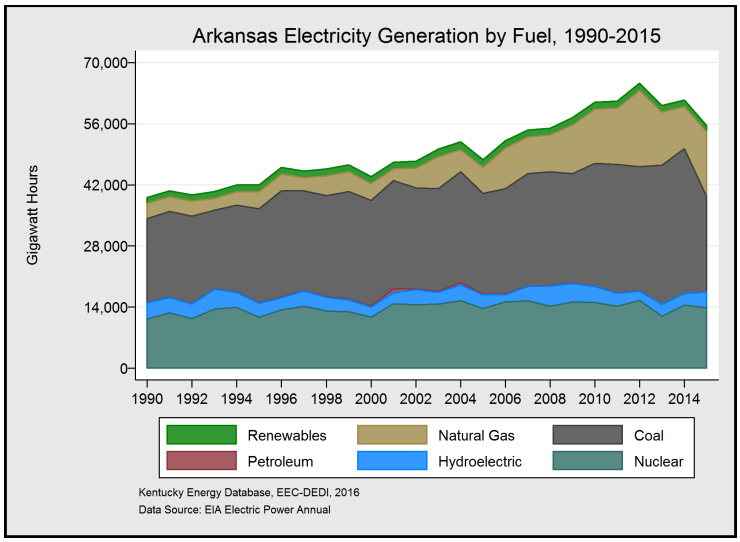


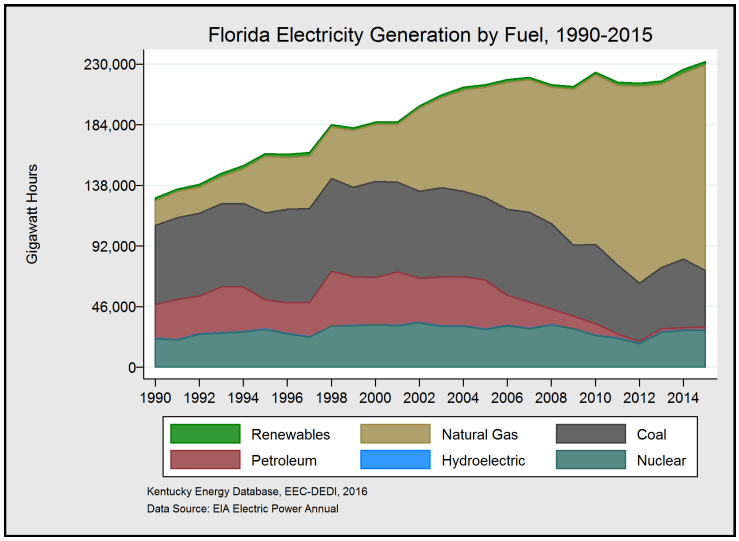


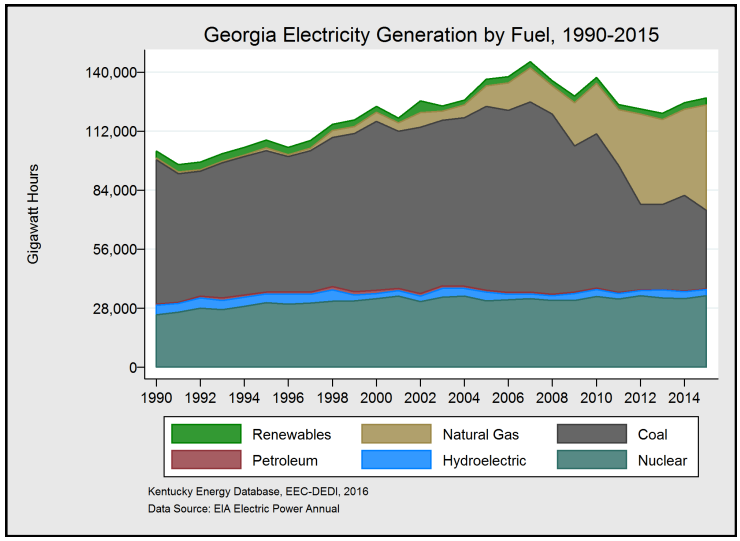


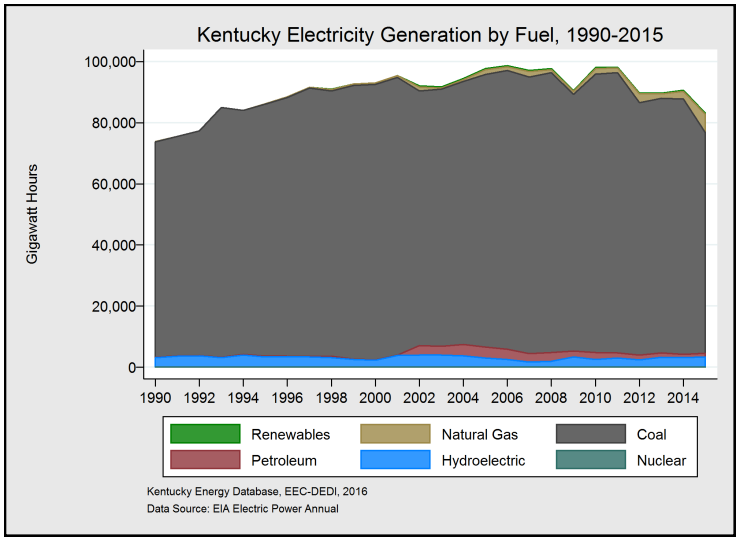
Historical Electricity Generation

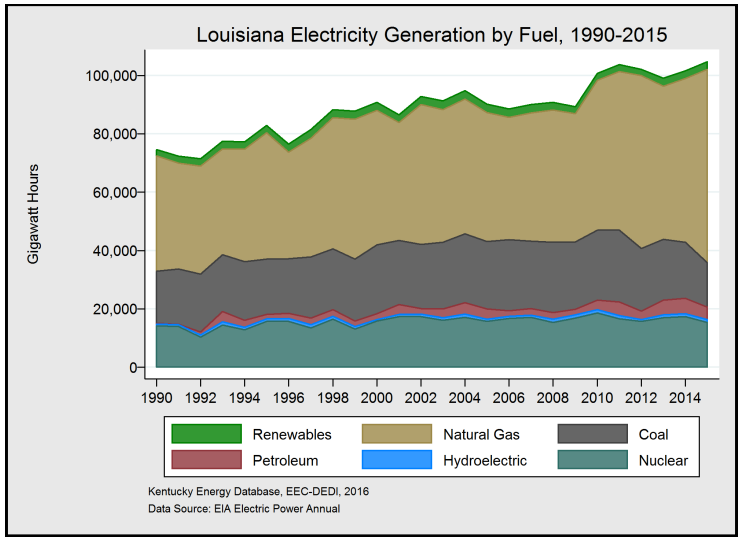












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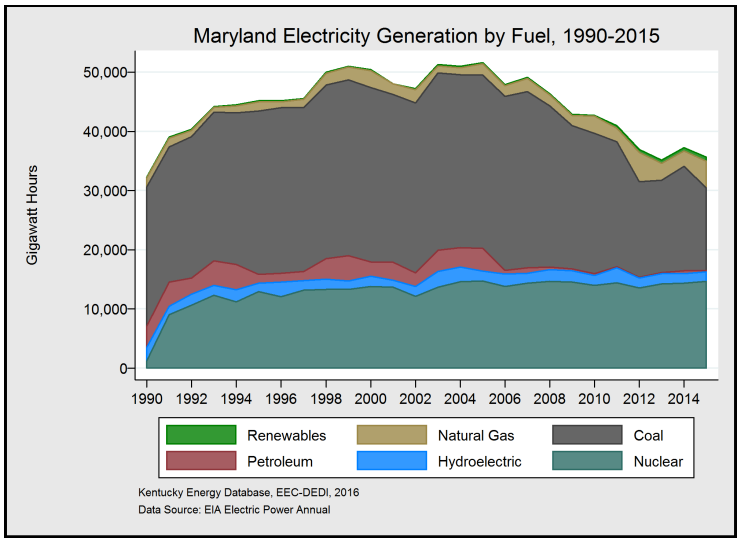
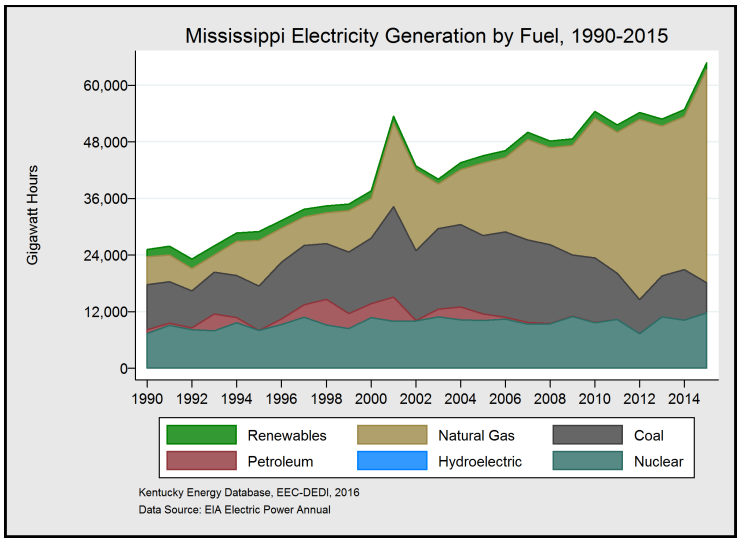
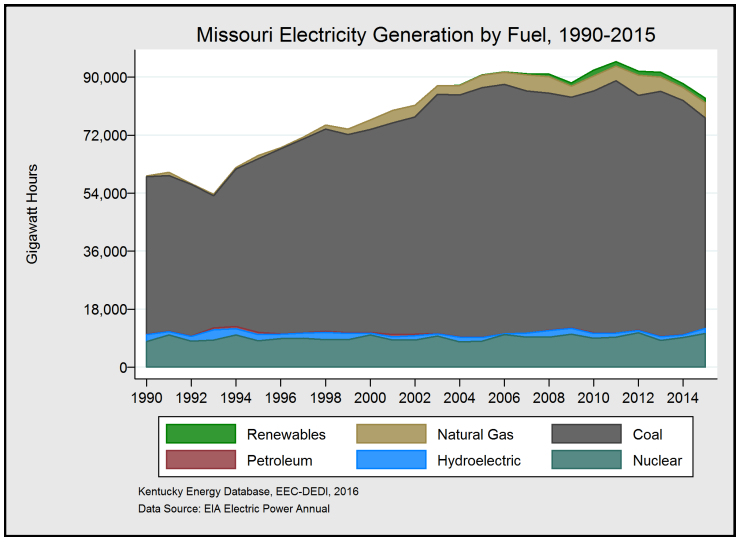
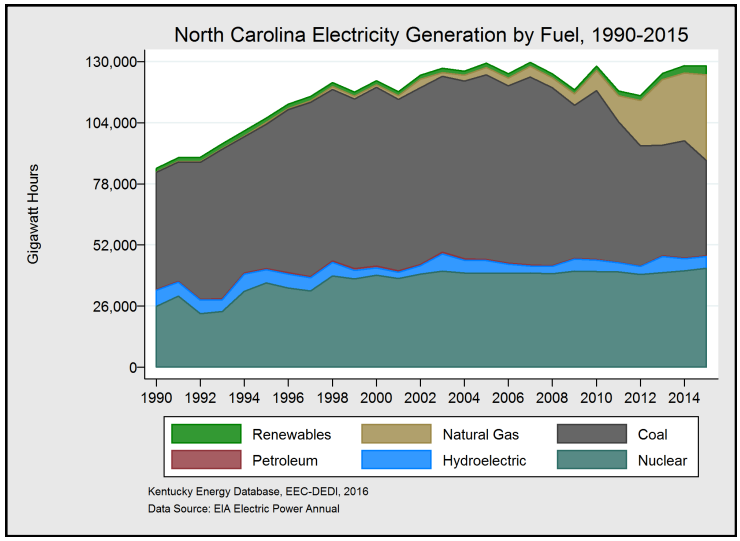
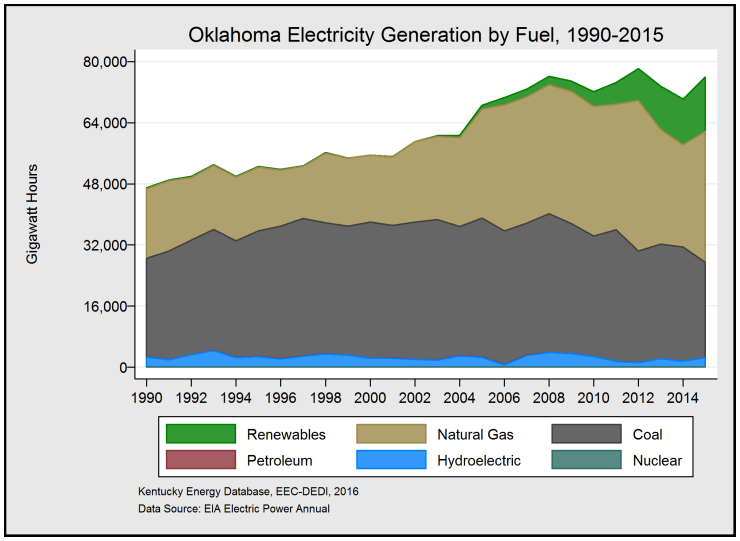
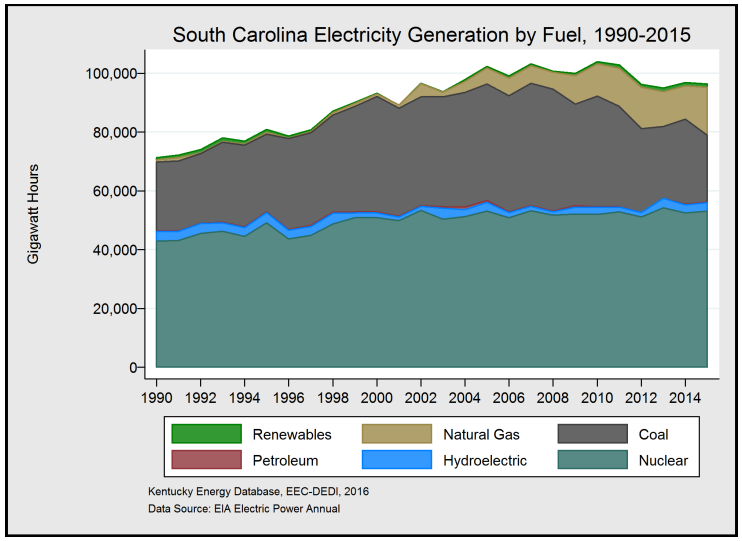




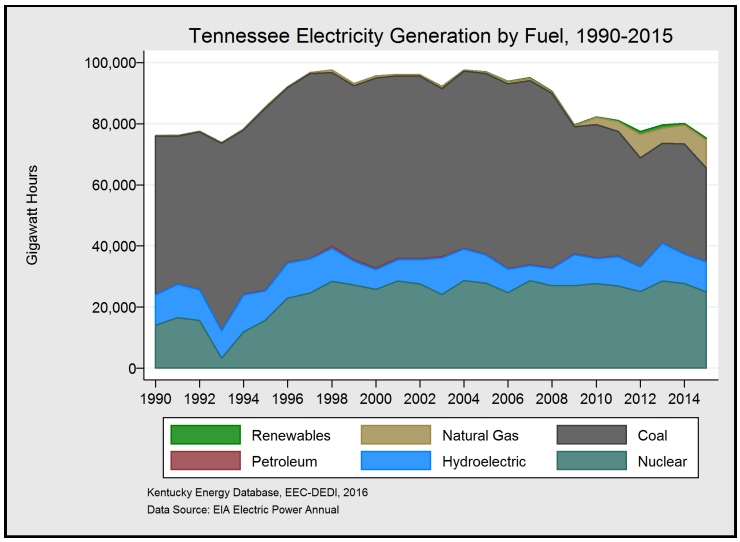


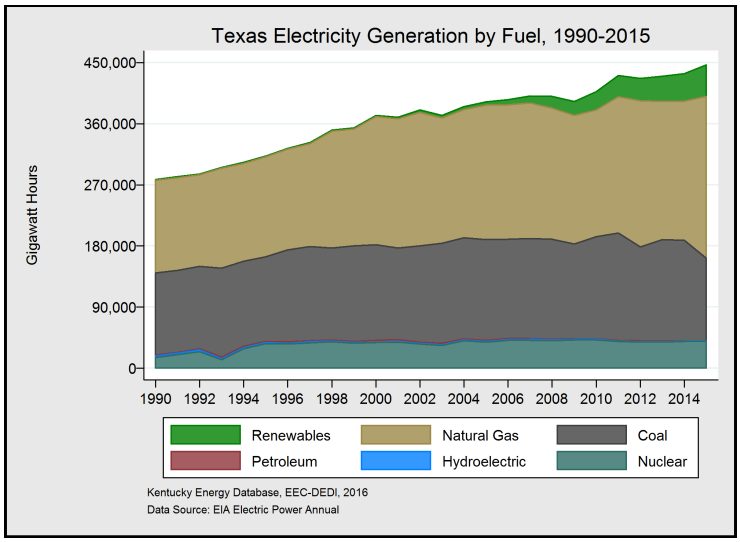


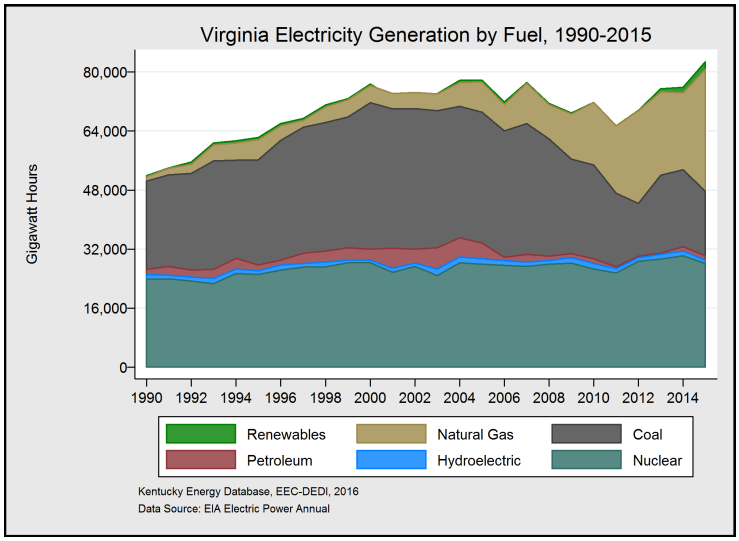


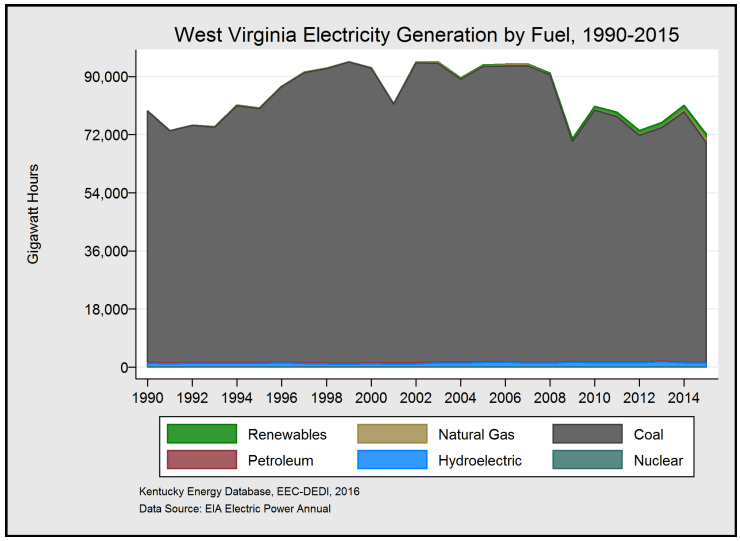


Historical Electricity Generation

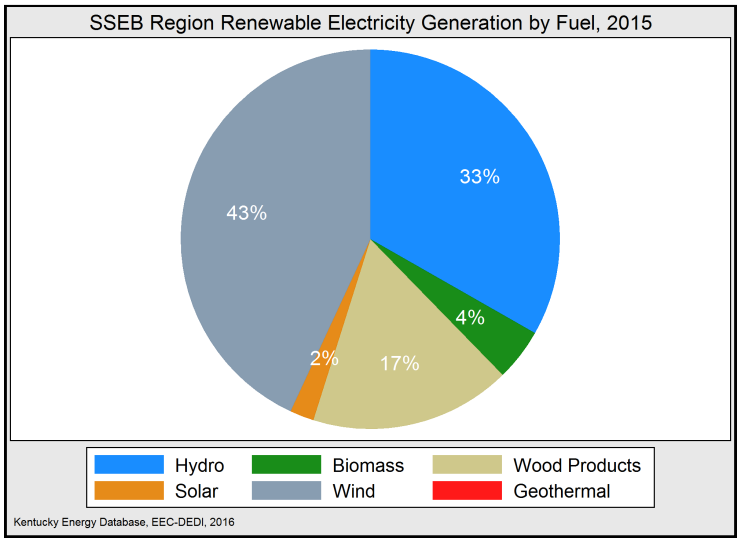


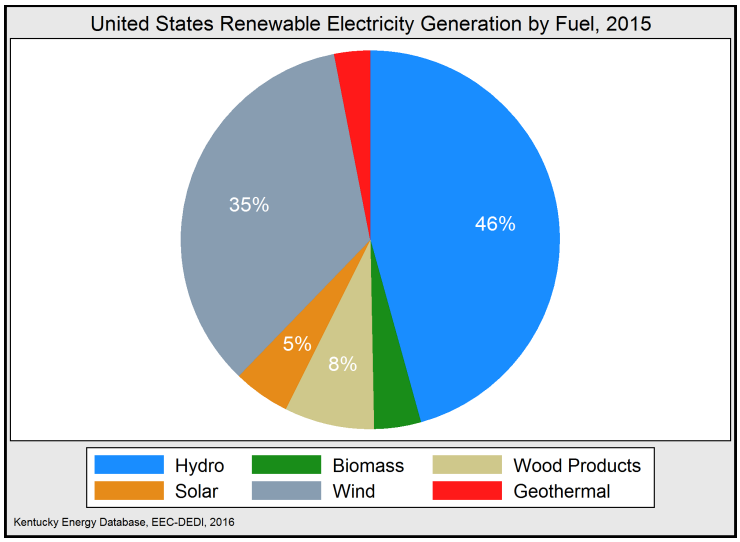






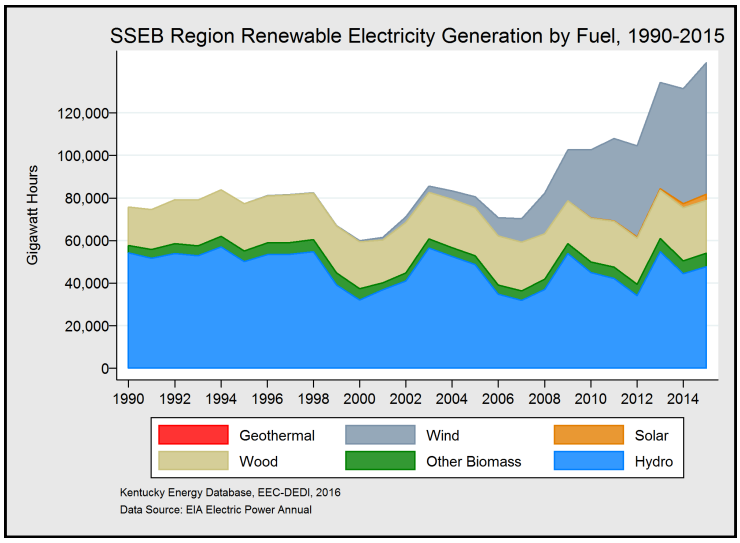
SSEB Renewable Electricity Generation

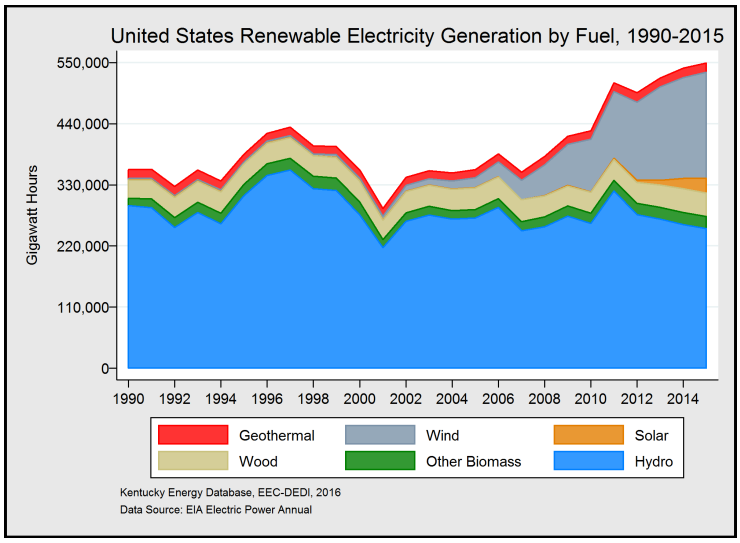




Fuel Type	Gigawatt-hours	2015 Change
Total	168,388	+7.7%
Hydroelectric	47,787	+7.5%
Wind	61,867	+14.2%
Wood Products	24,715	-0.9%
Biomass	6,365	+4.5%
Solar	2,940	+66.8%

Fuel Type	Gigawatt-hours	2015 Change
Total	544,433	+2.0%
Hydroelectric	251,169	-2.9%
Wind	190,927	+5.0%
Wood Products	42,358	-1.61%
Solar	26,473	+44.5%
Biomass	21,833	+2.7%

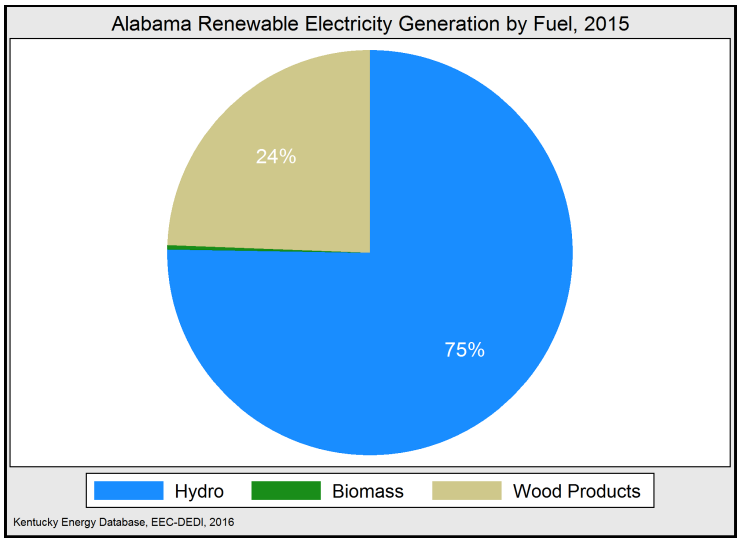


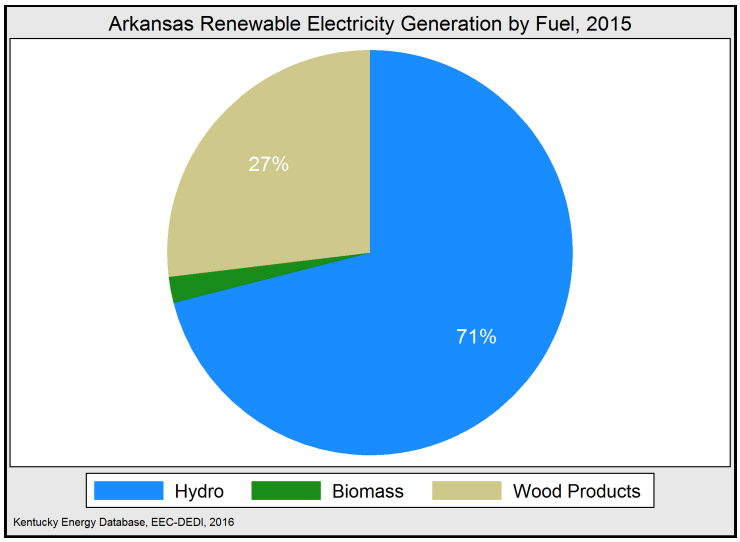


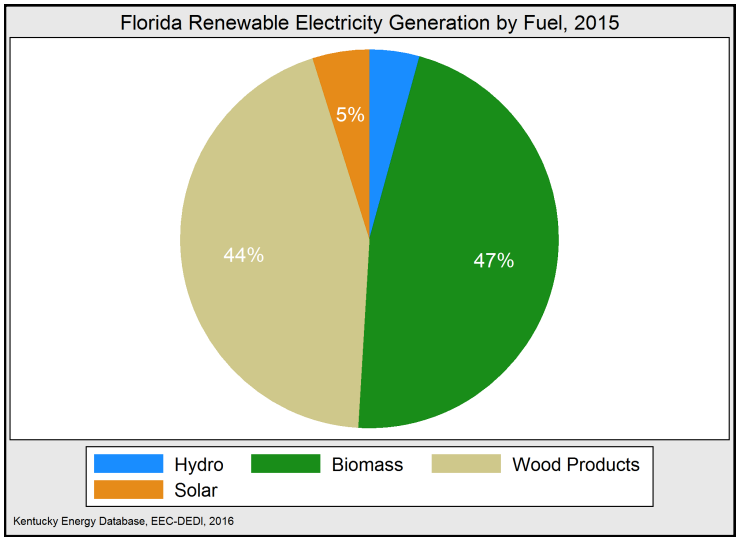
Renewable electricity generation increased by 17 percent in the SSEB region in 2015. Wind power was the fastest growing renewable technology by electricity output in the SSEB region, generating nearly 62 TWh in 2015, a 14 percent increase. Wind generation became the largest source of renewable electricity, 43 percent in 2015. The combustion of wood and other biomass make up the region's third and fourth largest renewable energy resources. Solar generation exhibited the largest proportional gain at 67 percent.

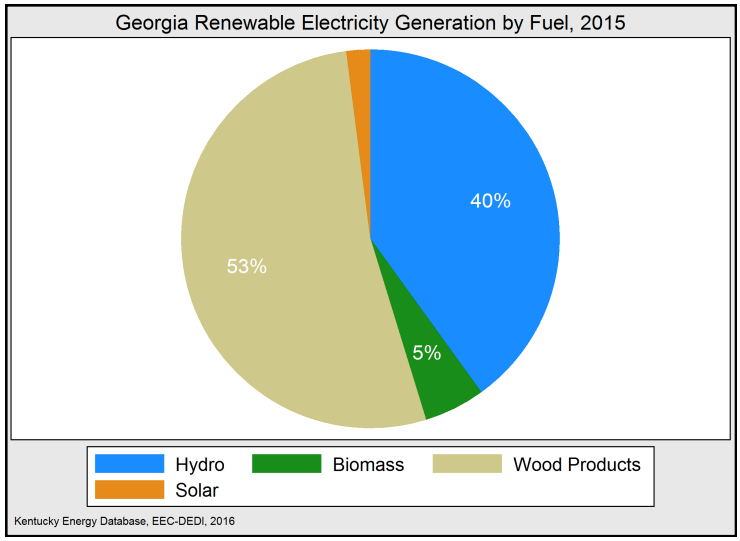
Renewable electricity generation in the United States has risen by 48 percent since 2008 to 562 TWh in 2015. Although hydroelectric energy constitutes 45 percent and wind constitutes 34 percent of renewable energy, solar generation is the fastest growing, producing 38.6 TWh in 2015, a 42 percent increase. Wood and other biomass accounted for 12 percent of total renewables.

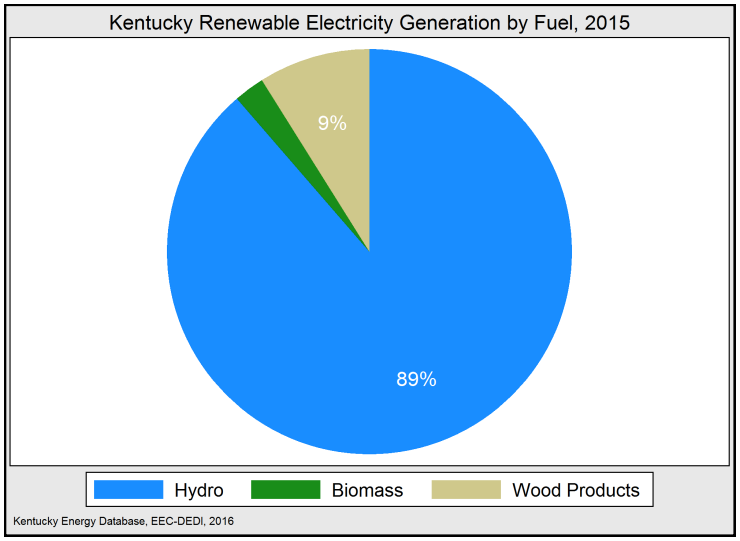
Renewable Electricity Generation

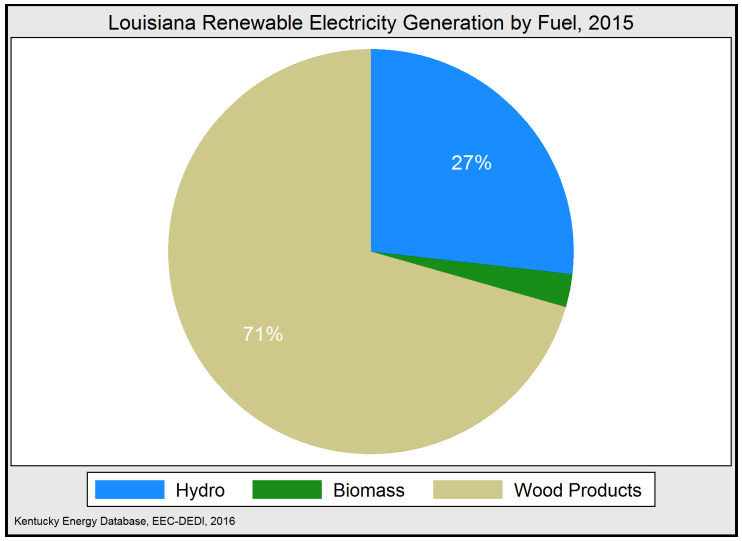




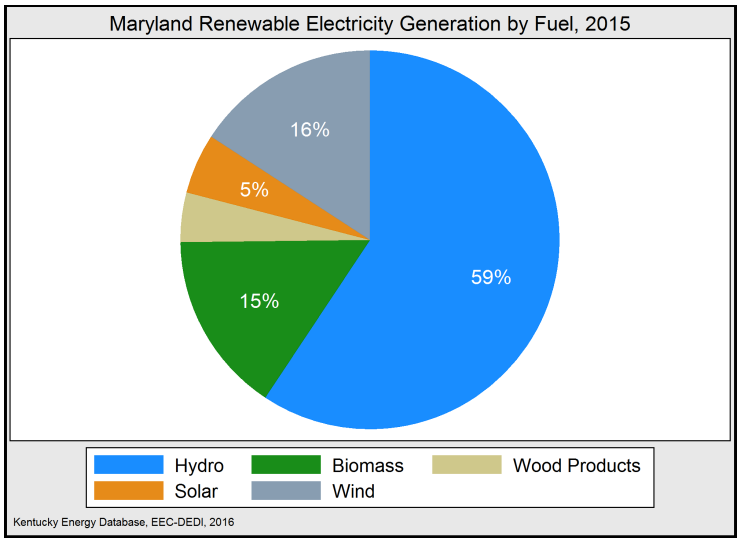


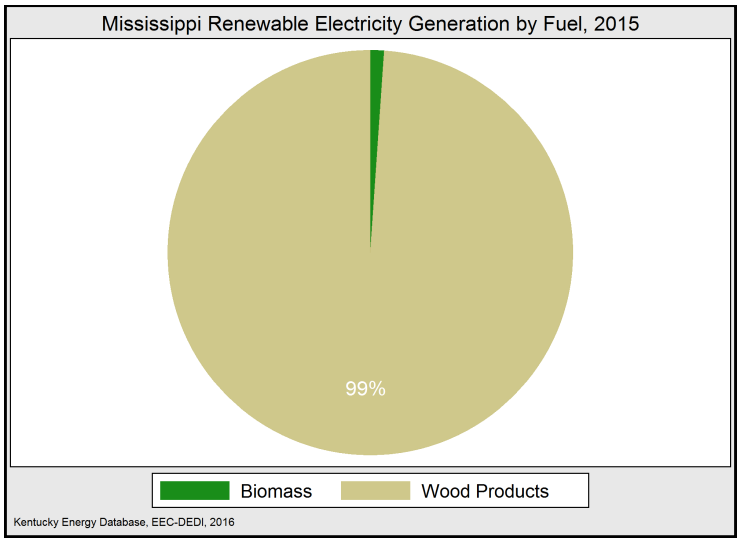


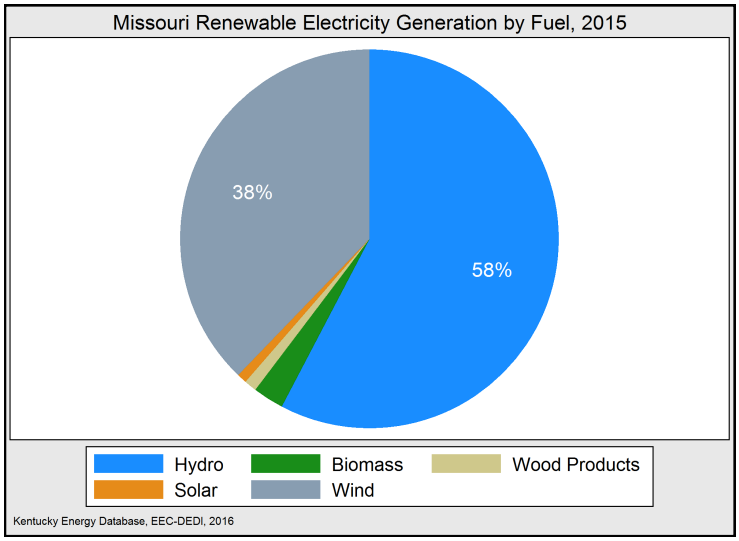


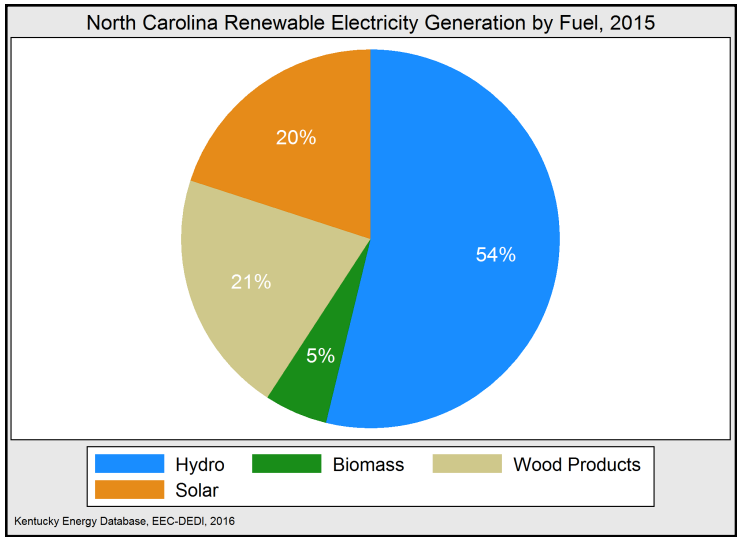


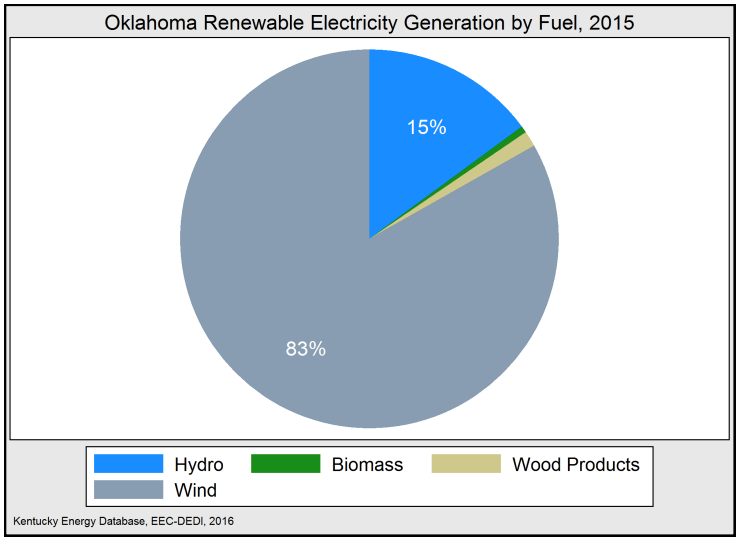
Renewable Electricity Generation

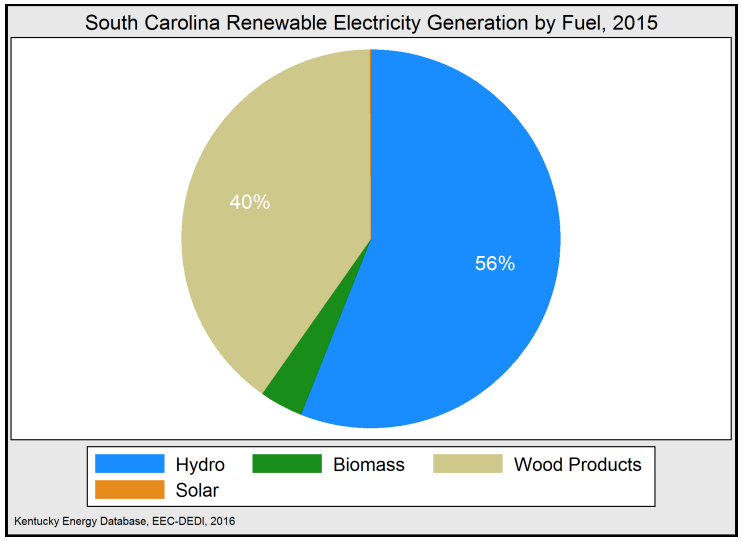




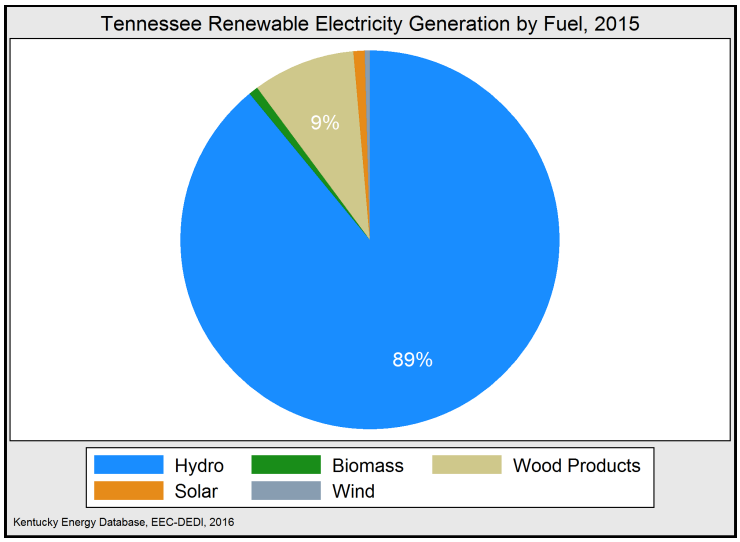


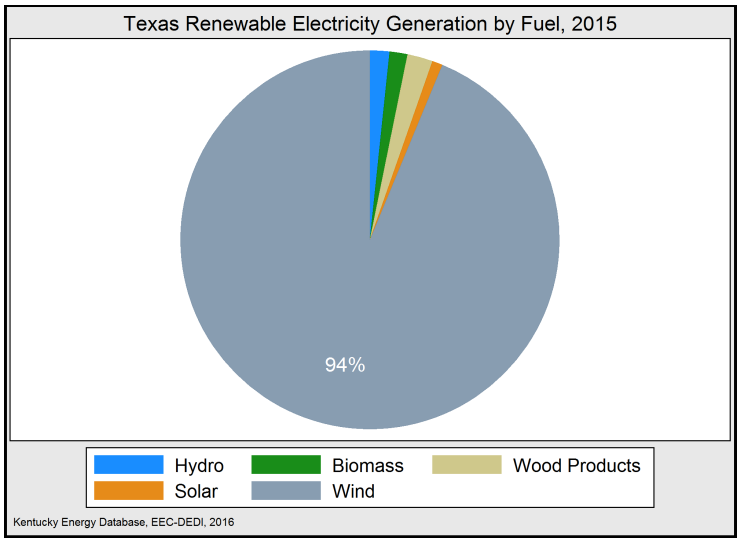


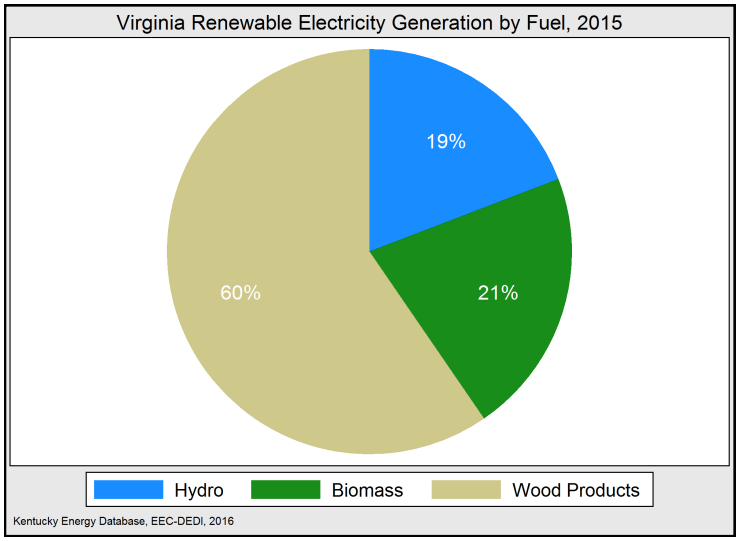


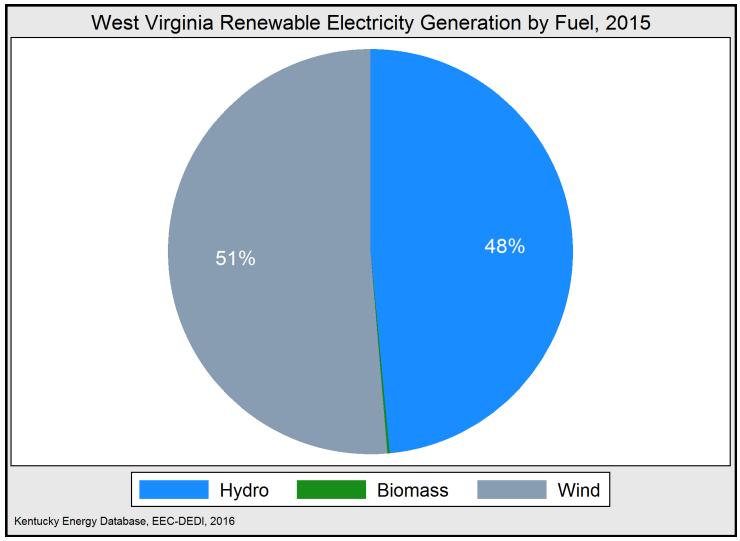


Renewable Electricity Generation

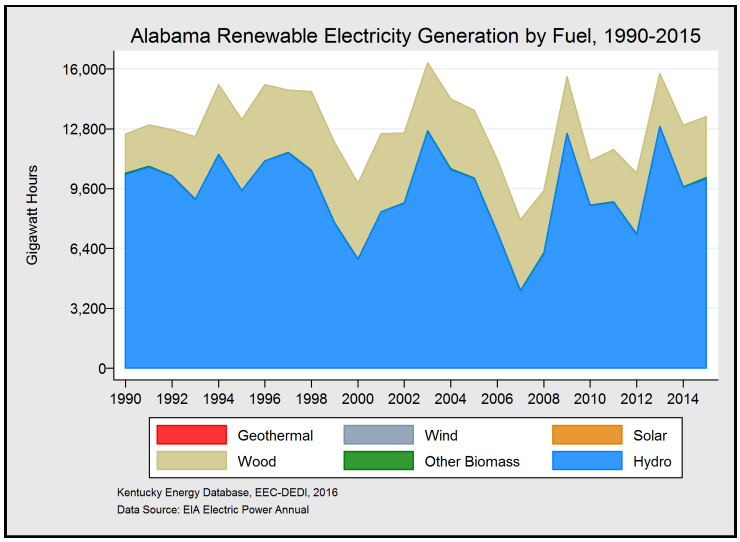


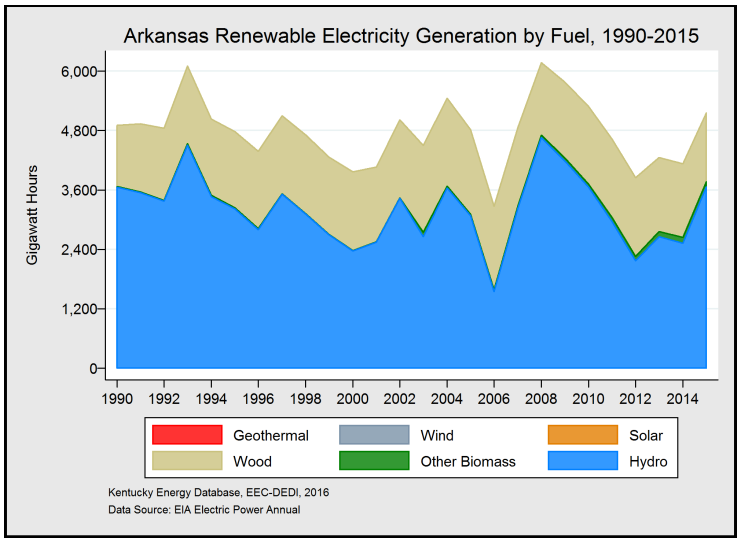


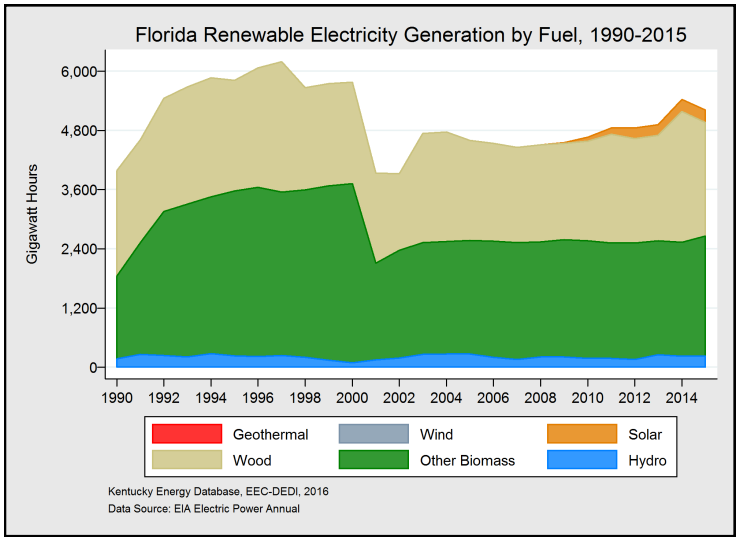


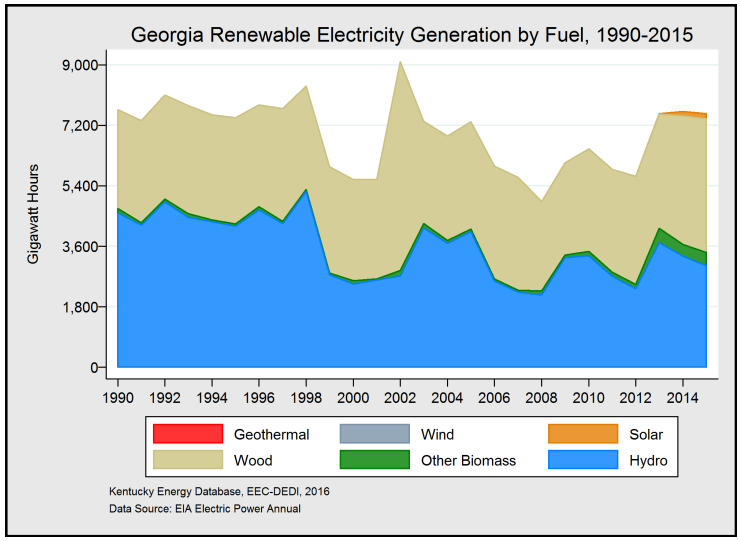


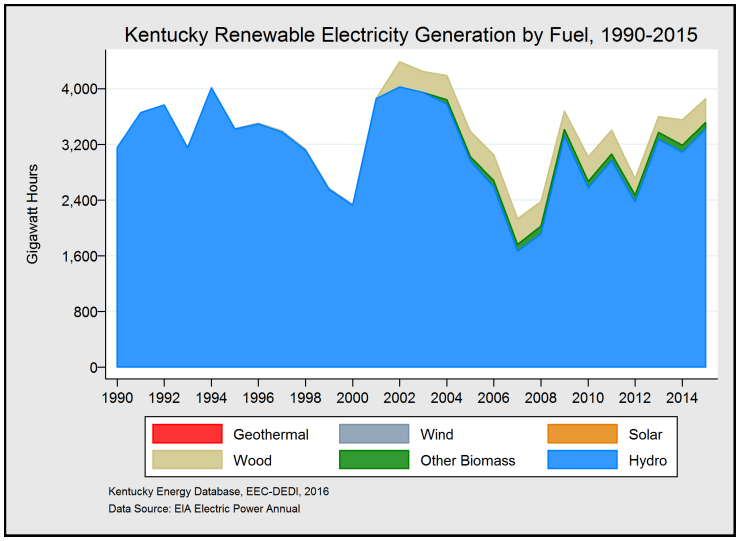
Historical Renewable Electricity Generation

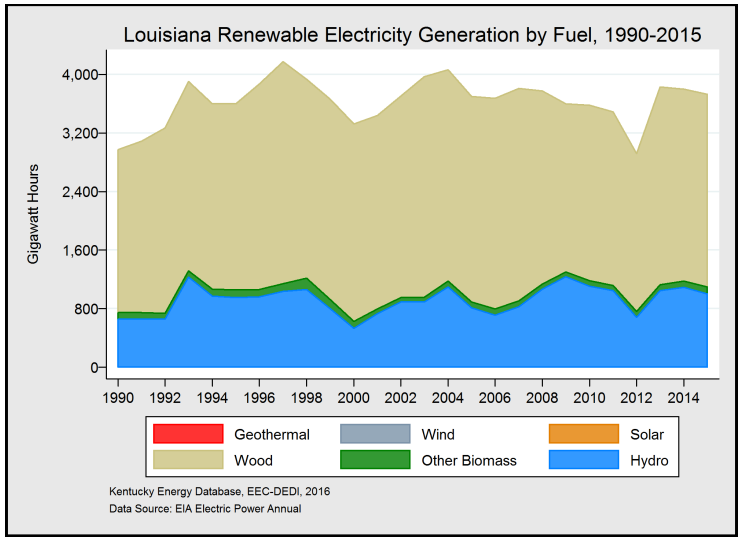




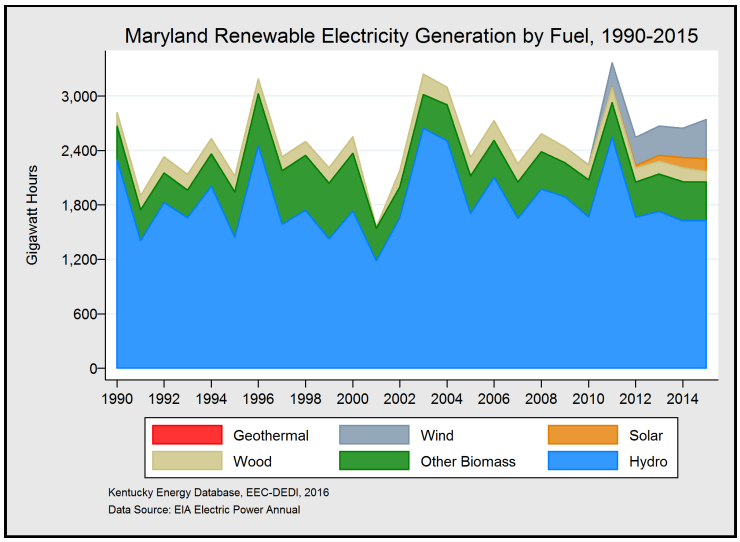


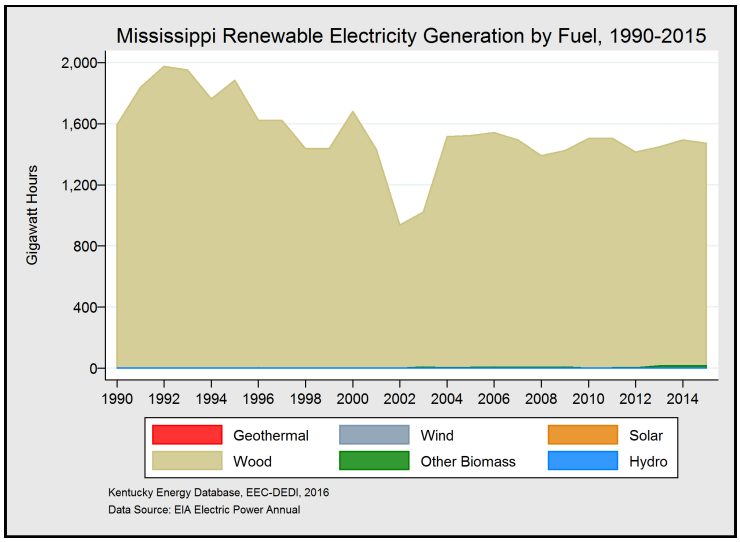


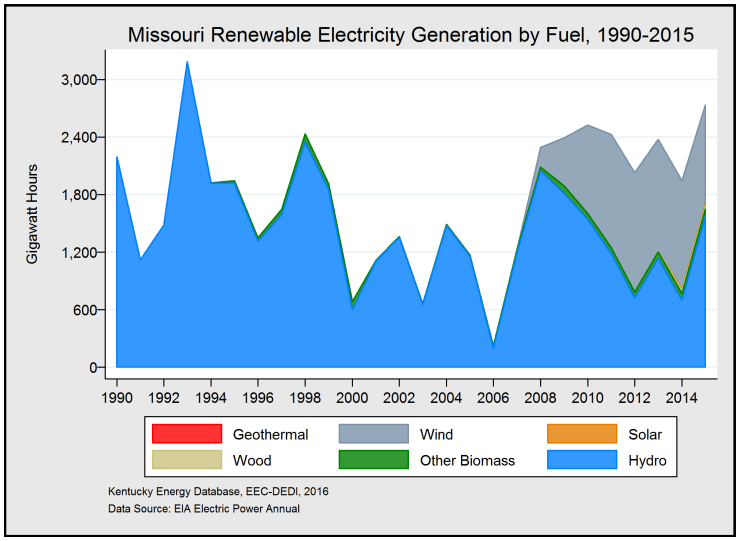


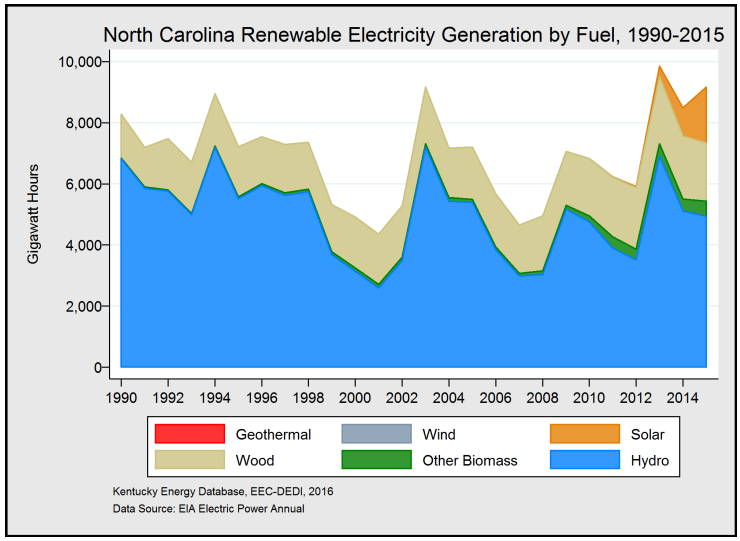


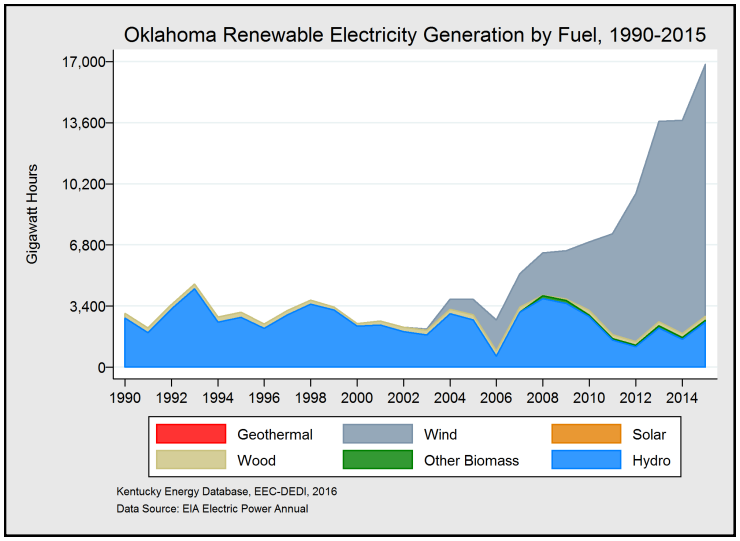
Historical Renewable Electricity Generation

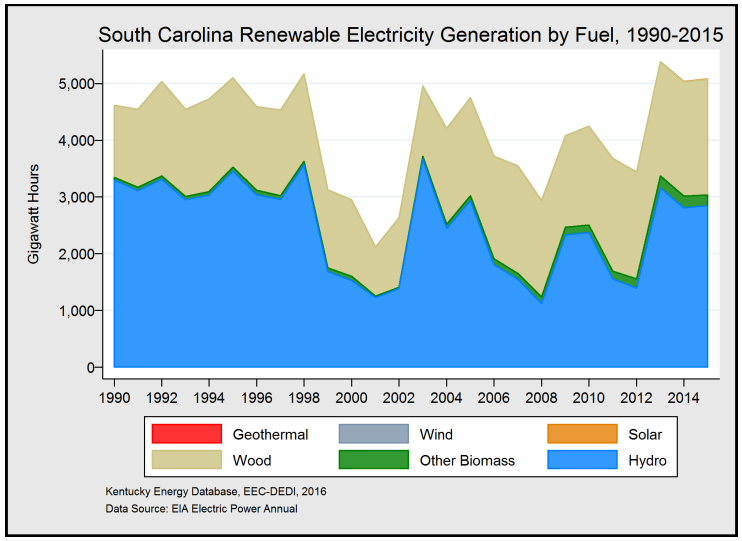




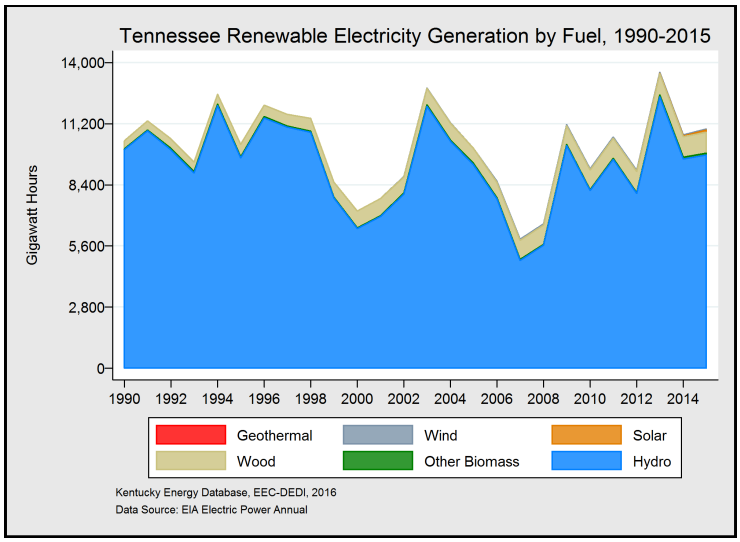


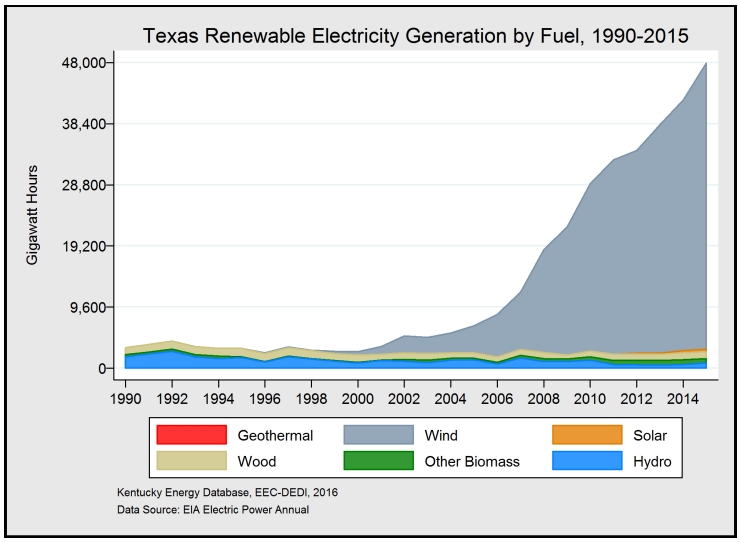


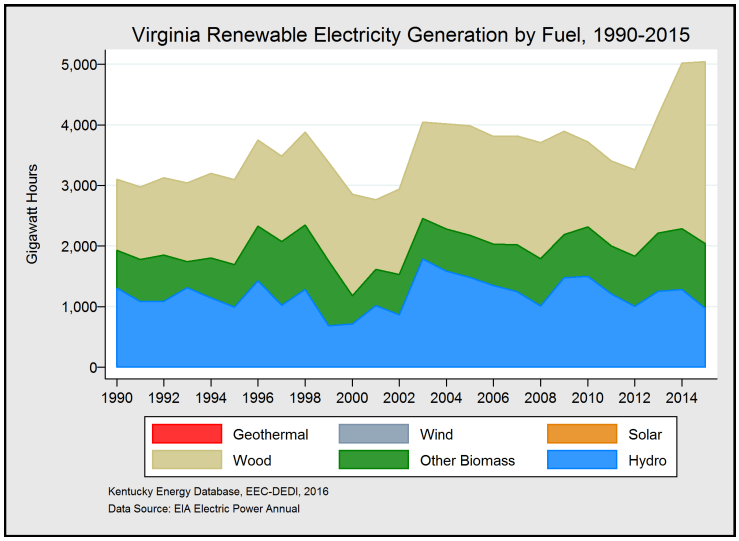


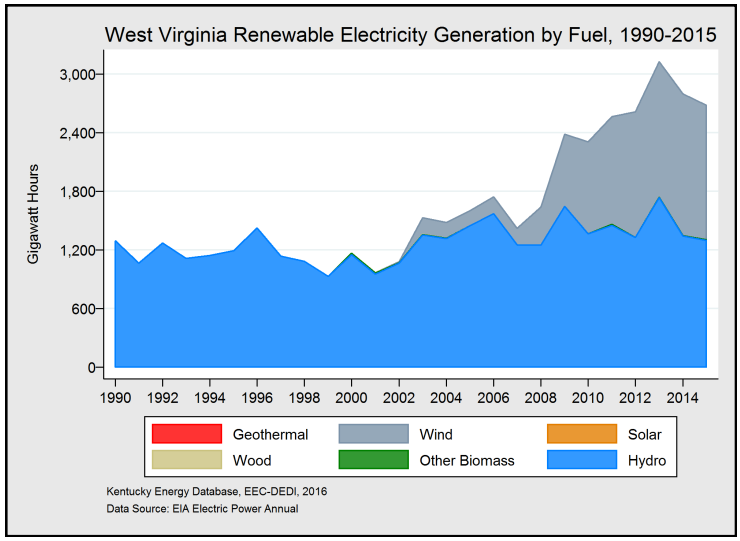


Historical Renewable Electricity Generation

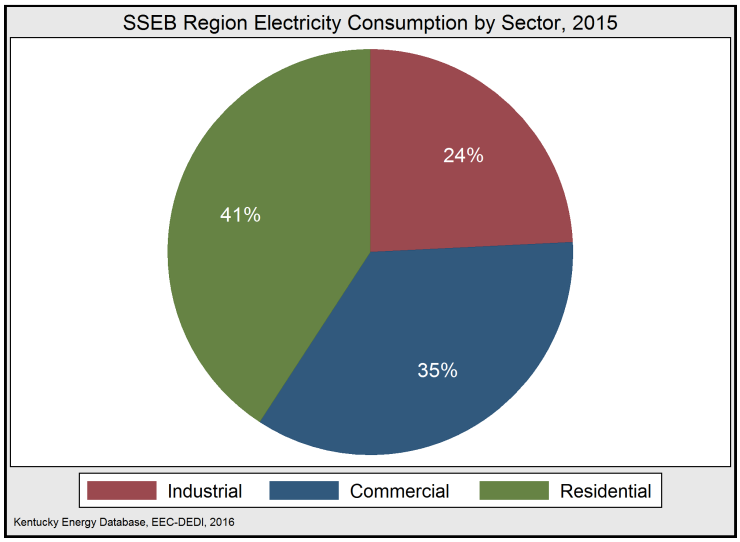


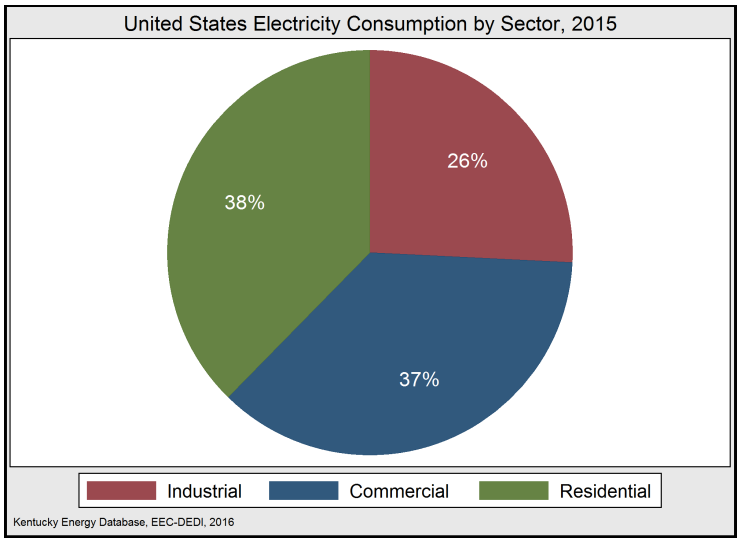






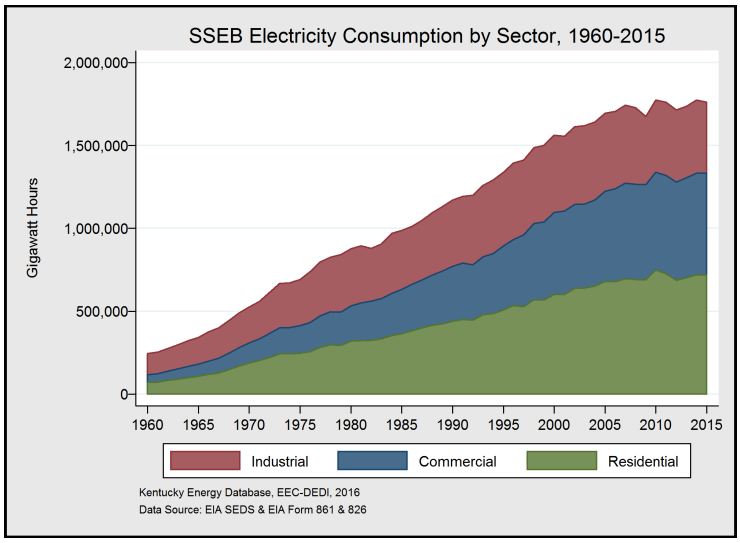
SSEB Region Electricity Consumption

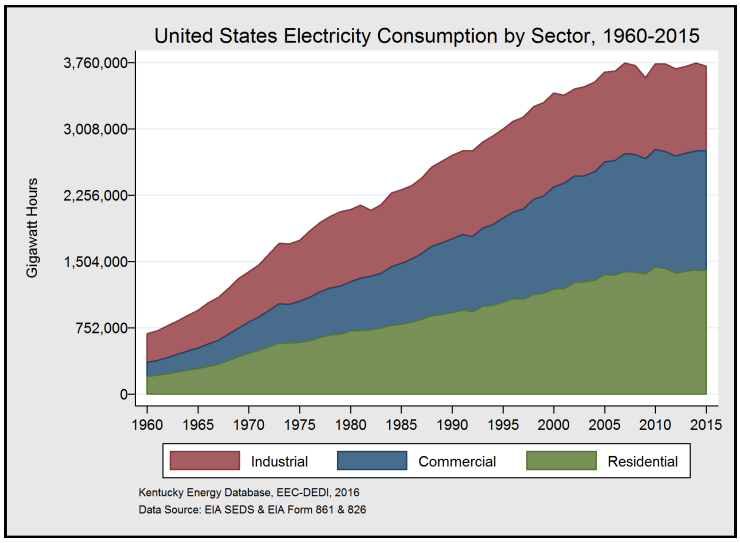




Sector	Gigawatt-hours	2015 Change
Total	1,760,544	-0.7%
Residential	718,452	-0.3%
Commercial	615,509	+0.8%
Industrial	426,583	-3.5%

Sector	Gigawatt-hours	2015 Change
Total	3,724,525	-<0.1%
Residential	1,399,884	+1.2%
Commercial	1,358,419	+0.8%
Industrial	966,222	-3.2%

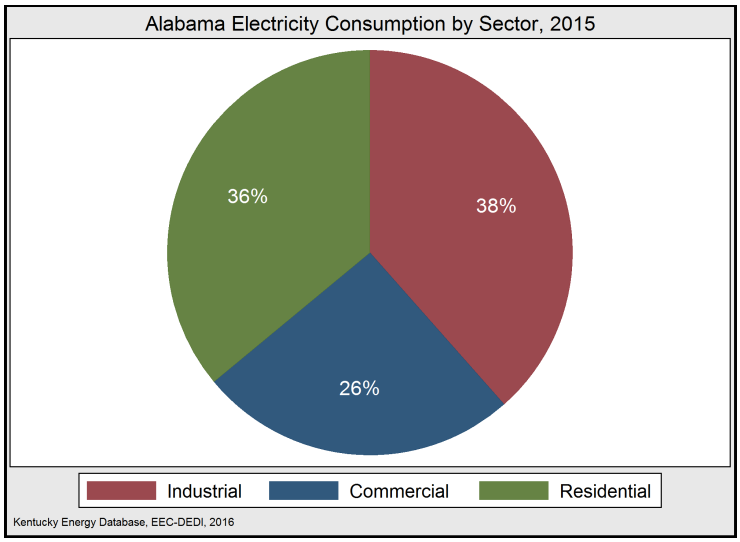


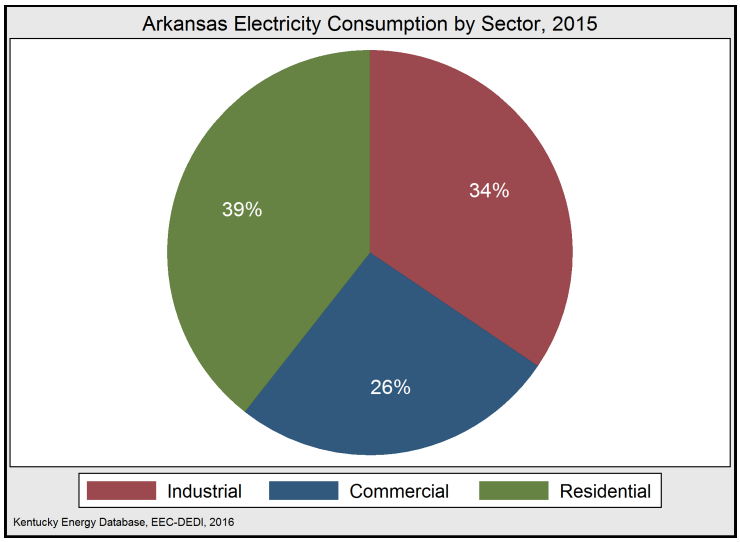


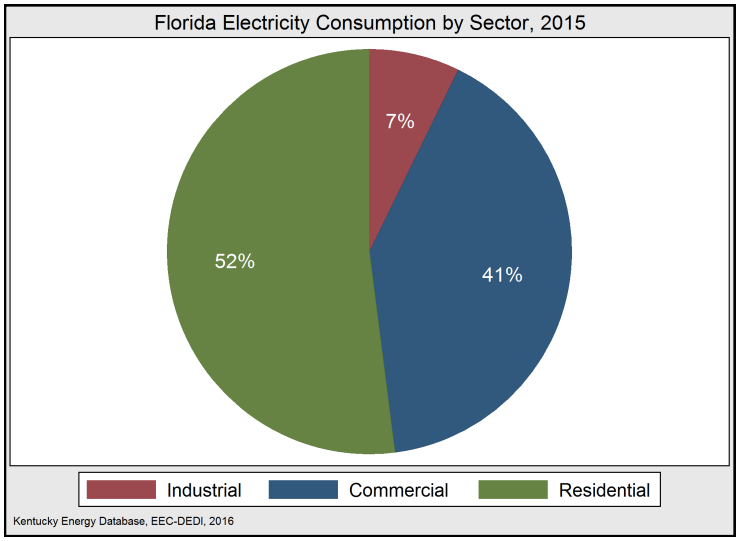
Electricity consumption across the SSEB region declined by 0.7 percent in 2015, while elsewhere in the United Sates, electricity consumption declined by a marginal 0.1 percent. Industrial and residential consumption declined by 3.5 and 0.3 percent respectively in 2015, while commercial consumption increased by 0.8 percent. In 2015, industrial consumers in the SSEB region accounted for 24 percent of demand compared to 26 percent nationally.

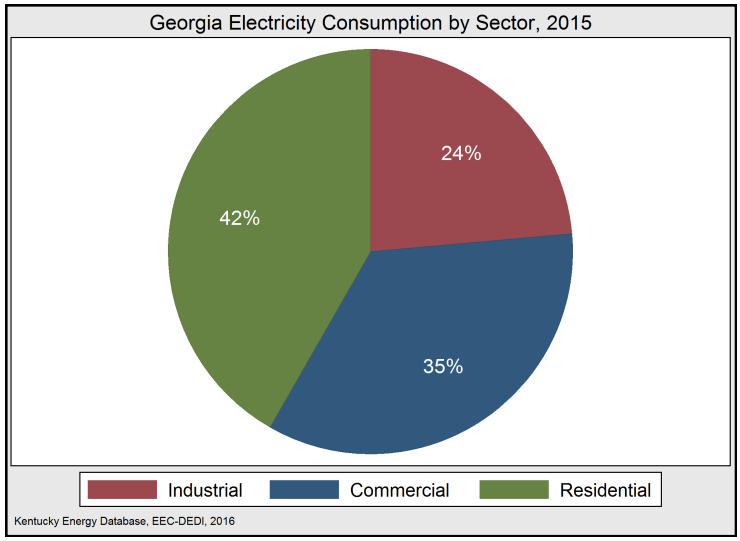
Industrial electricity demand was once the largest consuming sector; however industrial demand in the SSEB region continues to decline, decreasing 3.5 percent in 2015 and 10 percent since peaking in 2000. Since the mid-1980s, residential demand continues to account for the largest proportion of electricity consumption in both the SSEB region, 41 percent, and the United States, at 38 percent.

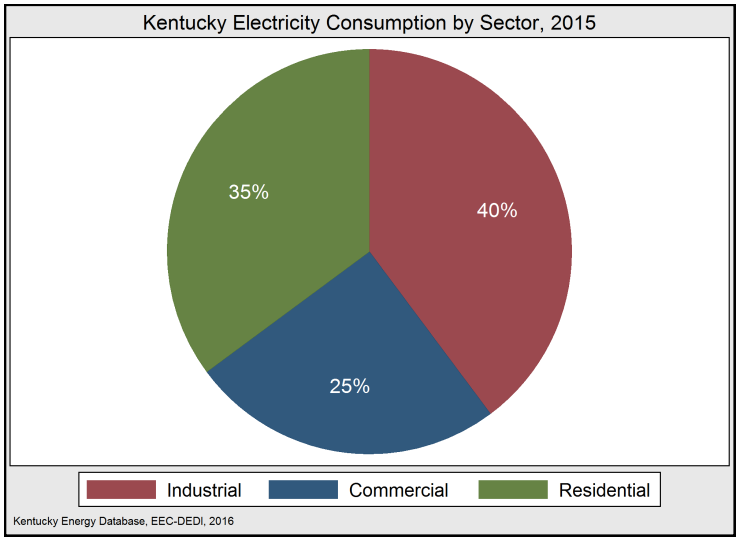
Electricity Consumption by Sector

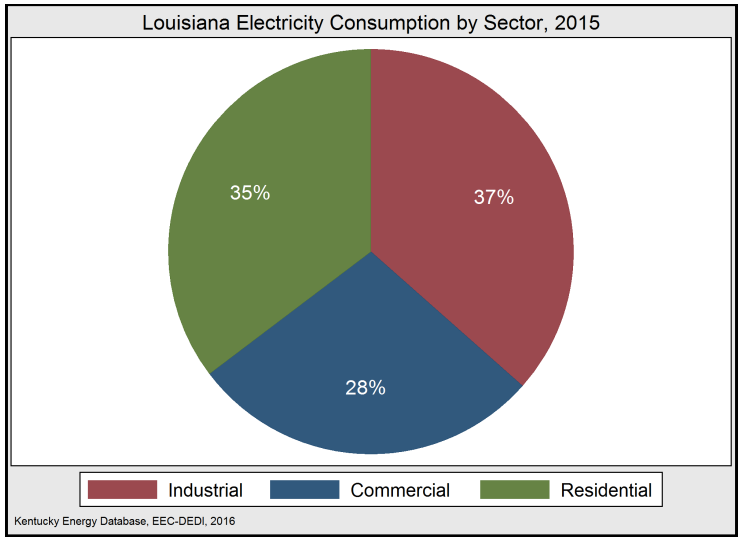




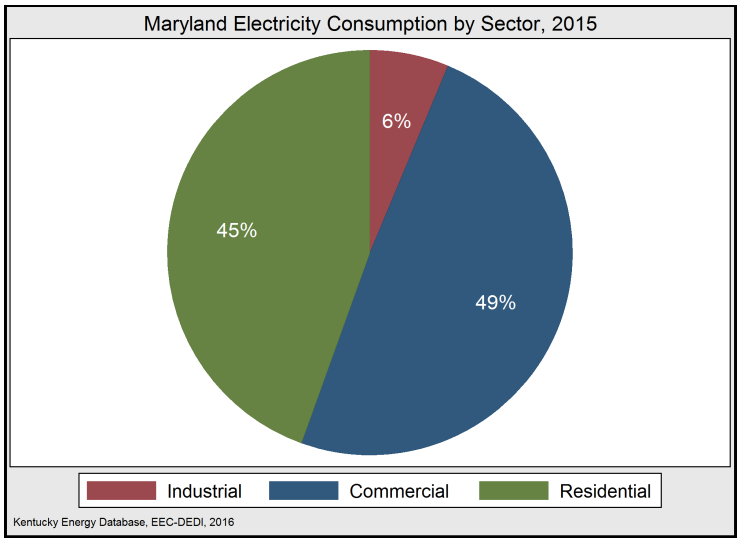


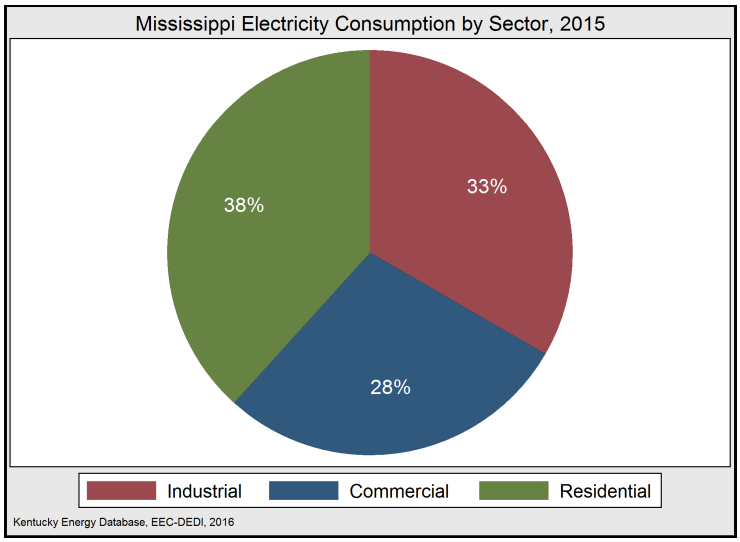


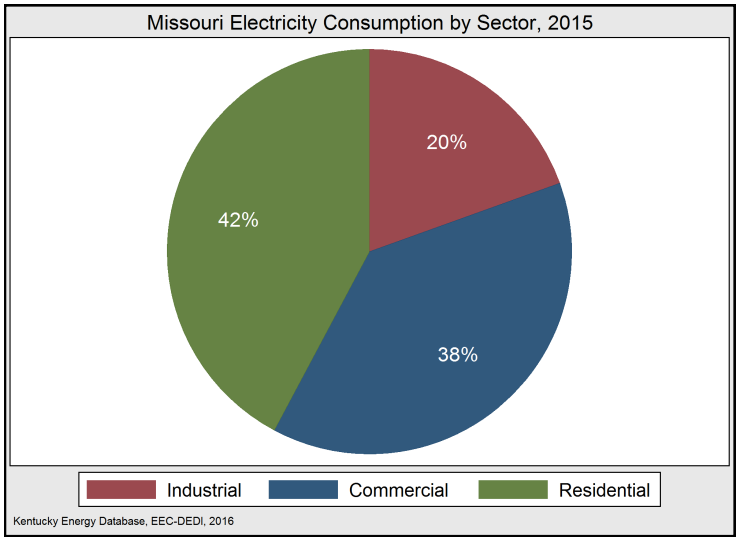


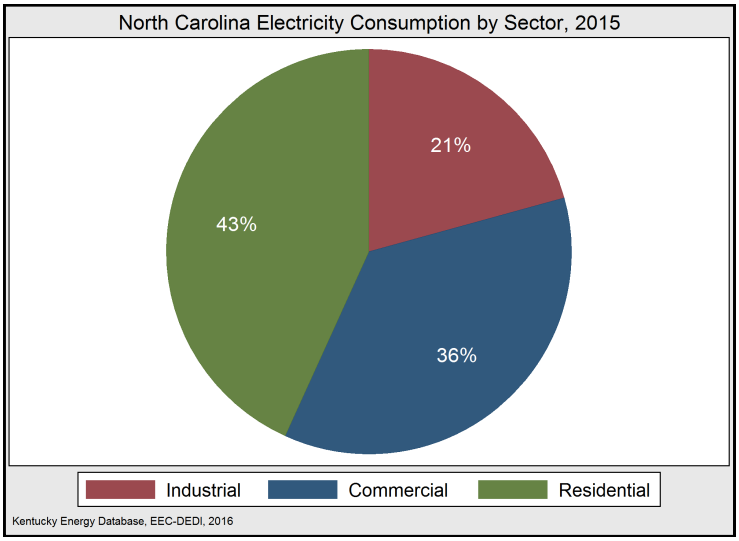


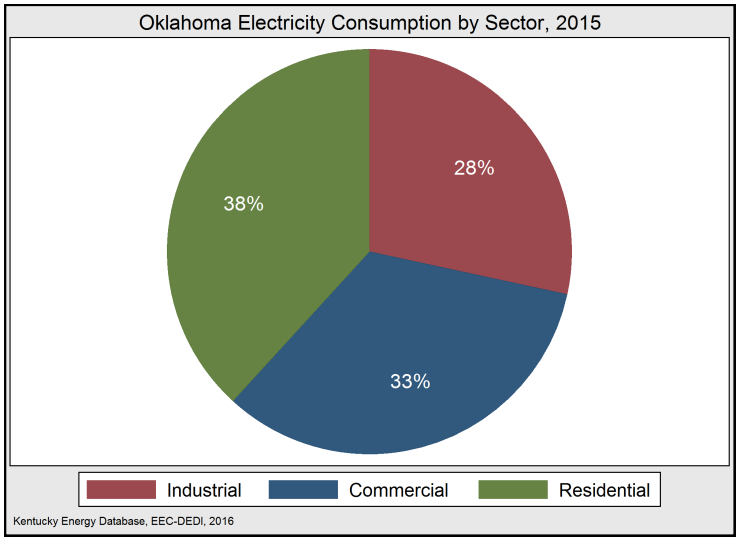
Electricity Consumption by Sector

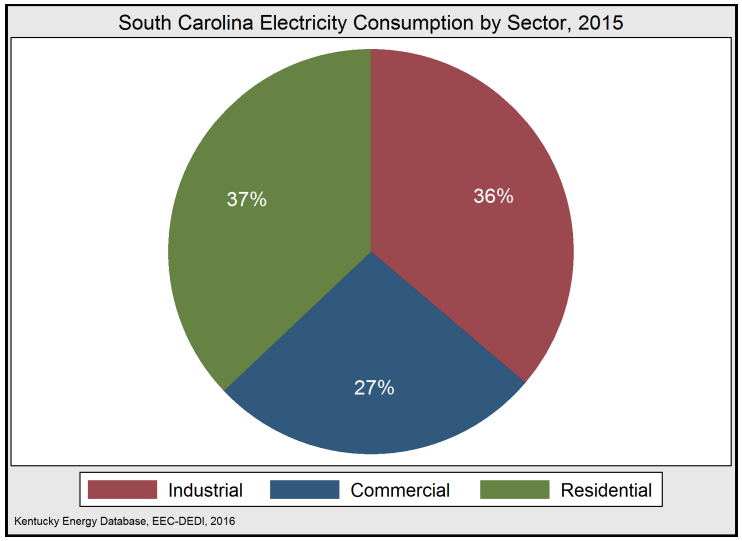




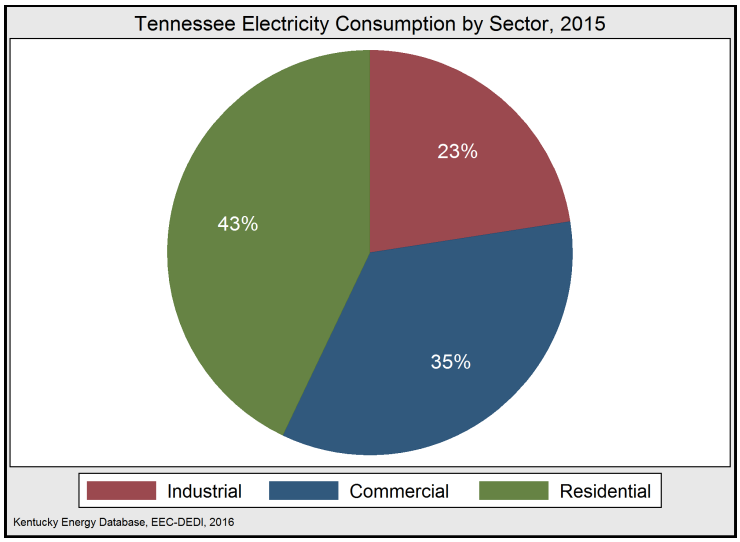


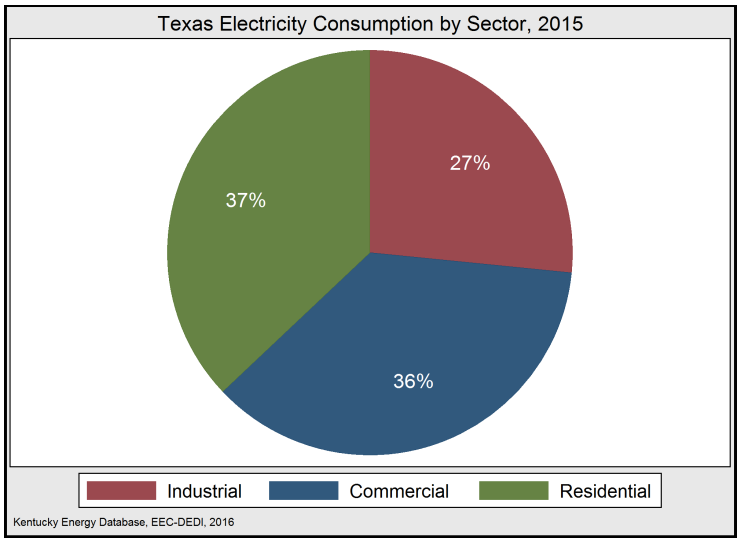


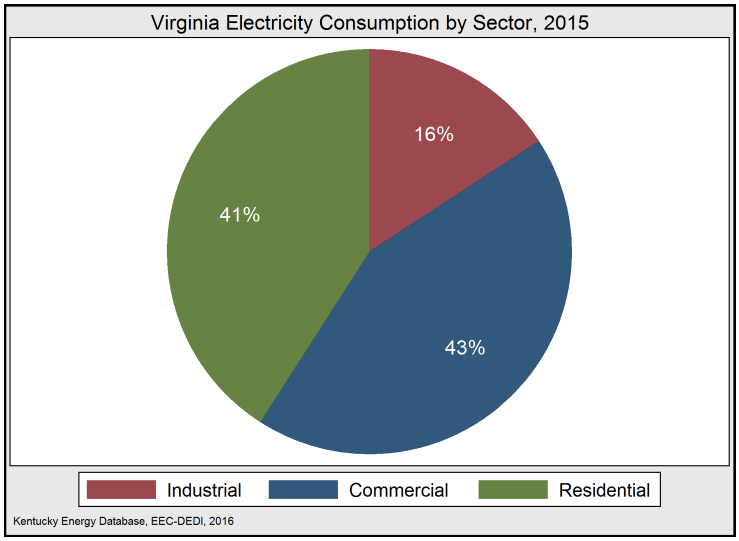


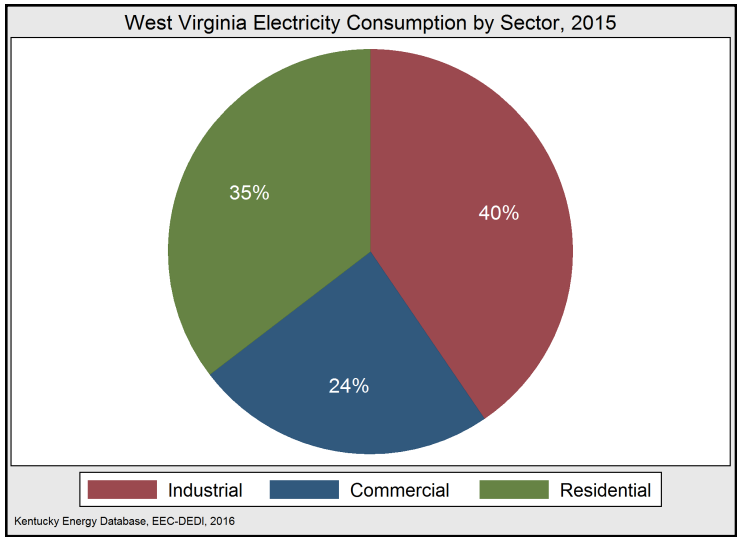


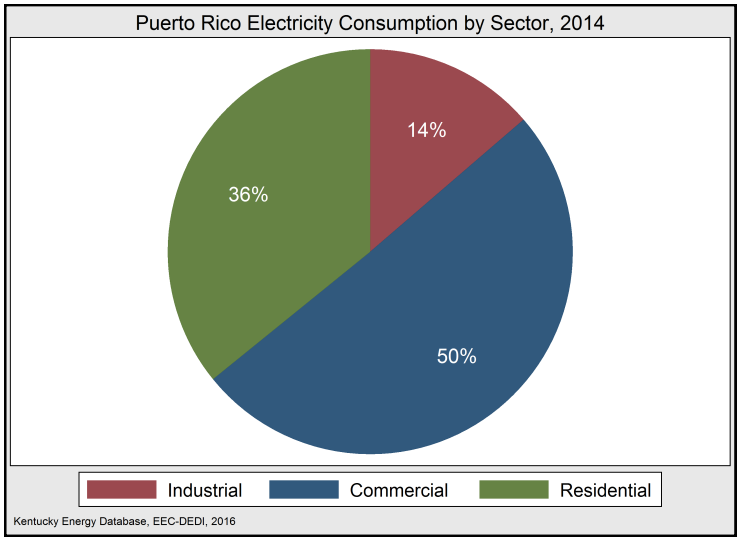
Electricity Consumption by Sector

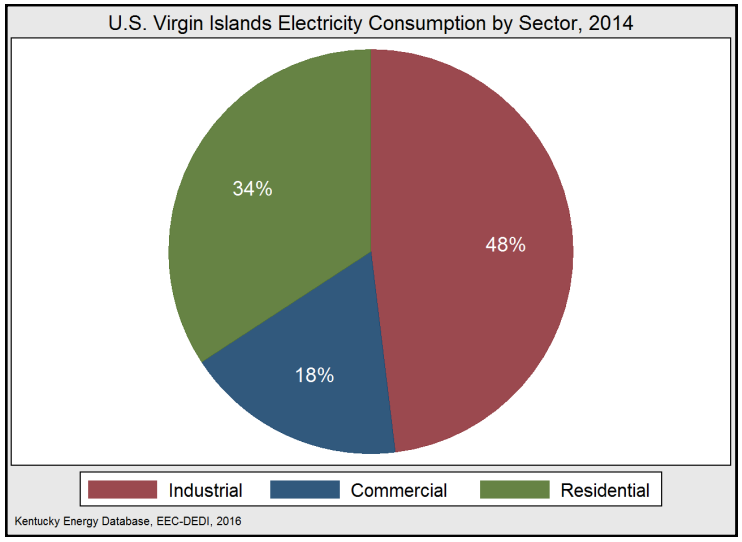




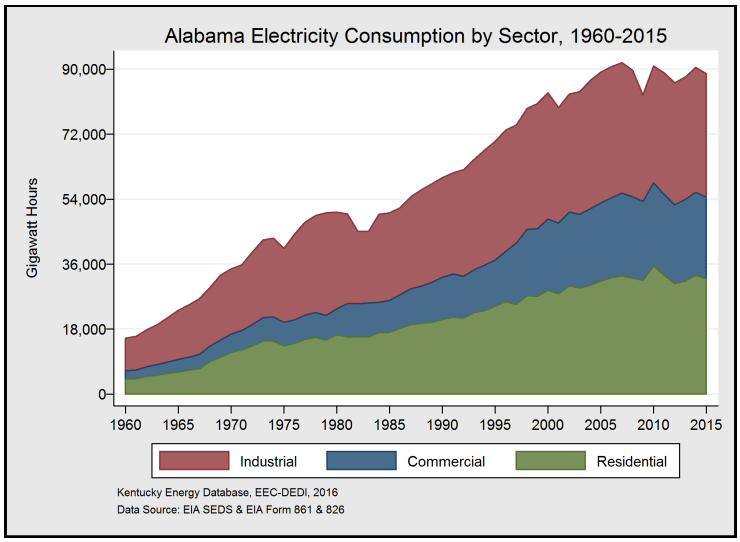


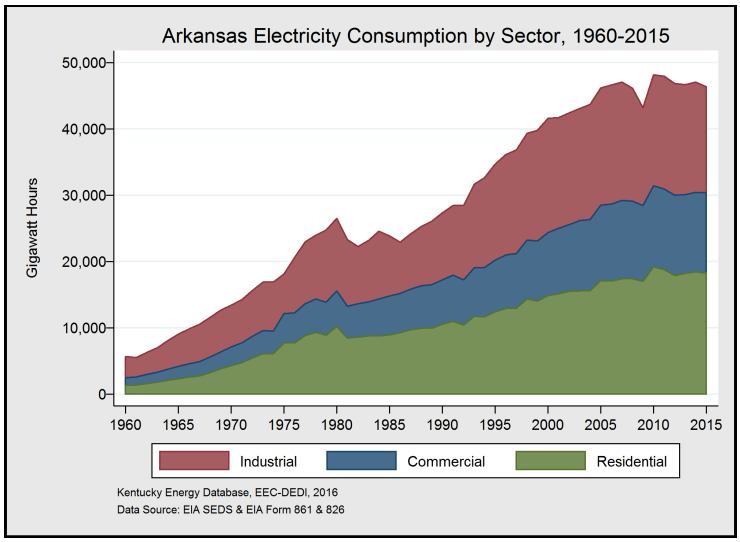


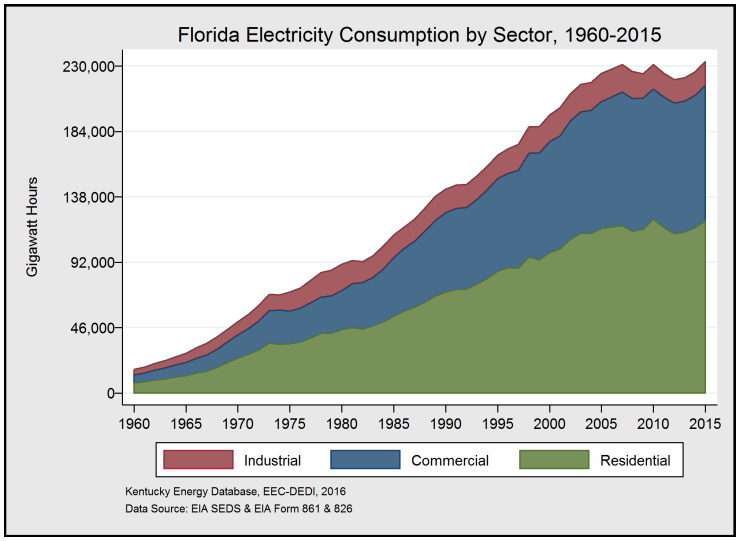


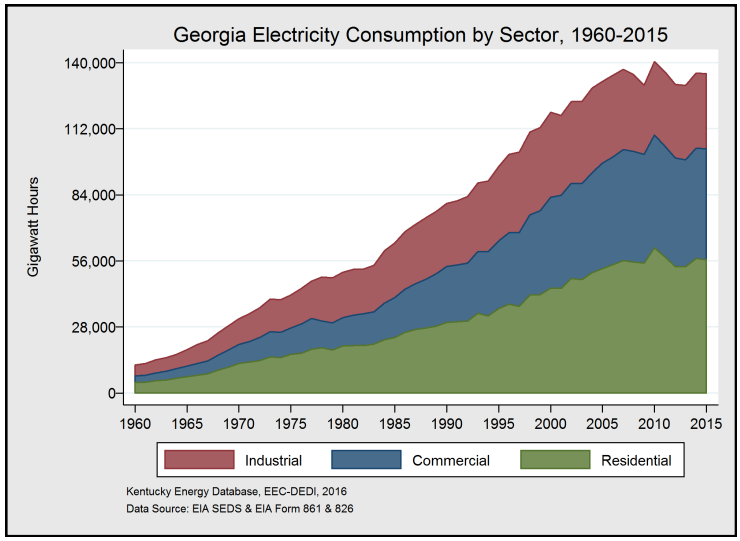


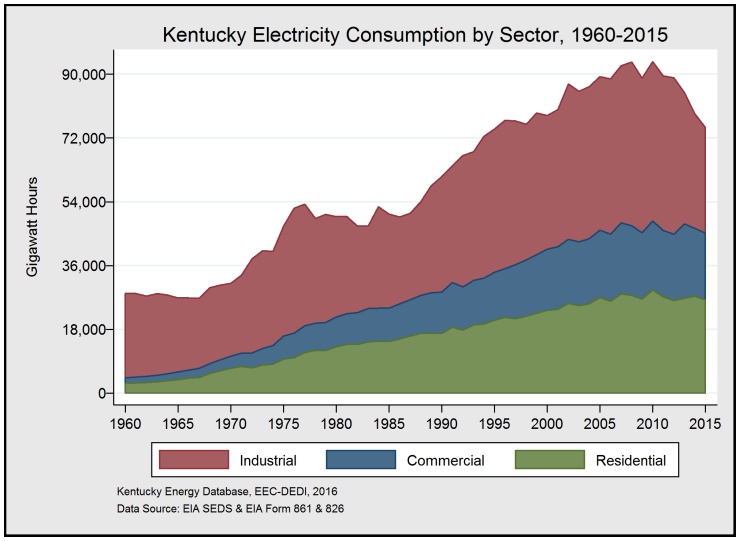
Historical Electricity Consumption by Sector

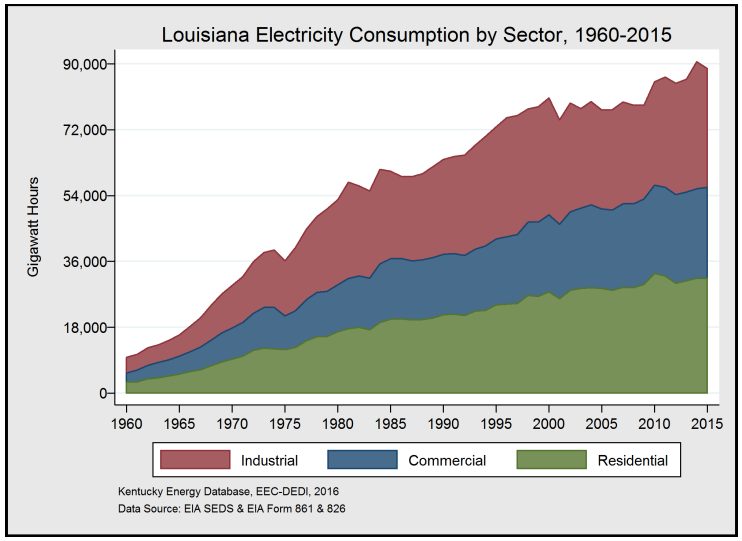




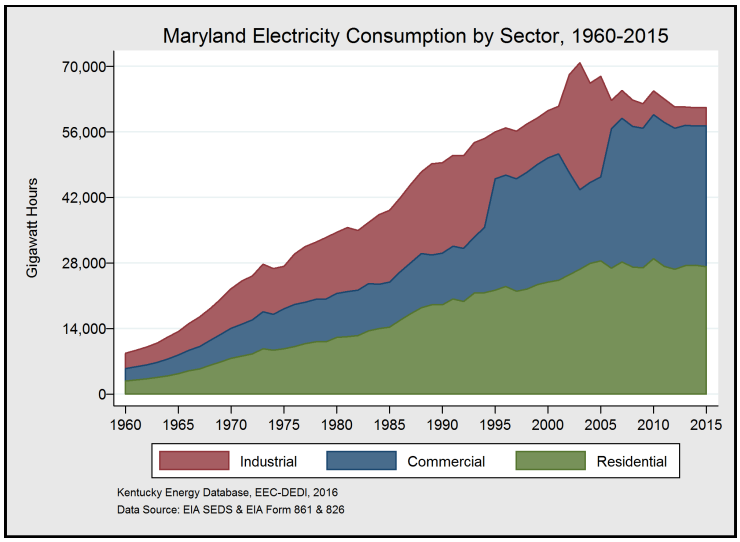


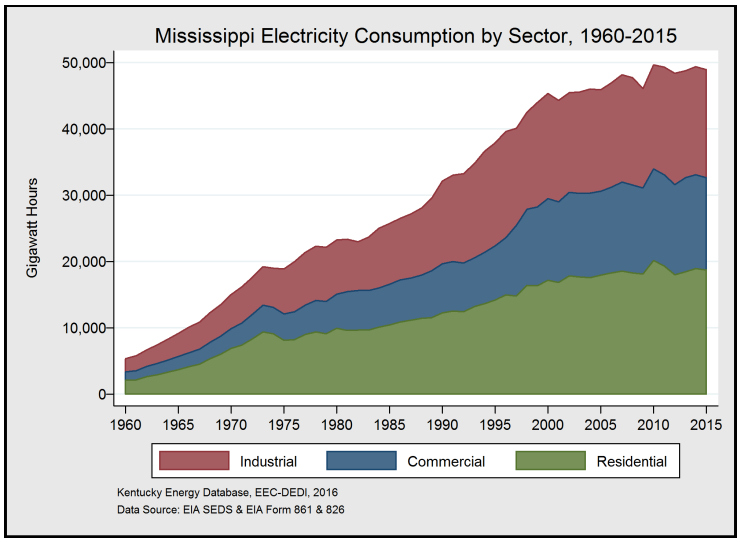


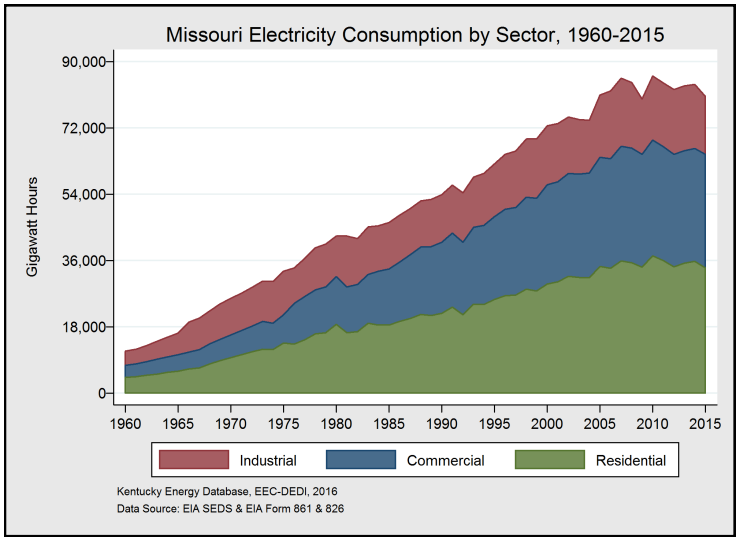


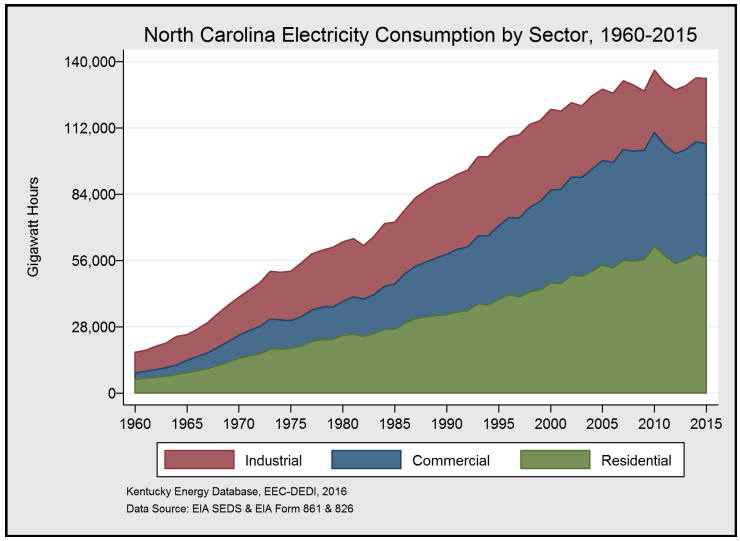


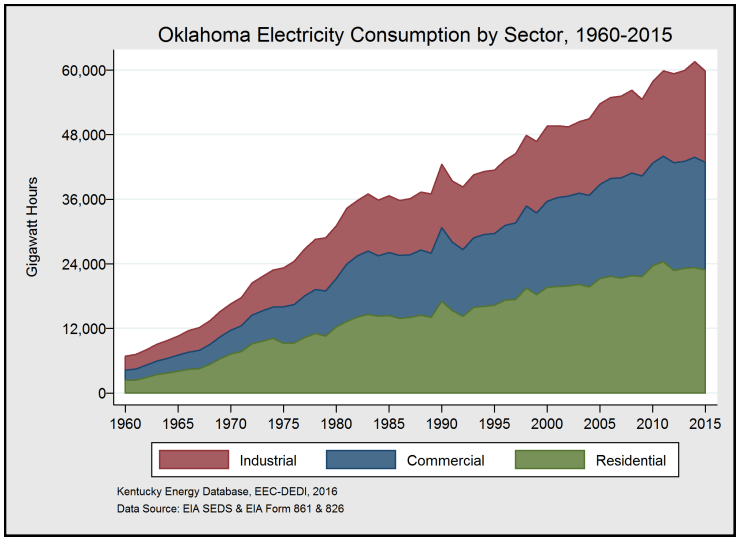
Historical Electricity Consumption by Sector

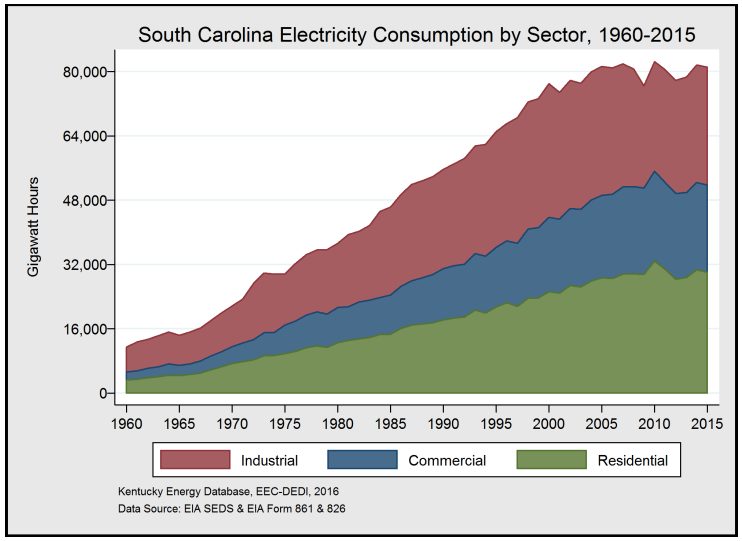




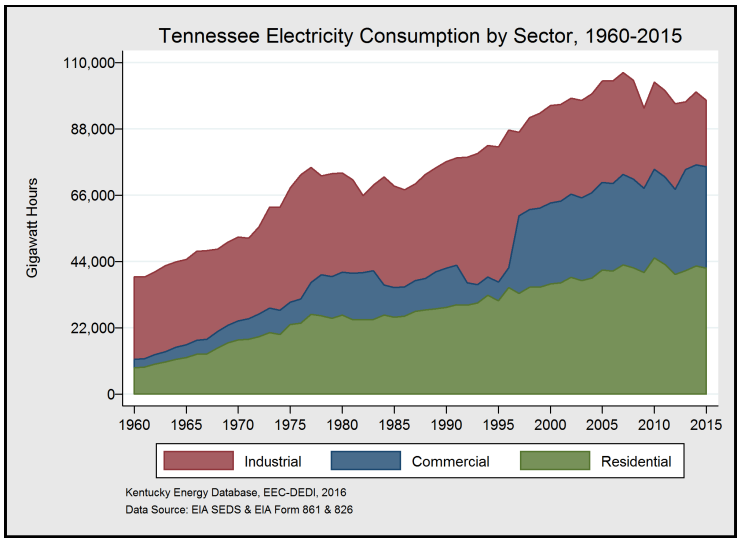


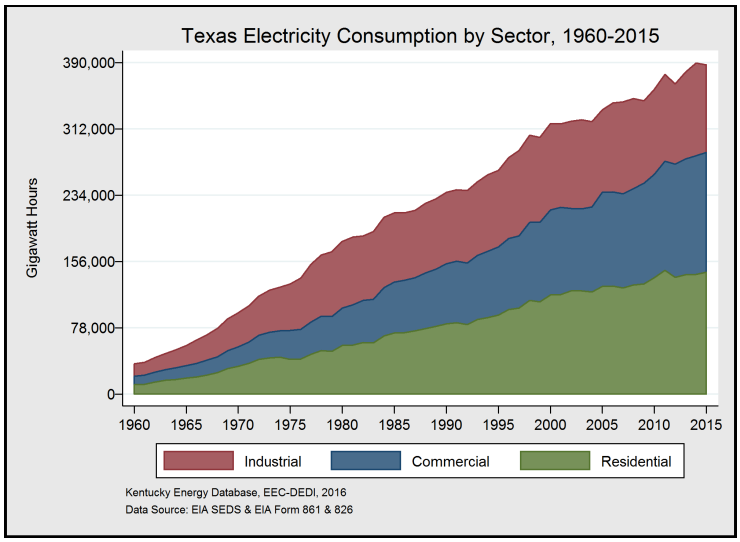


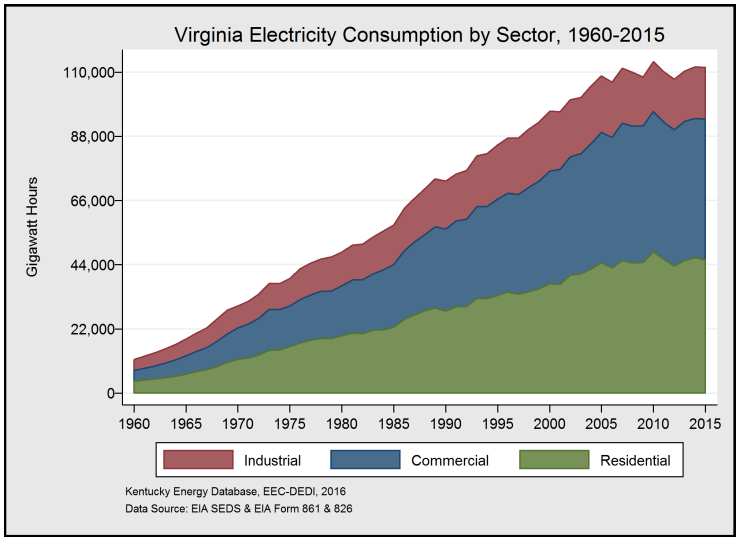


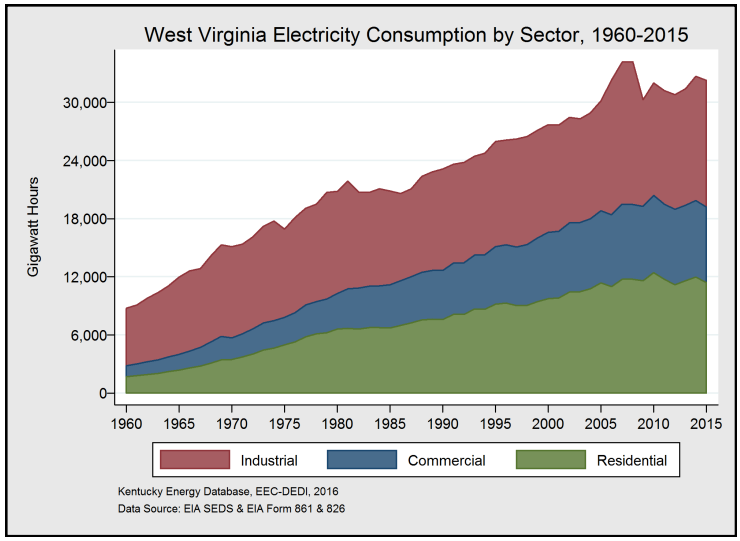


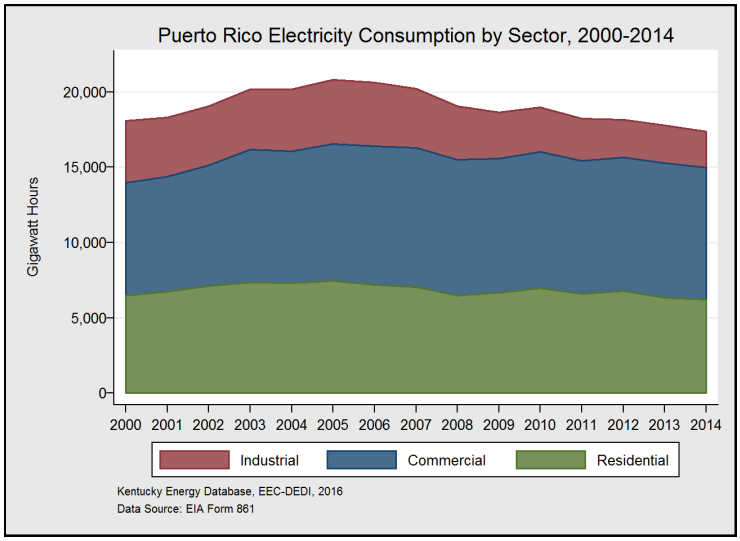
Historical Electricity Consumption by Sector

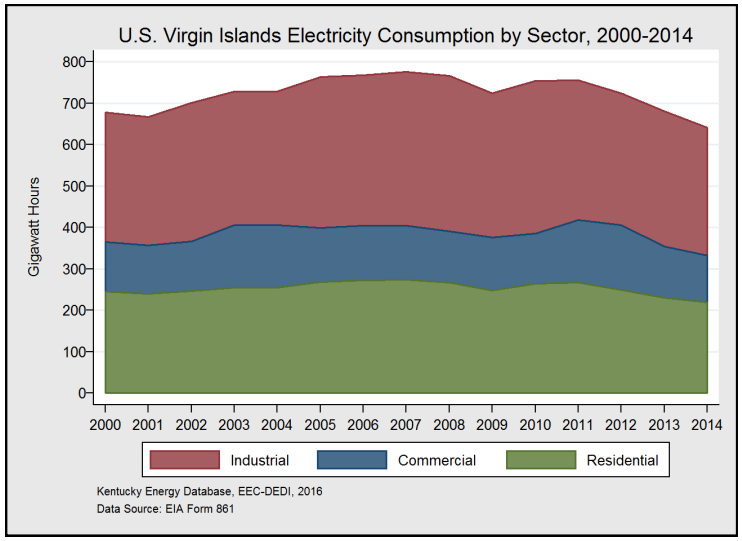






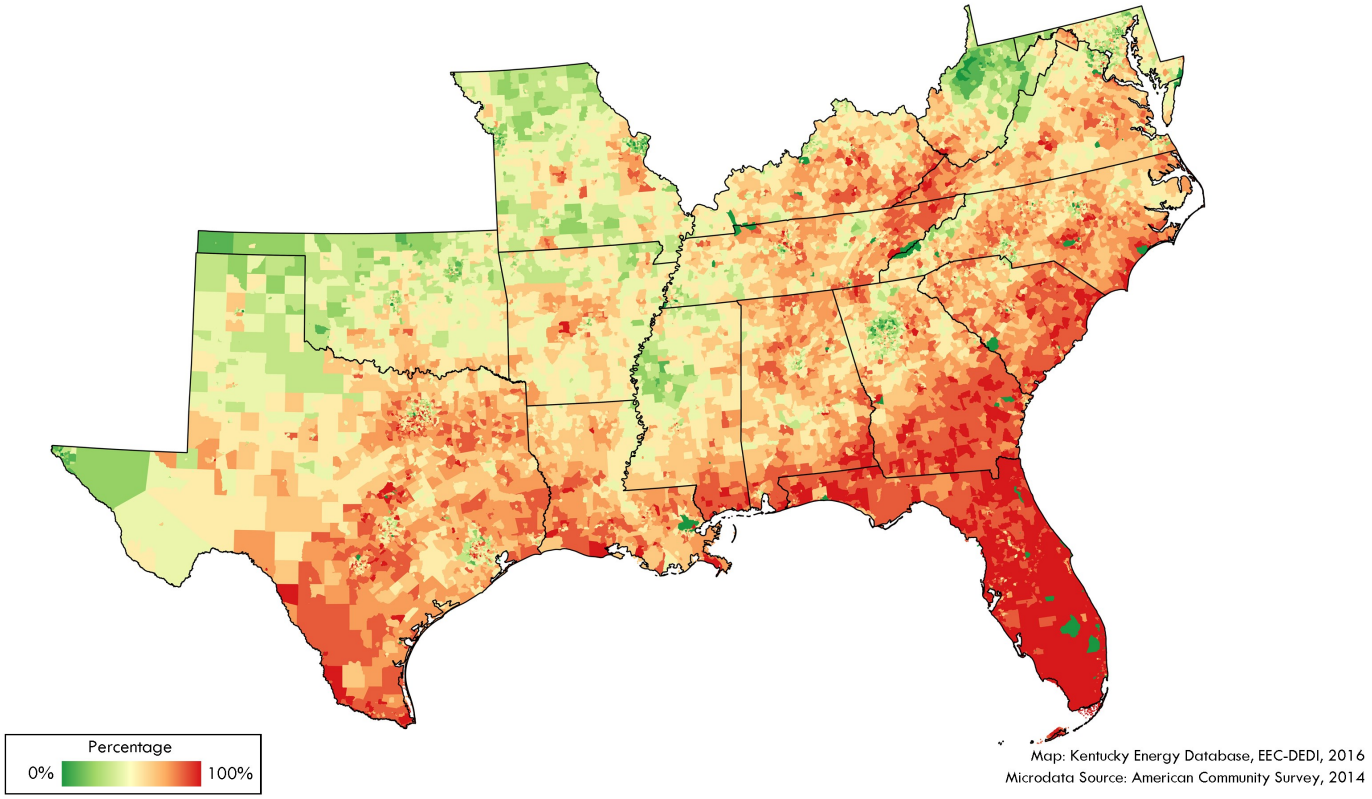




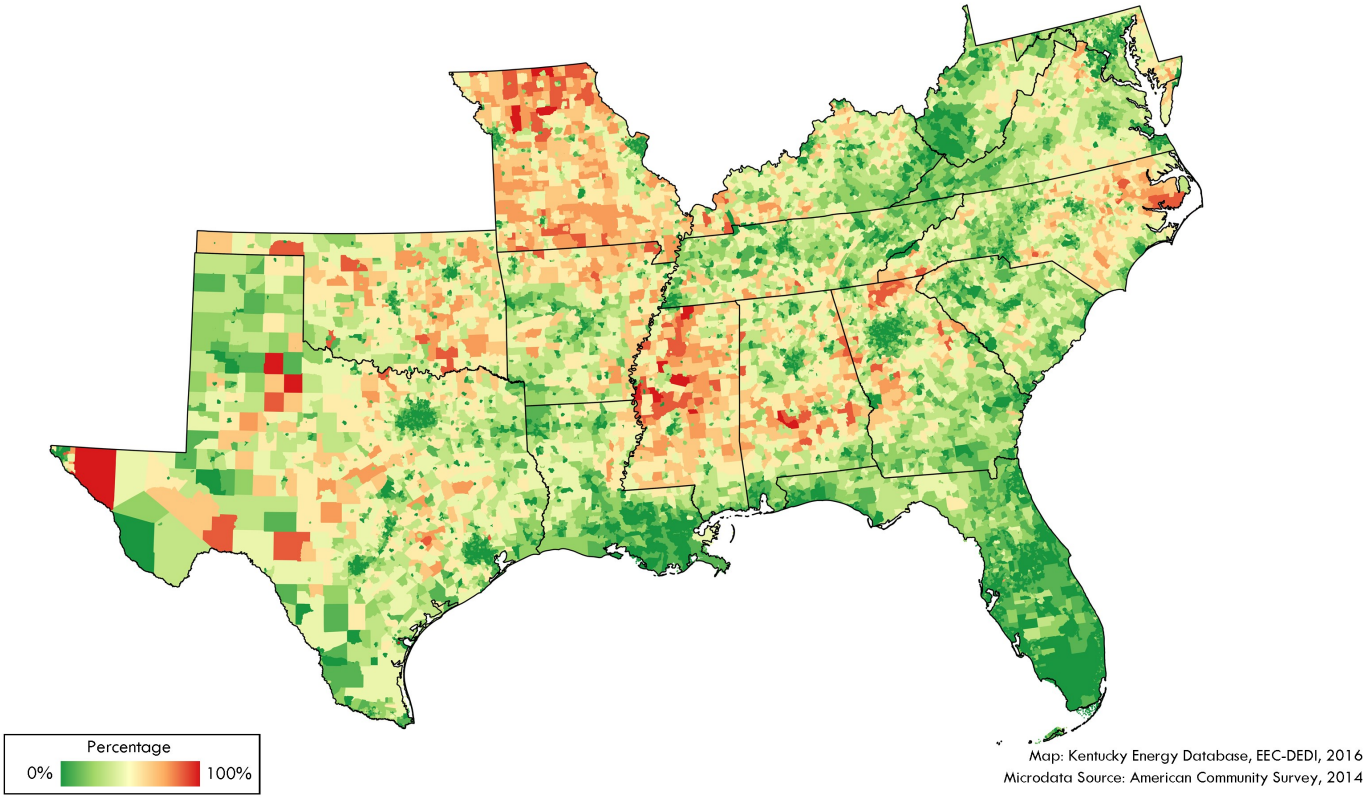


Home Heating

Homes Heating with Electricity in SSEB Region

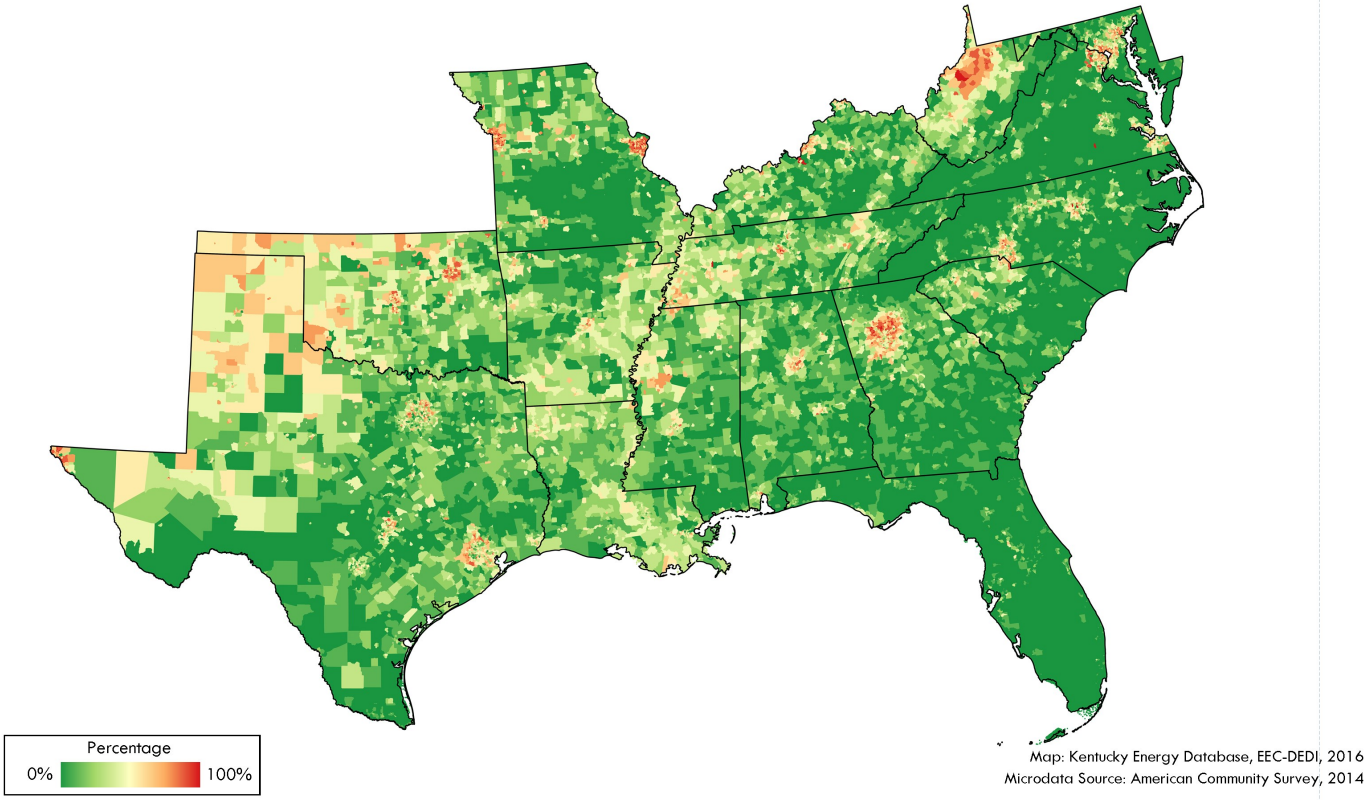


Homes Heating with Propane in SSEB Region



Home Heating

Homes Heating with Natural Gas in SSEB Region

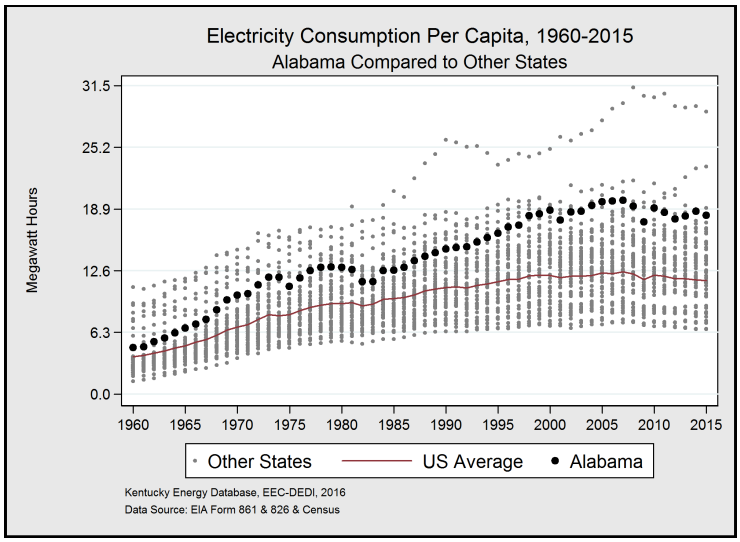


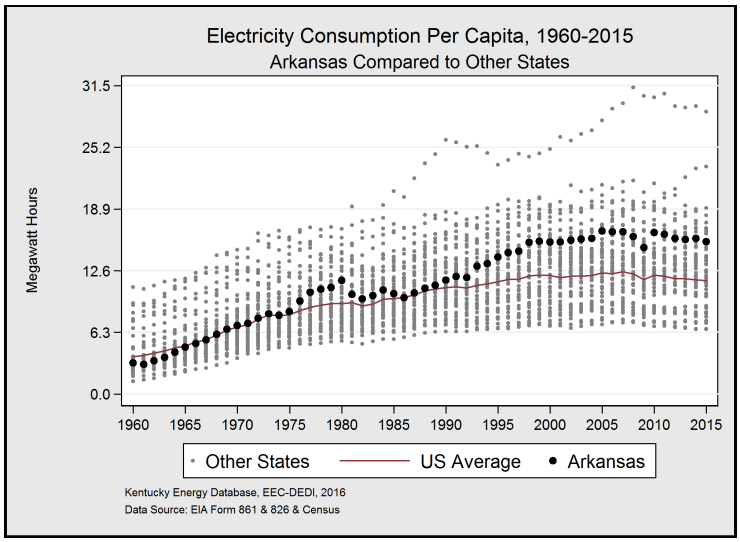
Homes in the southern Atlantic seaboard, Florida, and across the Gulf coast heat mostly with electricity; electric heating usage diminishes further north and west, with the exception of pockets in the Appalachian Mountains region. Electric heating further north can present a financial hardship, especially to lower income households.

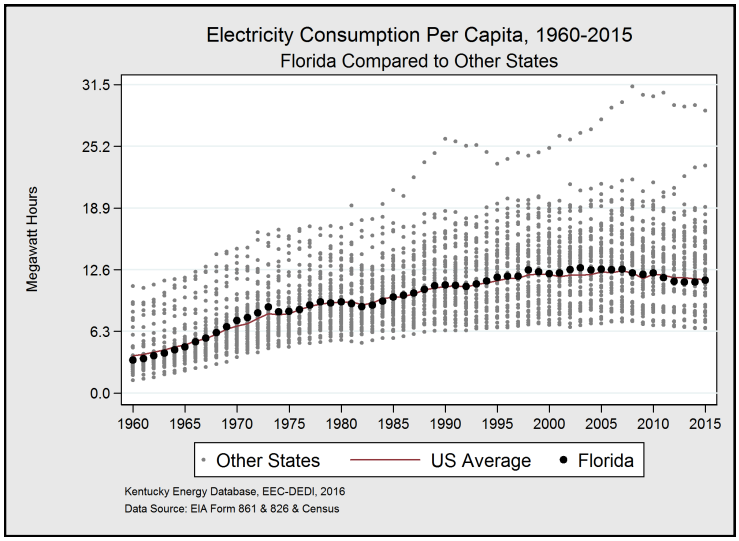
Propane is commonly used in rural areas, owing to its transport and storage characteristics. Overall, however, a proportional usage is lower along the Gulf Coast and the Appalachian coal fields; highest in Missouri, northern Arkansas, and throughout the cotton belt, running from Mississippi up to coastal North Carolina.

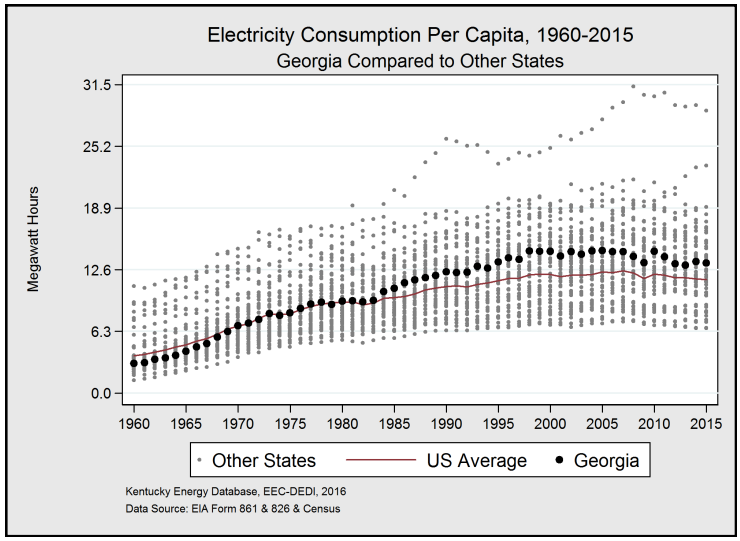
Because of distribution infrastructure limitations, natural gas heating is typically limited to more urban areas, with the exception of northern West Virginia, Oklahoma panhandle and northern Texas.

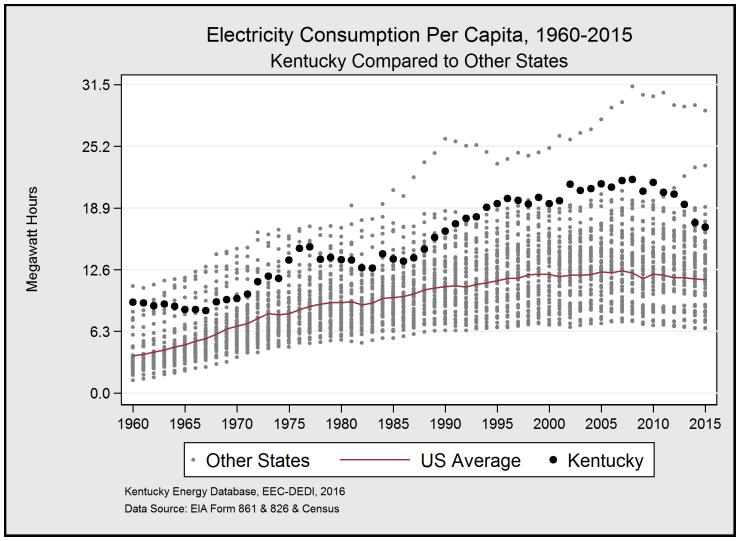
Historical Electricity Use per Capita

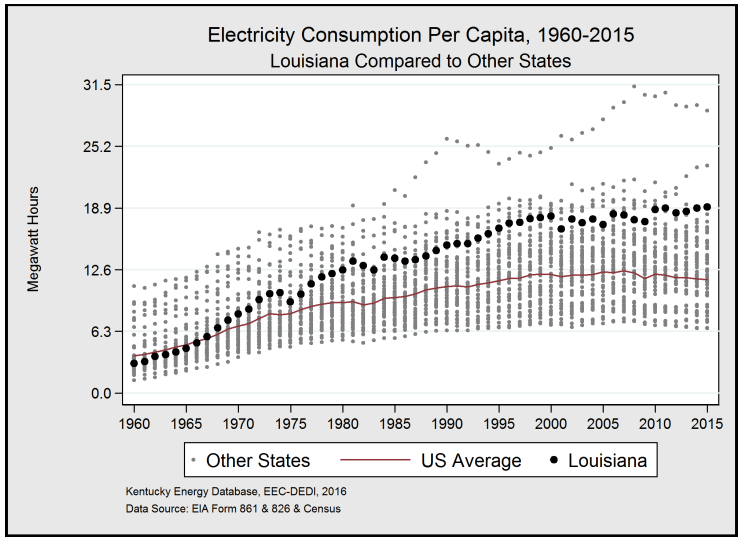




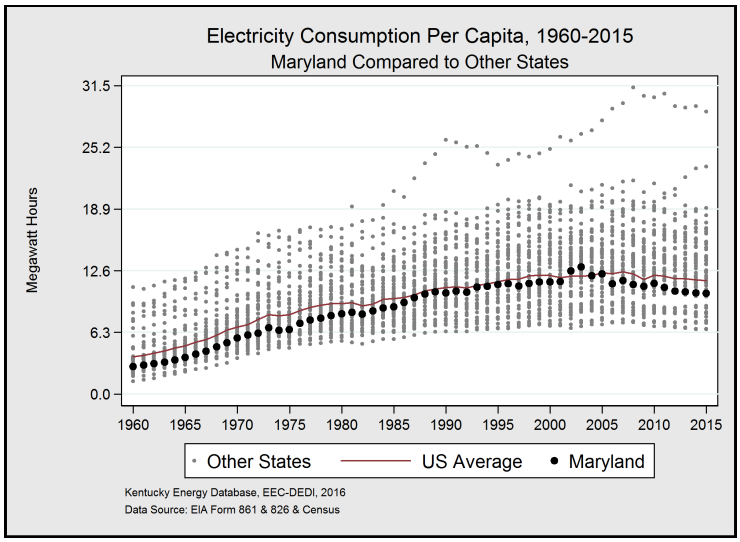


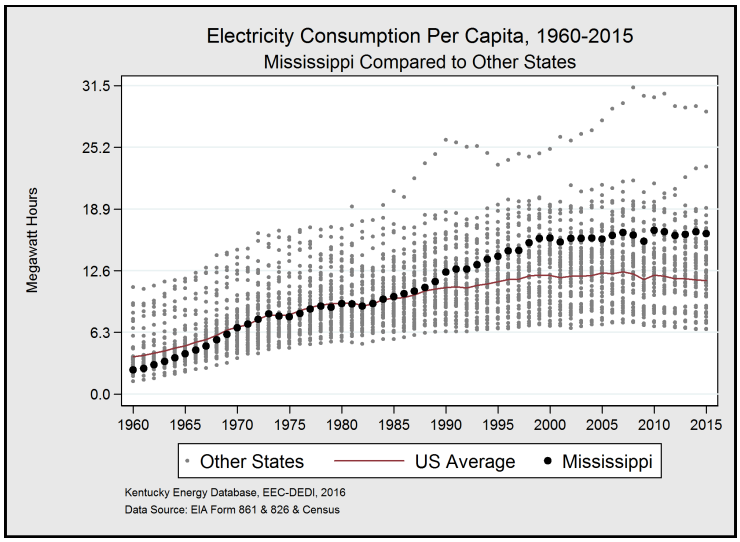


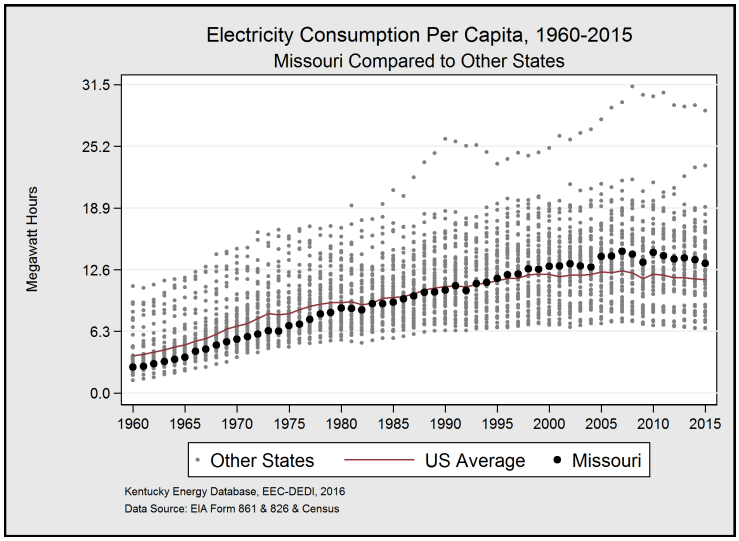


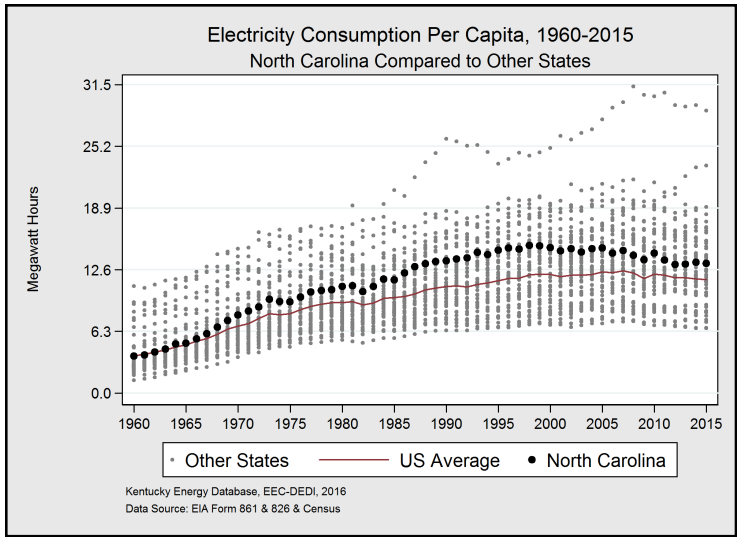


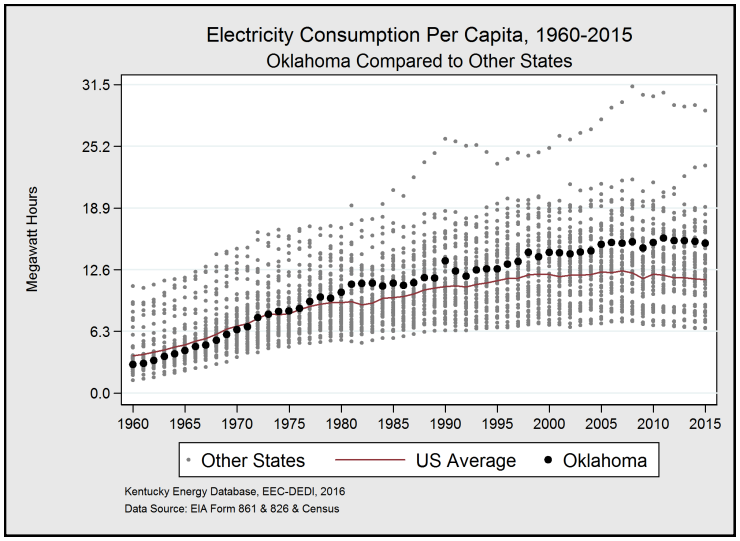
Historical Electricity Use per Capita

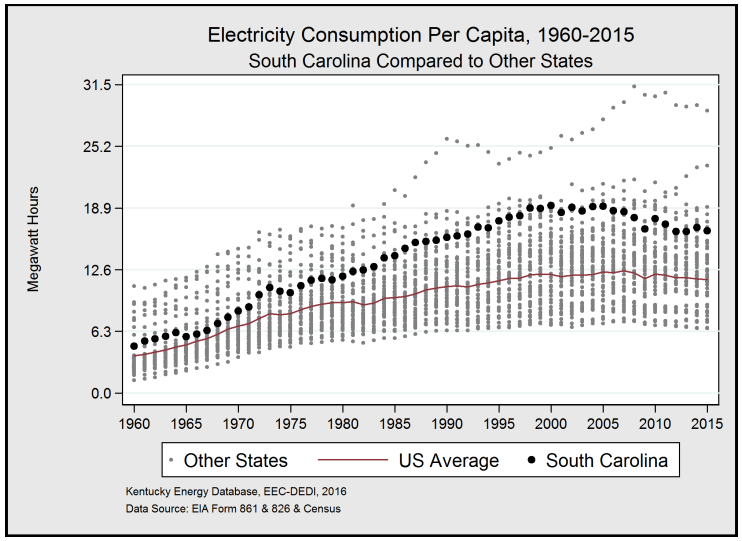




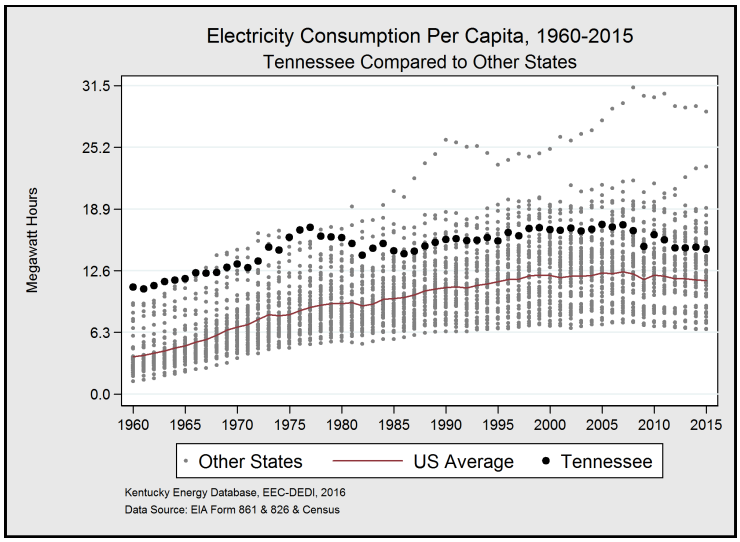


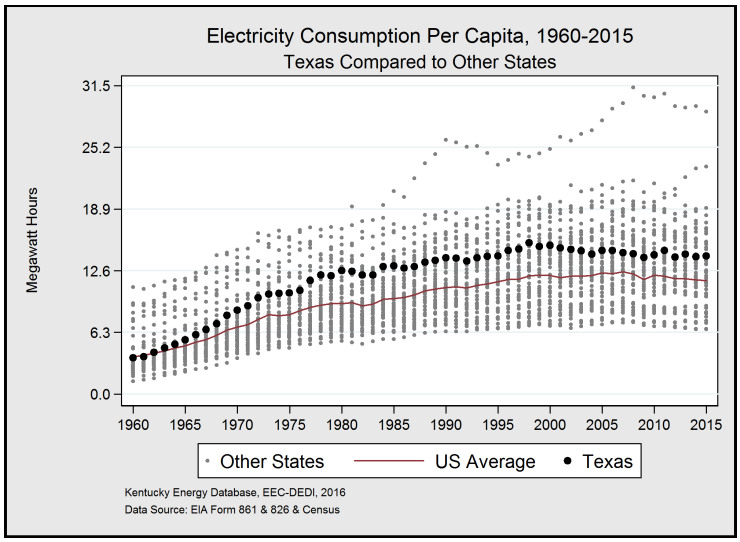


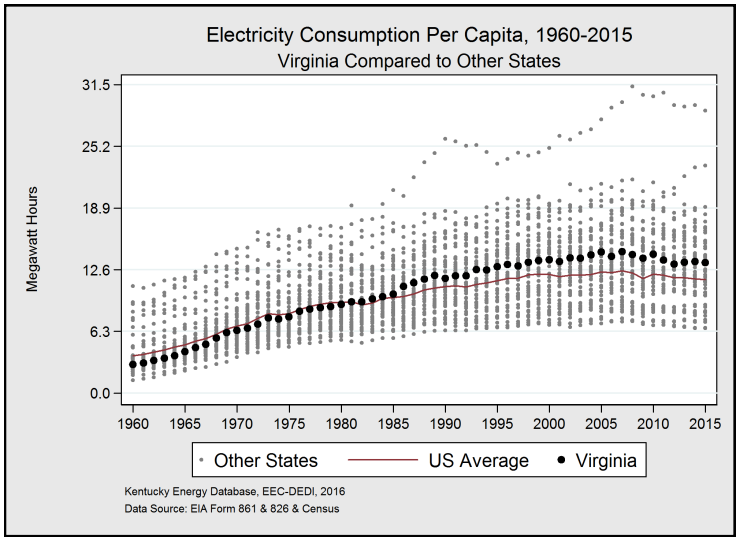


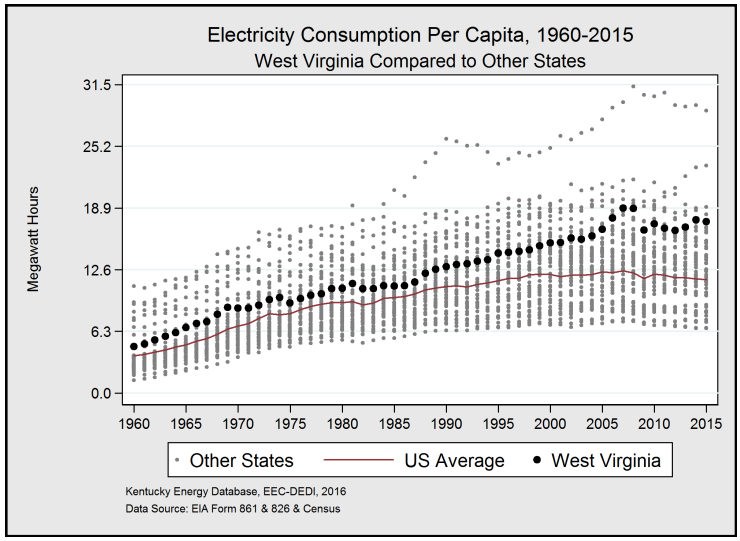


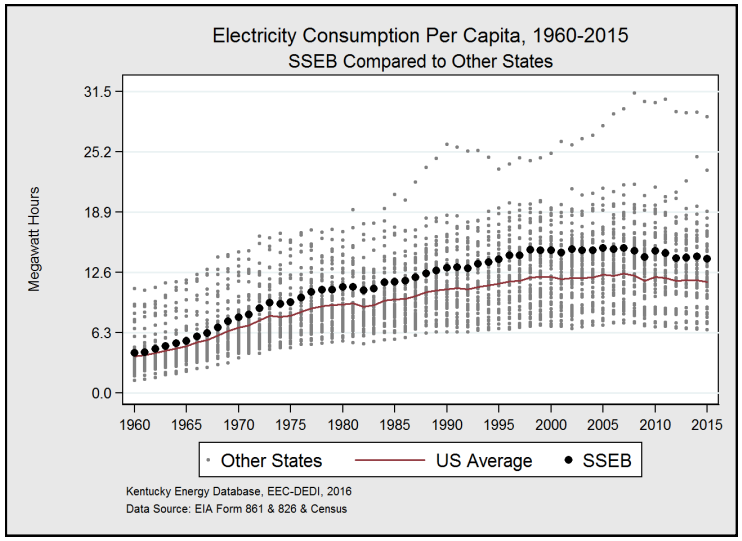
Historical Electricity Use per Capita



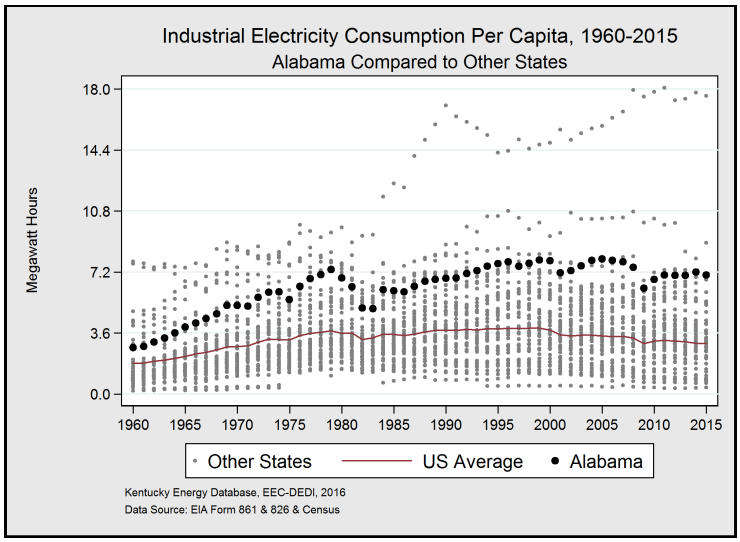


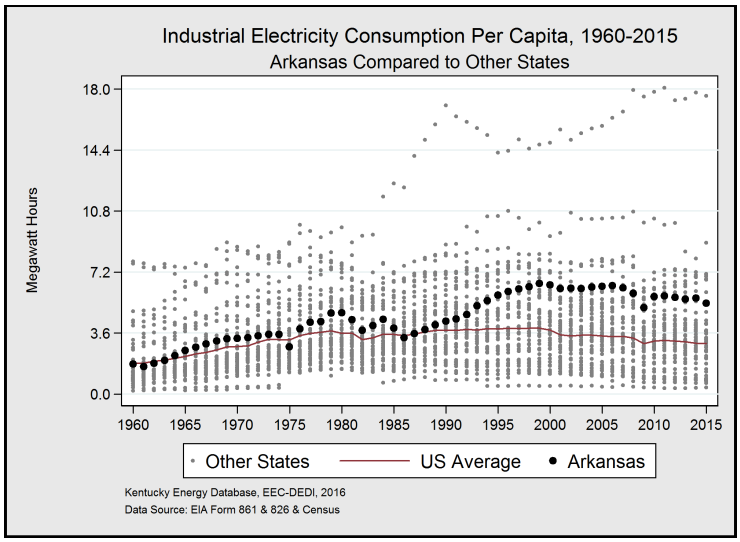


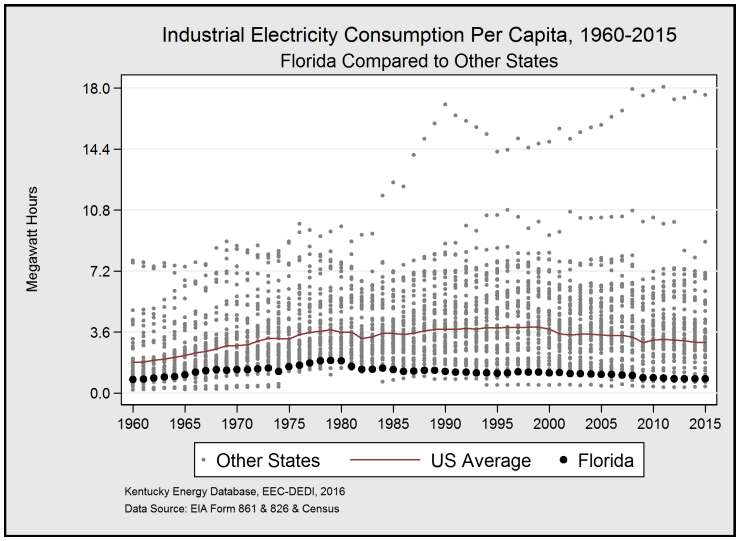


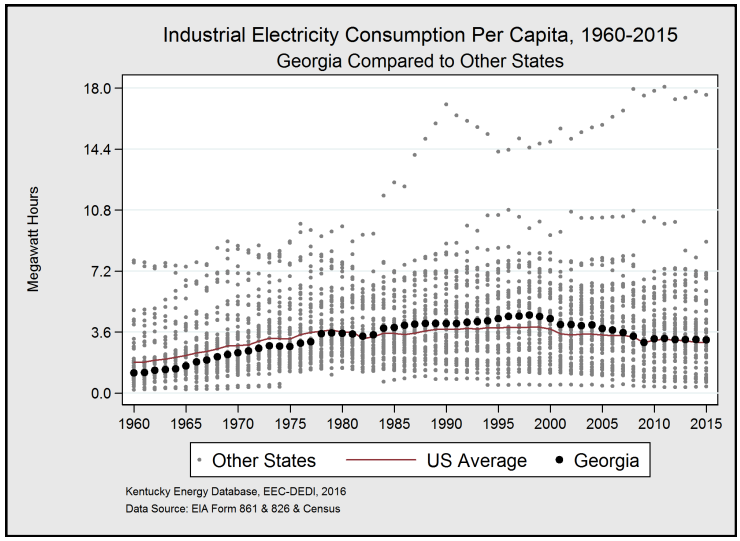


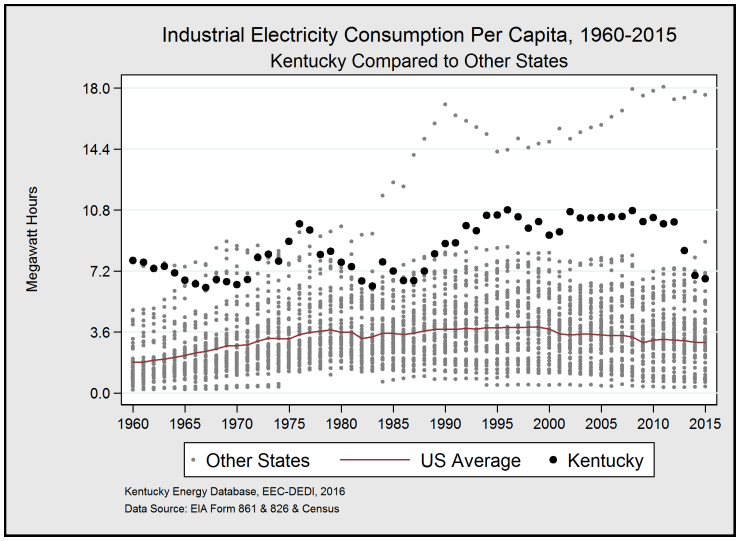
Historical Industrial Electricity Use per Capita

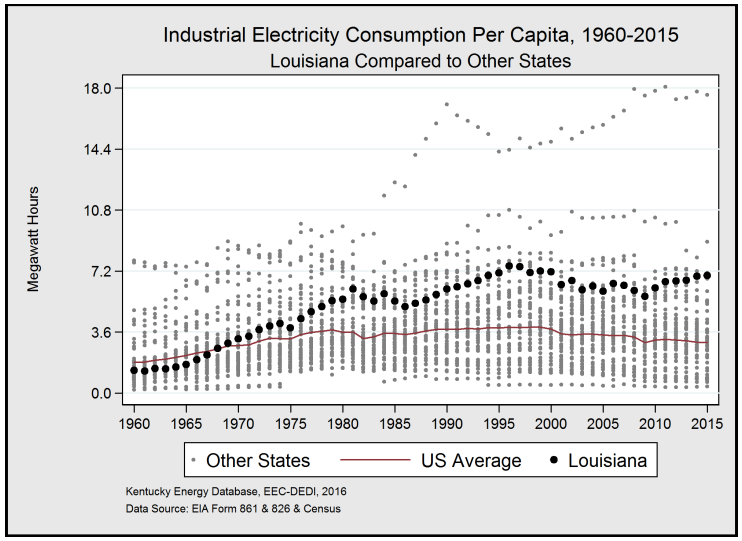




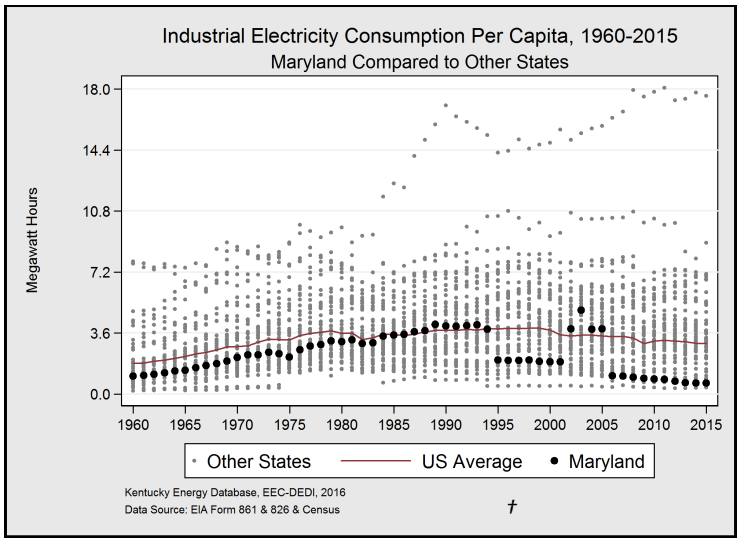


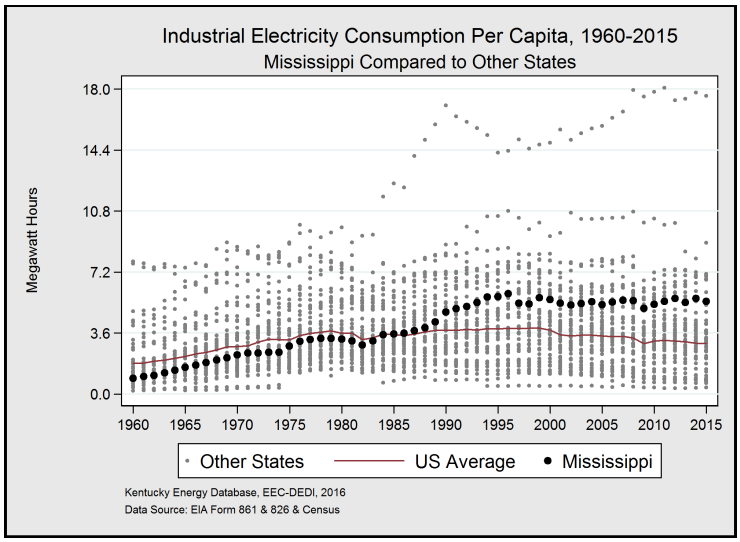


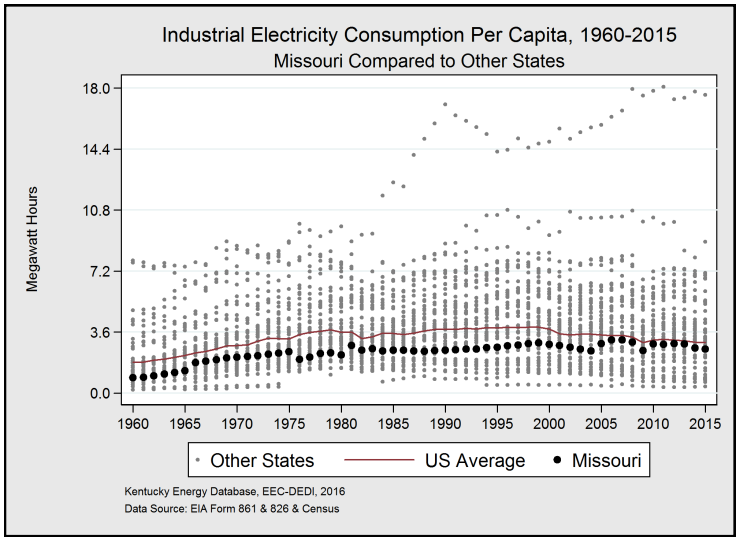


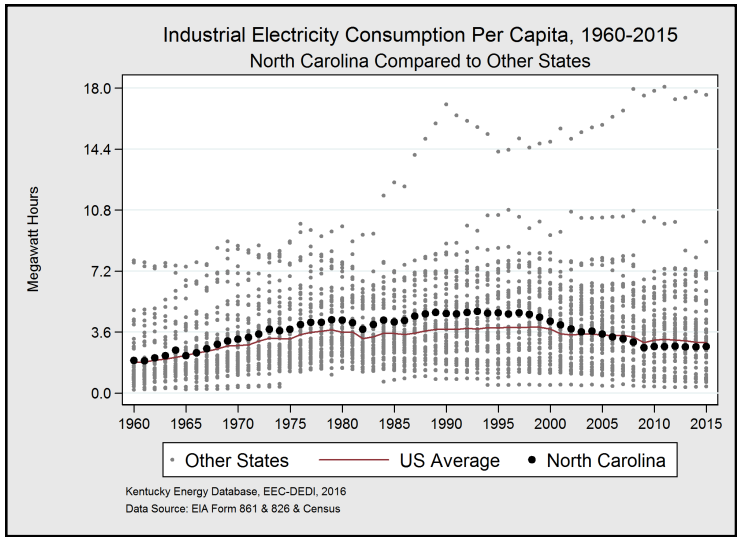


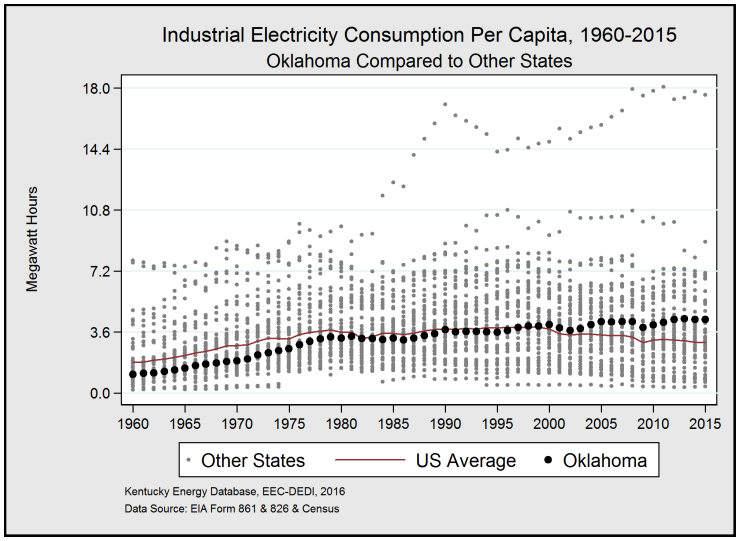
Historical Industrial Electricity Use per Capita

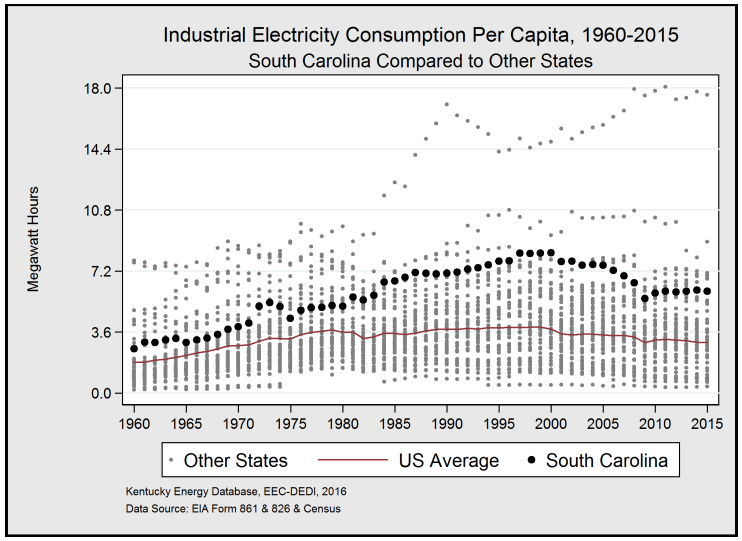




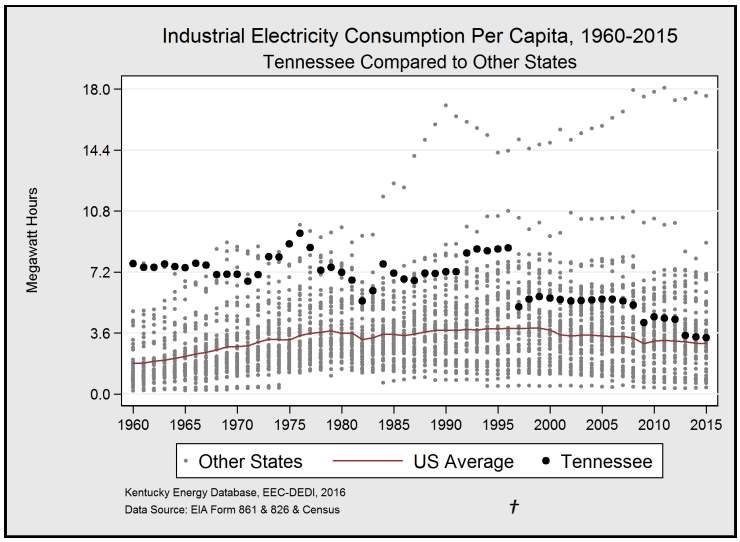


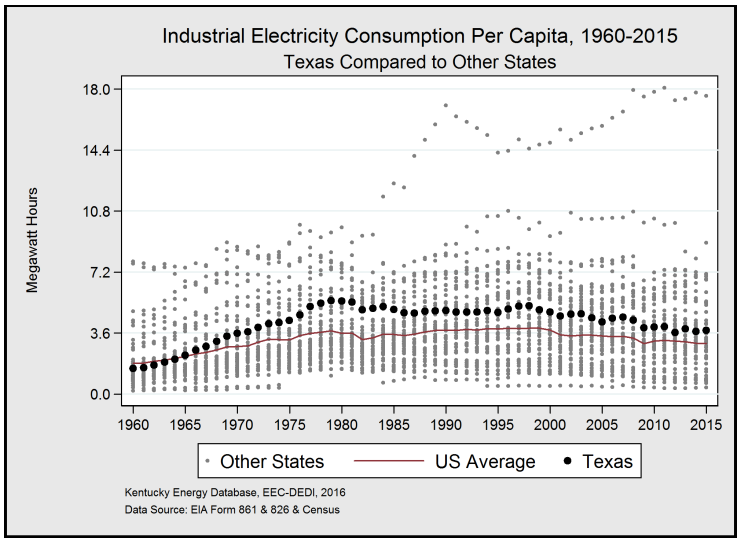


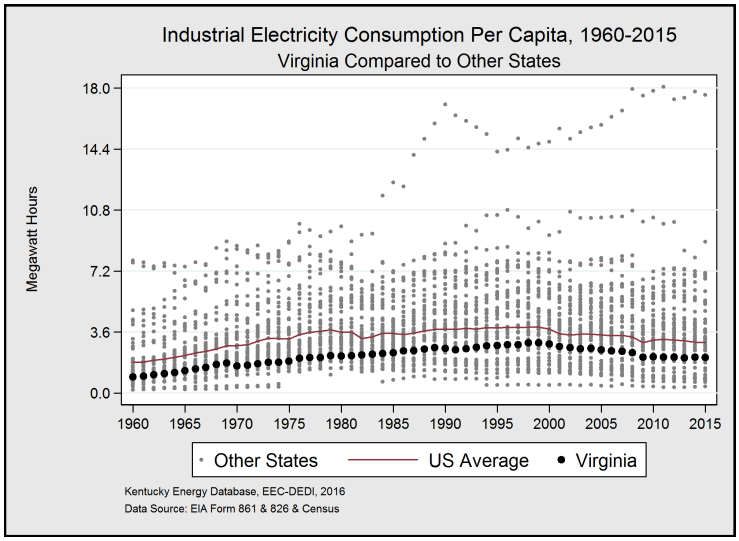


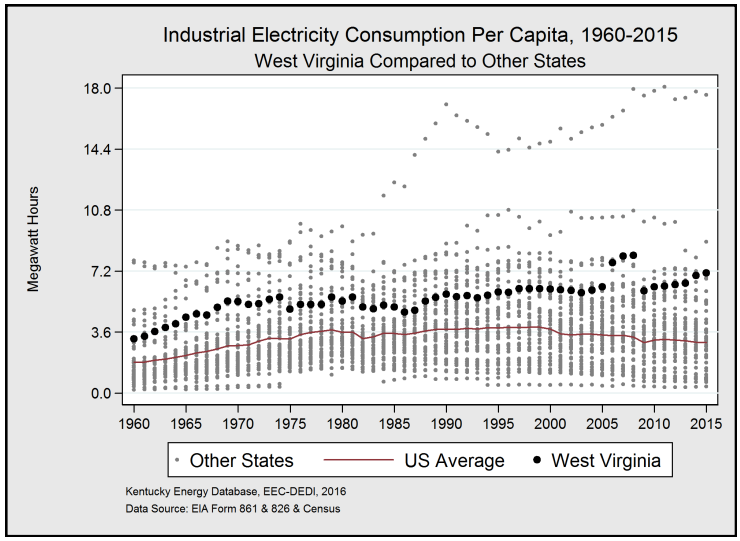


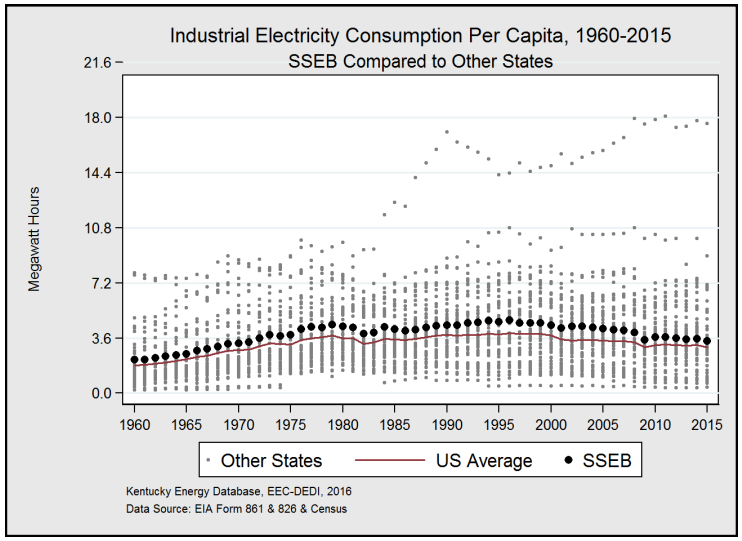
Historical Industrial Electricity Use per Capita





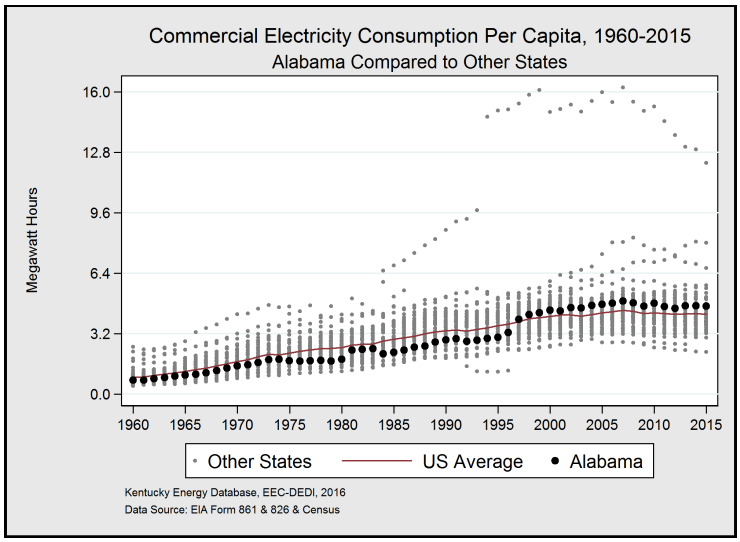


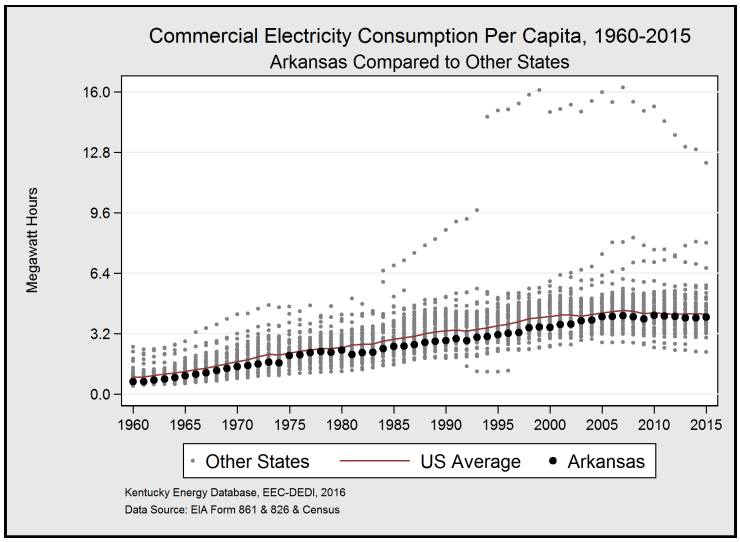


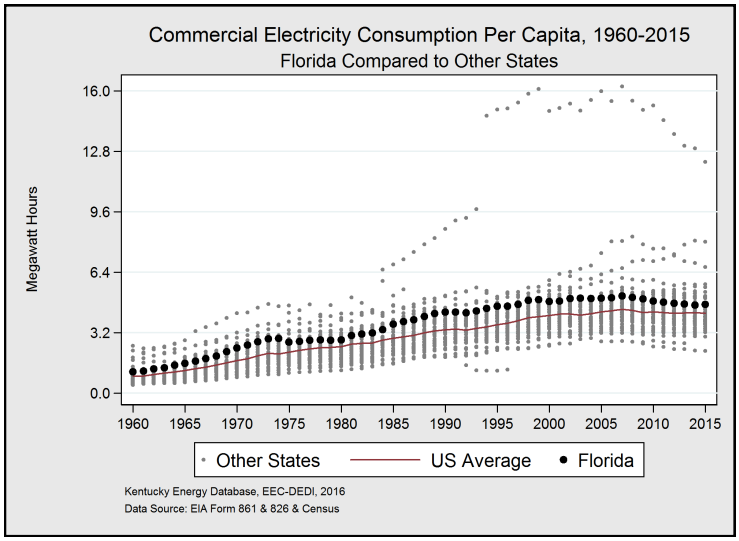


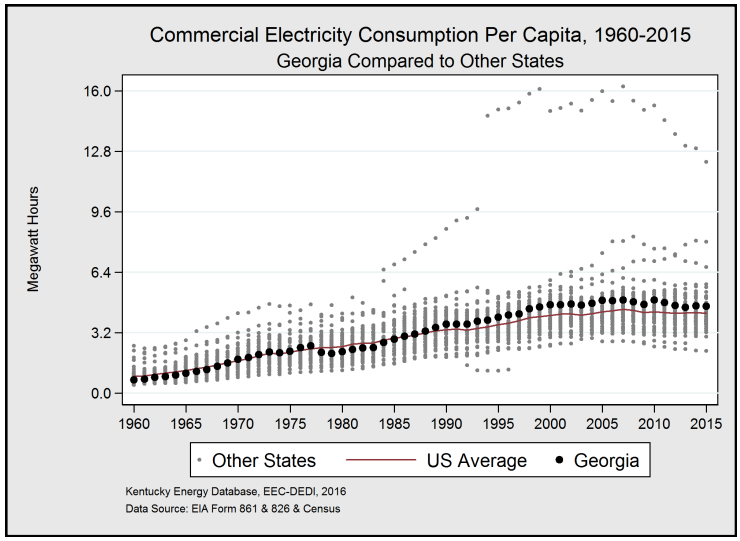
† Maryland and Tennessee show substantial fluctuation in per capita industrial electricity consumption due to the reclassification of certain industrial processes as commercial during this timeseries.

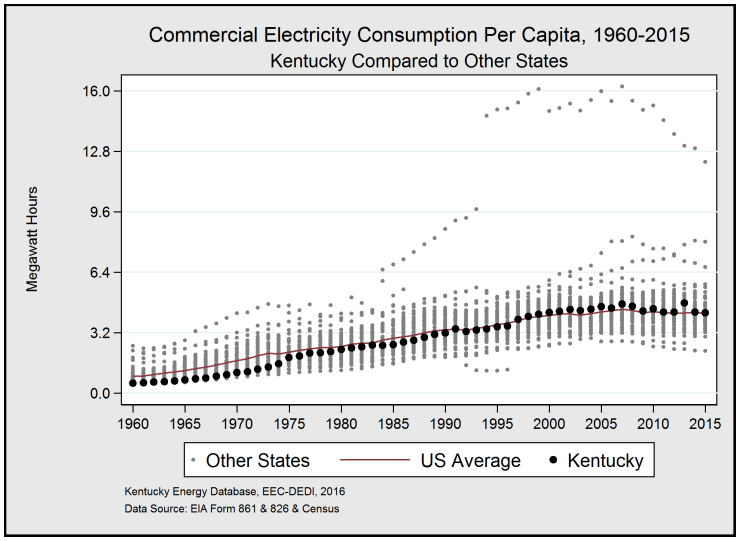
Historical Commercial Electricity Use per Capita

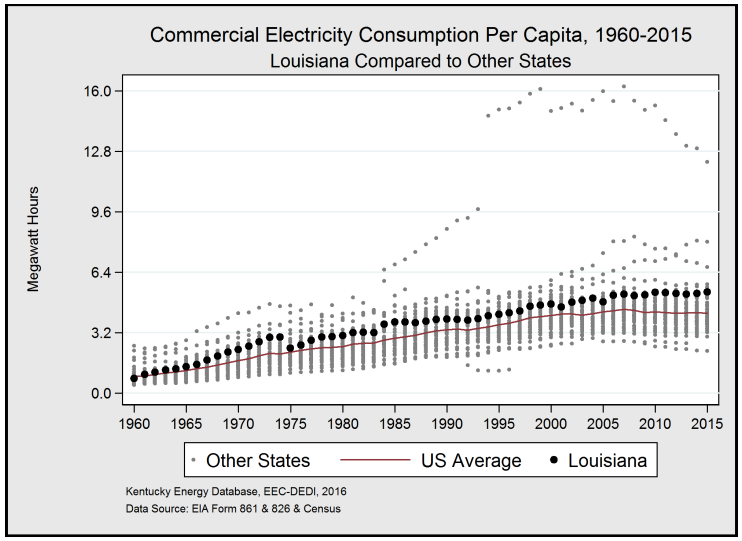




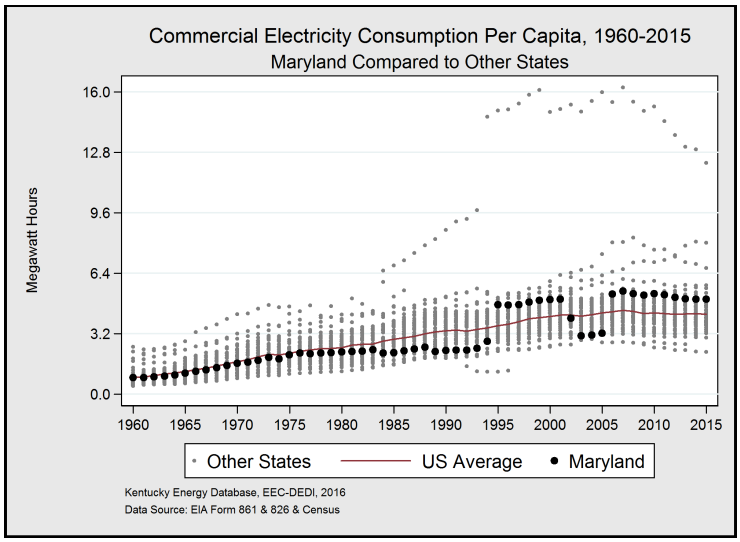


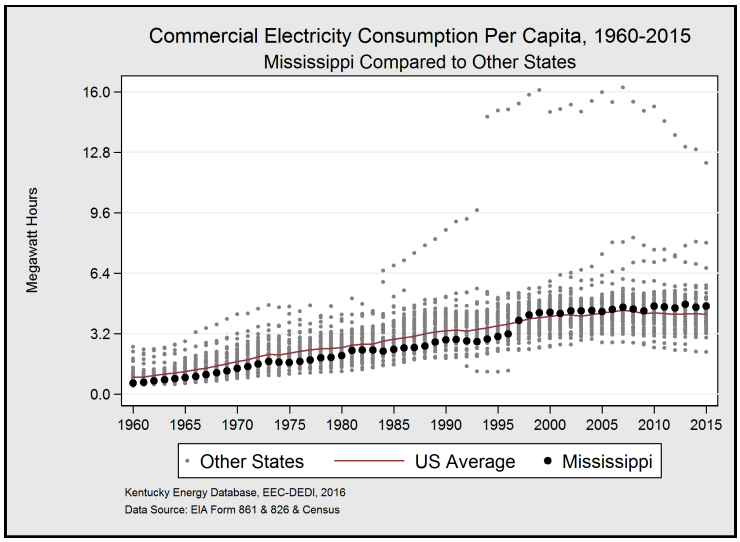


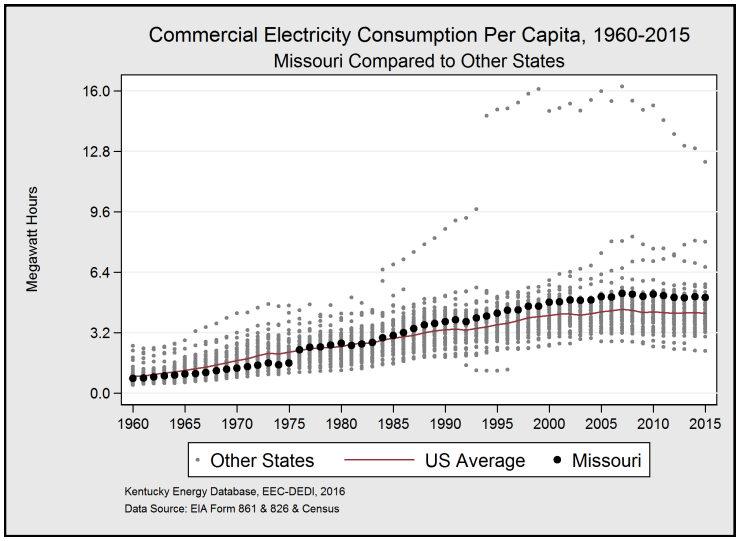


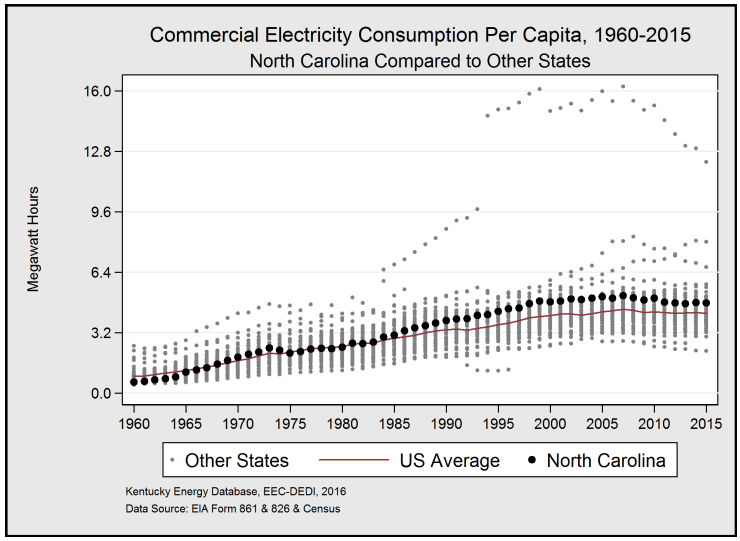


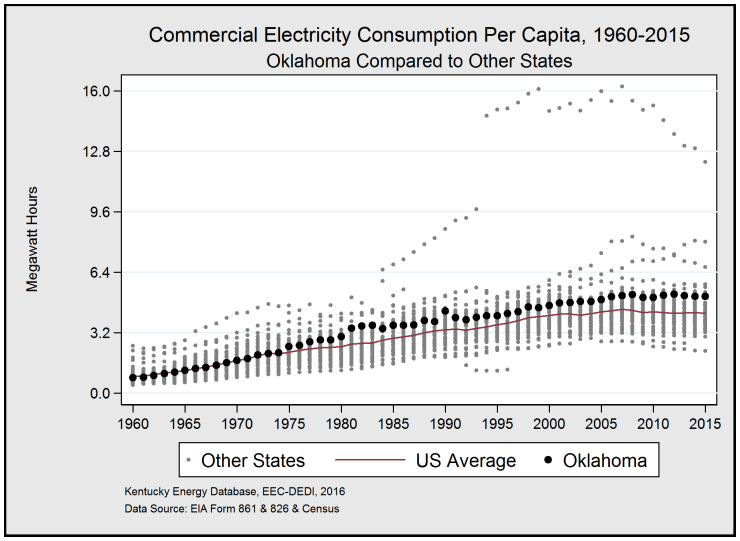
Historical Commercial Electricity Use per Capita

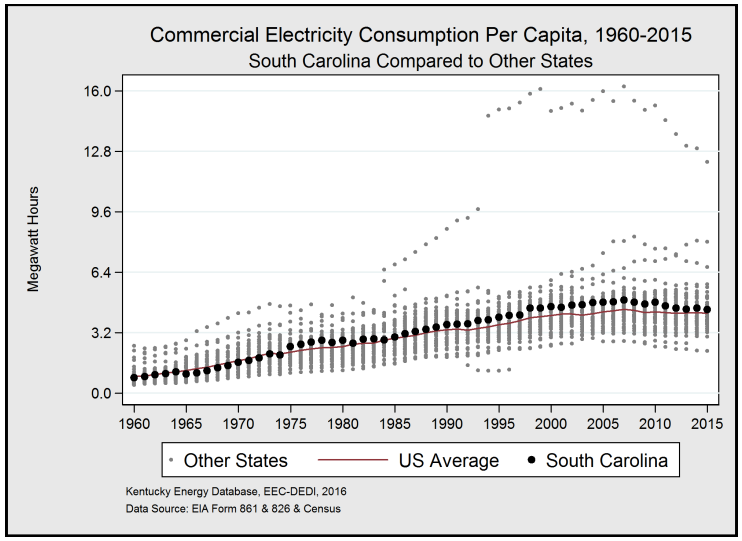




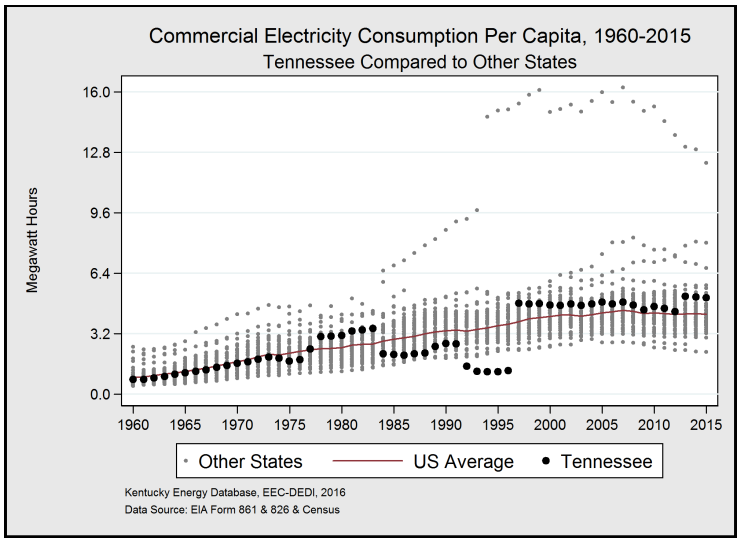


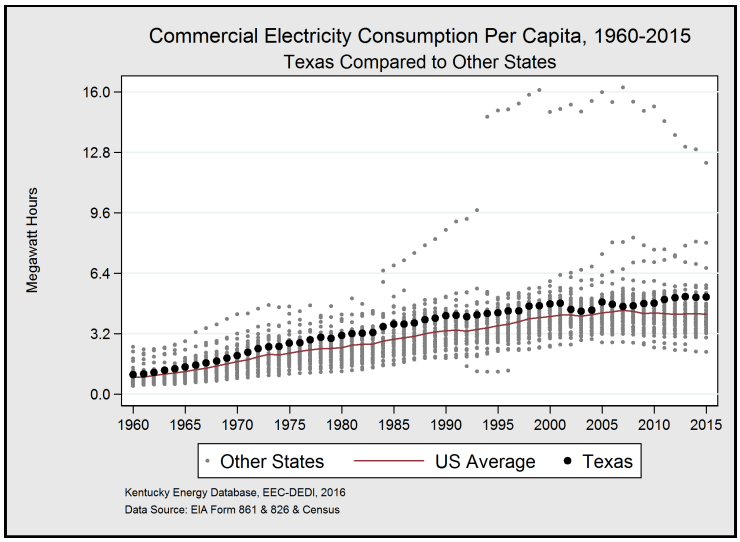


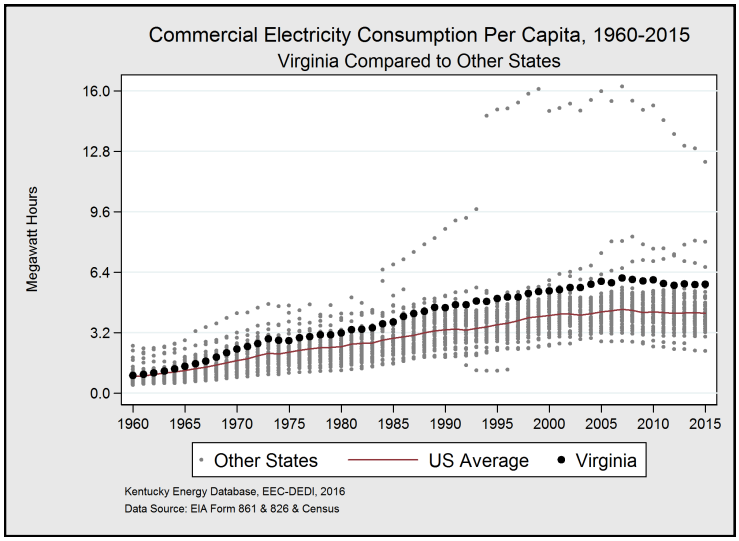


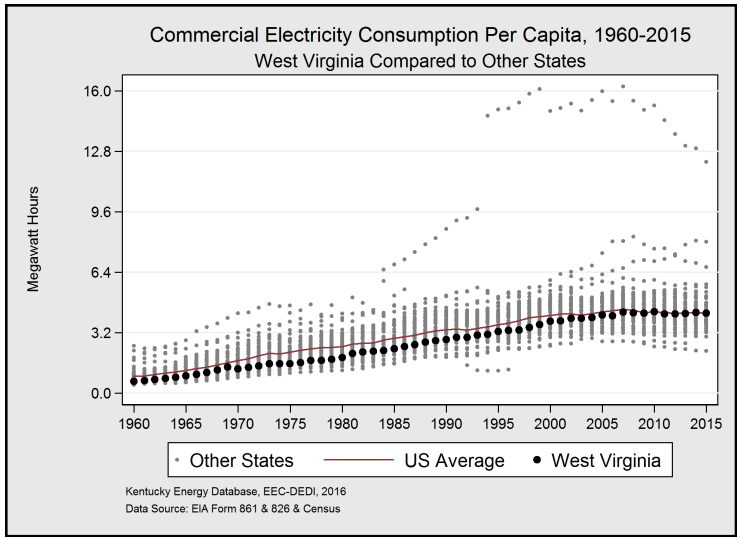


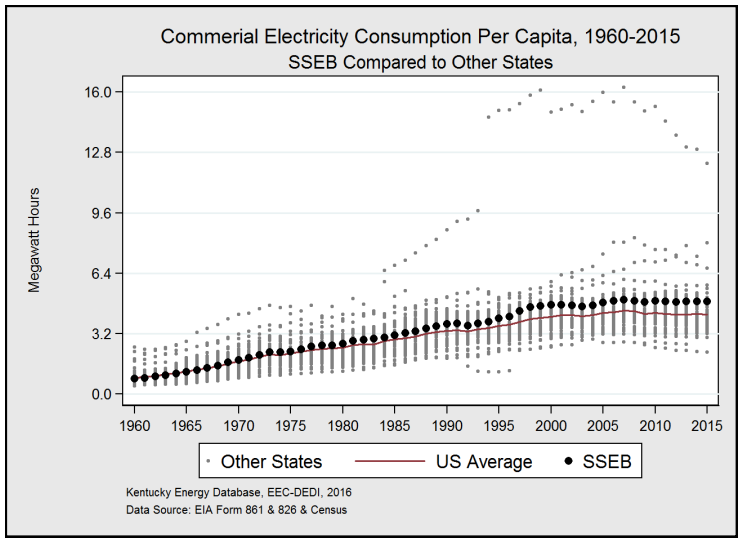
Historical Commercial Electricity Use per Capita





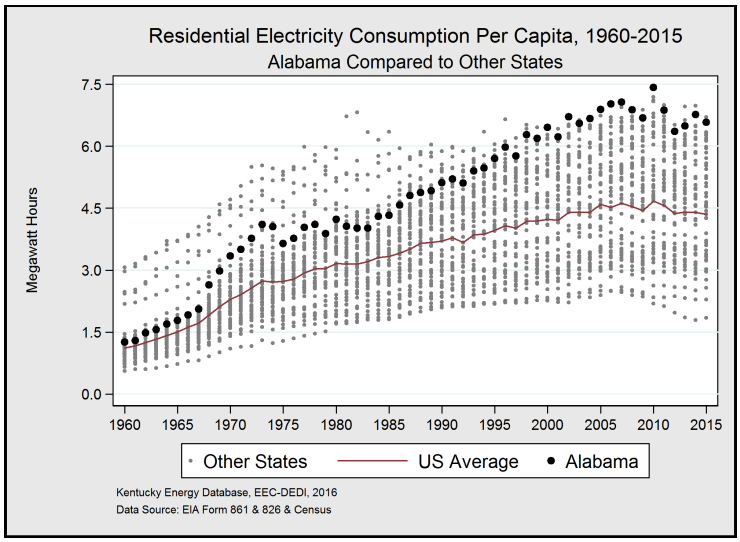


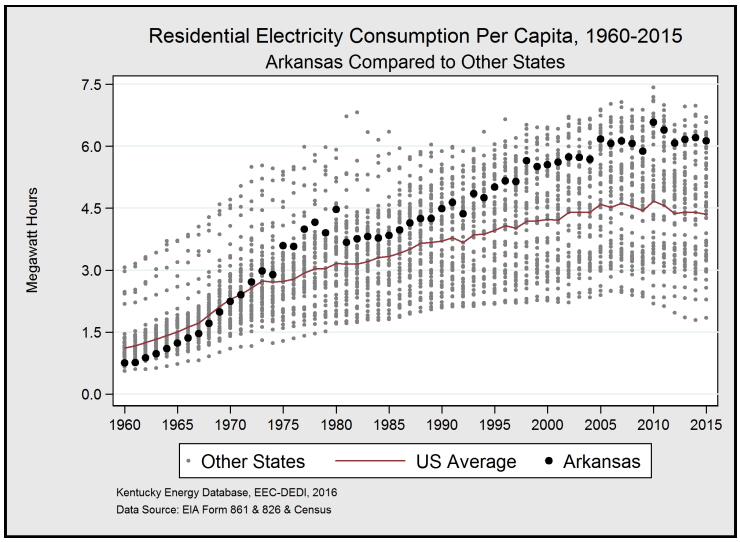


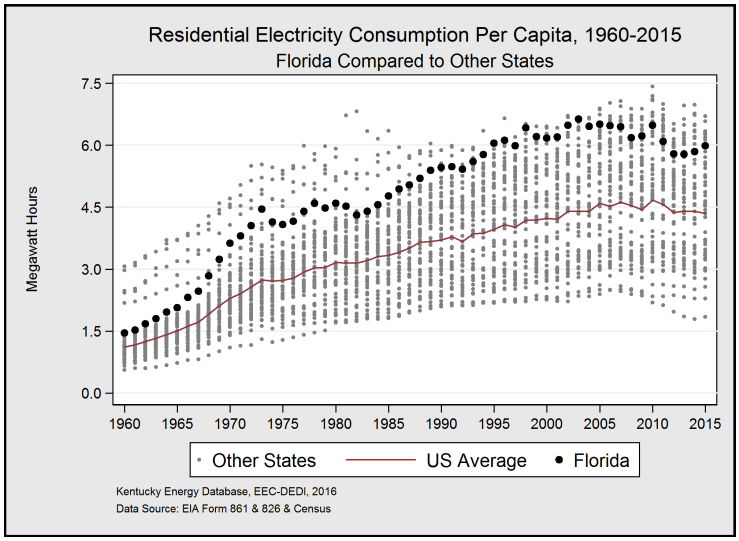


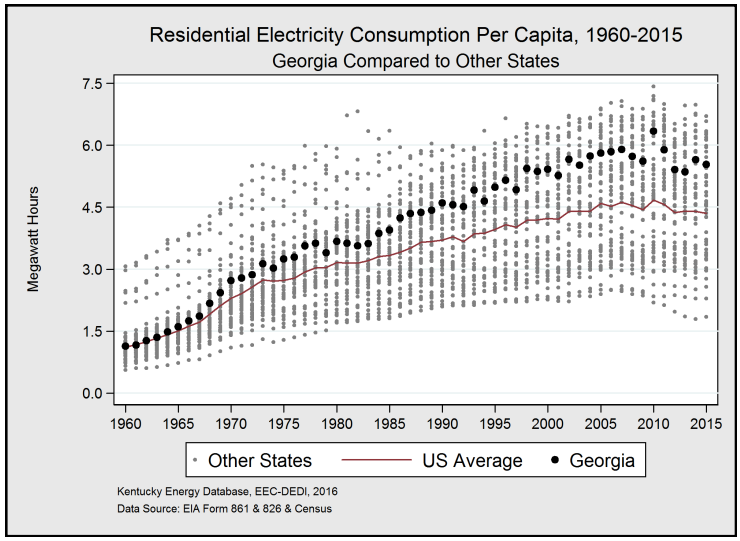
Maryland and Tennessee show substantial fluctuation in per capita commercial electricity consumption due to the reclassification of certain industrial processes as commercial during this timeseries.

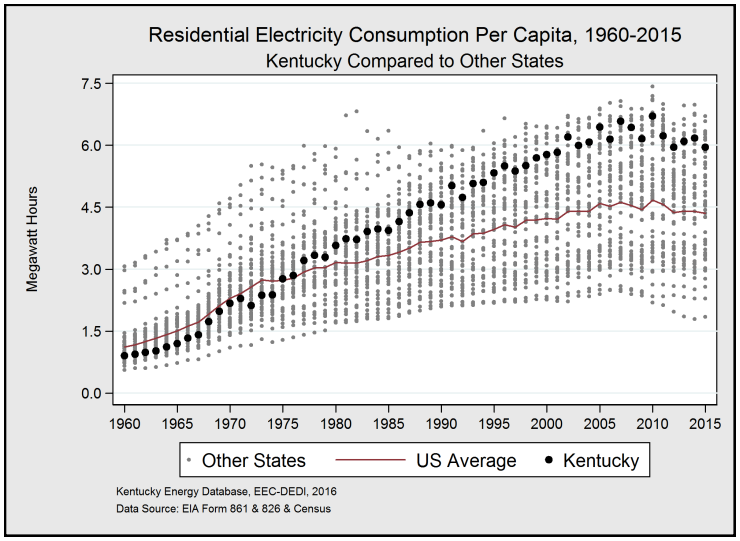
Historical Residential Electricity Use per Capita

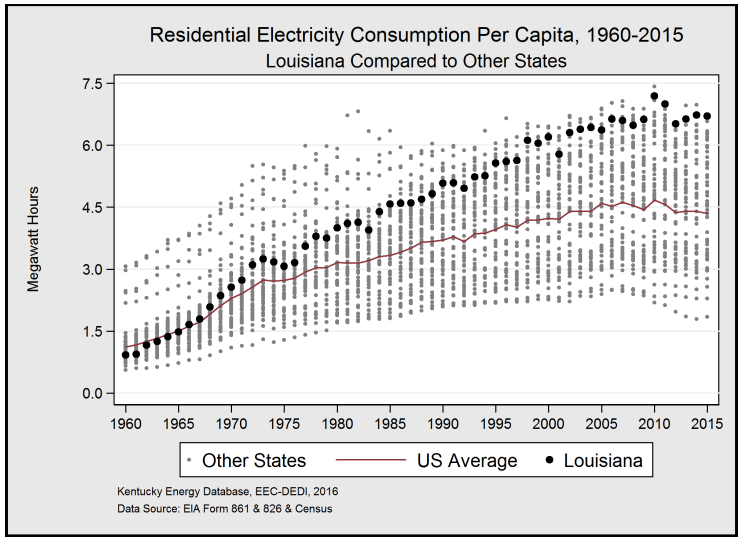




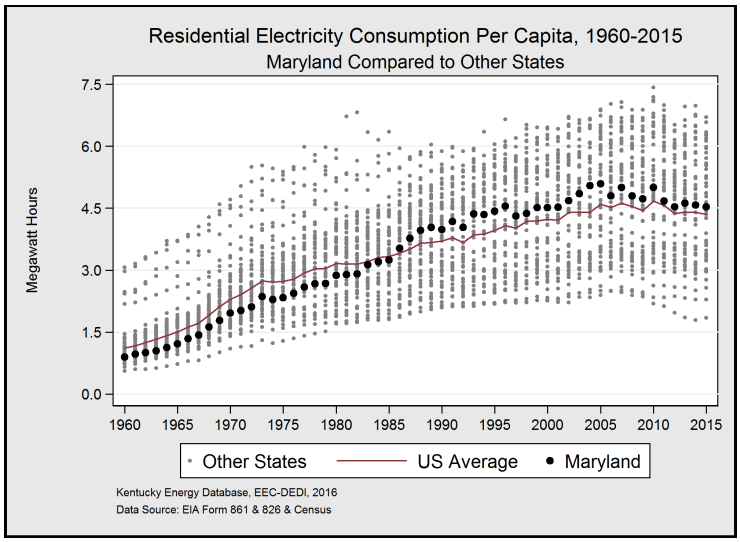


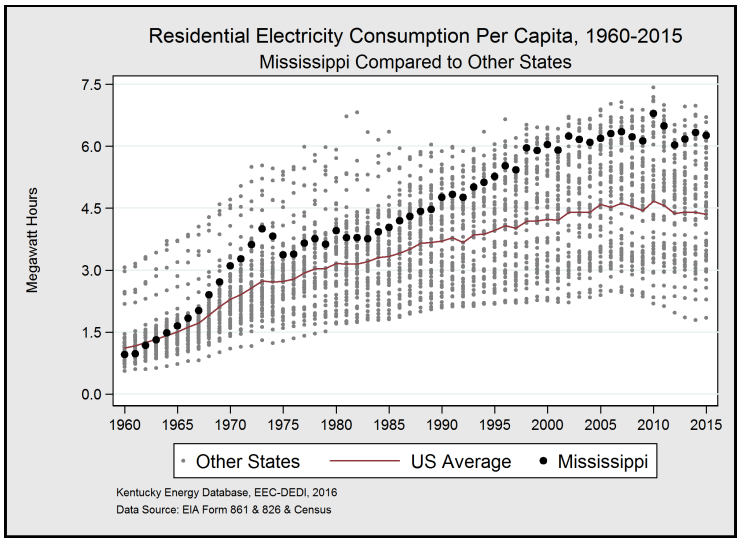


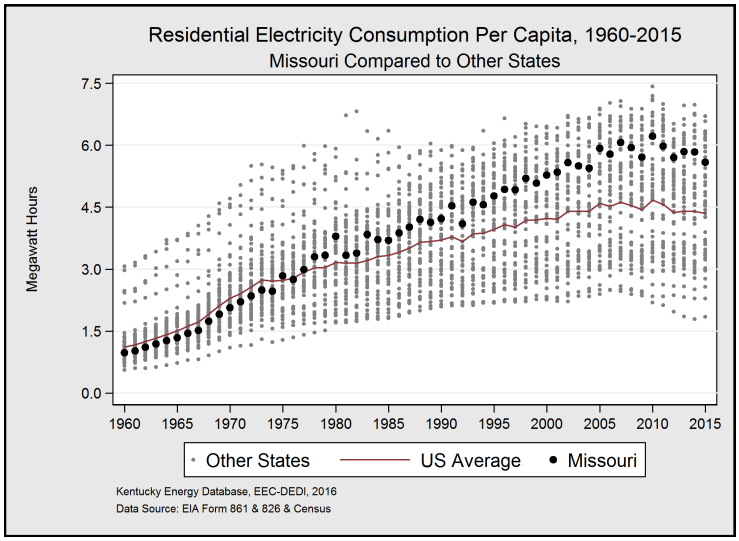


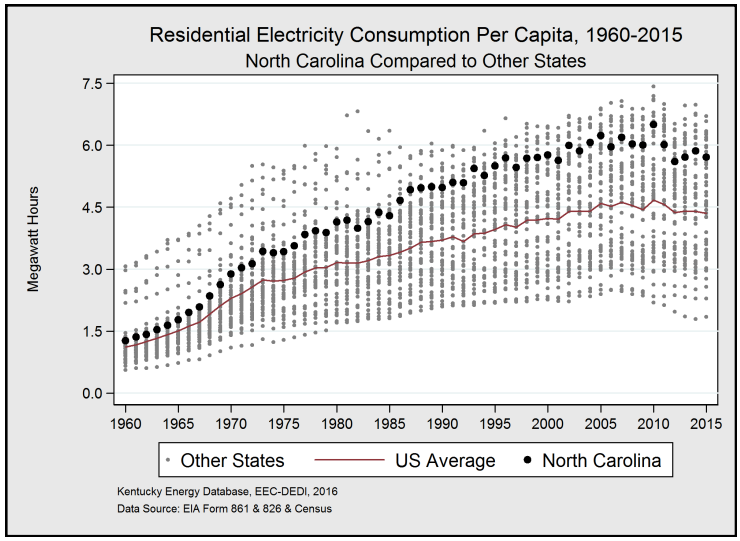


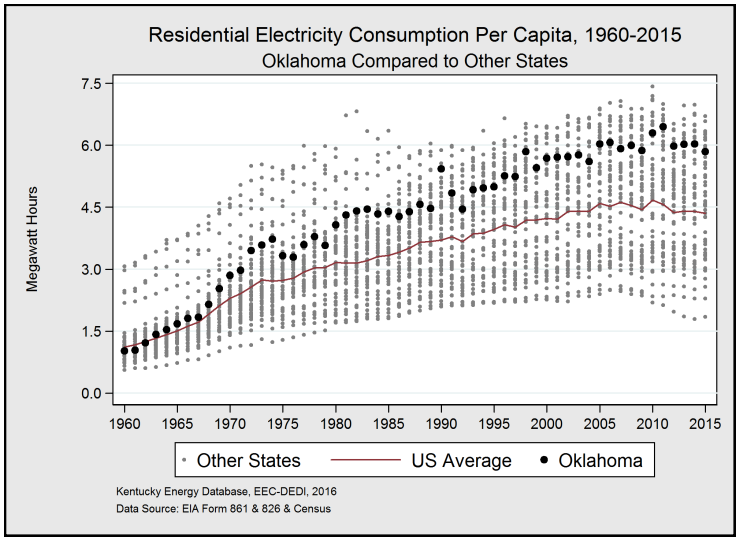
Historical Residential Electricity Use per Capita

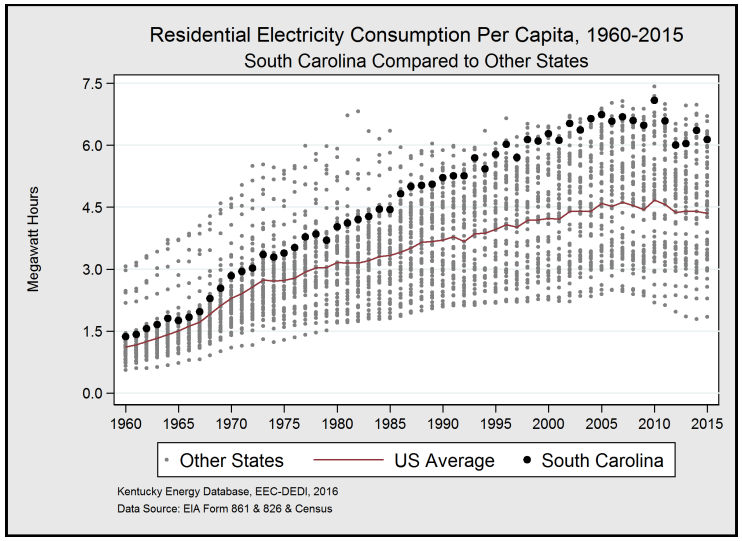




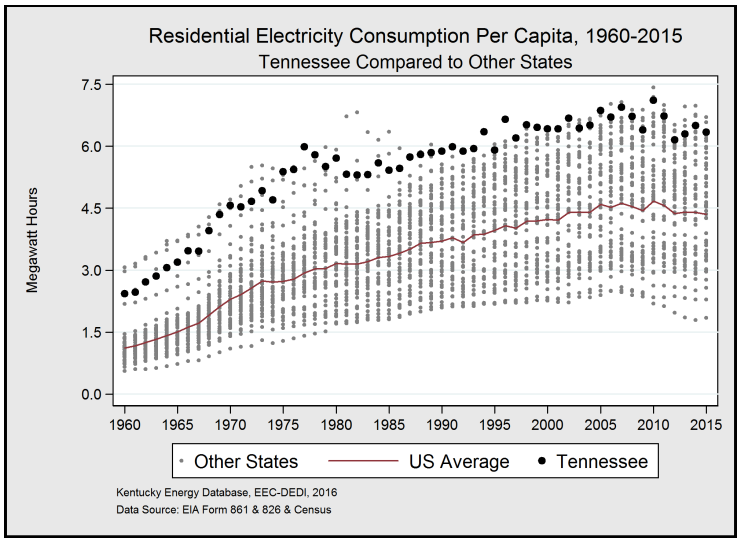


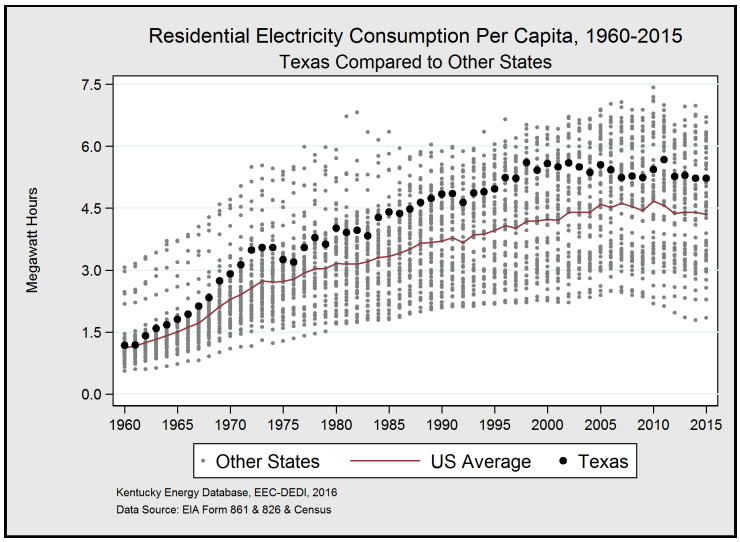


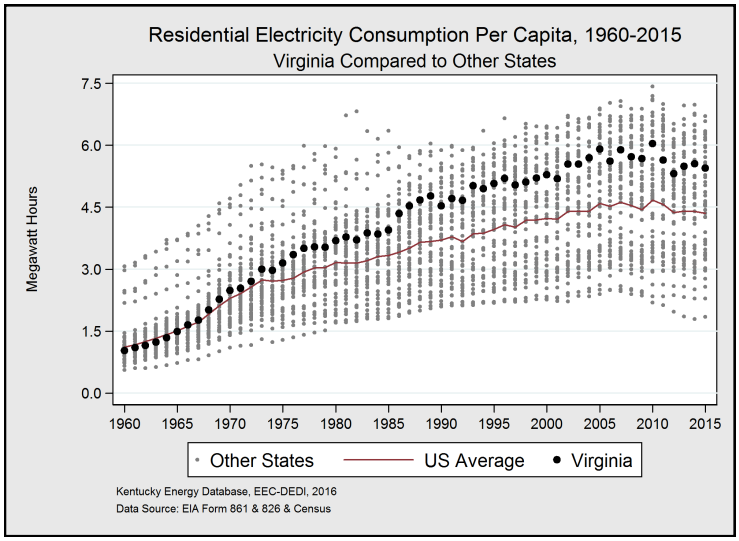


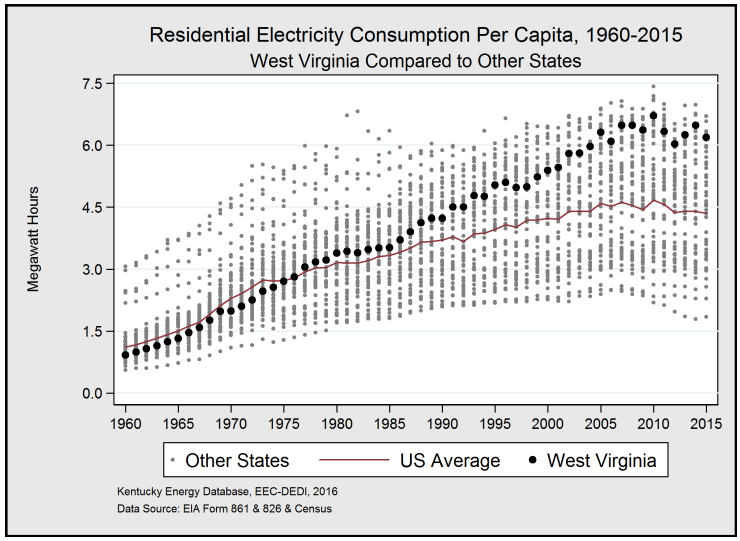


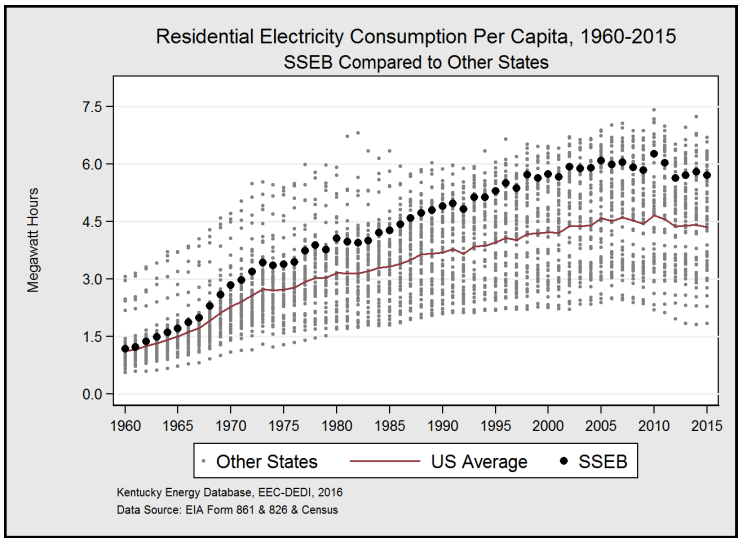
Historical Residential Electricity Use per Capita



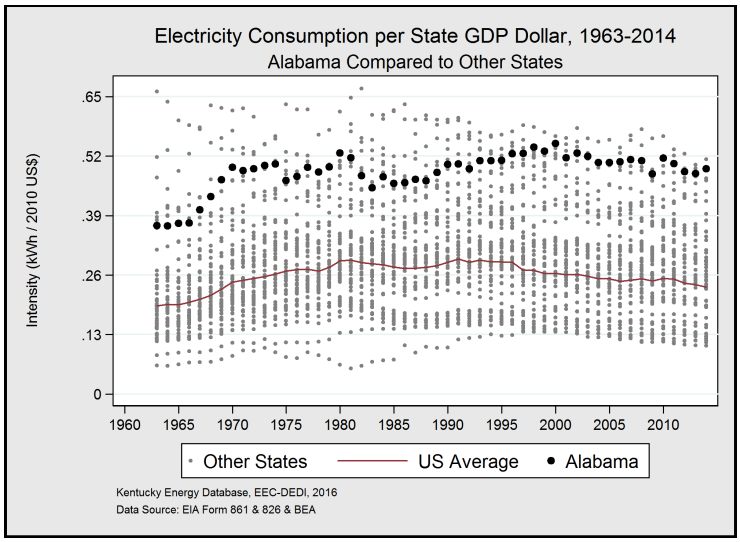


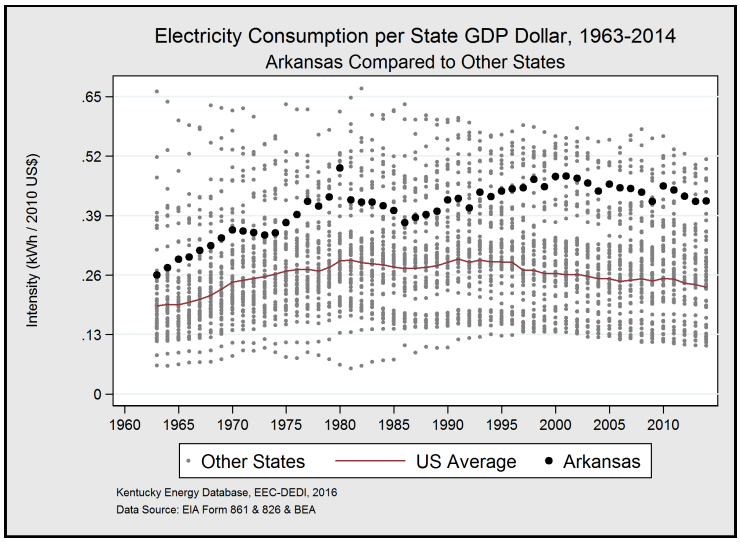


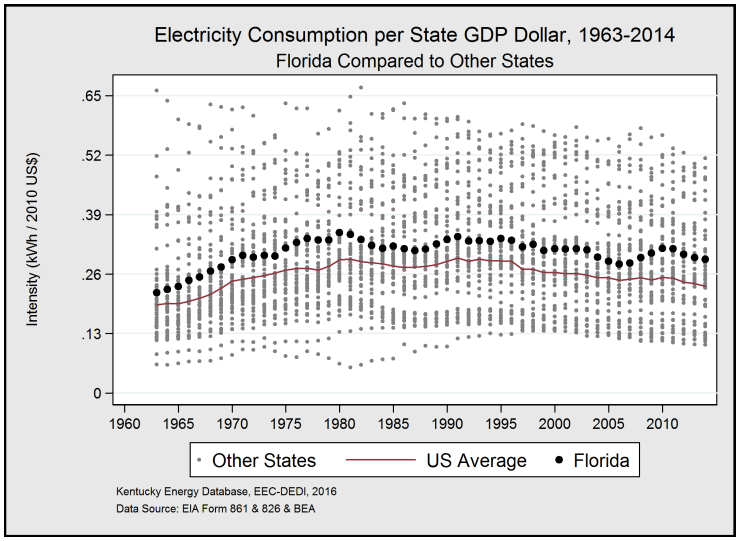


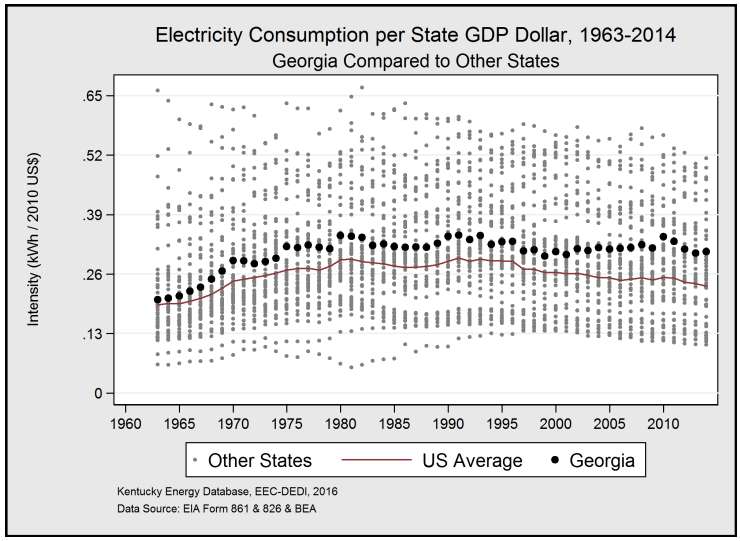


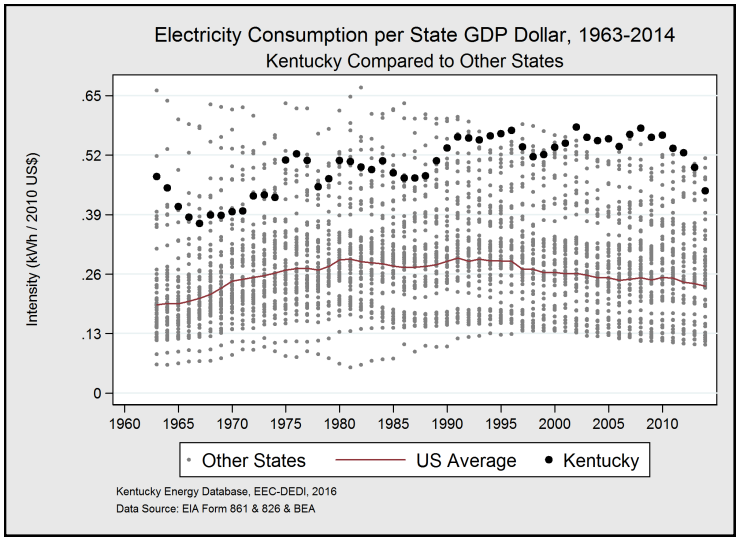
Historical Electricity Intensity per GDP Dollar

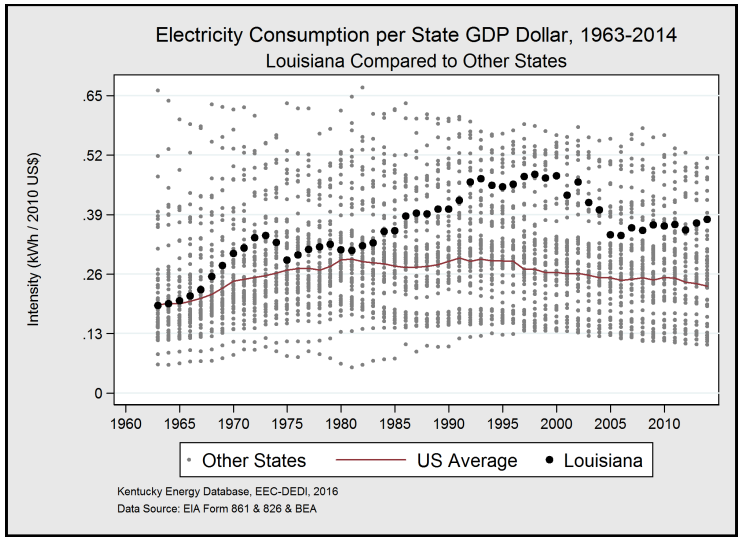




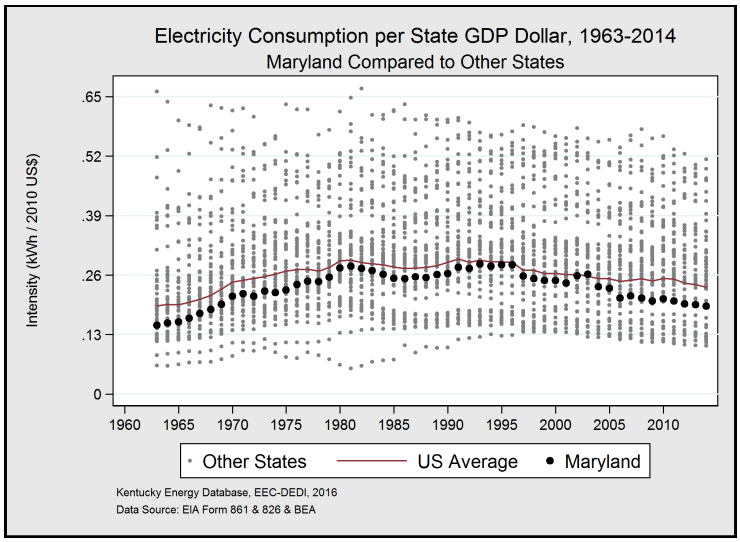


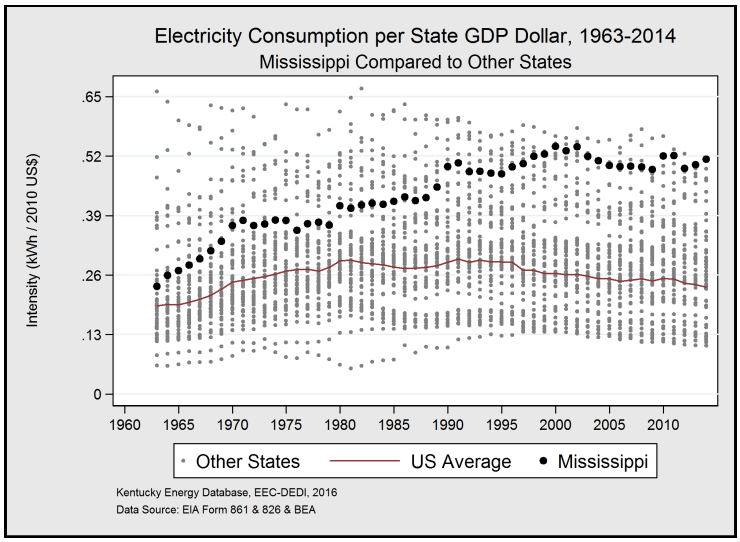


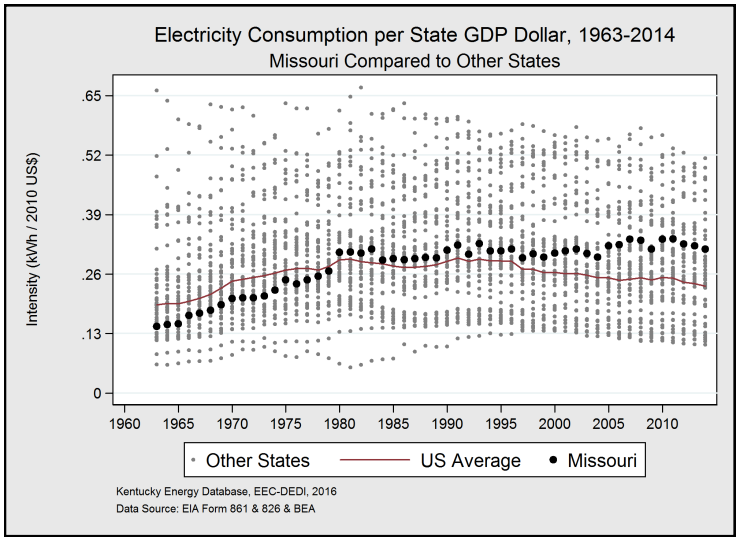


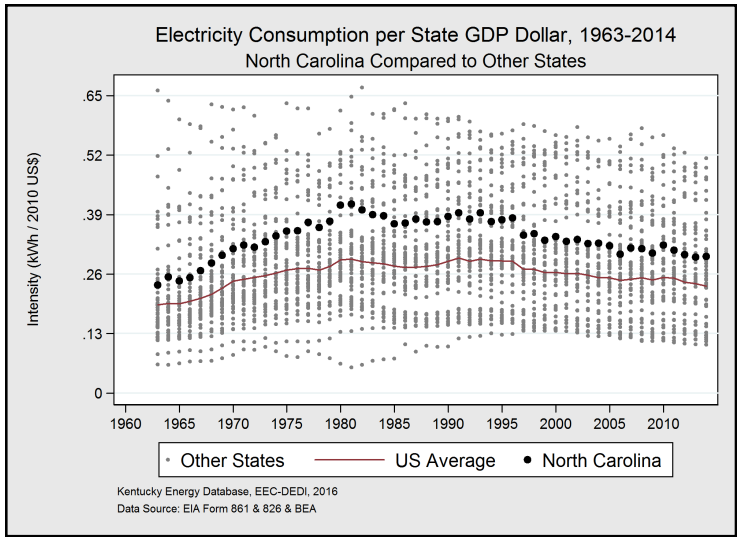


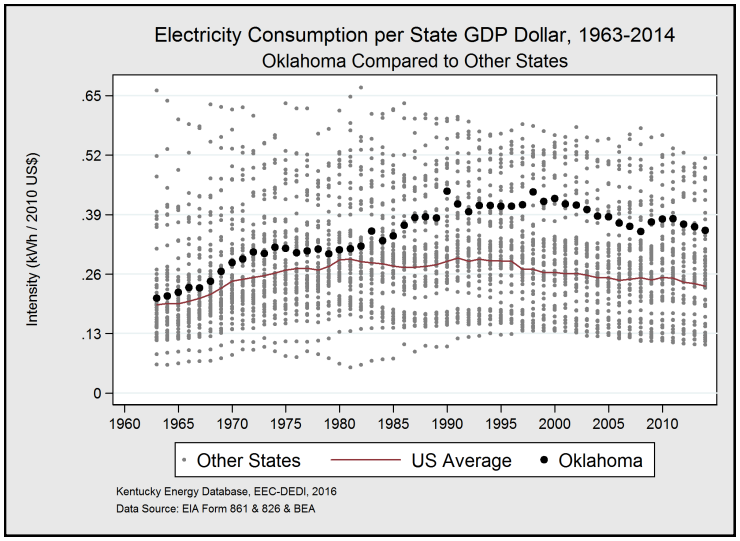
Historical Electricity Intensity per GDP Dollar

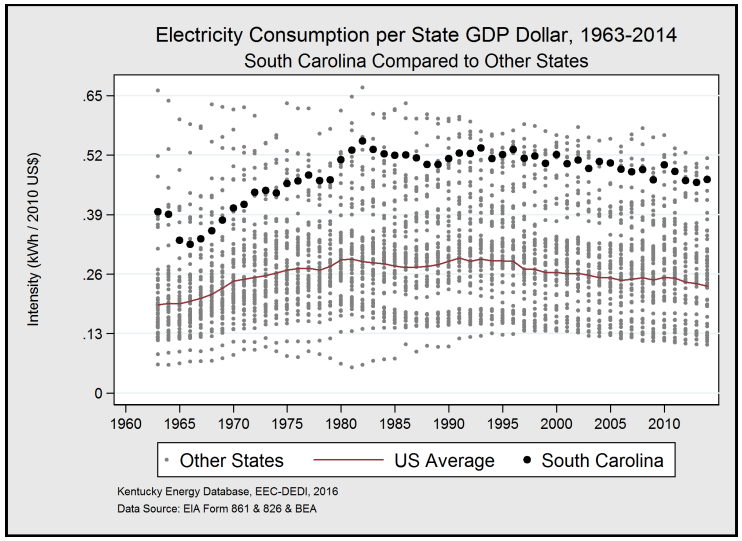




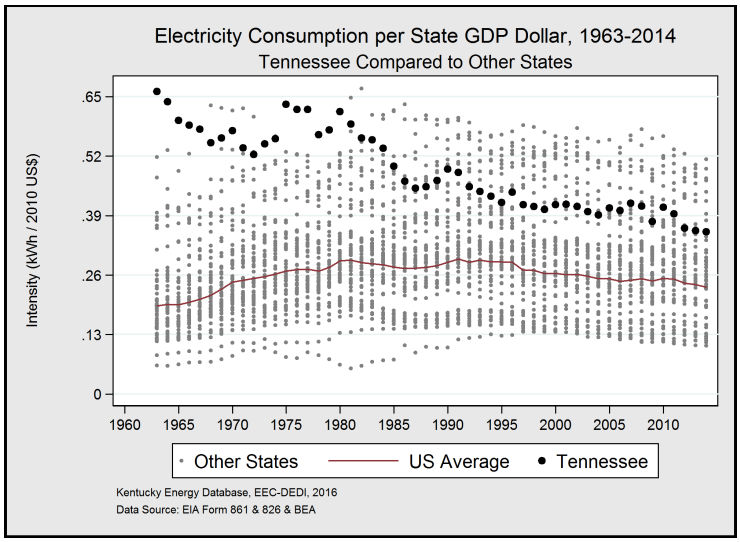


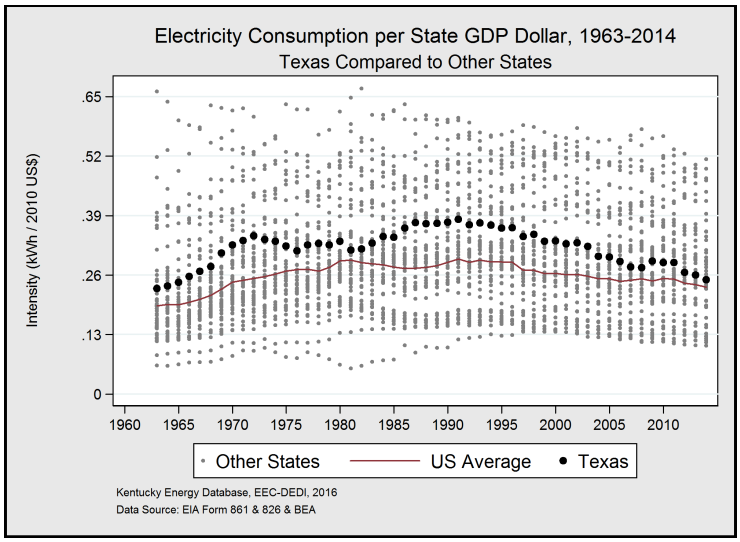


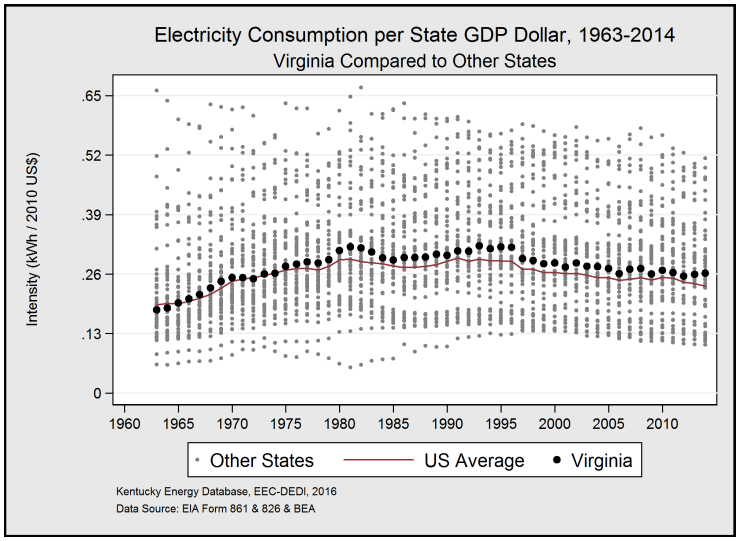


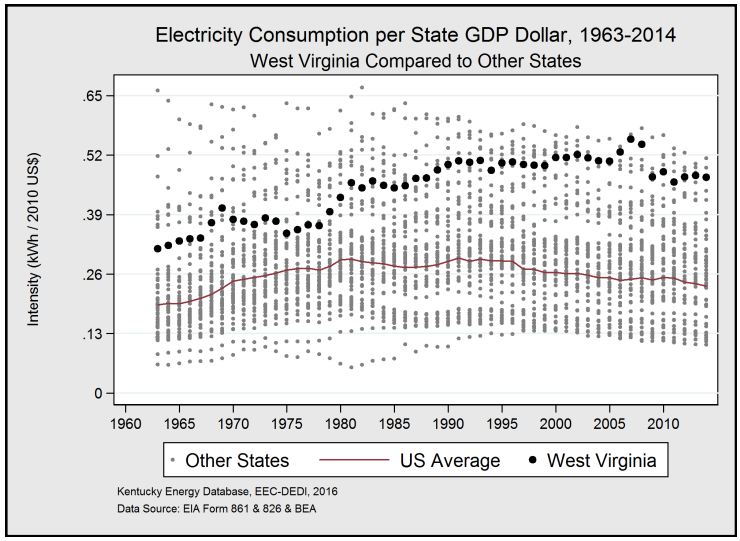


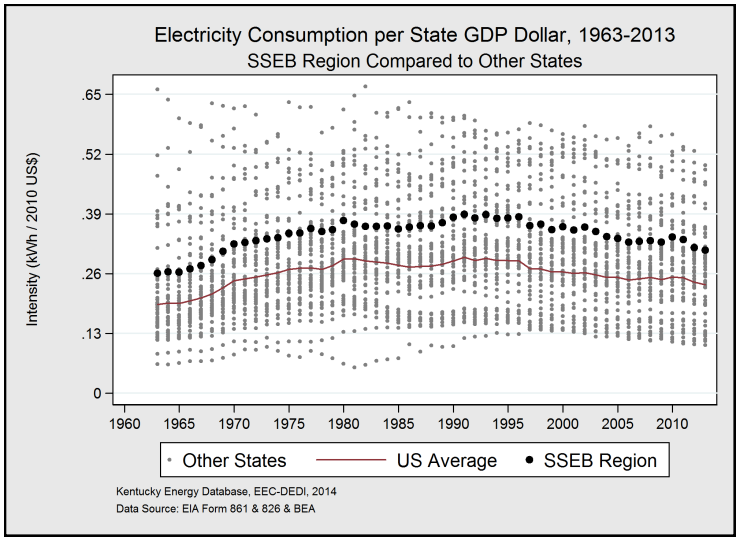
Historical Electricity Intensity per GDP Dollar



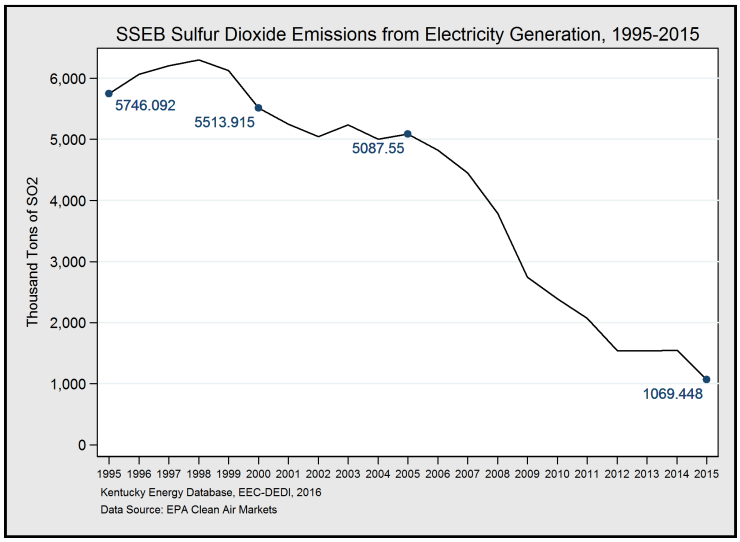


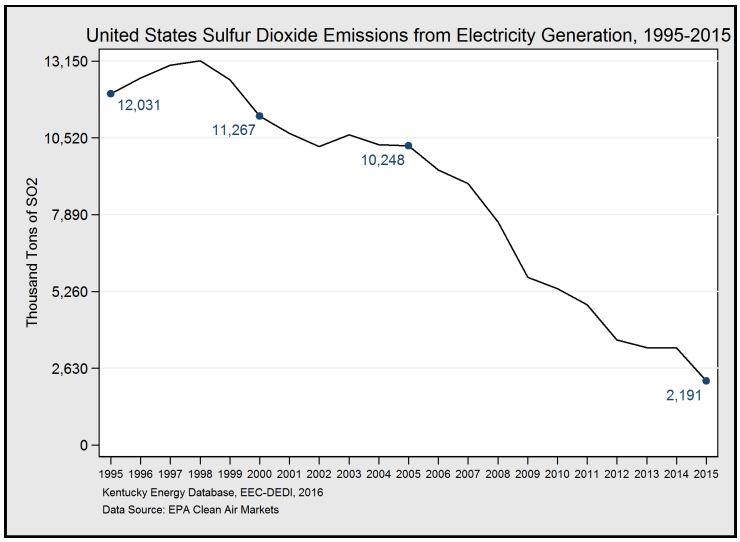






SSEB Region Electric Power Emissions



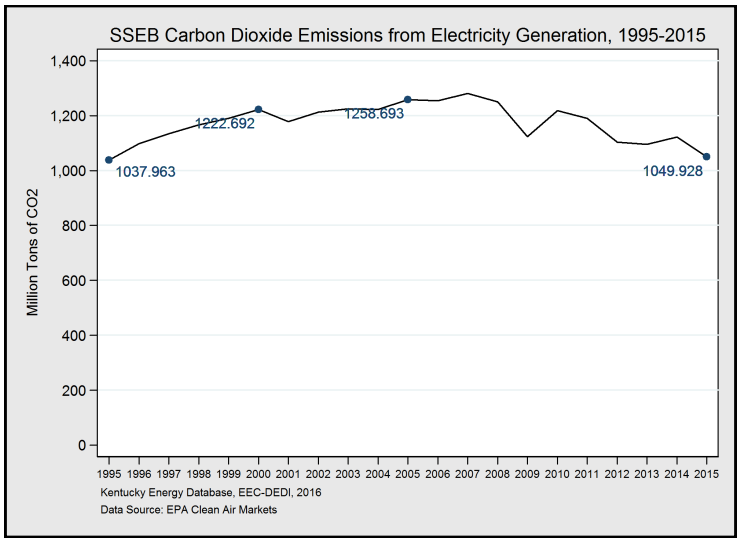


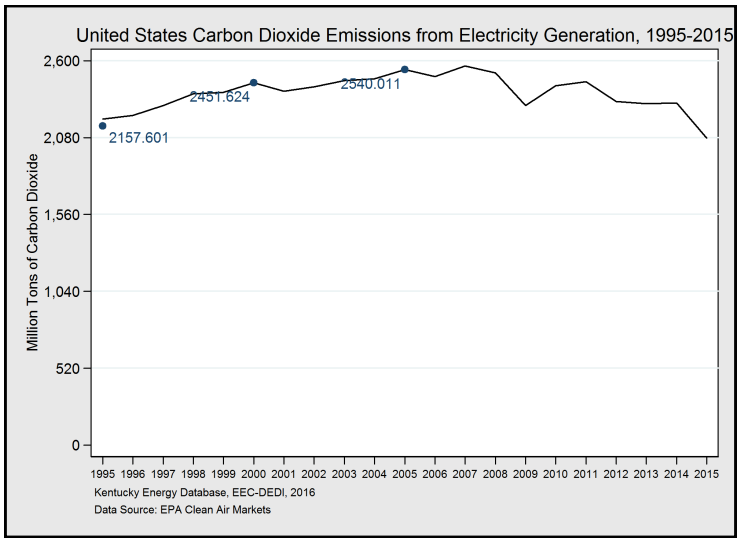
Emission	2015 Tons	Since 2005
Sulfur Dioxide	1,069,448	-79%

Emission	2015 Tons	Since 2005
Sulfur Dioxide	2,191,000	-79%

Emission	2015 Tons	Since 2005
Carbon Dioxide	1,049,928,000	-17%

Emission	2015 Tons	Since 2005
Carbon Dioxide	2,092,917,956	-18%





Since 1995, sulfur dioxide (SO_2) emissions have fallen by 82 percent across the United States despite a 24 percent increase in electricity consumption. At the same time, the SSEB region decreased its SO_2 emissions by 81 percent while increasing its electricity consumption by 26 percent. This decrease was achieved through pollution mitigation measures at power plants, including the use of lower-sulfur coal and the installation of desulfurization equipment.

Since 1995, Carbon dioxide (CO_2) emissions for the generation of electrical power have risen by 1.1 percent in the SSEB region and decreased 3.0 percent in the United States. Since 2008, CO_2 emissions have fallen by 17 percent nationally due to decreased electricity consumption, increased renewable generation, as well as decreased coal-fired generation—the nation's leading source of carbon emissions.

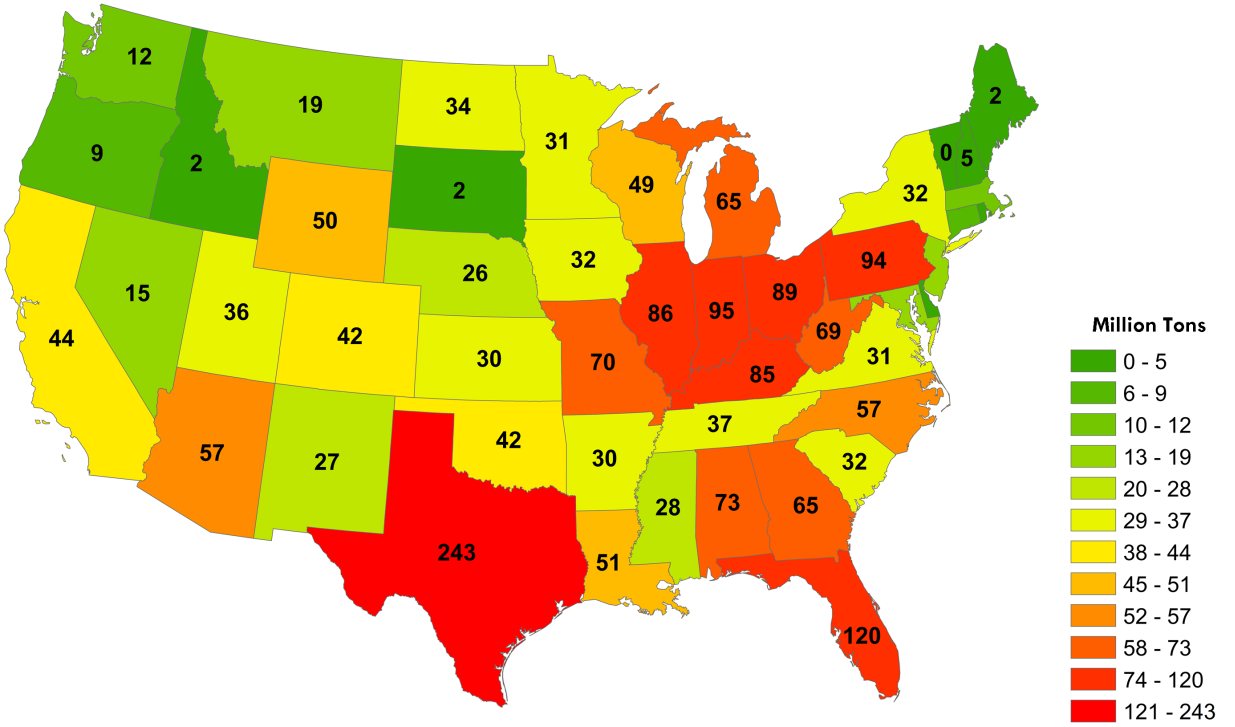
Electric Power Emissions by State, 2015

Rank	State*	CO_2 Intensity (Lbs./MWh)	CO_2 Emissions (Million Tons)	NO_x Intensity (Lbs./MWh)	NO_x Emissions (Tons)	SO_2 Intensity (Lbs./MWh)	SO_2 Emissions (Tons)
1	Idaho	212	1.6	0.034	256	0.001	8
2	Washington	214	11.7	0.112	6,154	0.044	2,424
3	Maine	293	1.8	0.118	720	0.290	1,762
4	Oregon	307	9.0	0.112	3,300	0.157	4,618
5	New Jersey	426	16.0	0.070	2,614	0.012	467
6	Connecticut	433	8.1	0.089	1,676	0.062	1,158
7	South Dakota	443	2.2	0.670	3,259	0.988	4,807
8	California	444	44.0	0.035	3,423	0.002	232
9	Vermont	453	0.5	0.145	151	0.001	2
10	New York	453	31.7	0.159	11,139	0.121	8,448
11	New Hampshire	499	5.0	0.215	2,168	0.180	1,813
12	South Carolina	665	32.1	0.246	11,865	0.212	10,253
13	Delaware	716	2.8	0.255	986	0.211	817
14	Virginia	732	30.9	0.409	17,230	0.304	12,827
15	Massachusetts	744	12.0	0.190	3,063	0.168	2,717
16	Nevada	752	14.6	0.223	4,331	0.275	5,341
17	Mississippi	864	28.0	0.366	11,847	0.804	26,043
18	Pennsylvania	874	94.3	0.875	94,417	1.803	194,630
19	Rhode Island	879	3.1	0.155	544	0.005	19
20	North Carolina	887	57.2	0.550	35,486	0.426	27,490
21	Illinois	891	86.5	0.365	35,378	0.975	94,659
22	Maryland	910	16.6	0.473	8,614	1.065	19,386
23	Louisiana	946	50.9	0.753	40,522	0.995	53,539
24	Alabama	954	72.9	0.587	44,894	1.278	97,760
25	Tennessee	982	37.0	0.476	17,964	1.582	59,669
26	Arizona	1,002	56.8	0.704	39,874	0.311	17,618
27	Georgia	1,006	64.5	0.457	29,318	0.496	31,785
28	Florida	1,010	119.8	0.459	54,430	0.510	60,469
	United States	1016.7	2077.8	0.659	1,347,066	1.072	2,191,353
	SSEB	1056.8	1021.9	0.608	588,389	1.079	1,043,405
29	Texas	1,079	243.1	0.476	107,235	1.155	260,122
30	Arkansas	1,081	30.1	0.848	23,613	1.636	45,544
31	Minnesota	1,083	31.1	0.638	18,328	0.642	18,451
32	Oklahoma	1,107	42.1	0.722	27,449	1.629	61,971
33	Iowa	1,128	32.3	0.895	25,578	1.437	41,087
34	Michigan	1,133	64.7	0.771	43,985	2.302	131,411
35	Montana	1,288	19.0	1.177	17,385	0.749	11,070
36	Nebraska	1,327	26.1	1.188	23,329	3.257	63,991
37	Kansas	1,332	30.5	0.766	17,536	0.605	13,851
38	Ohio	1,461	89.2	1.058	64,617	2.903	177,246
39	Wisconsin	1,475	49.2	0.596	19,854	0.759	25,289
40	Colorado	1,602	42.1	1.359	35,672	0.872	22,906
41	New Mexico	1,654	27.2	2.755	45,262	0.708	11,626
42	Missouri	1,672	69.9	1.075	44,942	2.695	112,676
43	Utah	1,702	35.8	2.239	47,059	0.696	14,640
44	North Dakota	1,837	33.9	2.435	44,953	2.493	46,018
45	Indiana	1,839	95.5	1.688	87,660	3.205	166,403
46	West Virginia	1,920	69.3	1.626	58,729	1.558	56,262
47	Wyoming	2,033	49.8	1.723	42,158	1.487	36,377
48	Kentucky	2,053	85.4	1.588	66,096	3.212	133,653

*Alaska, Hawaii, and Washington D.C. are omitted as they do not report emissions to the EPA's Clean Air Markets database.

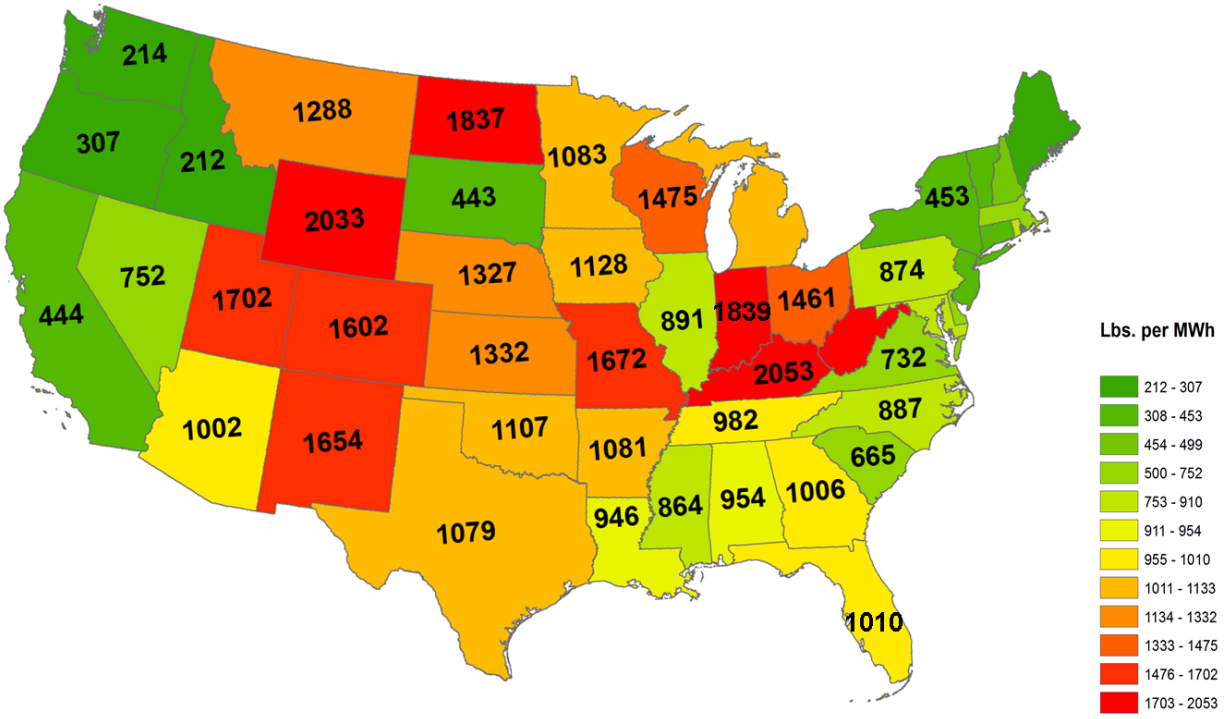
CO_2 Emissions by State

CO_2 Emissions from Electric Power, 2015



Kentucky Energy Database, EEC-DEDI, 2016

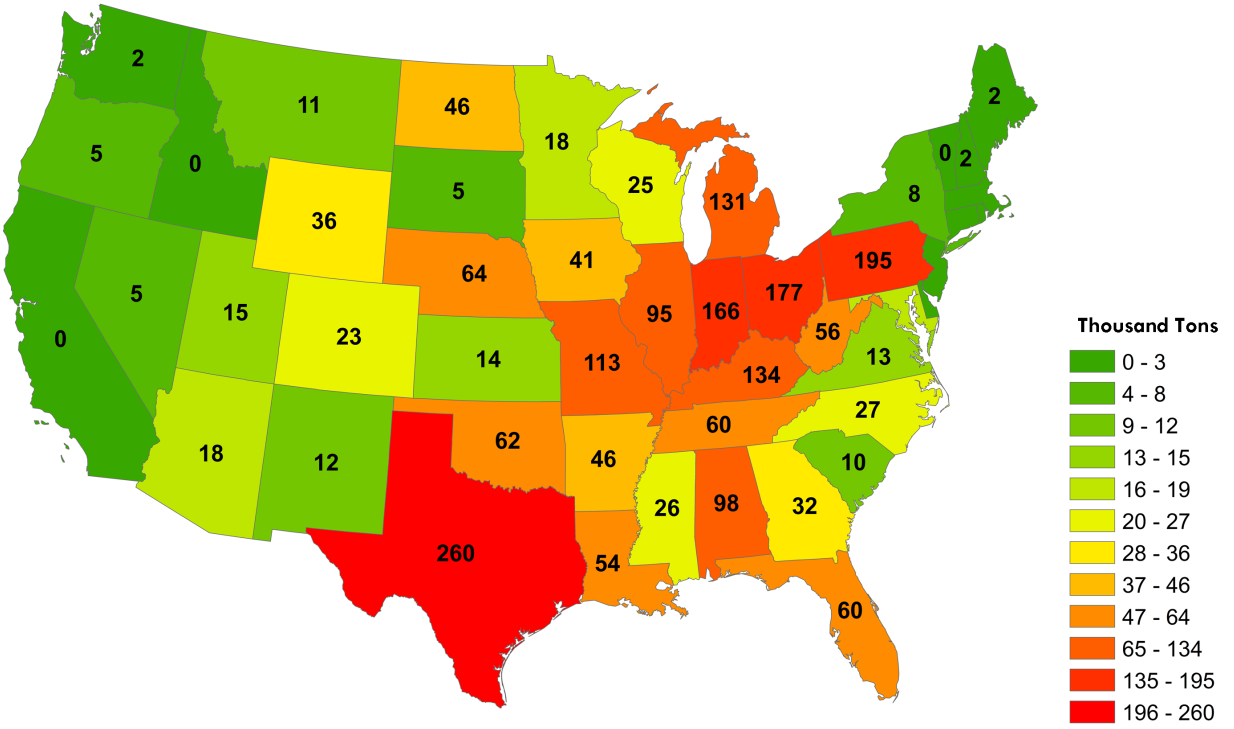
CO_2 Intensity of Electric Power, 2015



Kentucky Energy Database, EEC-DEDI, 2016

SO_2 Emissions by State

SO_2 Emissions from Electric Power, 2015



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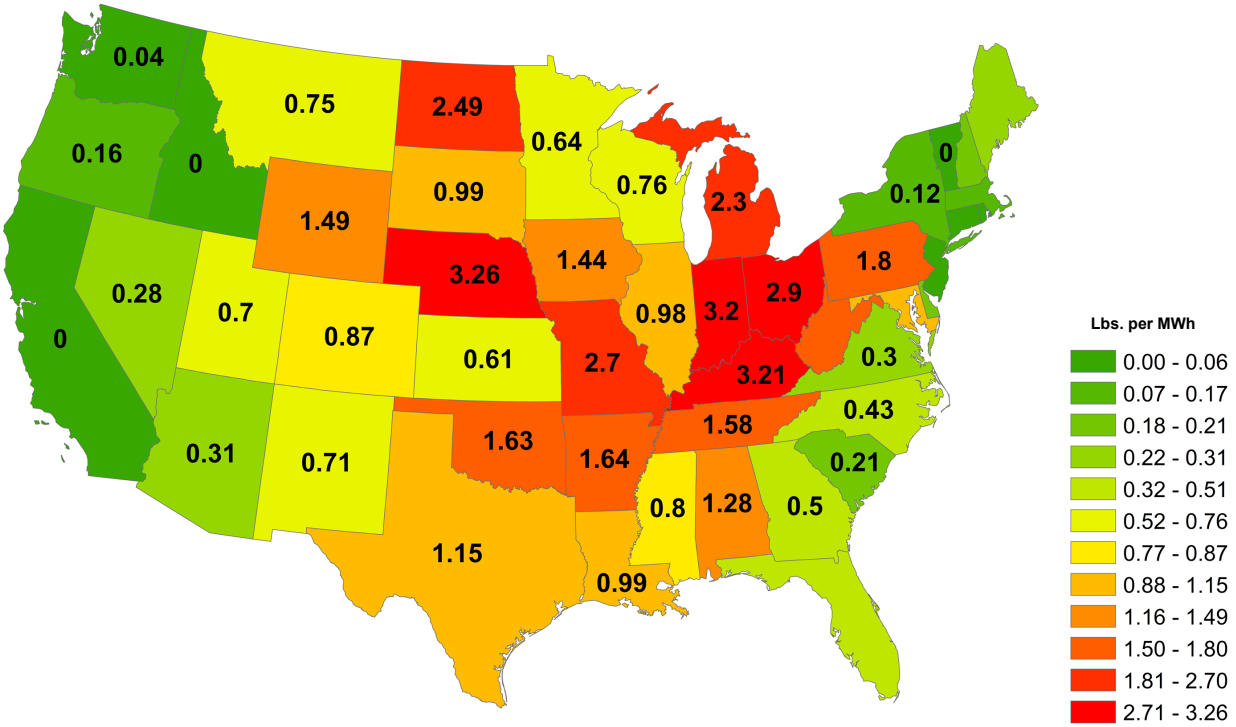
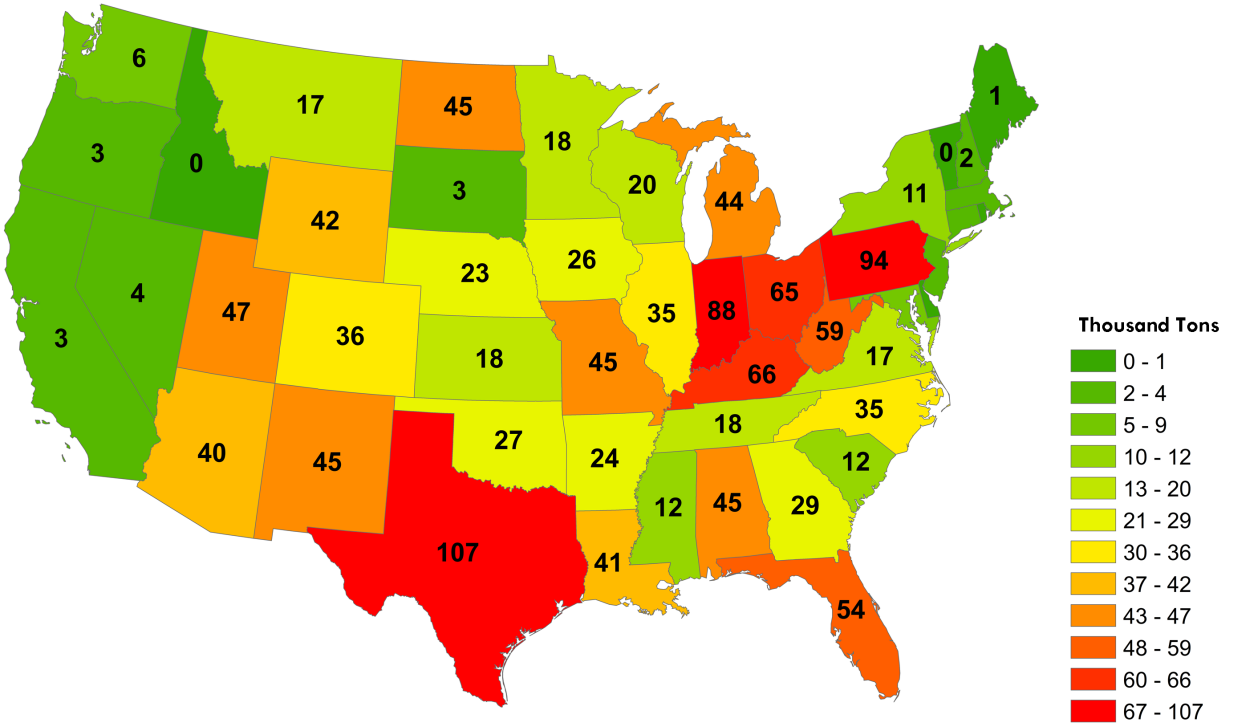
SO_2 Intensity of Electric Power, 2015



Kentucky Energy Database, EEC-DEDI, 2016

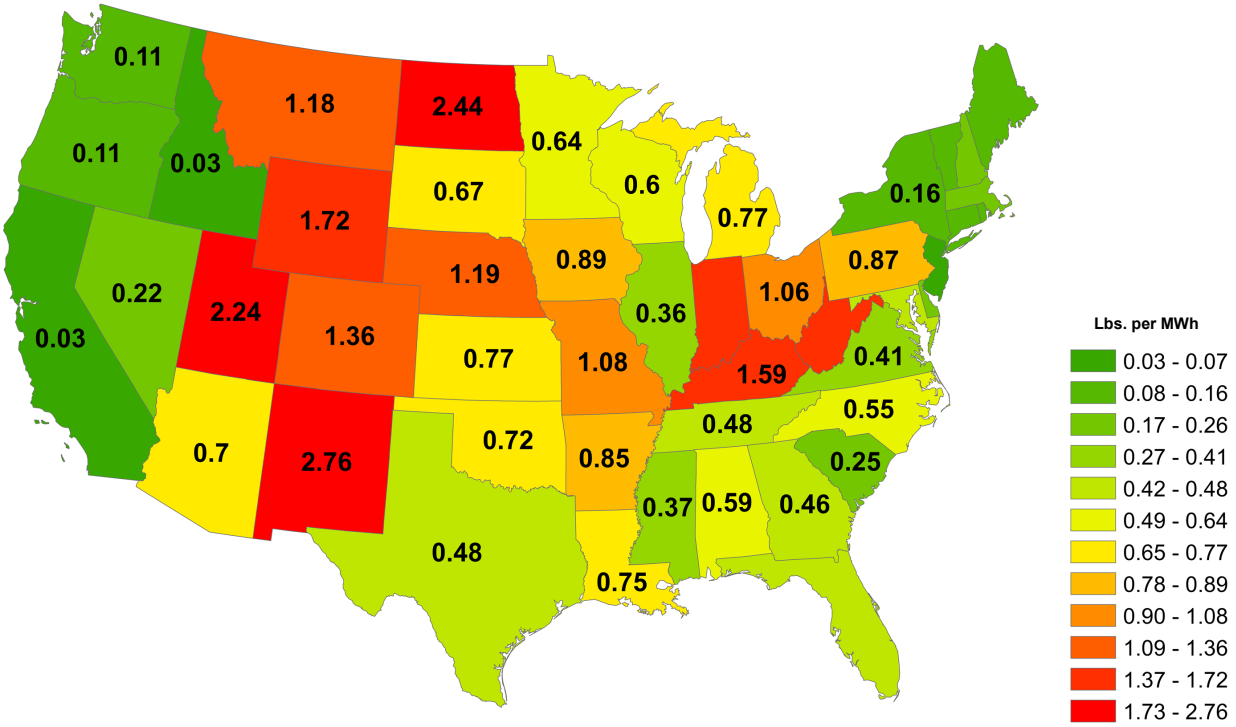
NO_x Emissions by State

NO_X Emissions from Electric Power, 2015



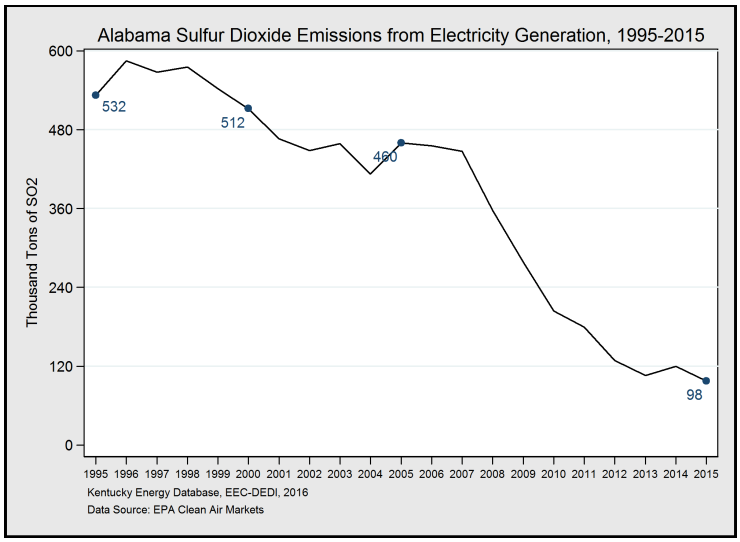
Kentucky Energy Database, EEC-DEDI, 2016

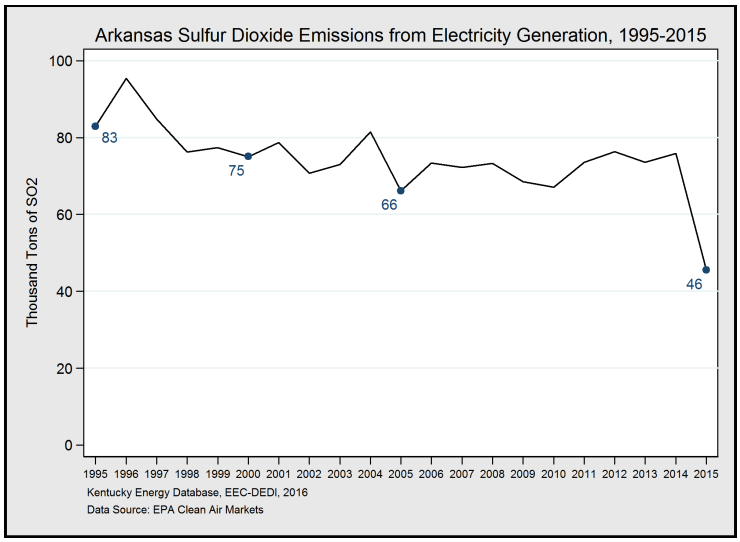
NO_X Intensity of Electric Power, 2015

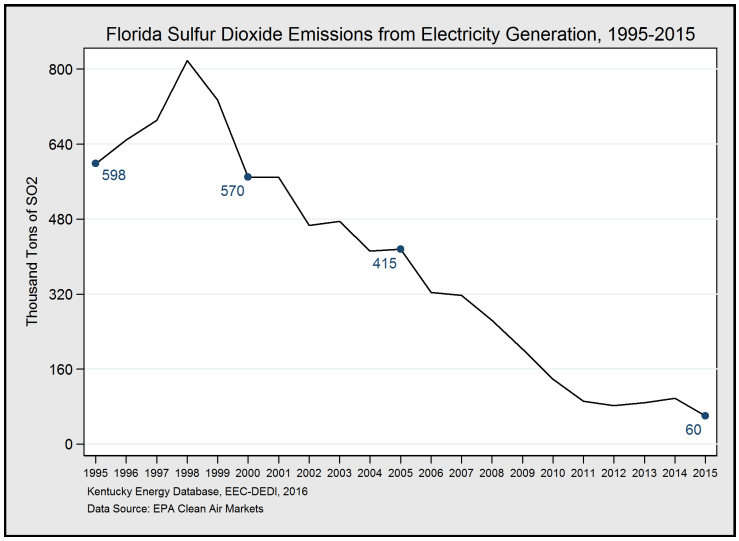


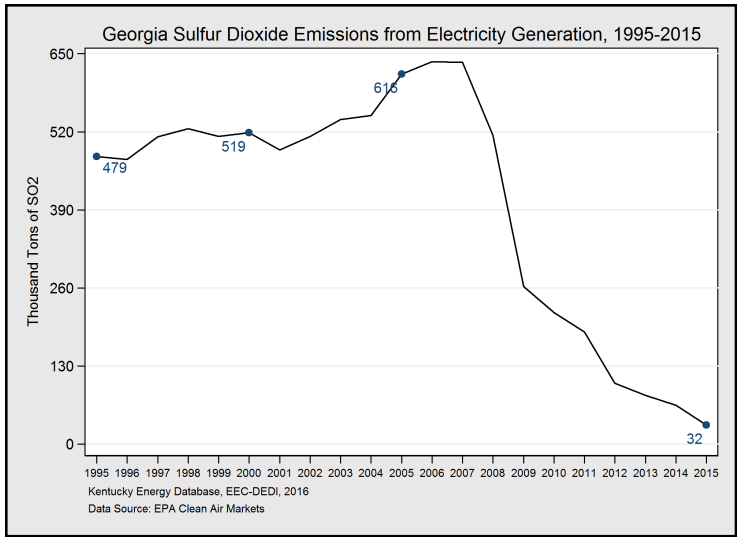
Kentucky Energy Database, EEC-DEDI, 2016

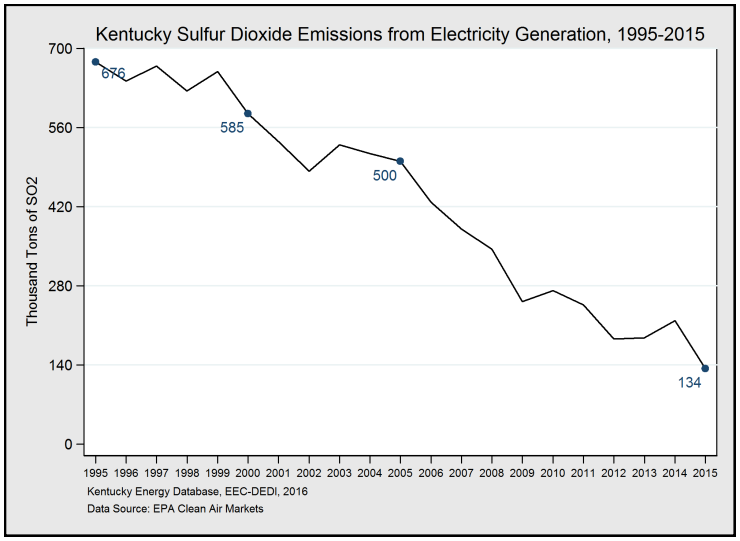
Historical Electric Power Emissions (SO_2)

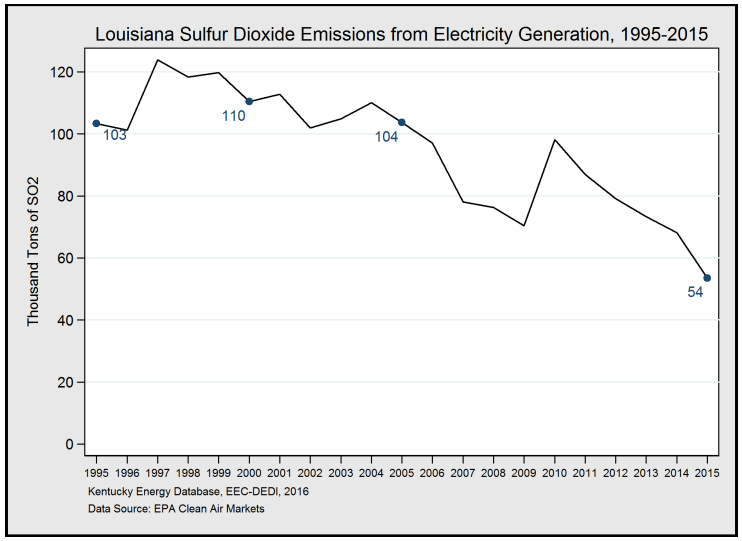




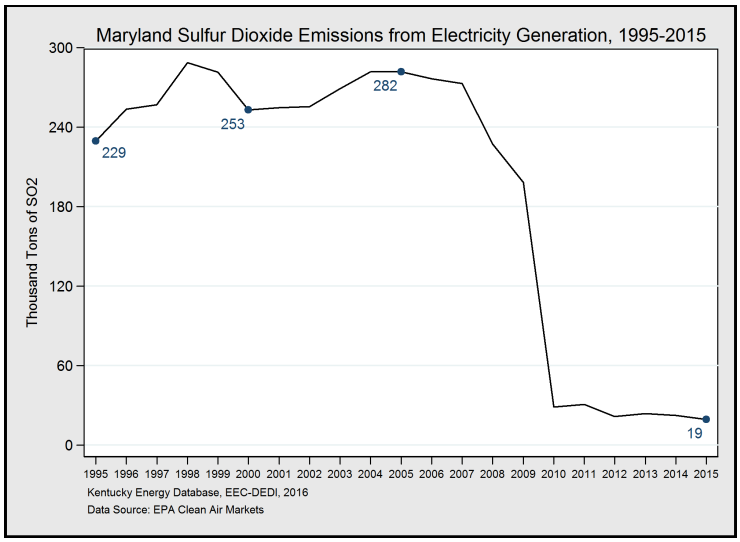


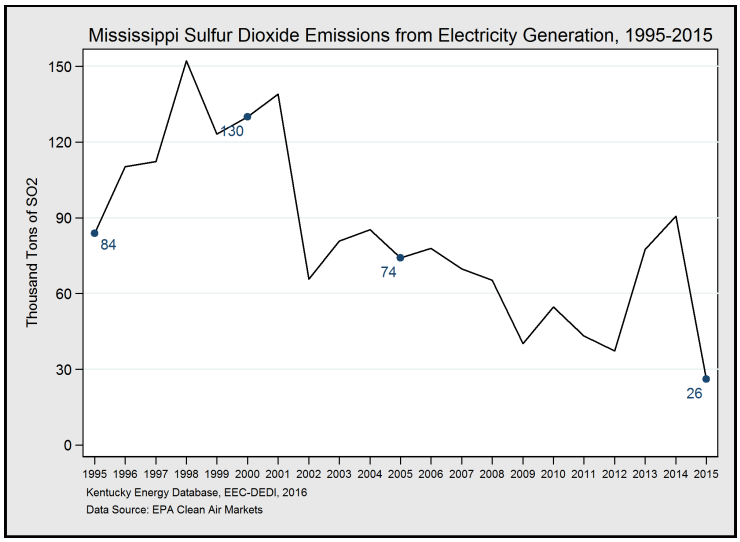


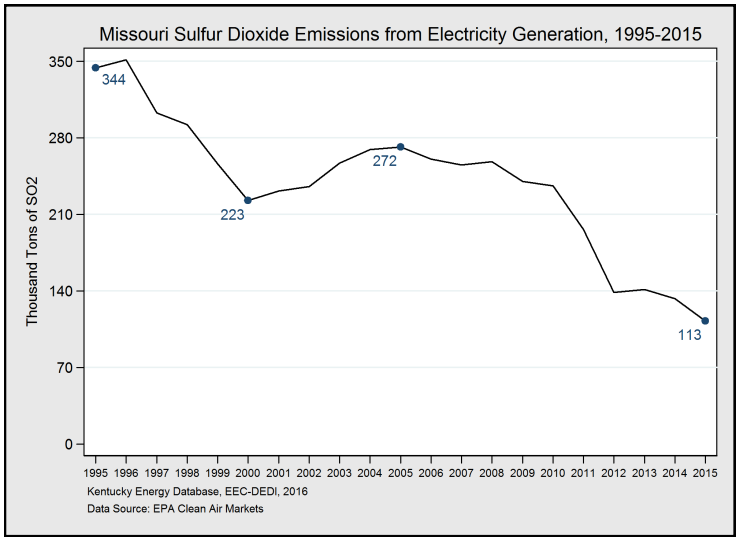


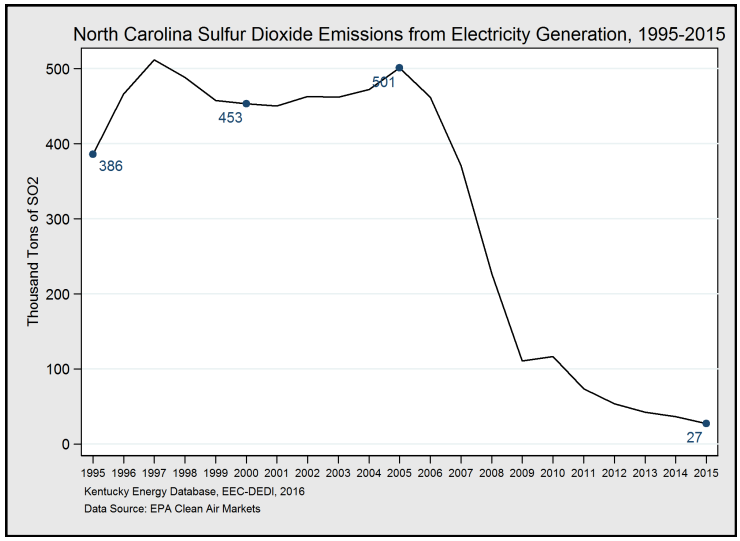


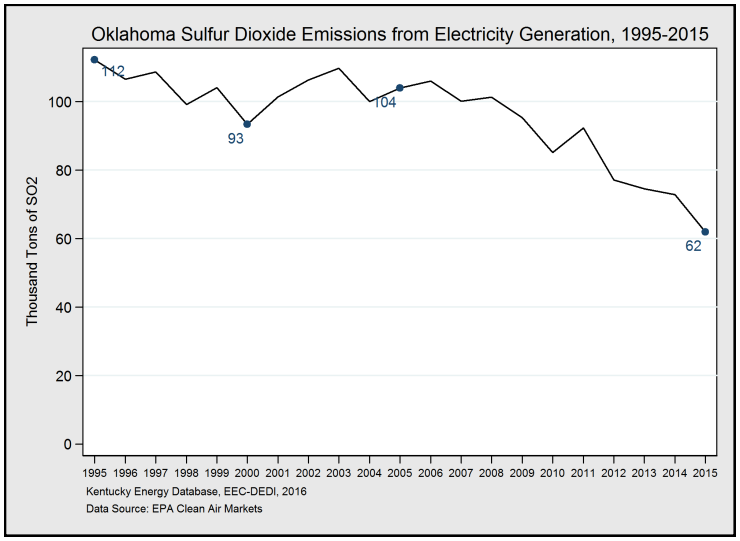
Historical Electric Power Emissions (SO_2)

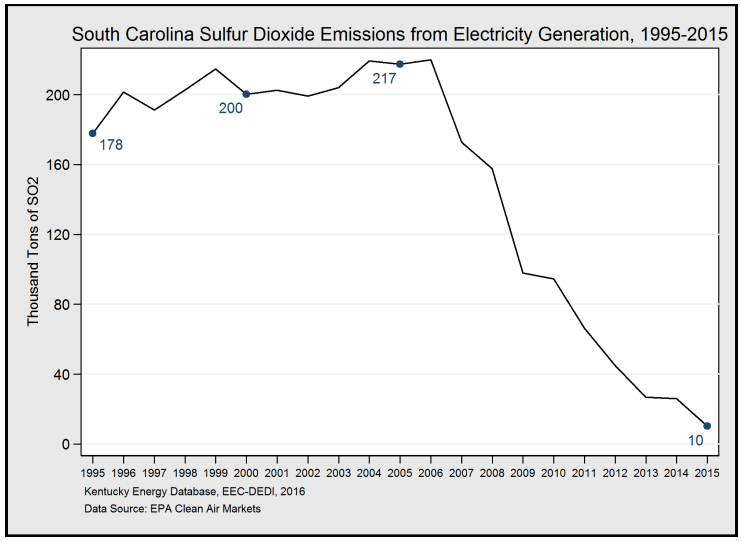




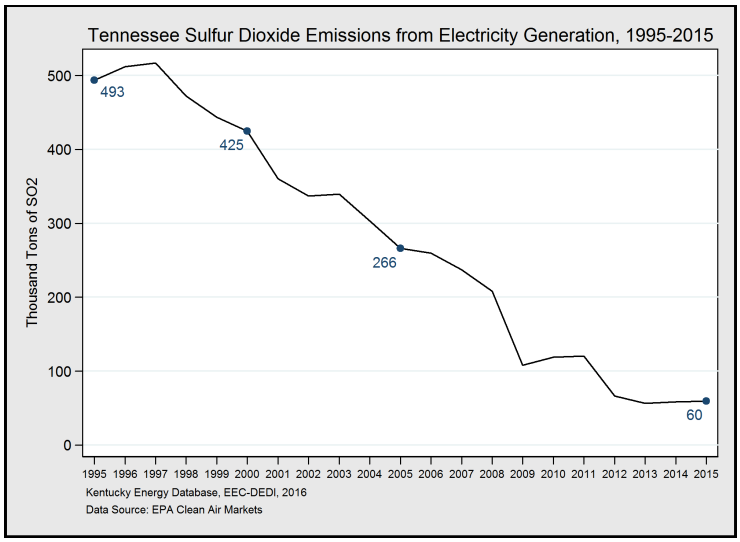


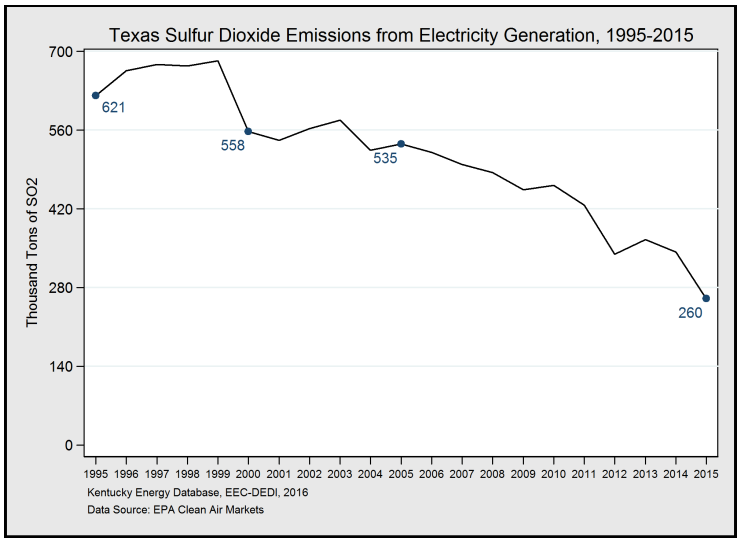


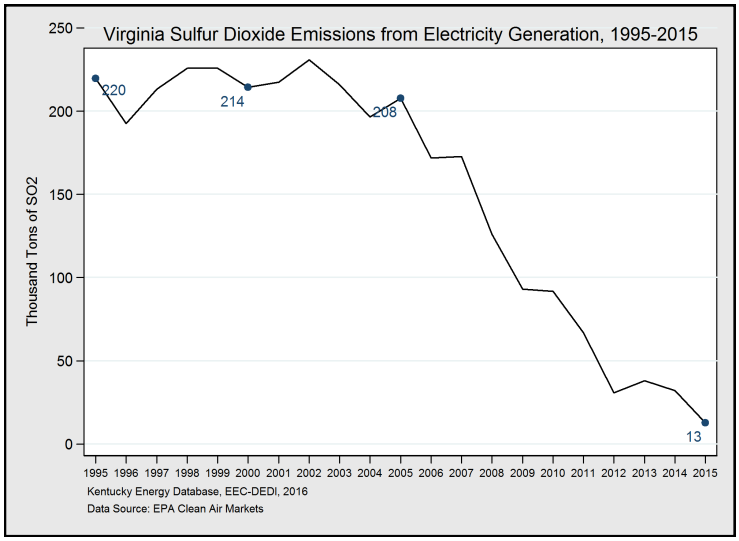


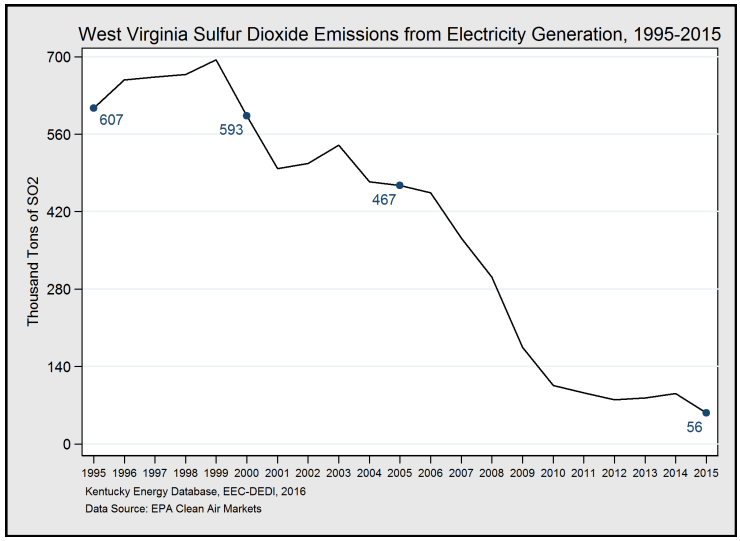


Historical Electric Power Emissions (SO_2)

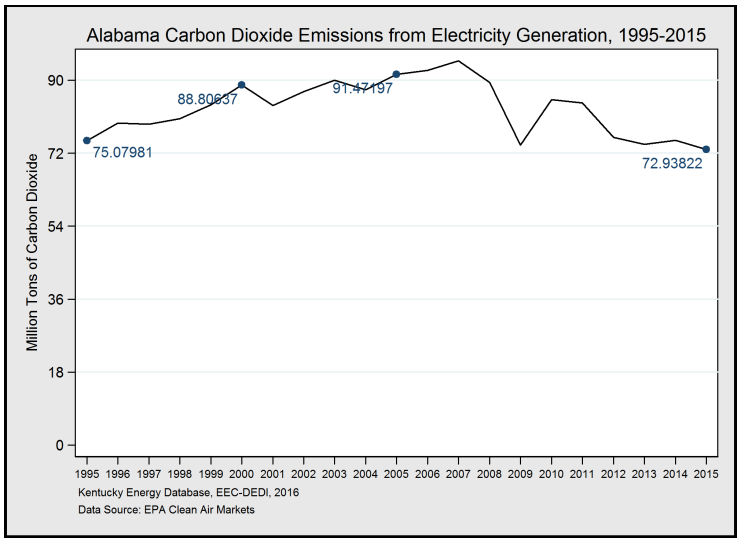


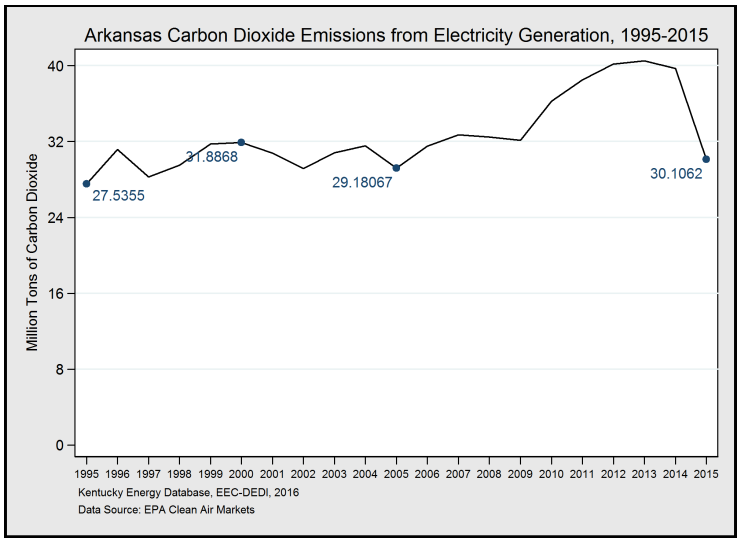


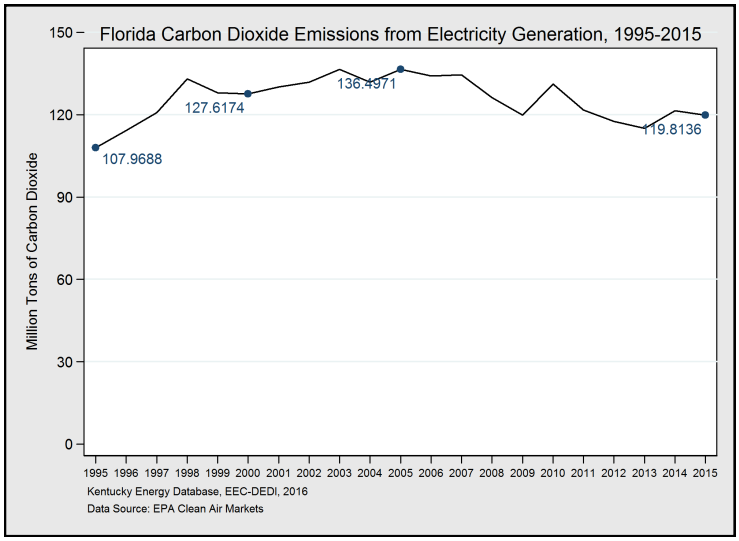


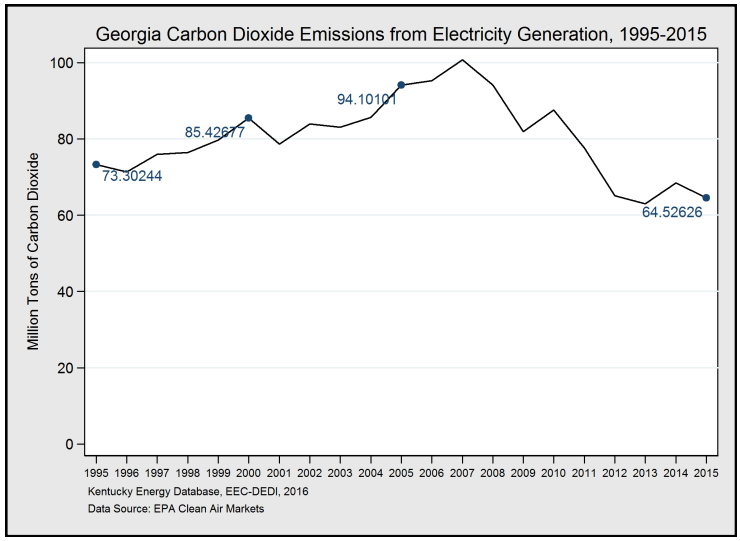


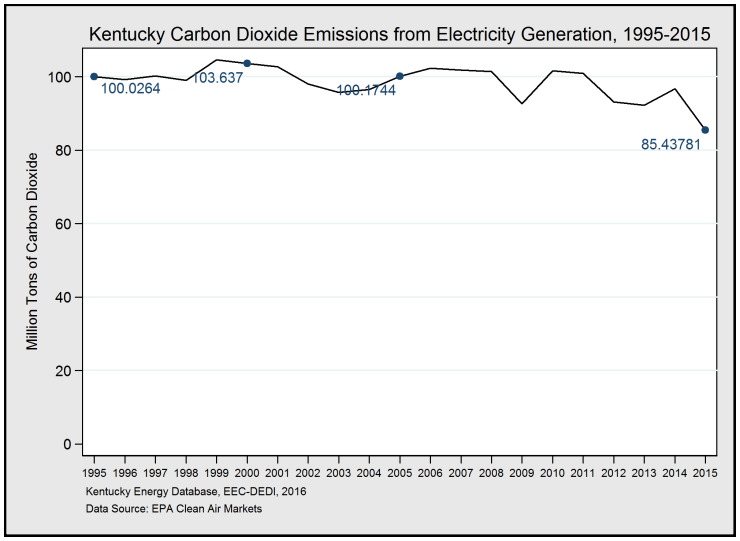
Historical Electric Power Emissions (CO_2)

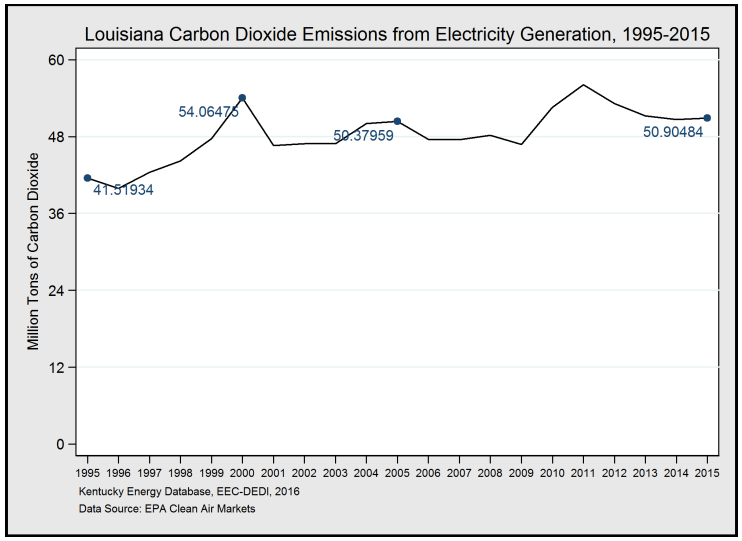












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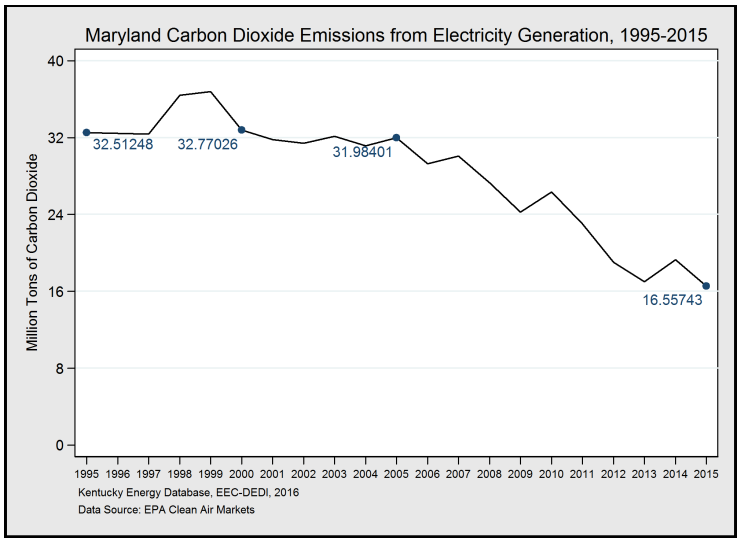
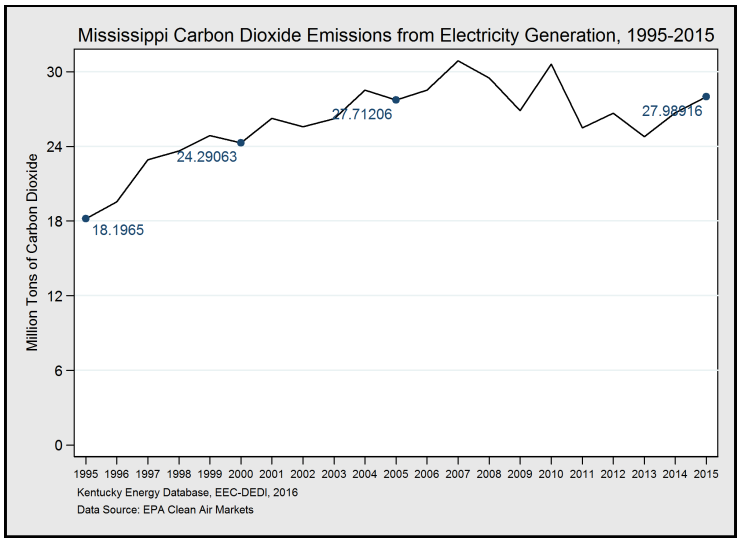
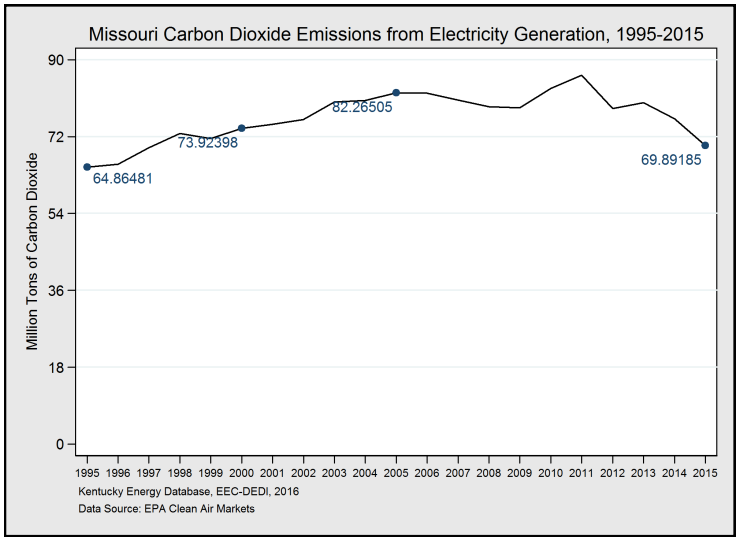
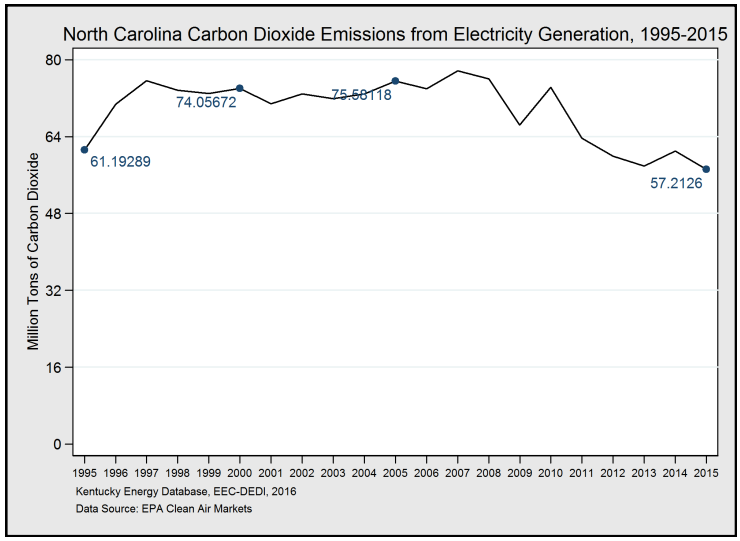
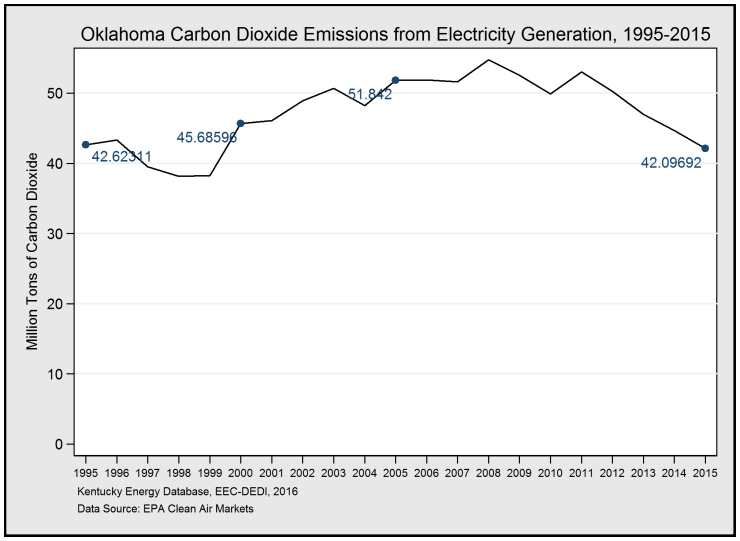
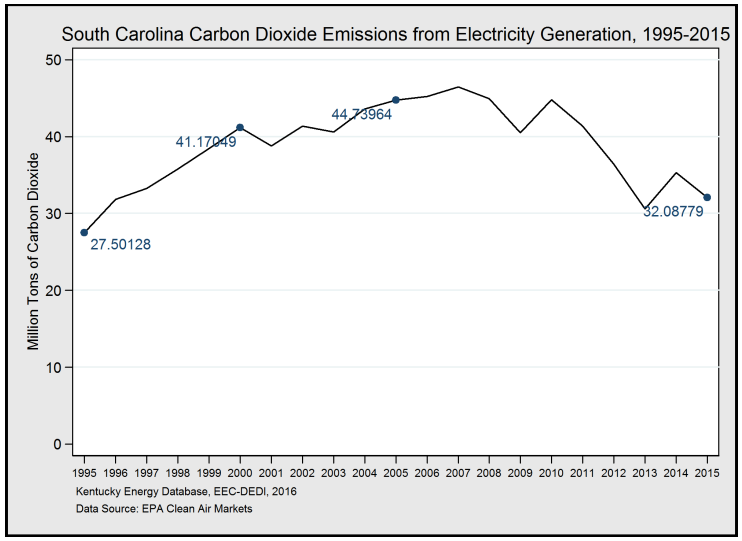




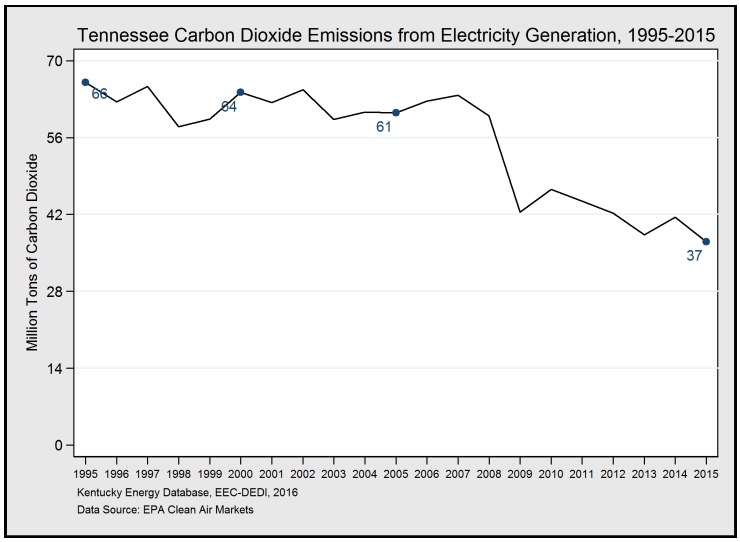


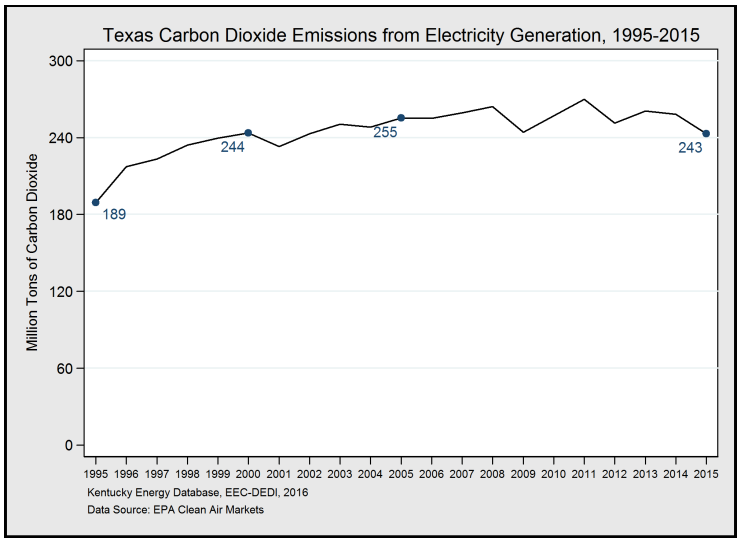


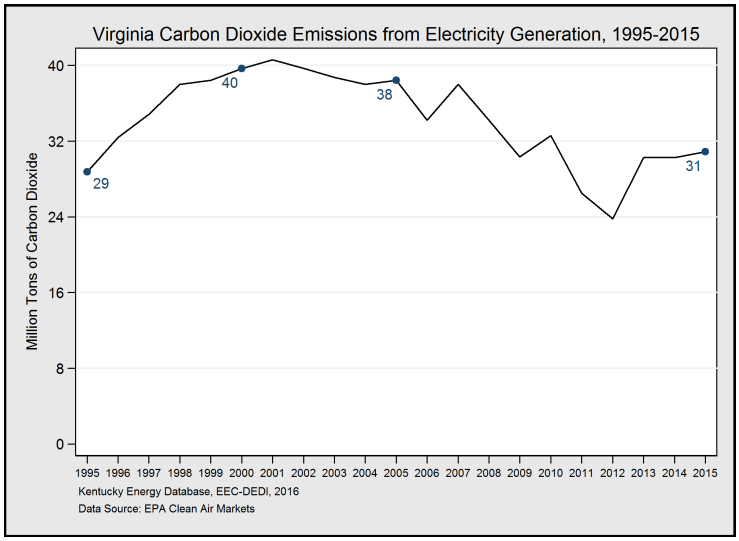


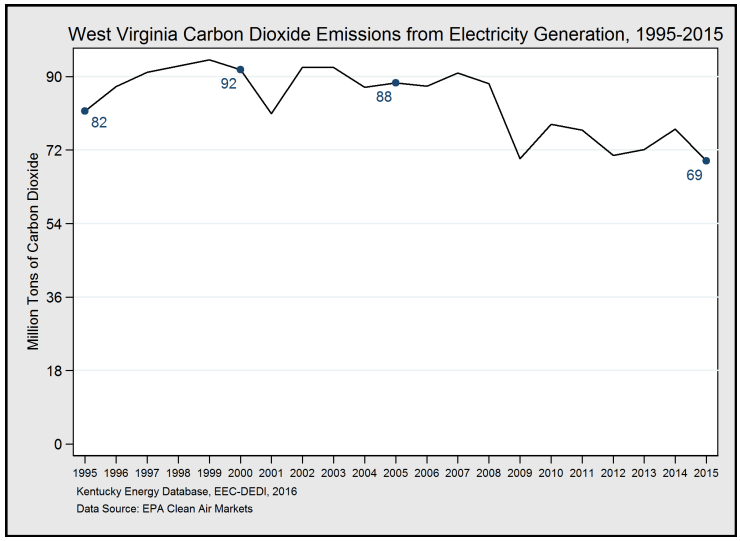


Historical Electric Power Emissions (CO_2)

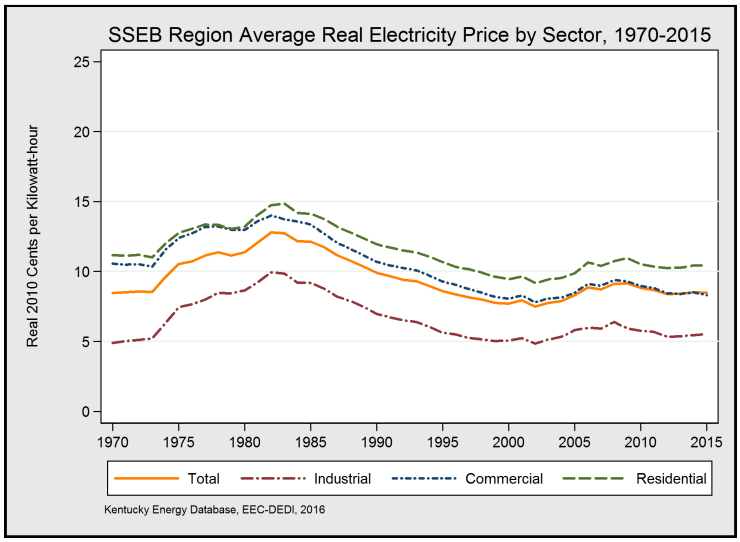


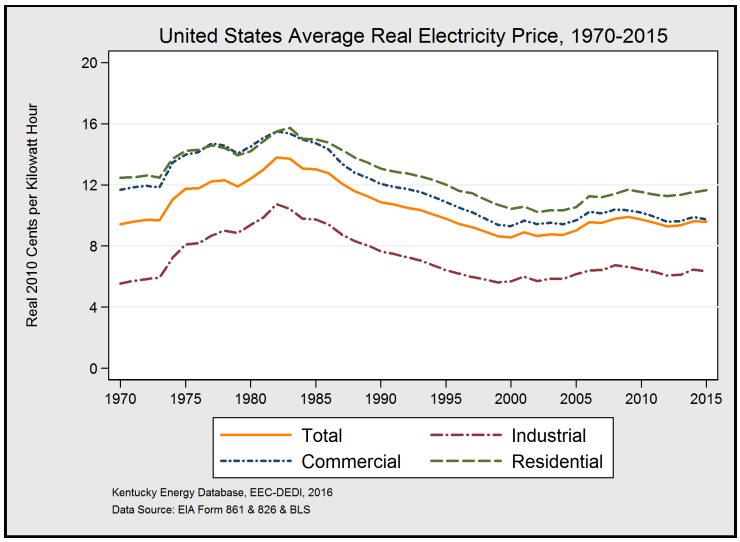






SSEB Region Price of Electricity, 2015





Sector	Cents / kWh	Inflation Adjusted Change Since 2005
Total	9.23	+2.0%
Residential	11.3	+5.2%
Commercial	9.0	-2.4%
Industrial	6.0	-5.2%

Sector	Cents / kWh	Inflation Adjusted Change Since 2005
Total	10.4	+6.0%
Residential	12.7	+10.2%
Commercial	10.6	+0.4%
Industrial	6.9	+2.7%

Electricity price is measured in terms of cents per kilowatt-hour of electricity consumed. While the price of electricity varies from state to state and from one utility to another, the above graphic illustrates the average price of electricity delivered to each economic sector.

After adjusting for inflation in the price of all consumer goods, relative electricity prices actually fell from 1983 to 2000, and have risen thereafter with the price of fossil fuel inputs.

The two most influential factors explaining the changes in both nominal and real electricity prices in the SSEB region and nationally 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, and renewables) used within a state, the share of each technology in supplying baseload electricity, and the price of the primary fossil fuel inputs.

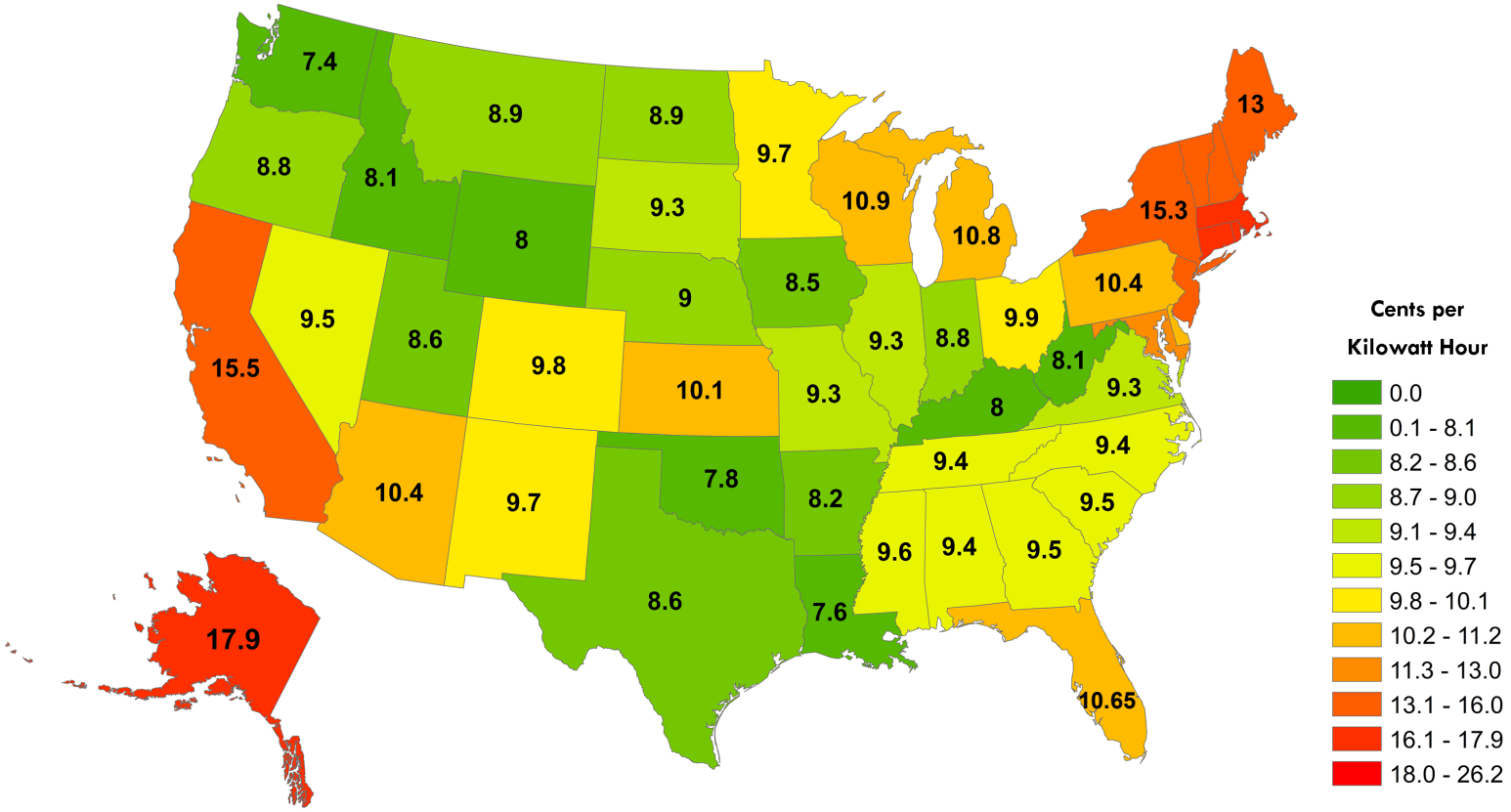
Electricity prices in the SSEB region in 2015 were 11 percent lower than the national average. Industrial electricity prices in the region averaged 6.0 cents per kWh.

Nominal electricity prices by state and economic sector are based on aggregated data from individual electric utilities derived from United States Form EIA-861 and Form EIA-826. To control for the changing value of the United States Dollar, nominal prices were converted to Real 2010 US$ using the Bureau of Labor Statistics (BLS) Consumer Price Index (CPI).

Electricity Price by State, 2015

Rank	State	Primary Source	Electricity Price (Cents per kWh)	Inflation Adjusted 1 Year Change	Inflation Adjusted 5 Year Change
1	Washington	Hydroelectric	7.41	5.04%	3.44%
2	Louisiana	Natural Gas	7.64	2.02%	-7.08%
3	Oklahoma	Natural Gas	7.83	-2.60%	-4.47%
4	Wyoming	Coal	7.95	5.13%	21.00%
5	Kentucky	Coal	8.03	-0.88%	11.07%
6	West Virginia	Coal	8.12	6.07%	1.38%
7	Idaho	Hydroelectric	8.12	2.35%	14.20%
8	Arkansas	Coal	8.15	3.49%	6.52%
9	Iowa	Coal	8.47	3.85%	1.84%
10	Utah	Coal	8.61	3.87%	15.38%
11	Texas	Natural Gas	8.63	-1.19%	-12.95%
12	Indiana	Coal	8.79	-2.04%	6.68%
13	Oregon	Hydroelectric	8.82	1.48%	7.41%
14	North Dakota	Coal	8.85	6.69%	15.51%
15	Montana	Coal	8.93	8.05%	5.99%
16	Nebraska	Coal	9.04	2.17%	10.66%
	Southern States Average	Natural Gas	9.23	-0.21%	-1.13%
17	Illinois	Nuclear	9.28	0.75%	-5.68%
18	Missouri	Coal	9.30	1.96%	10.02%
19	South Dakota	Hydroelectric	9.31	2.74%	9.51%
20	Virginia	Natural Gas	9.31	1.40%	-1.42%
21	Tennessee	Coal	9.35	-0.19%	0.65%
22	North Carolina	Nuclear	9.36	0.17%	-0.65%
23	Alabama	Natural Gas	9.37	1.22%	-0.03%
24	South Carolina	Nuclear	9.48	-2.09%	2.67%
25	Nevada	Natural Gas	9.48	-2.67%	-8.95%
26	Georgia	Natural Gas	9.52	-5.18%	-0.73%
27	Mississippi	Natural Gas	9.55	0.96%	5.29%
28	New Mexico	Coal	9.68	1.38%	8.99%
29	Minnesota	Coal	9.69	2.91%	6.89%
30	Colorado	Coal	9.78	-2.47%	-0.54%
31	Ohio	Coal	9.90	2.45%	0.43%
32	Kansas	Coal	10.06	1.04%	11.60%
33	Arizona	Coal	10.40	2.12%	-1.22%
34	Pennsylvania	Nuclear	10.41	1.81%	-6.24%
	United States Average	Coal	10.42	0.51%	-1.60%
35	Florida	Natural Gas	10.65	-1.24%	-7.41%
36	Michigan	Coal	10.84	-1.54%	1.68%
37	Wisconsin	Coal	10.93	3.43%	3.69%
38	Delaware	Natural Gas	11.21	2.45%	-13.84%
39	District of Columbia	Natural Gas	12.08	-0.38%	-16.75%
40	Maryland	Nuclear	12.14	0.20%	-12.08%
41	Maine	Hydroelectric	12.97	2.42%	-7.04%
42	New Jersey	Natural Gas	13.93	0.88%	-12.40%
43	Vermont	Hydroelectric	14.36	-1.53%	-0.18%
44	New York	Natural Gas	15.28	-6.10%	-14.34%
45	California	Natural Gas	15.50	3.14%	10.48%
46	New Hampshire	Nuclear	16.03	5.20%	-0.58%
47	Massachusetts	Natural Gas	16.86	9.69%	8.83%
48	Rhode Island	Natural Gas	17.05	10.46%	11.44%
49	Connecticut	Nuclear	17.76	4.07%	-5.97%
50	Alaska	Natural Gas	17.94	4.61%	13.01%
51	Hawaii	Petroleum	26.17	-21.60%	-2.46%

Electricity Prices by State, 2015

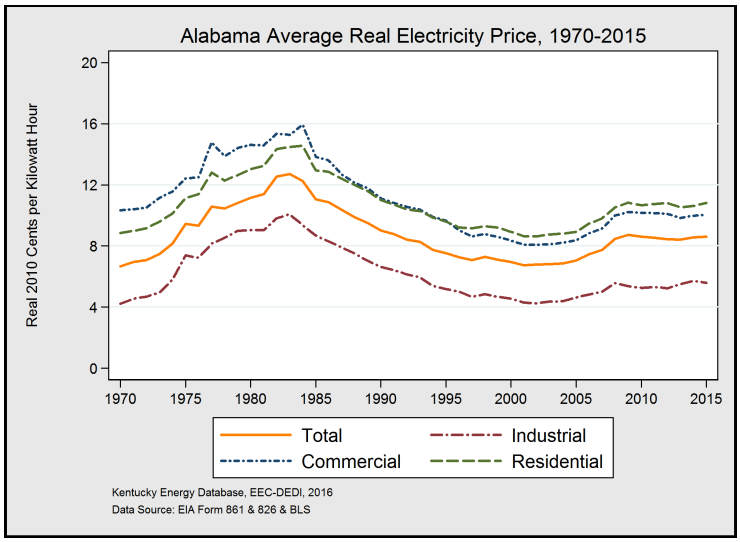


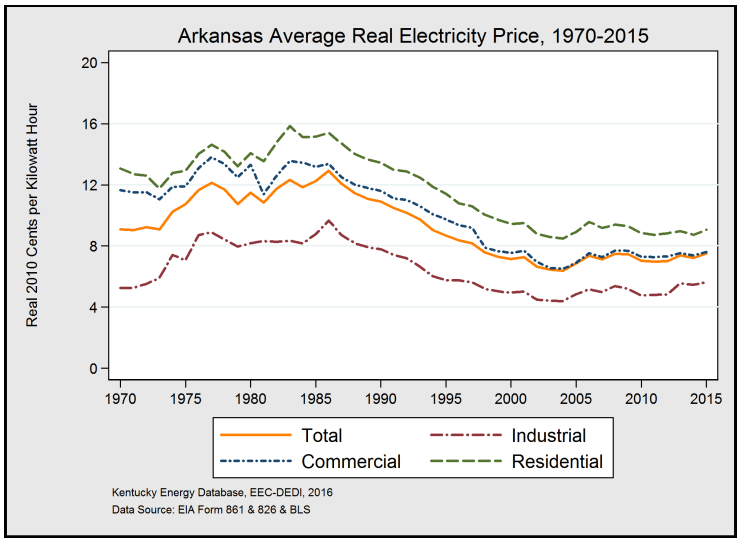
Kentucky Energy Database, EEC-DEDI, 2016

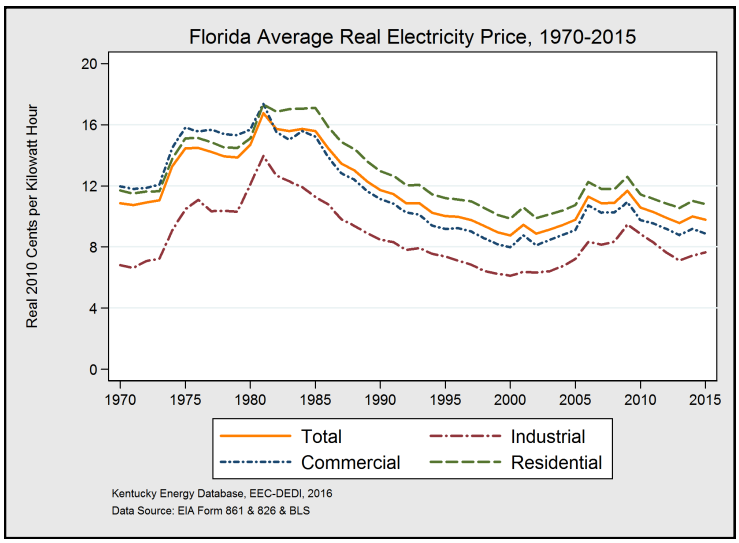
The average national electricity price is 10.4 ranging from a low of 7.41 cents per kWh in Washington state to 26.2 in Hawaii. Contrast that to the average electricity price in the SSEB states of 9.23, ranging from 7.6 in Louisiana to a high of 12.1 in Maryland. States with lower electricity prices include Louisiana and Oklahoma.

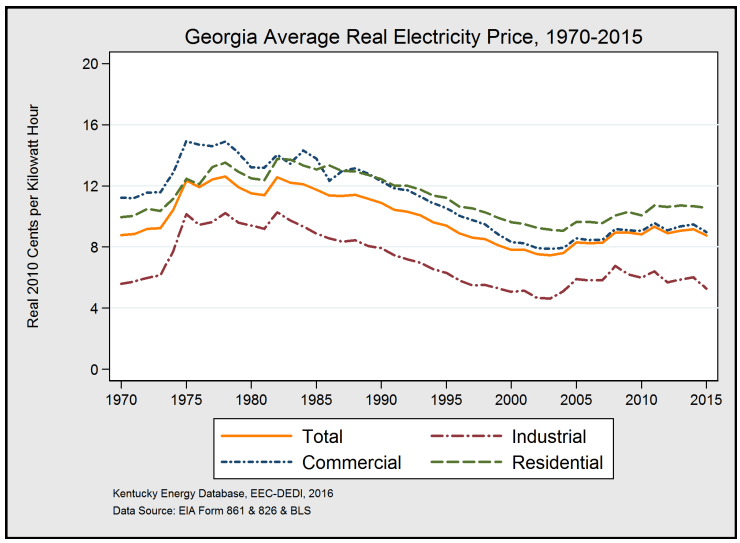
Nationally, states with low electric prices are driven by low-cost fuel resources, such as an abundance of coal and hydro-electricity, and currently, natural gas. The southern states generally enjoy lower prices with 6 states in the lower quartile and 14 states less than the national average.

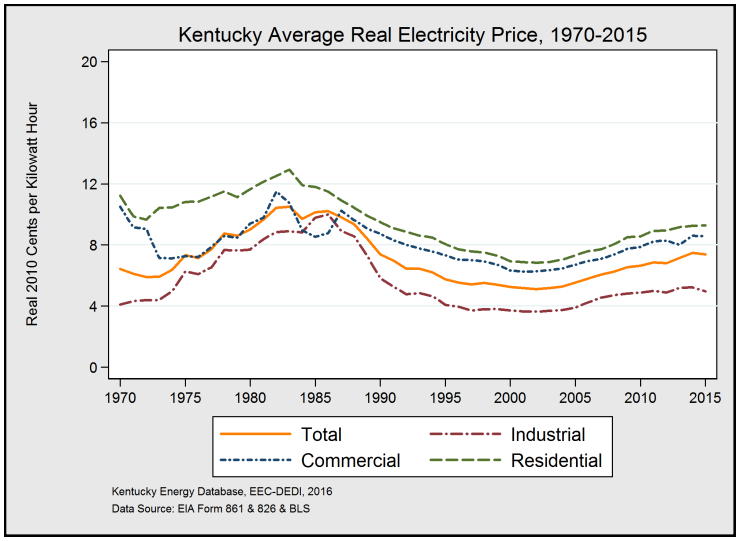
Historical Inflation Adjusted Price of Electricity

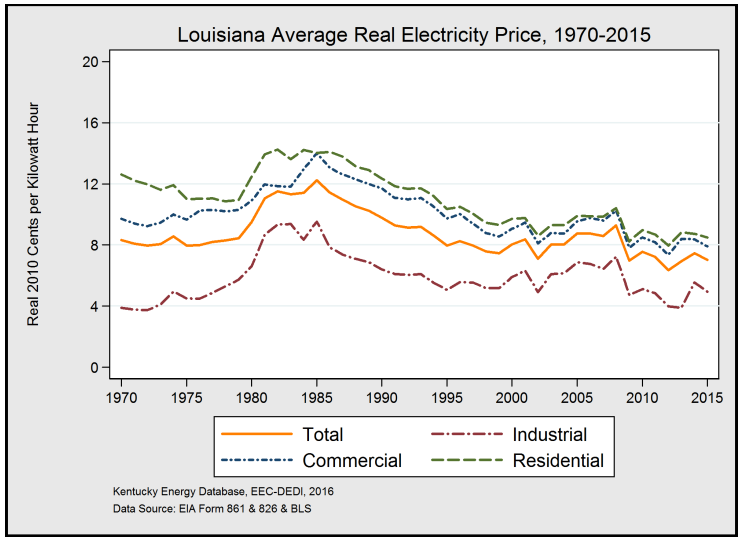




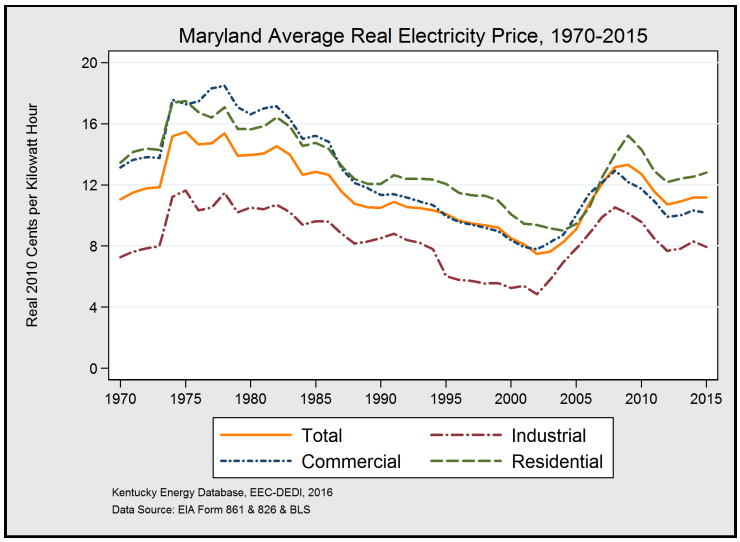


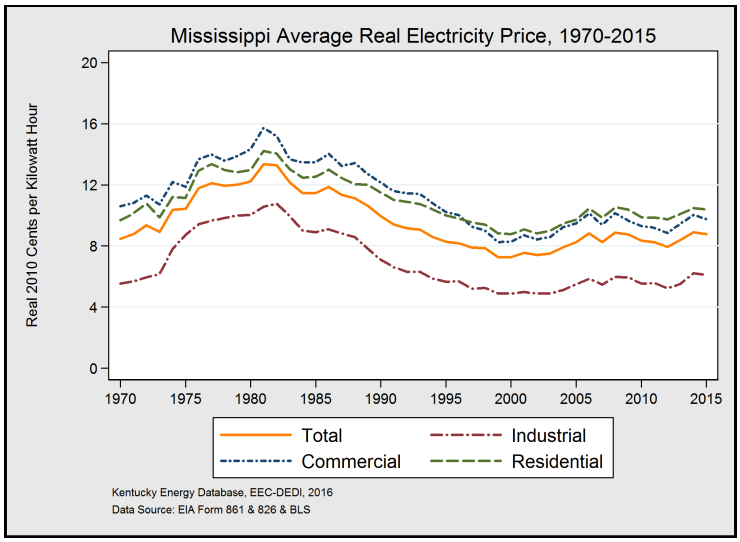


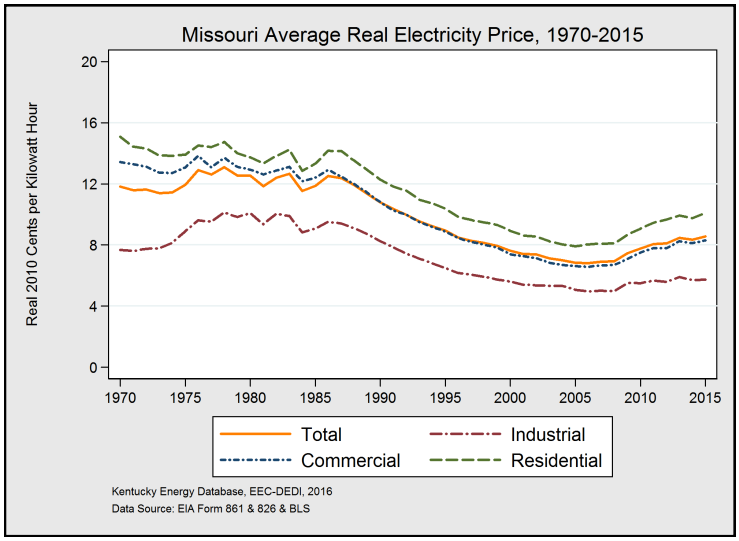


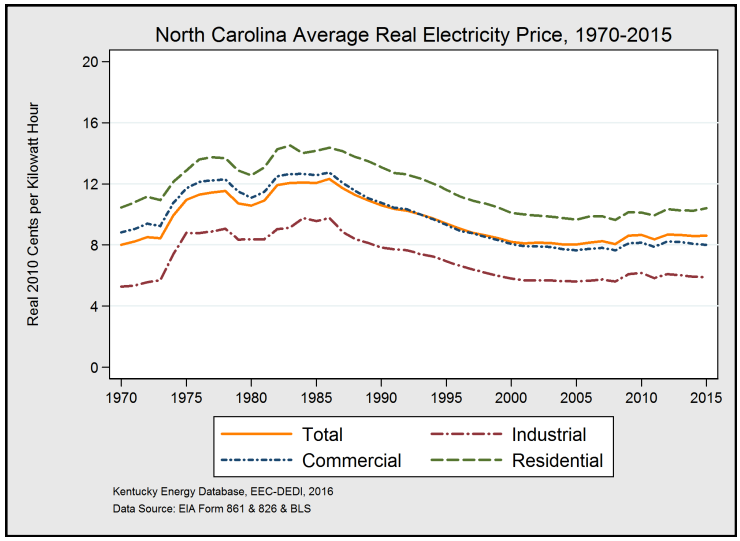


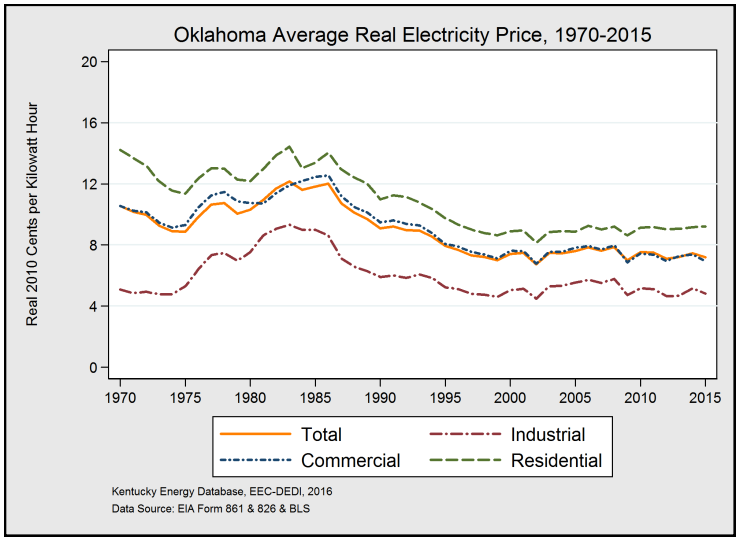
Historical Inflation Adjusted Price of Electricity

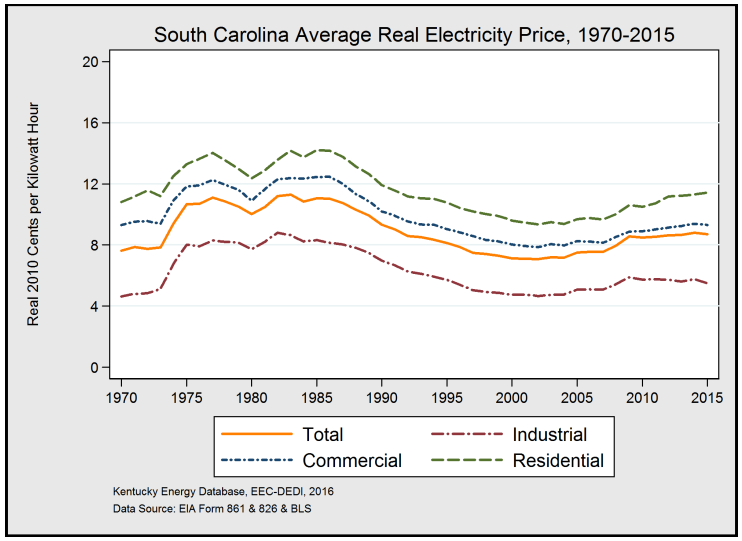




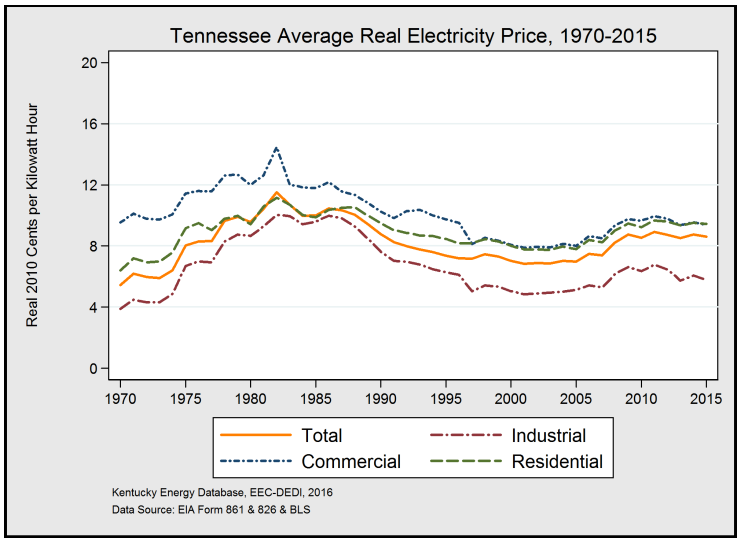


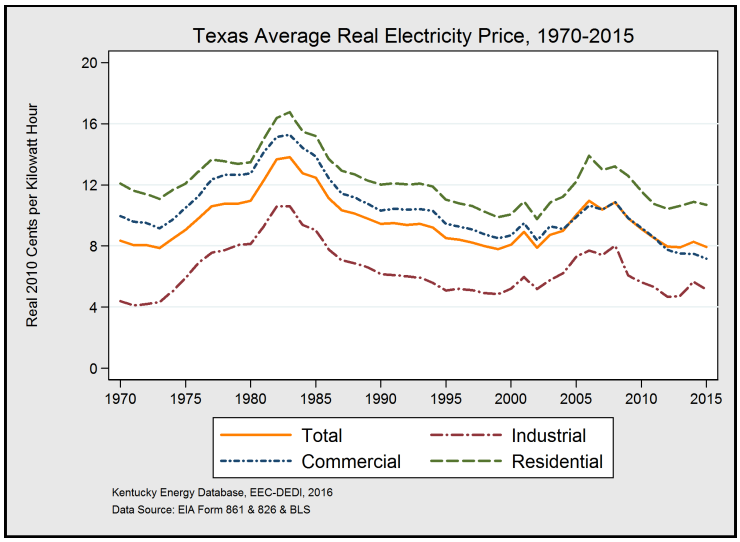


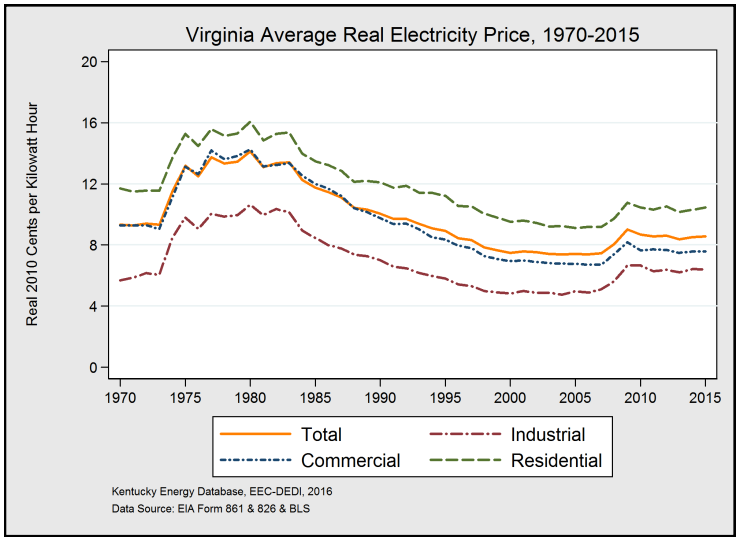


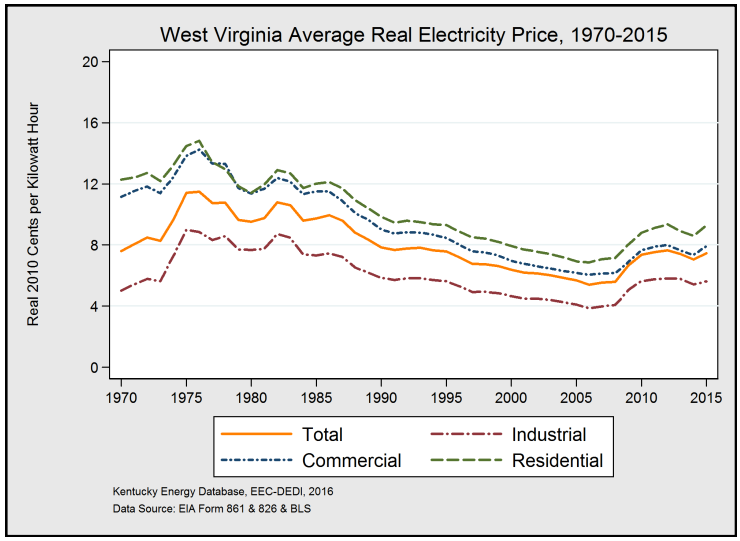


Historical Inflation Adjusted Price of Electricity

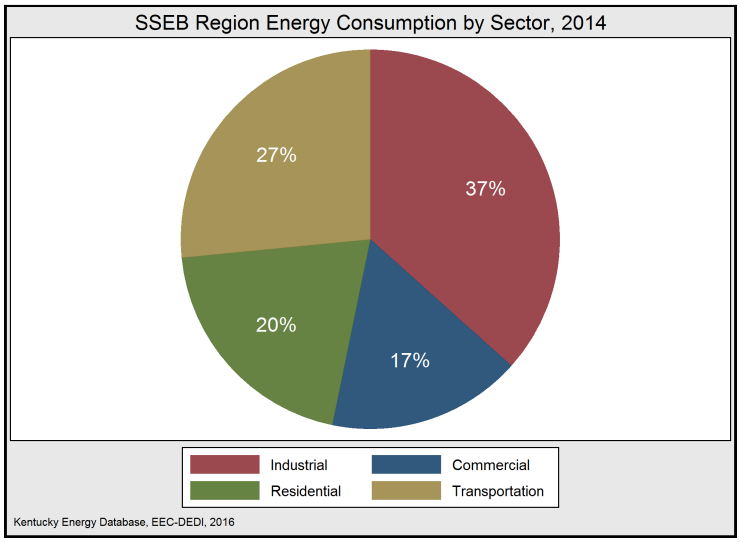


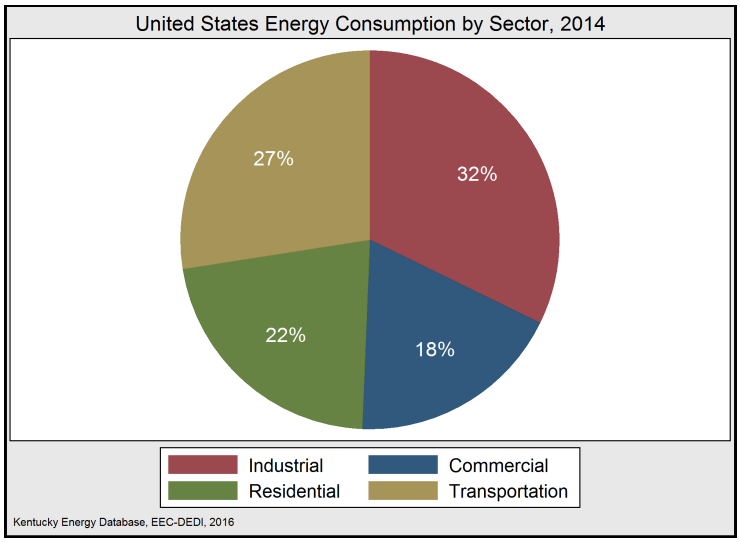






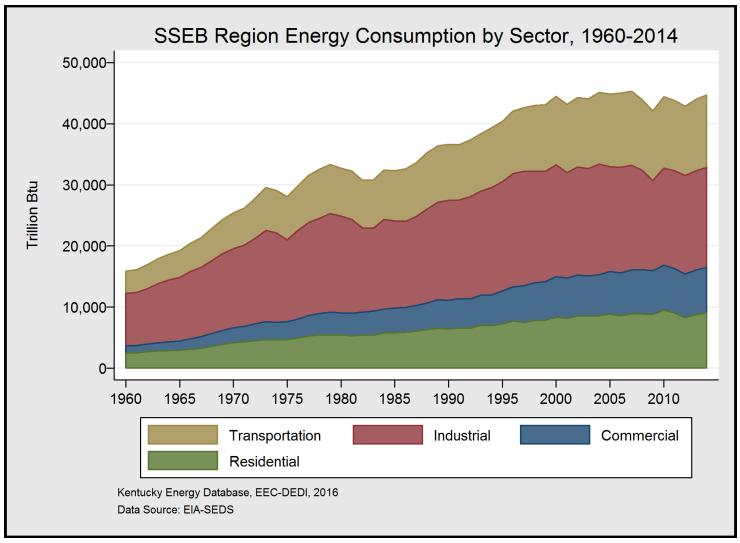
SSEB Region Energy Consumption by Sector

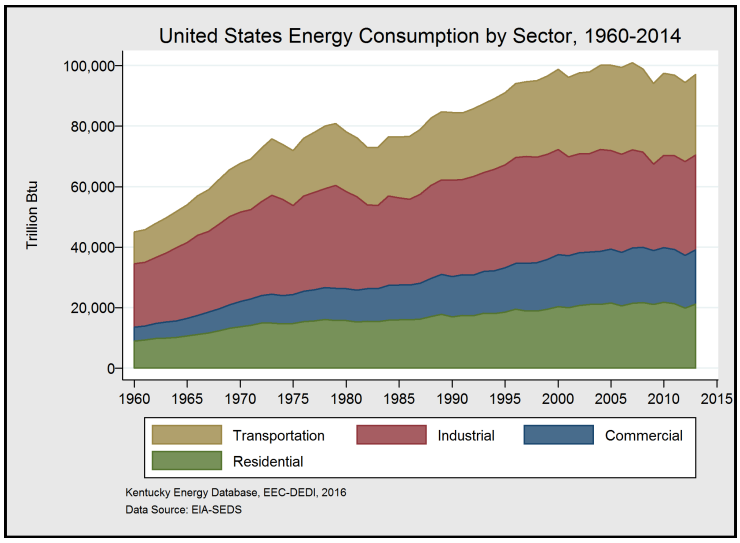




Sector	Trillion Btu	1 Year Change
Total	44,700	+1.5%
Industrial	16,371	+0.8%
Transportation	11,857	+1.7%
Residential	9,044	+3.3%
Commercial	7,425	+1.4%

Sector	Trillion Btu	1 Year Change
Total	98,400	+1.4%
Industrial	31,700	+0.6%
Transportation	27,000	+1.1%
Residential	21,500	+1.4%
Commercial	18,100	+1.7%

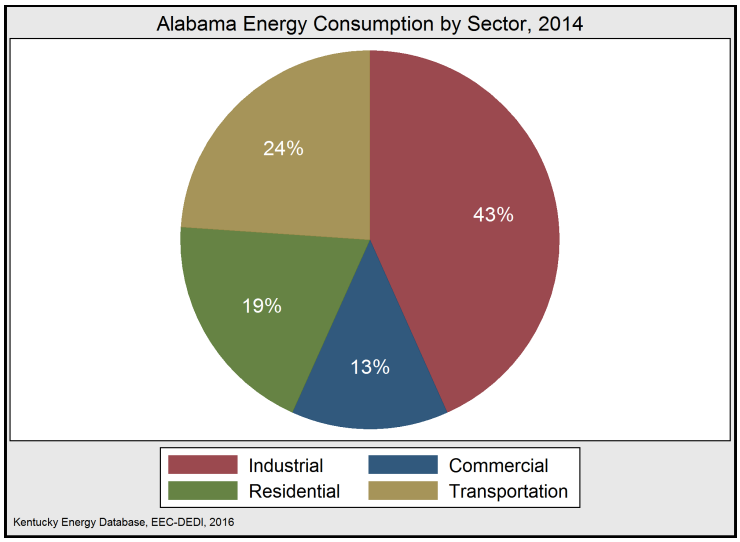


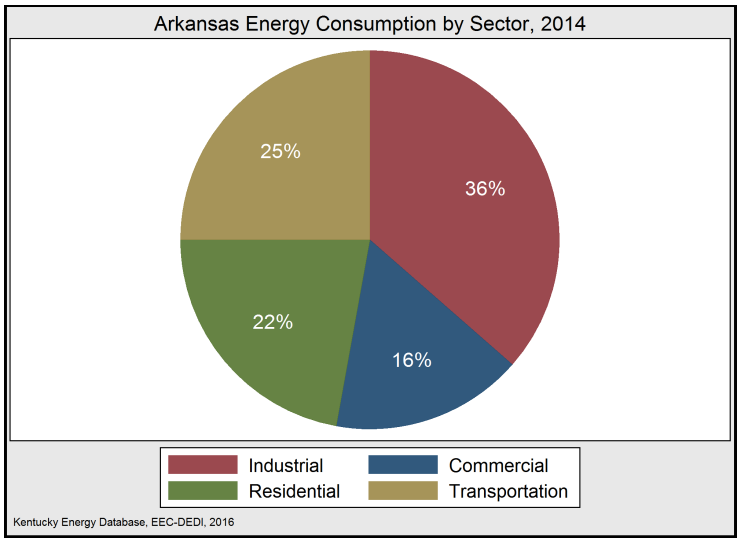


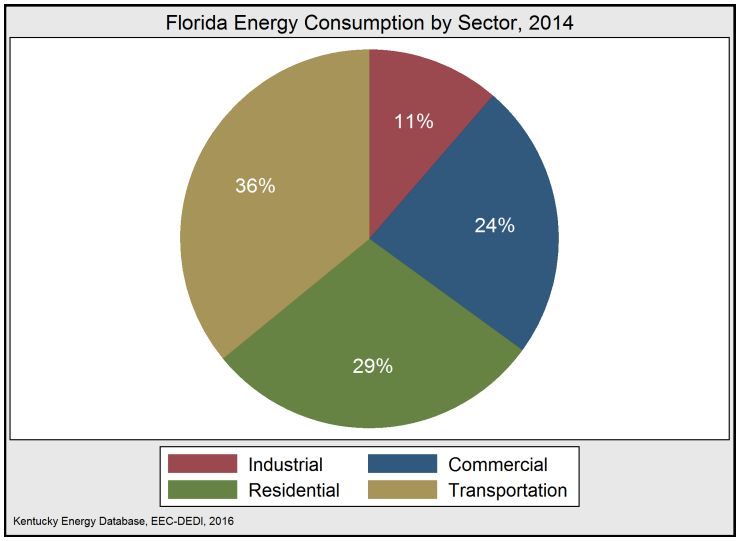
Energy consumption in the SSEB region has risen by 181 percent since 1960, with demand growth in member states averaging approximately 1.9 percent annually. The relatively energy-intensive industrial and manufacturing processes in the SSEB region continue to consume more energy than other economic sectors. Since 1960, residential and commercial energy consumption has grown at a faster rate than industrial demand.

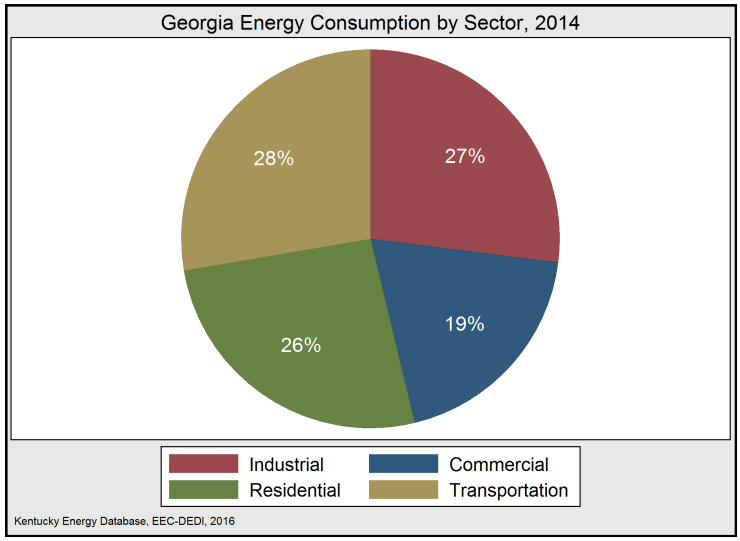
Total energy consumption in the United States increased in 2014 to 98.4 Quadrillion Btu, and by 118 percent from 1960. Although energy demand by industrial consumers nationally remains higher than other economic sectors, it is proportionally less than in the SSEB region. Energy consumption has fallen by 2.6 percent since 2007—the year of peak U.S. energy demand. This decrease in energy consumption was mostly caused by demand reduction in the transportation and industrial sectors.

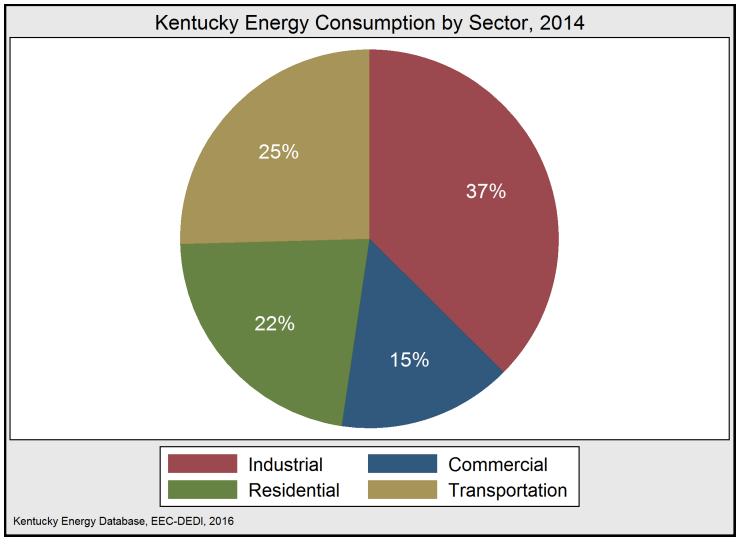
Energy Consumption by Sector

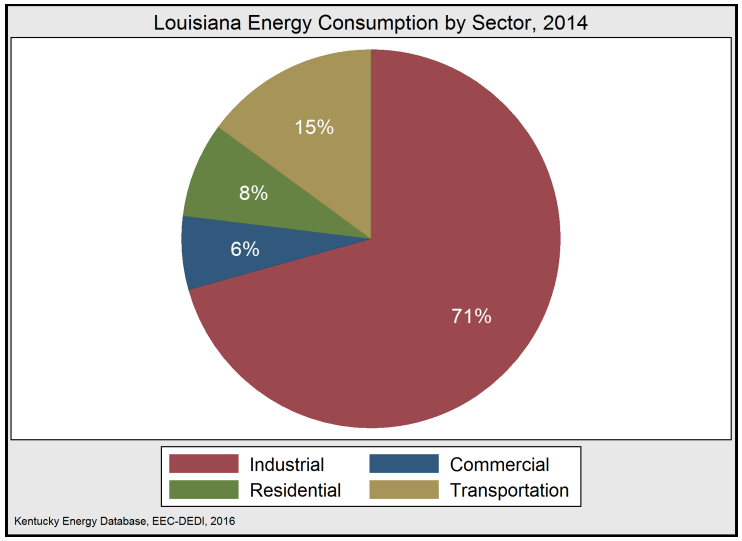




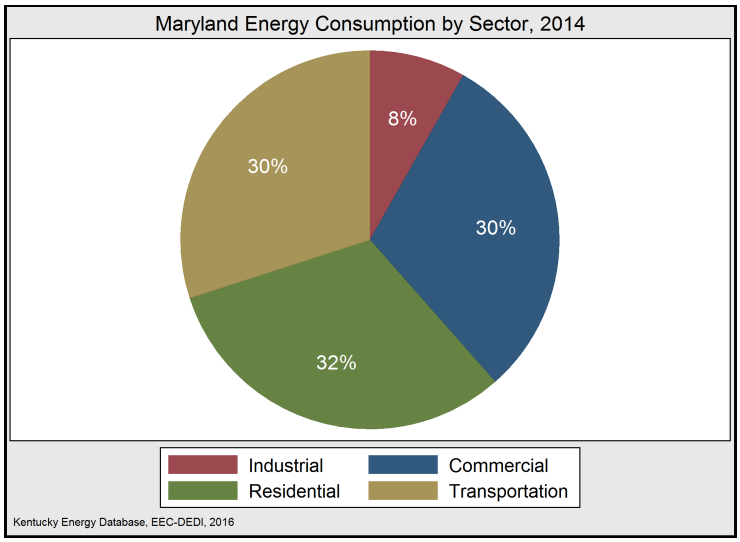


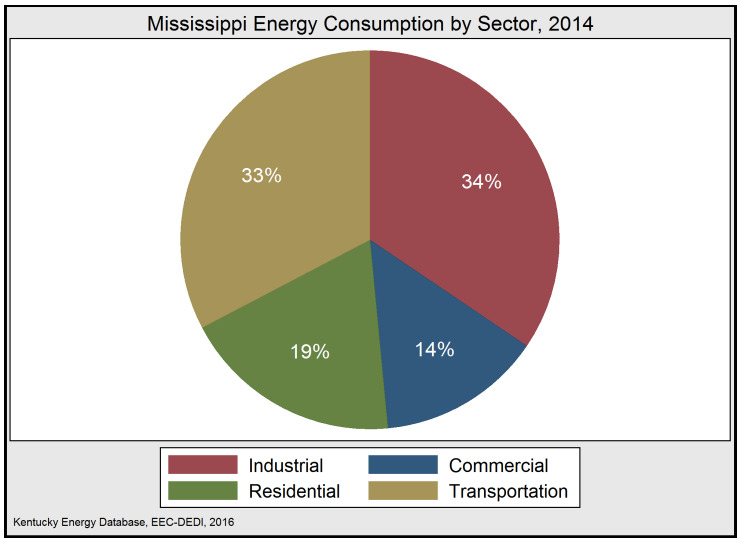


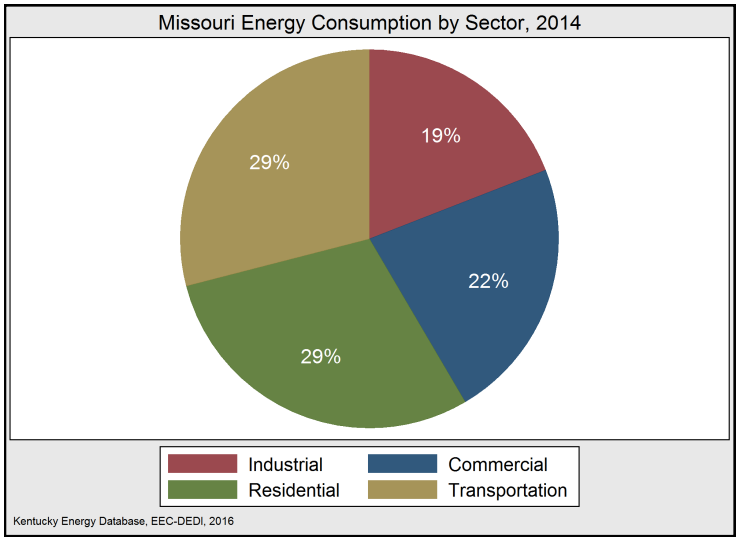


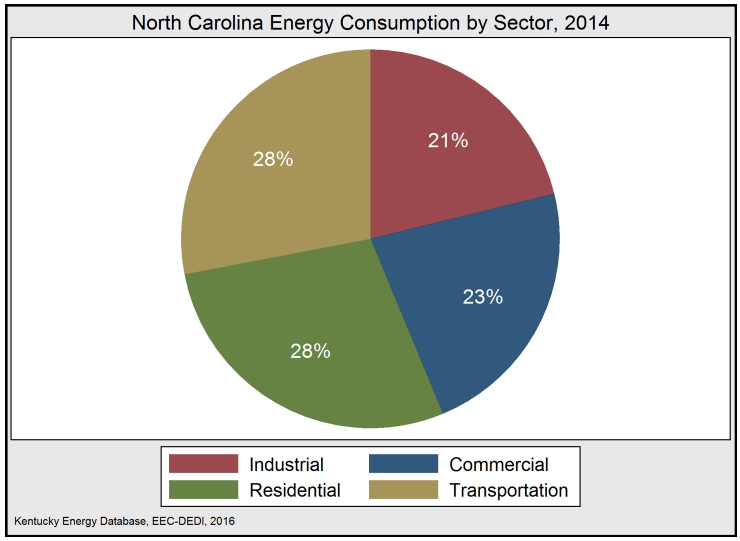


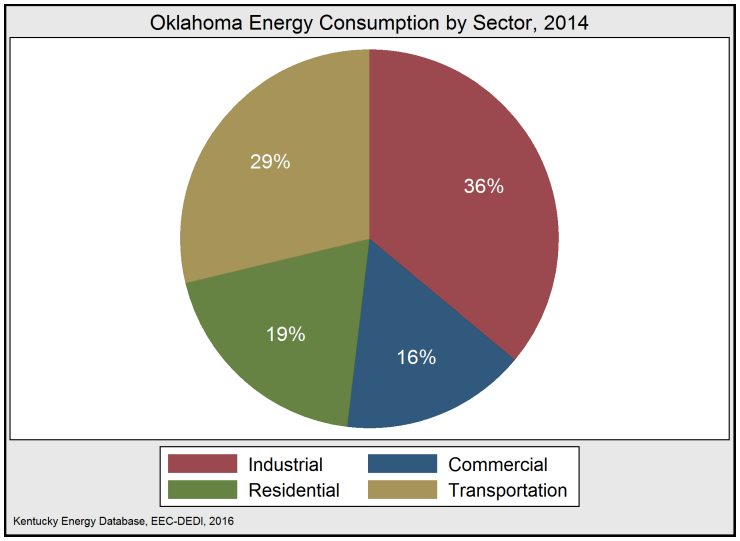
Energy Consumption by Sector

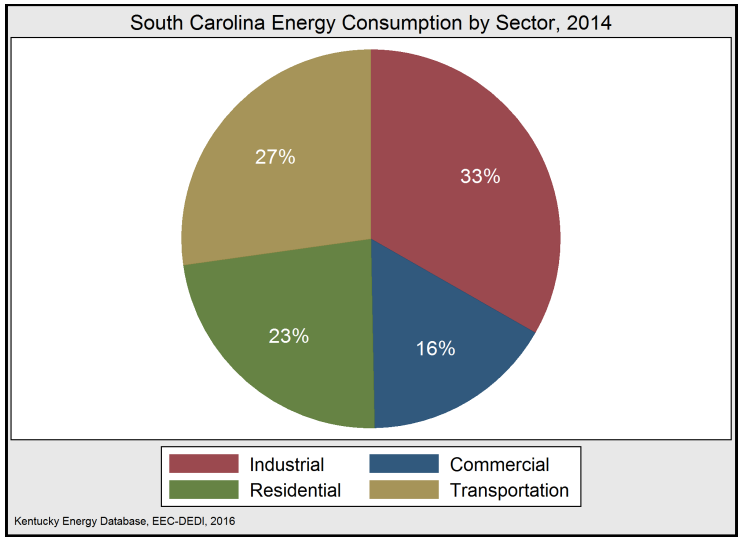




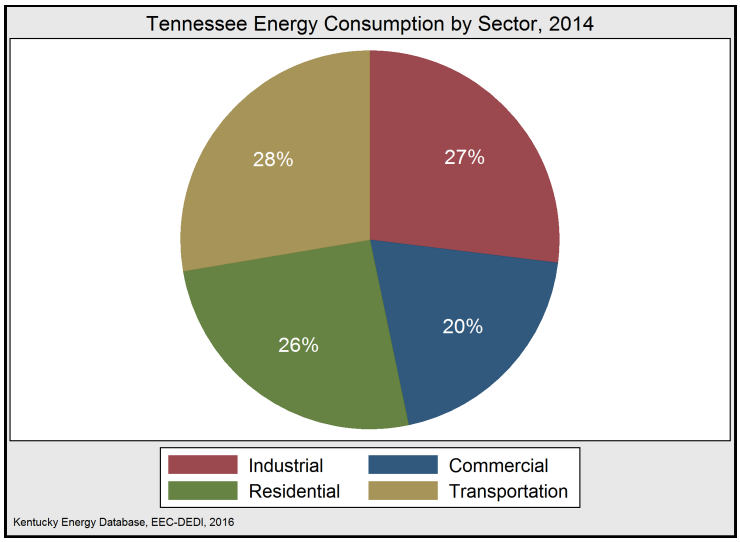


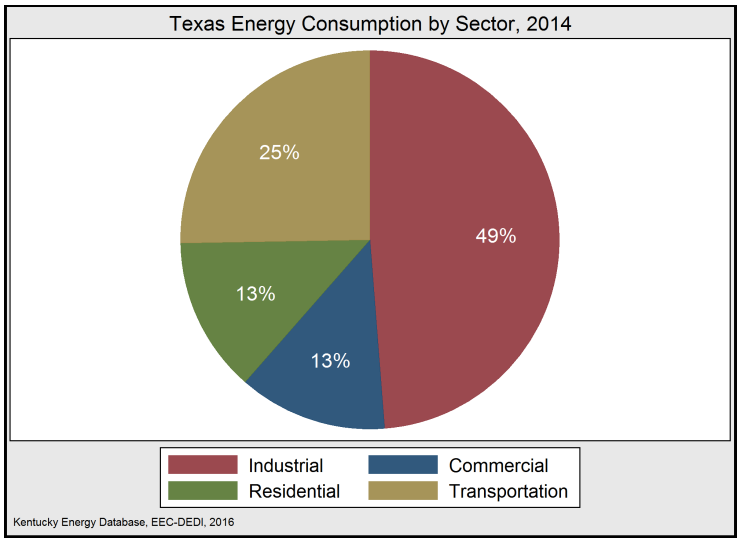


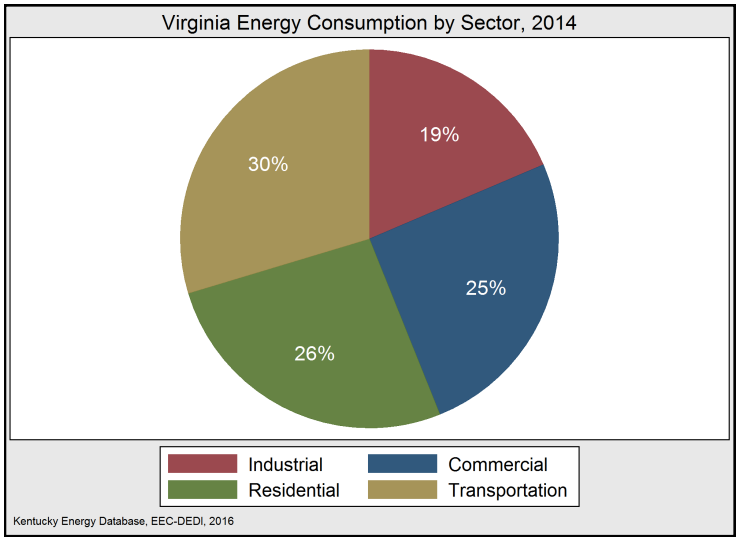


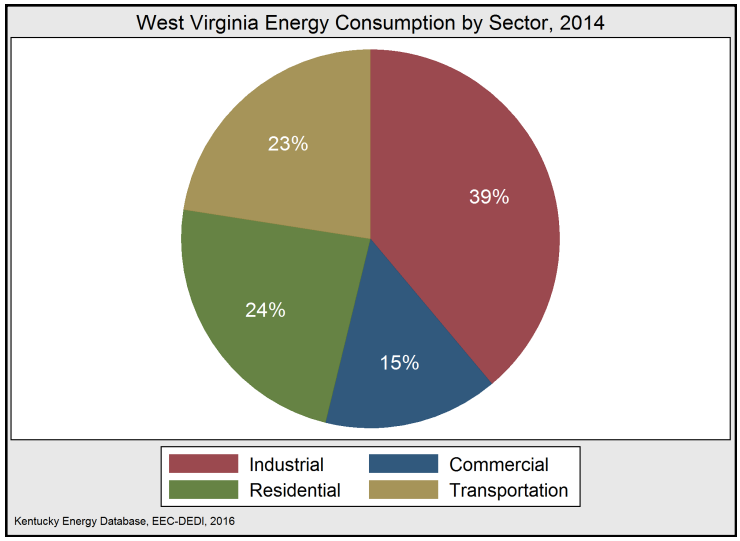


Energy Consumption by Sector

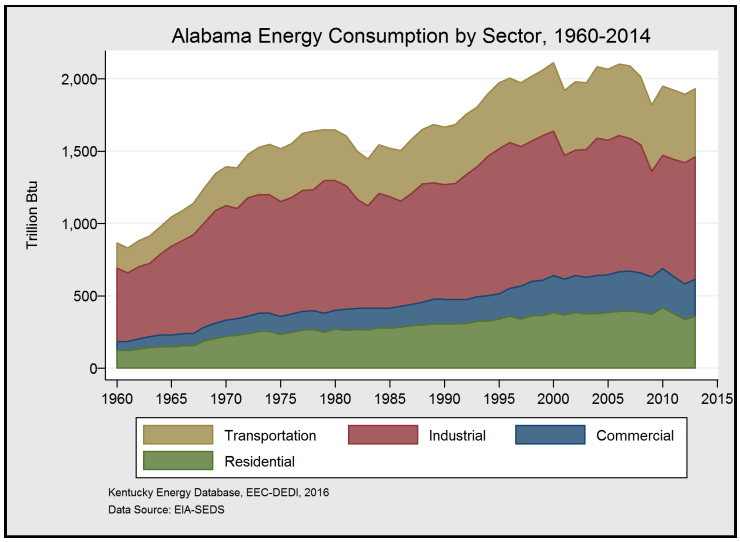


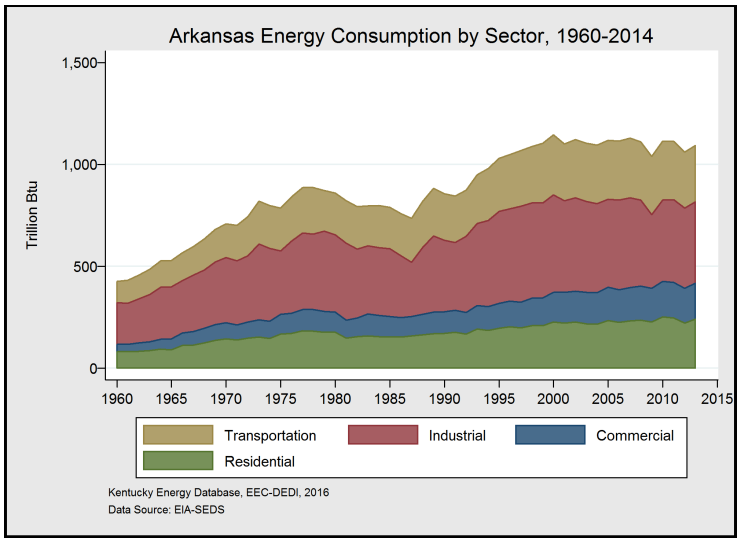


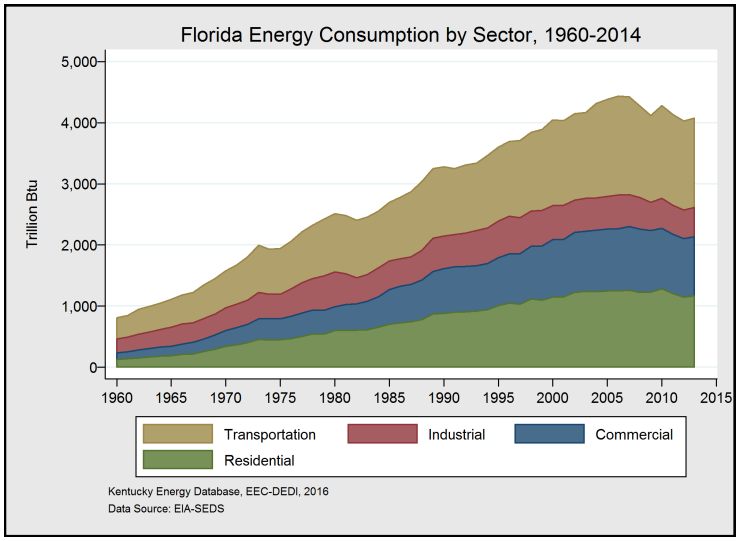


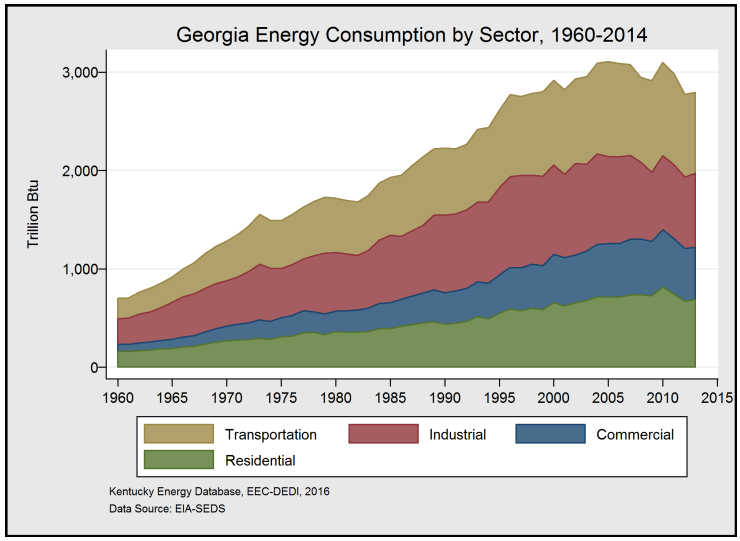


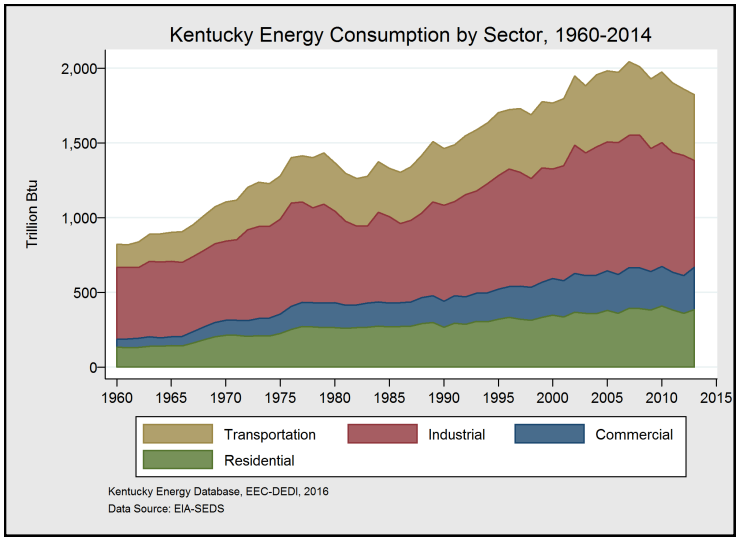
Historical Energy Consumption by Sector

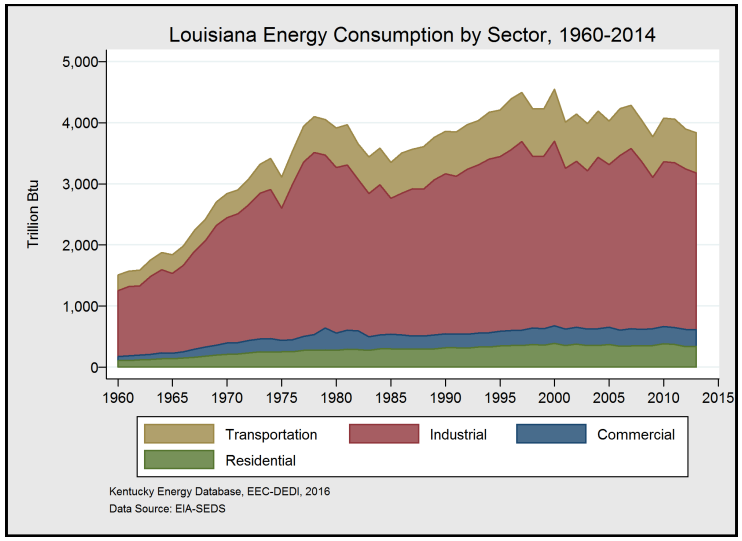




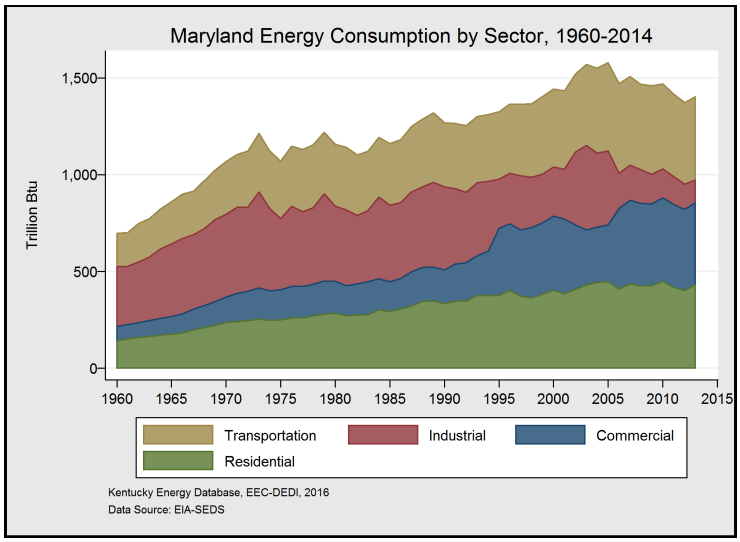


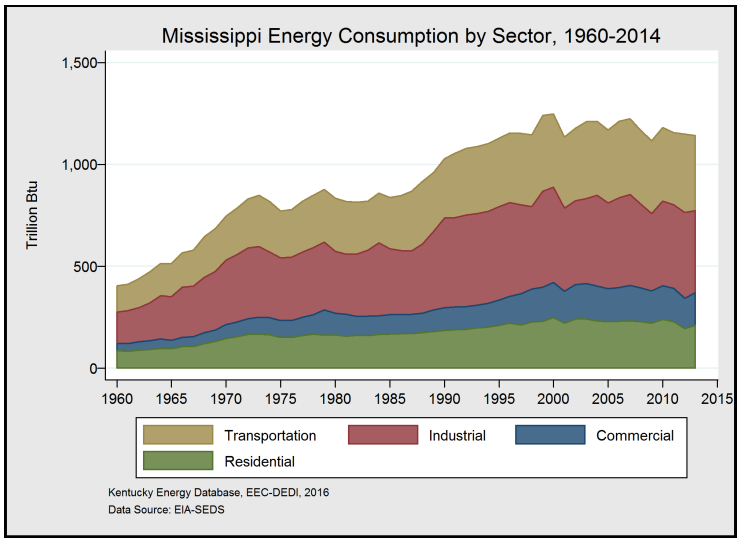


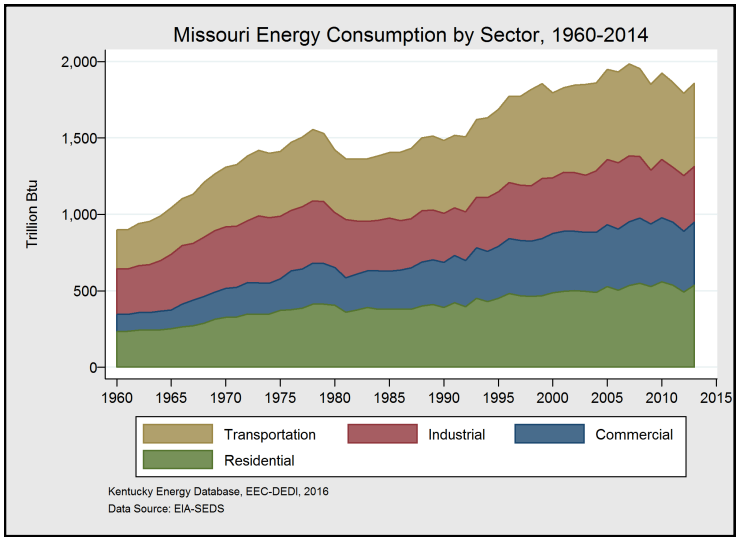


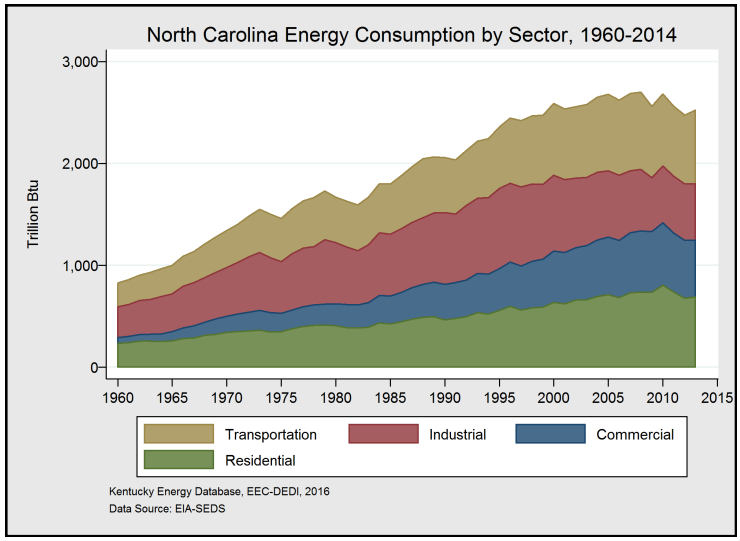


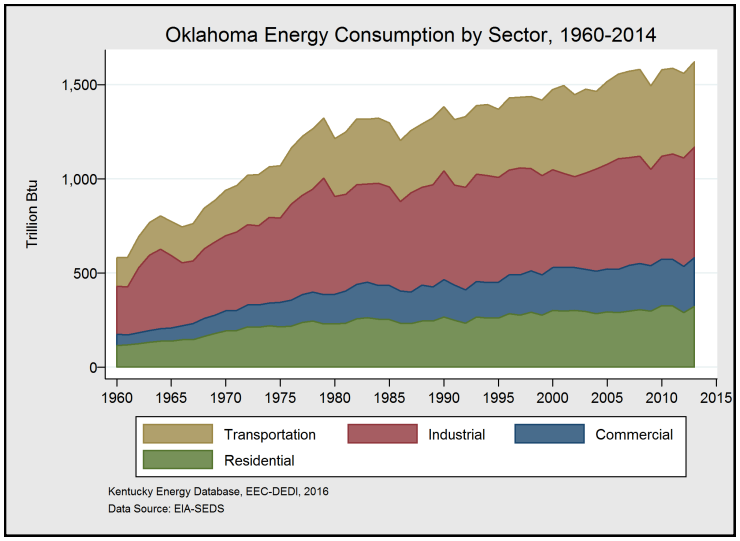
Historical Energy Consumption by Sector

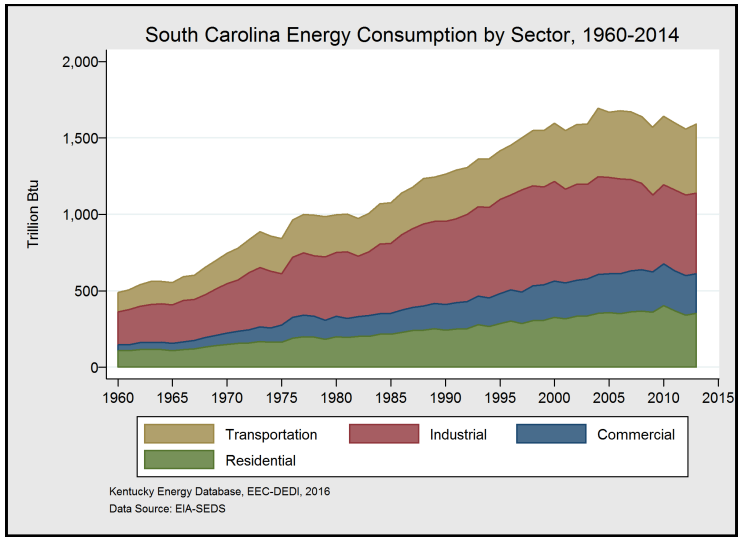




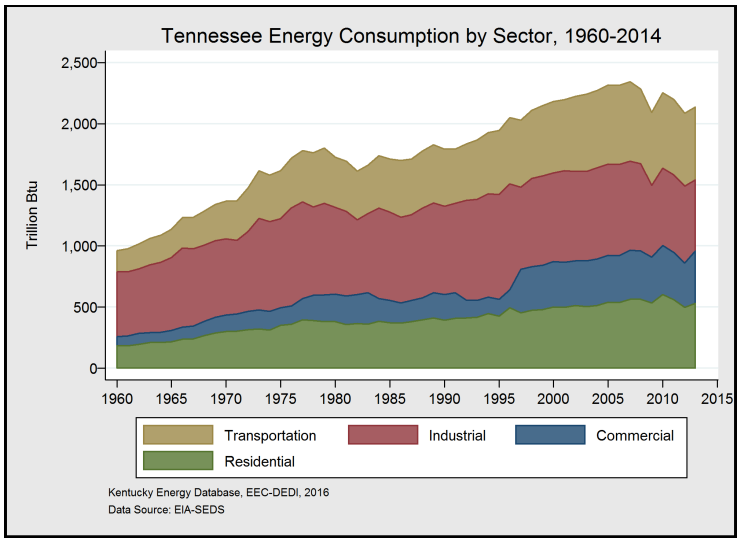


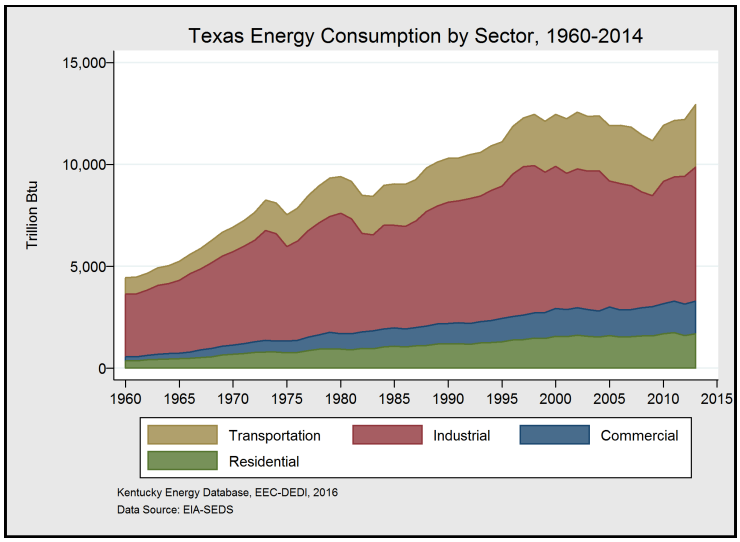


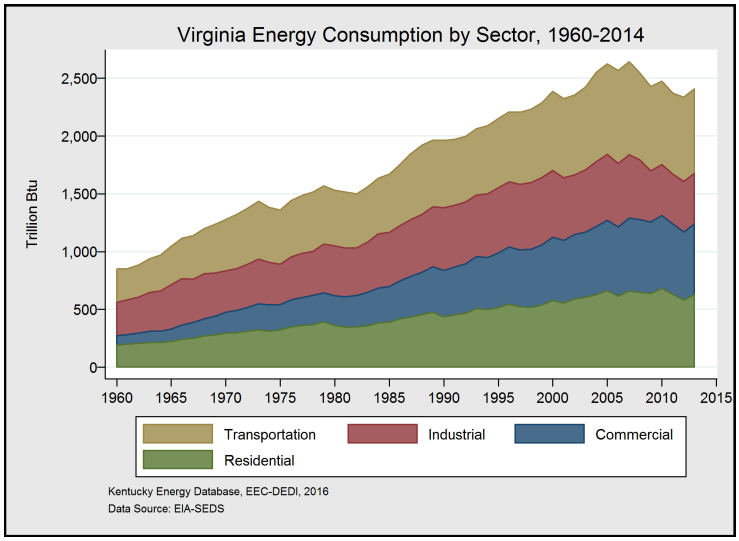


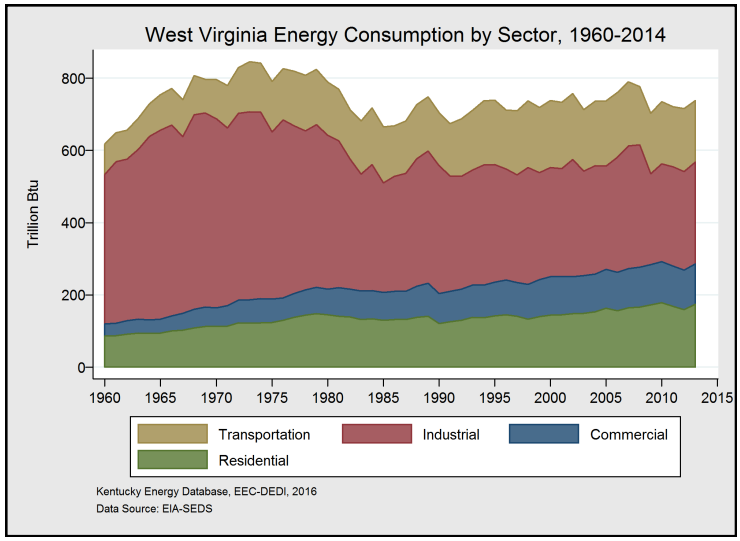


Historical Energy Consumption by Sector

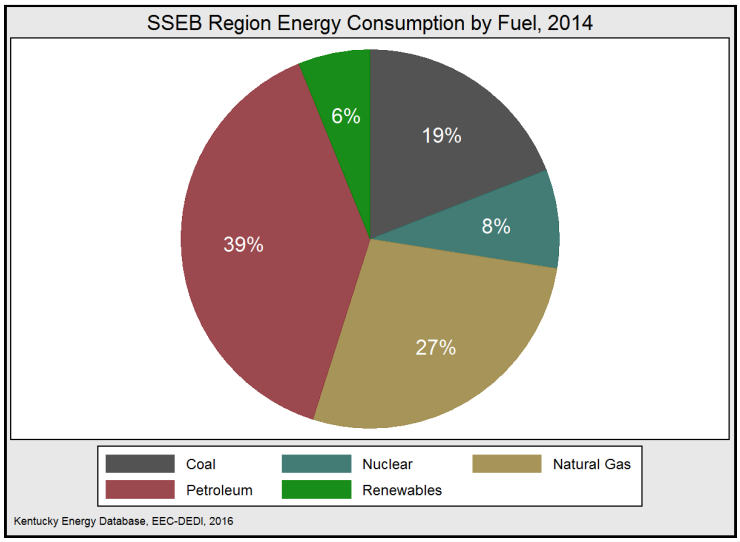


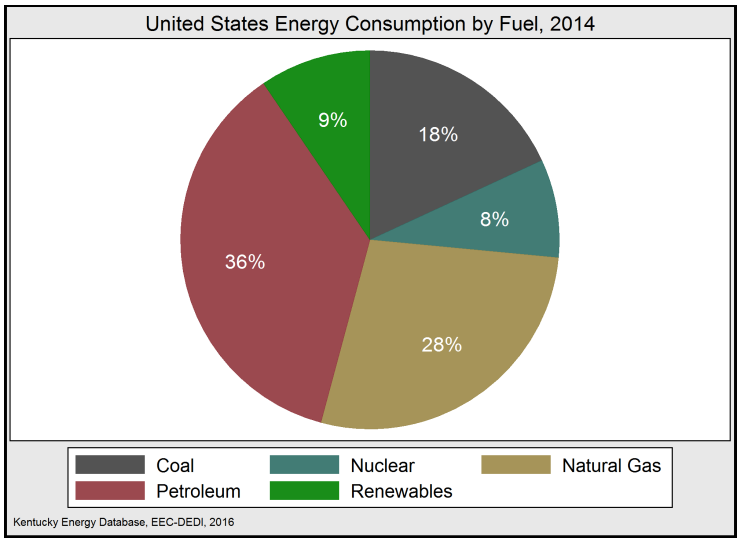






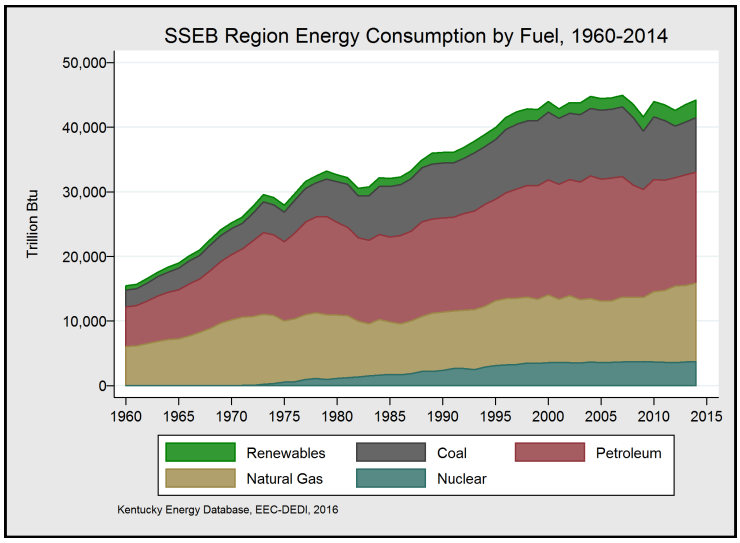
SSEB Region Energy Consumption by Source

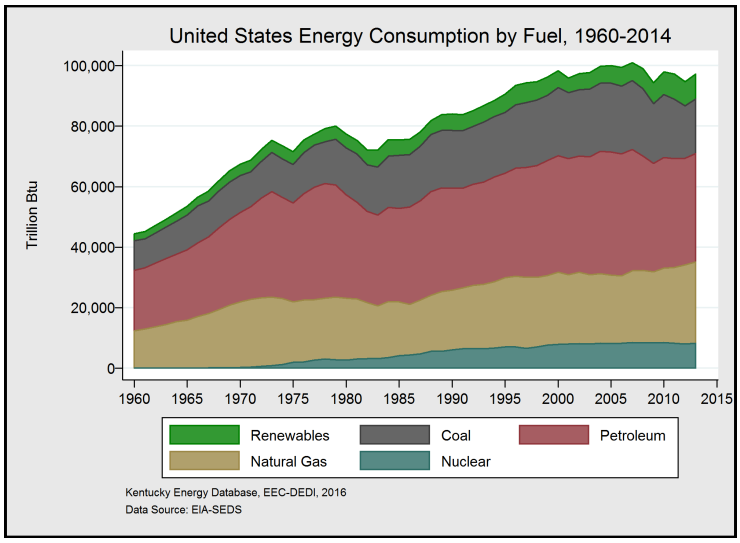




Source Type	Trillion Btu	1 Year Change
Total	44,700	+1.5%
Petroleum	17,203	+0.6%
Natural Gas	12,116	+2.4%
Coal	8,429	+2.8%
Nuclear	3,743	+1.4%
Renewables	2,730	+0.2%

Source Type	Trillion Btu	1 Year Change
Total	98,400	+1.3%
Petroleum	36,100	+0.8%
Natural Gas	27,500	+2.2%
Coal	18,000	~0.0%
Renewables	8,564	+3.1%
Nuclear	8,338	+1.1%

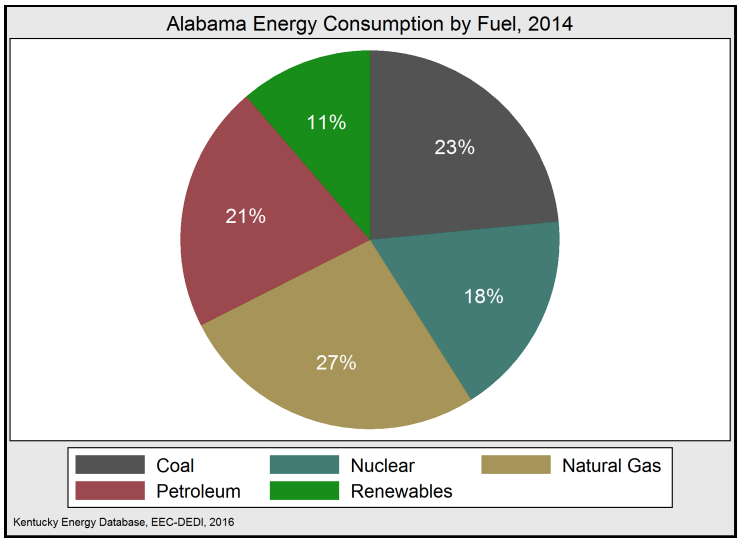


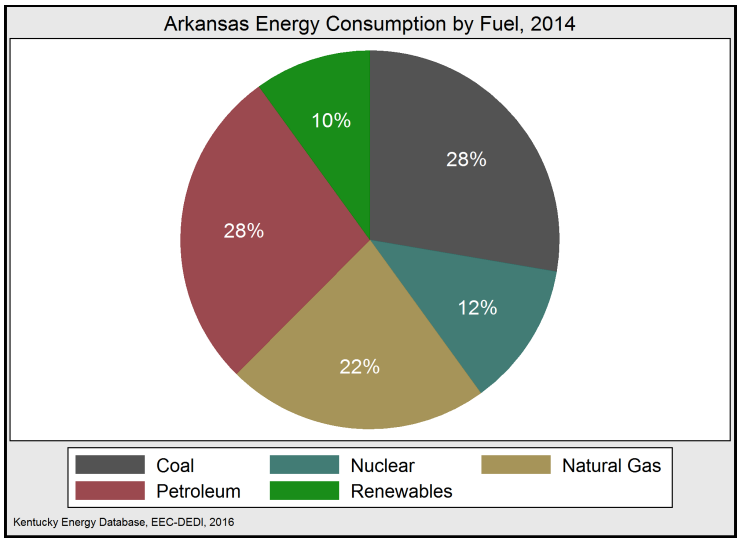


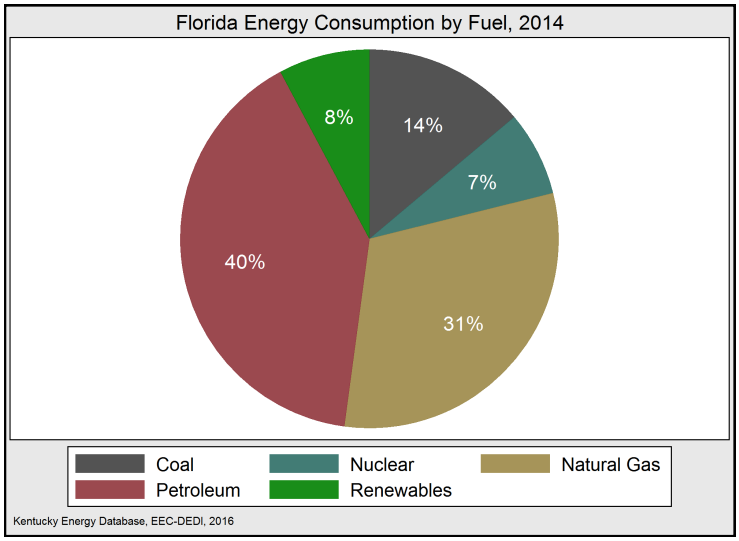
Total energy consumption in the SSEB region has risen by 181 percent from 1960 to almost 45 Quadrillion Btu in 2014, but the growth rate of energy demand has declined steadily since the late 1990s. Total energy demand has decreased by 1.4 percent since peaking in 2007; however regional demand remains 45 percent of all energy consumption nationally. Renewable resources have risen to 6 percent of all energy consumed in the SSEB region in 2014, led by increased wind electricity generation.

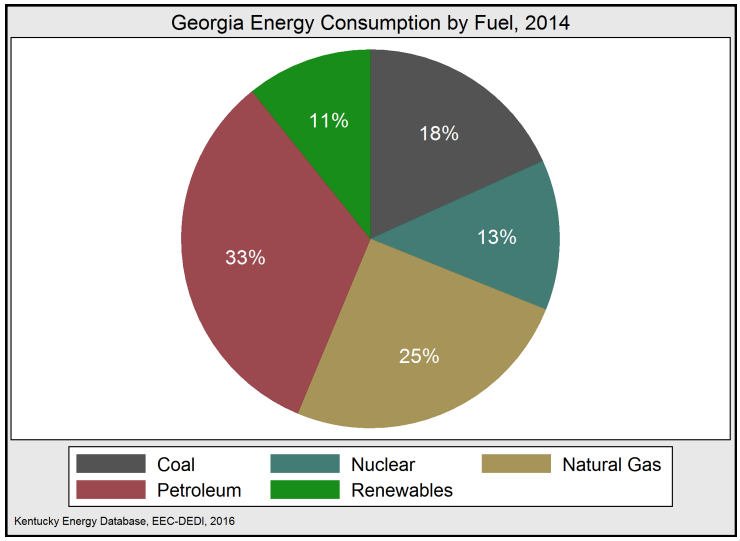
Energy consumption in the United States increased by 118 percent from 1960 to nearly 98.4 Quadrillion Btu in 2014, although it has fallen by 6.2 percent since 2007. The use of petroleum products continues to be the primary energy resource in both the SSEB region and the United States as a whole at 39 and 36 percent respectively in 2014, and is used primarily for transportation. Renewable energy now accounts for 9 percent of all energy consumed nationally.

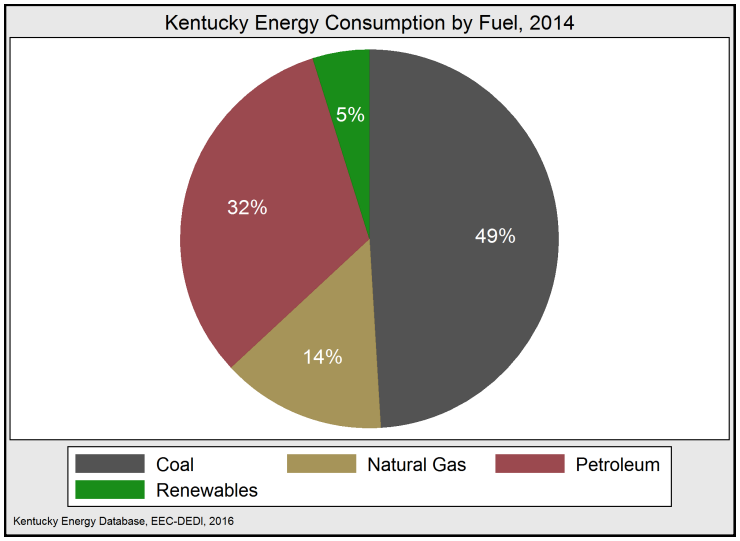
Energy Consumption by Source

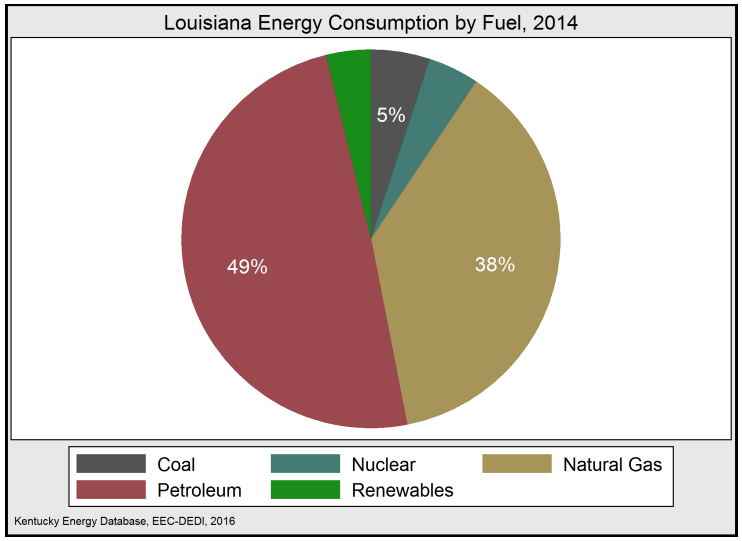




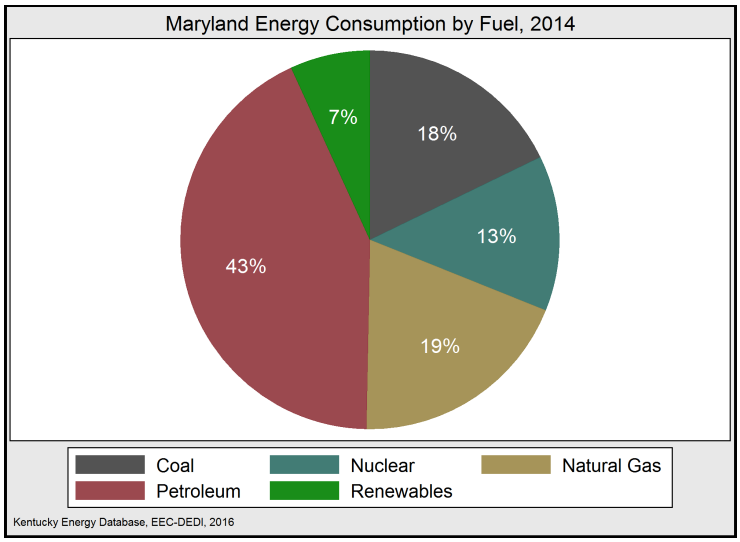


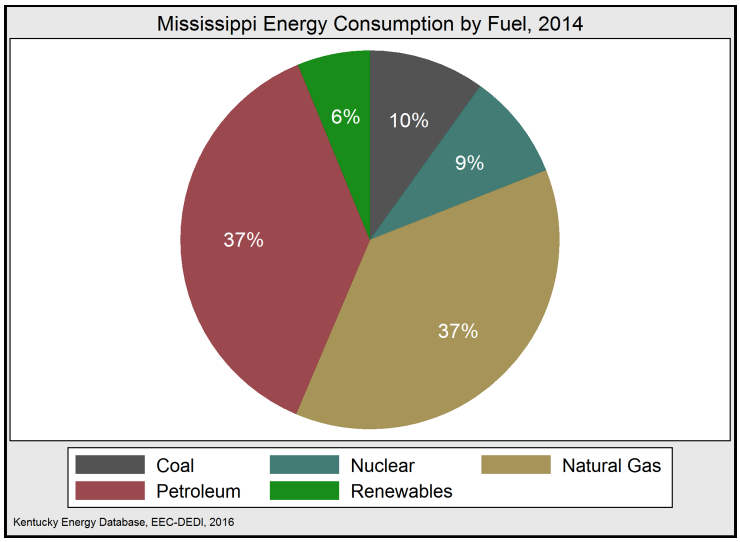


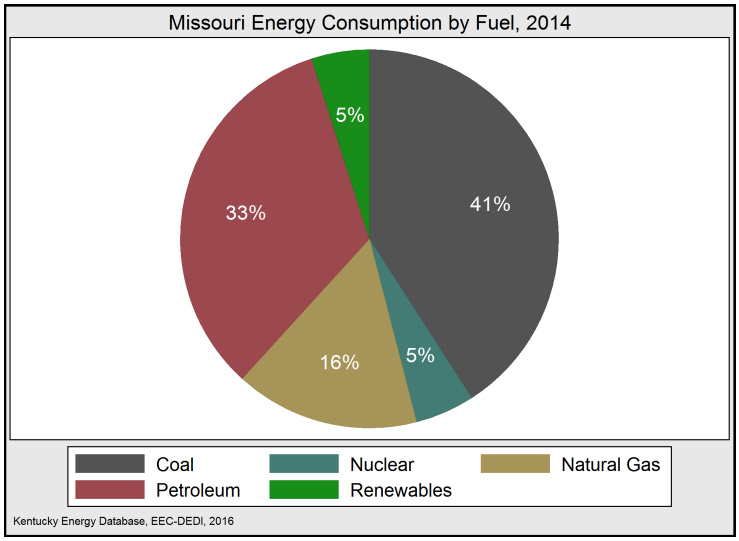


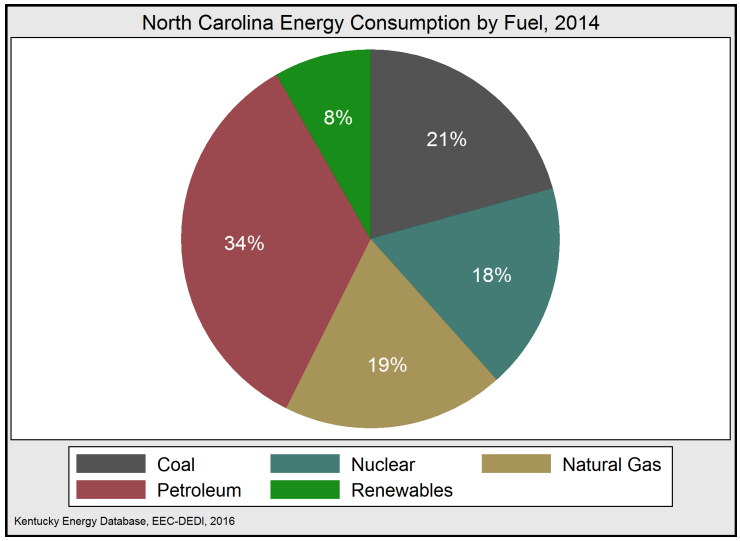


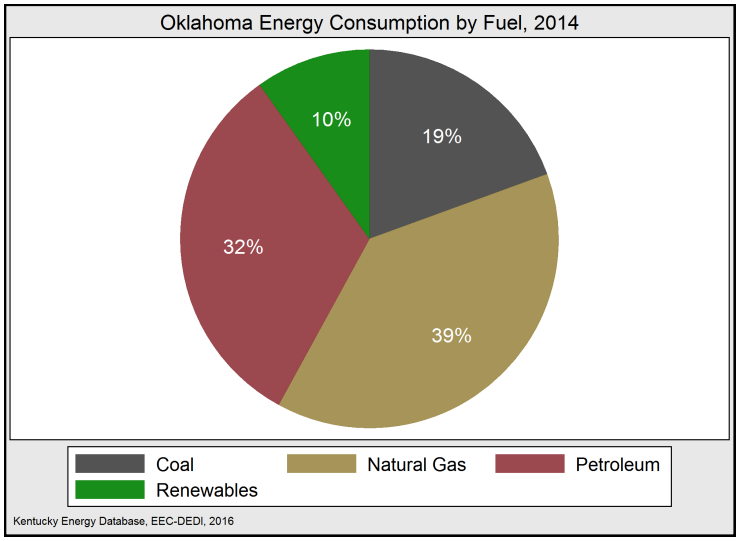
Energy Consumption by Source

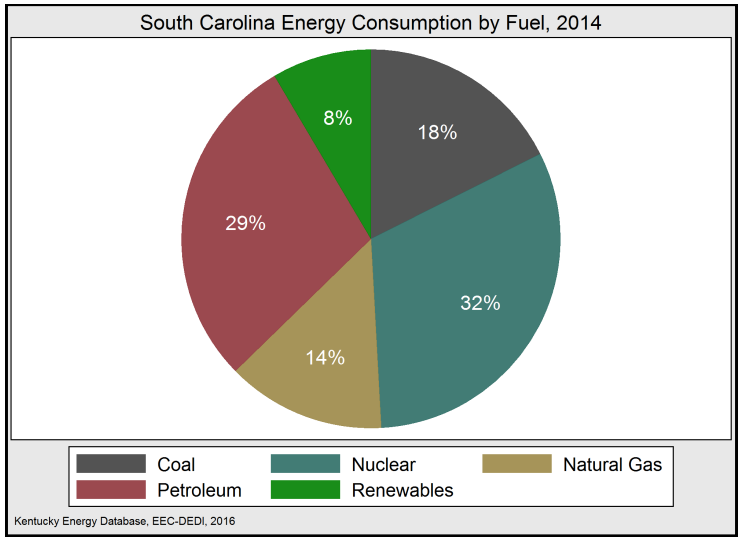




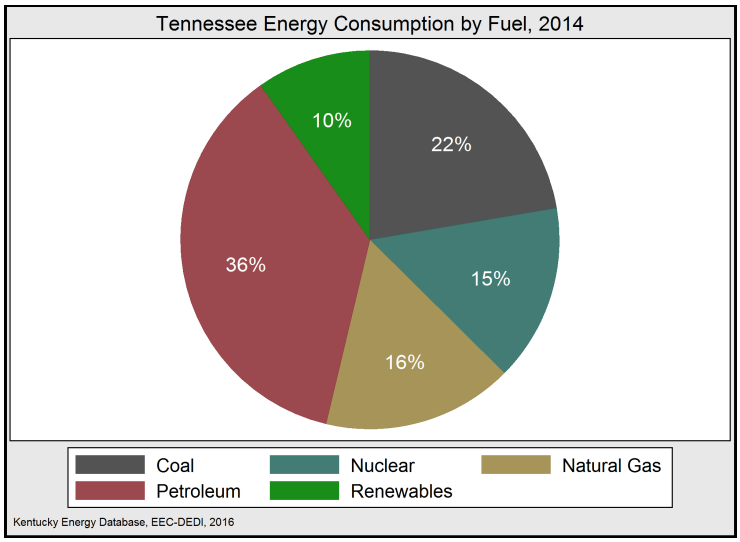


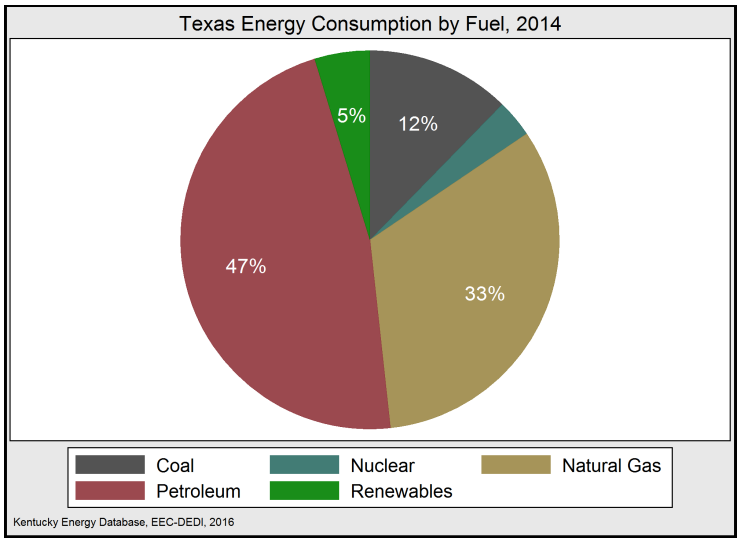


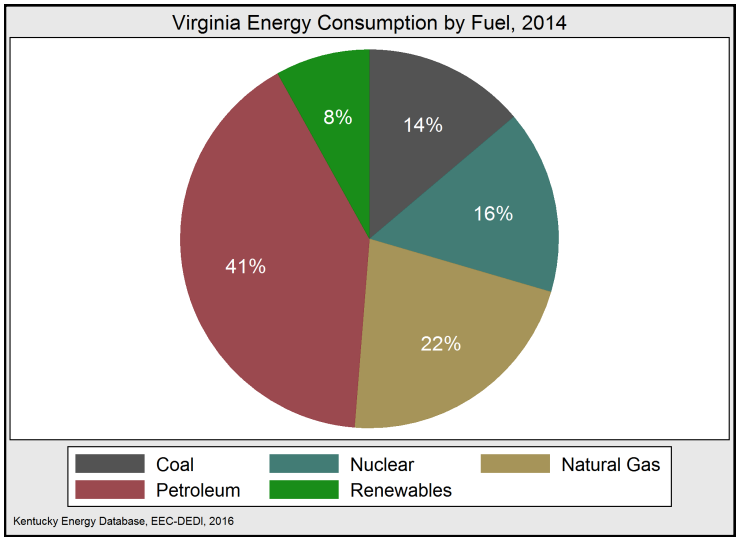


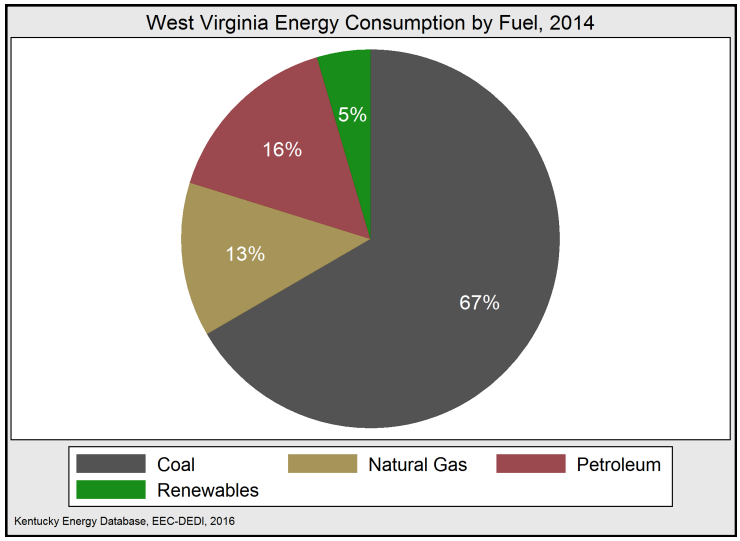


Energy Consumption by Source

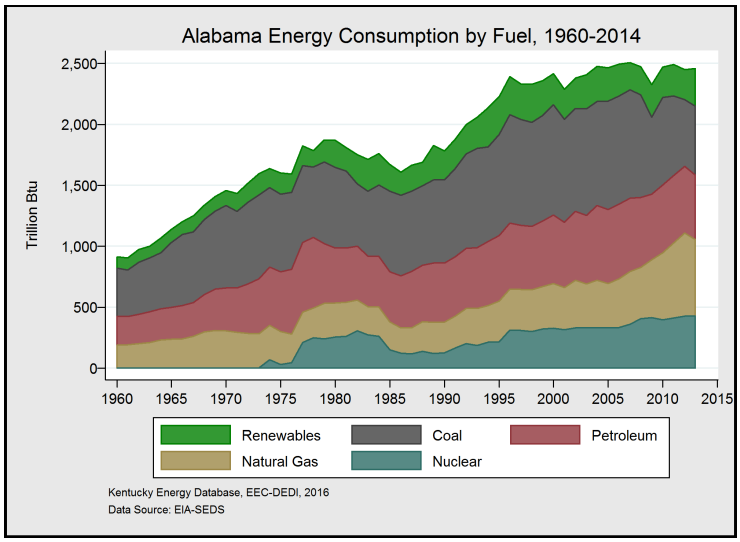


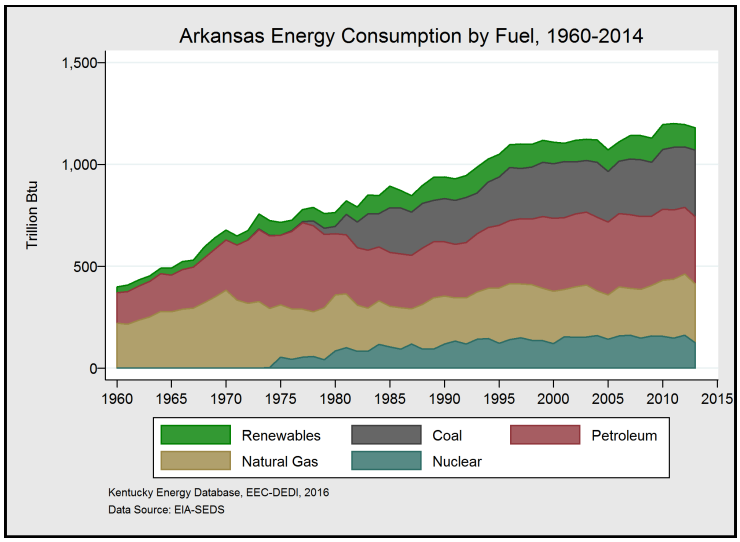


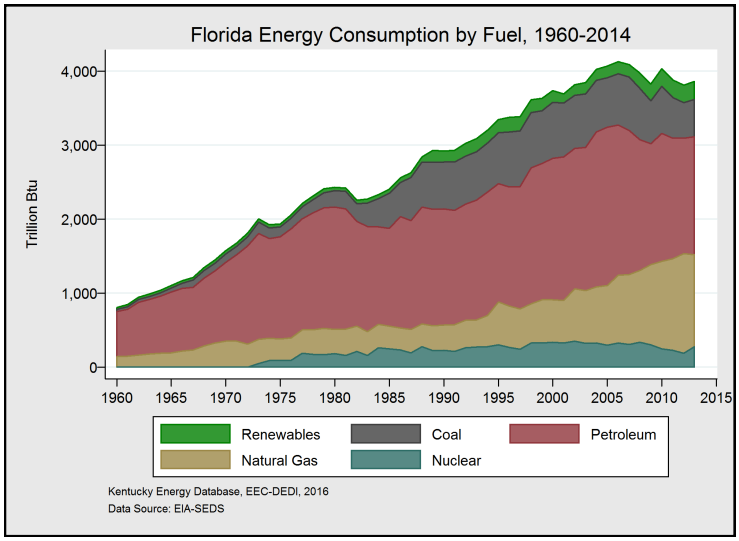


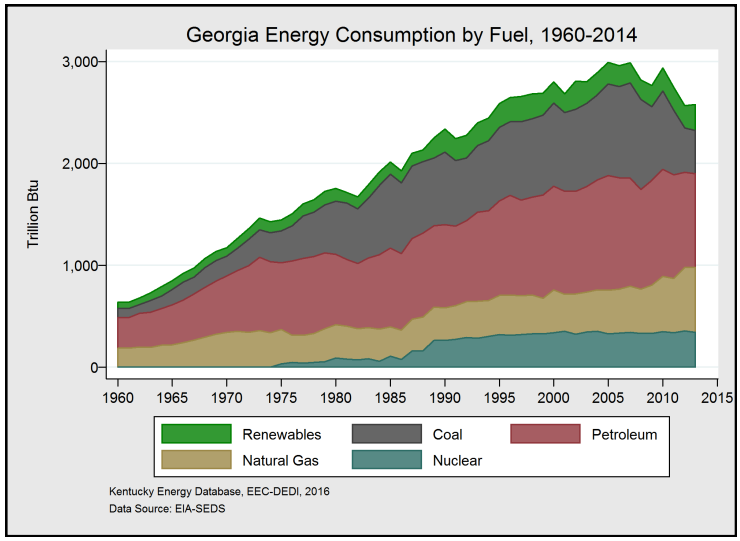


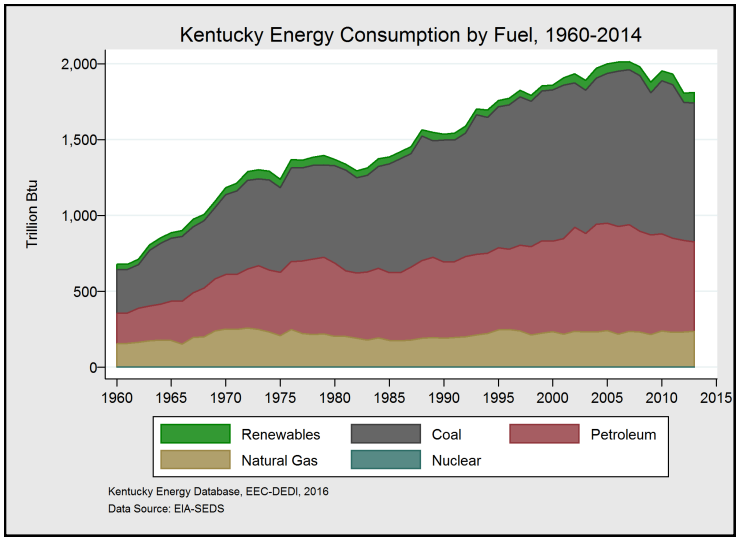
Historical Energy Consumption by Source

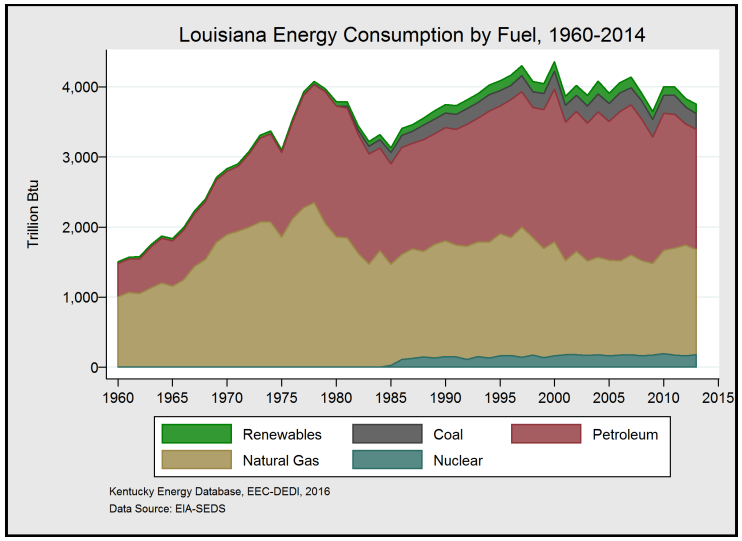




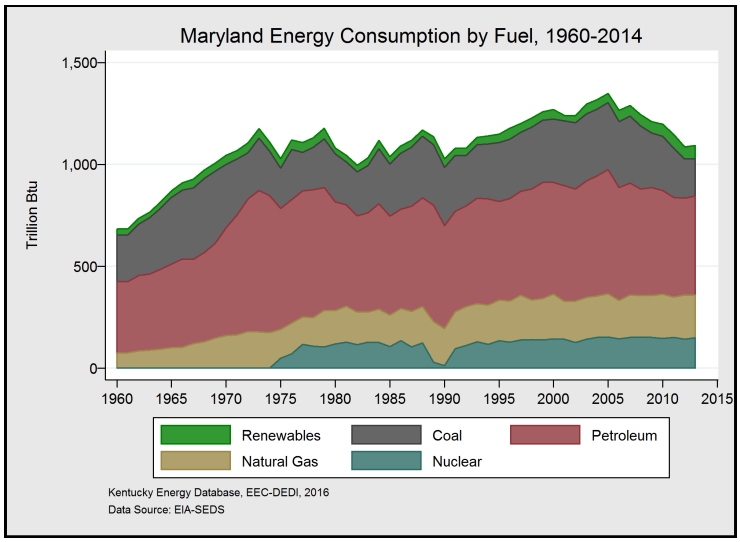


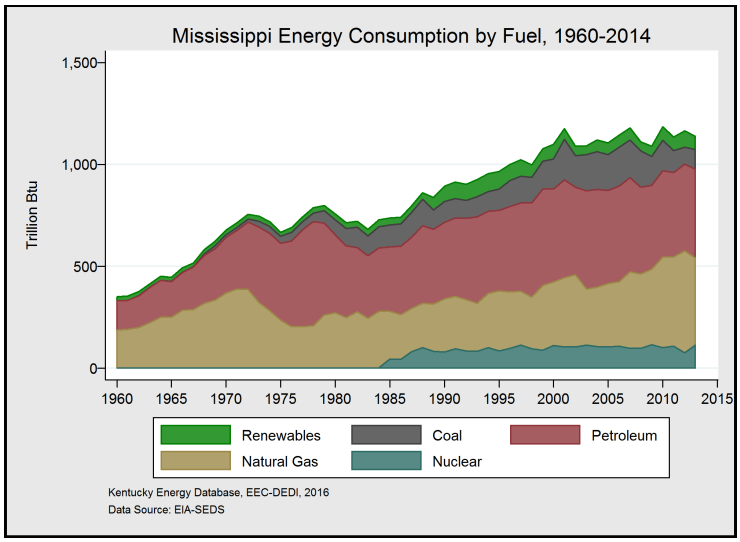


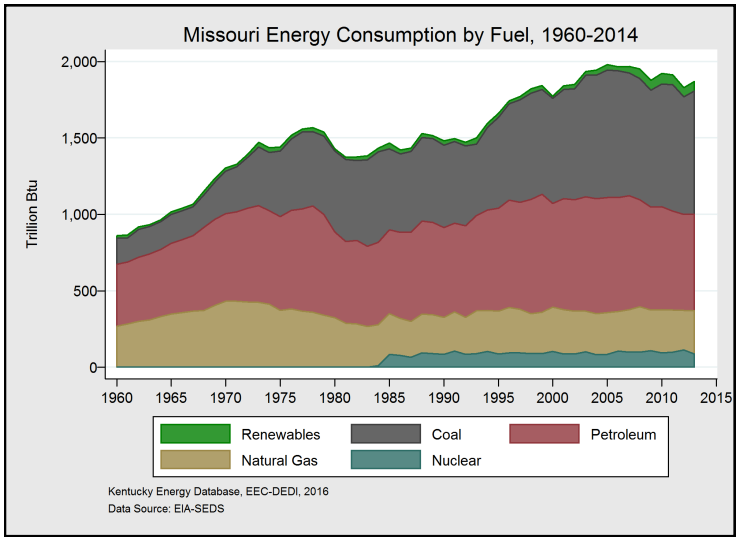


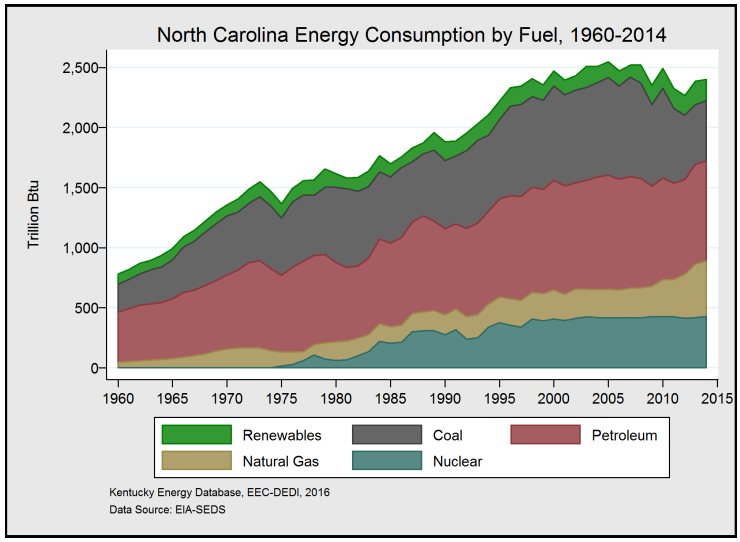


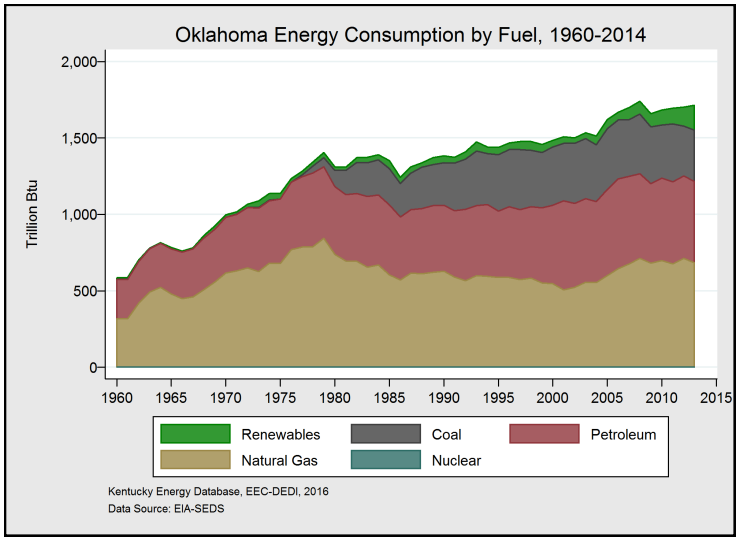
Historical Energy Consumption by Source

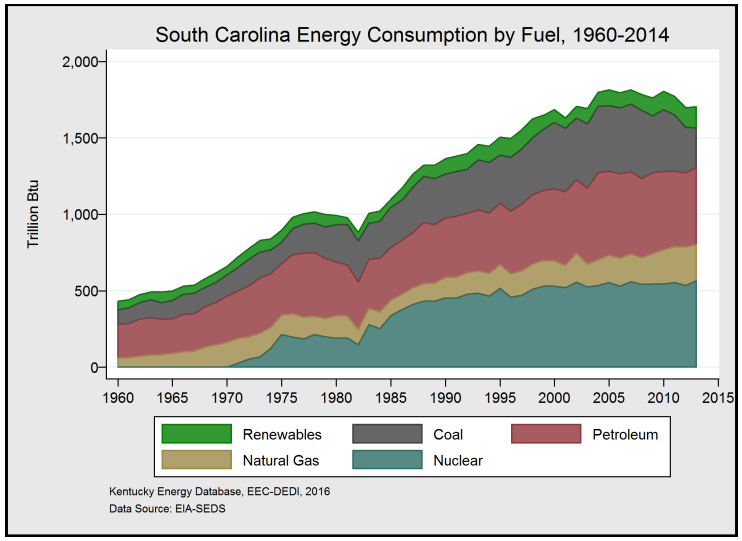




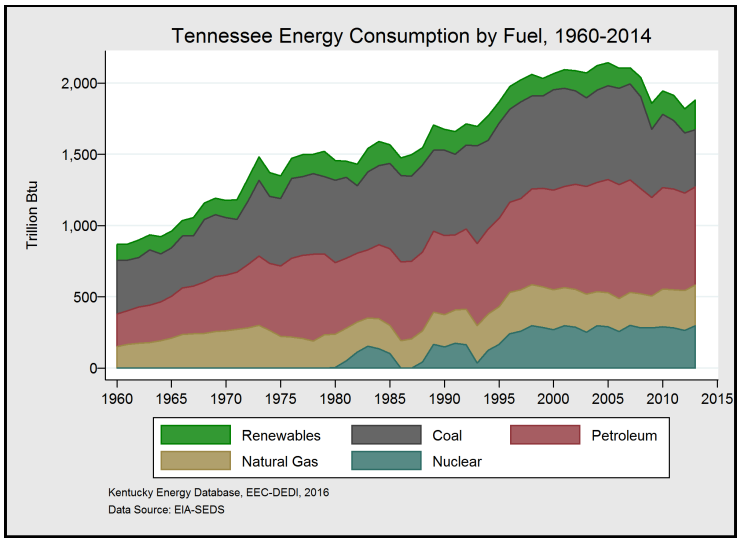


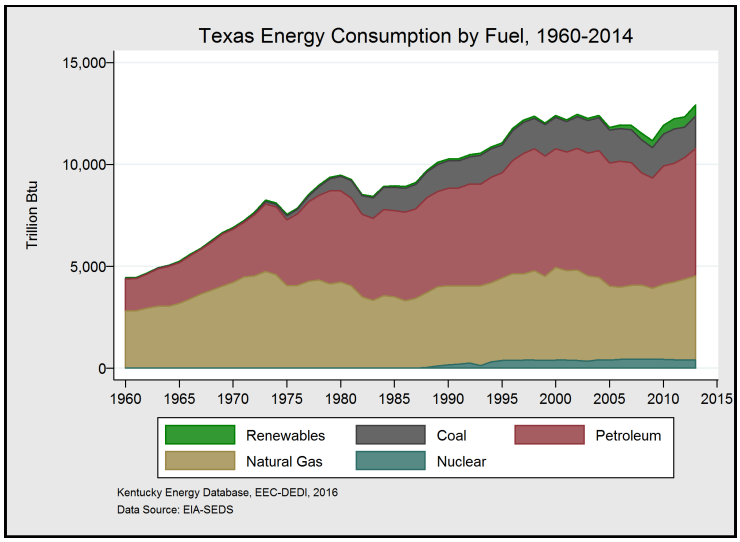


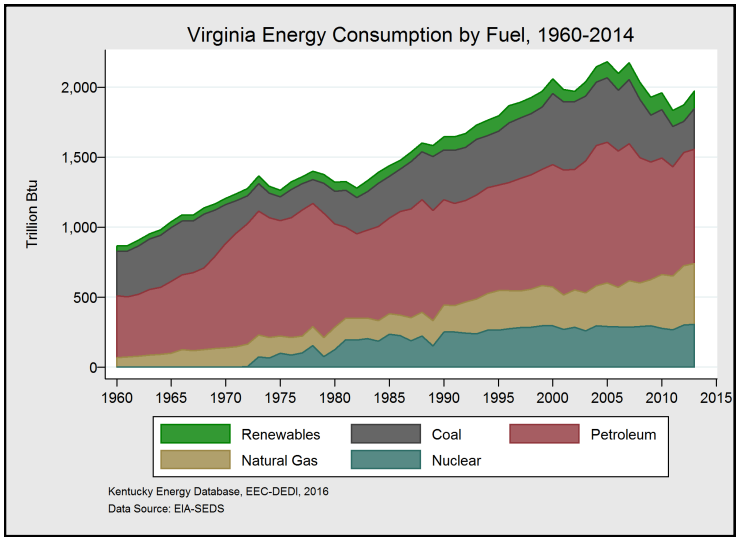


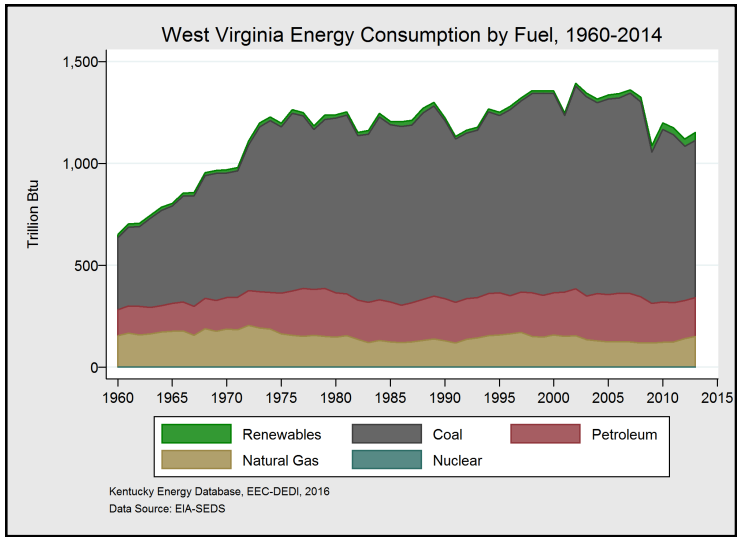


Historical Energy Consumption by Source

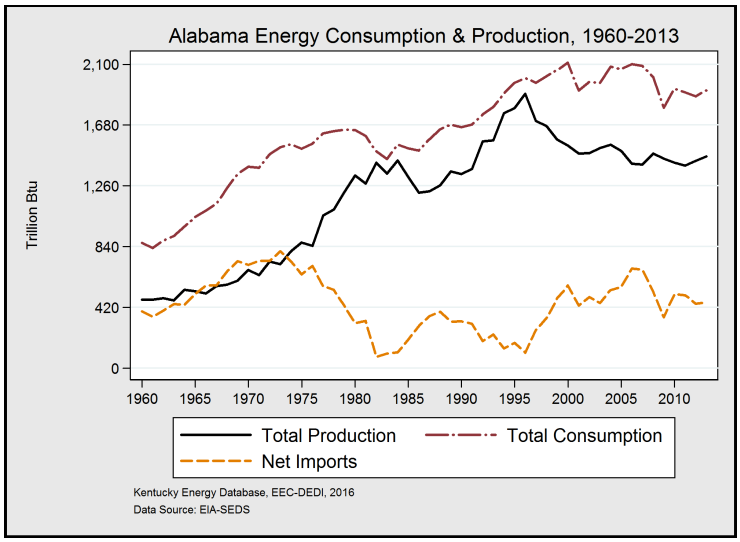


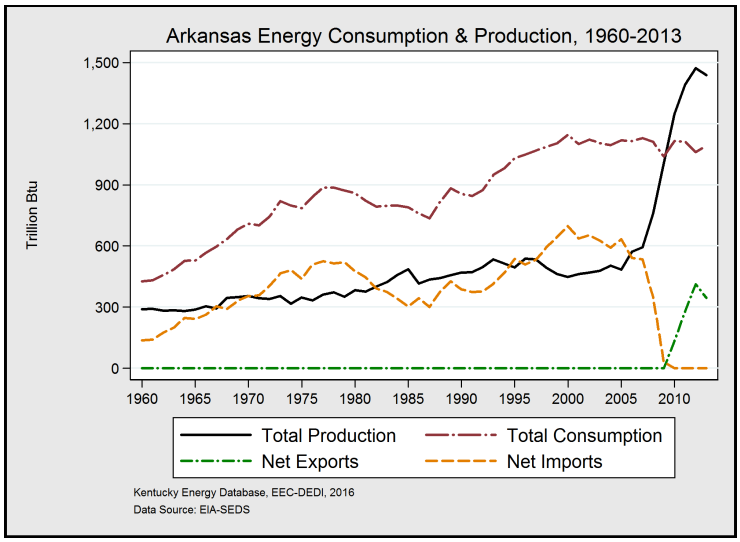


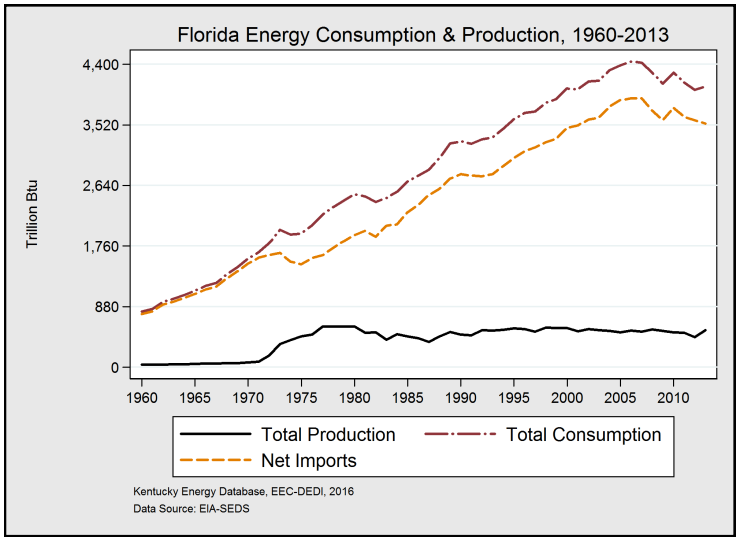


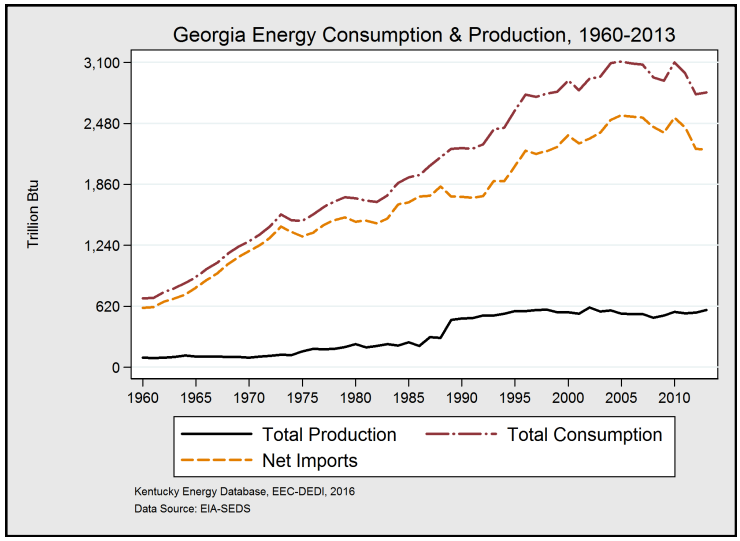


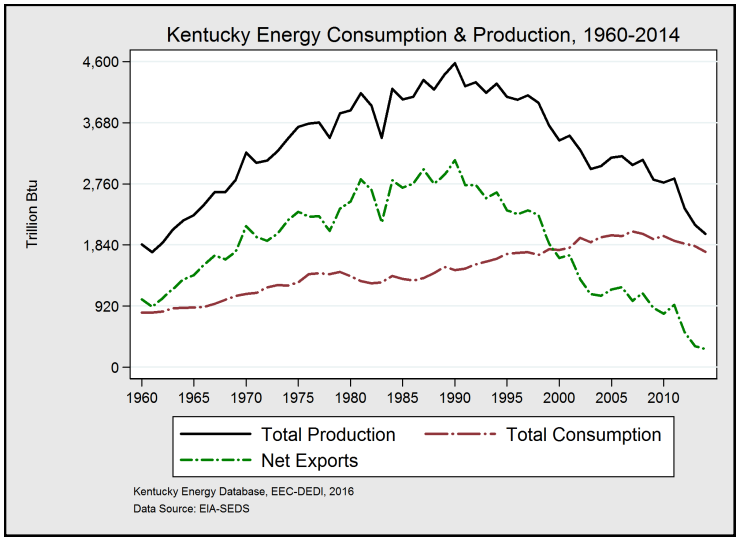
Historical Net Energy Exports

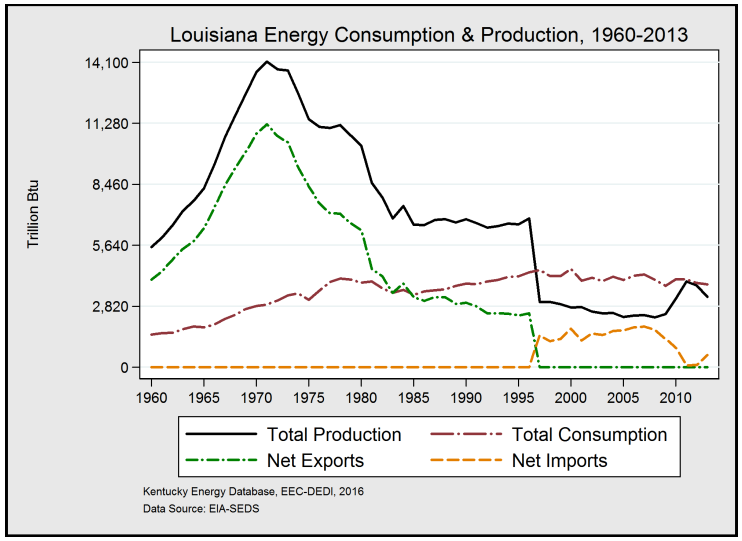






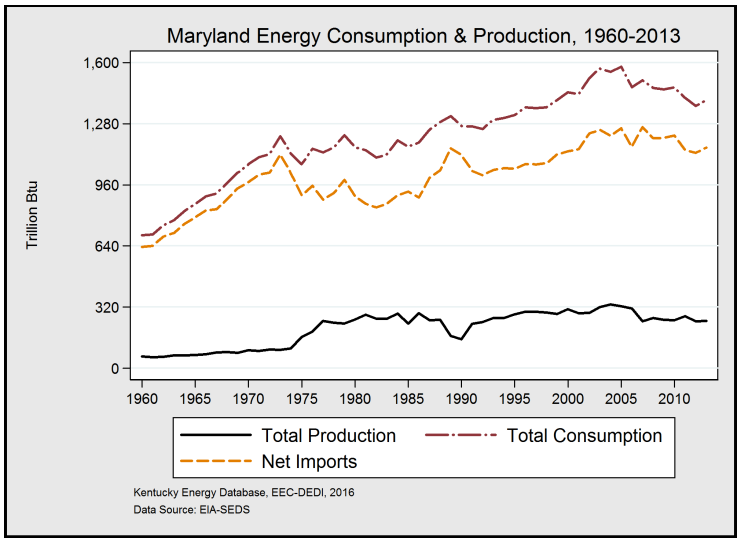


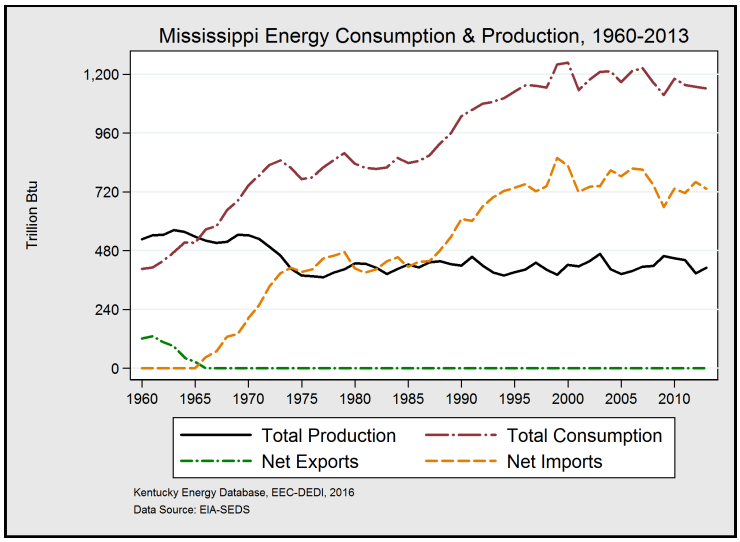


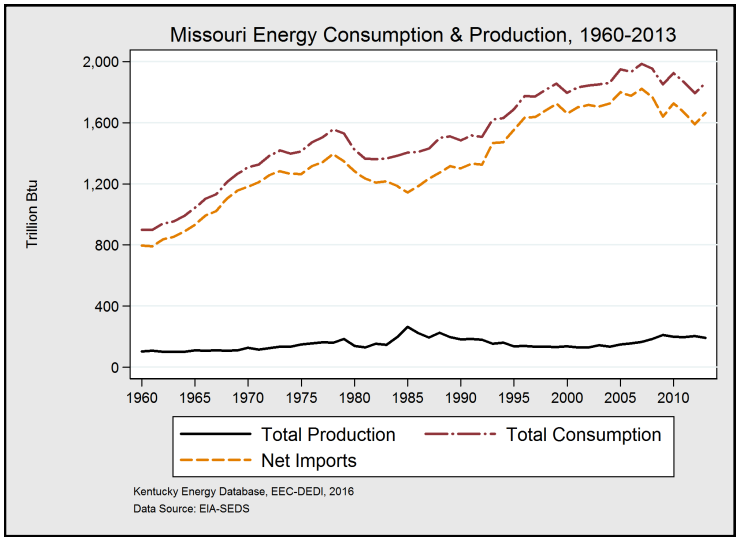


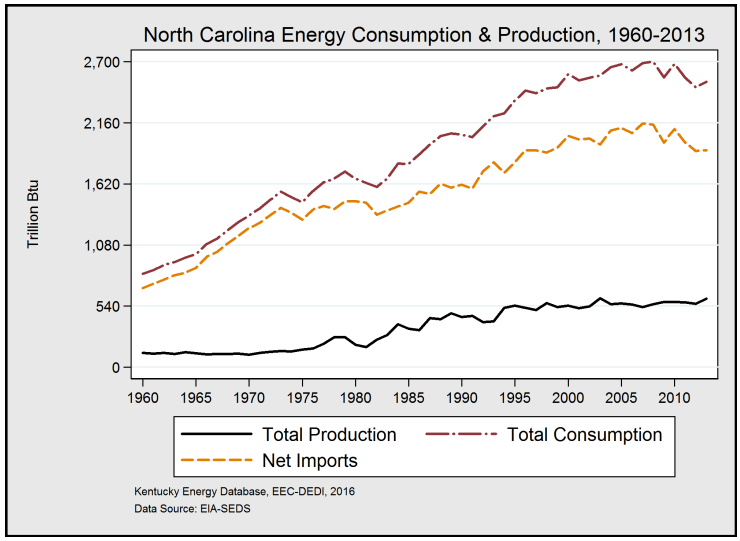
Louisiana and Texas show substantial fluctuation in energy consumption and production due to the reclassification of offshore energy extraction during this time series.

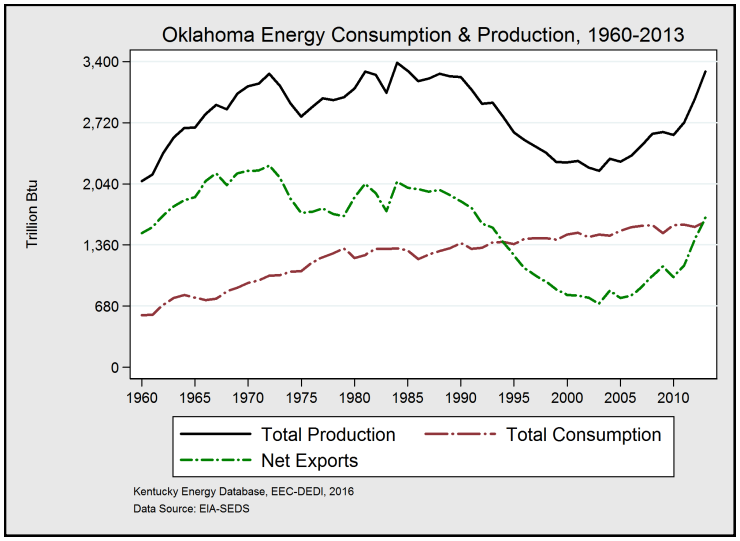
Historical Net Energy Exports

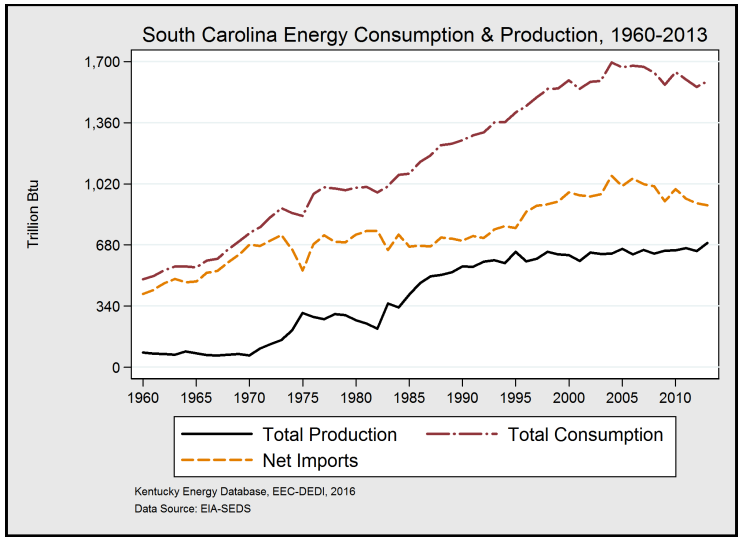




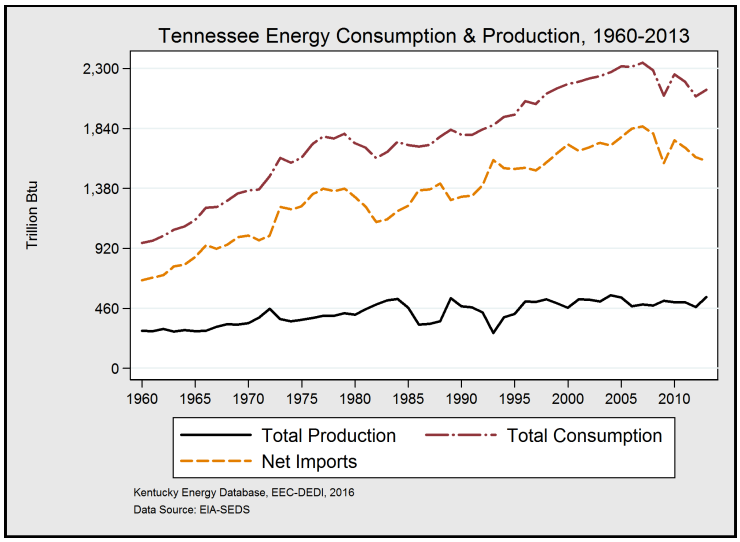


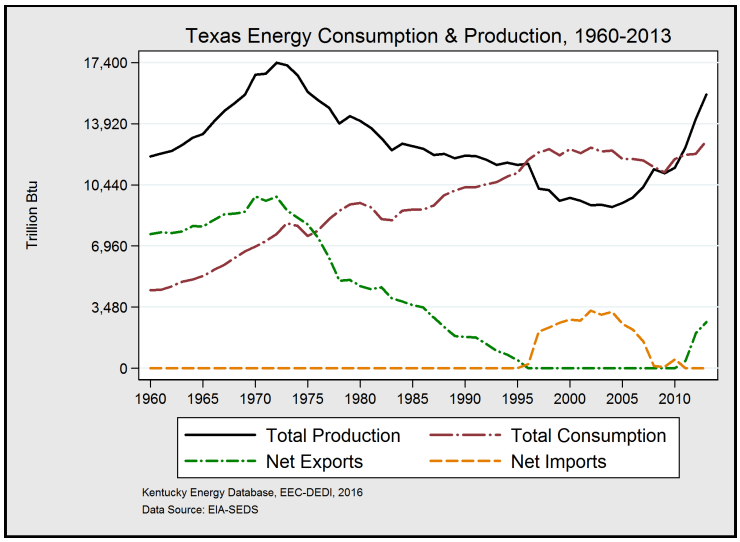


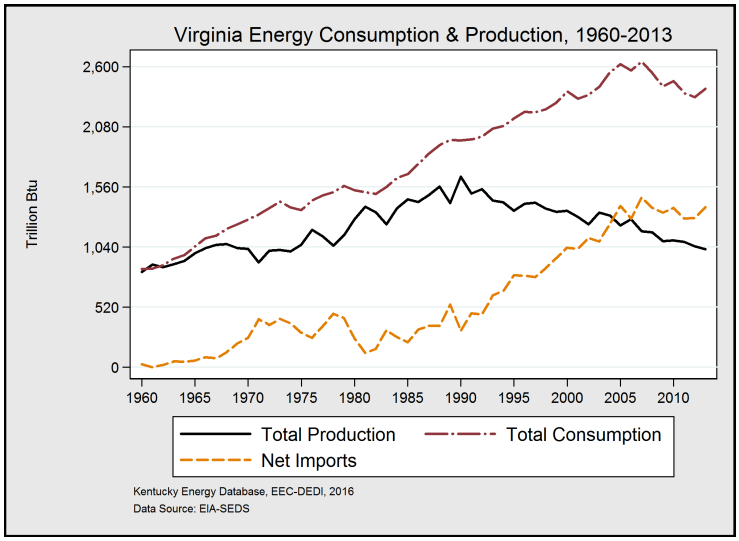


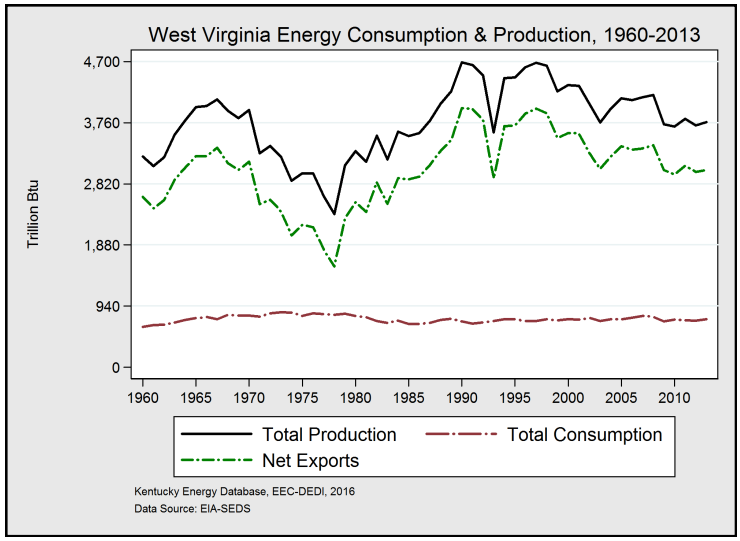


Historical Net Energy Exports









Louisiana and Texas show substantial fluctuation in energy consumption and production due to the reclassification of offshore energy extraction during this time series.

Glossary

Aviation Gasoline: A complex mixture of relatively volatile hydrocarbons with or without small quantities of additives, blended to form a fuel suitable for use in aviation reciprocating engines.

Biomass: Organic non-fossil material of biological origin constituting a renewable energy source.

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

Central Appalachian Basin: The Central Appalachian Coal Basin is the middle basin of three basins that comprise the Appalachian Coal Region of the eastern United States. It includes parts of Kentucky, Tennessee, Virginia, and West Virginia.

Coal: A naturally occurring, combustible, sedimentary rock containing at least 50 percent by weight organic matter, a solid "fossil" fuel.

Commercial Sector: An energy-consuming sector that consists of service-providing facilities and equipment of businesses; federal, state, and local governments; educational institutions, and other private and public organizations, such as religious, social, or fraternal groups.

Diesel: A fuel composed of distillates obtained in petroleum refining operation, or blends of such distillates with residual oil used in motor vehicles.

Electric Power Sector: An energy-consuming sector that consists of electricity only and combined heat and power (CHP) plants whose primary business is to sell electricity, or electricity and heat, to the public (NAICS 22). This sector includes electric utilities and independent power producers.

Electric Service Area: The geographic area served exclusively by one retail electricity provider.

Electricity Distribution: The delivery of electrical energy to a customer's home or business through low-voltage lines (typically at 69kV or less).

Electricity Generation: The conversion of energy resources into electric power.

Electricity Rate: The average amount of money charged for each unit of electrical energy (kWh) distributed to a customer.

Electricity Transmission: The movement or transfer of electric energy at high voltage over an interconnected group of lines and associated equipment between points of supply and points at which it is transformed for delivery to consumers or is delivered to other electric systems.

Energy Consumption: The processes of converting energy supplies into useful forms such as heat, steam, electricity, and motion.

Energy Production: The processes of extraction, collection, or utilization of energy resources for the purpose of creating accessible energy supplies (i.e. available for sale and distribution).

Ethanol: A clear, colorless, flammable alcohol. Ethanol is typically produced biologically from biomass feedstocks such as agricultural crops and cellulosic residues from agricultural crops or wood.

Gasoline: A complex mixture of relatively volatile hydrocarbons with or without small quantities of additives, blended to form a fuel suitable for use in spark-ignition engines.

Geothermal Energy: Hot water or steam extracted from Geothermal reservoirs in the earth's crust. Also, a subterranean energy source utilized by residential heat pumps and air conditioning units.

Glossary

Gigawatt (GW): A measure of electrical power. Specifically, one billion watts or one thousand megawatts.

Gigawatt Hour (GWh): A measure of electrical energy defined as a unit of work, measured as 1 Gigawatt (1,000,000,000 watts) of power expended for 1 hour.

Hydroelectric Energy: The use of flowing water to produce electrical energy.

Illinois Basin: The coal producing areas of Western Kentucky, Southern Illinois, and Southwest Indiana.

Industrial Sector: An energy-consuming sector that consists of all facilities and equipment used for producing, processing, or assembling goods. The industrial sector encompasses the following types of activity: manufacturing, agriculture, forestry, fishing and hunting; mining, oil and gas extraction, and construction.

Jet Fuel: A refined petroleum product used in jet aircraft engines. It includes kerosene-type Jet Fuel and naphtha-type Jet Fuel.

Kerosene: A light petroleum distillate that is used in space heaters, cook stoves, and water heaters and is suitable for use as a light source when burned in wick-fed lamps.

Kilowatt (kW): A measure of electrical power. Specifically, one thousand watts.

Kilowatt Hour (kWh): A measure of electrical energy defined as a unit of work, measured as 1 Kilowatt (1,000 watts) of power expended for 1 hour.

Megawatt (MW): A measure of electrical power. Specifically, one million watts.

Megawatt Hour (MWh): A measure of electrical energy defined as a unit of work, measured as 1 Megawatt (1,000,000 watts) of power expended for 1 hour.

Natural Gas: A naturally occurring combustible mixture of light hydrocarbon (primarily methane) and inorganic gases that often occurs in porous and permeable sedimentary rocks, a gaseous "fossil" fuel.

Natural Gas Liquids: Propane and butanes, which are dissolved in natural gas at reservoir pressure but condense into liquids at normal atmospheric pressure. Also called condensates, these liquids are removed from initial natural gas production and refined into a variety of additional energy products.

Net Energy Consumption: The measurement of the total British Thermal Unit (Btu) value of energy resources utilized or combusted, subtracting the quantity of energy lost in the conversion of a primary energy source into a secondary, useful energy source.

Nuclear Power: Electricity generated by the use of the thermal energy released from the fission of nuclear fuel in a reactor.

Nuclear Fuel: Fissionable materials that have been enriched to such a composition that, when placed in a nuclear reactor, will support a self-sustaining fission chain reaction, producing heat in a controlled manner for process use.

Petroleum: A mixture of hydrocarbons that exists in liquid phase in natural underground reservoirs and remains liquid at atmospheric pressure after passing through surface separating facilities.

Renewable Energy: There is no formal, universally accepted definition for this term. Typical usage may define renewable energy as energy resources that are naturally replenishing but flow-limited. Such resources are virtually inexhaustible in duration but limited in the amount of energy that is available per unit of time.

Glossary

Residential Sector: An energy-consuming sector that consists of living quarters for private households. Common uses of energy associated with this sector include space heating, water heating, air conditioning, lighting, refrigeration, cooking, and running a variety of other appliances.

Transportation Sector: An energy-consuming sector that consists of all vehicles whose primary purpose is transporting people and/or goods from one physical location to another. This sector includes the natural gas utilized in the movement of natural gas resources through transmission pipeline.

Terawatt: A measure of electrical energy defined as a unit of work, One Terawatt is 1,000,000,000,000 Watts or 10^{12} Watts.

Volt (V): A measure of electrical potential or electromotive force.

Watt (W): The unit of electrical power equal to one ampere under a pressure of one volt. A Watt is equal to 1/746 horse power.

Wood & Wood Waste: Wood and wood products, possibly including scrubs, branches, sawdust, etc., bought or gathered, and used by direct combustion.

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