Southern States Regional Energy Profiles

2012

Developed by DEDI

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July 28, 2012

Dear Board Members, Associate Members and Colleagues:

The Southern States Energy Board is pleased to present this informative and insightful analysis of ***Southern States Energy Profiles***, providing an overview of the changing patterns of energy consumption across the American South and their impacts on energy independence and security, reliability, and economic growth. A cooperative venture between the Southern States Energy Board and the Kentucky Department of Energy Development and Independence of the Energy and Environment Cabinet, this report is expected to serve 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. The Kentucky Energy and Environment Cabinet is to be commended for their skillful and groundbreaking modeling designs that have shaped the direction and substance of this report. 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 herein.

Why are these state energy profiles important to all of us? In 2010, the 16 southern states in the Southern States Energy Board region consumed over 45% of the energy used in the United States. Growing three times faster than the national average, energy consumption per capita and per unit of gross domestic product (GDP) is substantially higher in the South than in the rest of the Nation. Total energy consumption in member states has risen by 180% from 1960 to over 44 quadrillion BTU's in 2010. The energy-intensive industrial and manufacturing processes endemic to the SSEB region continue to consume more energy than other economic sectors. This is coupled with residential and commercial energy consumption rates that are growing even faster than industrial demand as a result of the increase in population and business attraction and relocation to the region.

Accounting for 40% of all energy consumed, petroleum in the form of transportation fuels such as diesel and motor gasoline is the region's primary energy source. Natural gas supplied 24% of our energy needs in 2010 and is the second largest energy provider. Coal contributed 22% of our energy generation requirements in 2010 but is being challenged by recent and continuing changes to federal environmental regulations that threaten its expansion and use. Nuclear power provides a stable 8% while renewables, primarily hydro, wood waste and wind power, contribute 5% of the region's energy mix.

Despite the South's leading energy consumption rate, electricity prices in 2011 were 9% lower than the national average. Even though residential prices were considerably lower in the region, consumption per household is higher than the national average due to lower prices, weather, income, housing stock, as well as a historical availability of low priced substitutes.

We commend these ***Southern States Energy Profiles*** to you as a report aggregated from public sources including 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. The document compares energy consumption, energy sources, electricity consumption, electricity generation and emissions, electricity prices, and energy exports between all Southern States Energy Board 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, the Southern Legislative Conference Energy and Environment Committee Chair 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 pollute less and contribute to a clean global environment while protecting indigenous natural resources for future generations.

Executive Summary

The Southern States Energy Board (SSEB) is proud to offer these ***Southern States Energy Profiles*** to provide a general overview of energy consumption within the SSEB region and to serve as a foundation for discussing the energy and environmental policies, programs, and technologies that could enhance future economic development of member states. This report is a collaboration between 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 United States Government agencies; Energy Information Administration (EIA), Environmental Protection Agency (EPA), Bureau of Labor Statistics (BLS), Bureau of Economic Analysis (BEA), and Census Bureau. This 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 as a whole.

Energy Consumption

The sixteen southern states in the SSEB region consumed 45% of all energy used in the United States in the year 2010. Energy consumption per capita and per unit of Gross Domestic Product (GDP) is not only substantially higher in the SSEB region, but is also growing faster than the national average. Demand growth in member states has averaged over 2% annually versus only 1.59% nationally. Total energy consumption in member states has risen by 180% from 1960 to over 44 quadrillion BTU in 2010. The relatively energy-intensive industrial and manufacturing processes in the SSEB region continue to consume more energy than other economic sectors. However, residential and commercial energy consumption are growing at a faster rate than industrial demand.

Energy Sources

Petroleum, used primarily for transportation fuels such as diesel and motor gasoline, continues to be the region's primary energy source; accounting for 40% of all energy consumed. Natural gas is the second largest energy resource, supplying 24% of energy demand in 2010, and is used primarily for industrial processes, electricity generation, and home heating. Coal is the region's third largest energy resource, supplying 22% of energy requirements in 2010, and is used primarily for electricity generation. However, due to low natural gas prices as well as recent changes to federal environmental regulations, coal consumption in the region can be expected to decline significantly for the foreseeable future to be replaced by natural gas. Nuclear power supplied 8% of the regions energy requirements. Renewable energy resources, primarily electricity generation from hydroelectric dams, combustion of wood waste, and wind power, supplied 5% of the energy consumed in the SSEB region in 2010. The fastest-growing renewable energy in the region is wind power.

Electricity Prices

Electricity prices in the SSEB region in 2011 were 9% lower than the national average. Industrial and residential electricity prices averaged 6.09 and 10.42 cents per kilowatt-hour (kWh) respectively. Although residential prices are considerably lower, electricity consumption per household is higher than the national average, such that the monthly electricity bills paid by consumers, which averaged $121.19 in 2011, are 26% higher than the national average of $96.20. Higher per capita consumption in the region is a result of lower electricity prices, weather, income, housing stock, as well as the historical availability and price of substitutes such as natural gas.

Emissions Reduction

Pollution mitigation measures at power plants in the SSEB region, including the use of lower-sulfur fuels and the installation of clean coal technologies, have reduced sulfur dioxide (SO_2) emissions by 60.5% since 1990 despite a 30% increase in electricity consumption. During the same time period, carbon dioxide (CO_2) emissions for the generation of electrical power have risen by 20%. The data for this and other topics are illustrated and discussed in greater detail in the remainder of this report.

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

SOUTH CAROLINA

TENNESSEE

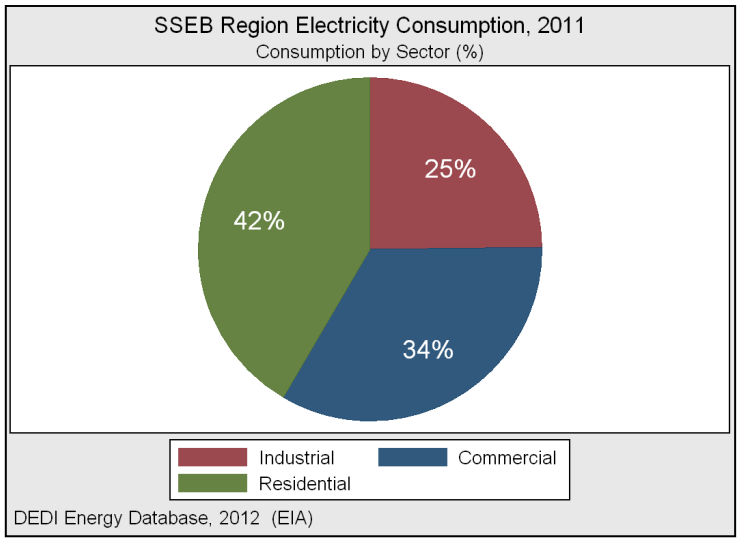
TEXAS

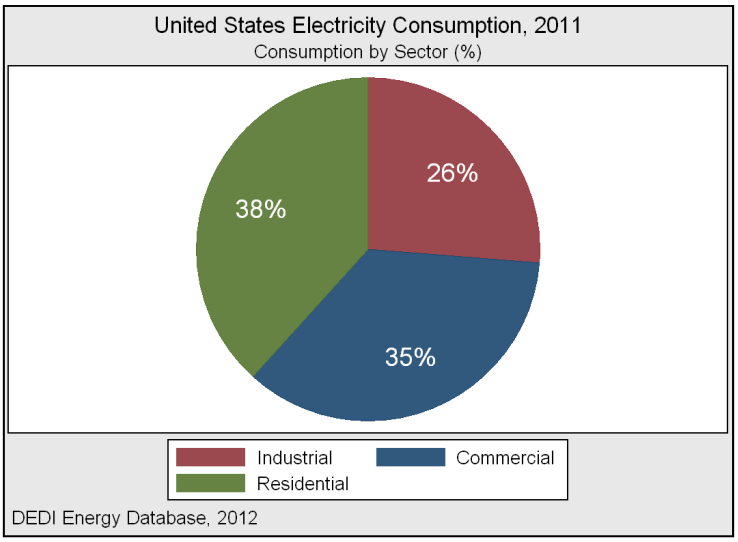
VIRGINIA

WEST VIRGINIA

Puerto Rico and the U.S. Virgin Islands, though members of the Southern States Energy Board, are not included in this profile because comparable data was not available at the time of publication.

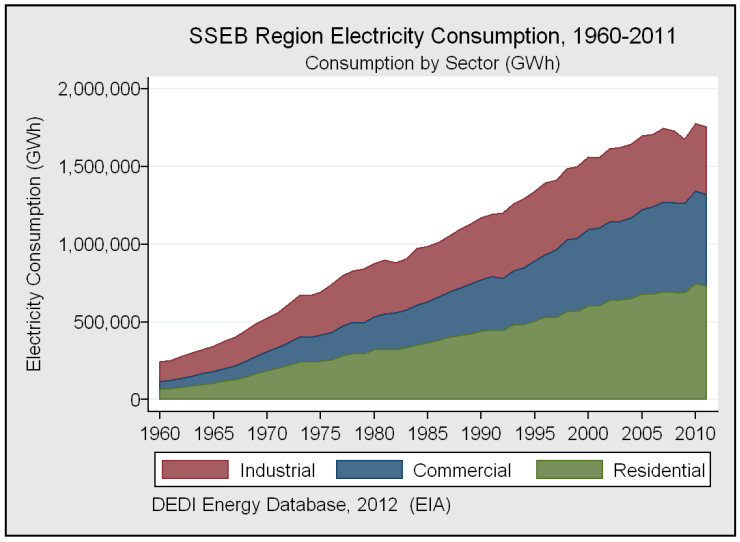
SSEB Region Electricity Consumption

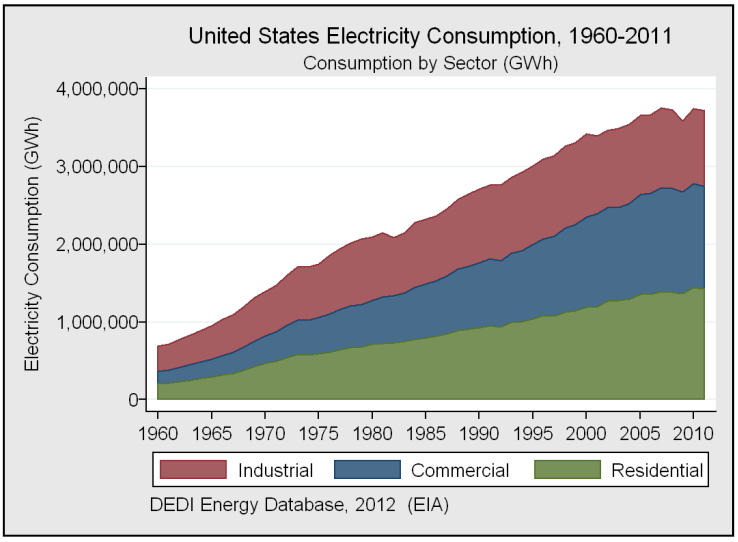




Sector	Gigawatt-hours	Percentage
Total	1,754,198	100%
Residential	728,736	42%
Commercial	589,670	34%
Industrial	434,685	25%

Sector	Gigawatt-hours	Percentage
Total	3,726,163	100%
Residential	1,423,700	38%
Commercial	1,319,288	35%
Industrial	975,569	26%

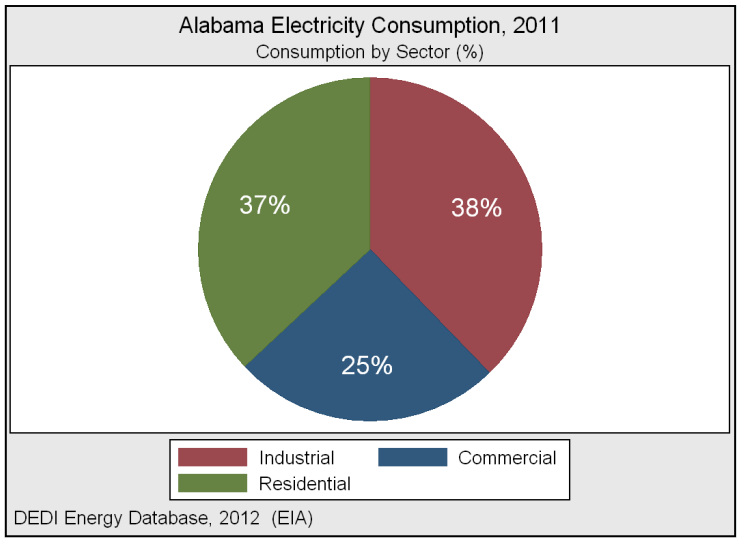


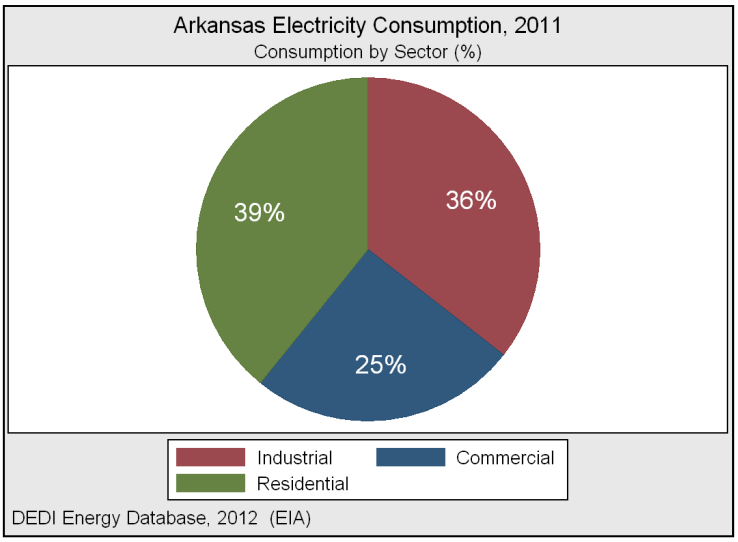


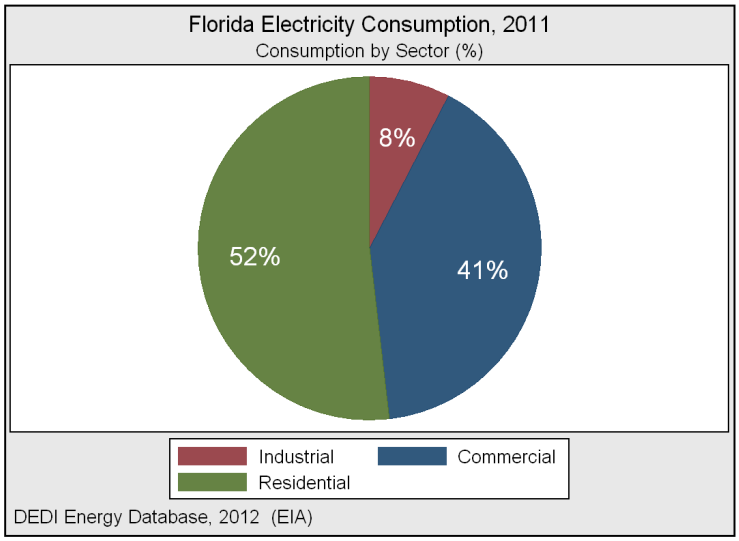
Since the year 2000, electricity consumption in the SSEB region has risen over three times faster than the rest of the United States, with average annual growth rates over +1.47%. Residential consumption is the fastest growing. Since the mid-1980's, residential demand has also accounted for the largest proportion of electricity consumption in both the SSEB region and the United States as a whole at 42% and 38% of total 2011 demand respectively.

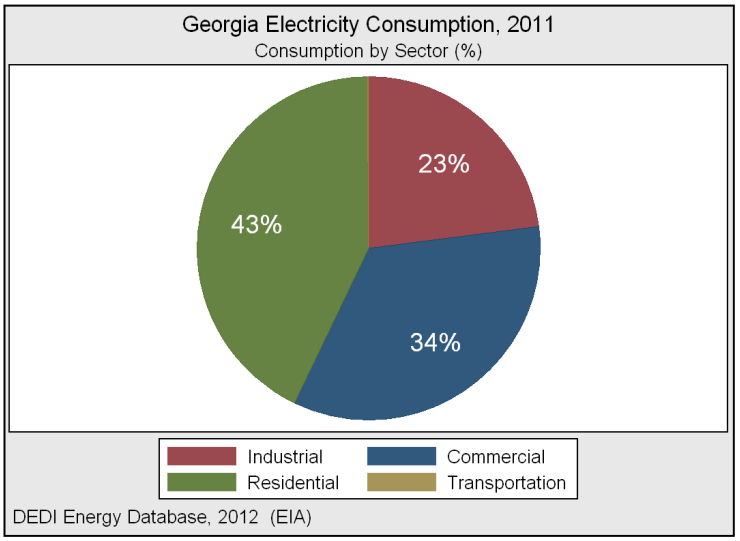
While industrial electricity demand was once the largest electricity consuming sector, industrial demand growth in the SSEB region has actually declined by -6.7% since peaking in the year 2000. Manufacturing processes in Kentucky remain the region's most-electricity intensive. The commercial sector consumes 34% and 35% of total demand in the region and nationally, however, growth has remained markedly flat.

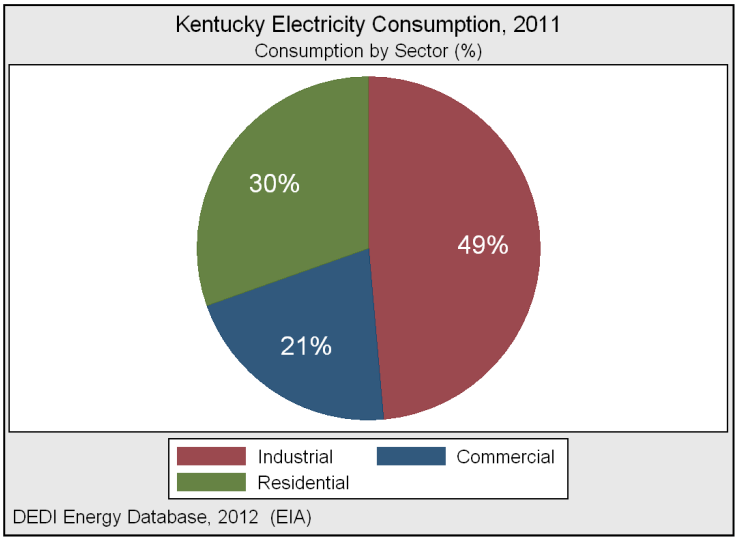
Electricity Consumption by Sector

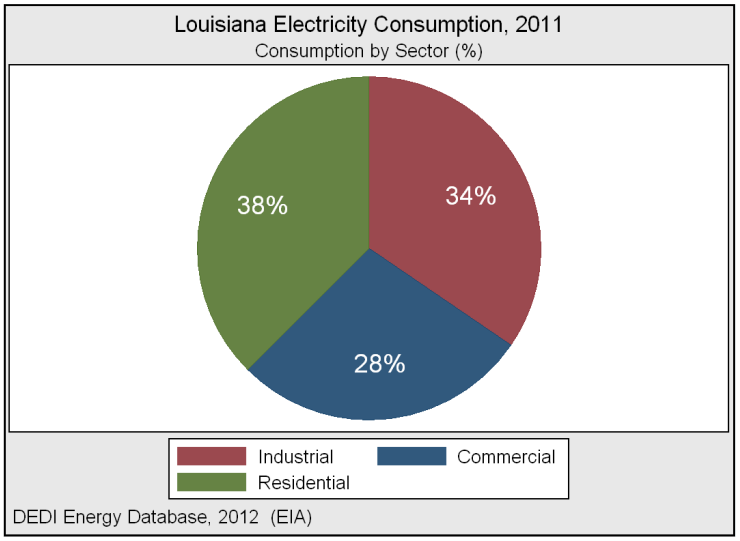




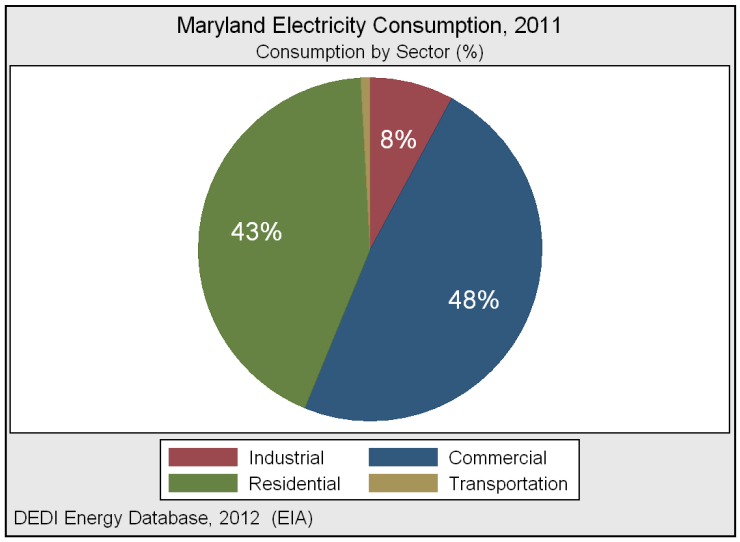


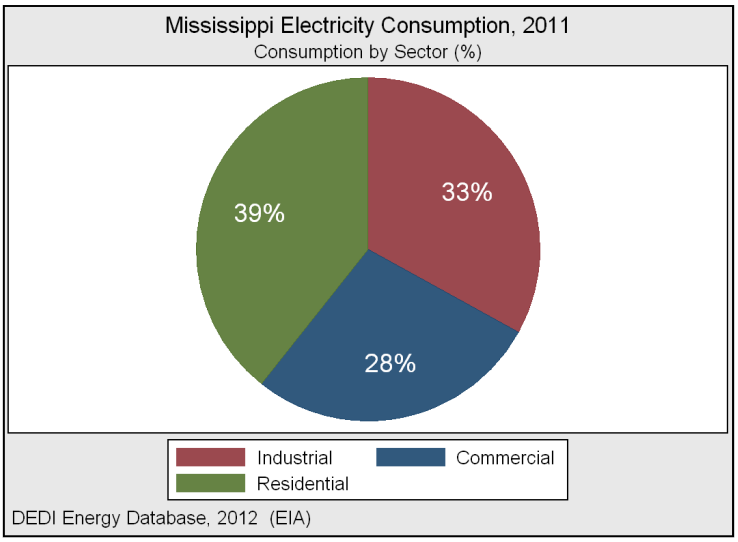


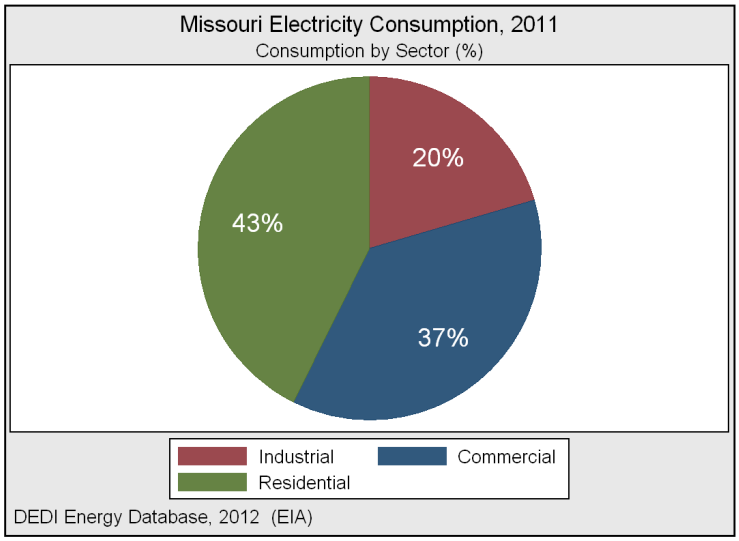


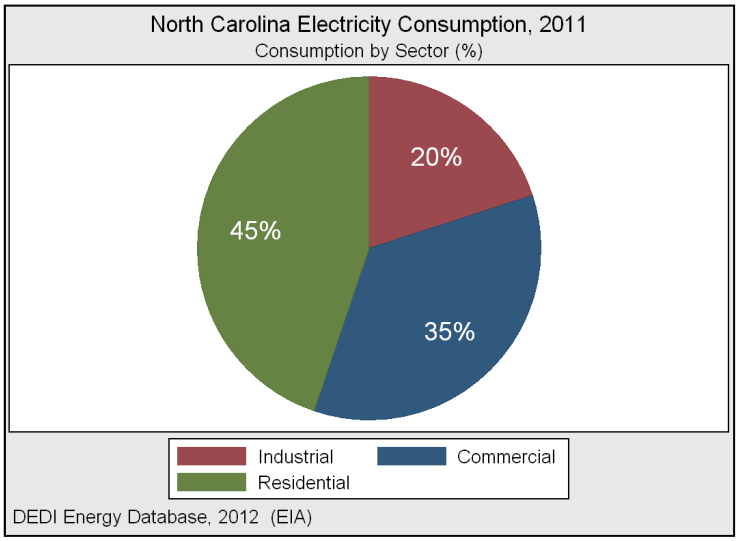


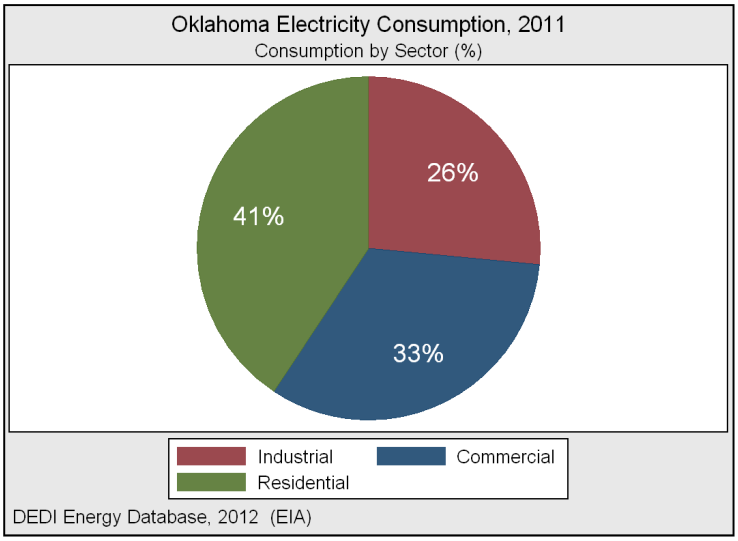
Electricity Consumption by Sector

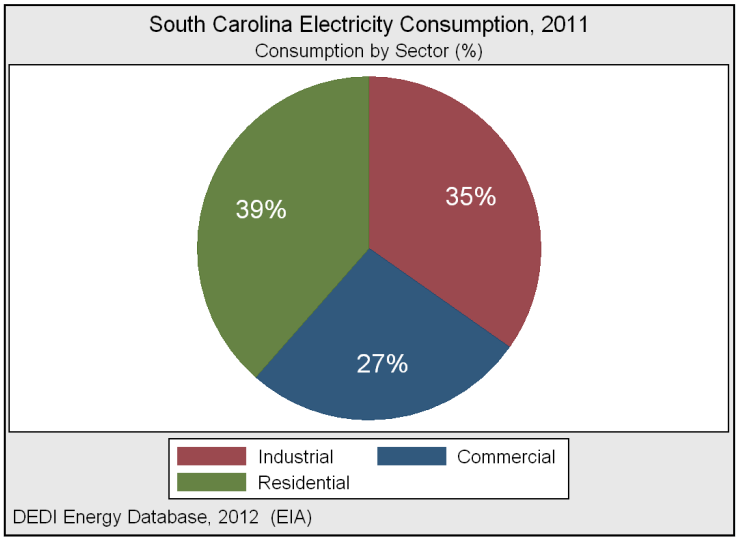












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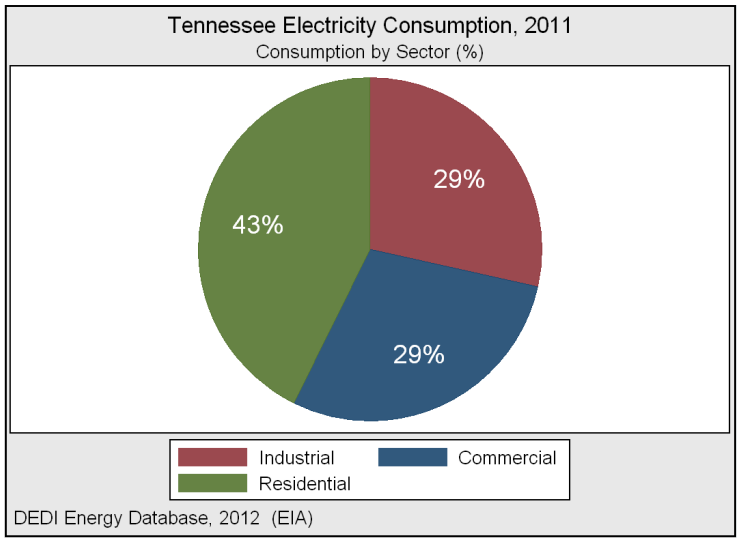

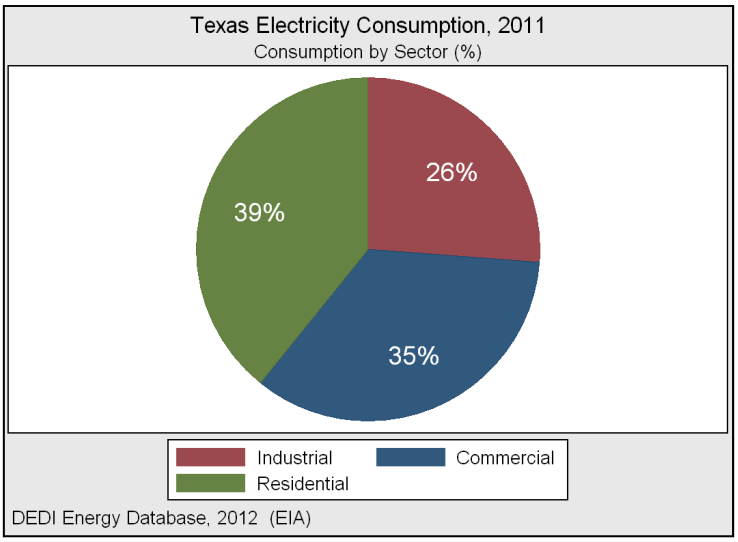

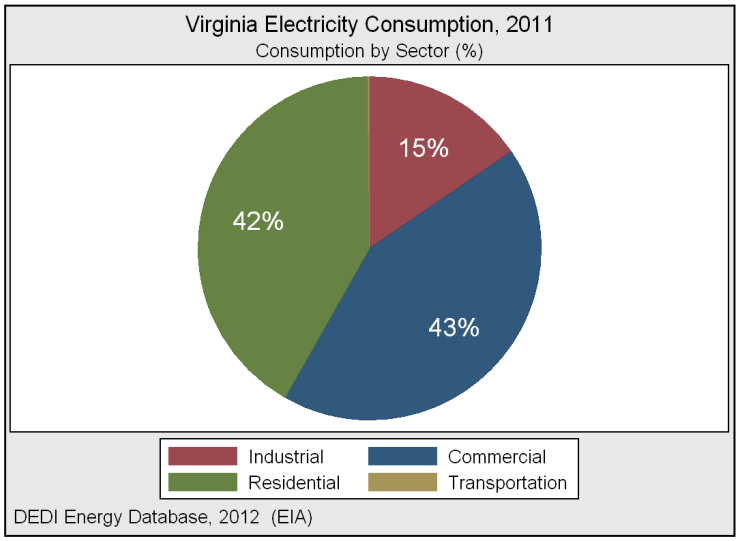

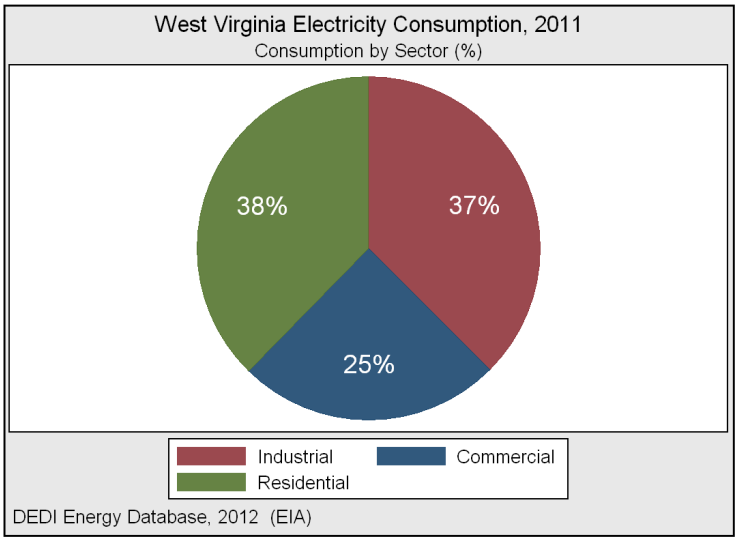

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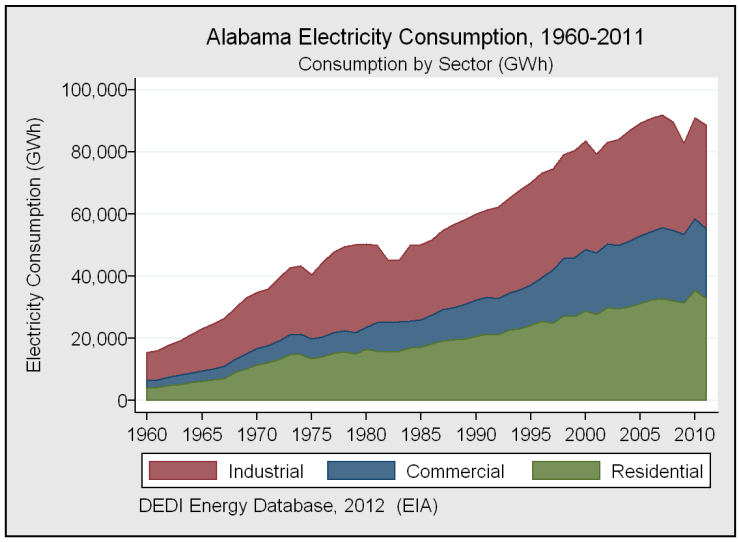

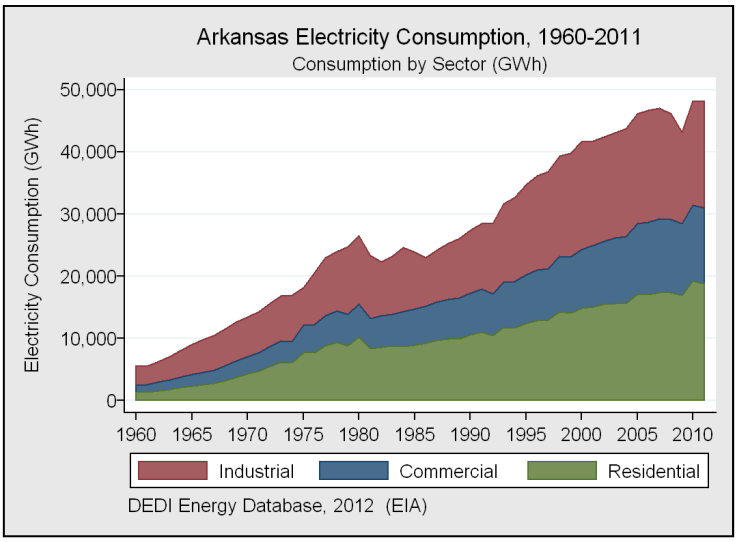

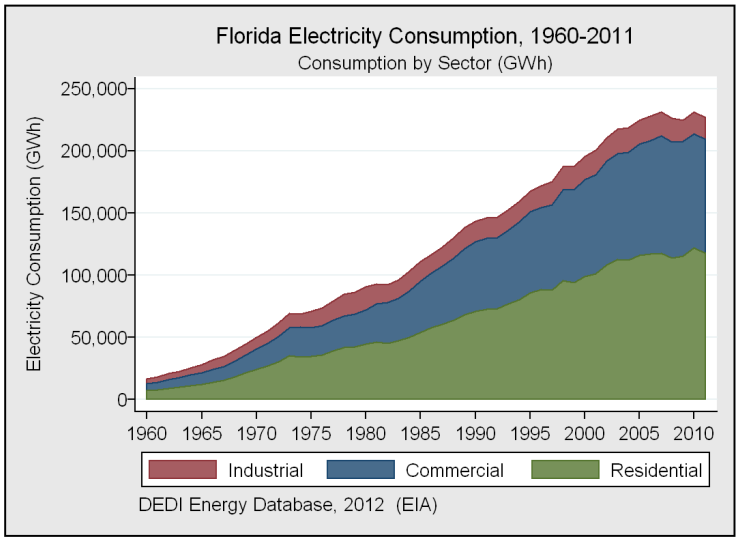

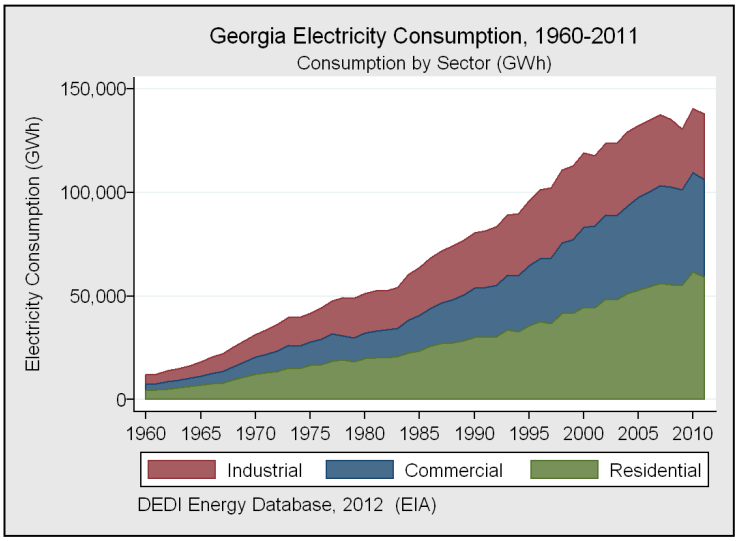

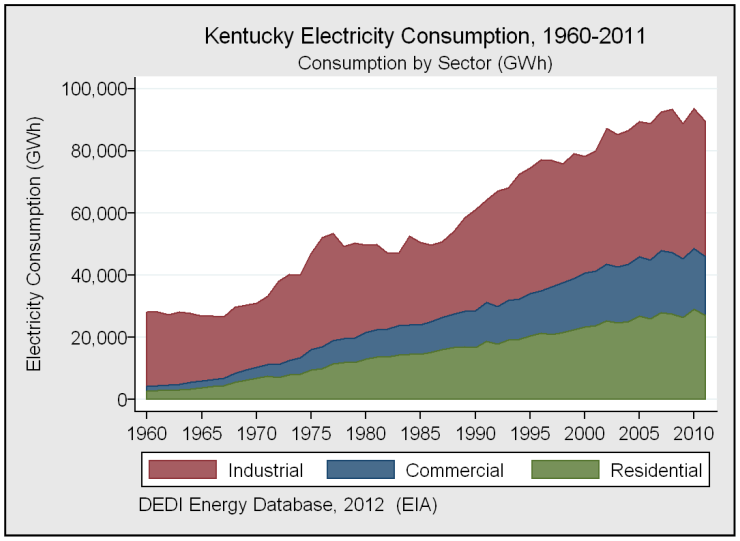

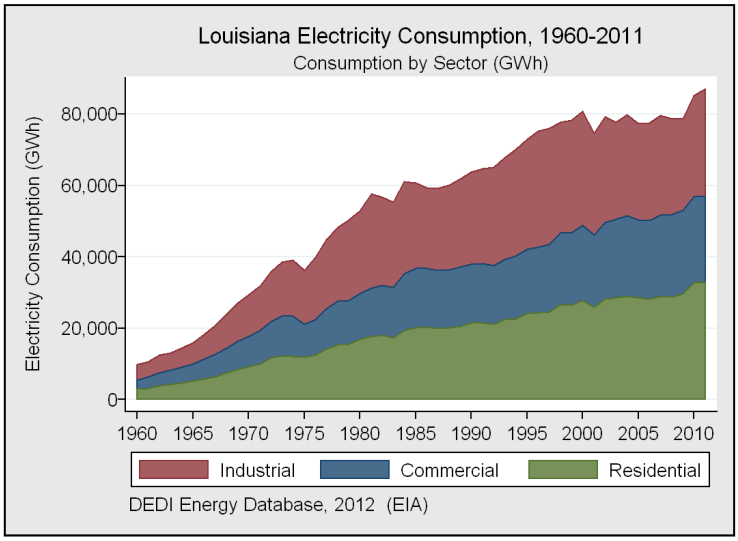

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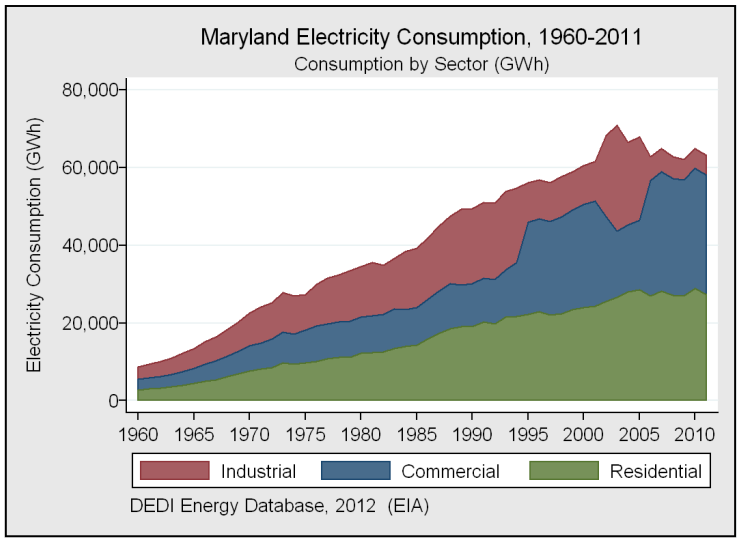
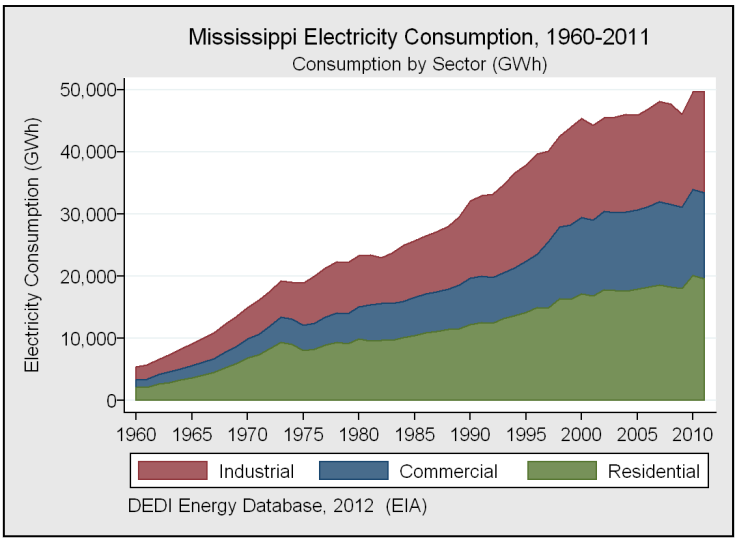
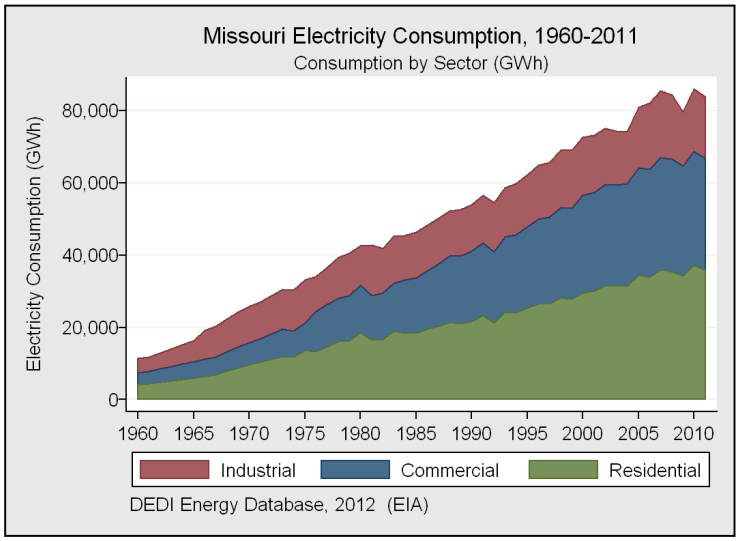
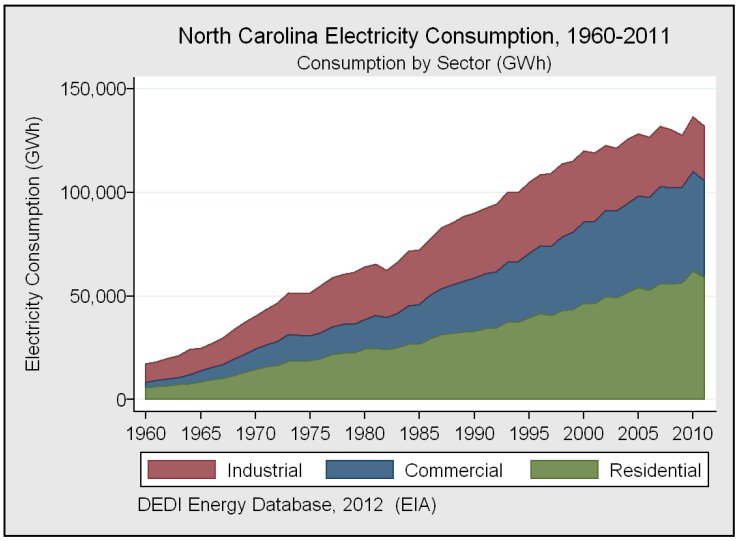
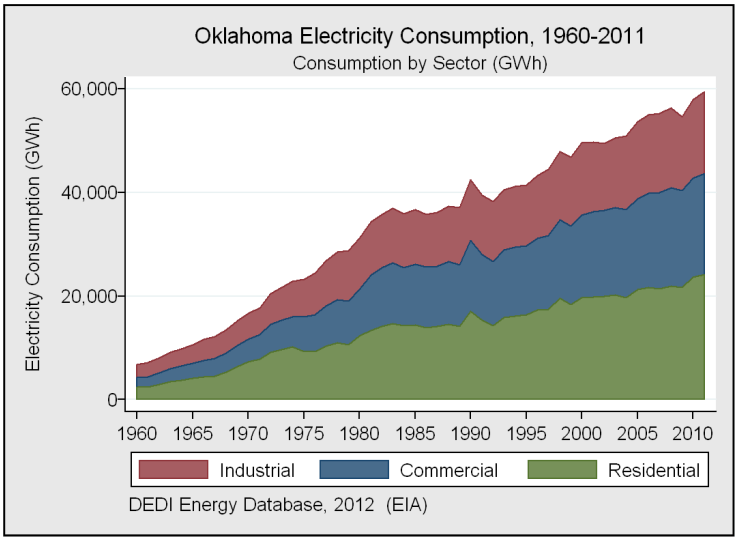
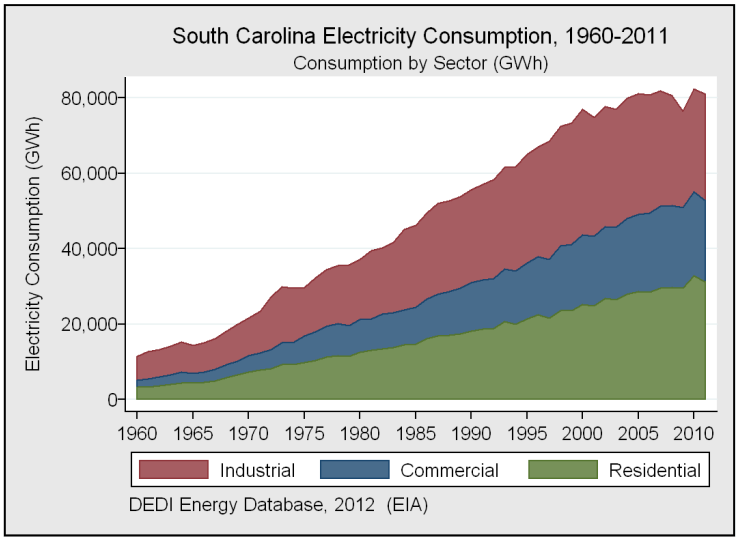




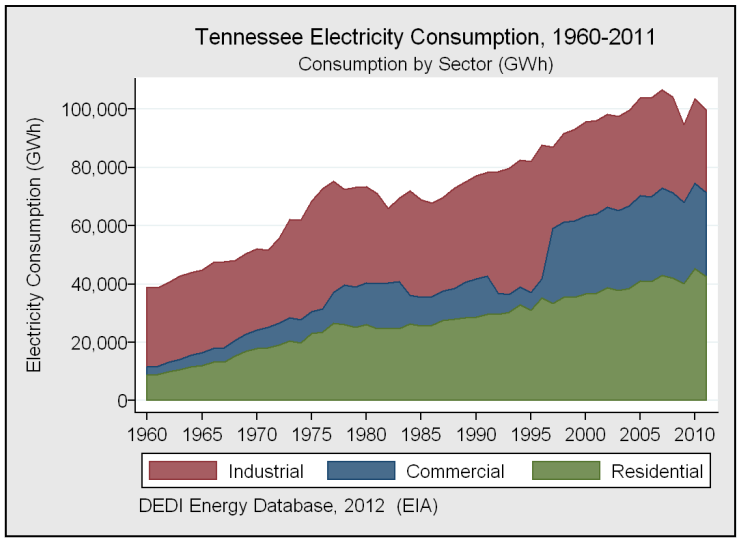


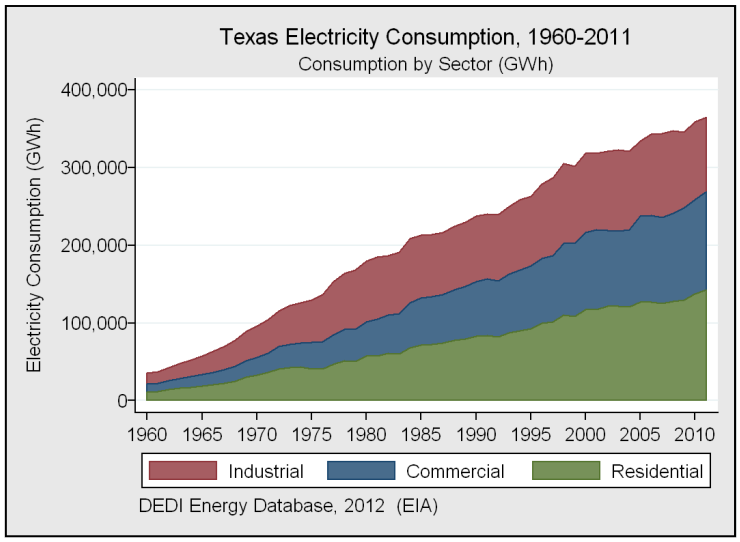


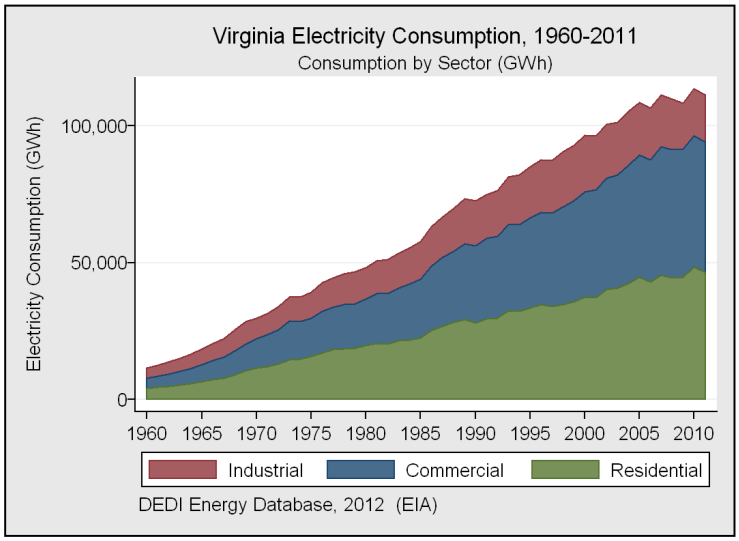


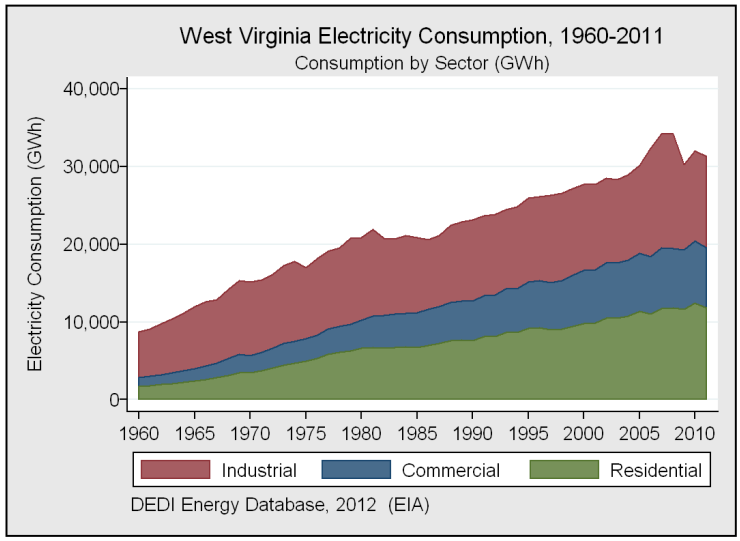


Electricity Consumption by Sector

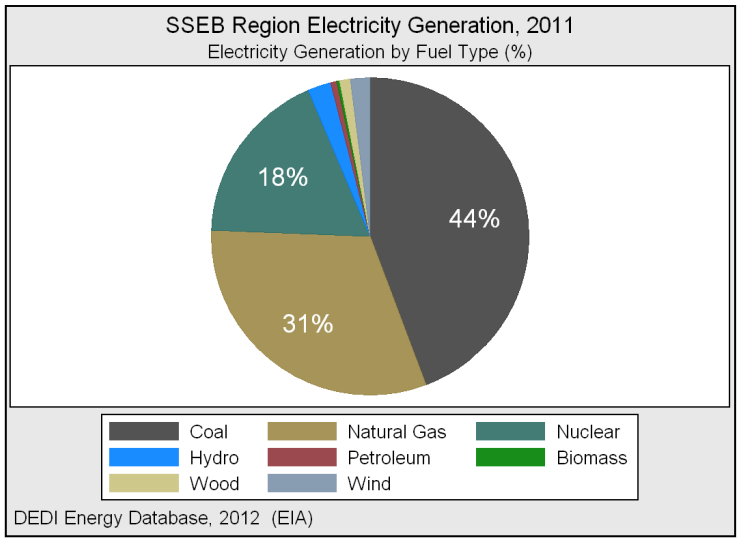


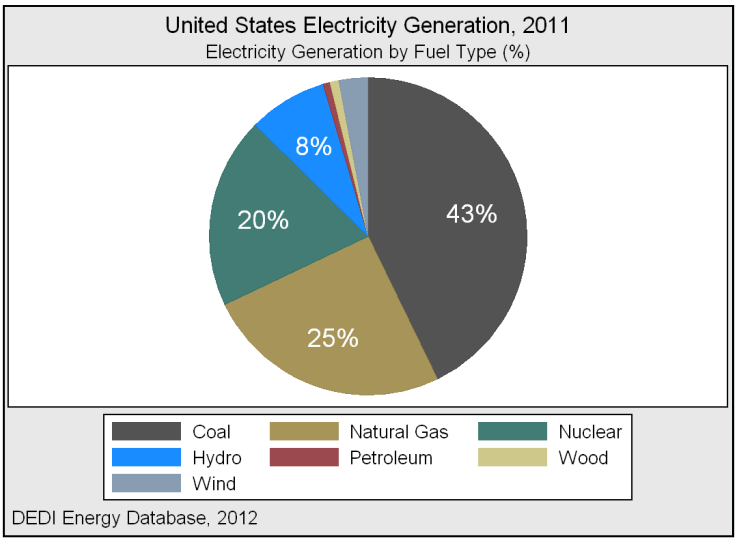






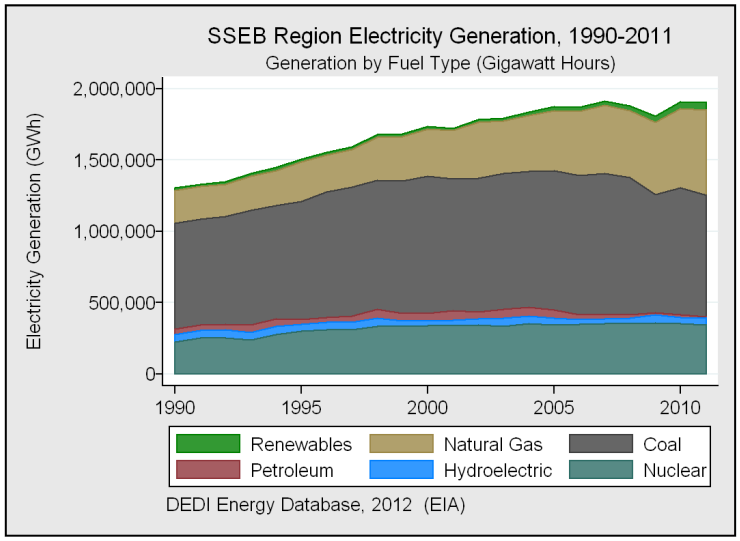
SSEB Region Electricity Generation

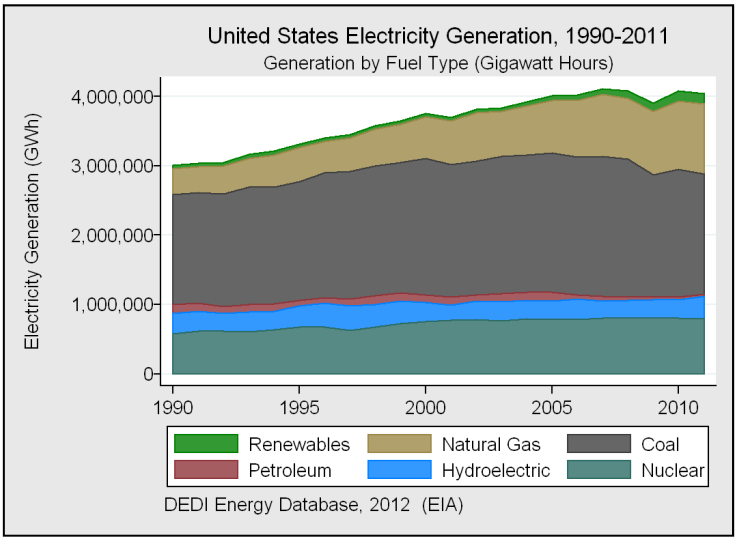




Fuel Type	Gigawatt-hours	Percentage
Total	1,920,295	100%
Coal	848,097	44%
Natural Gas	599,879	31%
Nuclear	344,137	18%
Hydroelectric	44,896	2%
Wind	38,071	2%

Fuel Type	Gigawatt-hours	Percentage
Total	4,105,735	100%
Coal	1,734,266	43%
Natural Gas	1,016,595	25%
Nuclear	790,225	20%
Hydroelectric	325,074	8%
Wind	119,746	3%

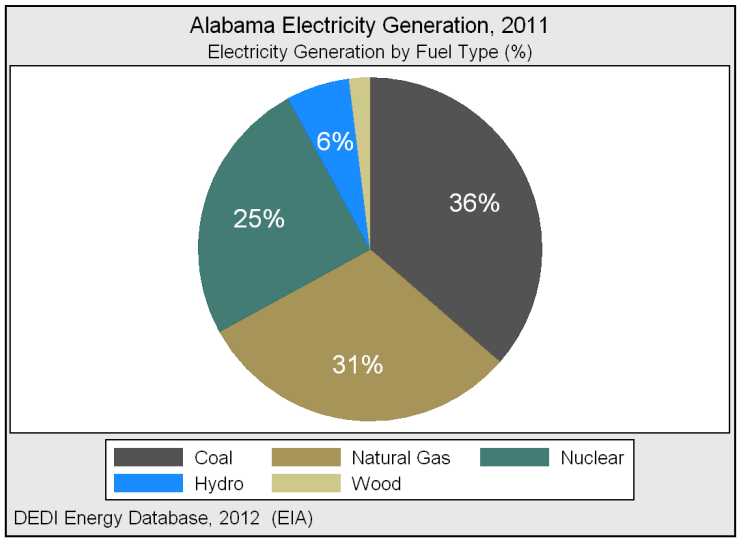


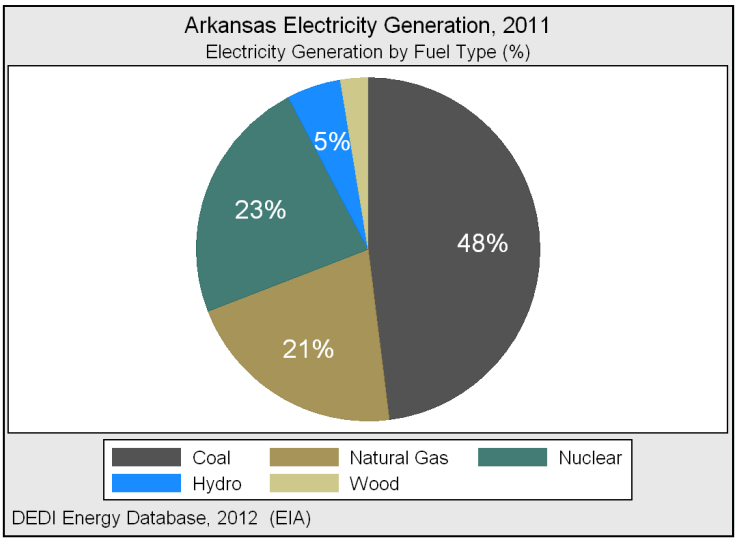


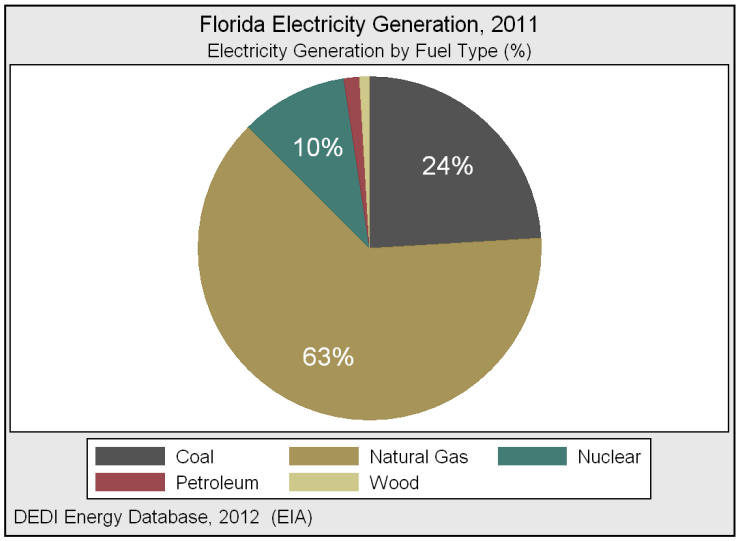
The combustion of coal remained the largest source of electricity generation within the SSEB region and the United States in 2011; despite substantial increases in natural gas generation and capacity. Natural gas and nuclear facilities were the second and third largest contributors to electricity production within the region. Petroleum, hydroelectricity, and other renewable resources such as biomass, solar, and wind contributed a relatively small proportion of total generation. Wind is the fastest growing renewable resource.

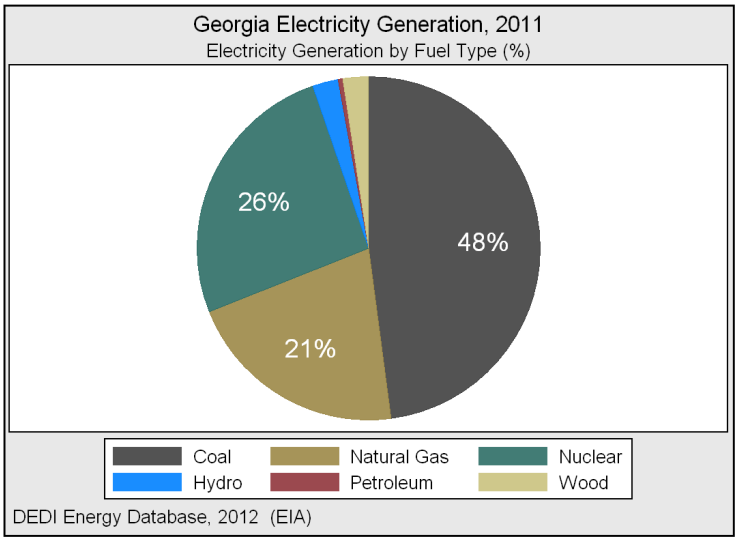
Total electricity generation in the United States was reduced by less than half of a percent from the year prior to 4,105 Terawatt-hours (TWh) in 2011. Coal-fired generation has fallen by 14% since 2007, and continues to fall, representing less than 43% of total generation in 2011. This lost generation has been predominately replaced by natural gas generation, which had risen to over 1,000 TWH, or 25%, by 2011 and continues to rise. The contribution from nuclear and hydroelectric generation has remained fairly constant.

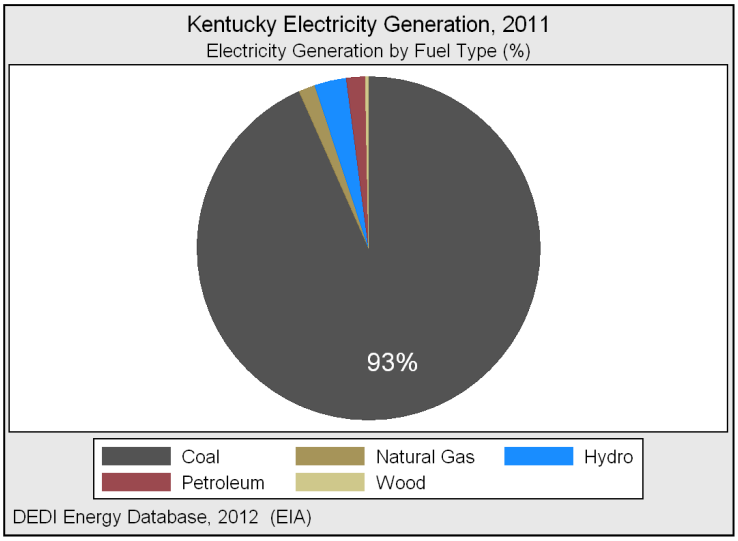
Electricity Generation

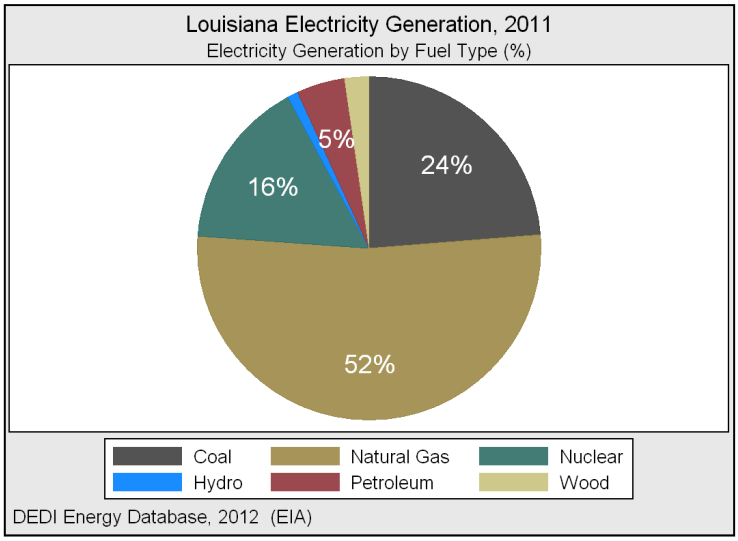




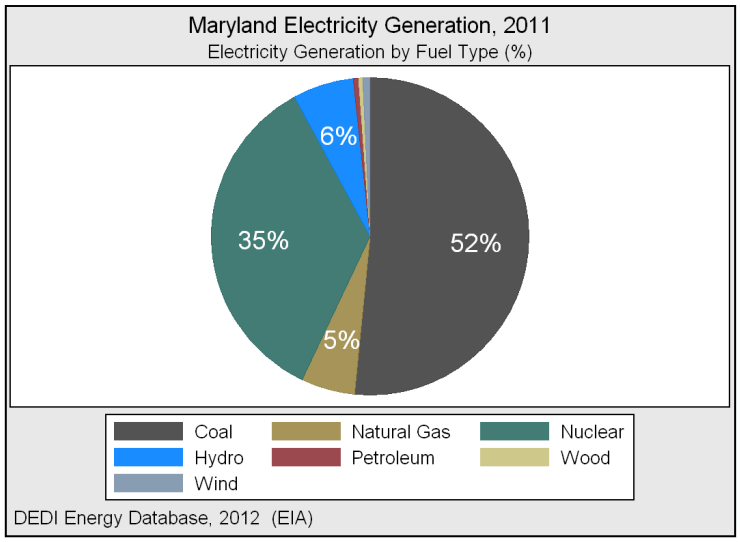


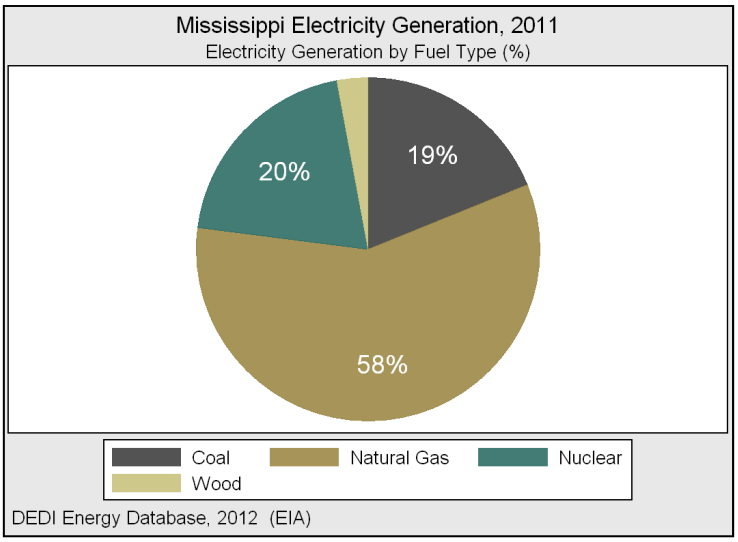


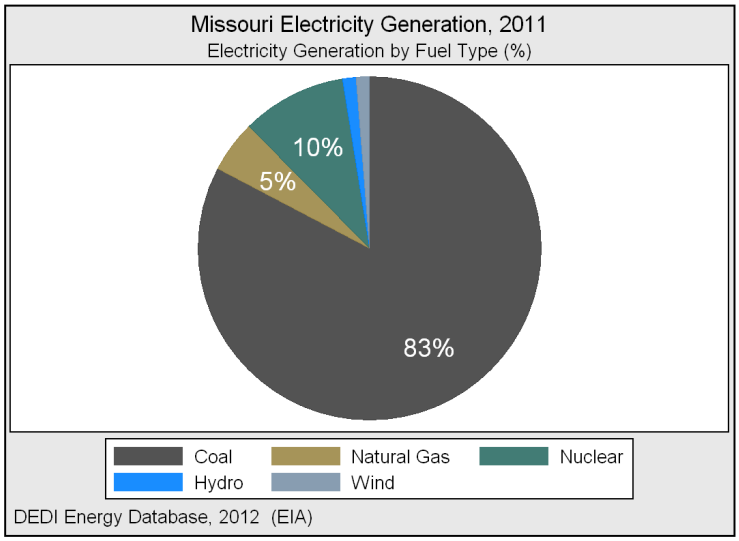


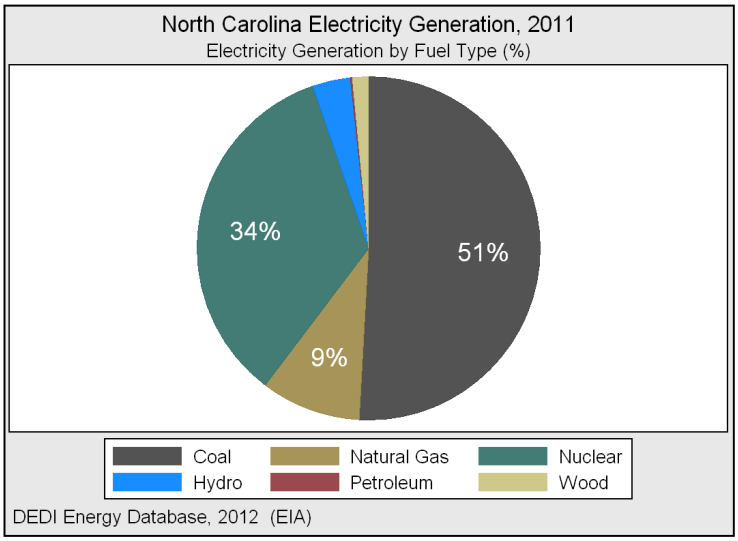


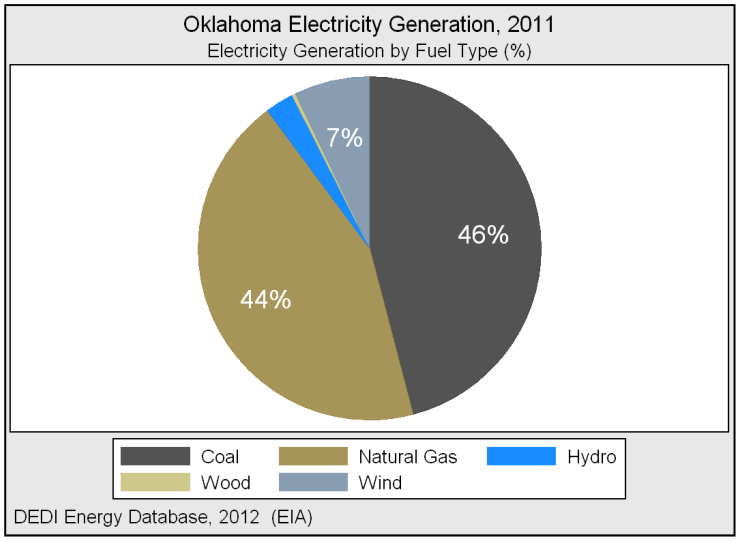
Electricity Generation

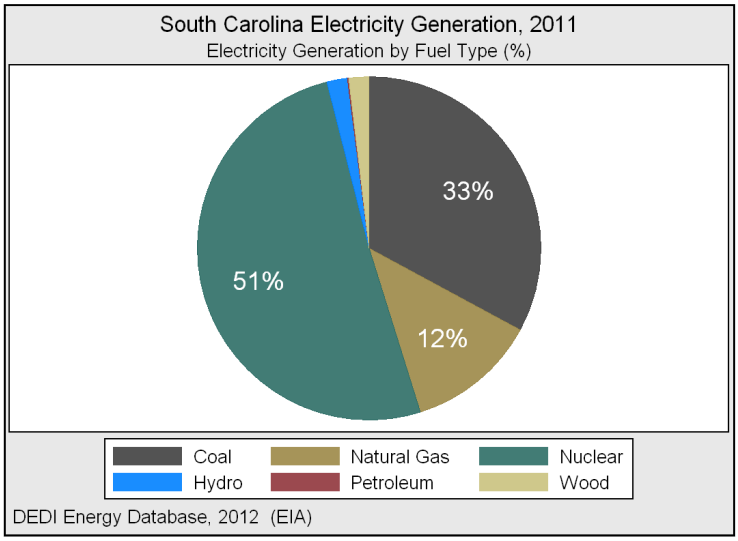




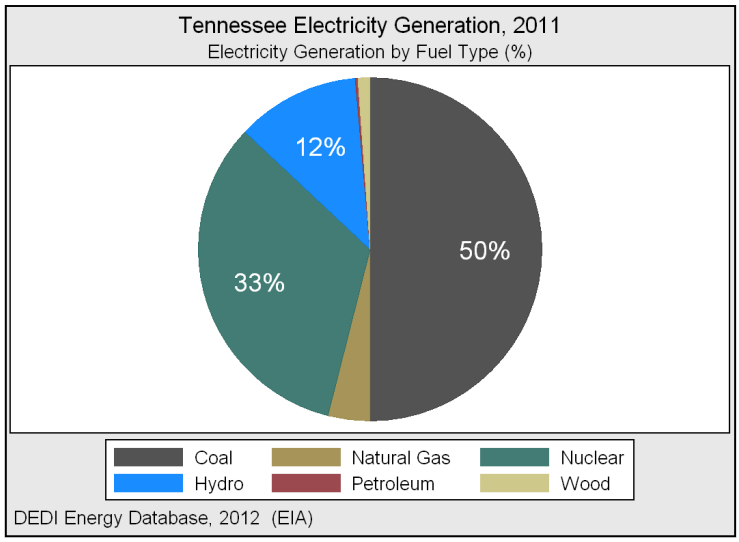


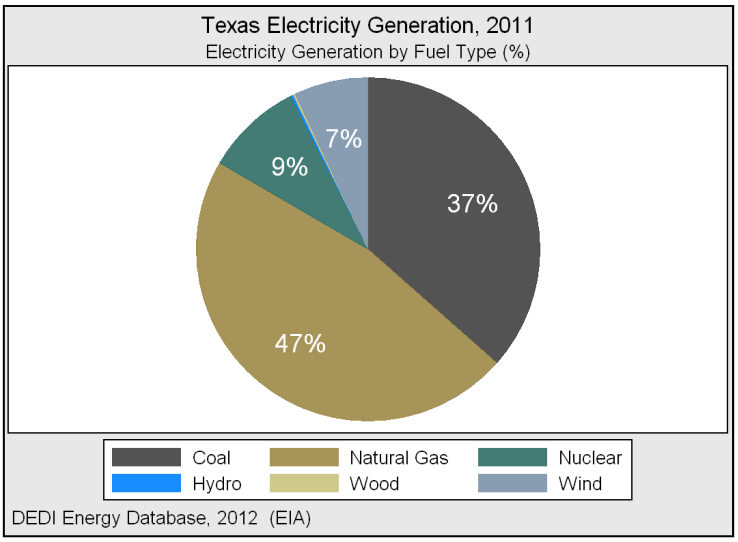


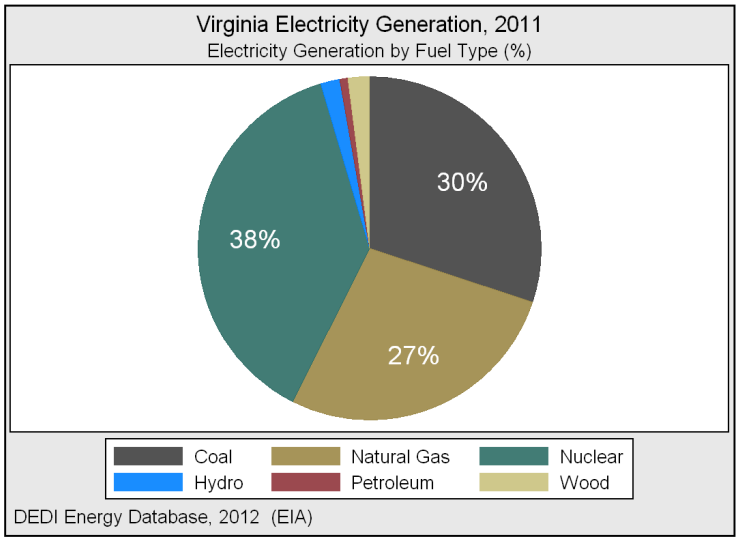


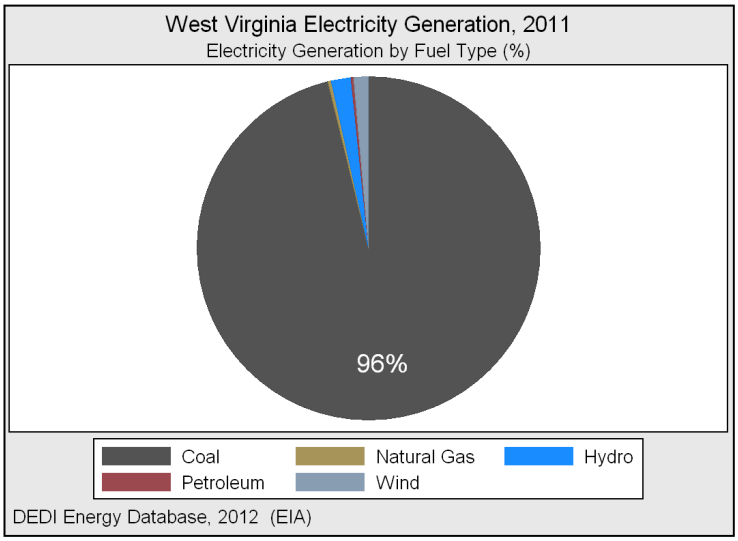


Electricity Generation

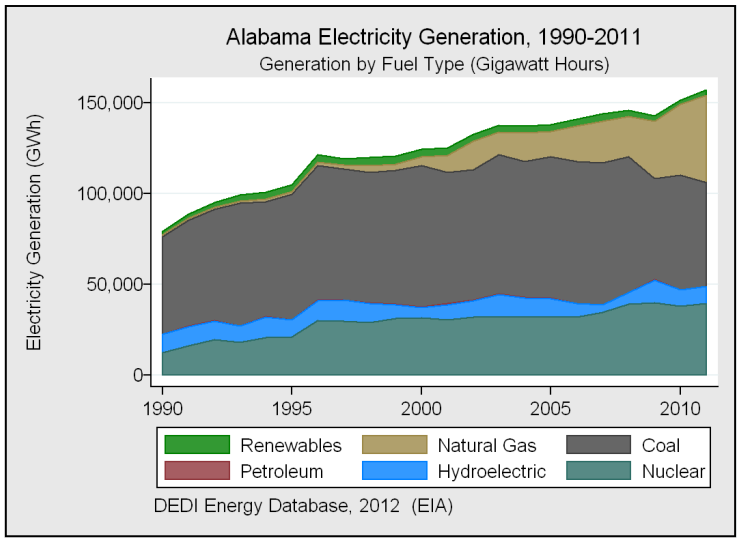


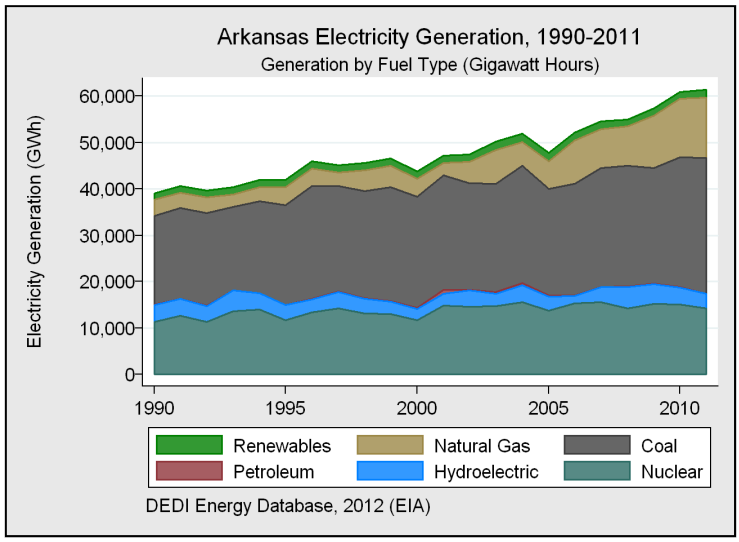


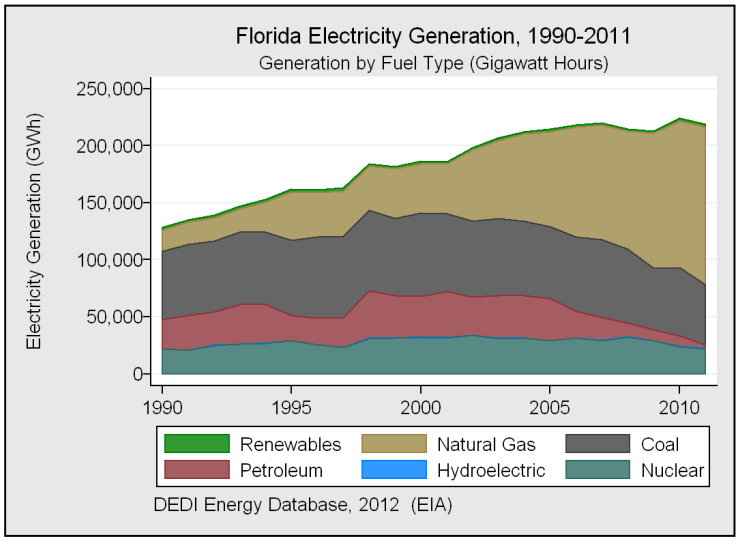


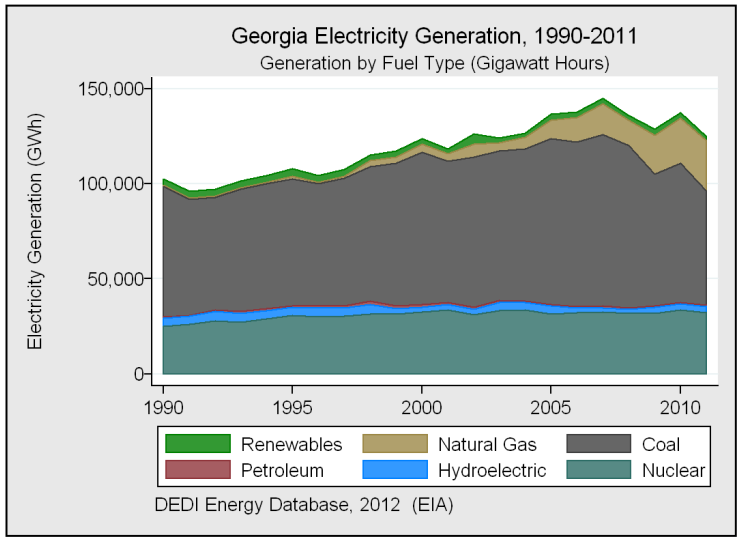


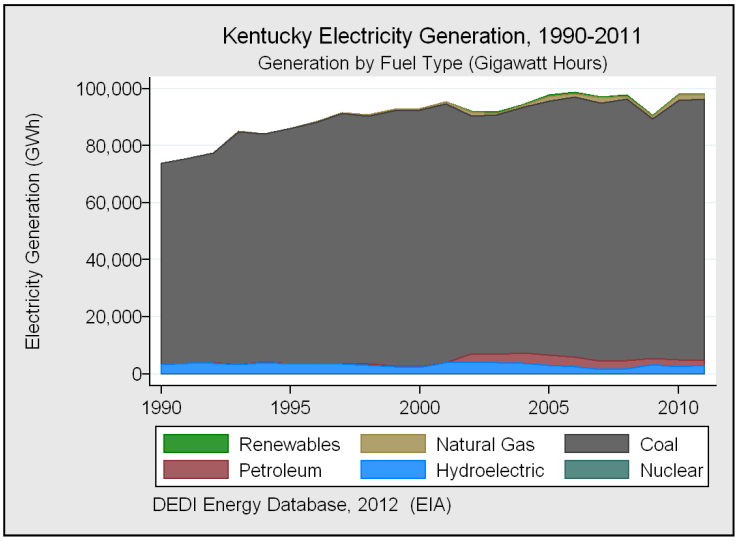
Electricity Generation

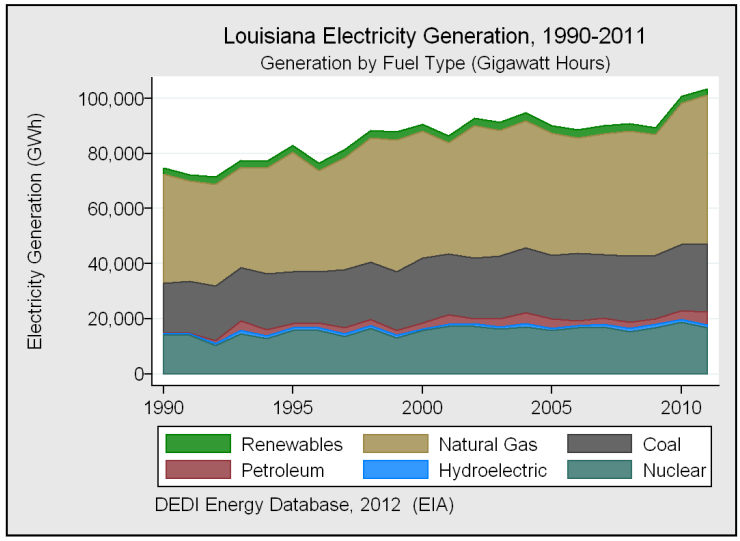












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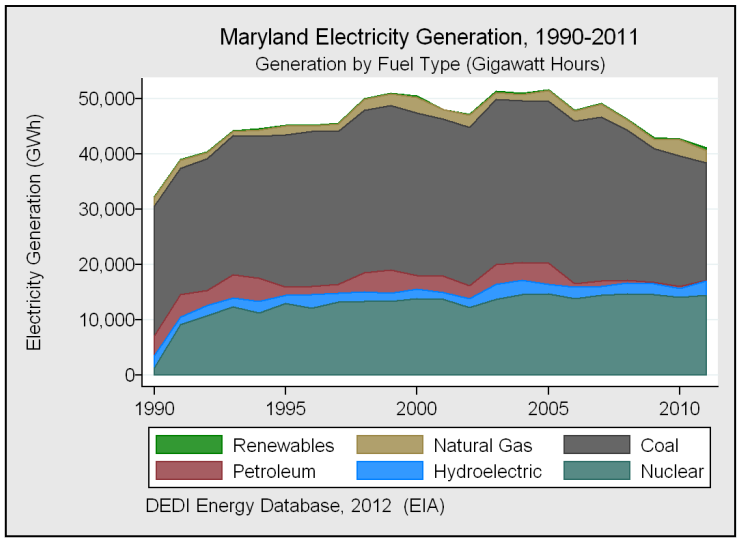
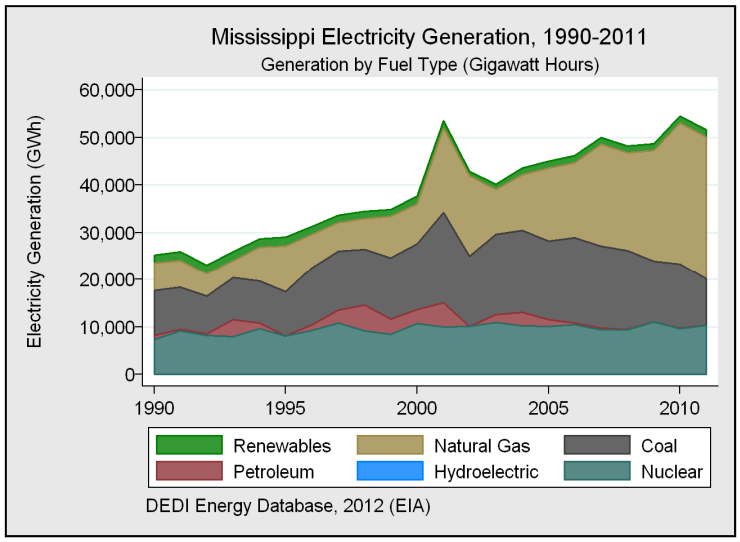
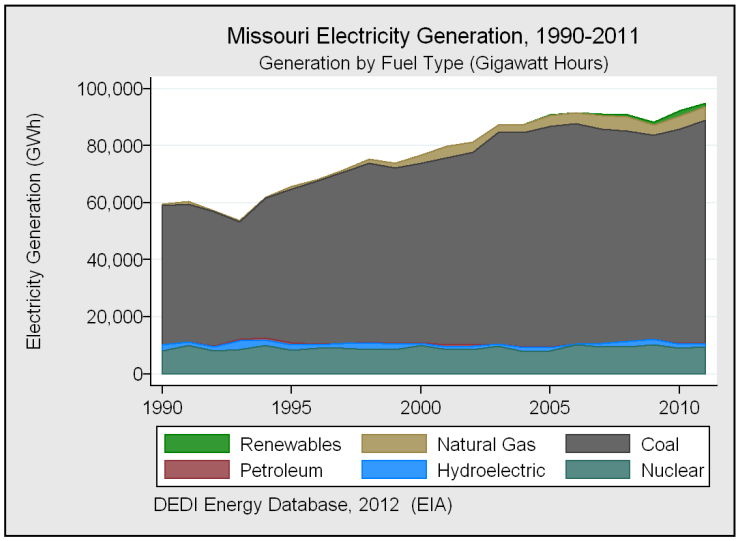
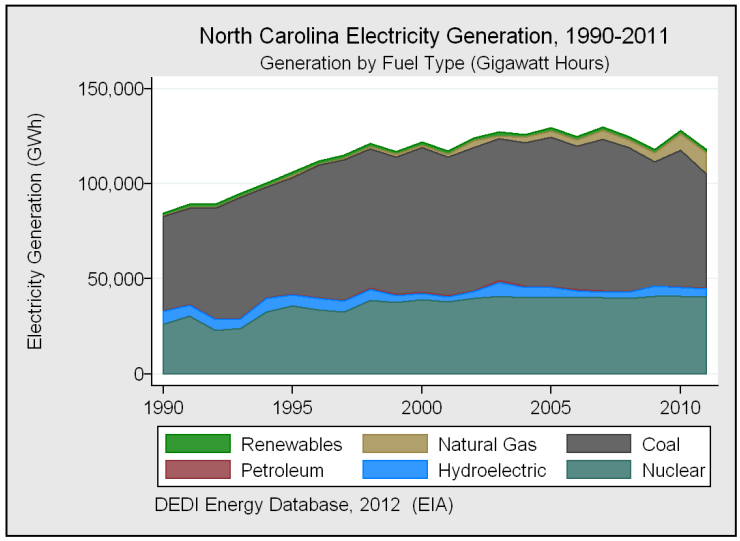
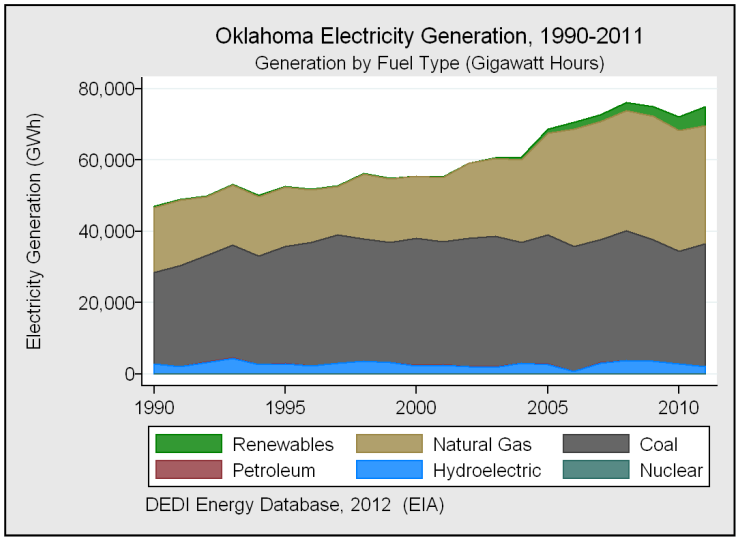
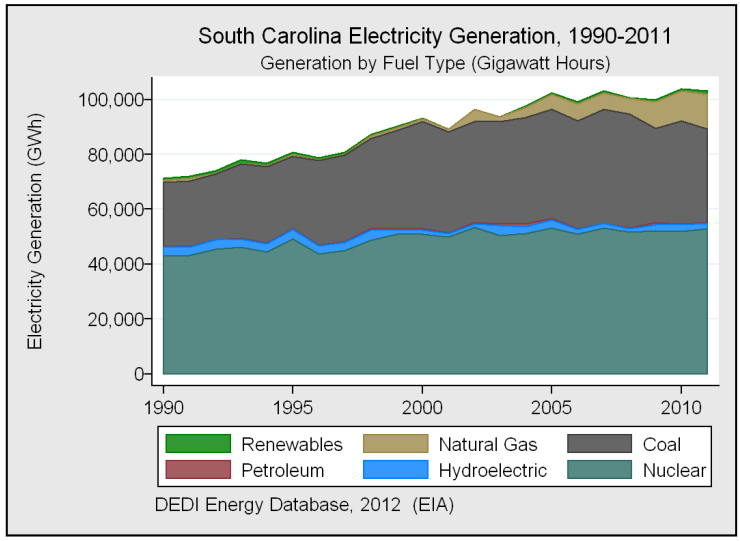




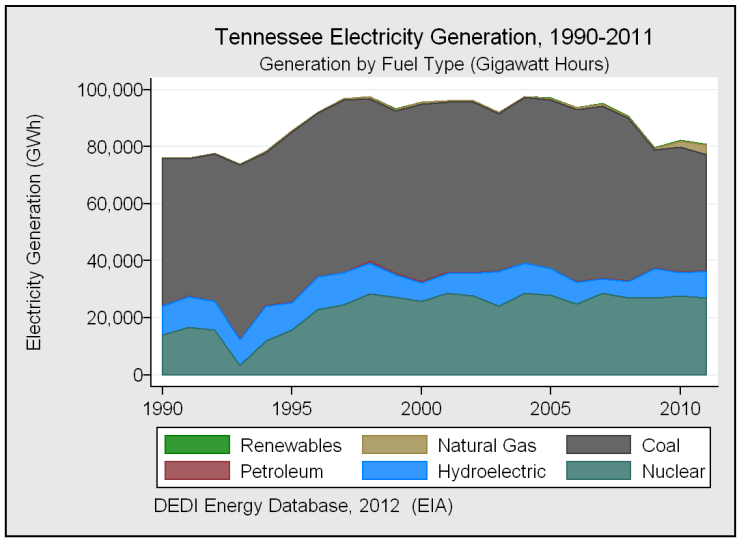


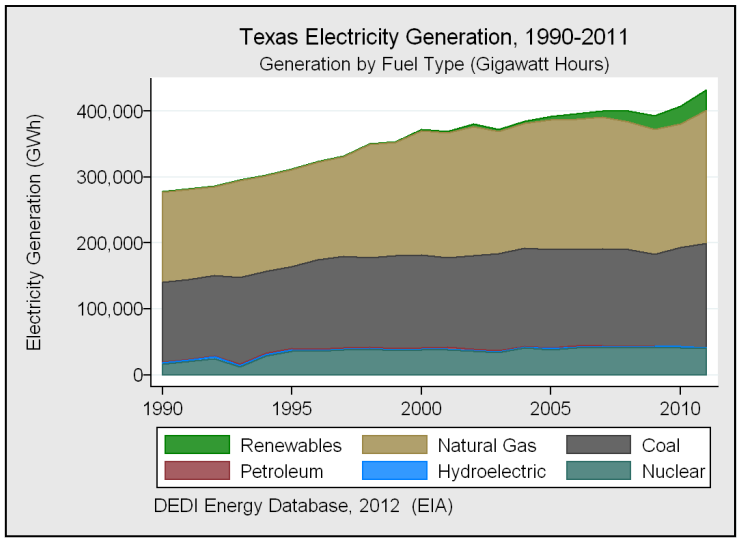


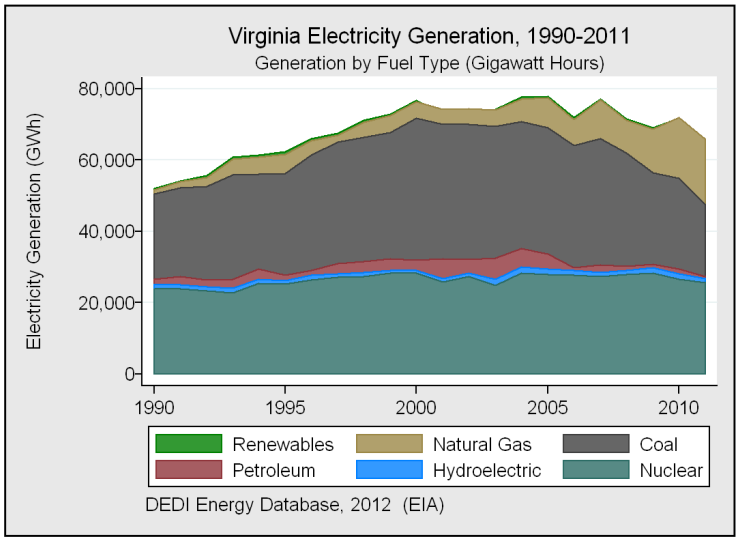


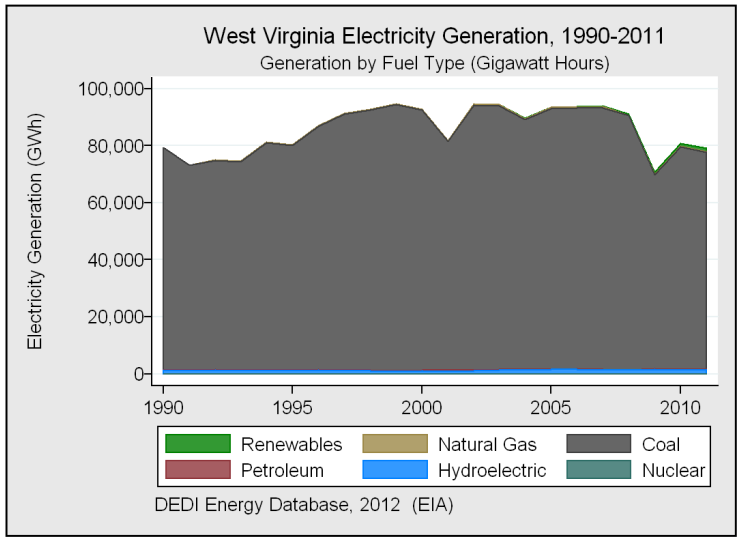


Electricity Generation

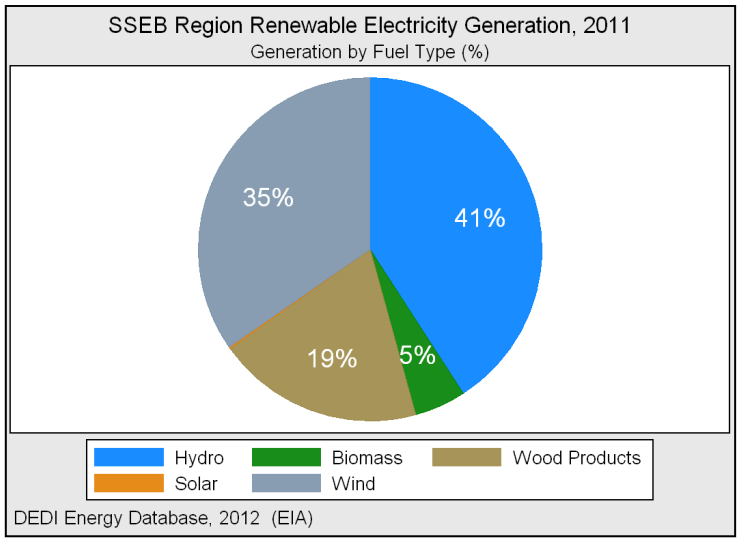


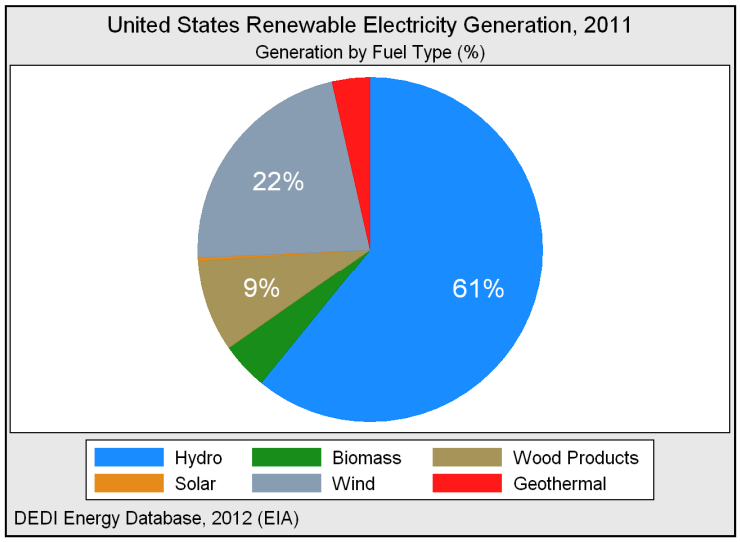






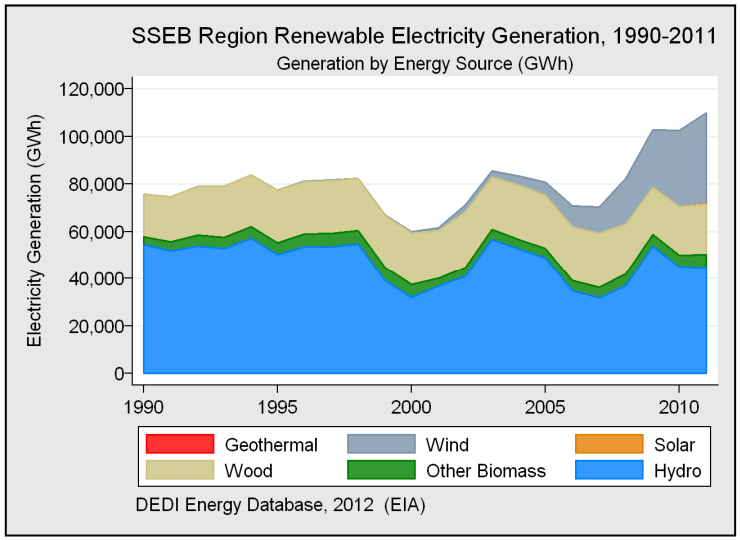
SSEB Renewable Electricity Generation

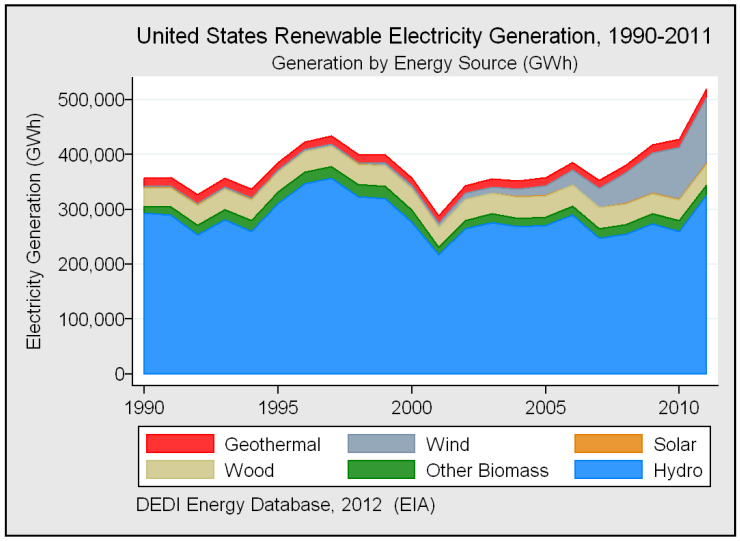




Fuel Type	Gigawatt-hours	Percentage
Total	131,283	100%
Hydroelectric	44,896	41%
Wind	38,071	35%
Wood Products	21,404	19%
Biomass	5,318	5%
Solar	188	<1%

Fuel Type	Gigawatt-hours	Percentage
Total	557,013	100%
Hydroelectric	325,074	61%
Wind	119,746	22%
Wood Products	36,946	9%
Biomass	19,786	4%
Geothermal	16,699	4%

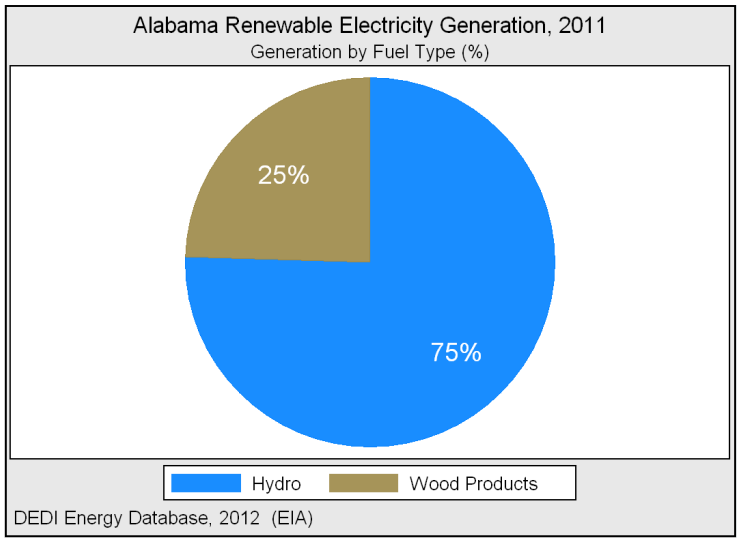


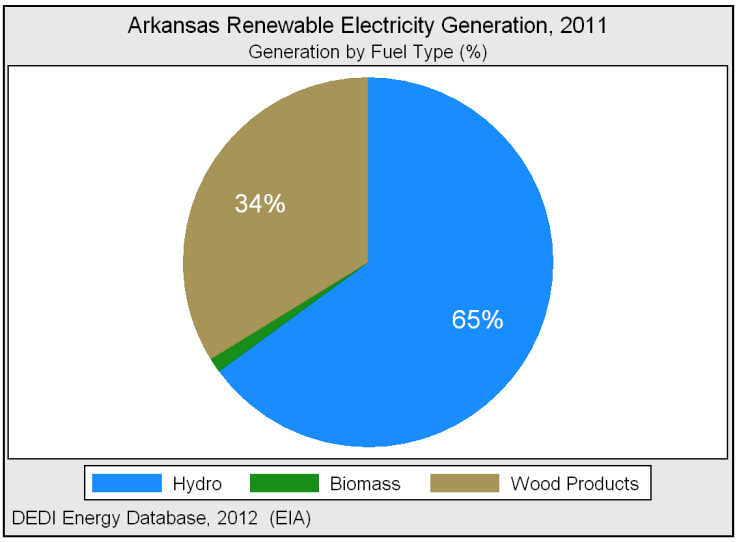


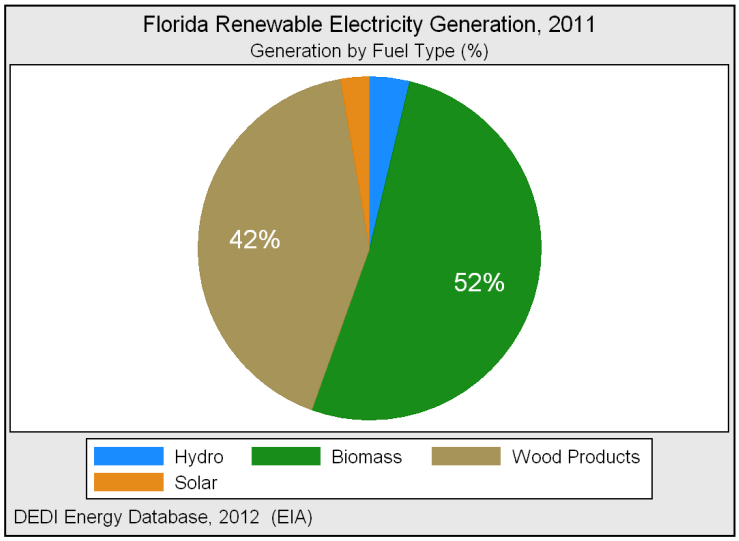
Renewable electricity generation has increased by 25% in the SSEB region over historical highs. Wind power is the fastest growing renewable technology in the SSEB region, generating over 38 TWh's, or 35%, in 2011. Hydroelectric generation remains the largest source of renewable electricity, 41%, although generation can vary substantially from year to year with fluctuations in rainfall and temperature. The combustion of wood and other biomass make up the region's third and fourth largest renewable energy resources.

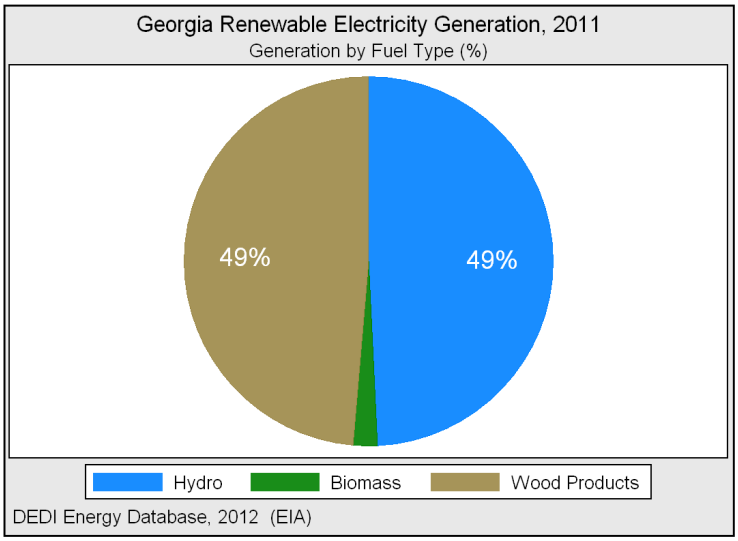
Renewable electricity generation in the United States has risen by 42% since 2007 to 557 TWh in 2011, almost 13.6% of total generation. Although a majority continues to be hydroelectric, 61% of renewables, wind generation is the fastest growing, producing 120 TWh's in 2011, or 22% of renewables. Wood and other biomass accounted for 13% of total renewables. Solar electricity generation has more than doubled in the two years from 2009, producing 1.8 TWh's in 2011, or 0.33% of all renewables.

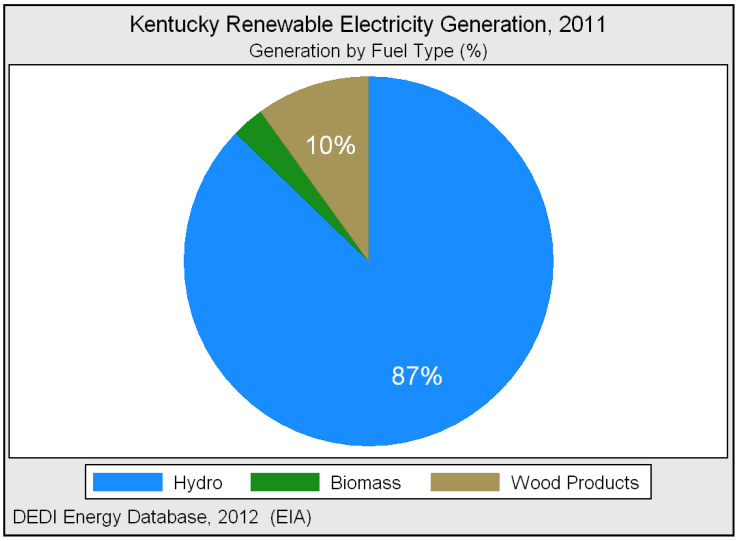
Renewable Electricity Generation

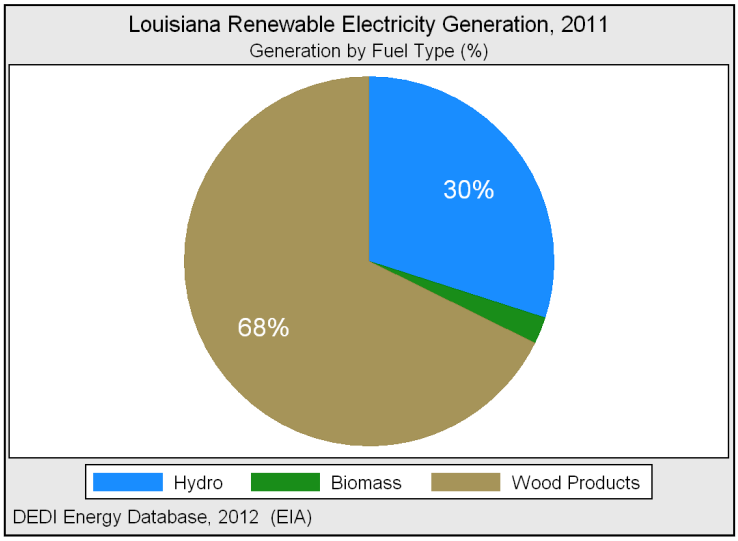




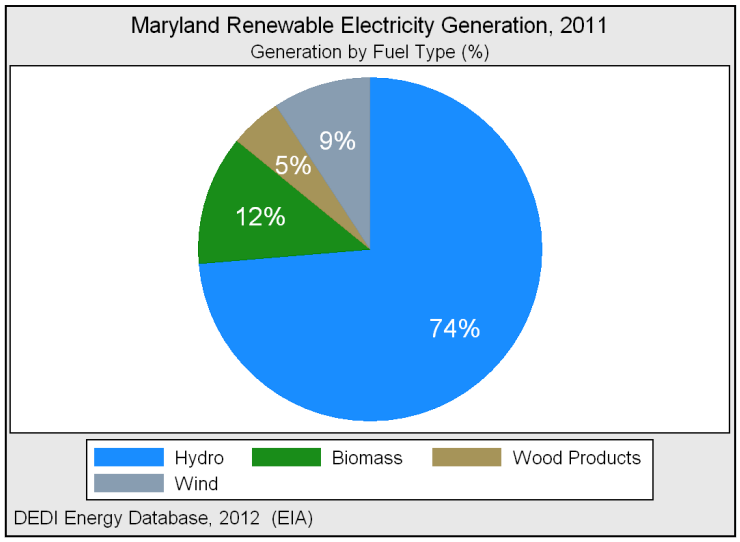


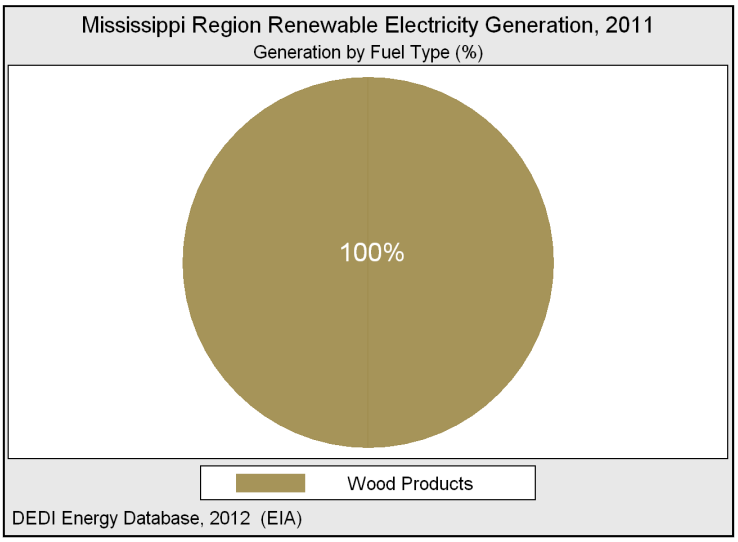


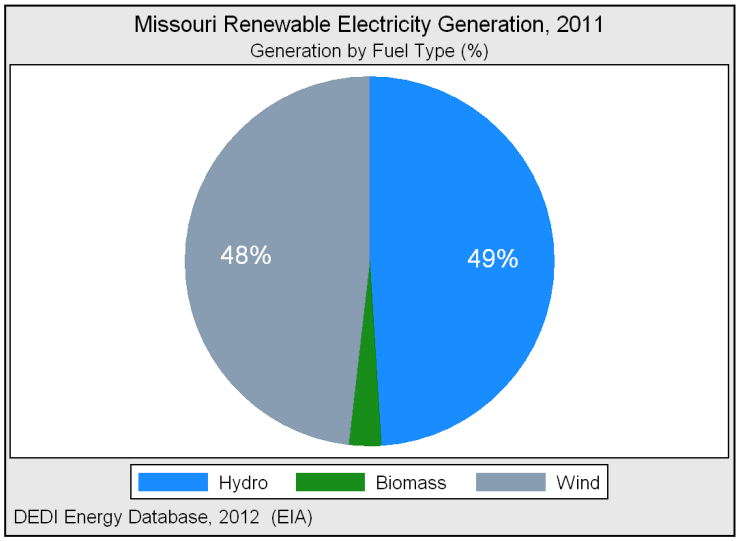


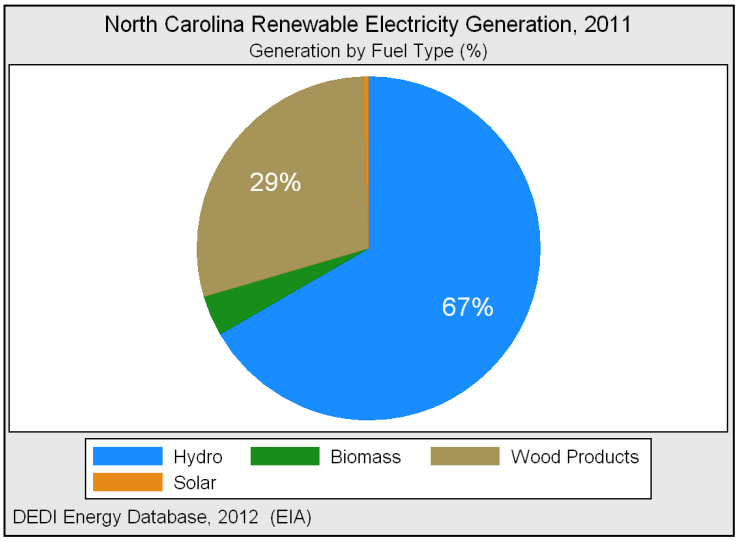


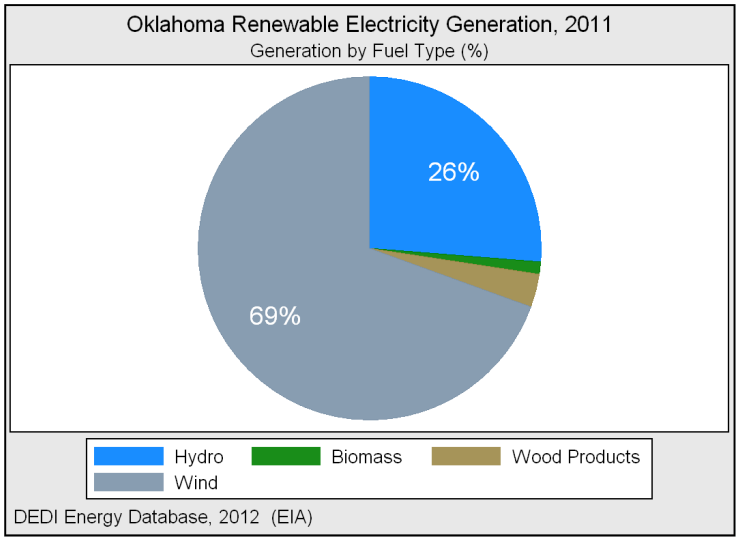
Renewable Electricity Generation

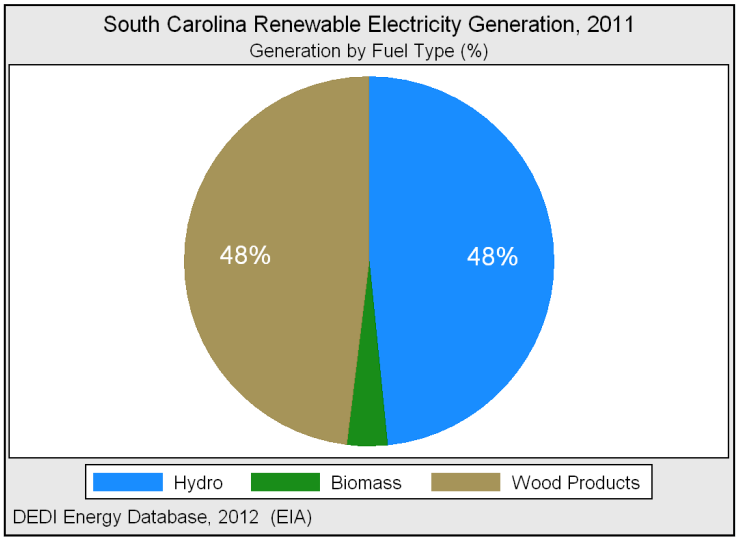




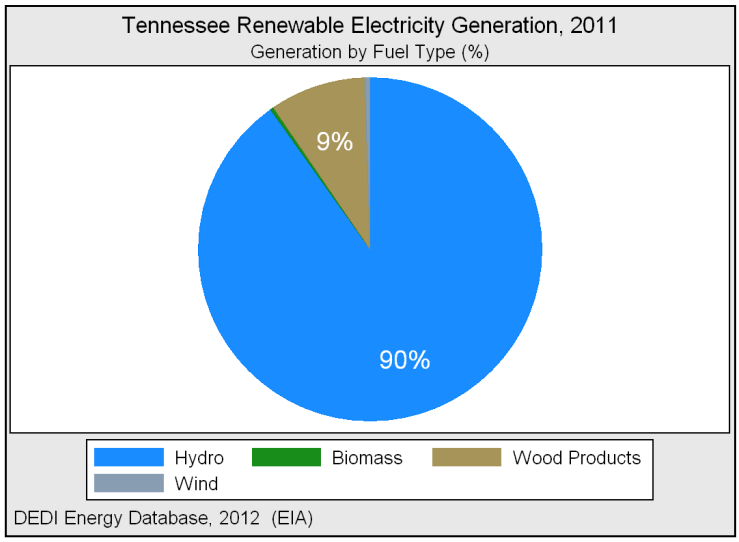


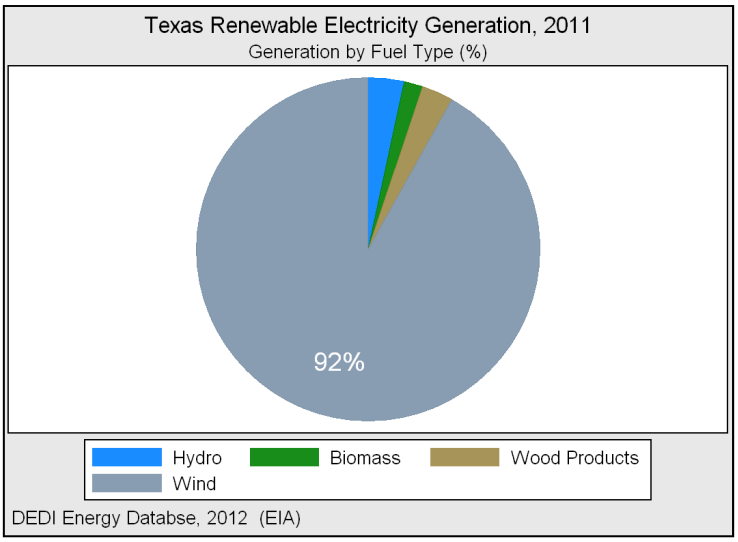


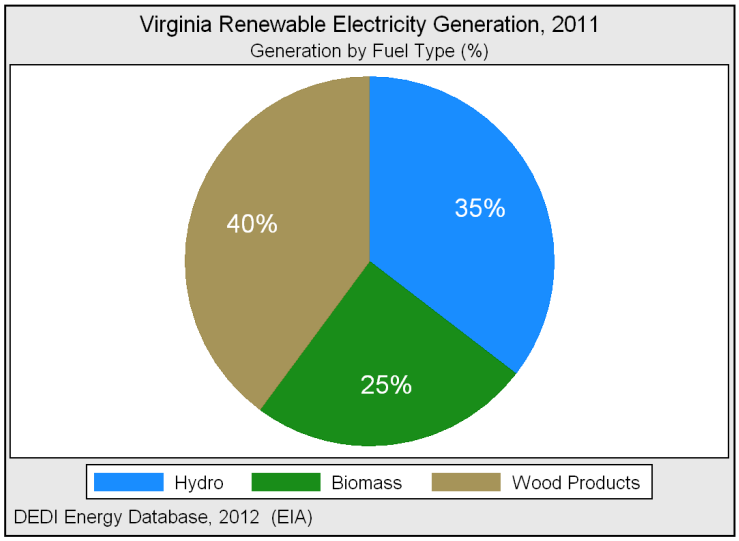


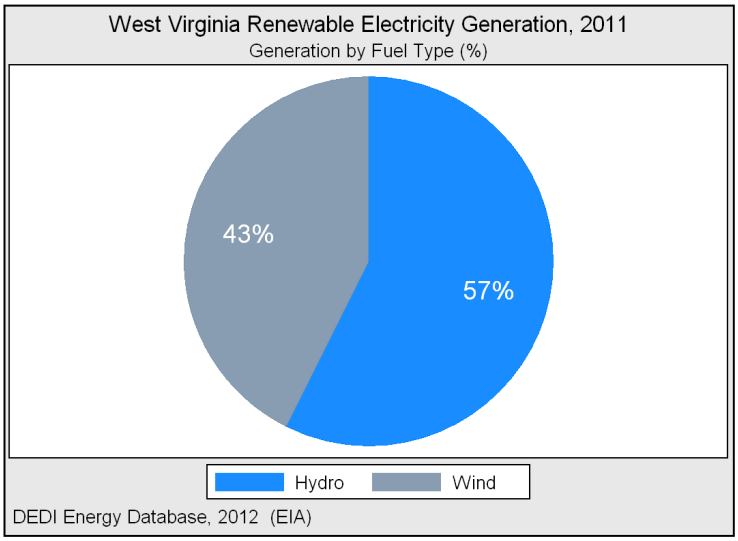


Renewable Electricity Generation

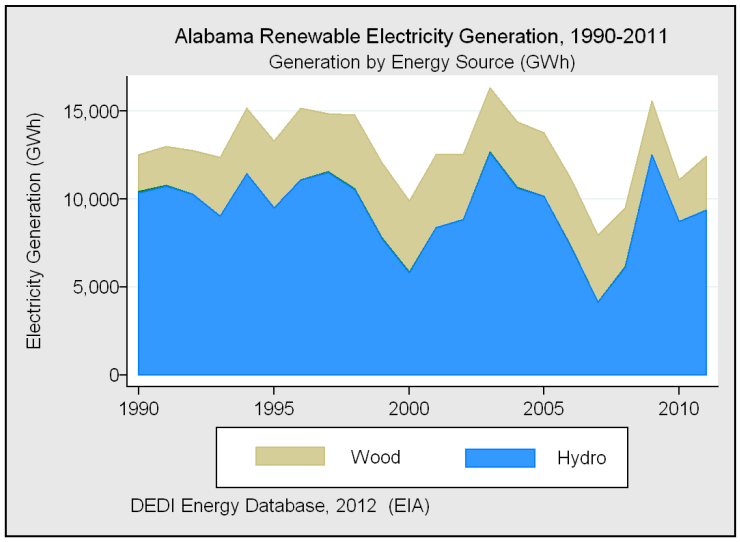


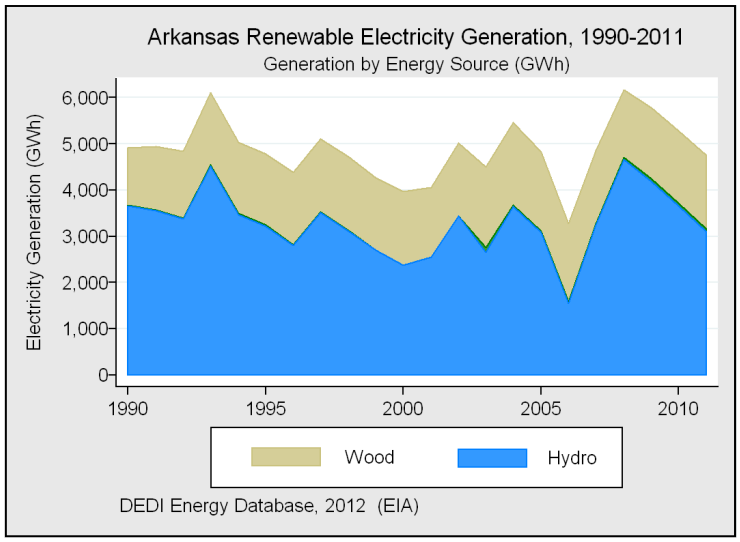


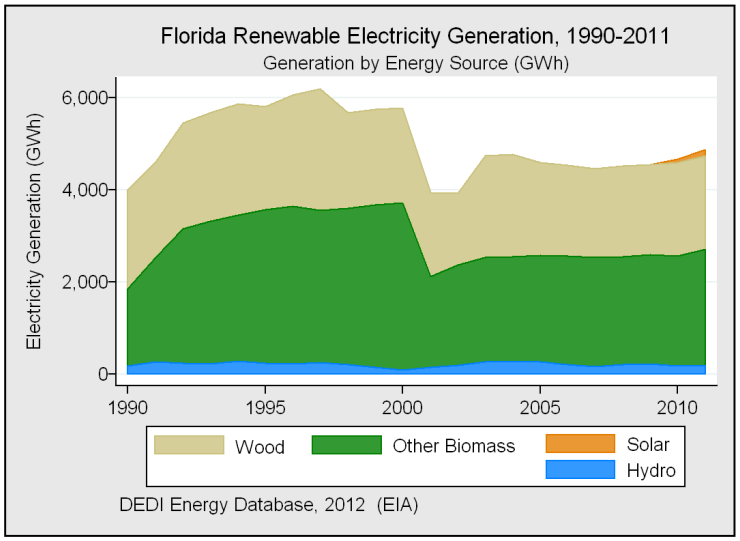


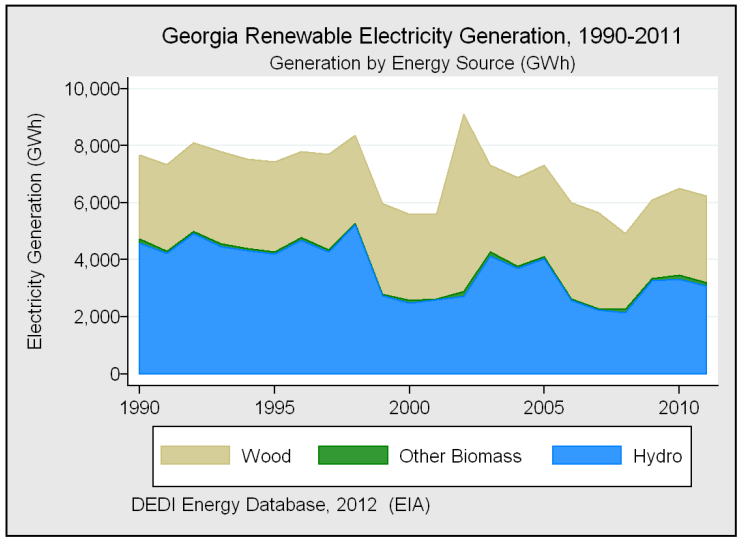


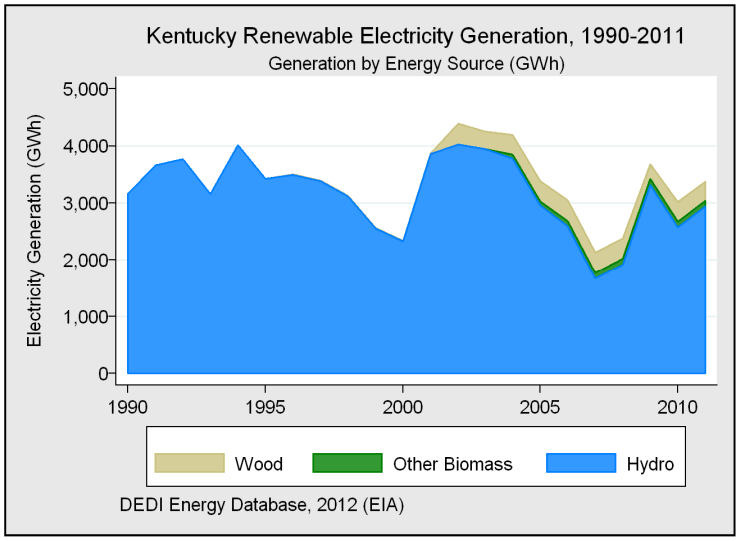
Renewable Electricity Generation

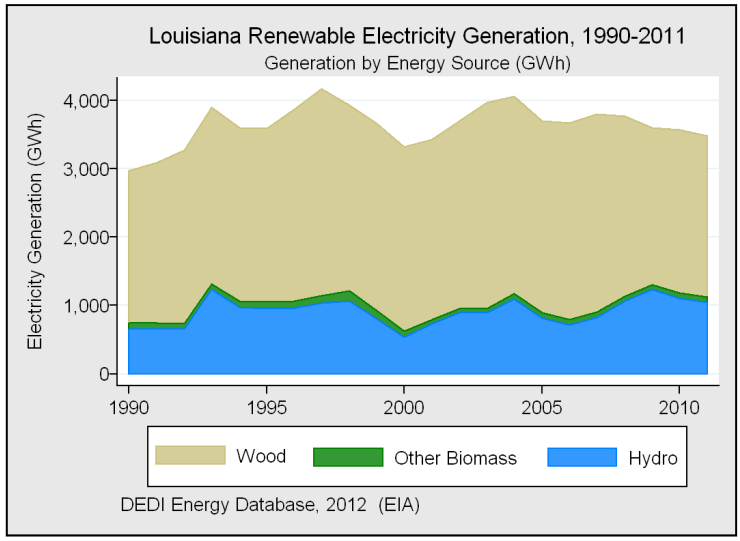




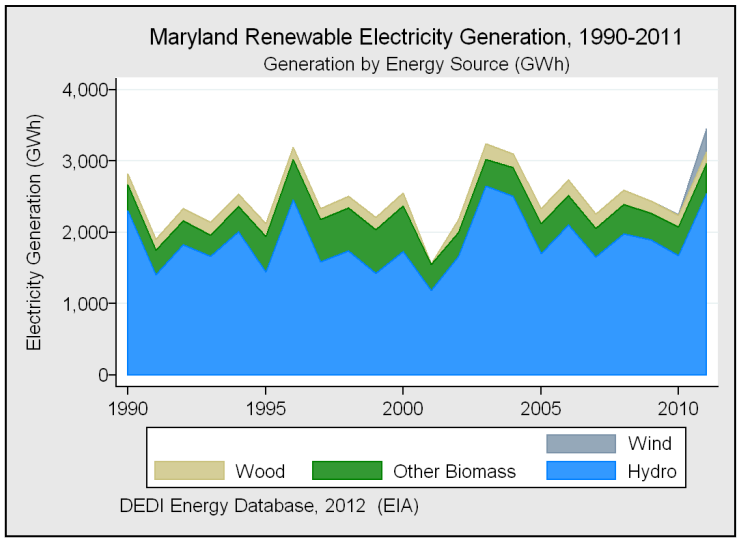


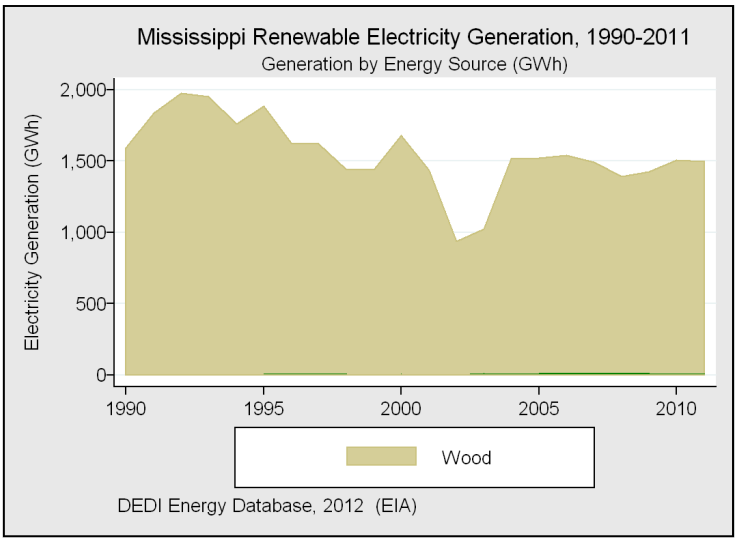


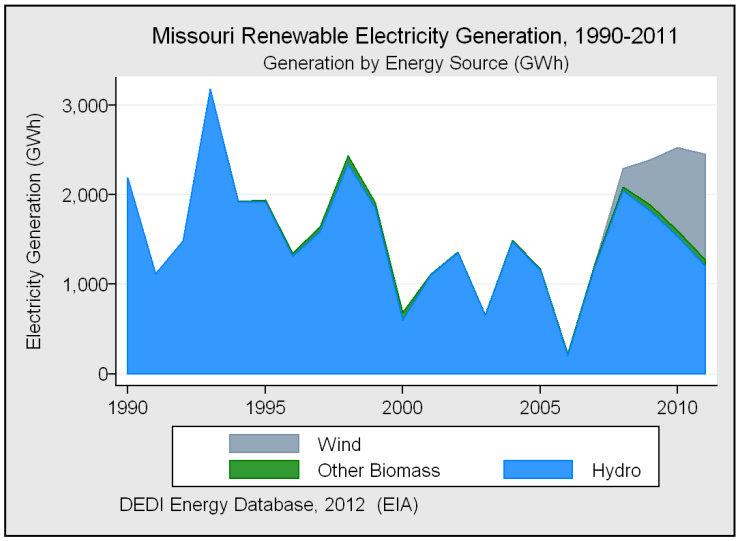


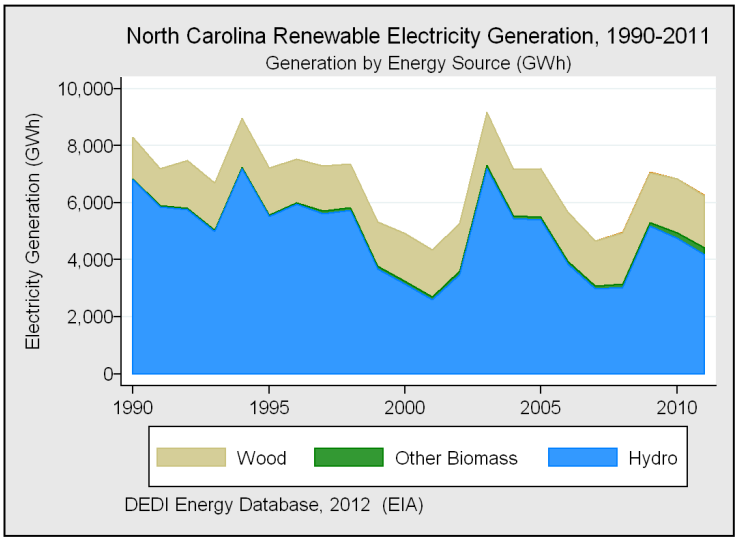


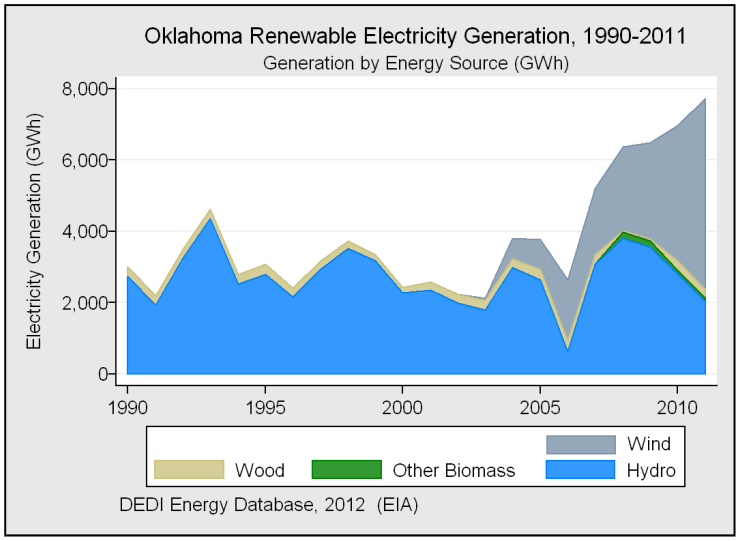
Renewable Electricity Generation

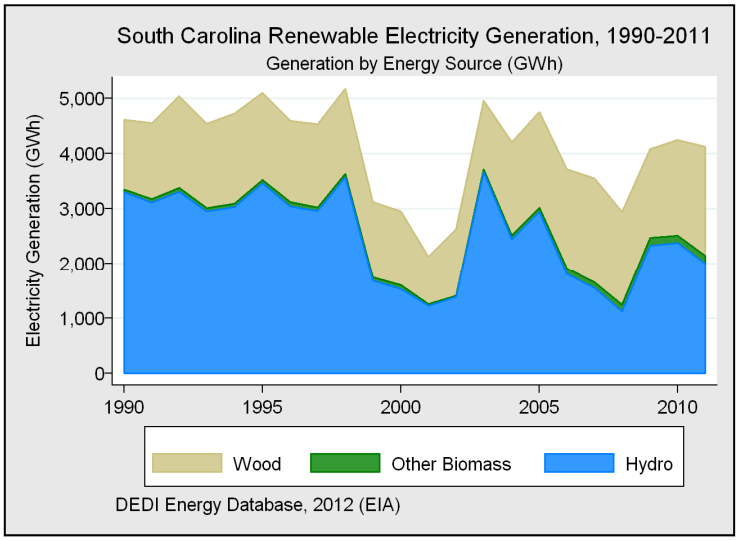




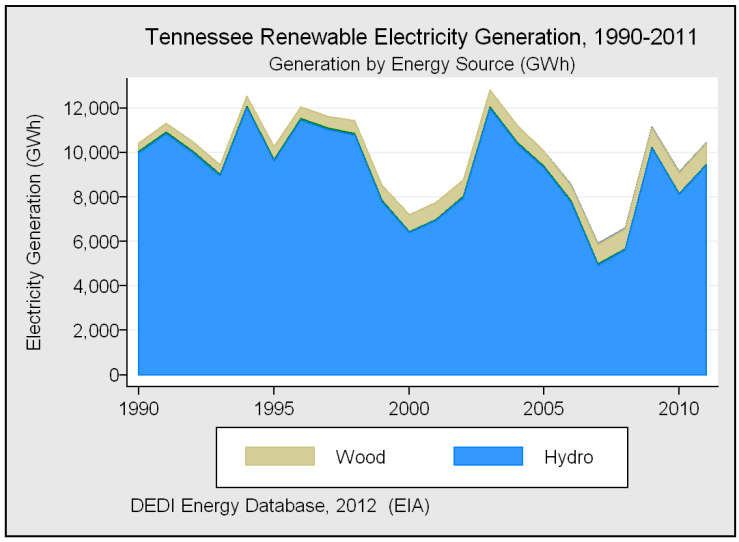


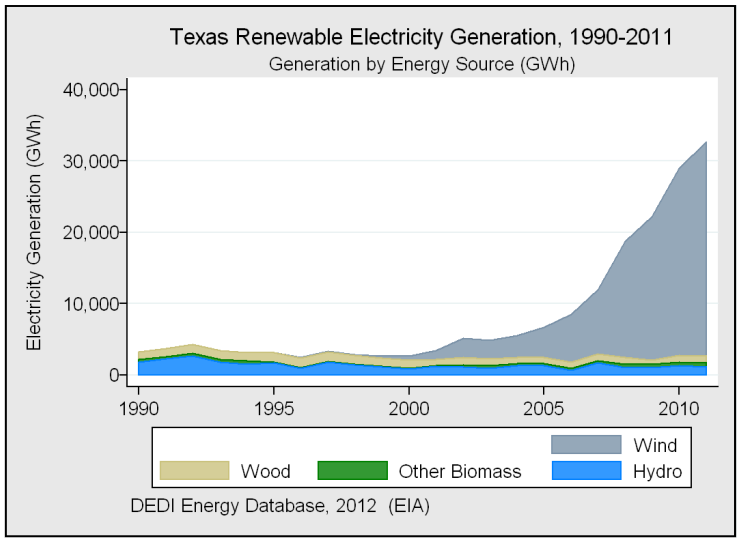


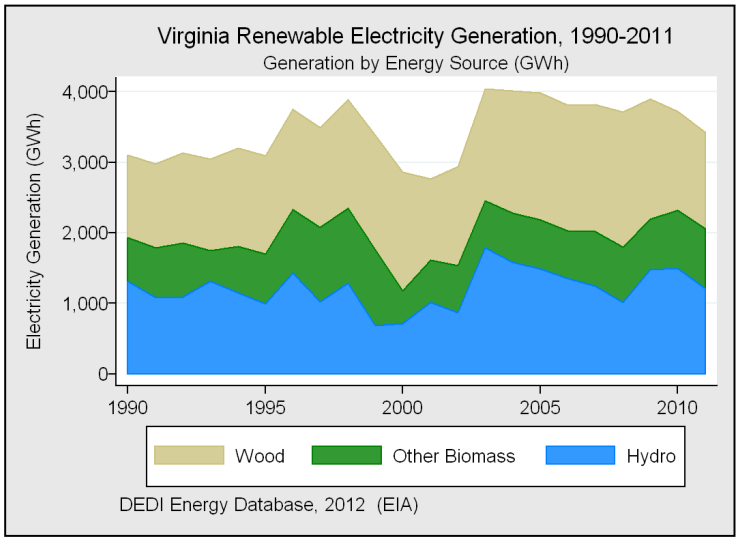


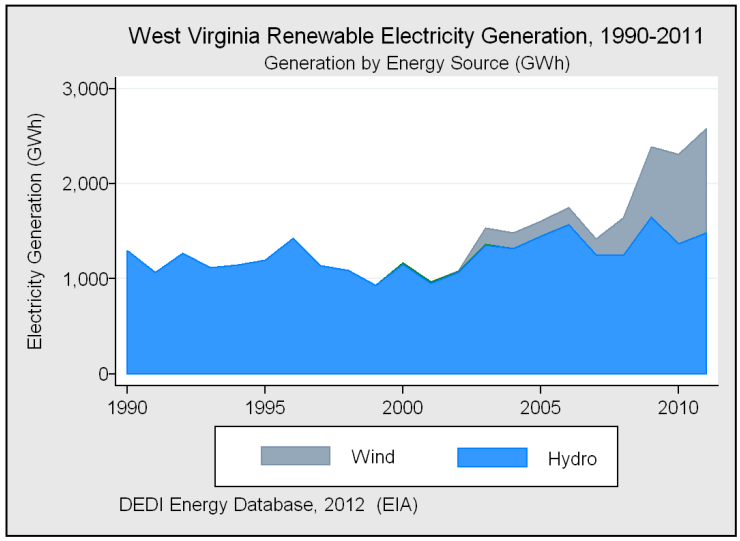


Renewable Electricity Generation

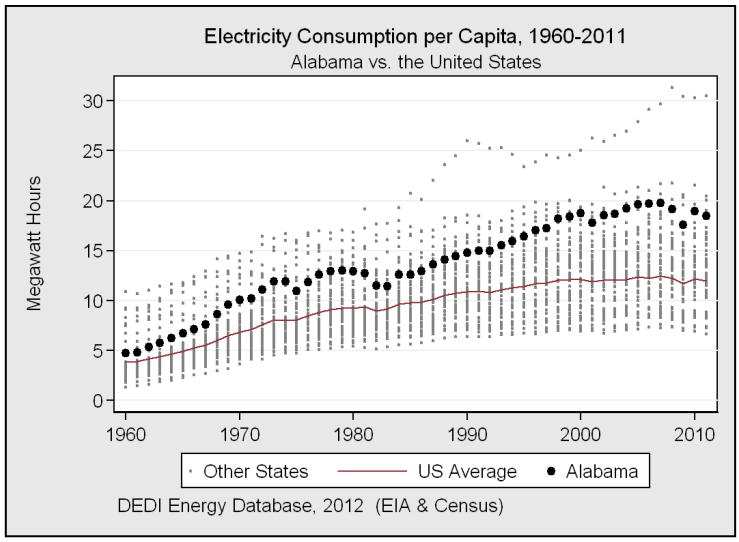


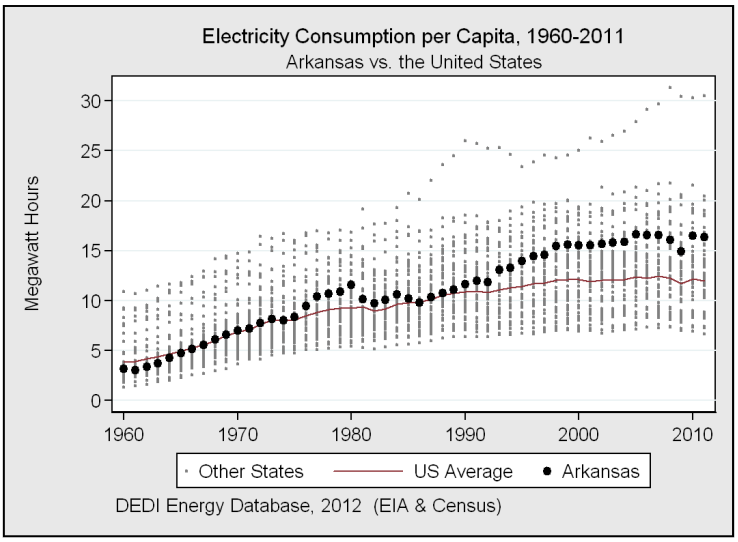


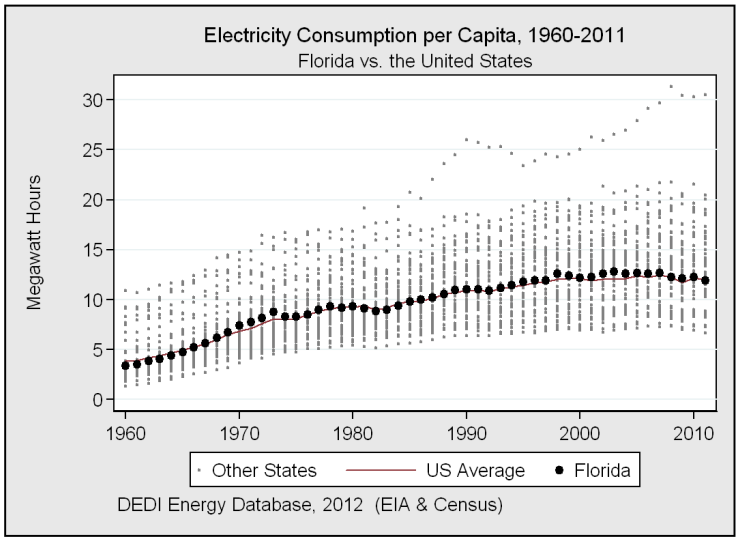


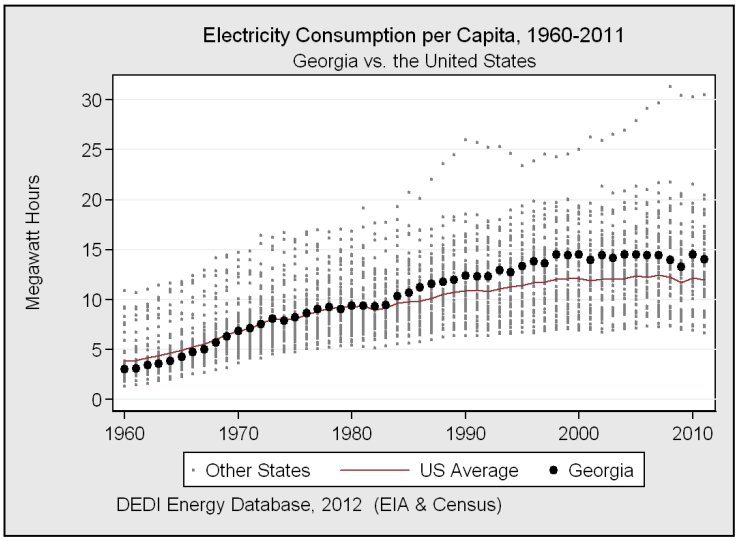


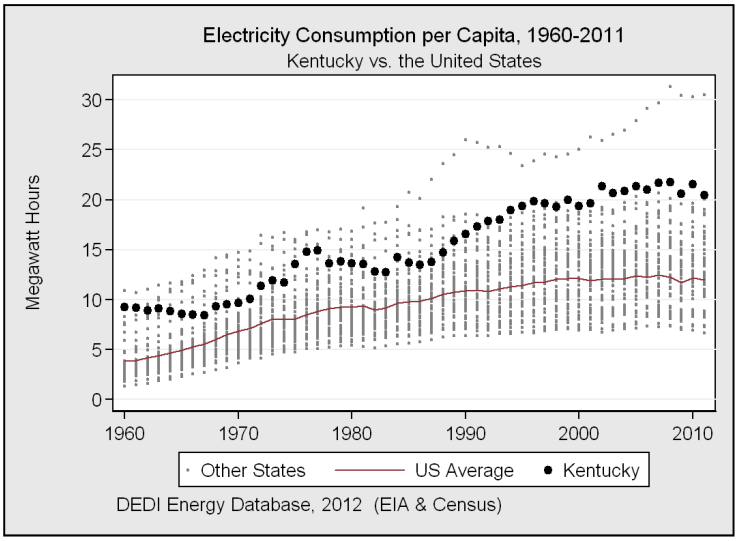
Electricity Use per Capita

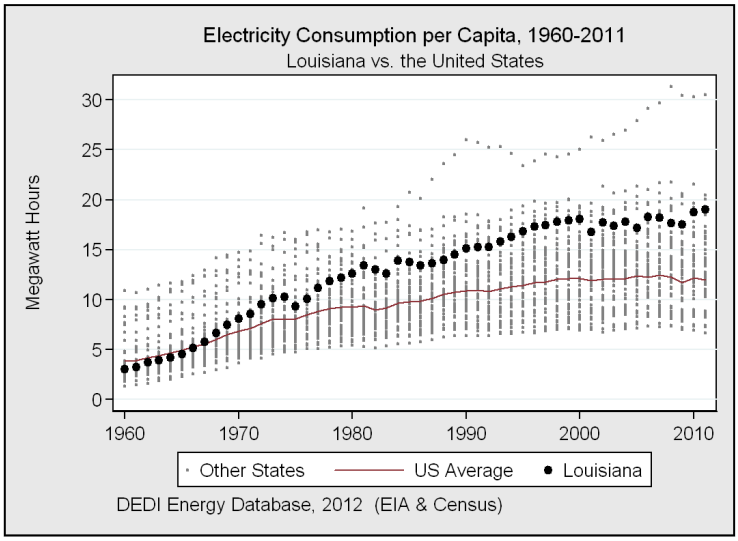




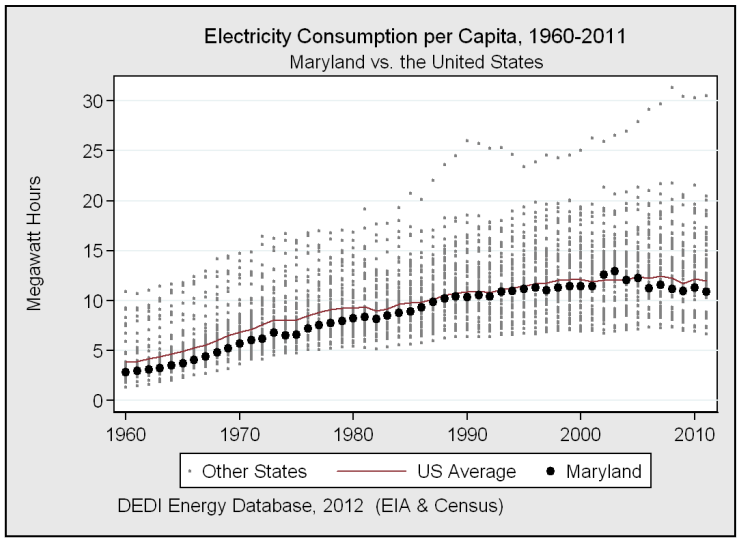


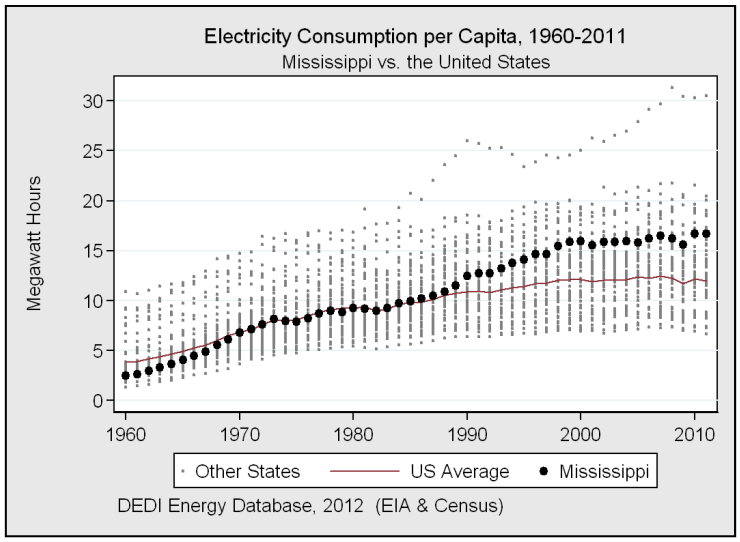


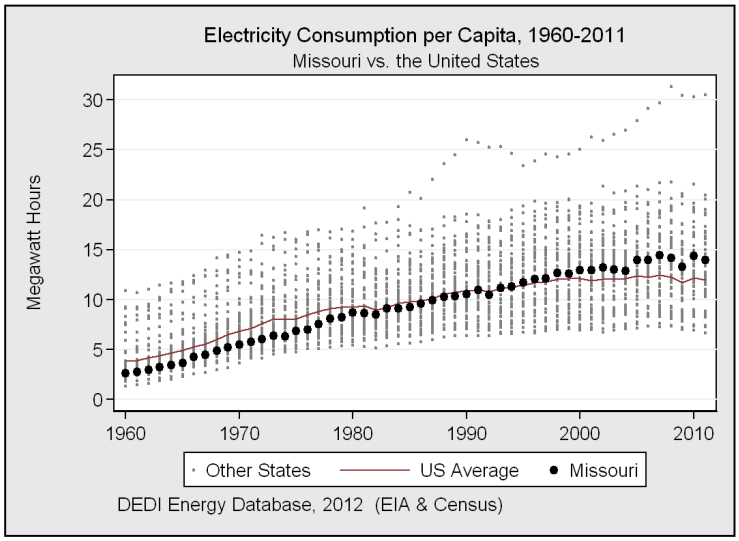


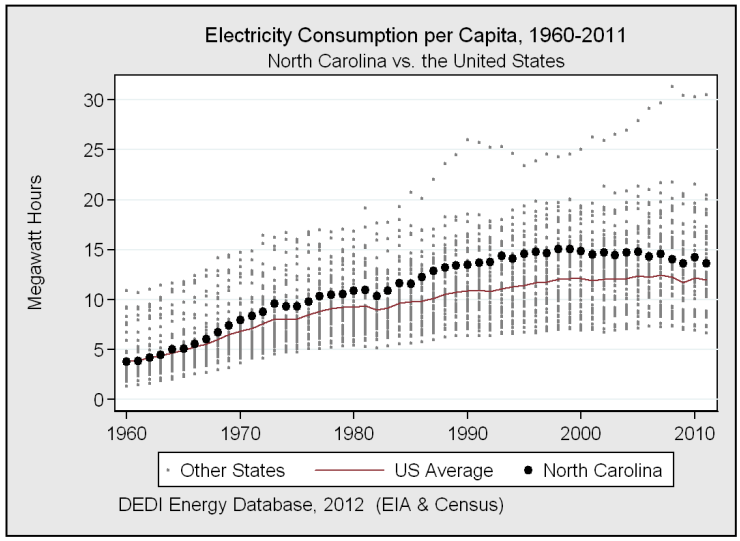


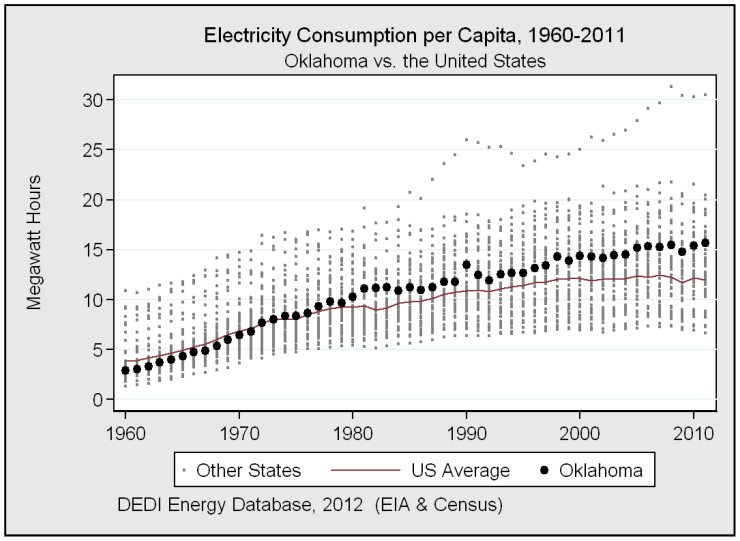
Electricity Use per Capita

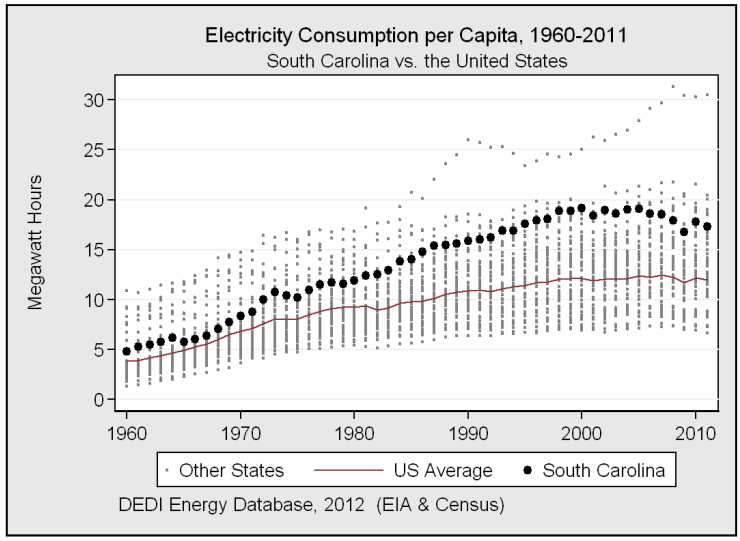




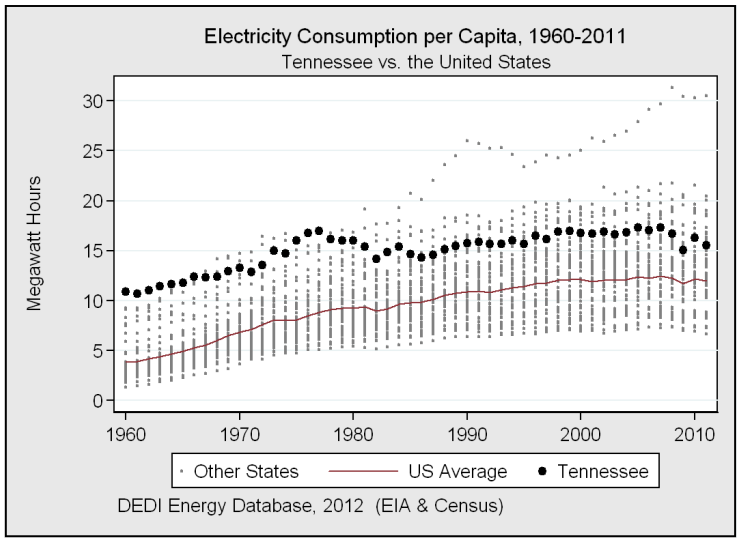


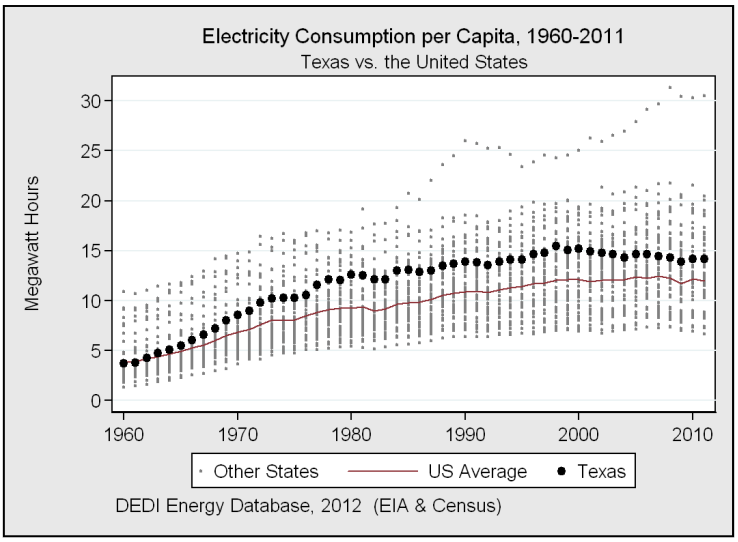


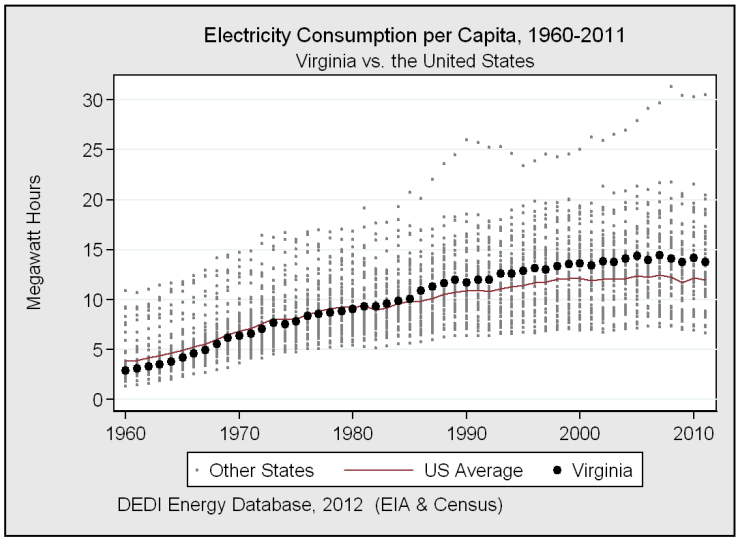


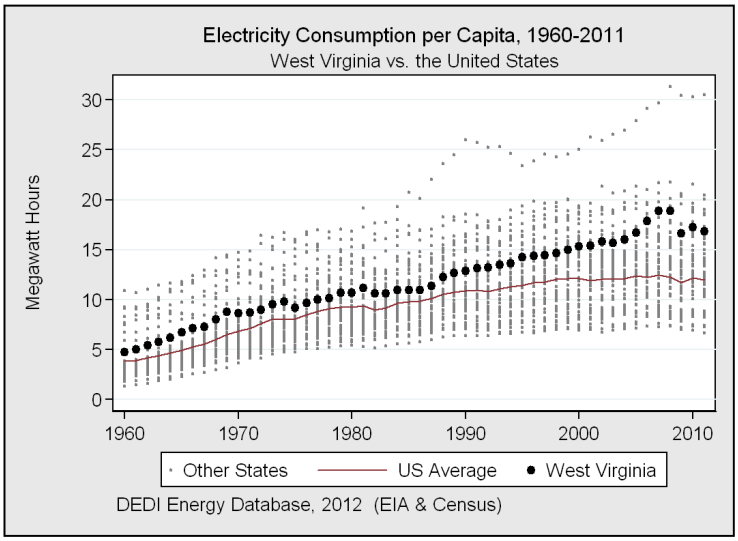


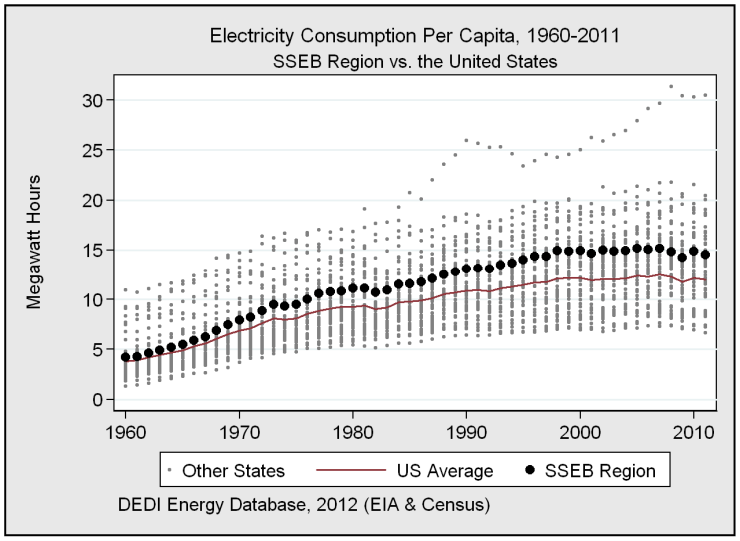
Electricity Use per Capita



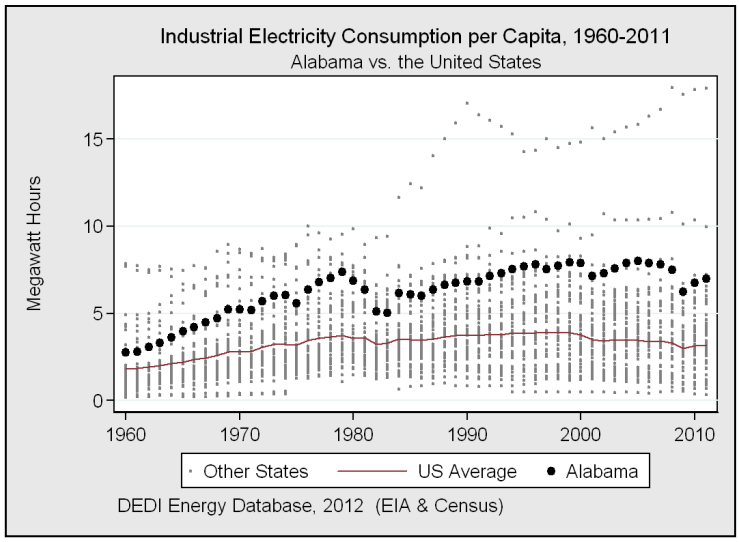


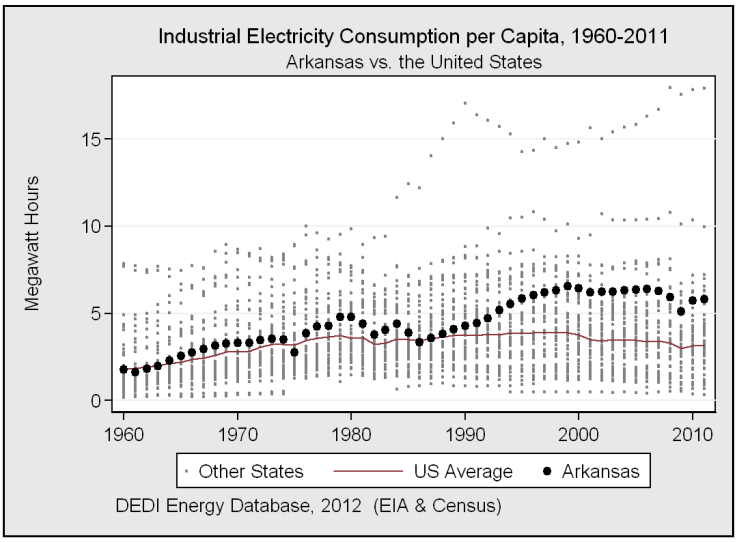


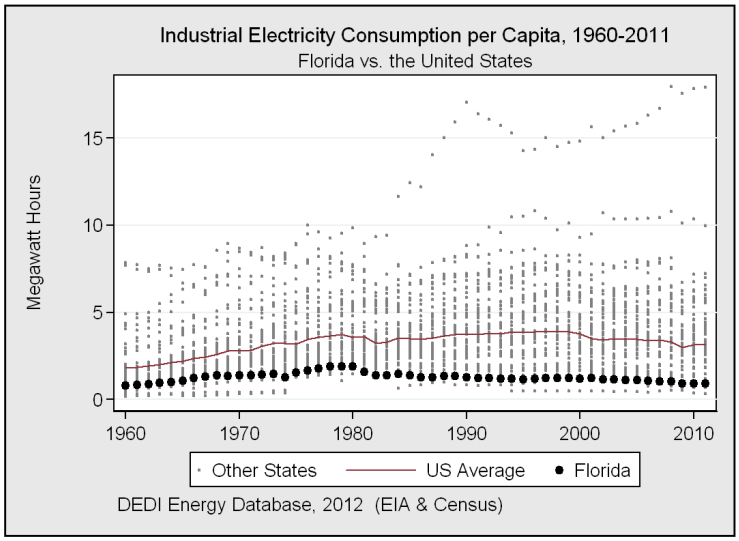


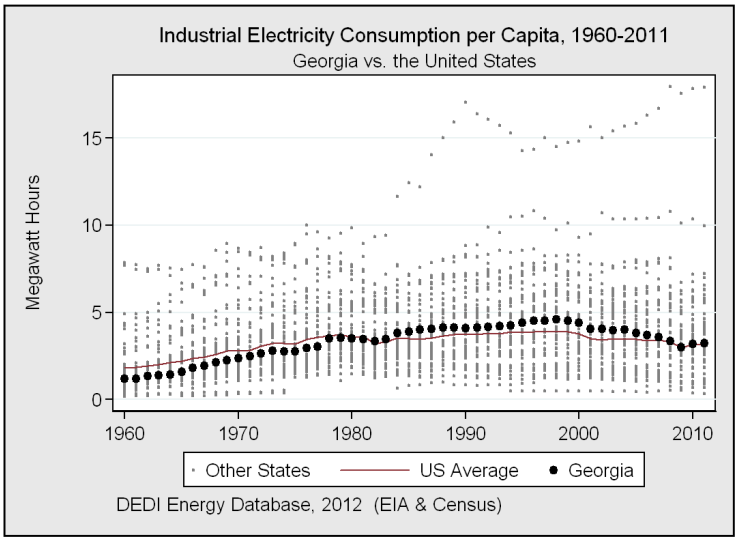


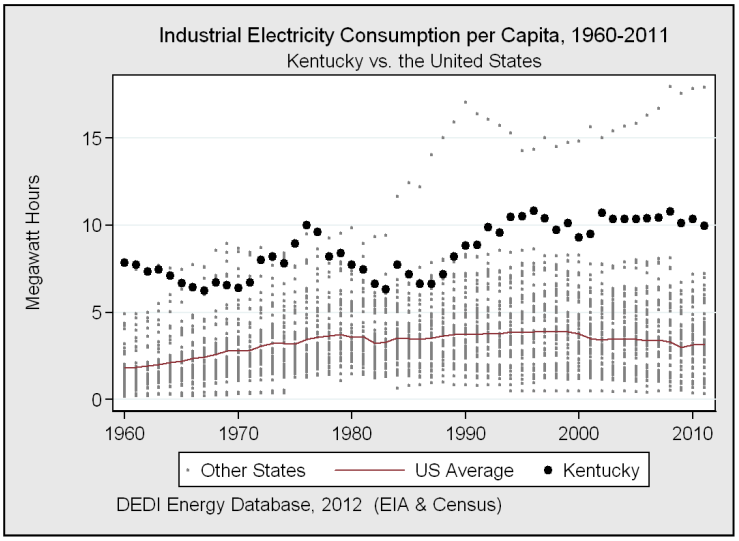
Industrial Electricity Use per Capita

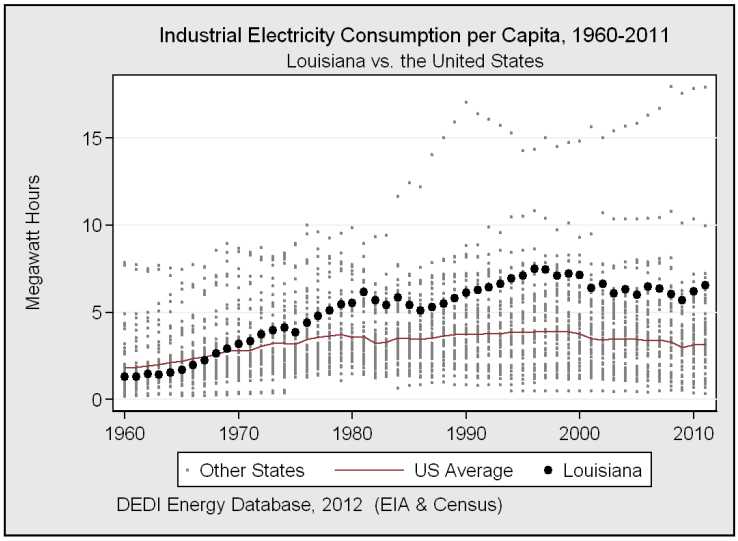




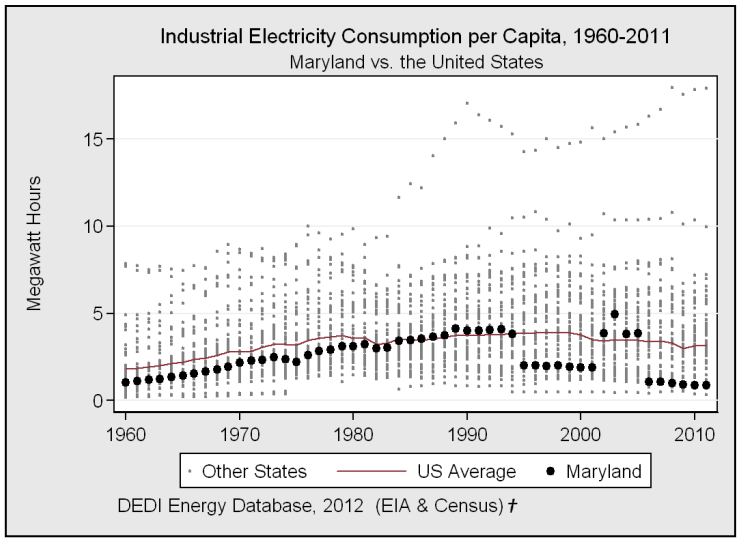


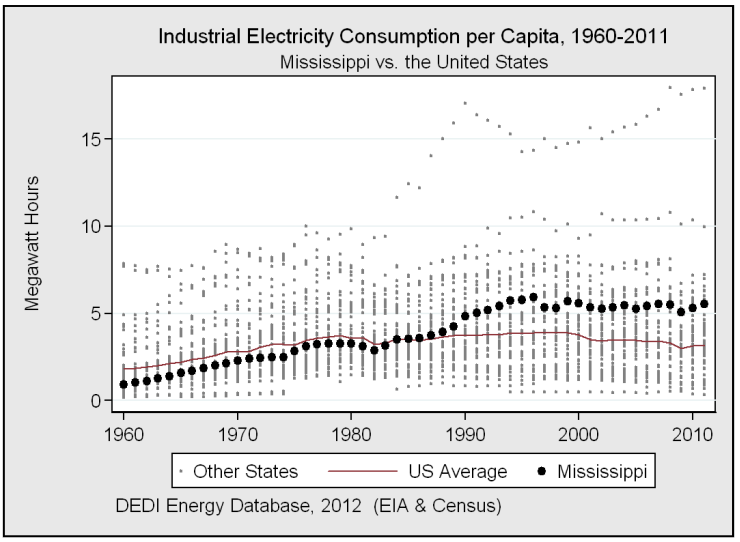


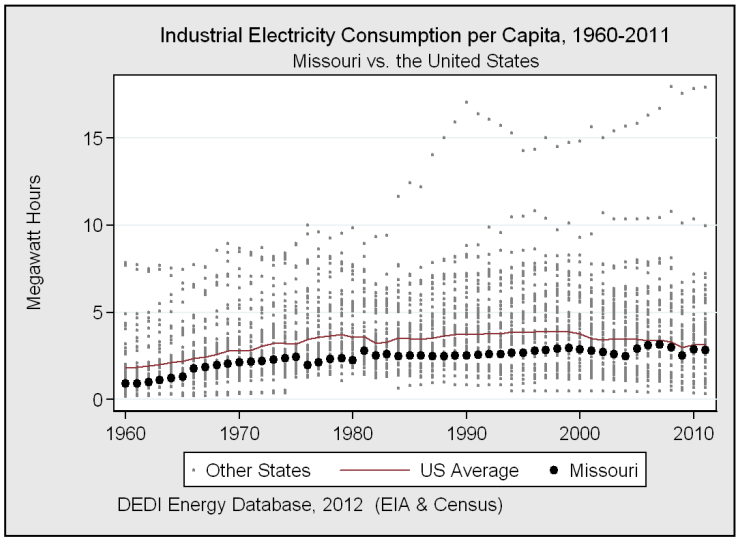


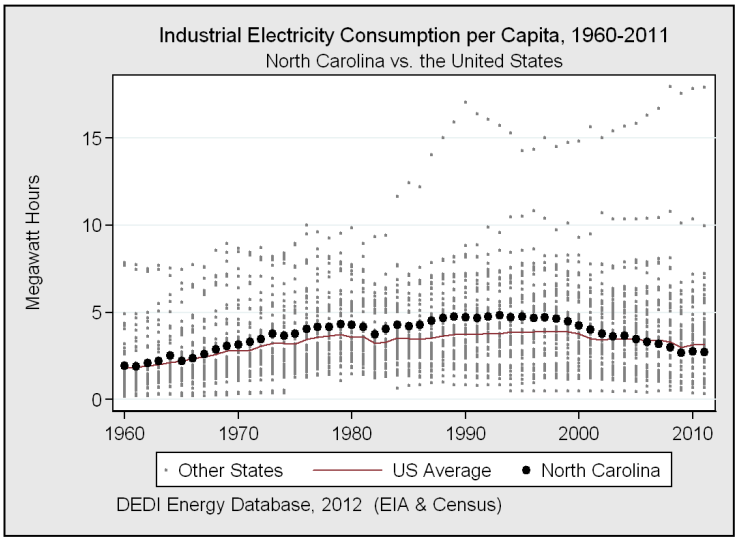


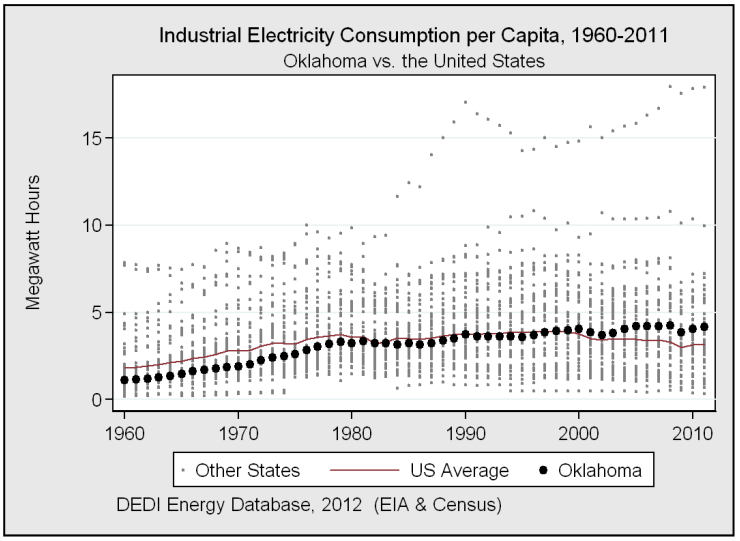
Industrial Electricity Use per Capita

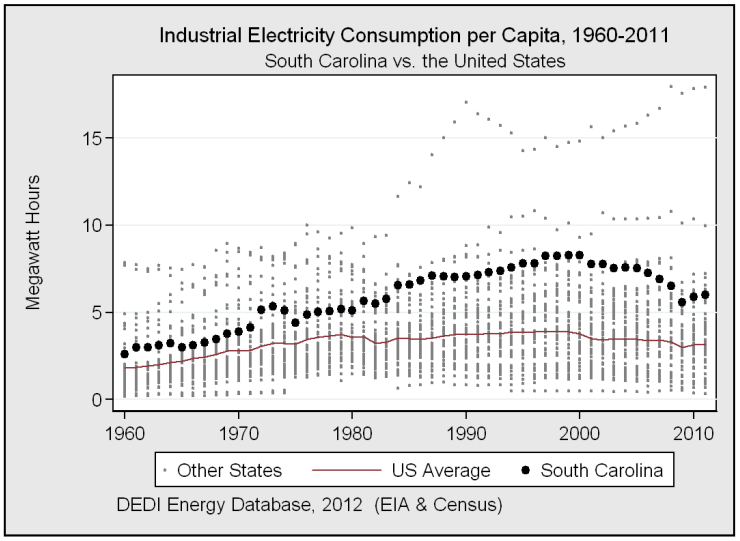




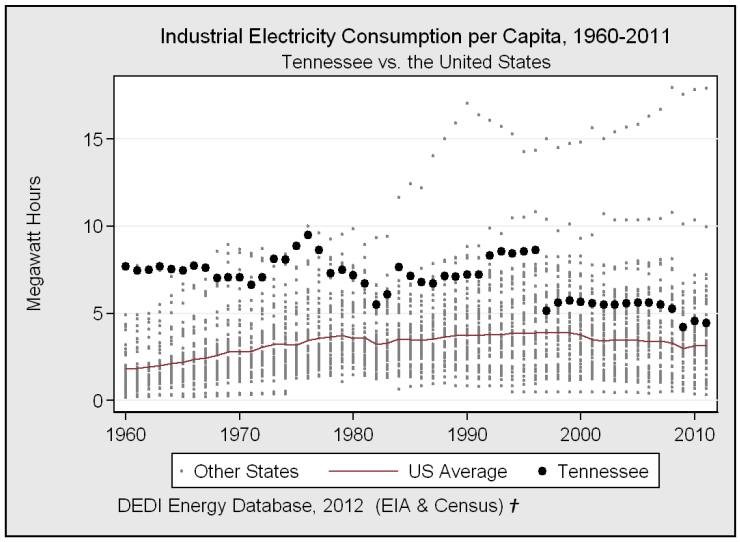


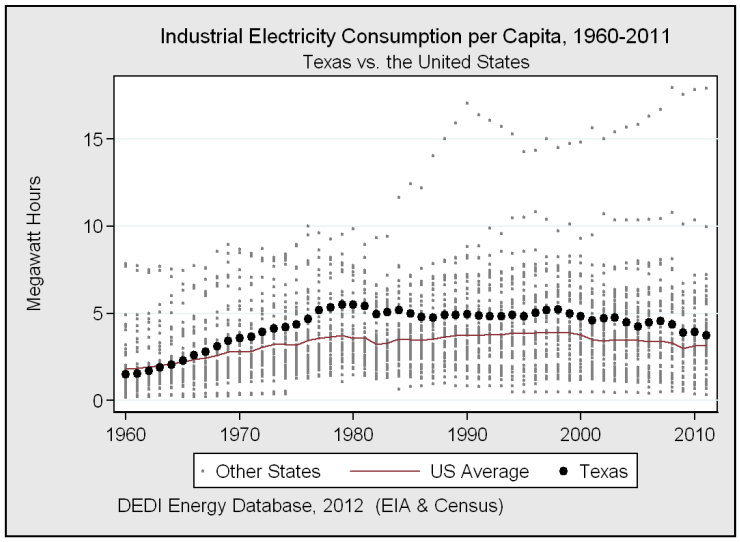


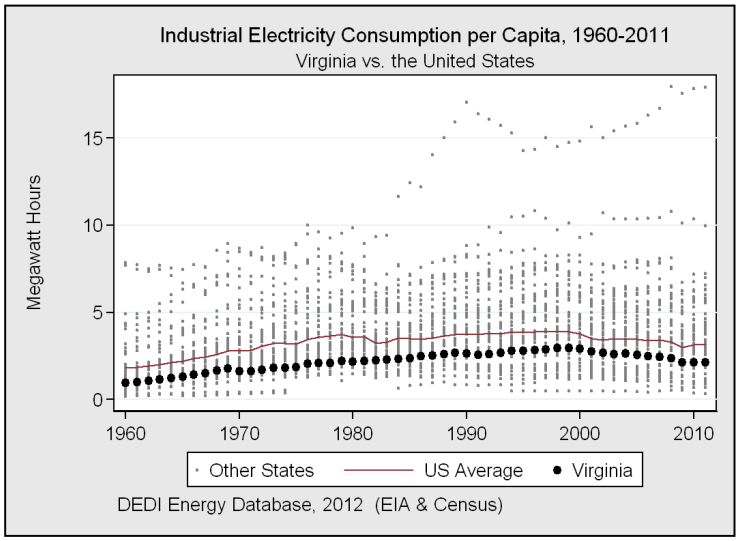


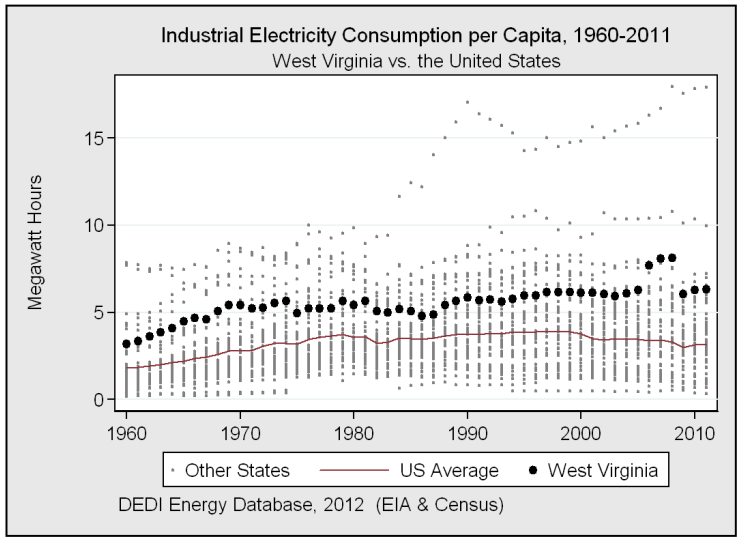


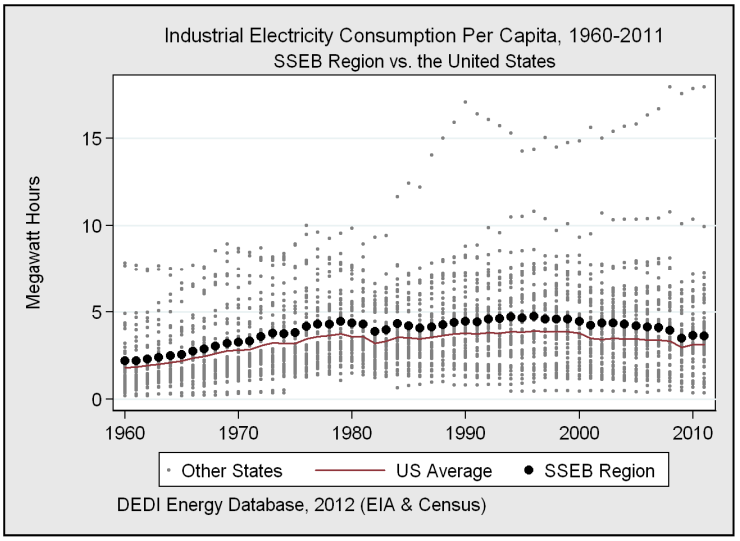
Industrial Electricity Use per Capita





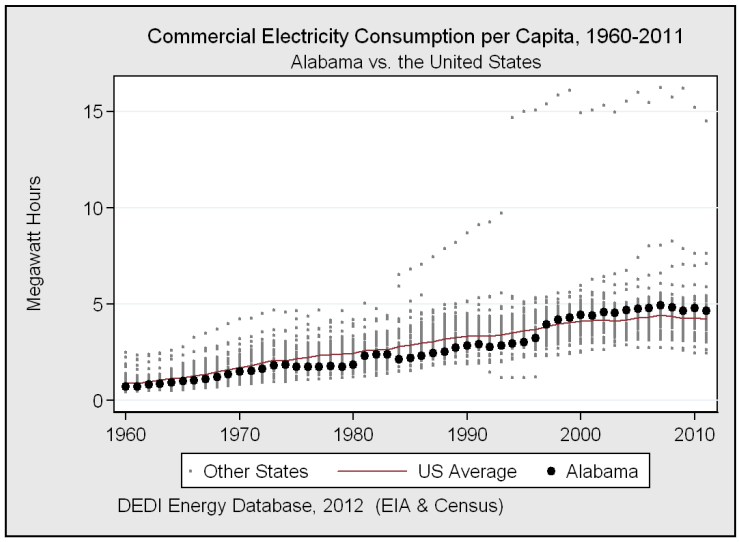


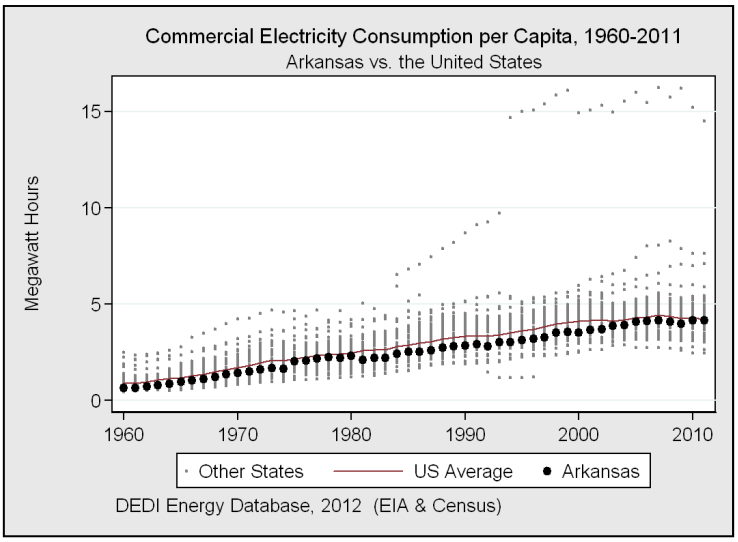


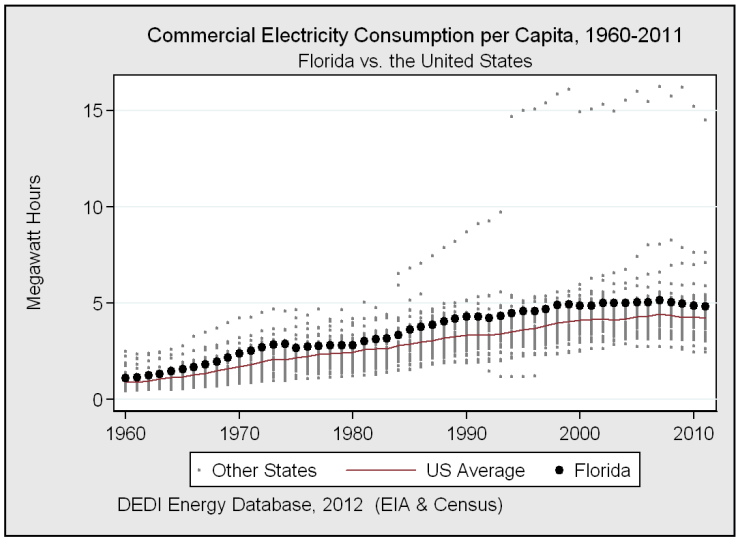


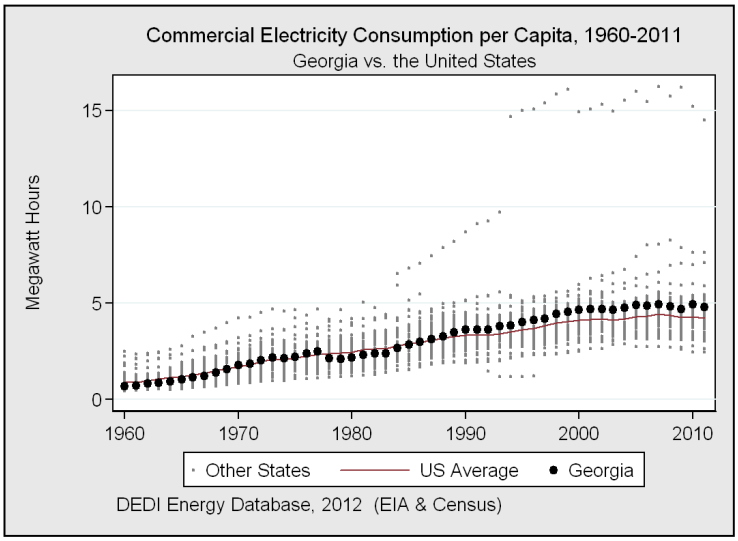
† Maryland and Tennessee show substantial fluctuation in per capita industrial electricity consumption during due to the reclassification of certain industrial processes as commercial during this timeseries.

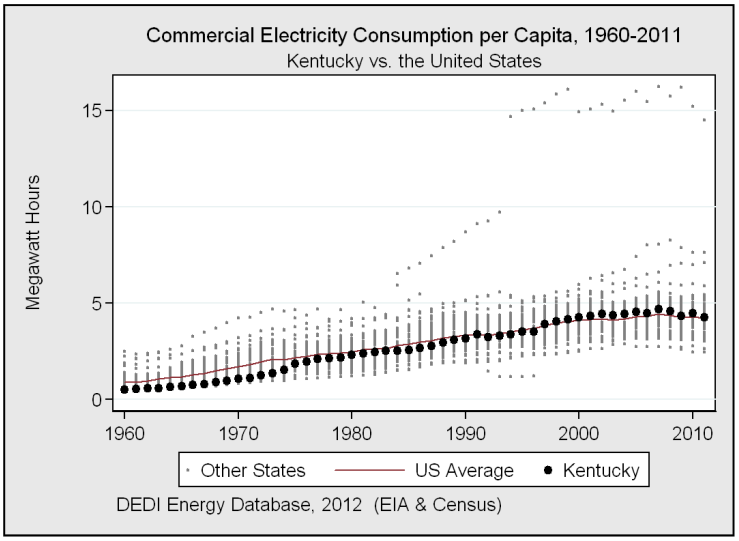
Commercial Electricity Use per Capita

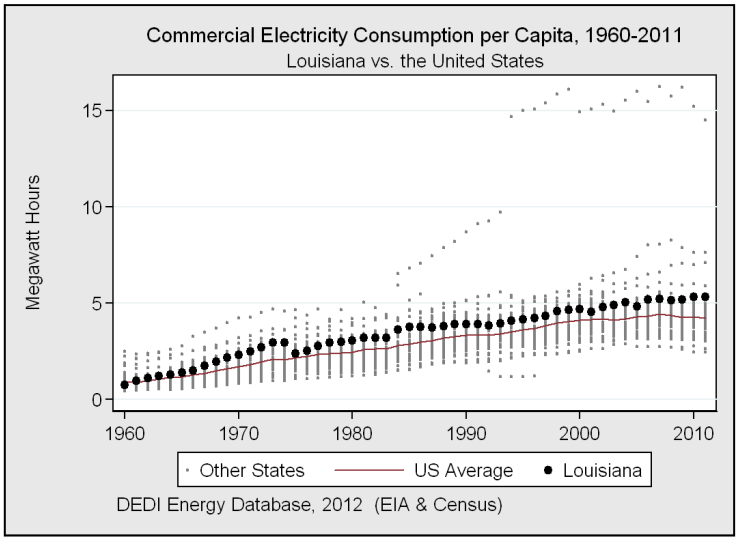




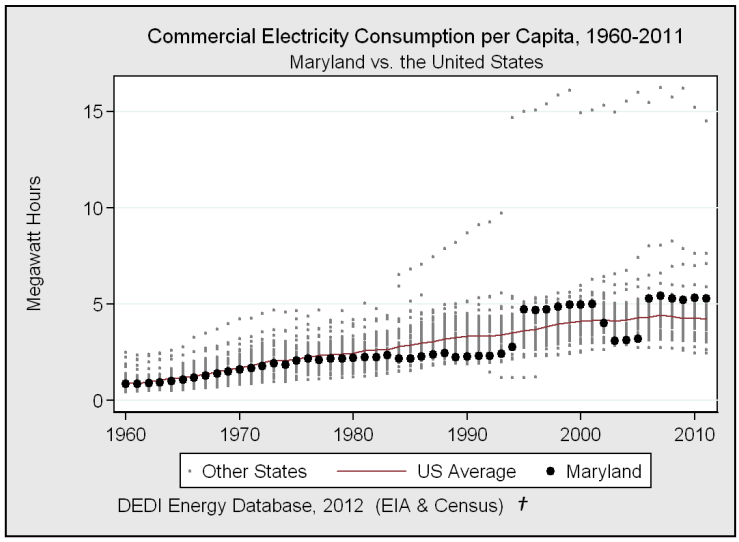


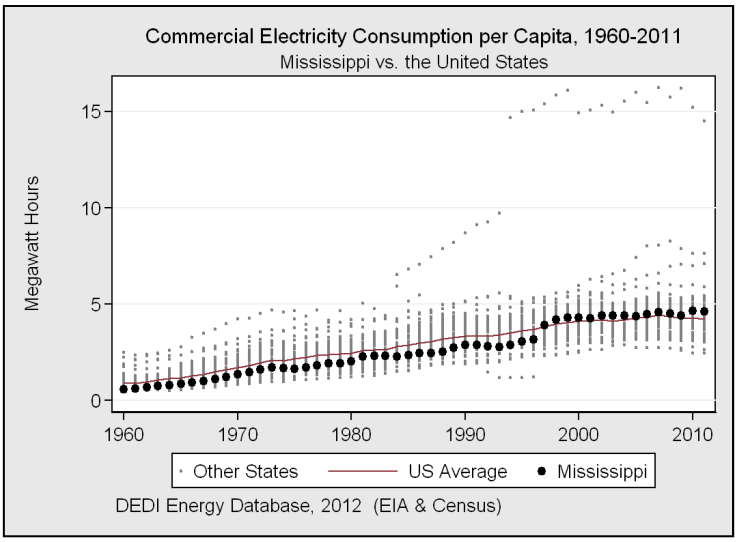


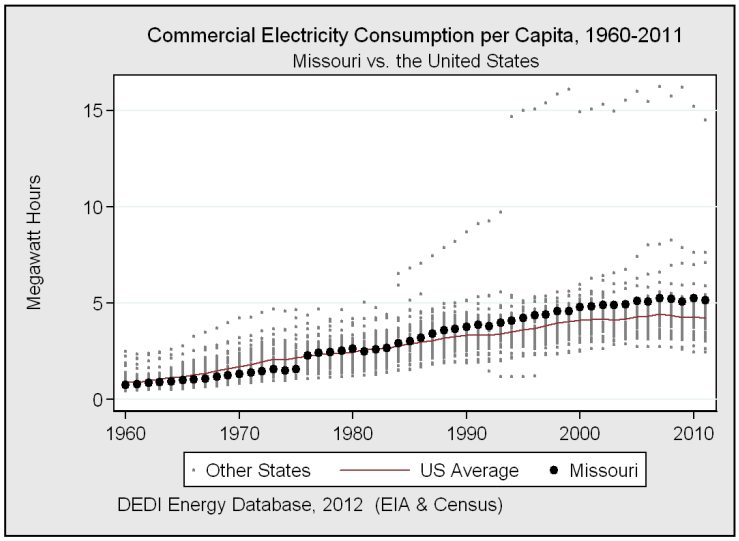


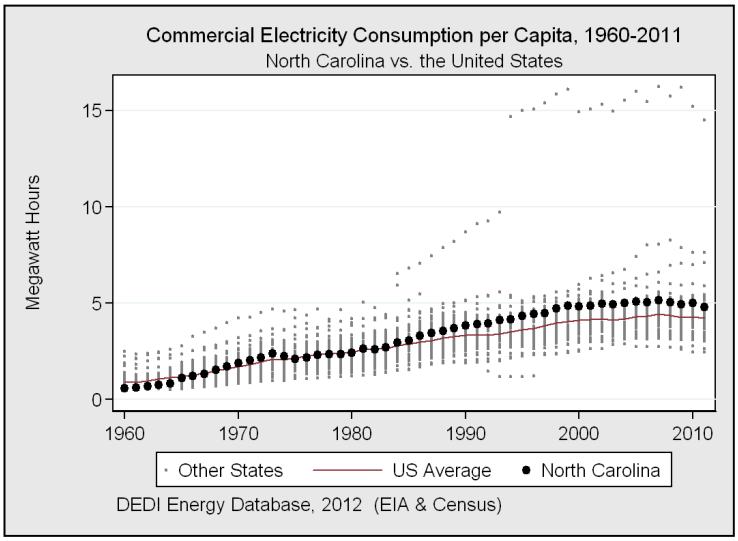


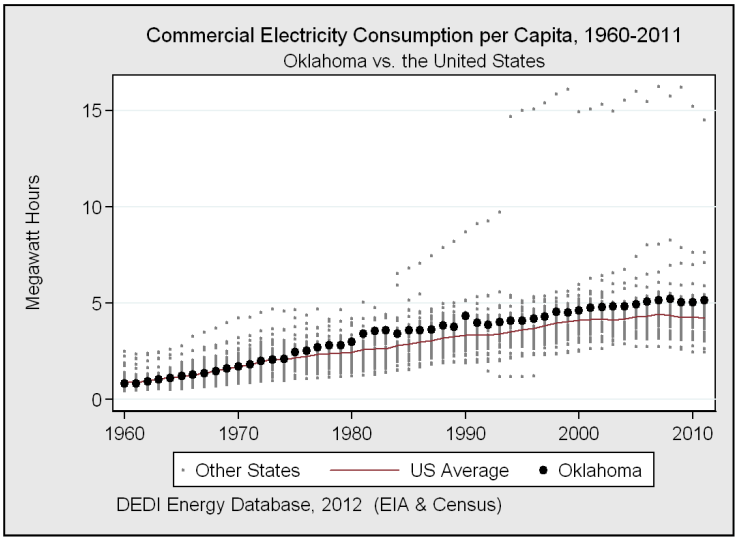
Commercial Electricity Use per Capita

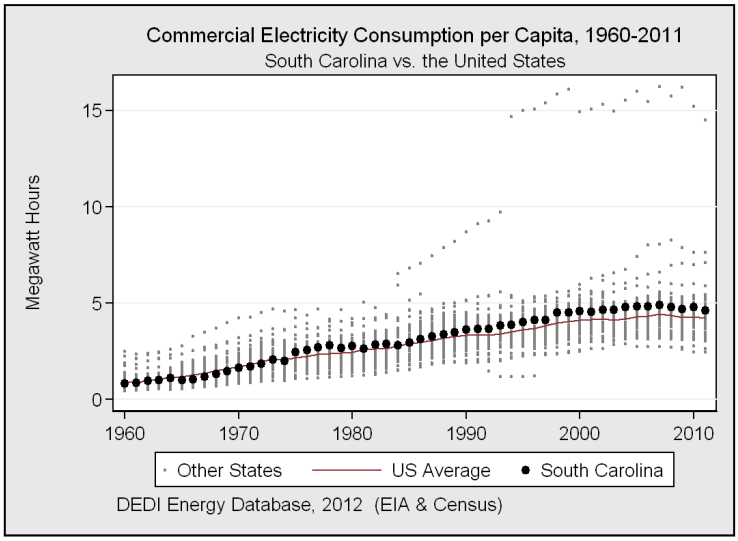




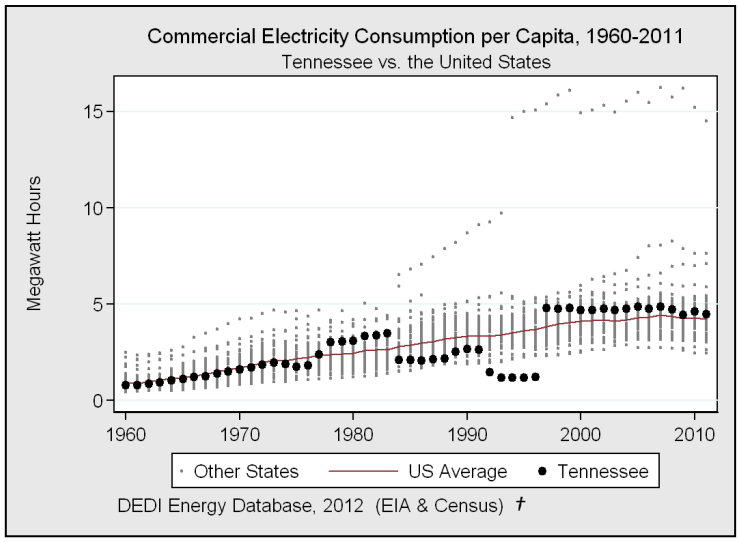


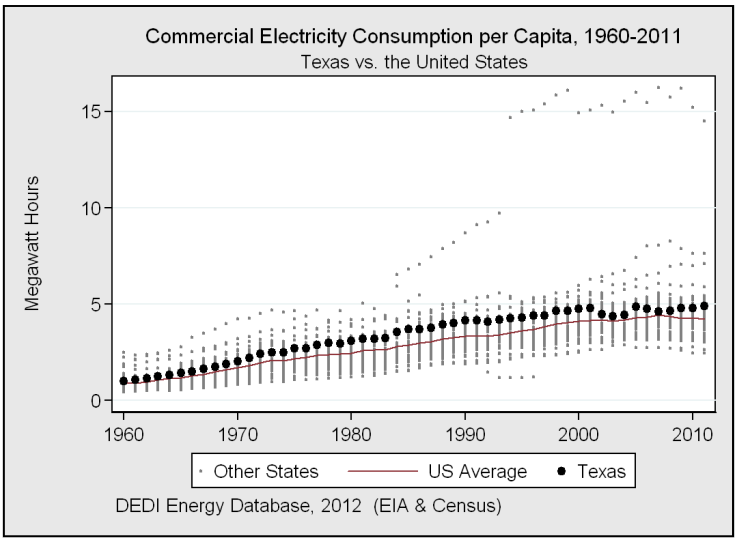


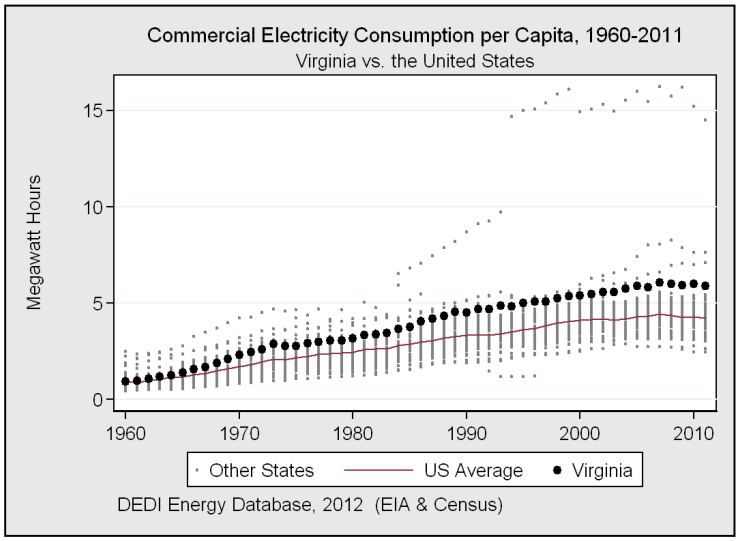


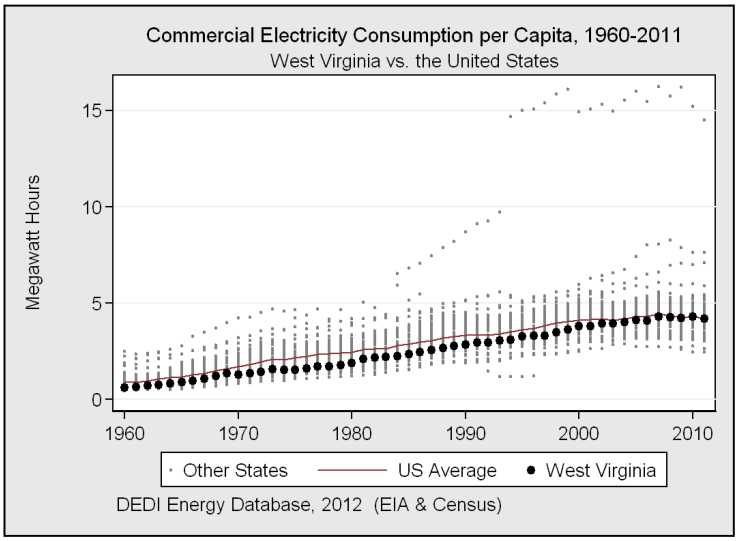


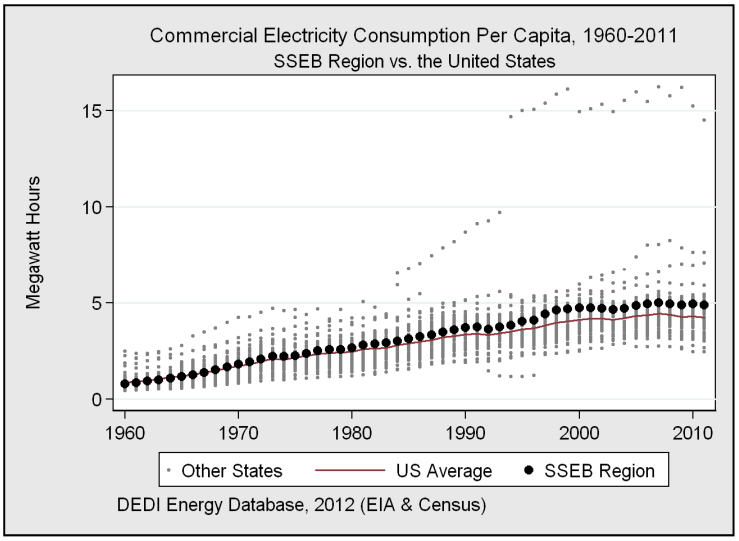
Commercial Electricity Use per Capita











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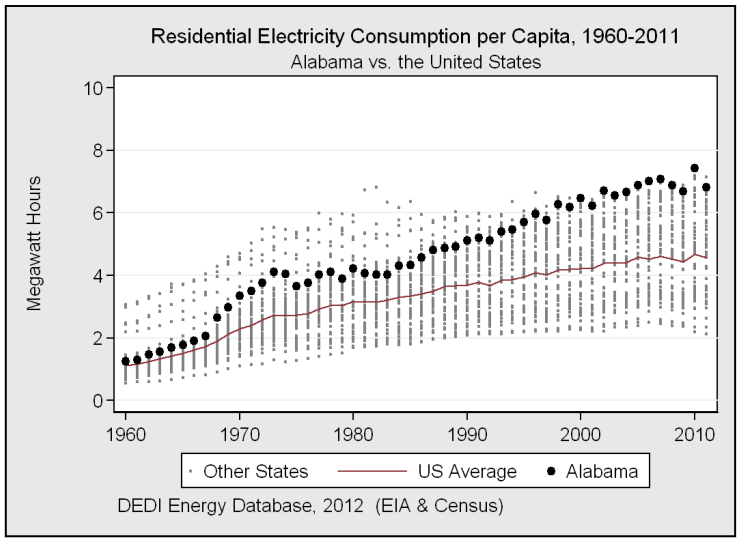
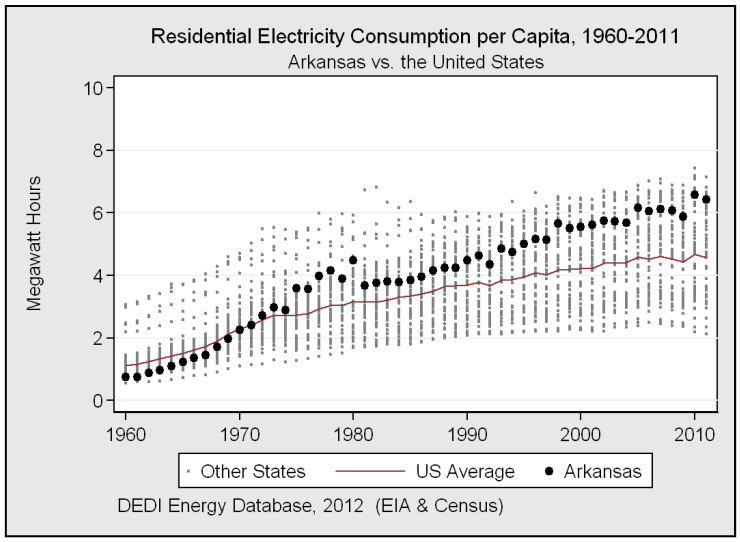
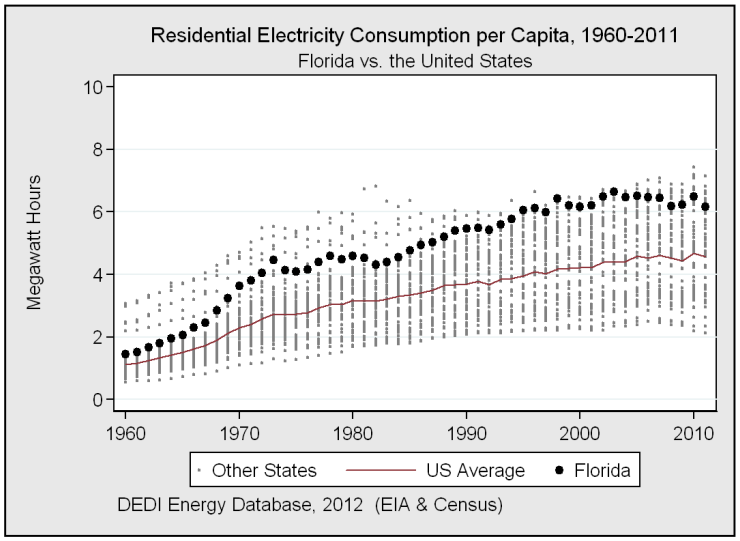
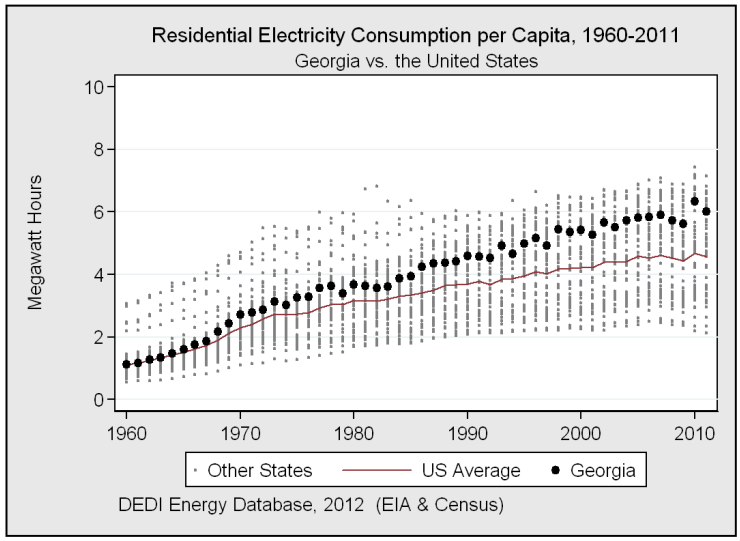
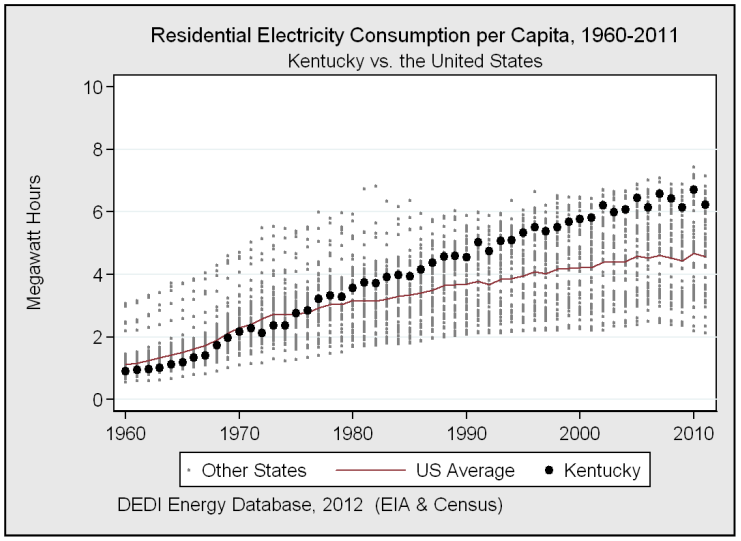
Residential Electricity Use per Capita

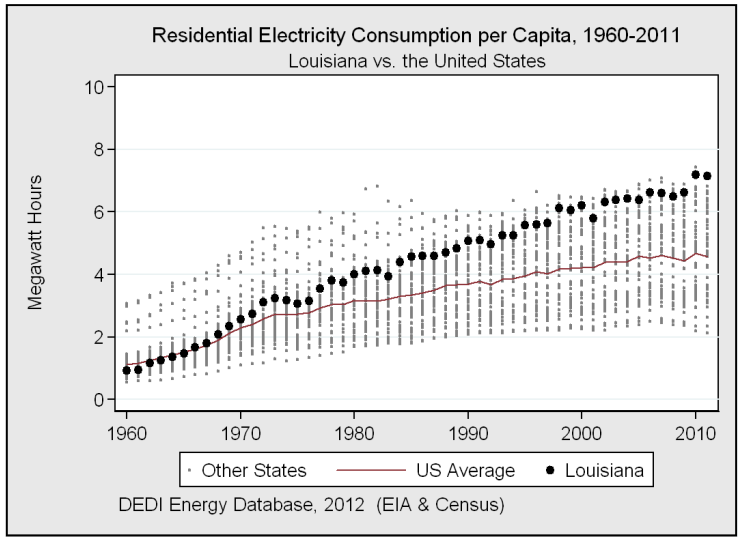




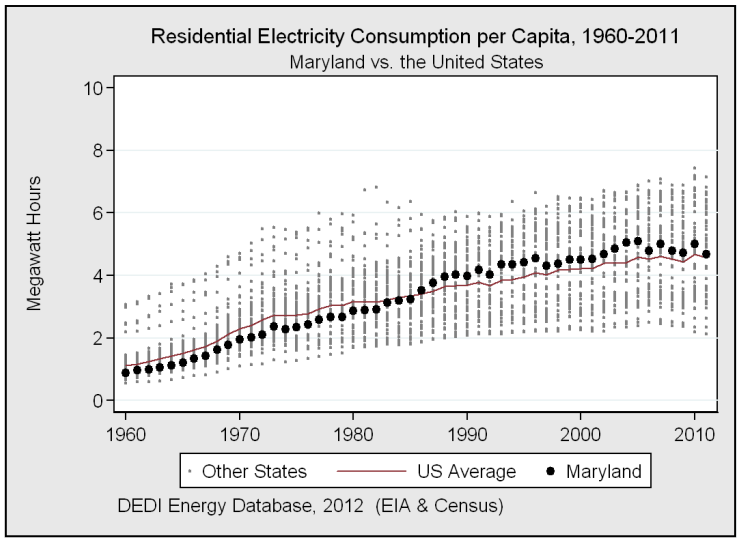


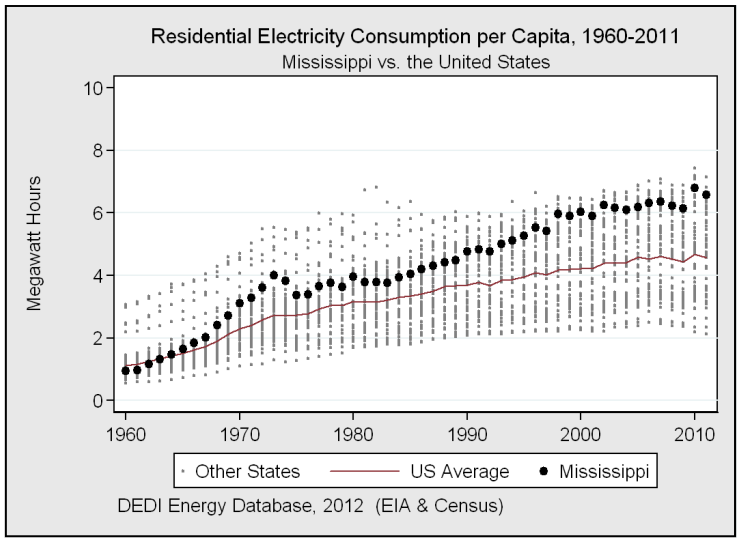


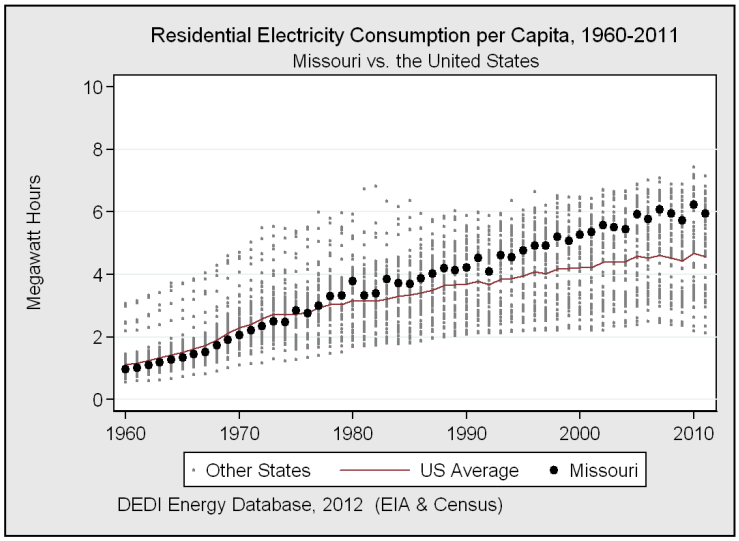


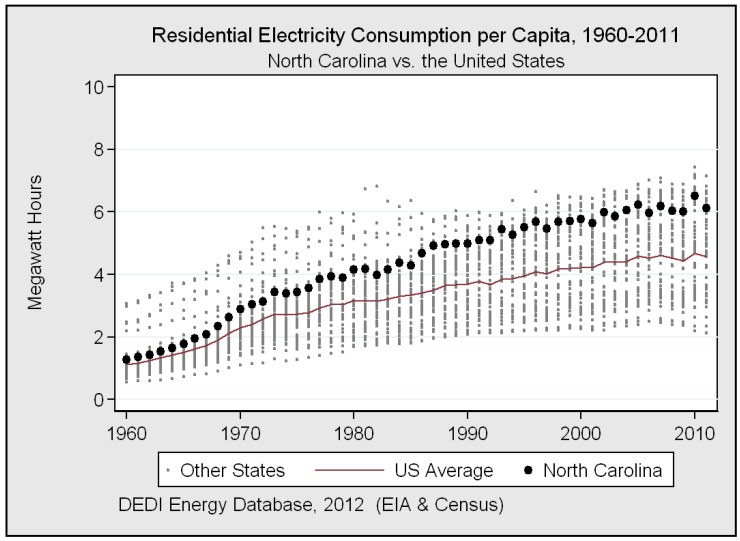


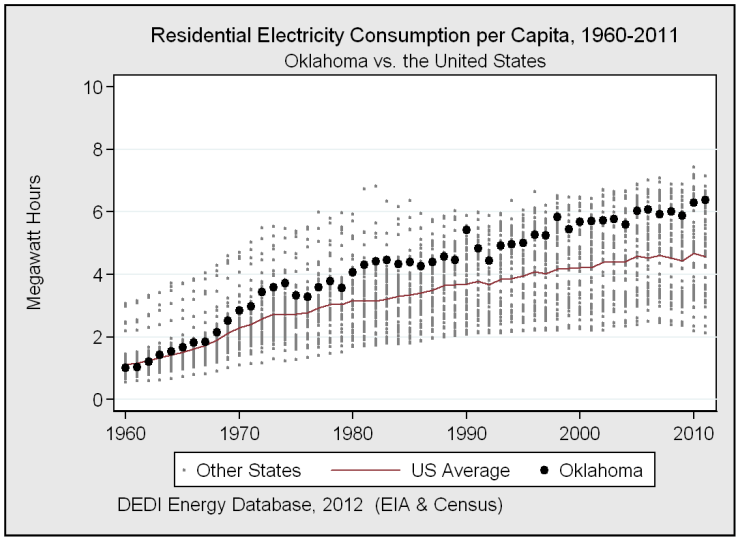
Residential Electricity Use per Capita

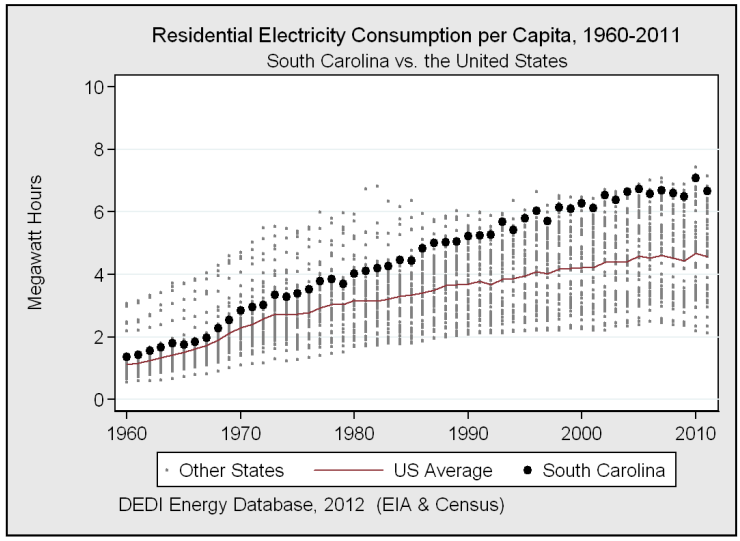




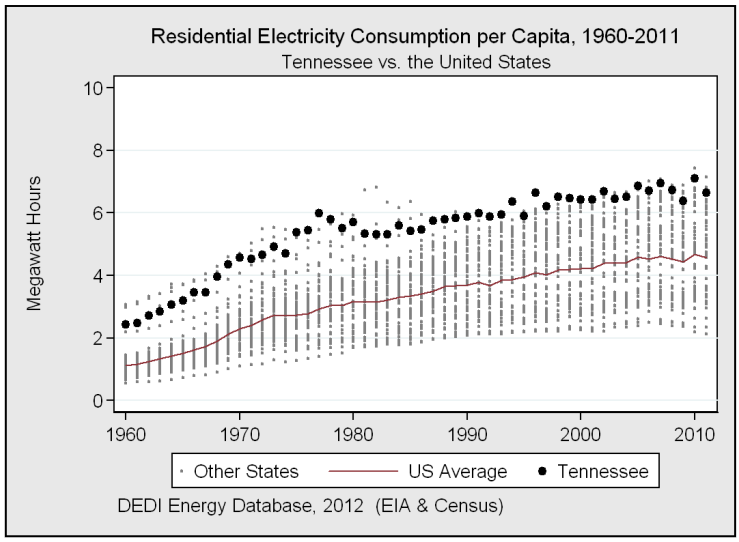


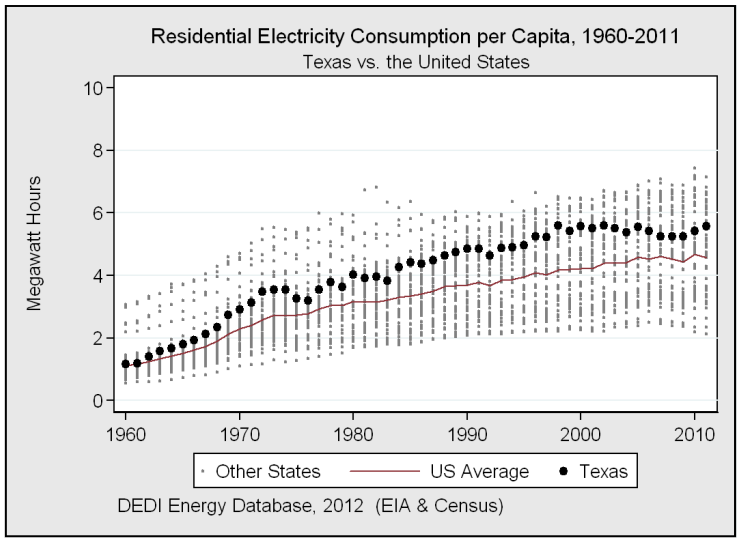


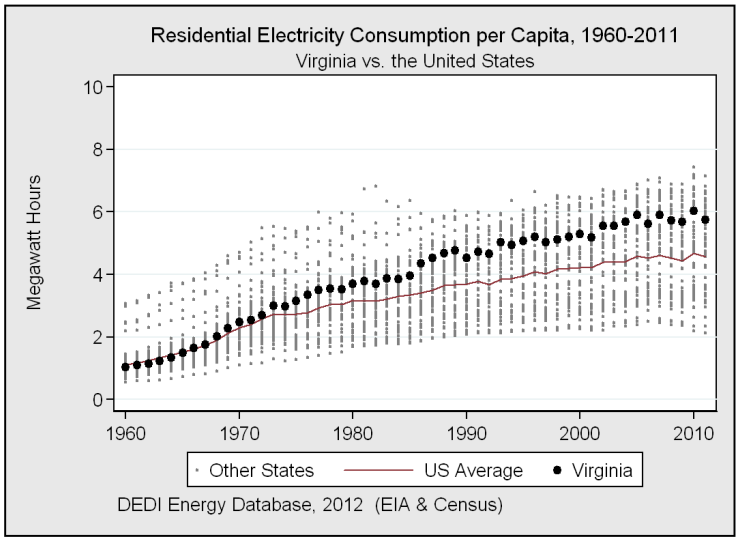


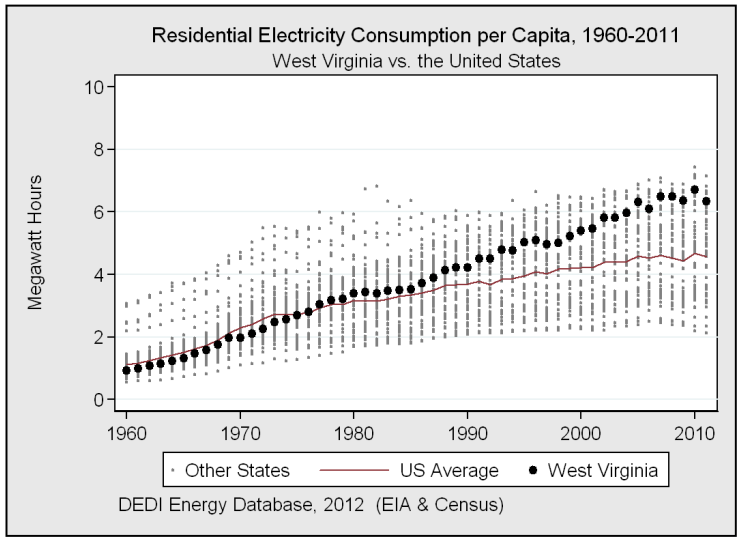


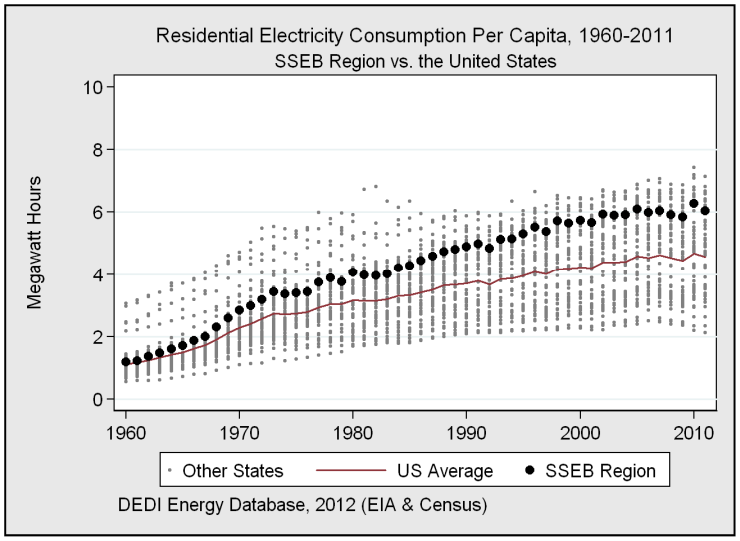
Residential Electricity Use per Capita



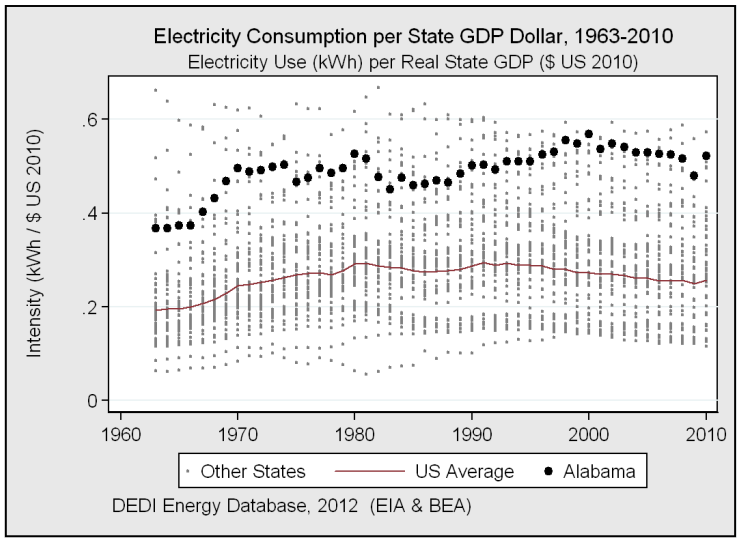


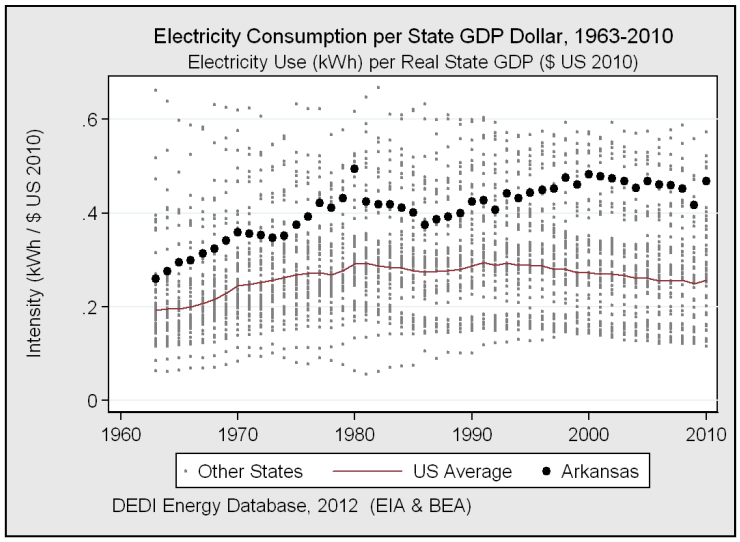


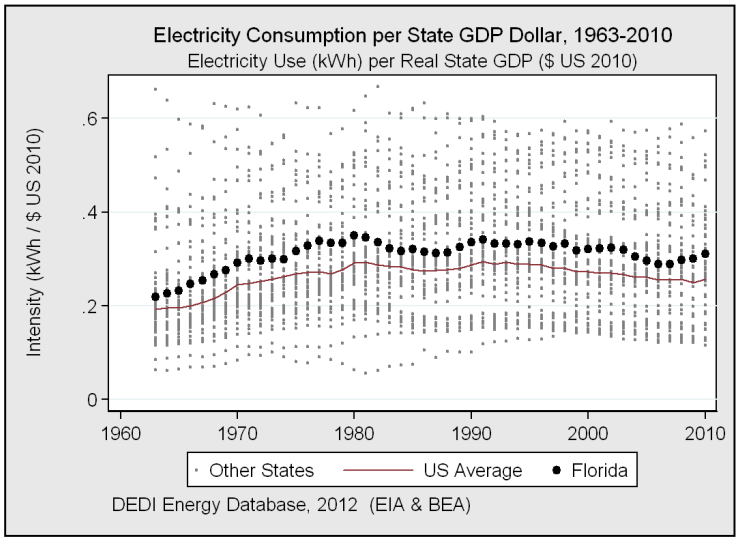


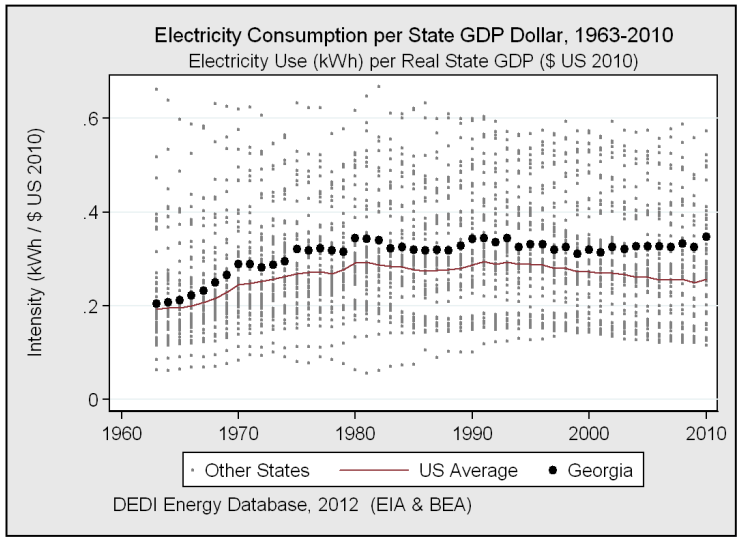


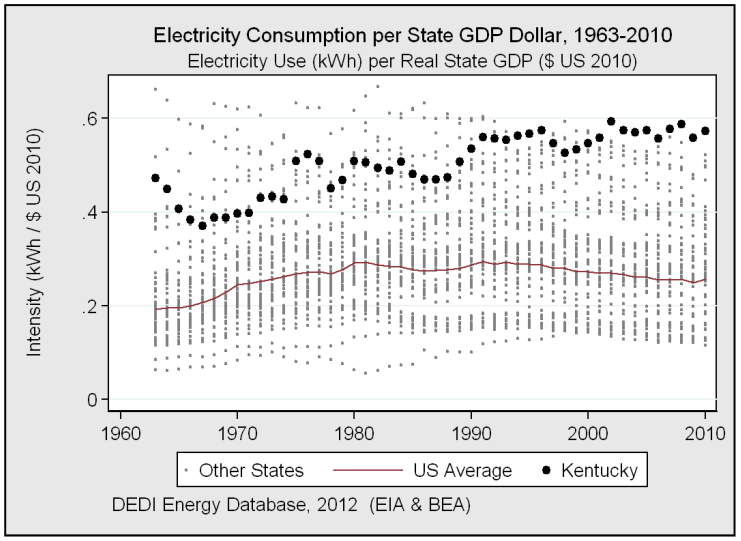
Electricity Intensity per GDP Dollar

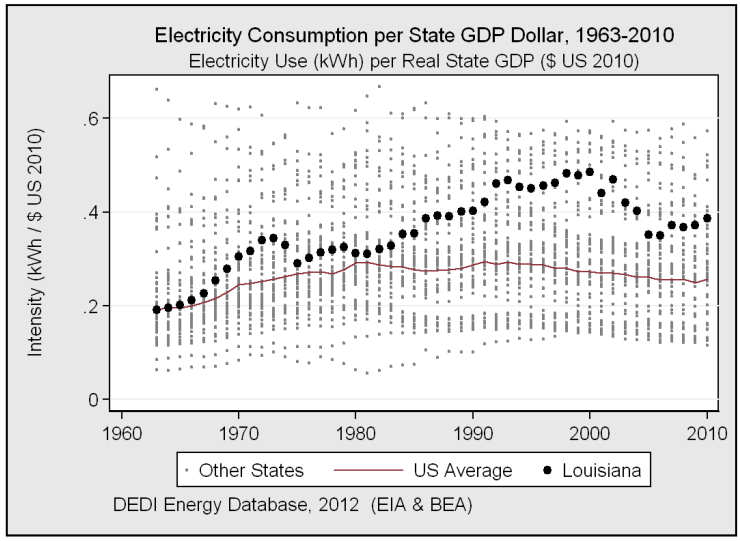




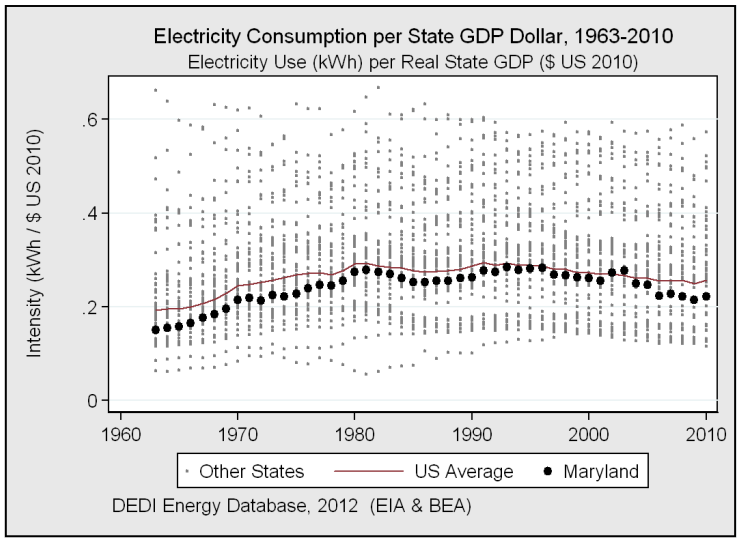


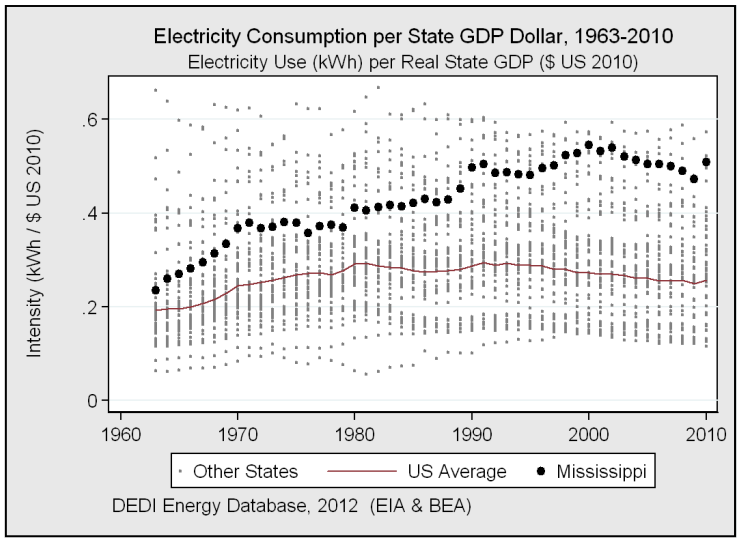


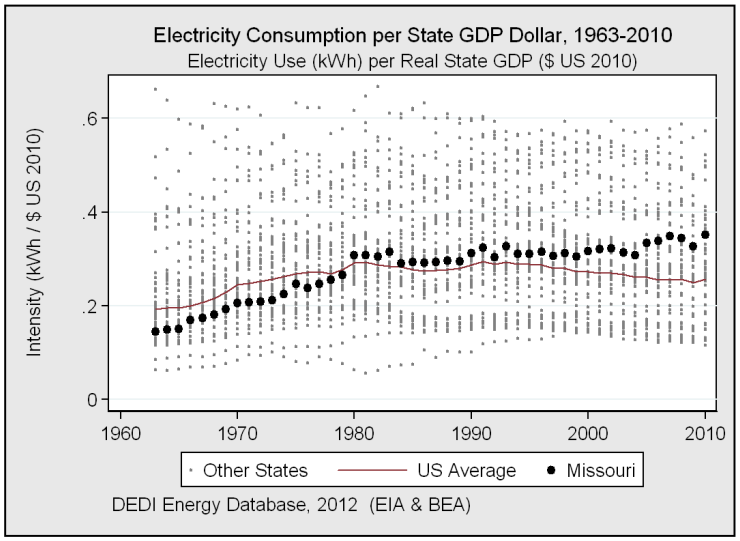


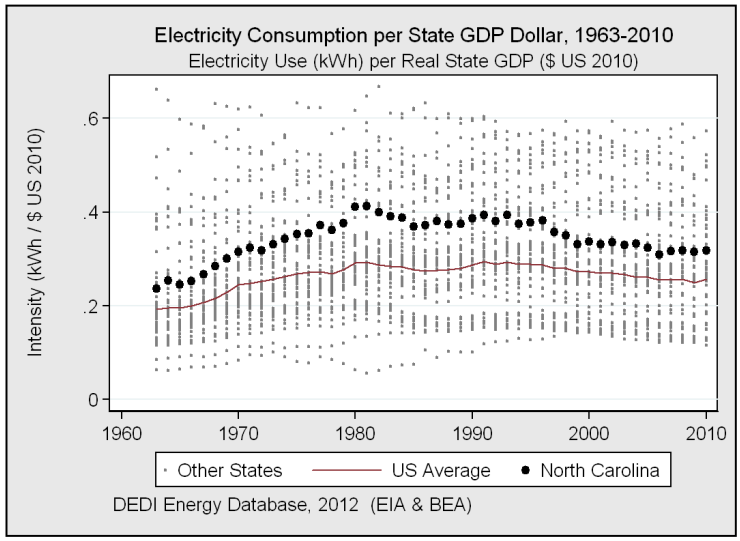


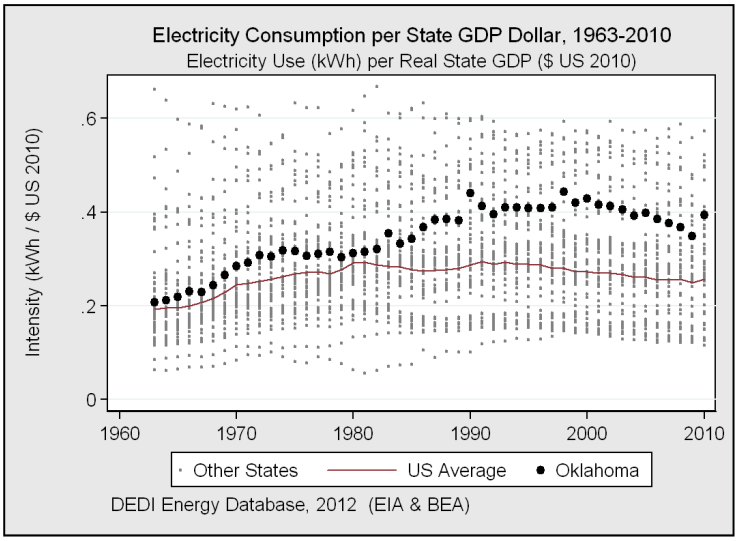
Electricity Intensity per GDP Dollar

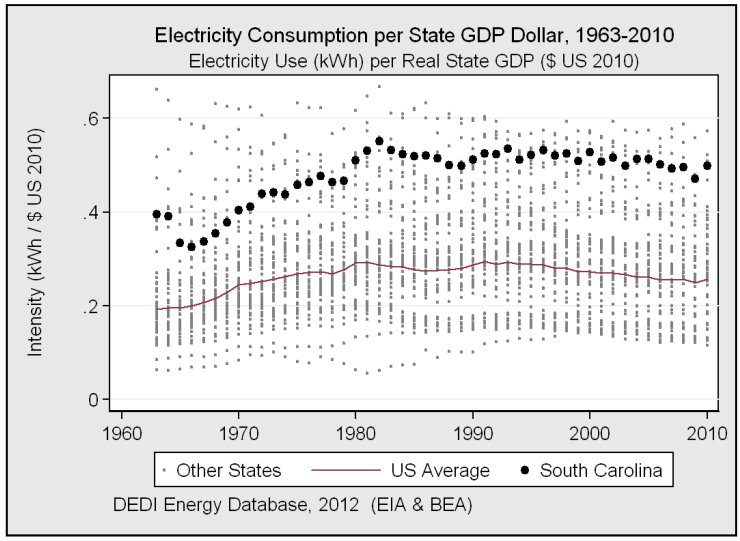




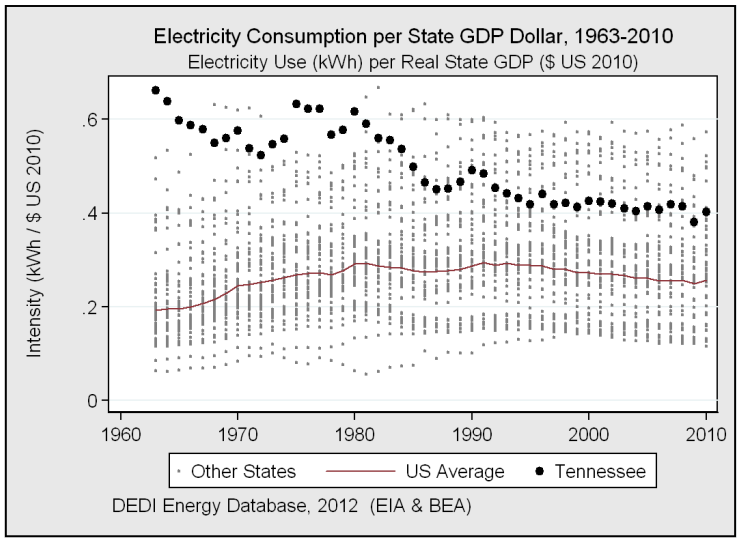


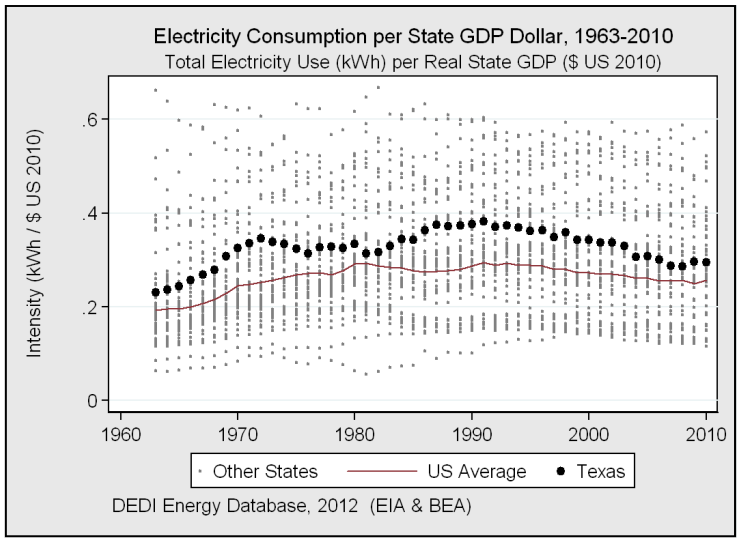


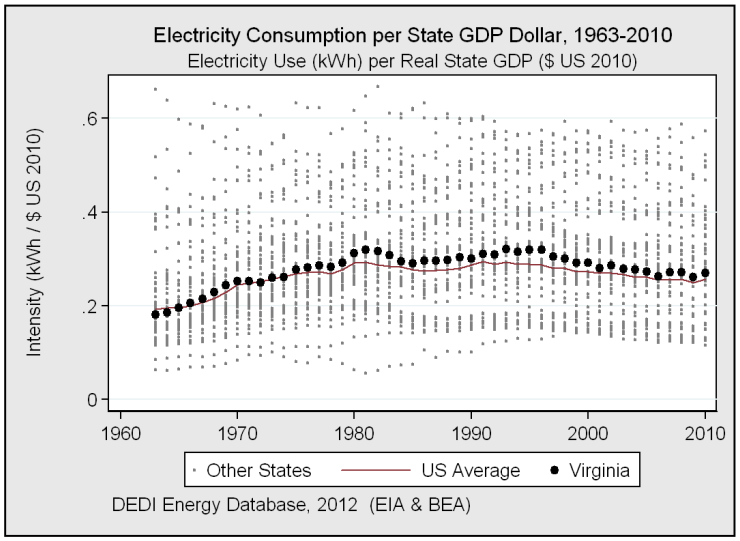


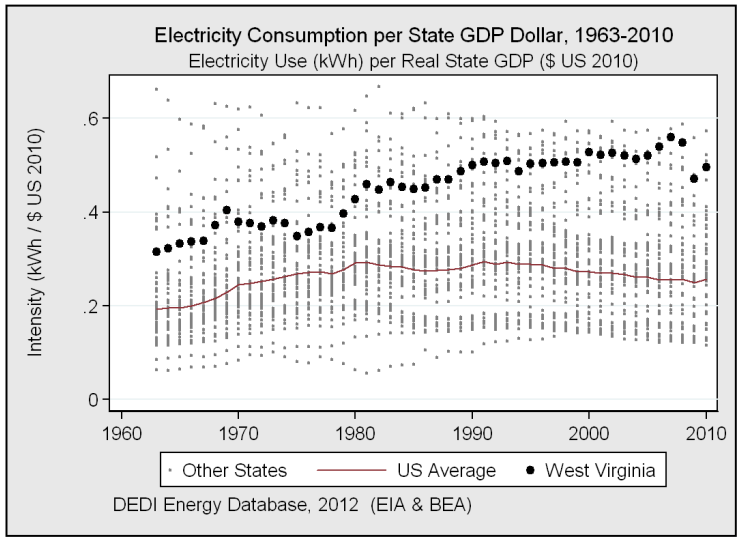


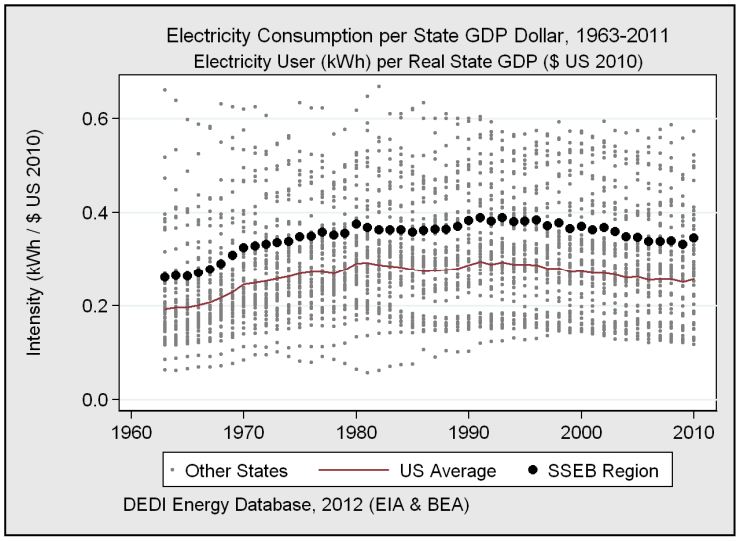
Electricity Intensity per GDP Dollar



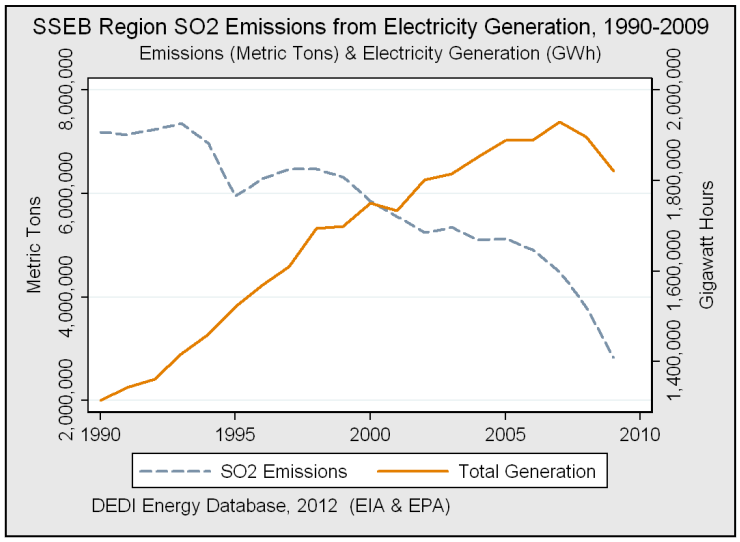


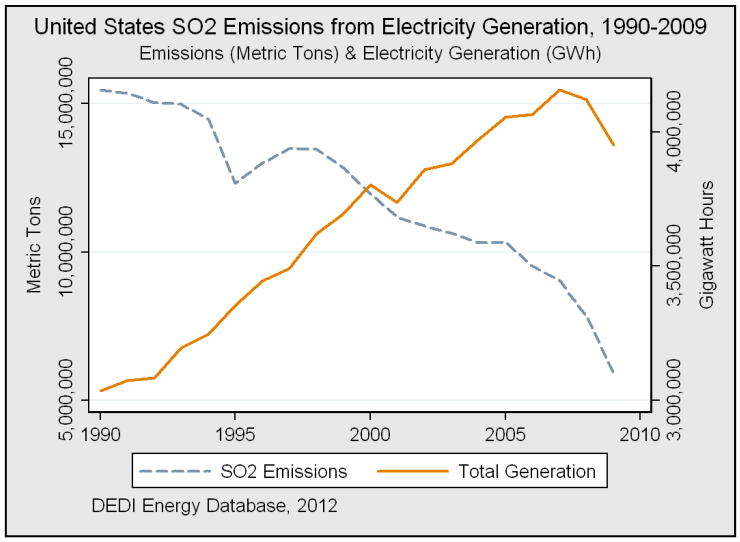






SSEB Region Electric Power Emissions



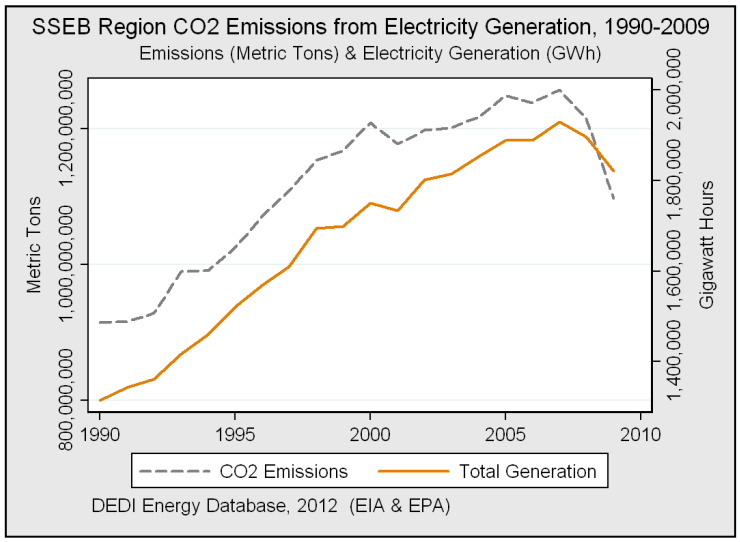


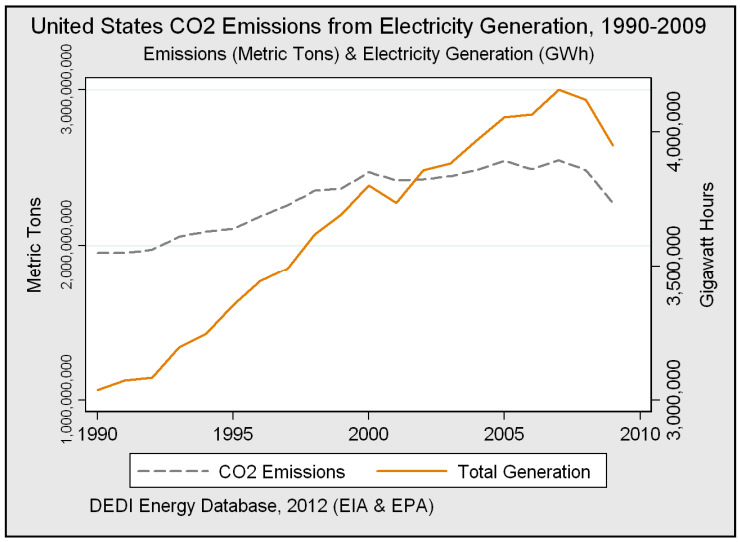
Emission	Metric Tons	Since 1990
Sulfur Dioxide	2,834,132	- 61%

Emission	Metric Tons	Since 1990
Sulfur Dioxide	5,970,324	- 61%

Emission	Metric Tons	Since 1990
Carbon Dioxide	1,098,142,000	+20%

Emission	Metric Tons	Since 1990
Carbon Dioxide	2,269,508,000	+16%

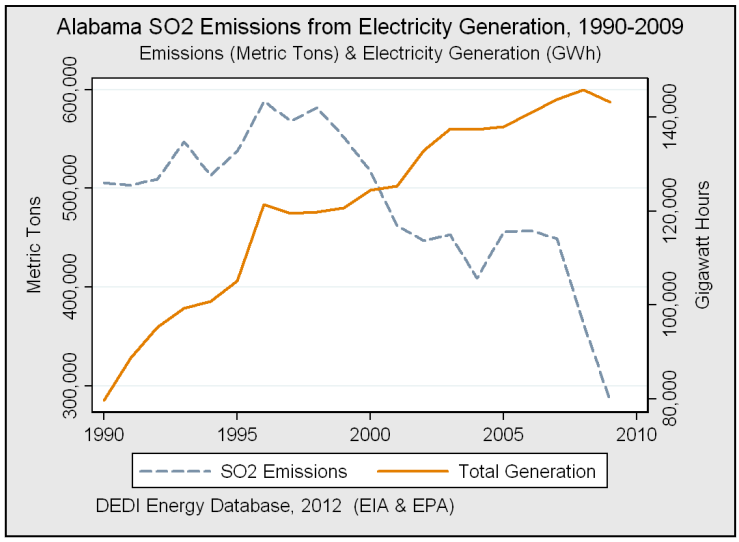


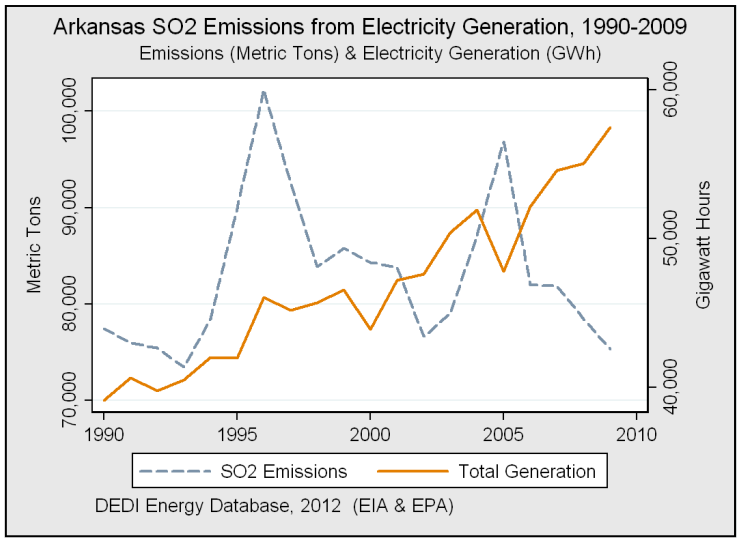


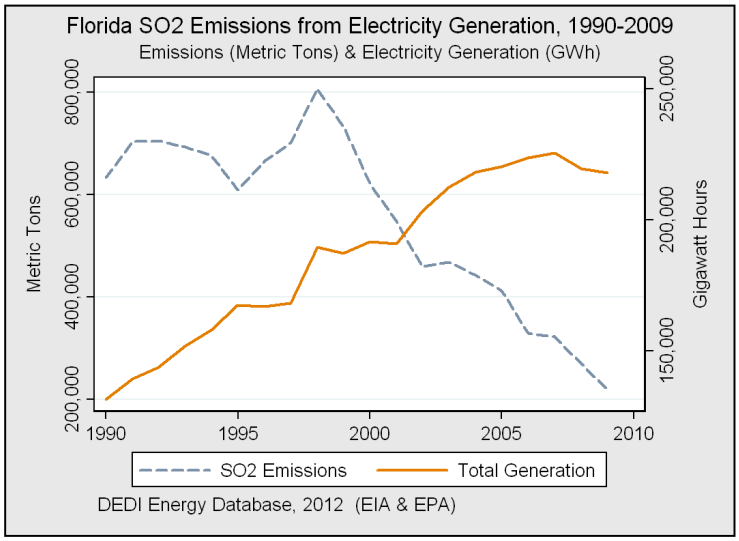
Since Clean Air Act Amendments of 1990, sulfur dioxide (SO2) emissions have fallen by 61.5% across the United States despite a 32.6% increase in electricity consumption. This decrease was achieved through pollution mitigation measures at power plants, including the use of lower-sulfur coal and the installation of desulfurization equipment. *Please note that, in order to highlight the subtle fluctuation in emissions from year to year, the vertical axes in this section have not been normalized and may vary from state to state.*

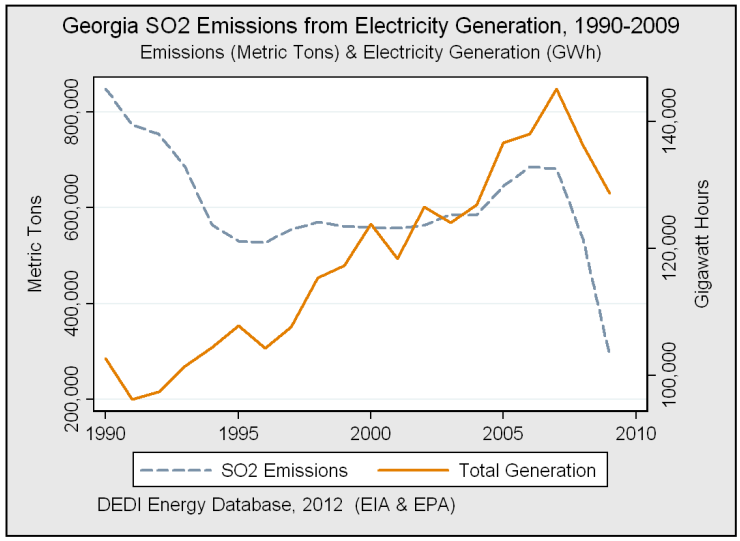
Carbon dioxide (CO2) emissions for the generation of electrical power have risen by 20% and 16% since 1990 in the SSEB region and the United States respectively. However, the 2008-2009 recession abated this trend. Between 2007 and 2009, CO2 emissions fell by 11% nationally due to decreased electricity consumption, increased renewable generation, as well as decreased coal-fired generation—the nation's leading source of carbon emissions.

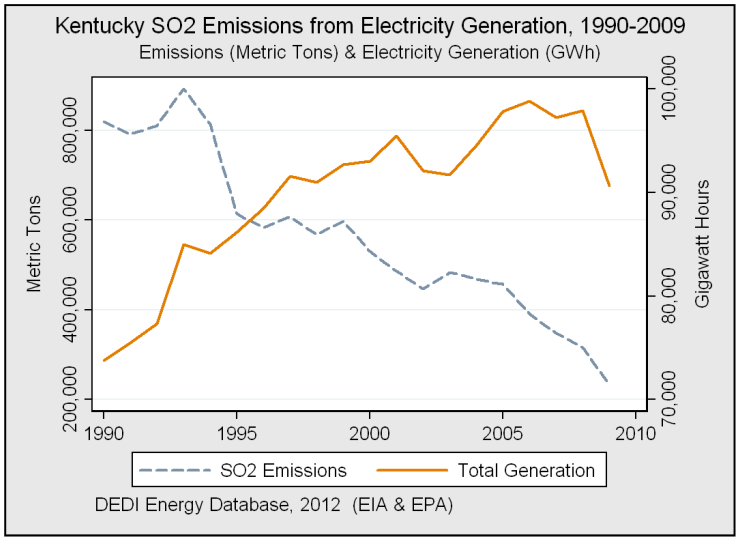
Electric Power Emissions (SO_2)

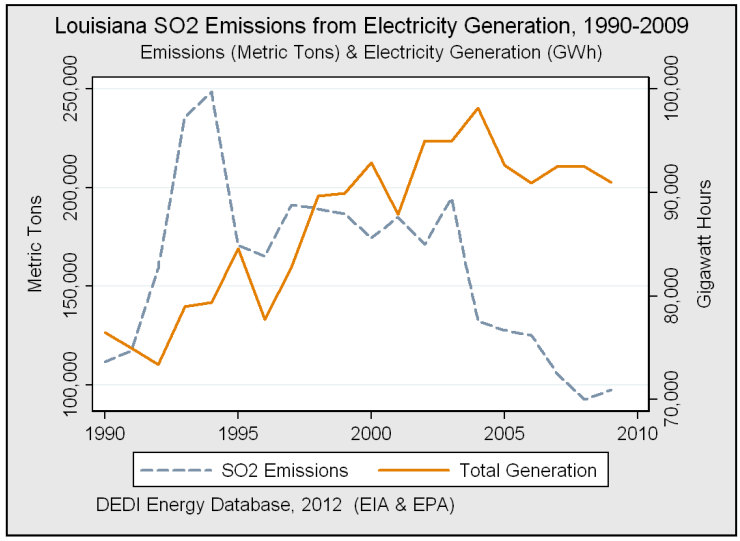




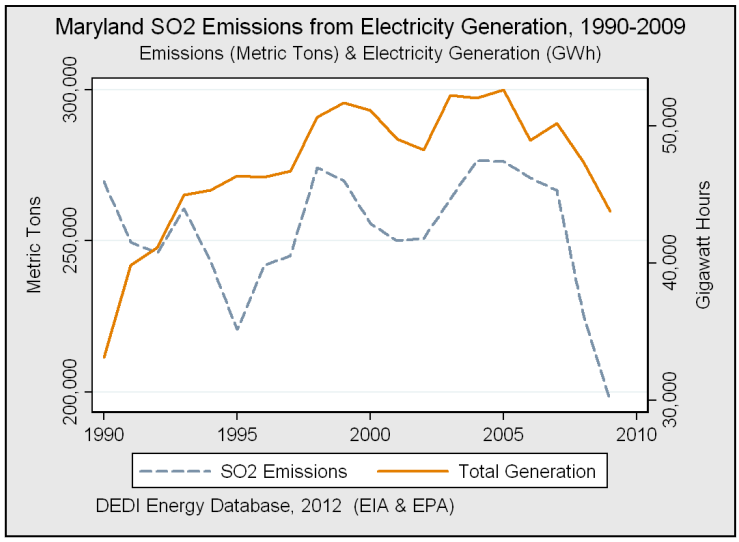


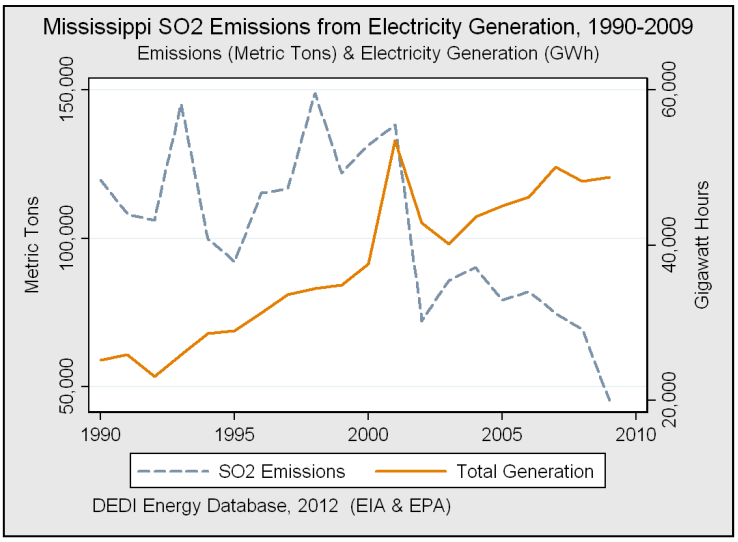


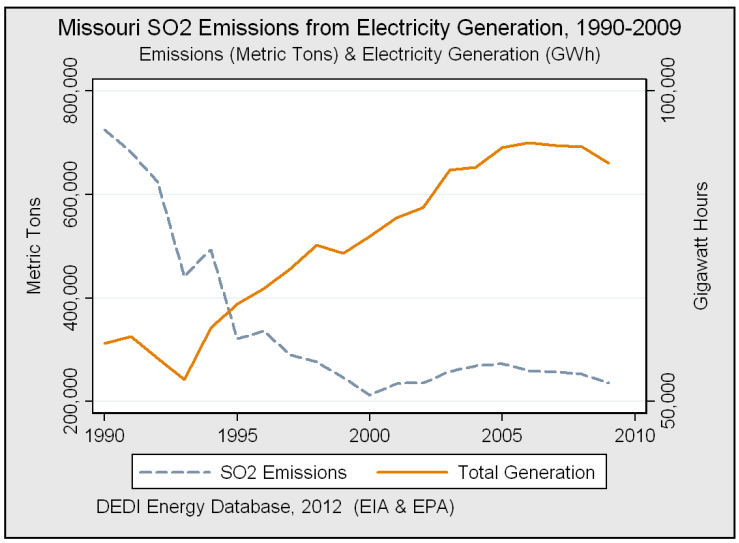


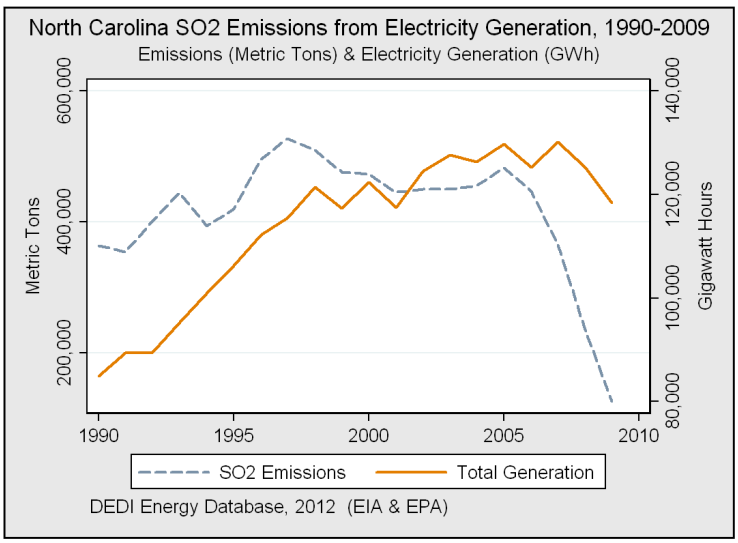


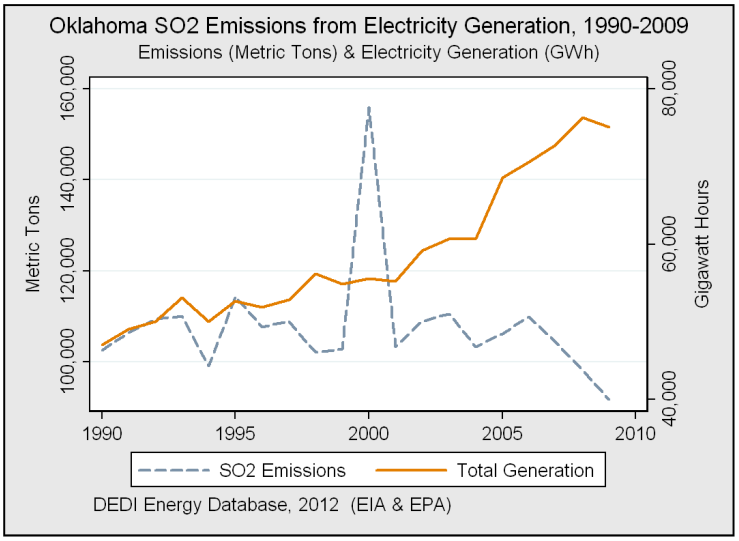
Electric Power Emissions (SO_2)

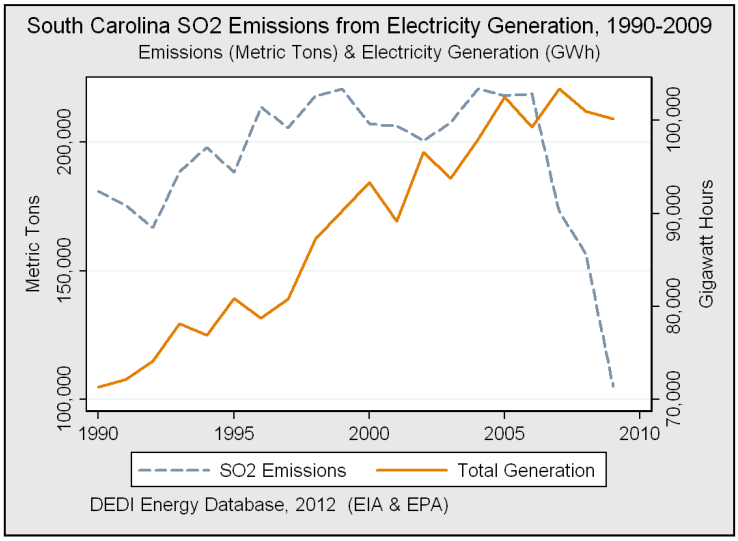




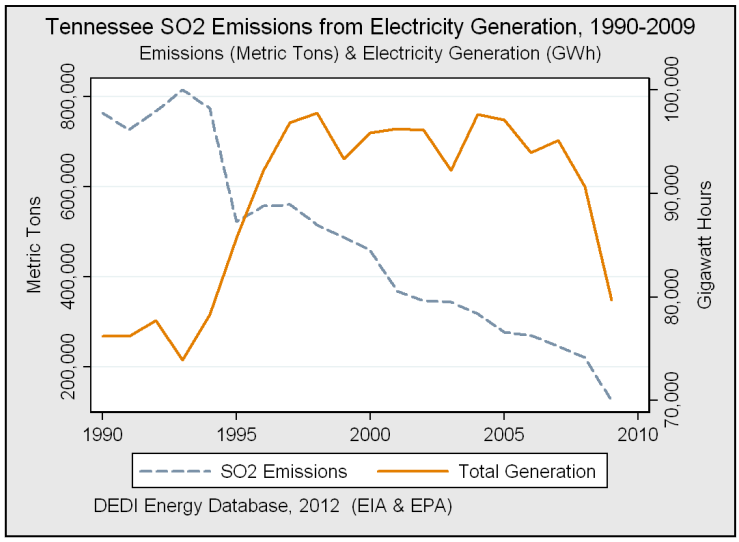


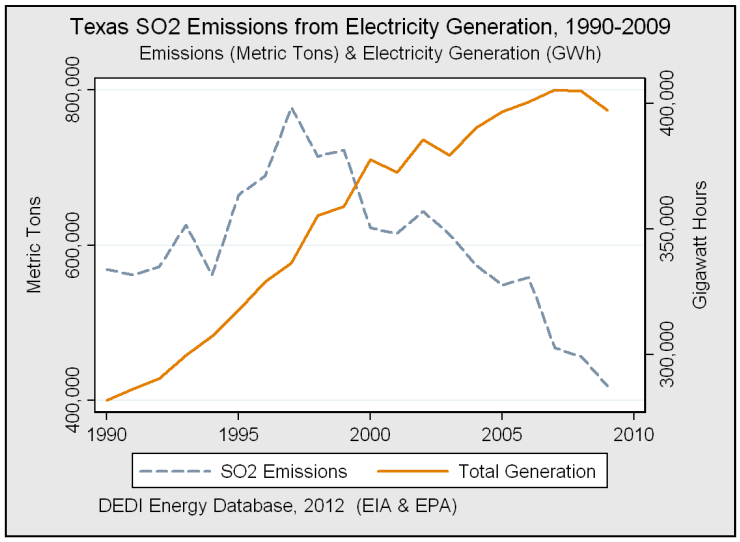


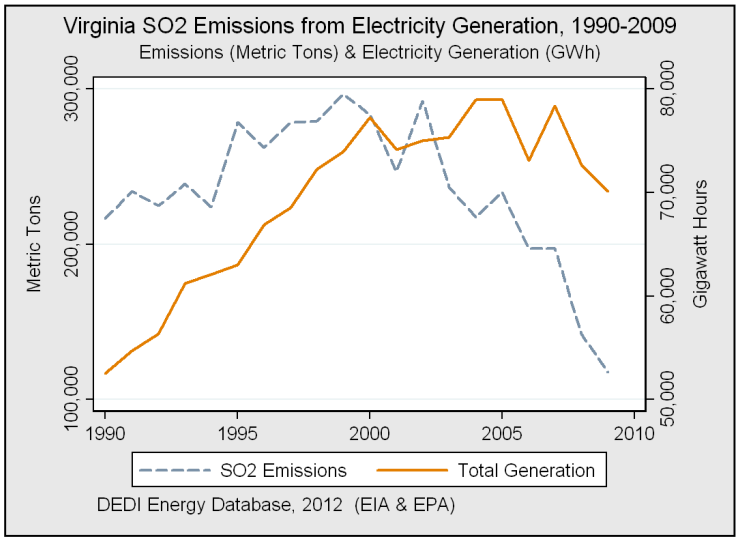


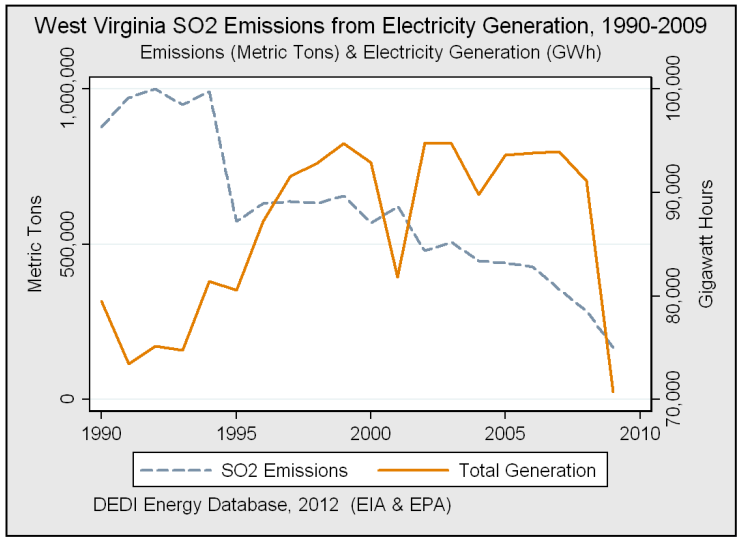


Electric Power Emissions (SO_2)

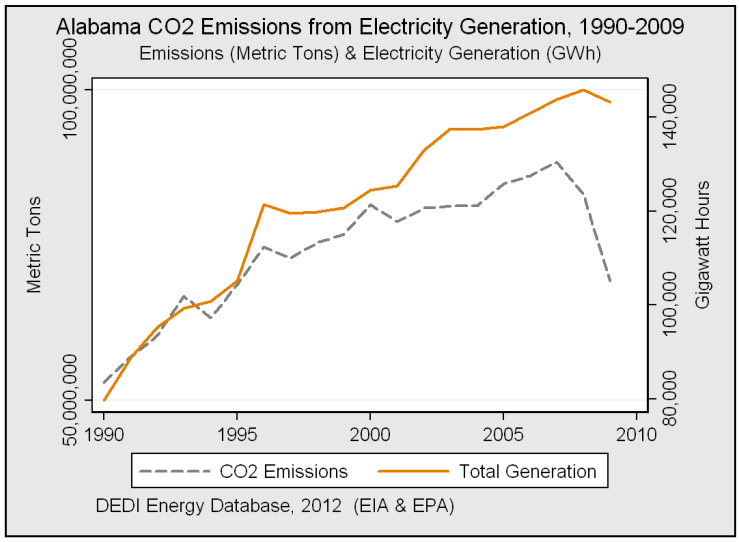


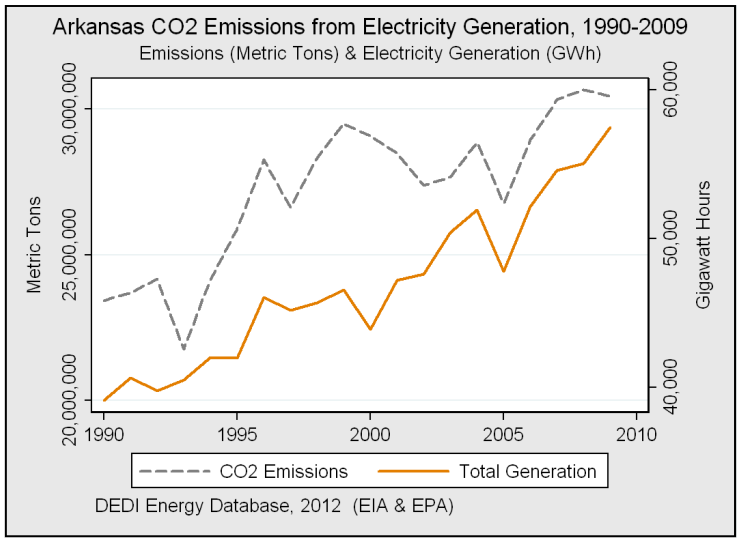


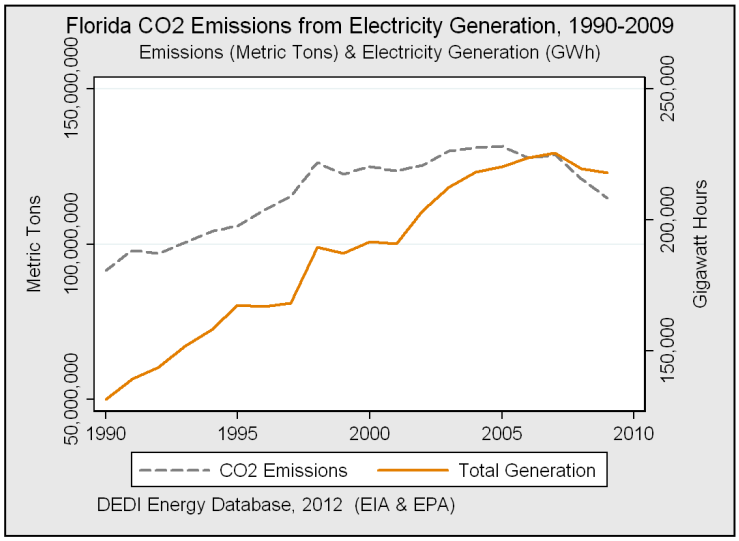


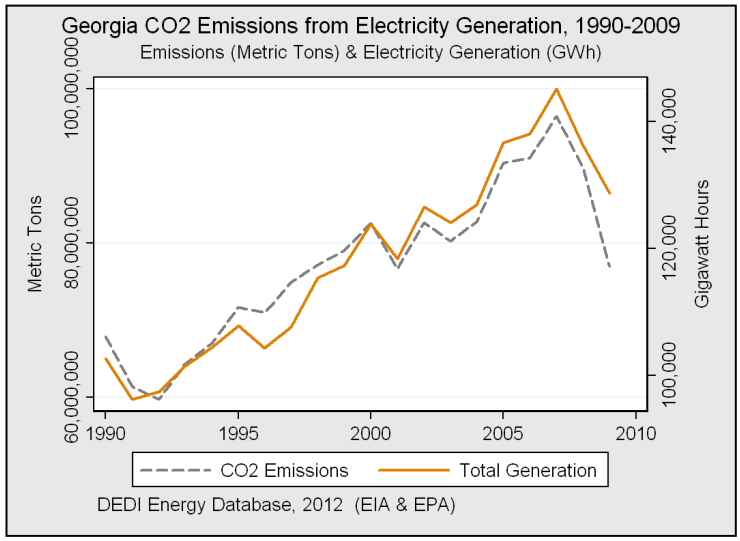


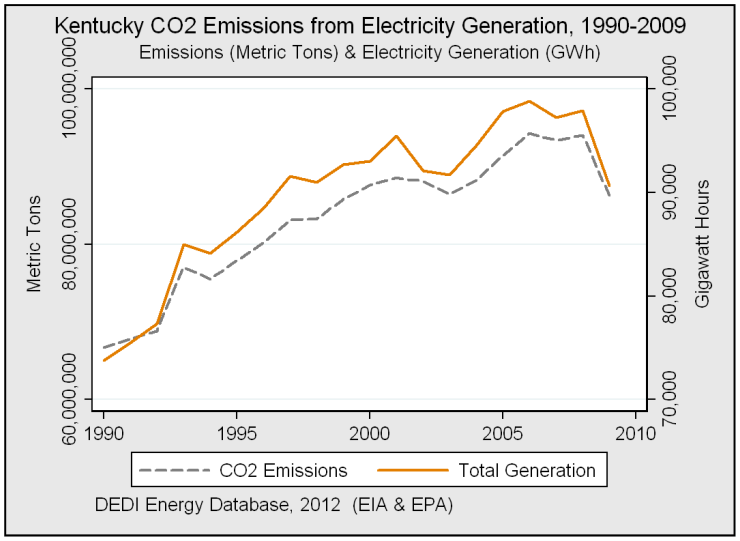
Electric Power Emissions (CO_2)

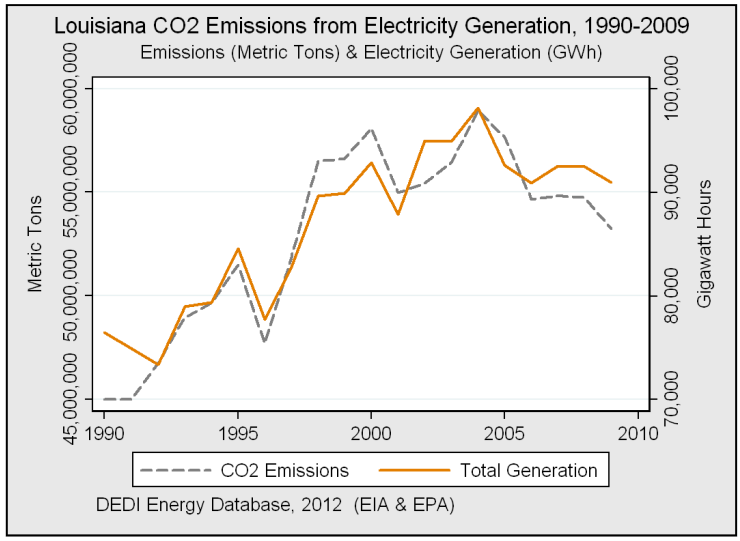




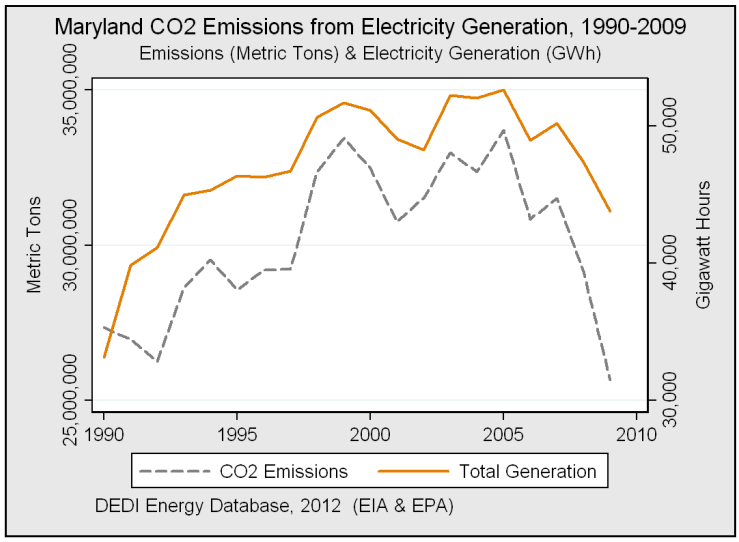


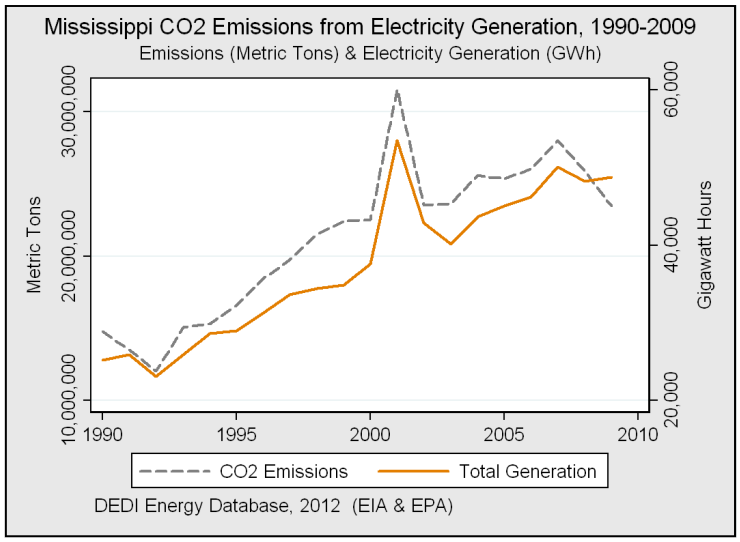


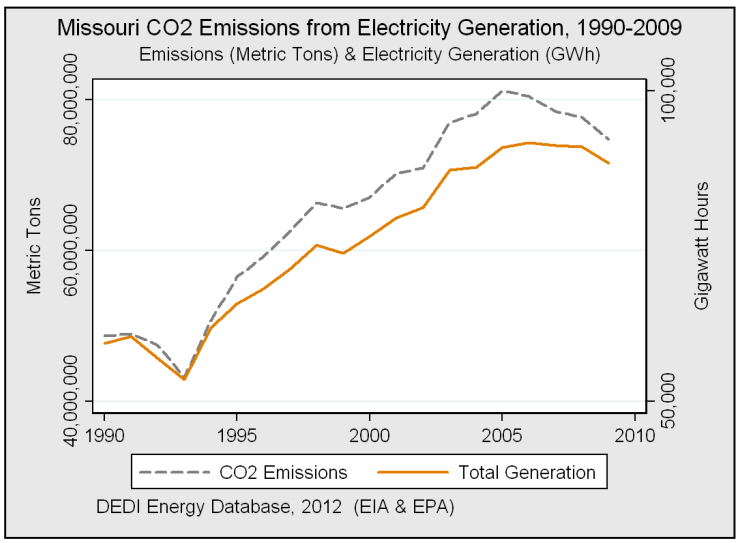


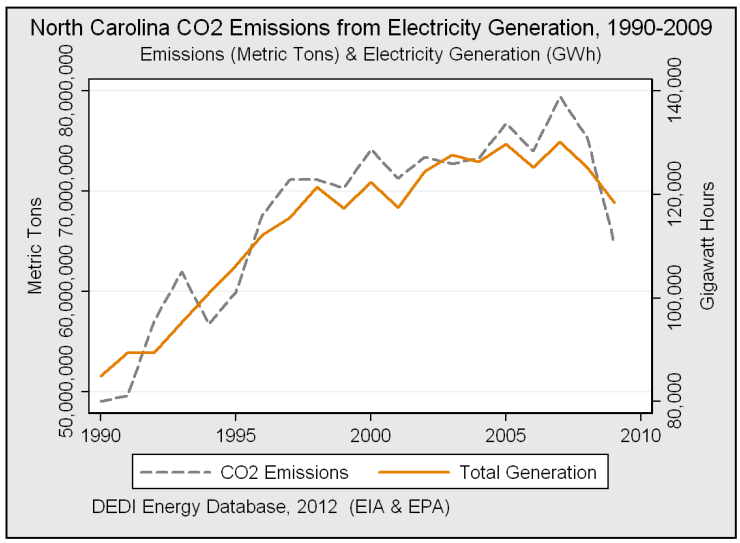


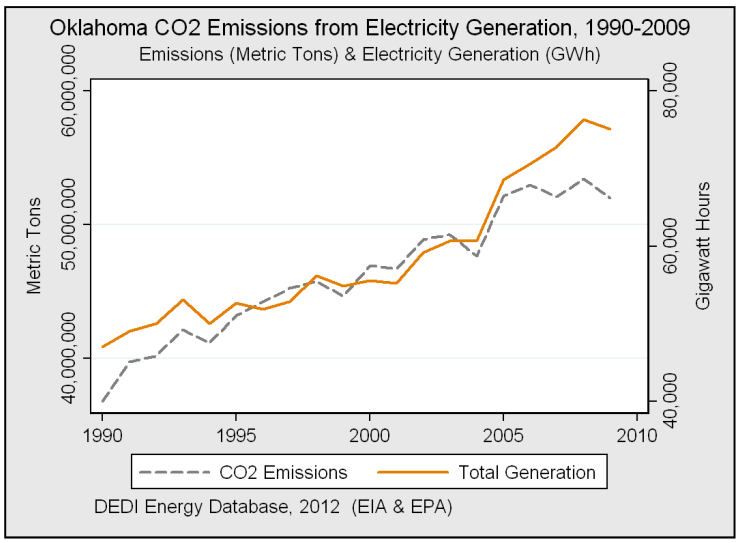
Electric Power Emissions (CO_2)

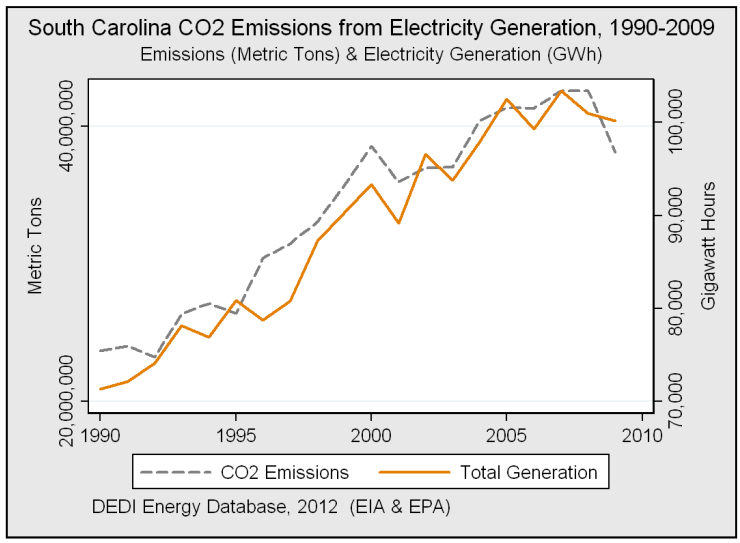




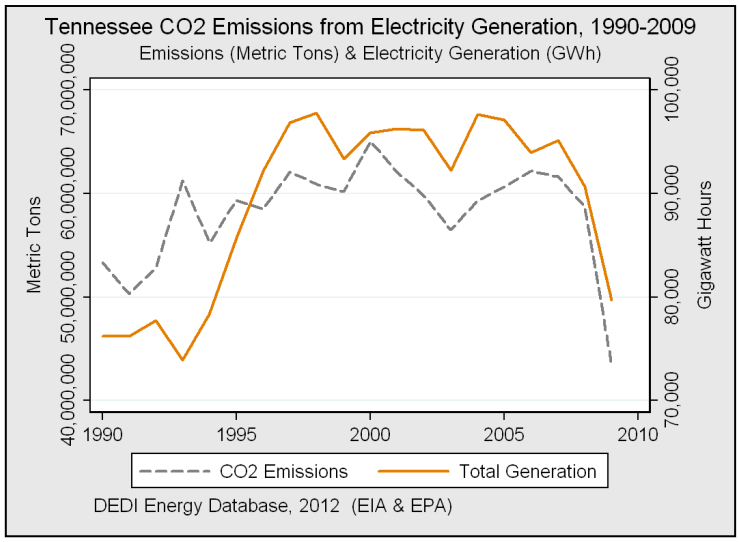


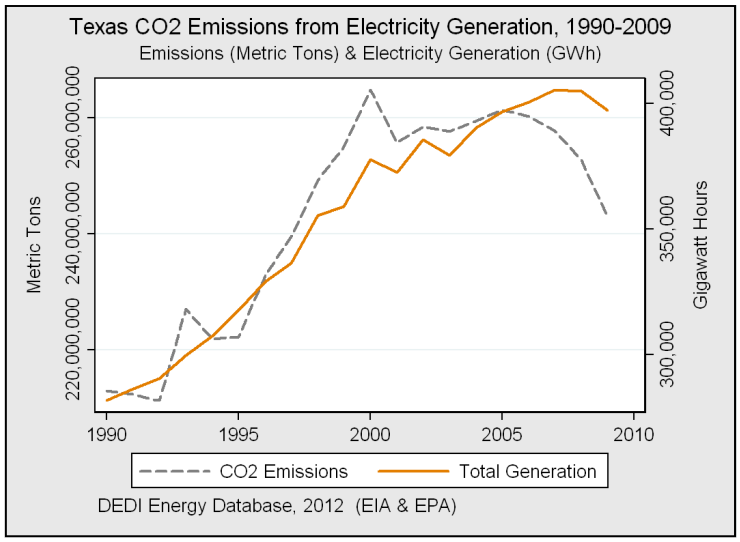


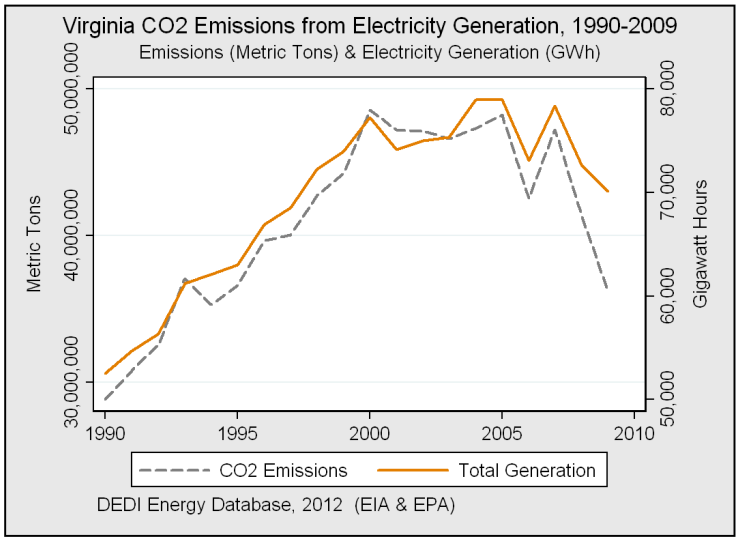


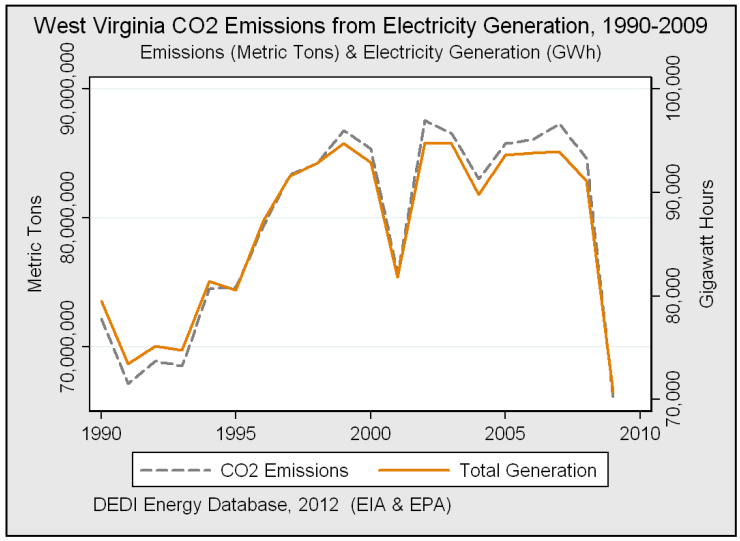


Electric Power Emissions (CO_2)

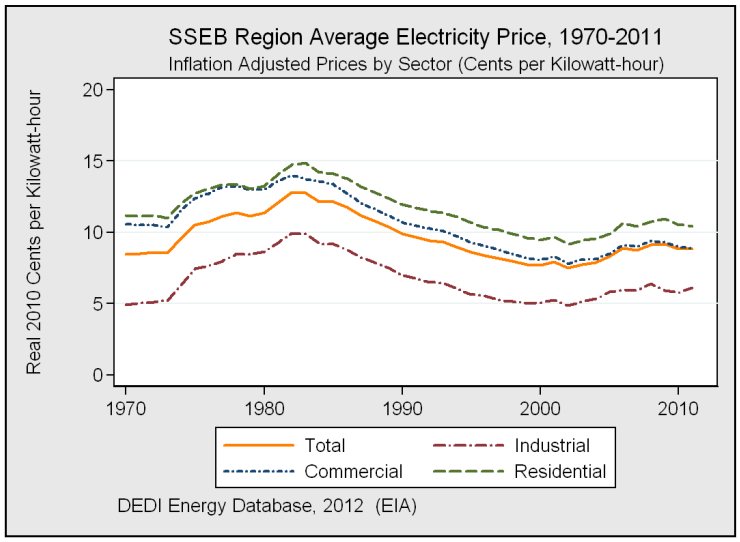


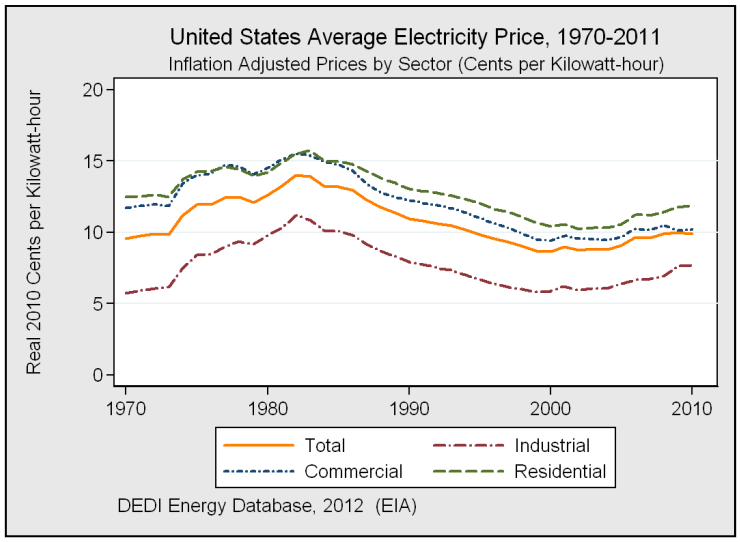






SSEB Region Price of Electricity





Sector	Cents / kWh	Since 2000
Total	8.82	15%
Residential	10.42	10%
Commercial	8.86	10%
Industrial	6.09	20%

Sector	Cents / kWh	Since 2000
Total	9.67	12%
Residential	11.42	9%
Commercial	9.99	6%
Industrial	6.67	9%

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.

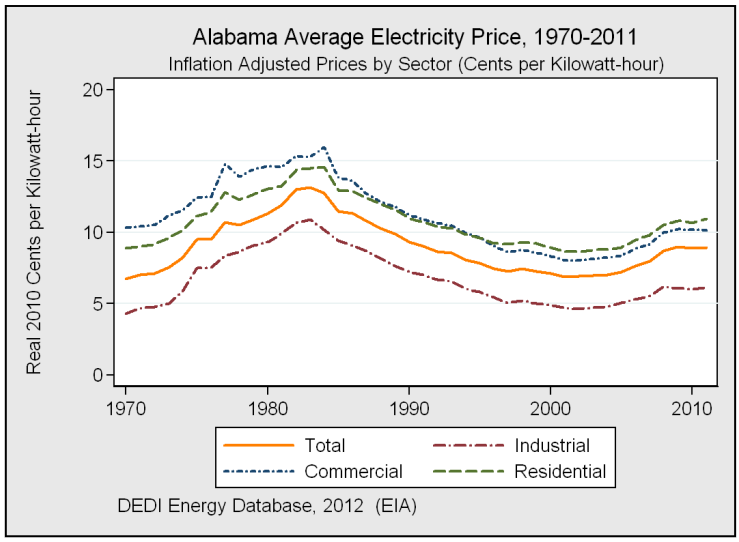
The two most influential factors explaining the changes in both nominal and real electricity prices in the SSEB region and nationally have been the type of generation portfolio developed within a state, and the price of fossil fuel inputs for the electric power sector. Specifically, these factors involve 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.

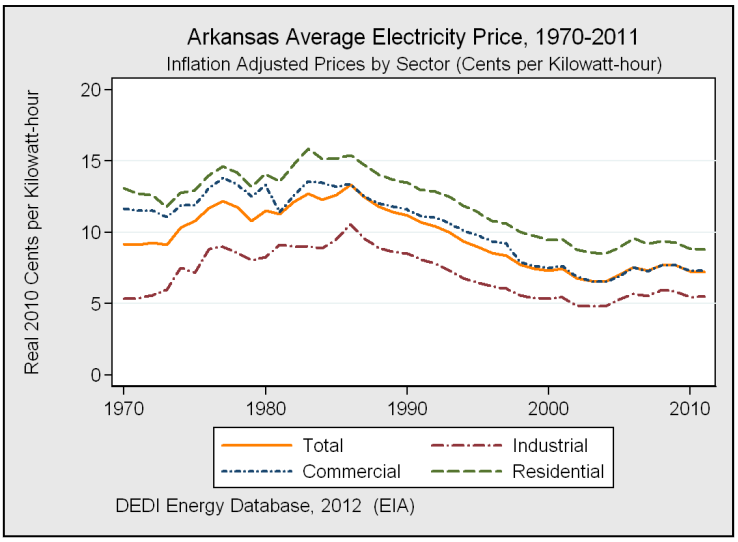
Electricity prices in the SSEB region in 2011 were 9% lower than the national average. Industrial electricity prices in the region averaged 6.09 cents per kWh, but were as low as 1.69 cents per kWh at certain electric utilities.

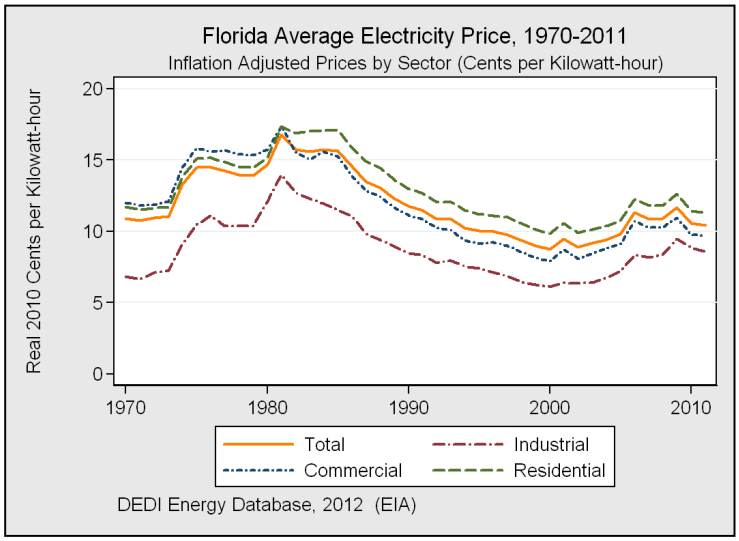
Although residential prices are substantially lower in the SSEB region, higher per capita consumption means that average monthly household electricity bills, $121.19, are $24.99 (26%) higher than the national average of $96.20. Higher per capita consumption in the region is a result of lower electricity prices, weather, income, housing stock, as well as the availability and price of substitutes such as natural gas.

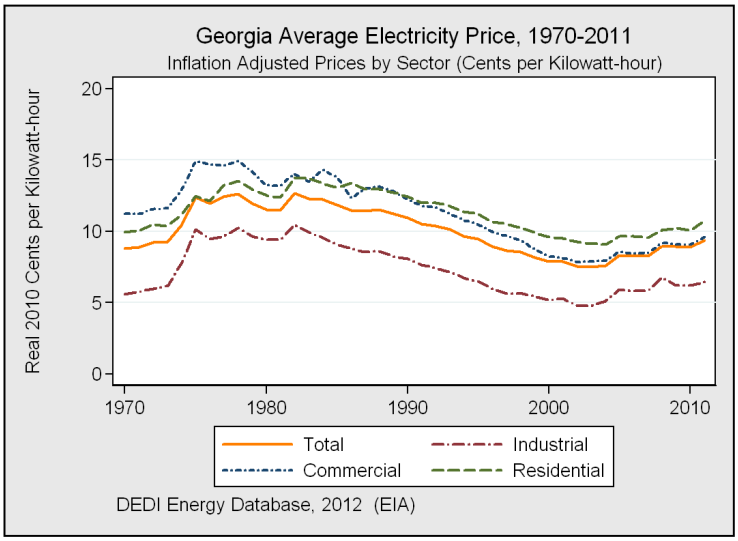
Nominal electricity prices by state and economic sector are based on aggregated data from individual electric utilities derived from United States Form EIA-861 and Form EIA-826. To control for the changing value of the United States Dollar, nominal prices were converted to Real 2010 US$ using the Bureau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

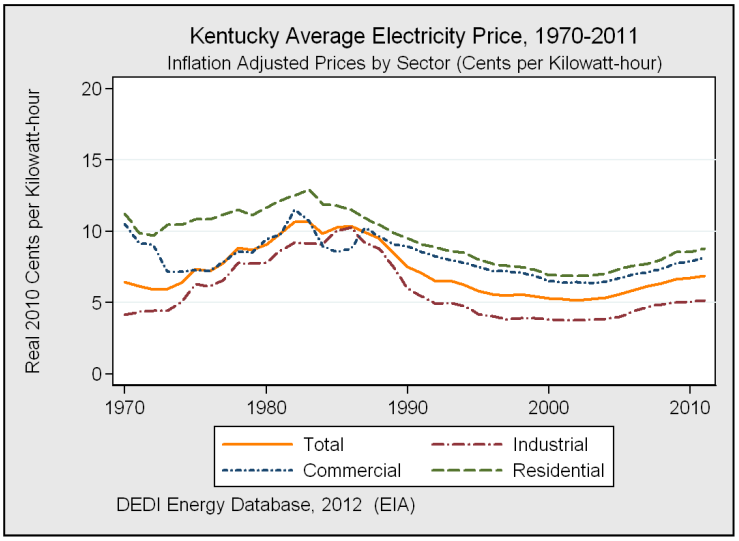
Inflation Adjusted Price of Electricity

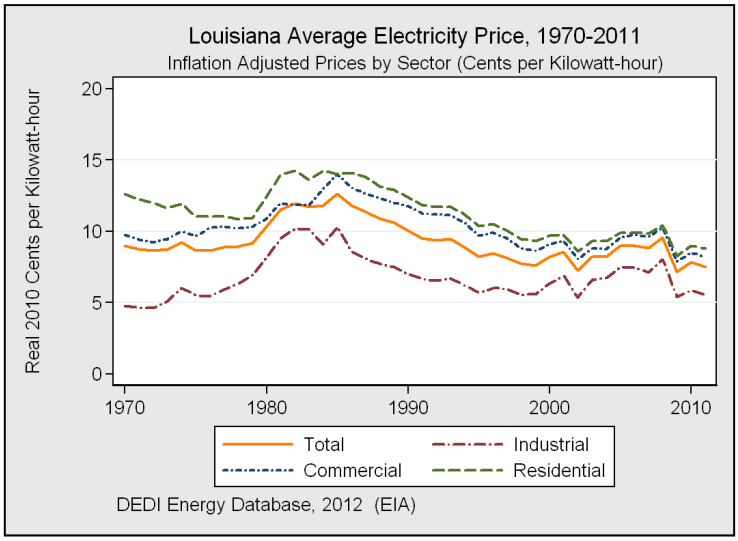




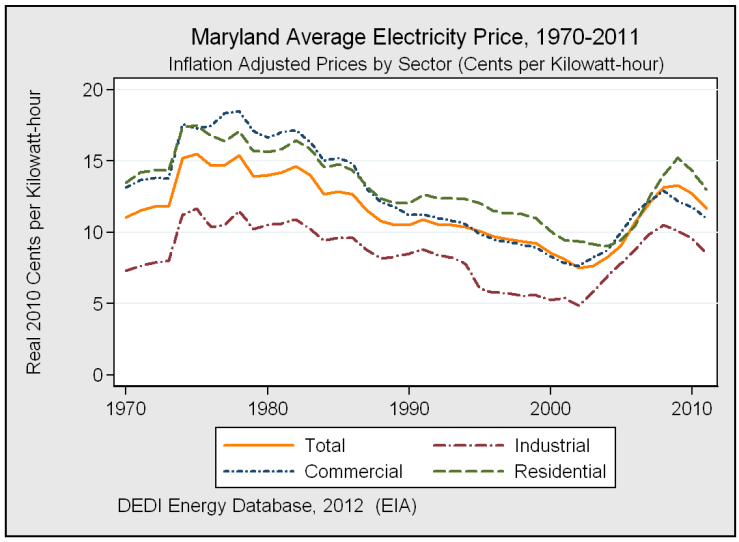


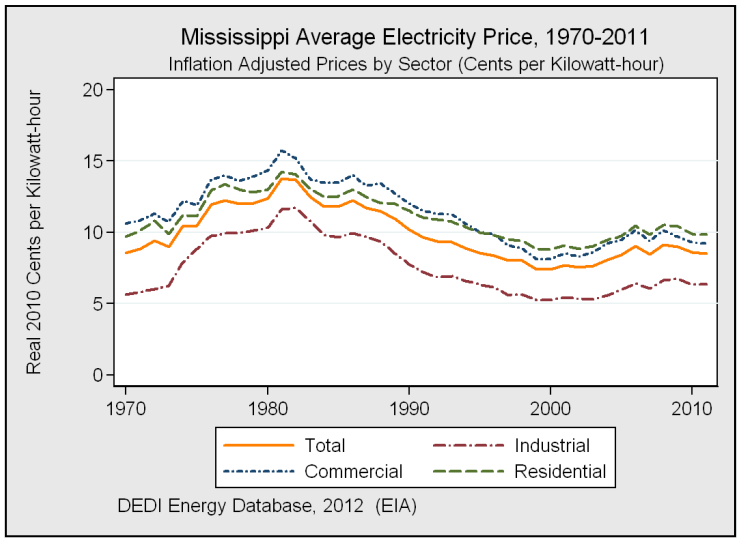


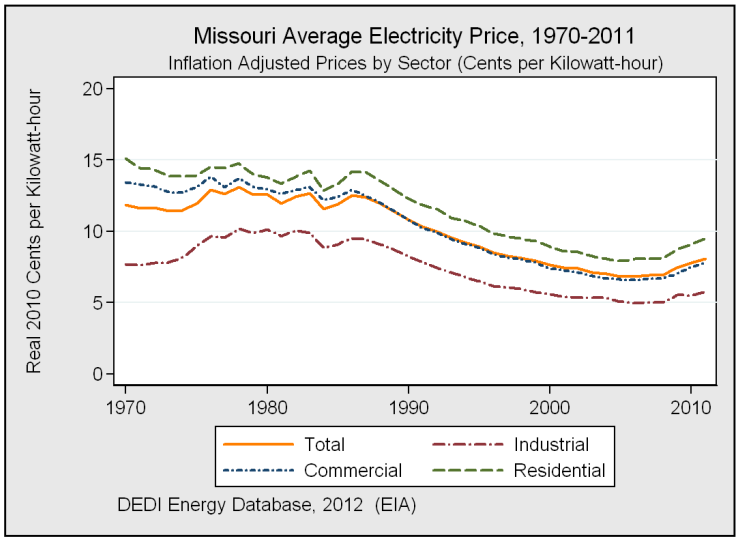


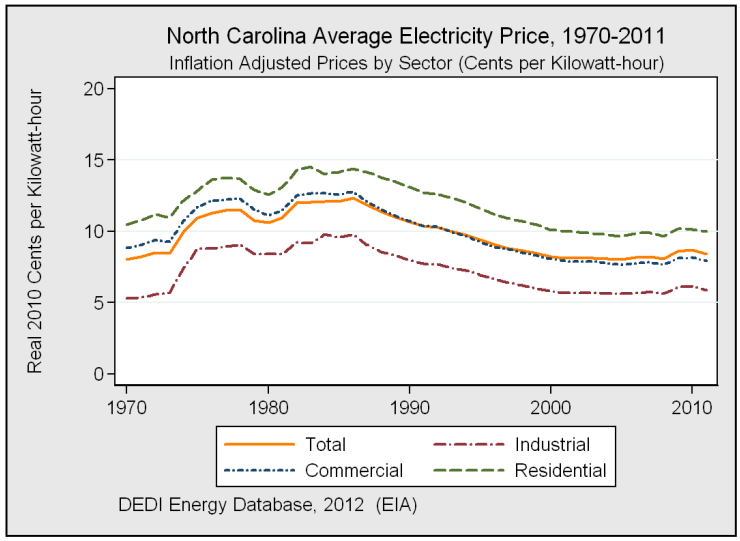


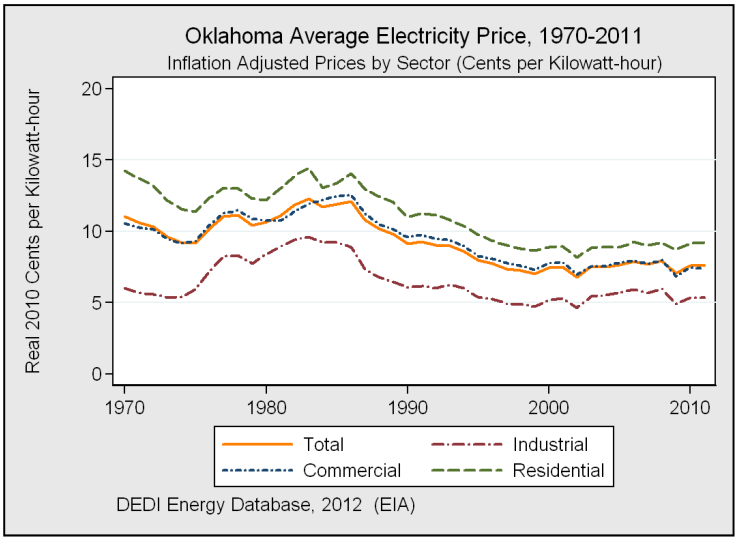
Inflation Adjusted Price of Electricity

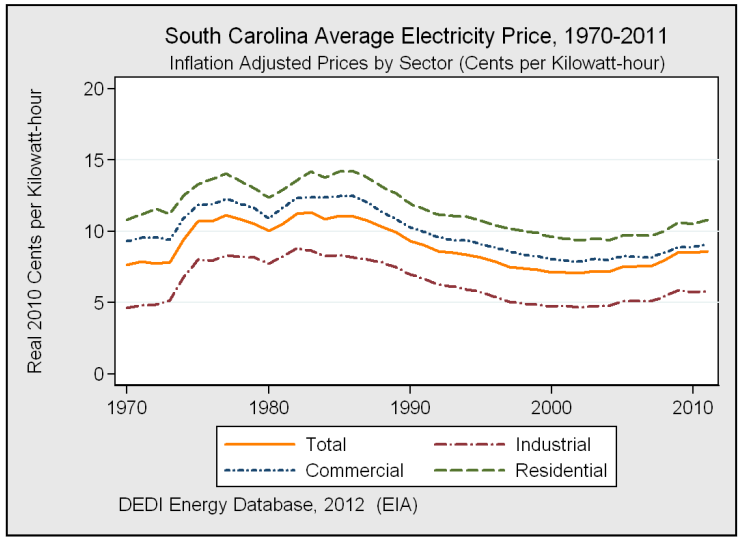




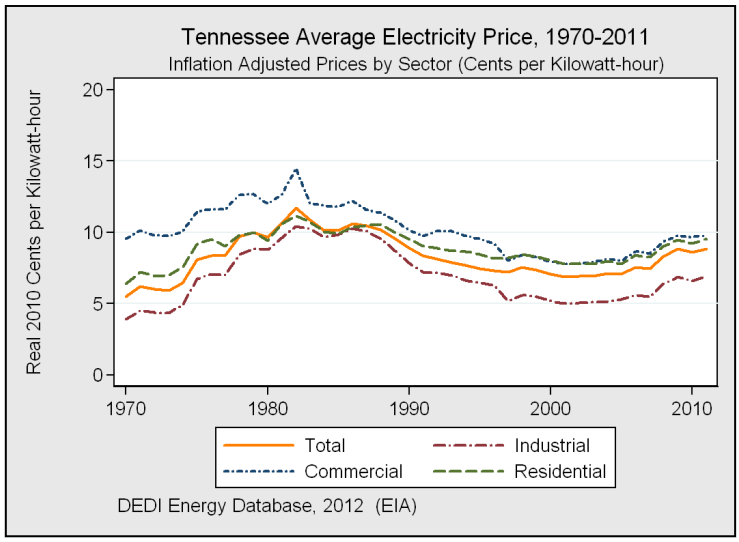


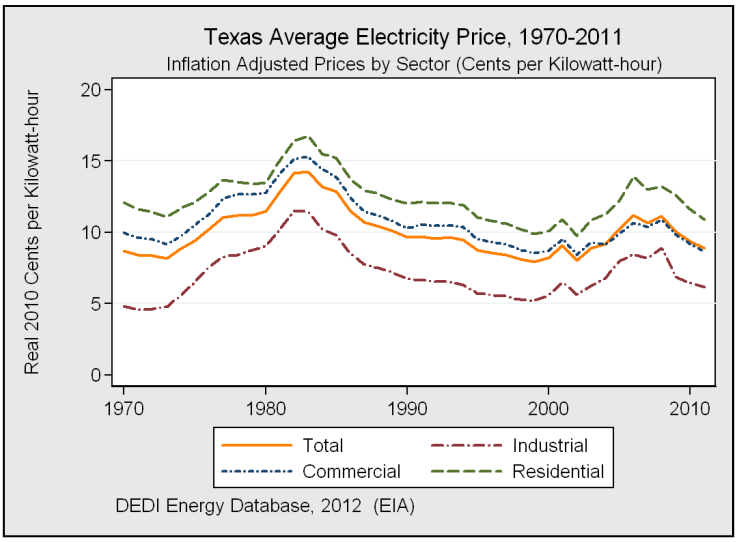


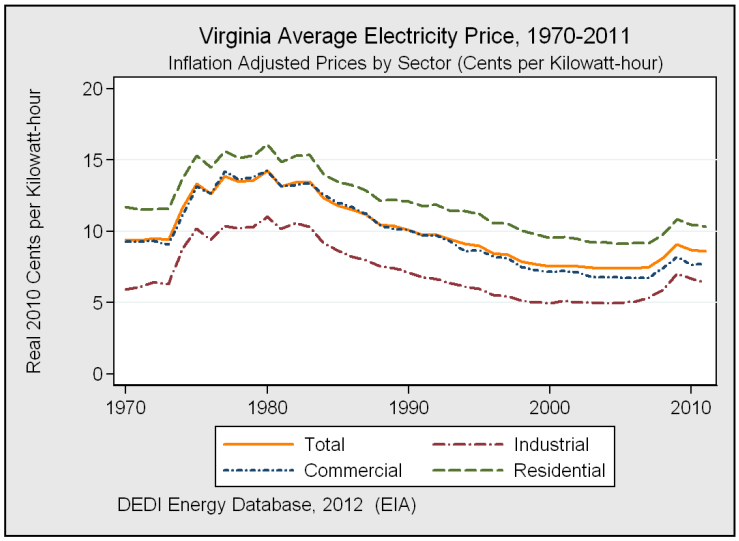


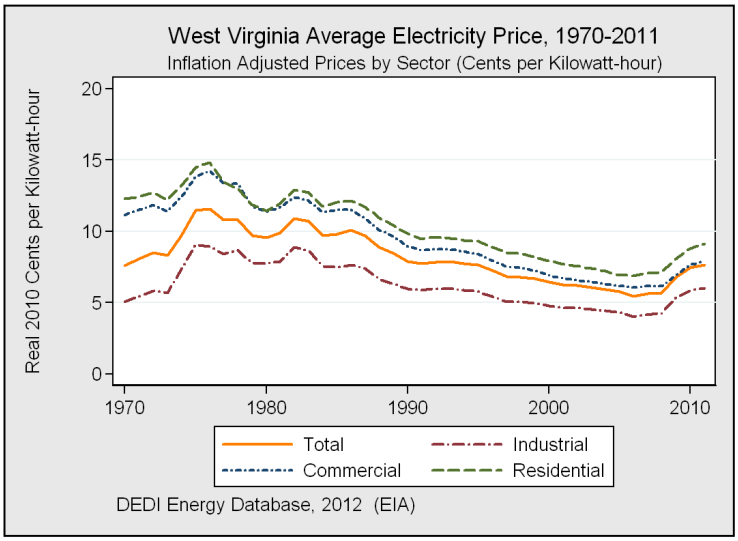


Inflation Adjusted Price of Electricity

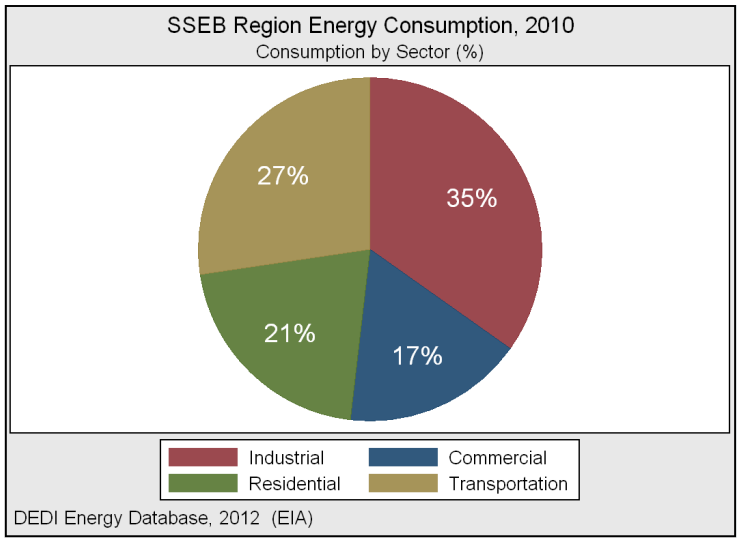


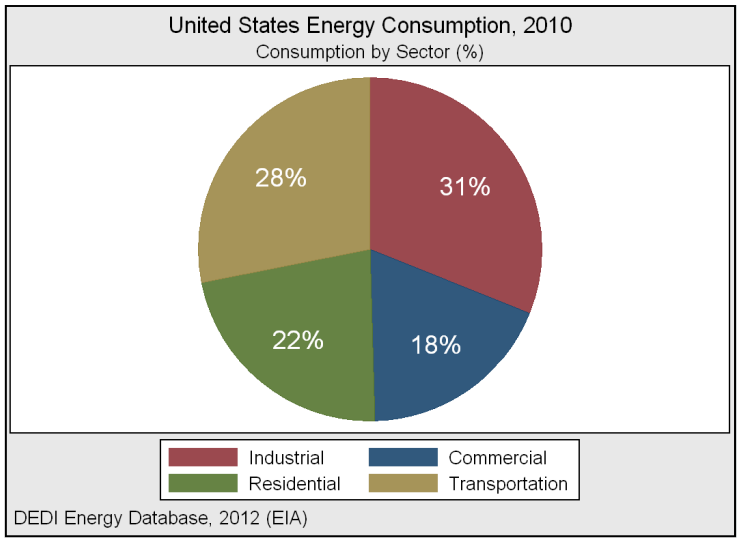






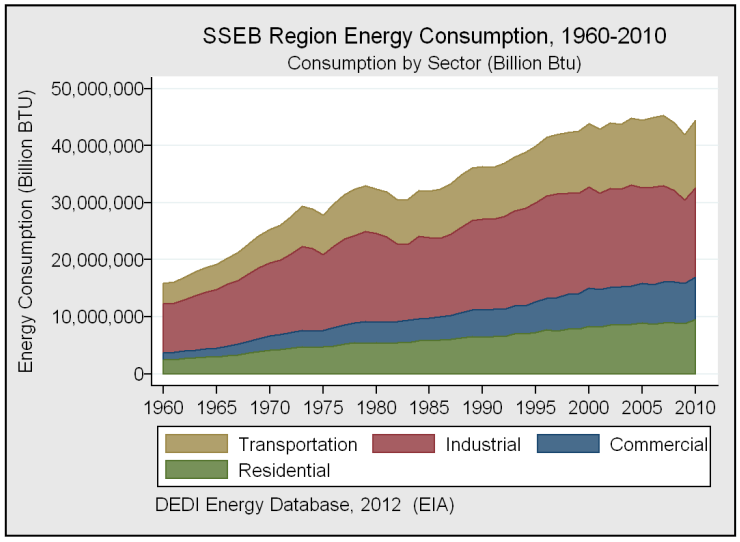
SSEB Region Energy Consumption

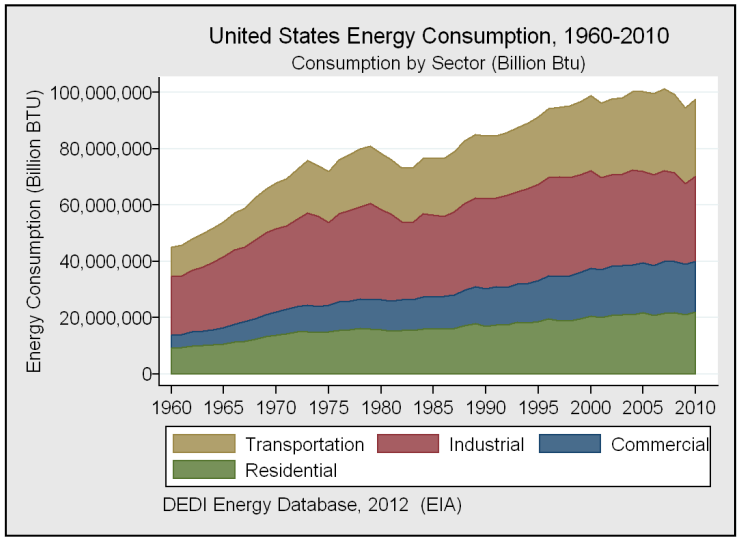




Sector	Billion Btu	Percentage
Total	44,443,293	100%
Industrial	15,722,130	35%
Transportation	11,824,620	27%
Residential	9,523,472	21%
Commercial	7,373,071	17%

Sector	Billion Btu	Percentage
Total	97,710,640	100%
Industrial	30,390,610	31%
Transportation	27,443,750	28%
Residential	21,836,170	22%
Commercial	18,040,110	18%

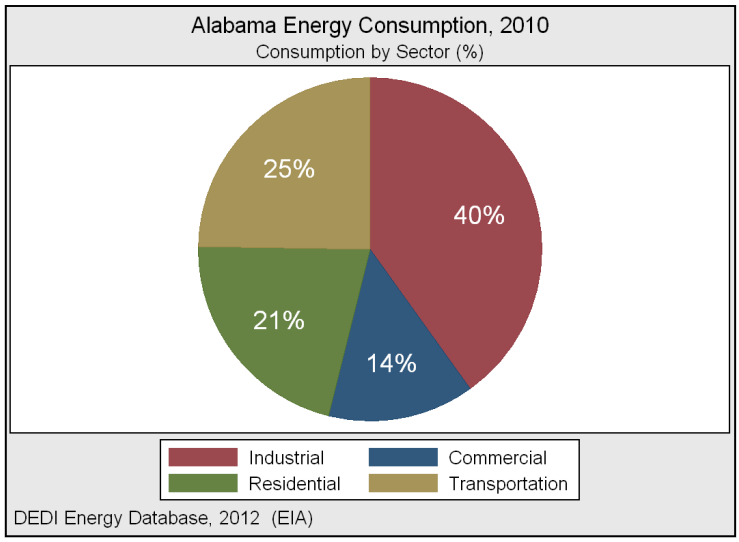


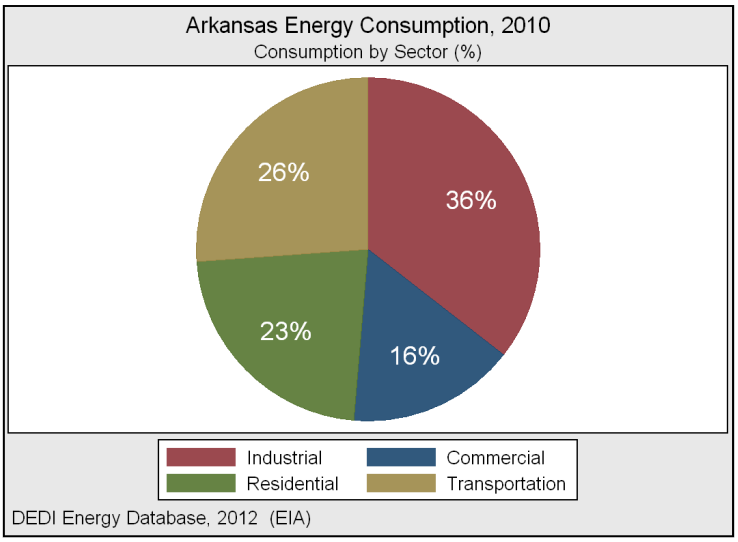


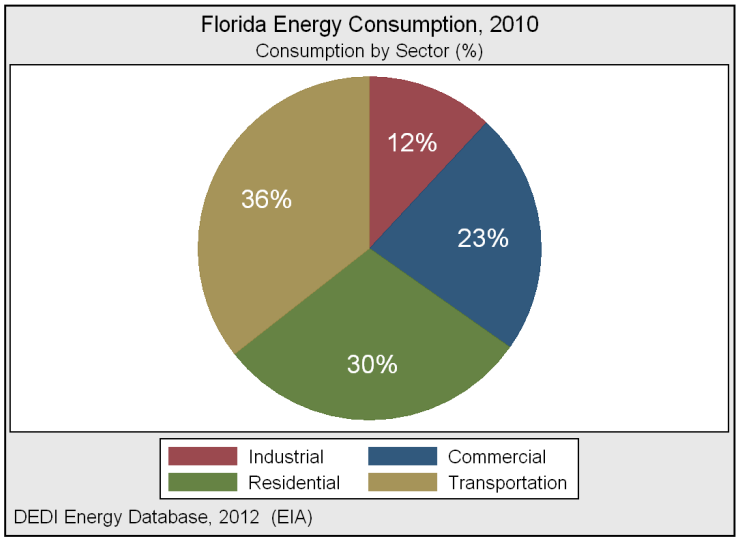
Energy consumption in the SSEB region has risen by 180% since 1960, with demand growth in member states averaging over 2% annually. The relatively energy-intensive industrial and manufacturing processes in the SSEB region continue to consume more energy than other economic sectors. However, residential and commercial energy consumption, which was largely unaffected by the 2008-2009 recession, continues to grow at a faster rate than industrial demand.

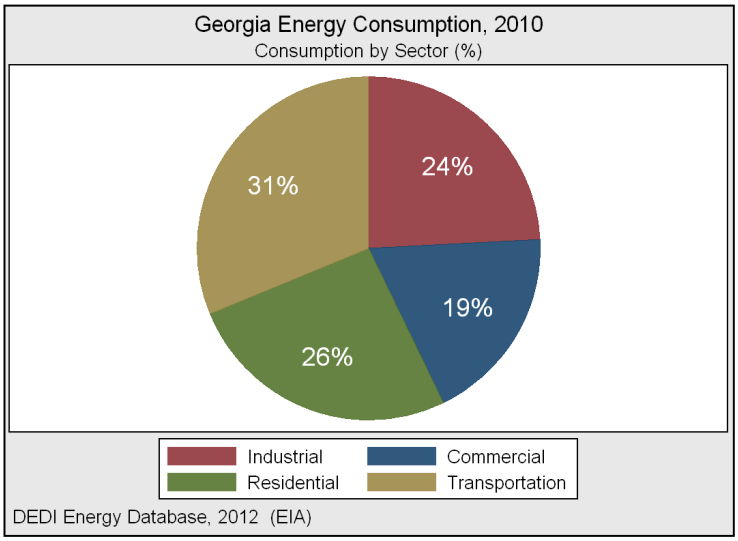
Total energy consumption in the United States increased in 2010 to over 97.7 Quadrillion Btu, an increase of 116% from 1960. Although energy demand by industrial consumers nationally remains higher than other economic sectors, it is proportionally less than in the SSEB region. Energy consumption has fallen by 3.3% since 2007, and was led by demand reduction in the transportation and industrial sectors.

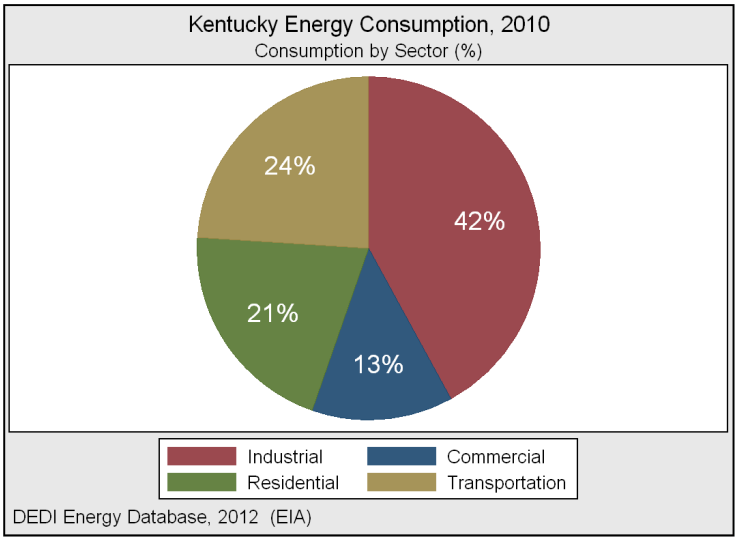
Energy Consumption by Sector

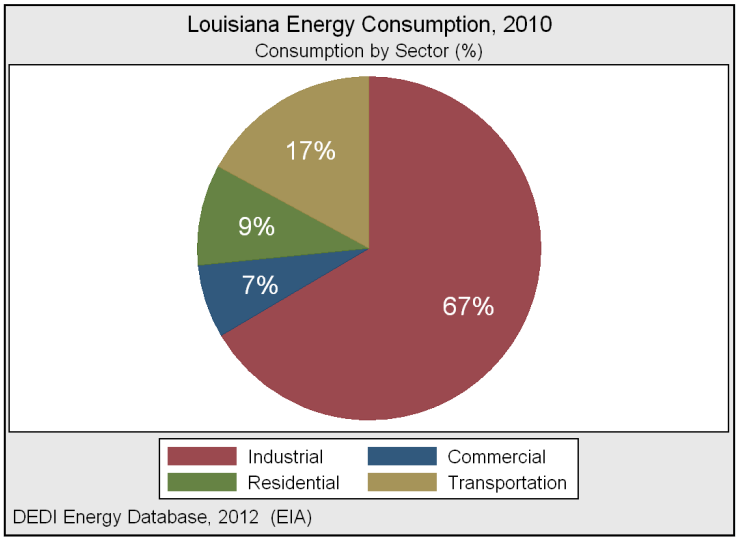




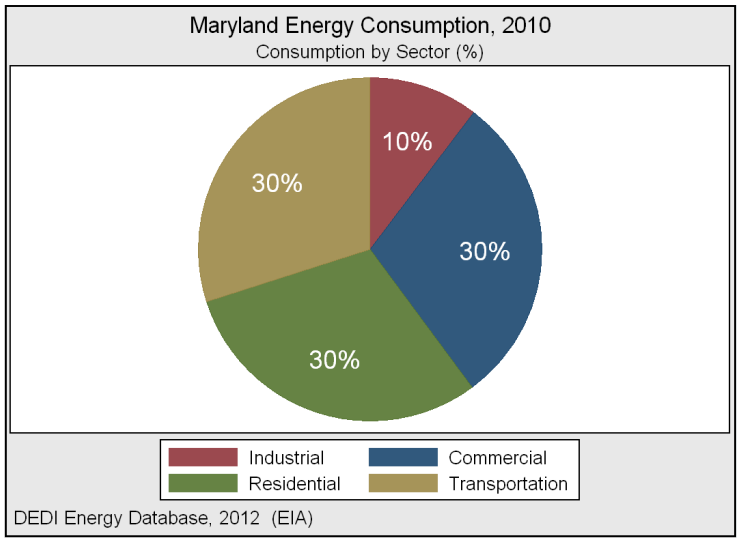


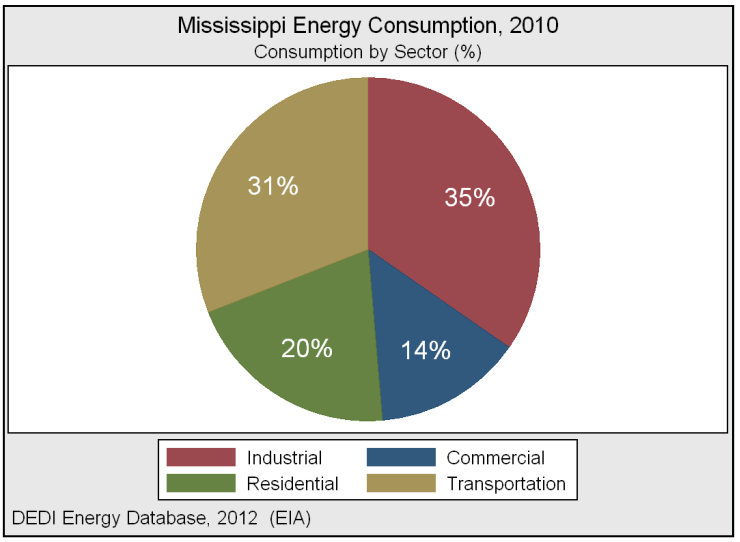


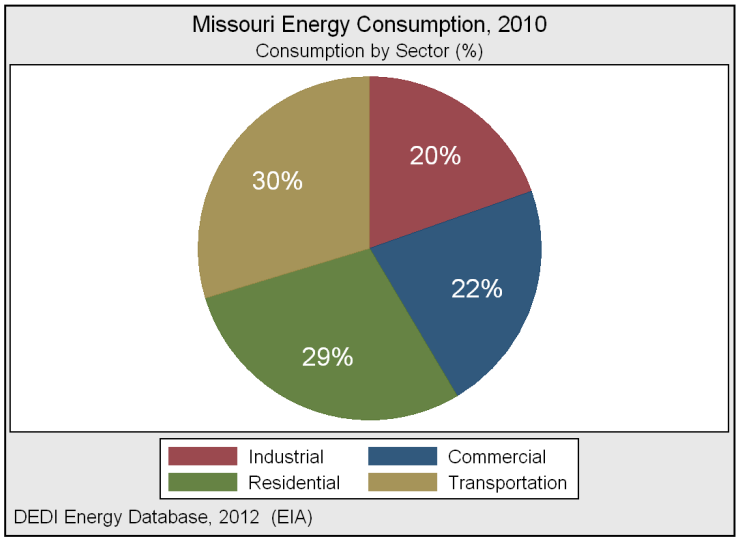


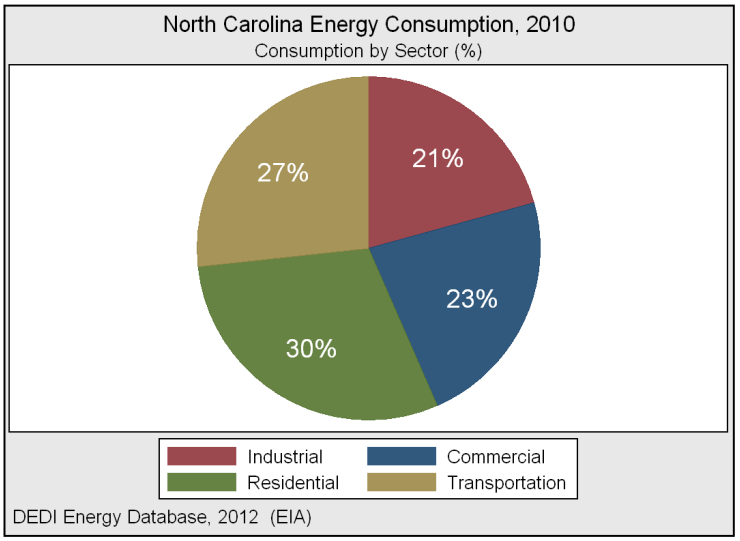


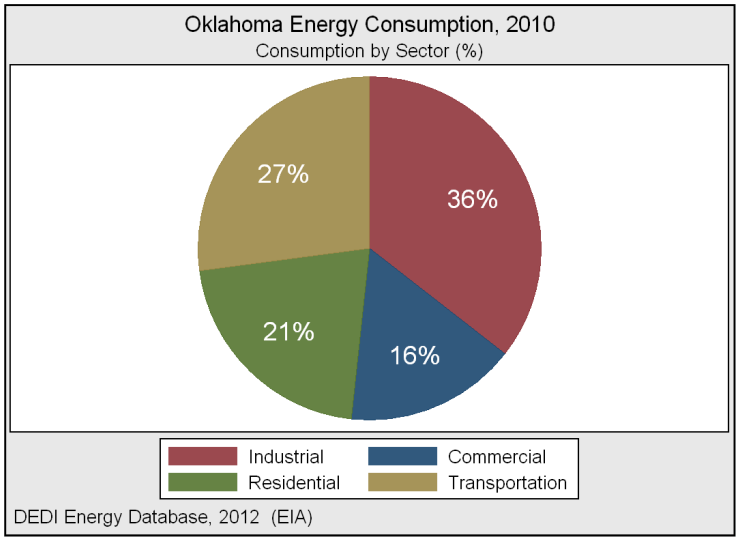
Energy Consumption by Sector

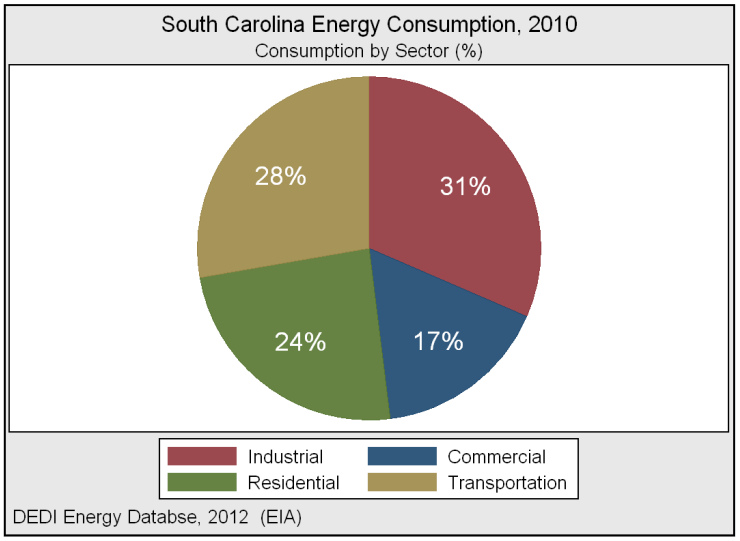




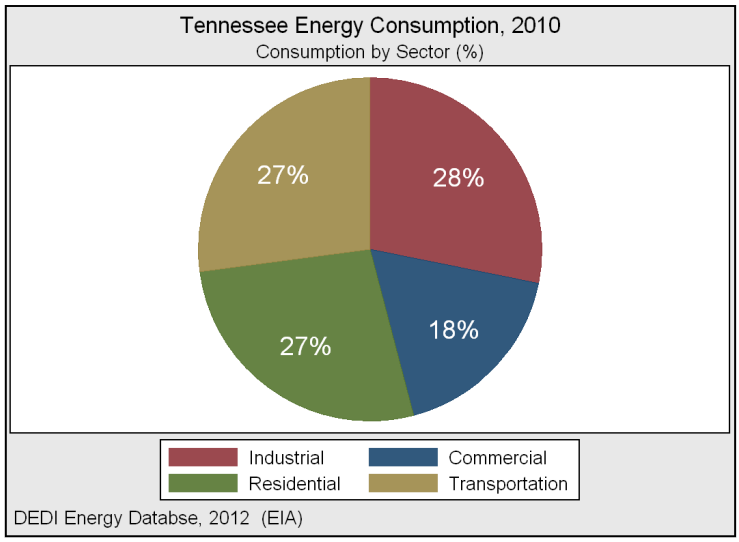


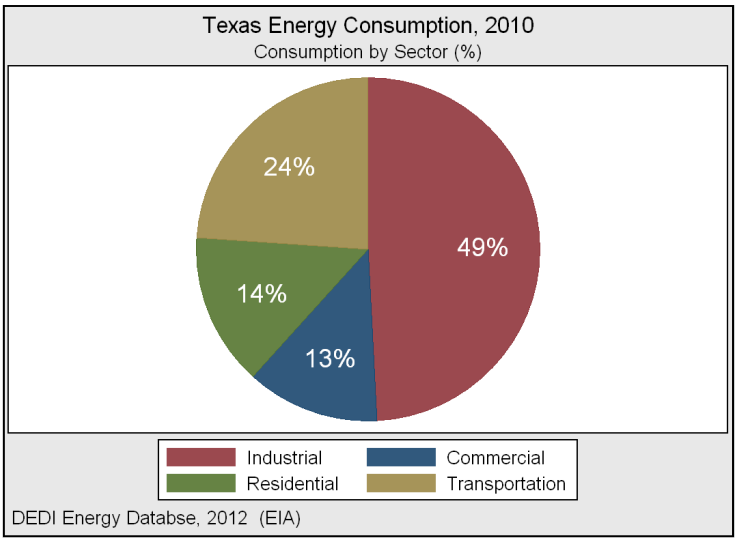


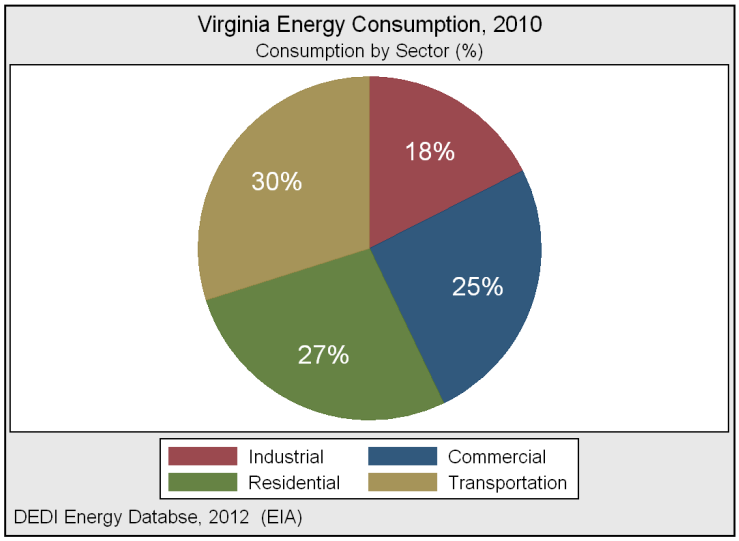


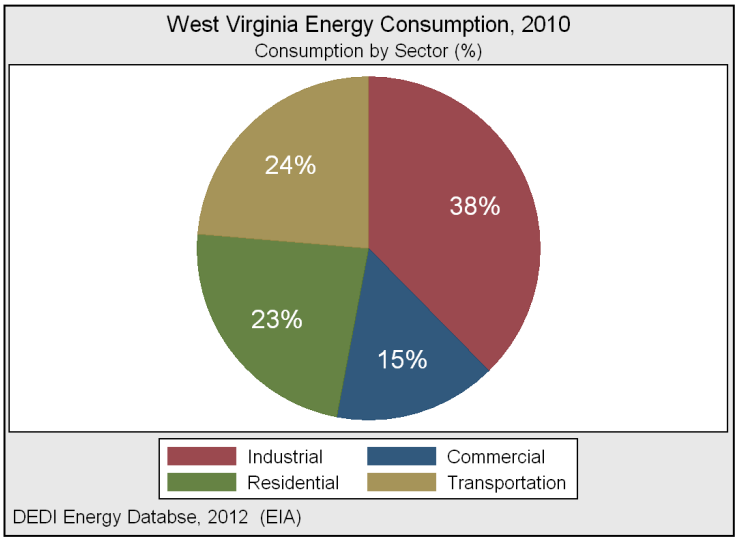


Energy Consumption by Sector

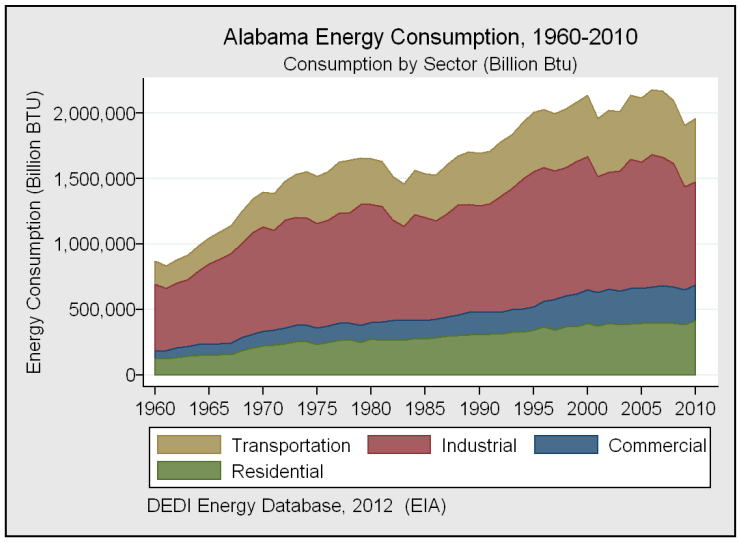


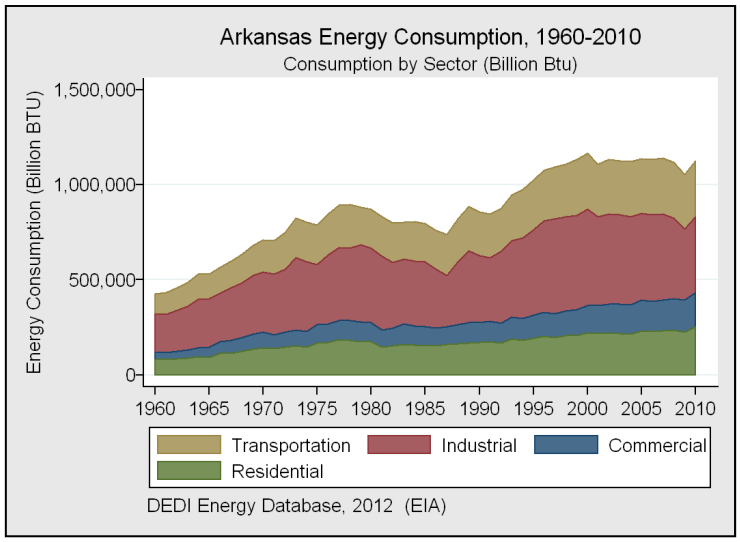


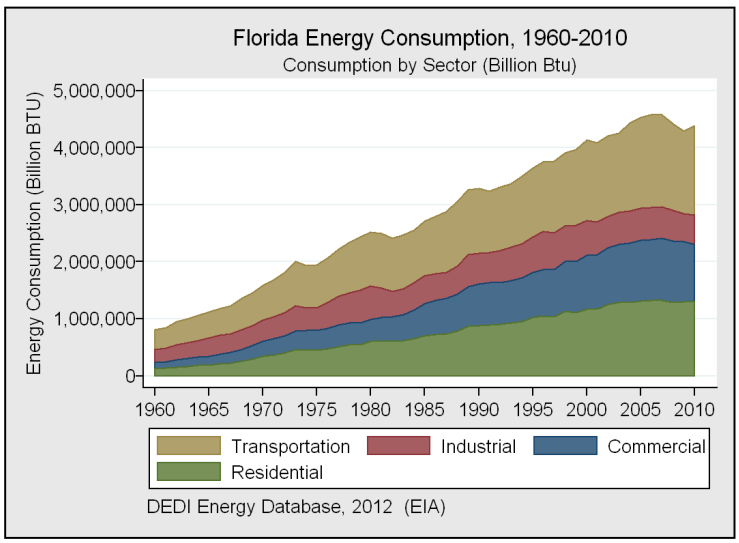


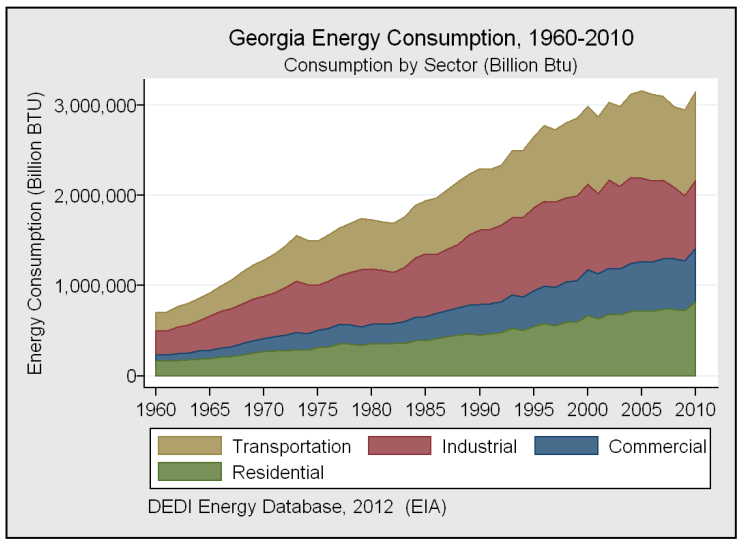


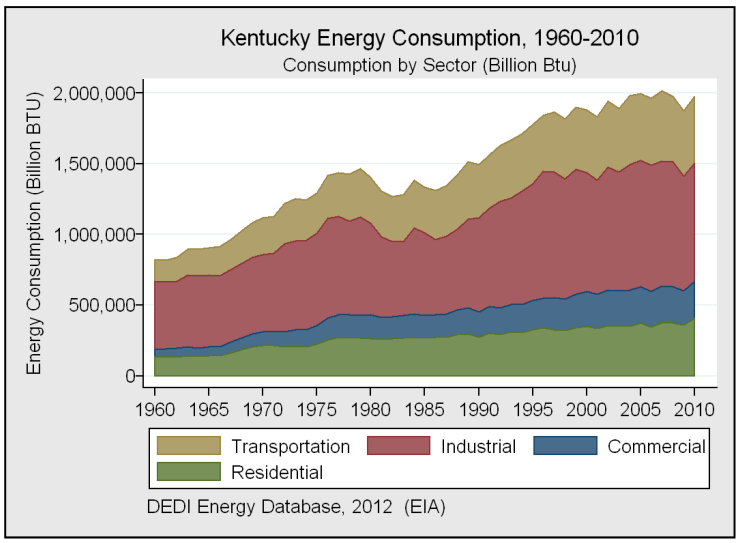
Energy Consumption by Sector

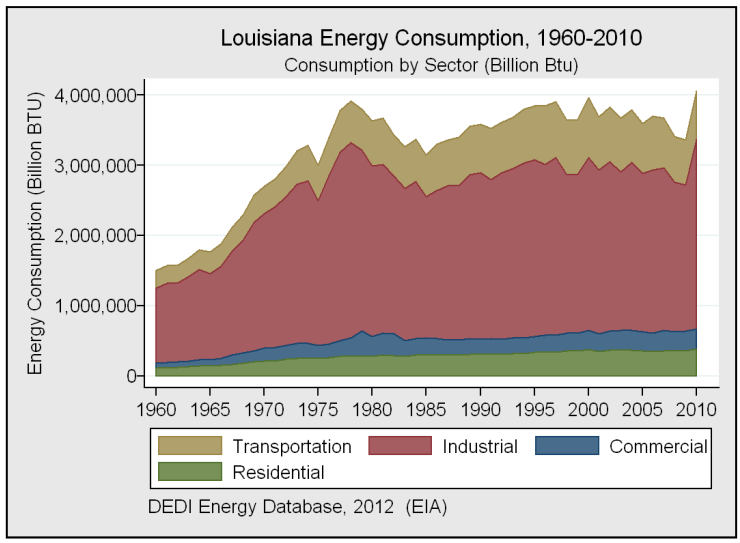




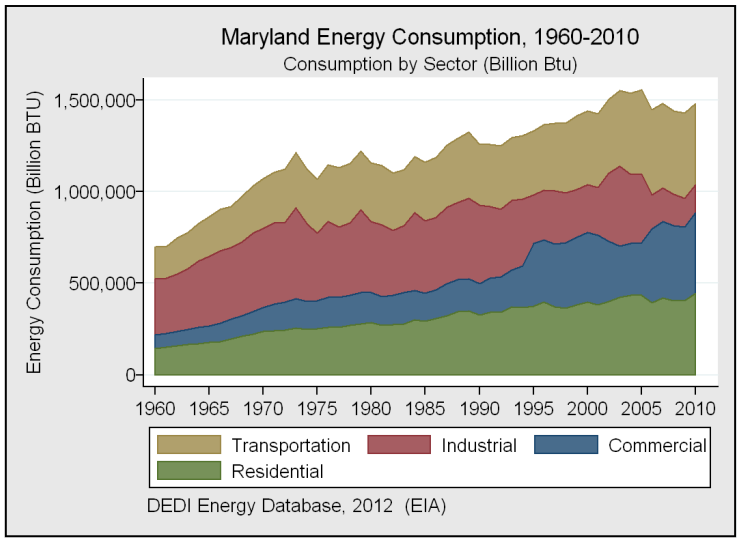


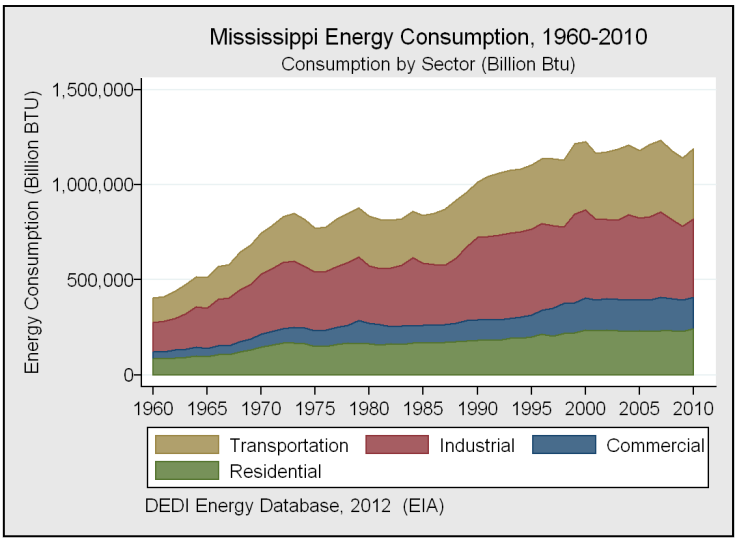


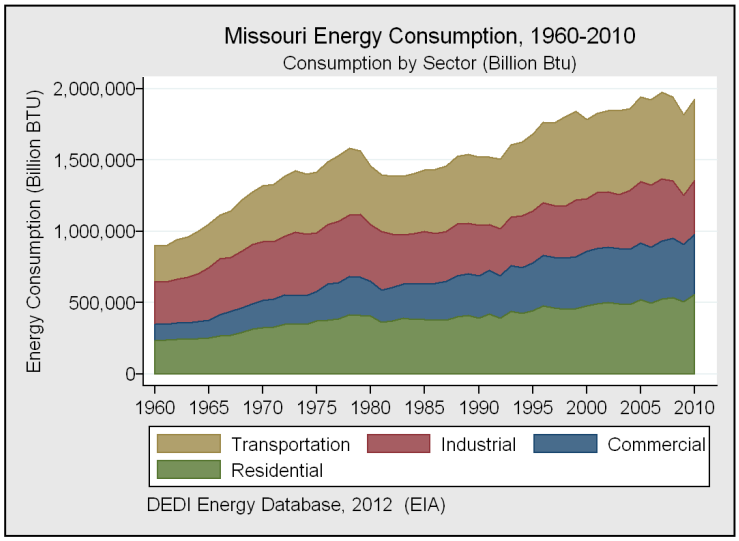


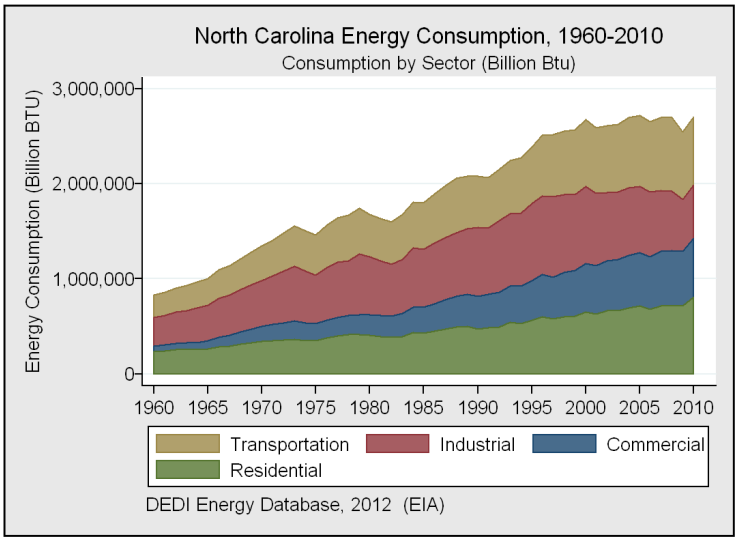


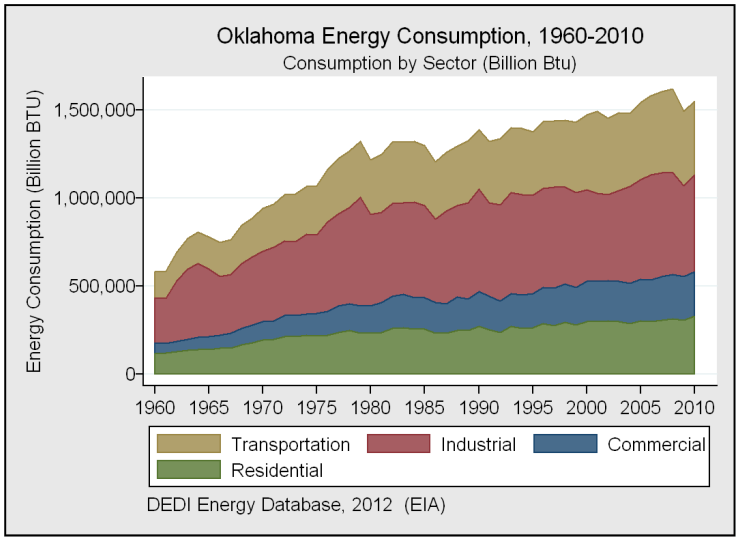
Energy Consumption by Sector

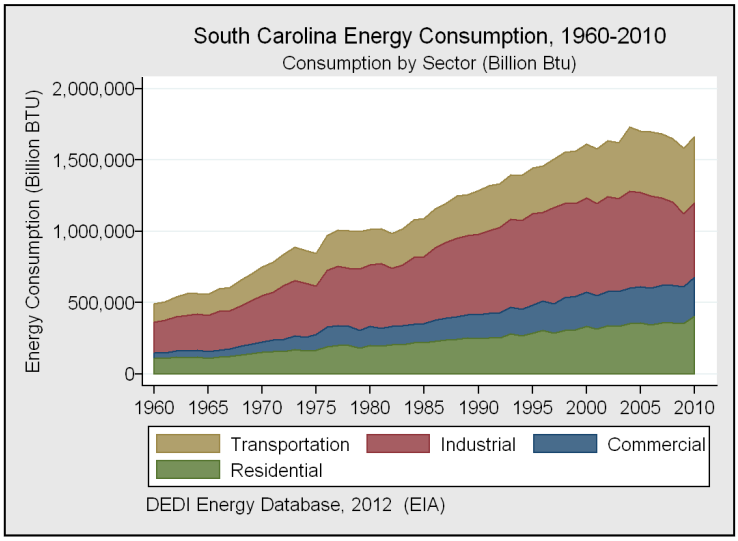




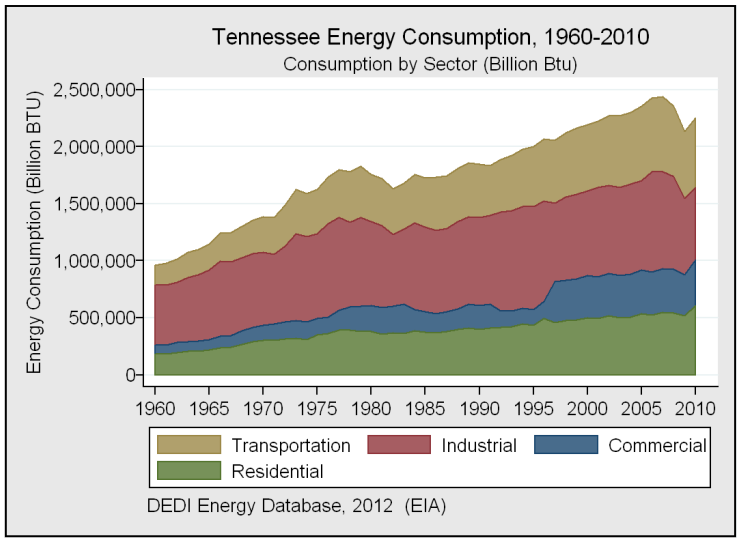


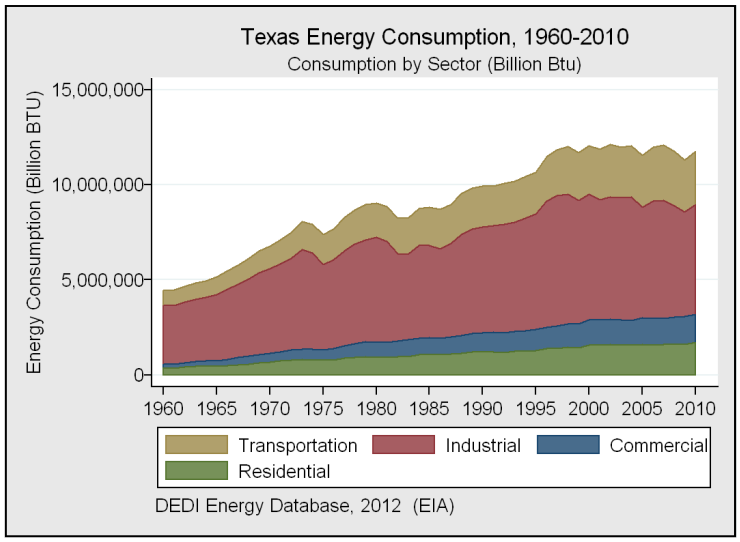


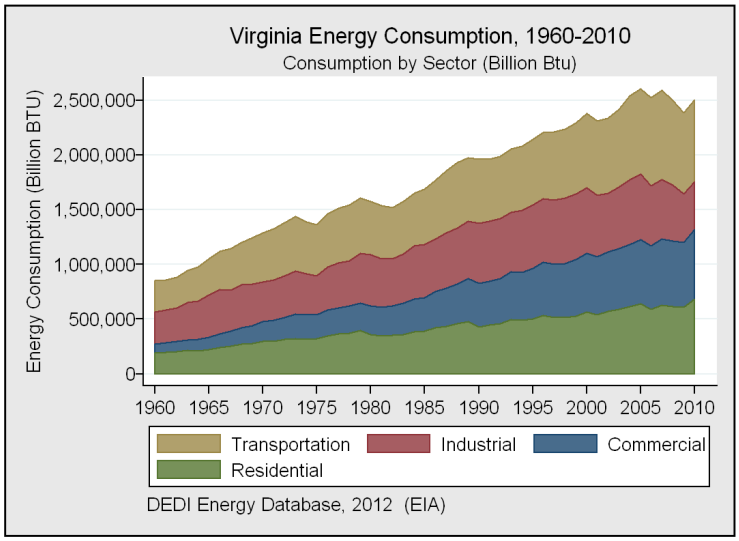


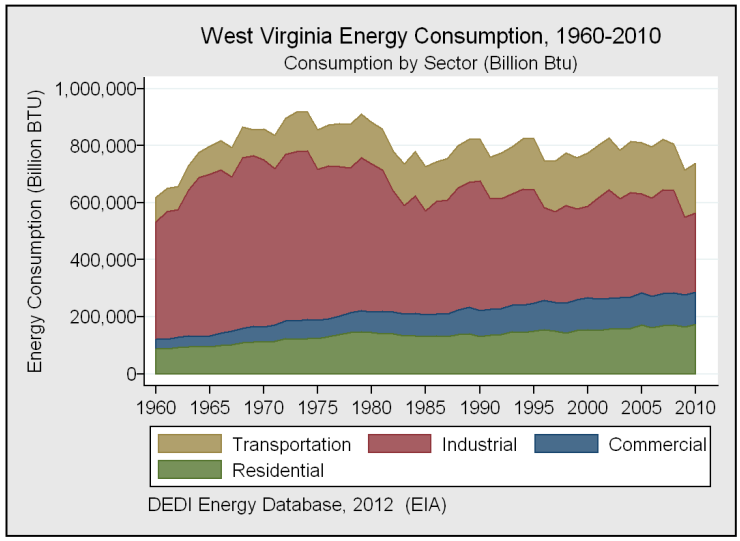


Energy Consumption by Sector

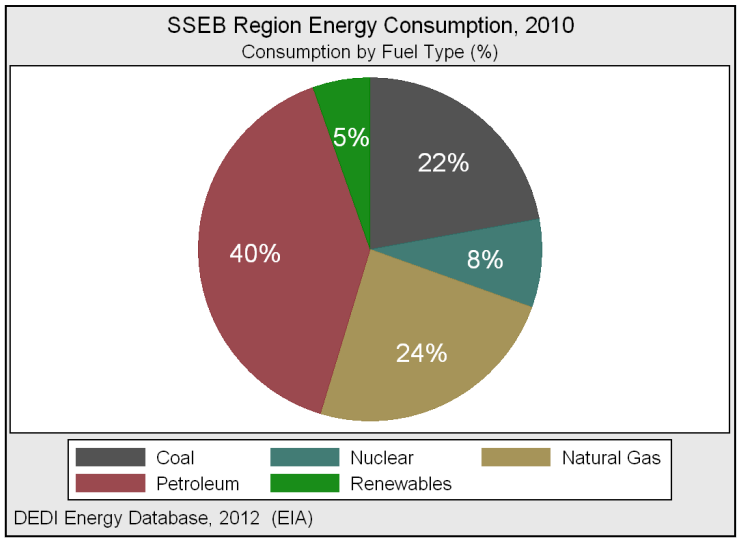


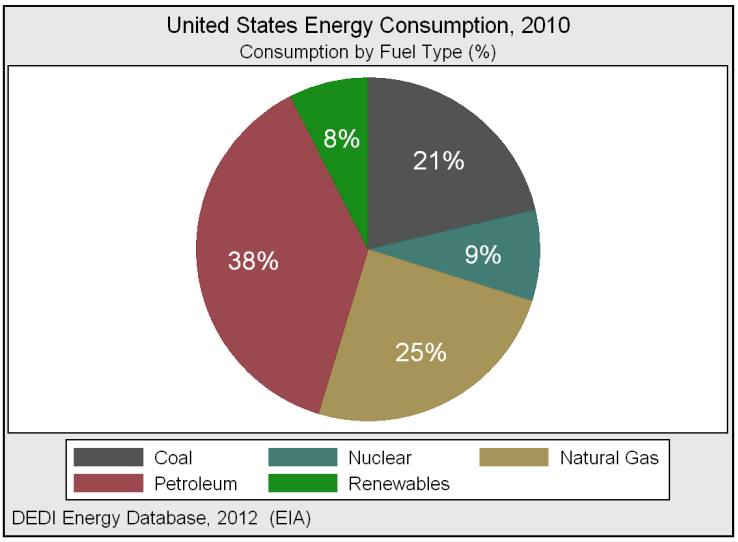






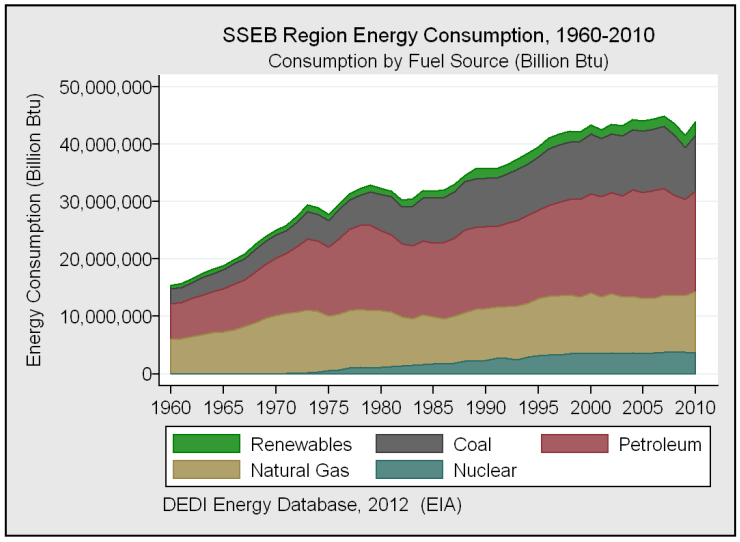
SSEB Region Energy Consumption

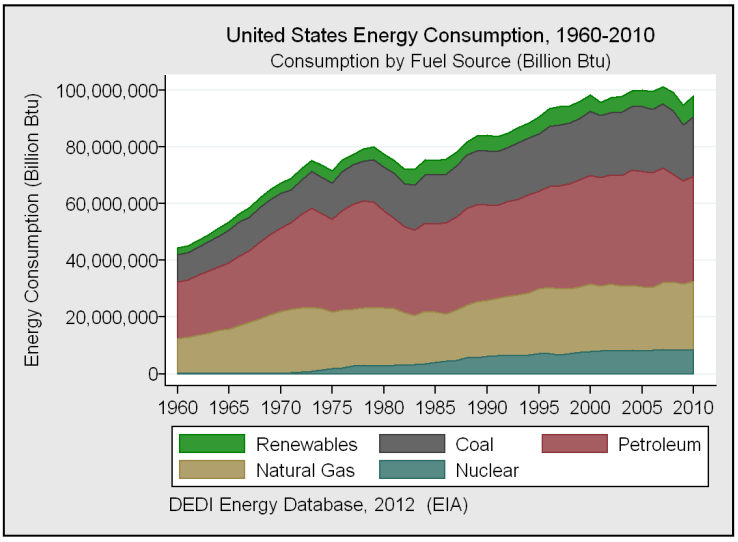




Fuel Type	Billion Btu	Percentage
Total	44,443,290	100%
Petroleum	17,541,880	40%
Natural Gas	10,643,560	24%
Coal	9,721,065	22%
Nuclear	3,658,806	8%
Renewables	2,368,229	5%

Fuel Type	Billion Btu	Percentage
Total	97,710,640	100%
Petroleum	37,081,710	38%
Natural Gas	24,314,050	25%
Coal	20,869,080	21%
Nuclear	8,434,433	9%
Renewables	7,358,848	8%

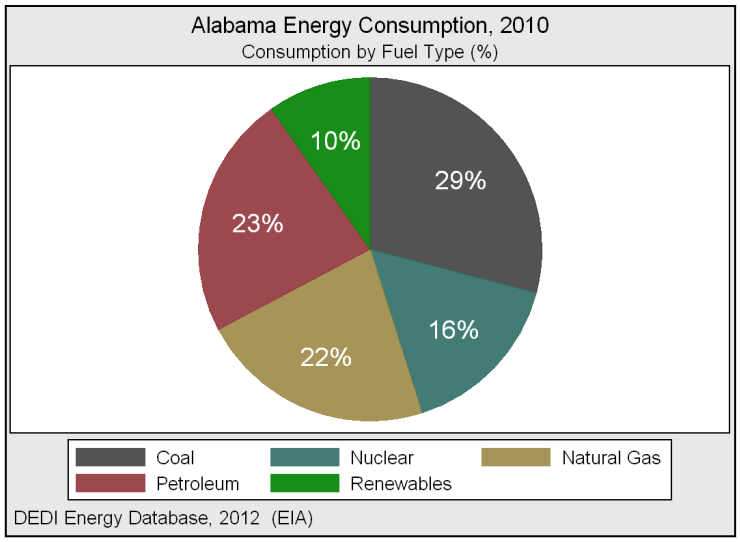


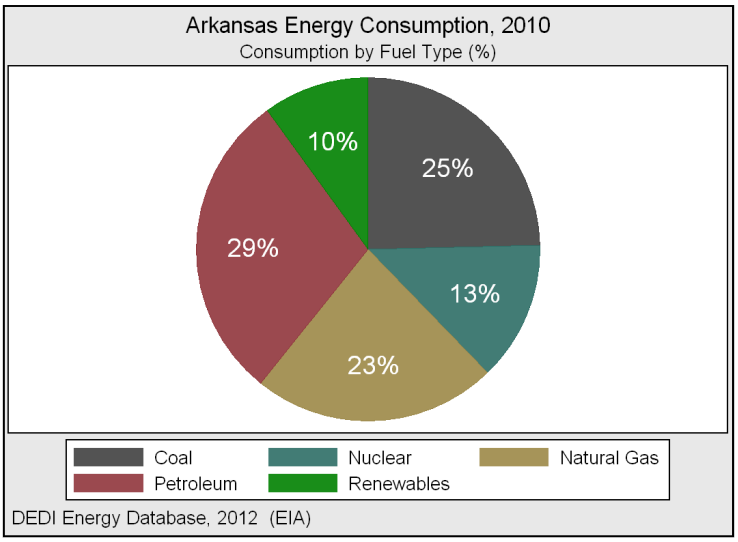


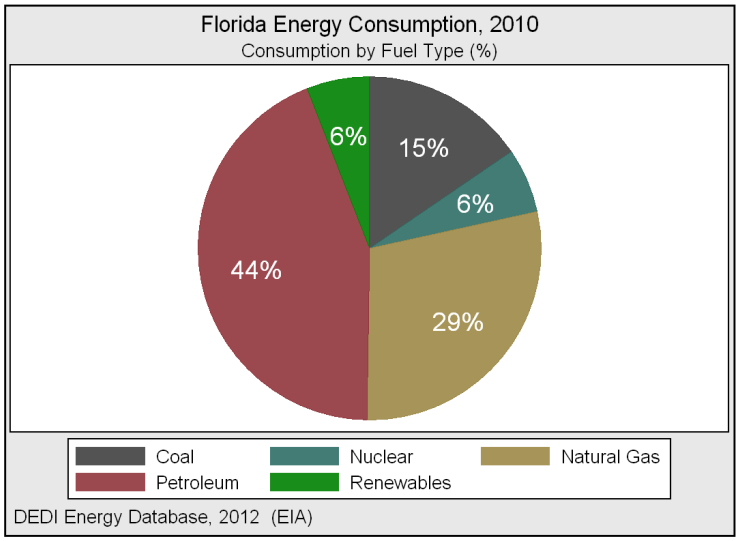
Total energy consumption in the SSEB region has risen by 180% from 1960 to over 44 quadrillion BTU in 2010. The SSEB region accounts for 45% of all energy consumption in the United States. Total energy consumption peaked in 2007, but has rebounded by 6% from 2009 recession lows. Renewable resources have risen to 5% of all energy consumed in the SSEB region.

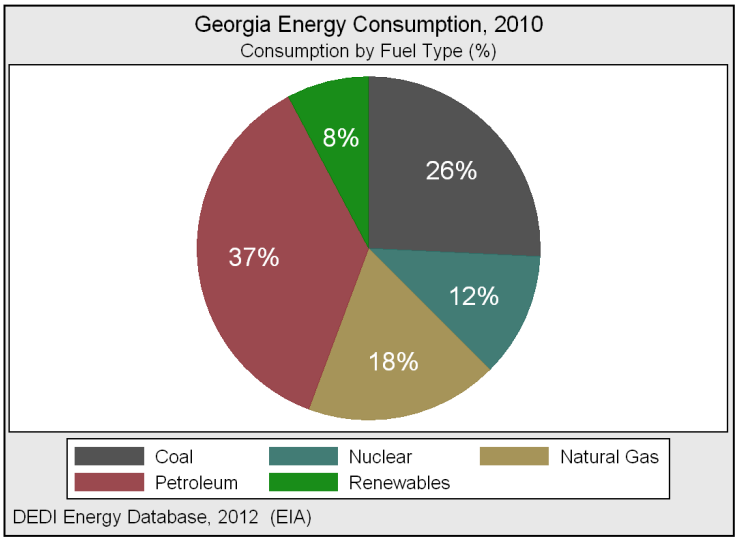
Energy consumption in the United States increased by 116% from 1960 to over 97 Quadrillion Btu in 2010, although has fallen by 3.3% since 2007. The use of petroleum products continues to be the primary energy resource in both the SSEB region and the United States as a whole in 2010, used primarily for transportation. Renewable energy consumption now accounts for 8% of all energy consumed nationally.

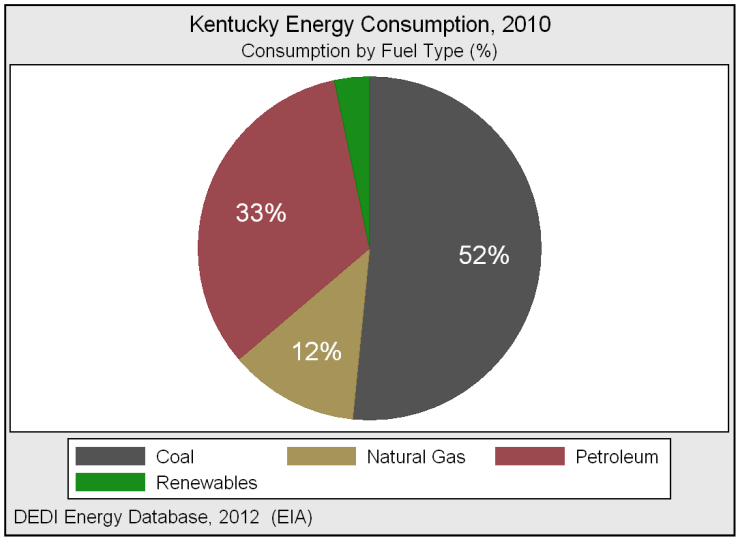
Energy Consumption by Fuel Type

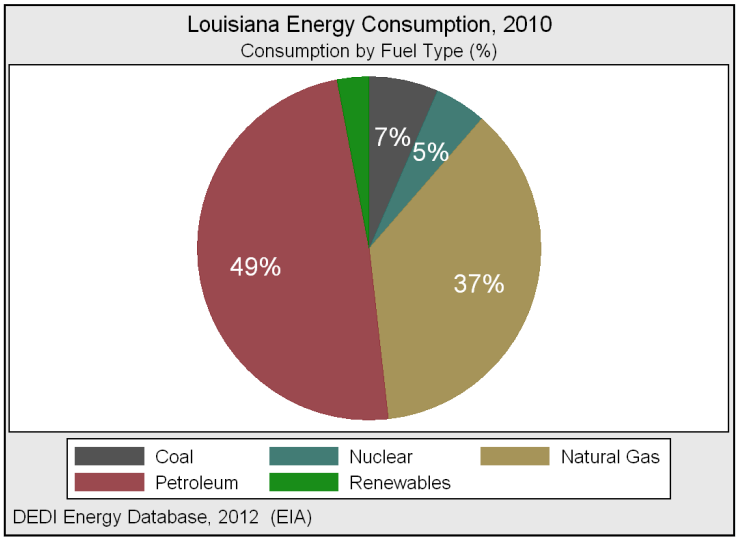




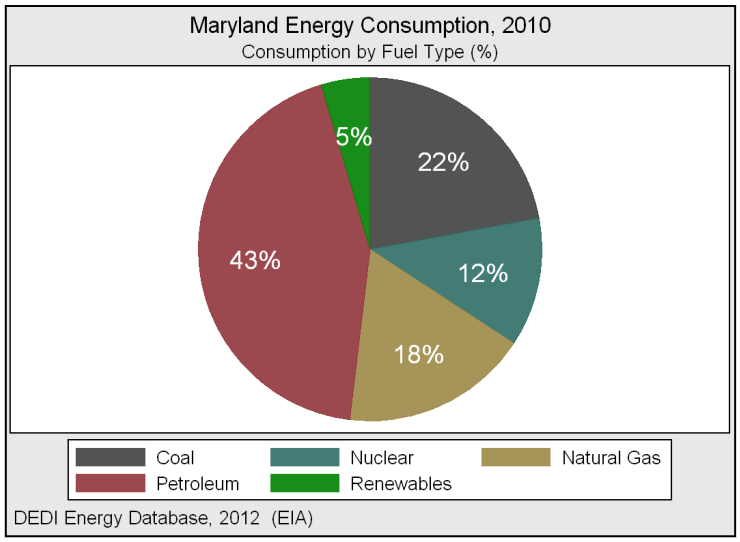


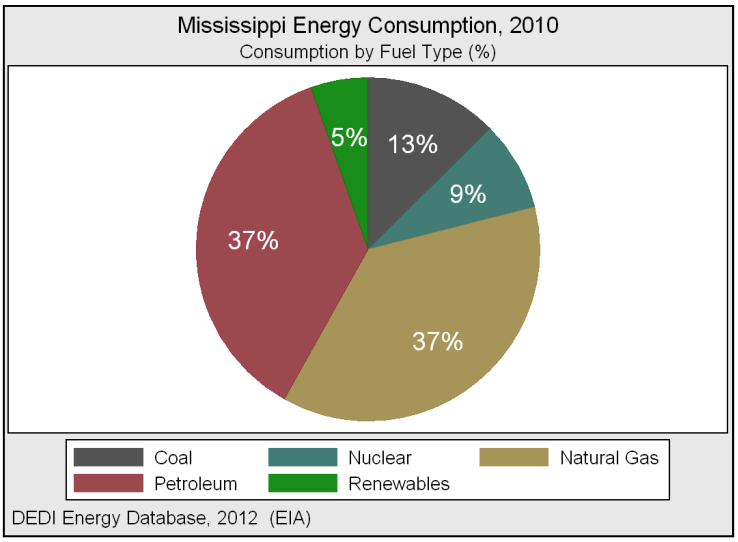


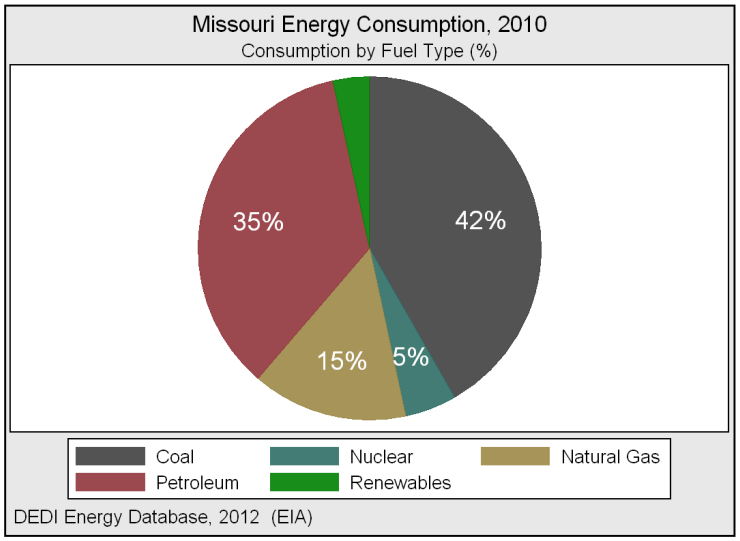


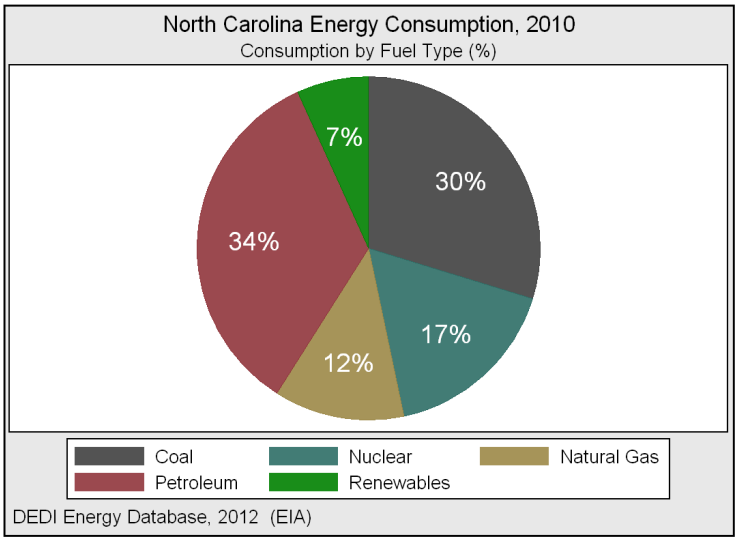


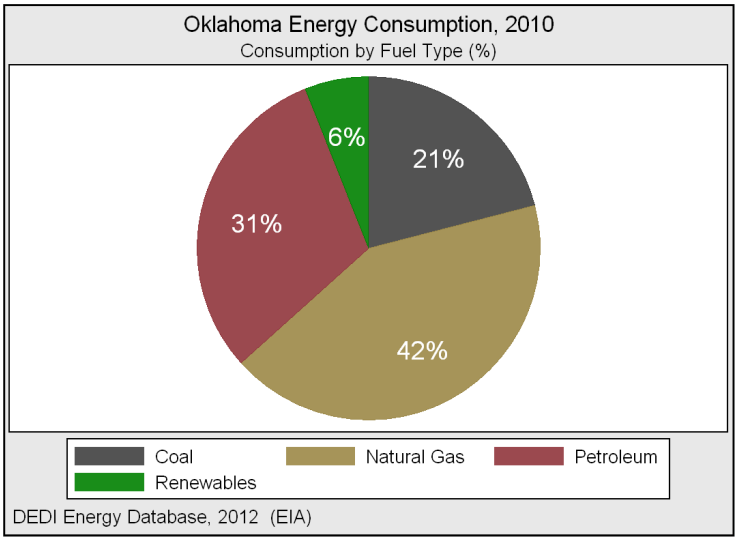
Energy Consumption by Fuel Type

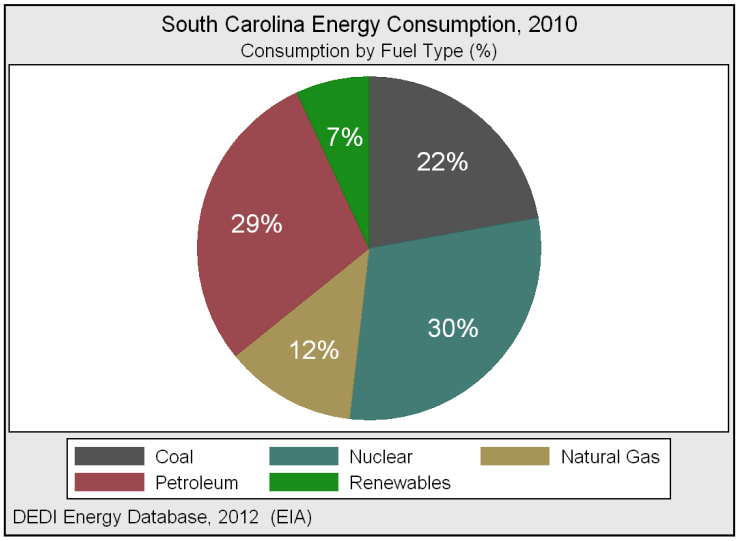




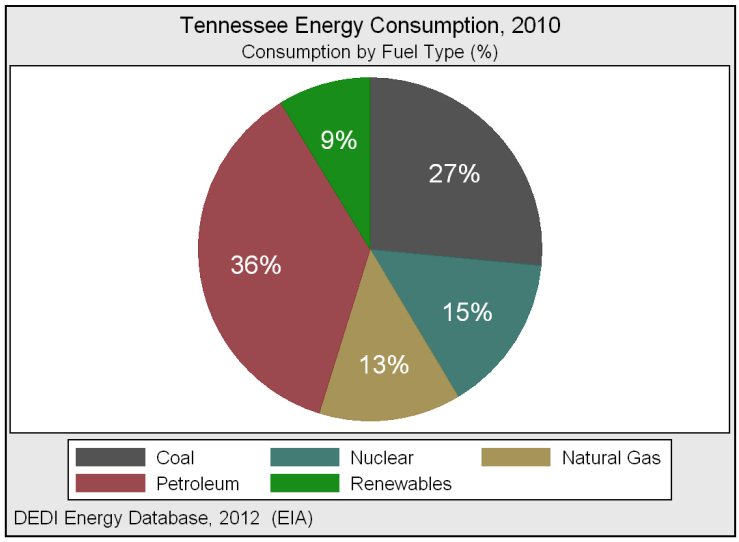


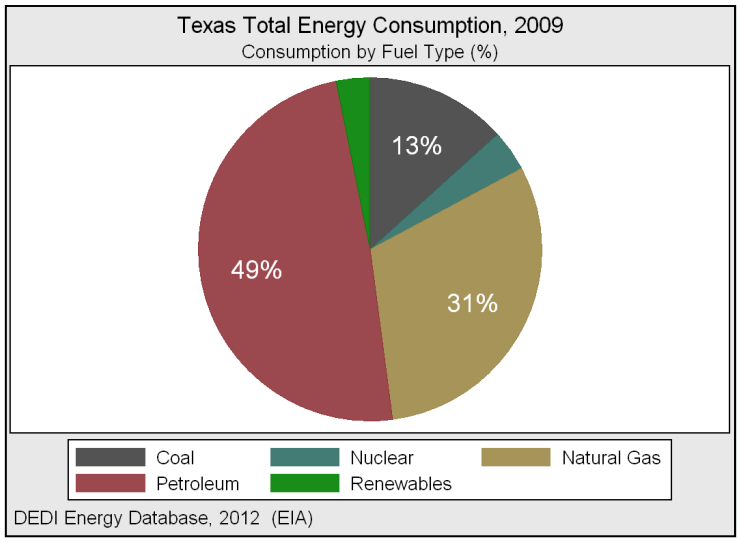


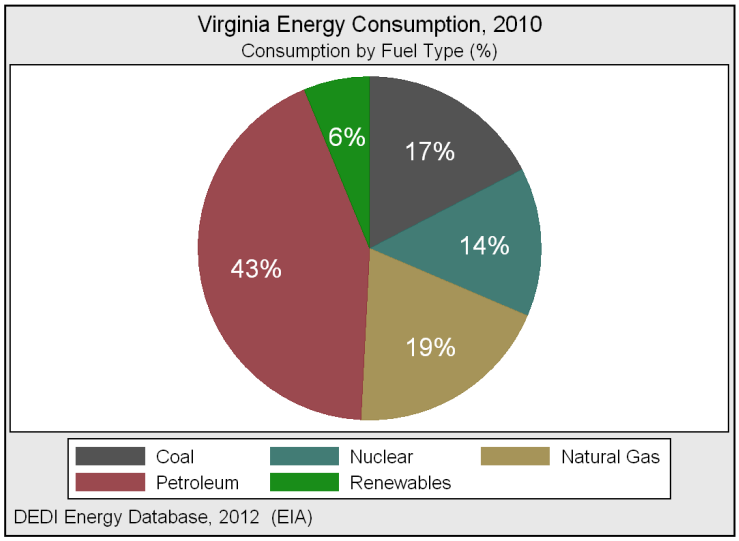


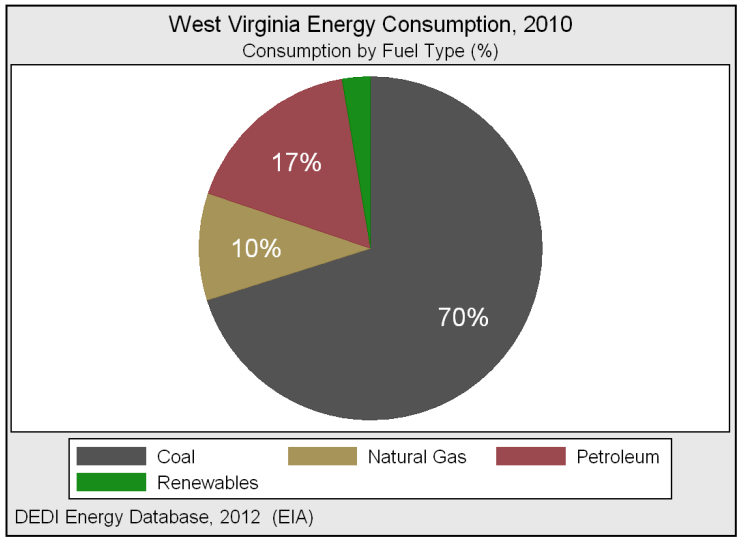


Energy Consumption by Fuel Type

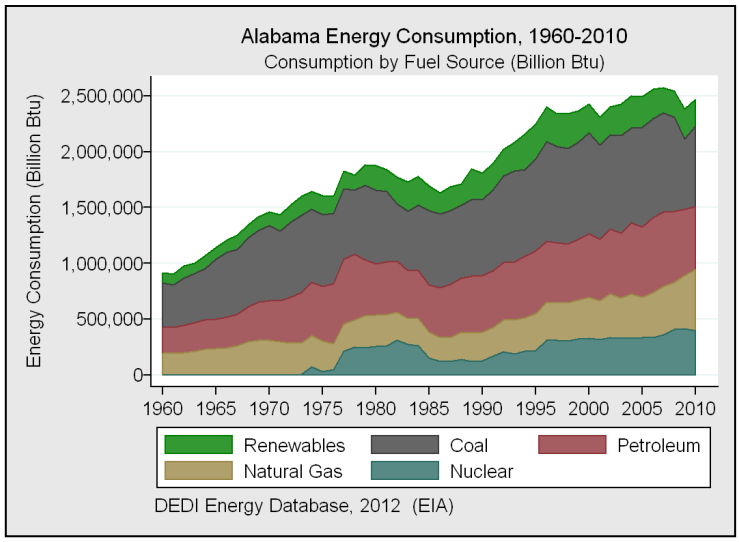


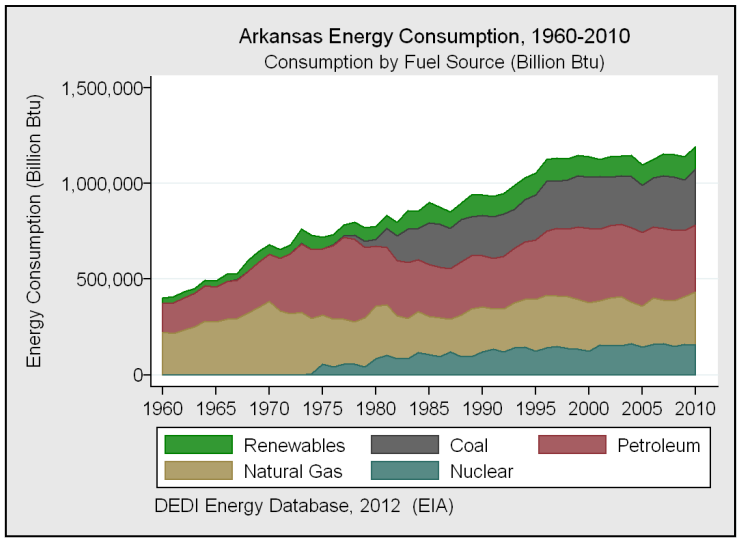


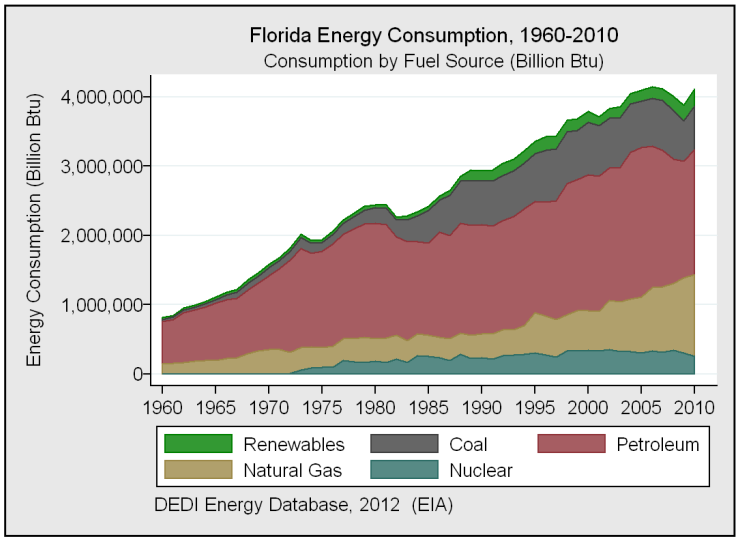


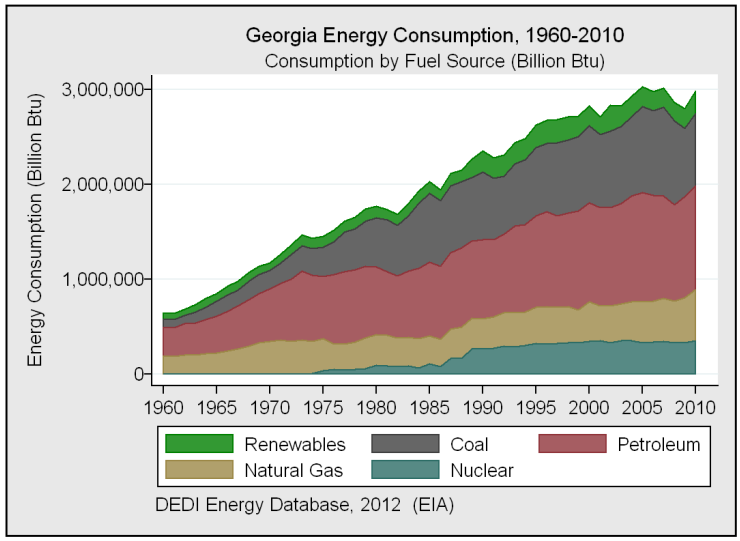


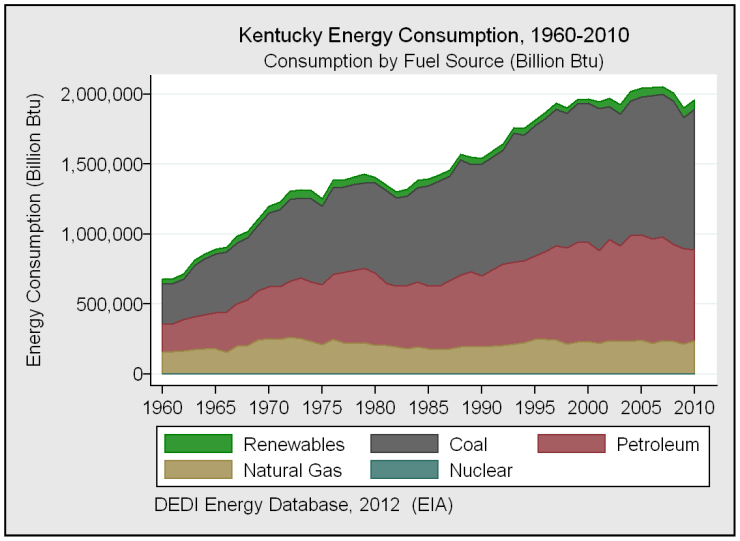
Energy Consumption by Fuel Type

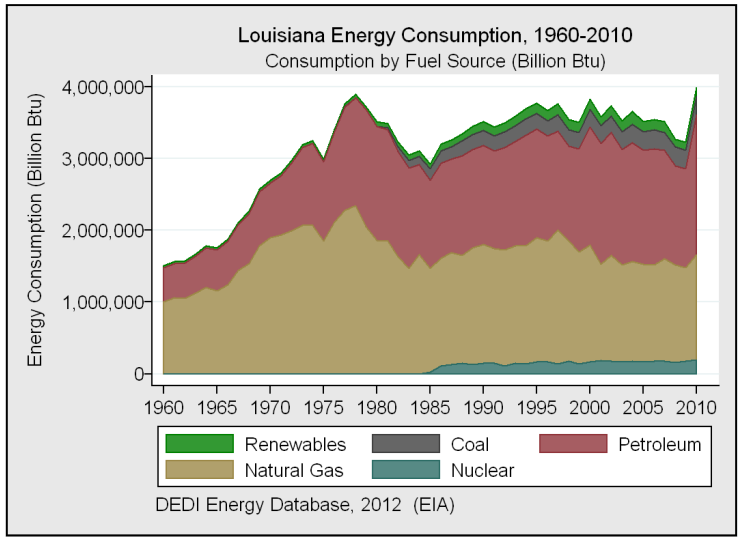




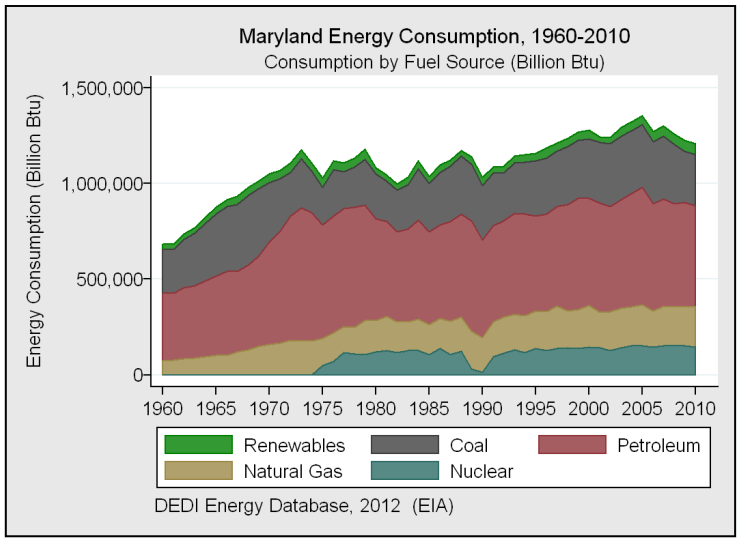


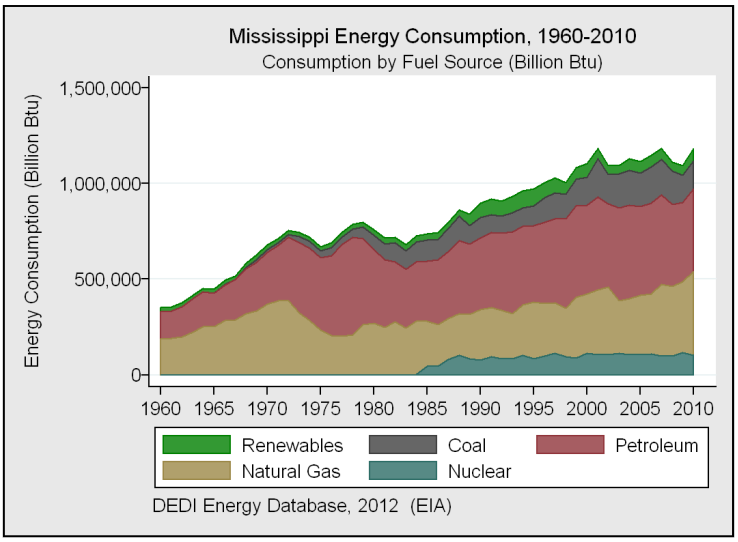


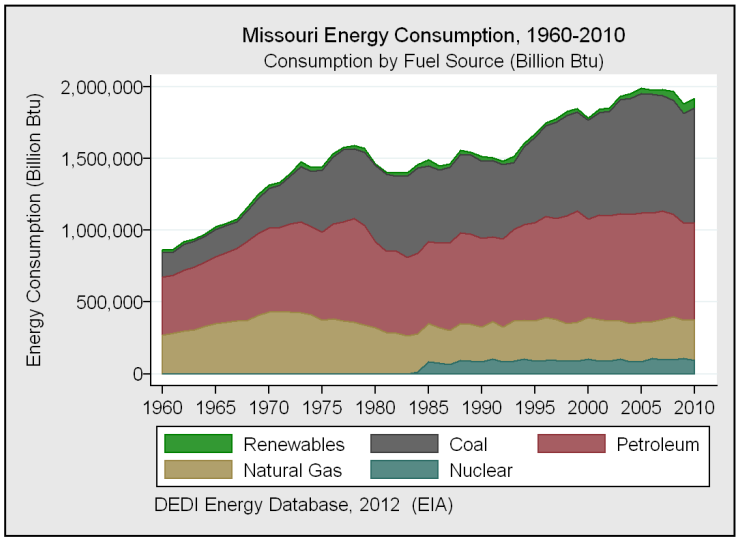


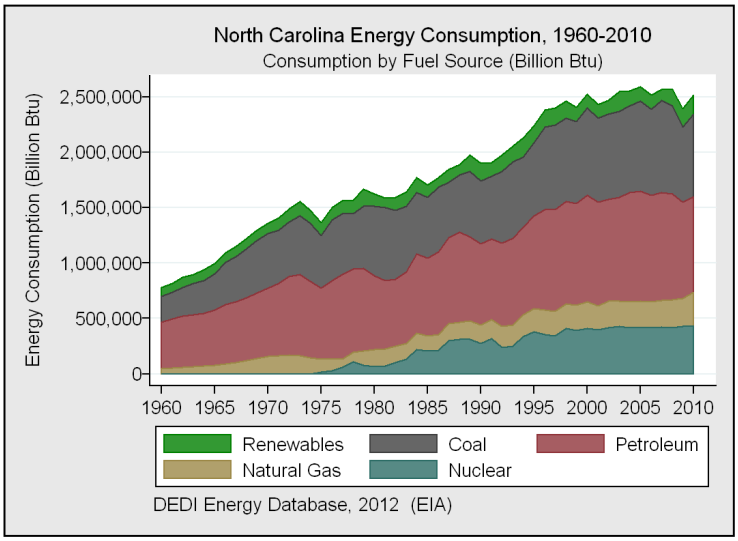


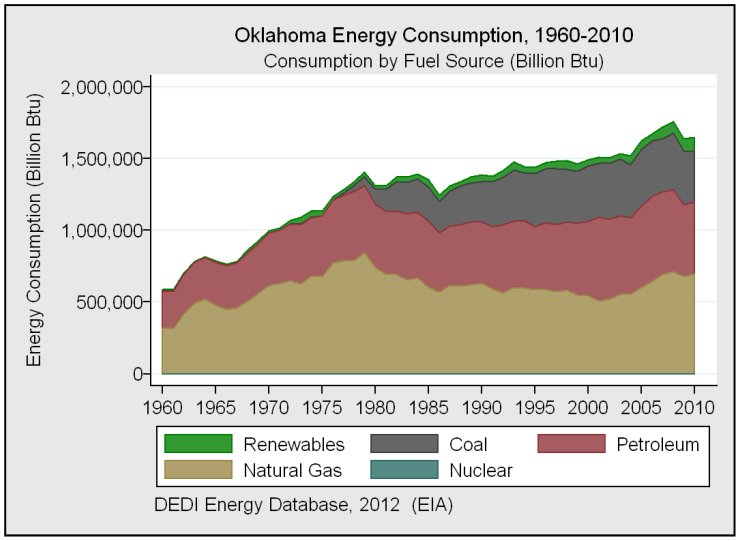
Energy Consumption by Fuel Type

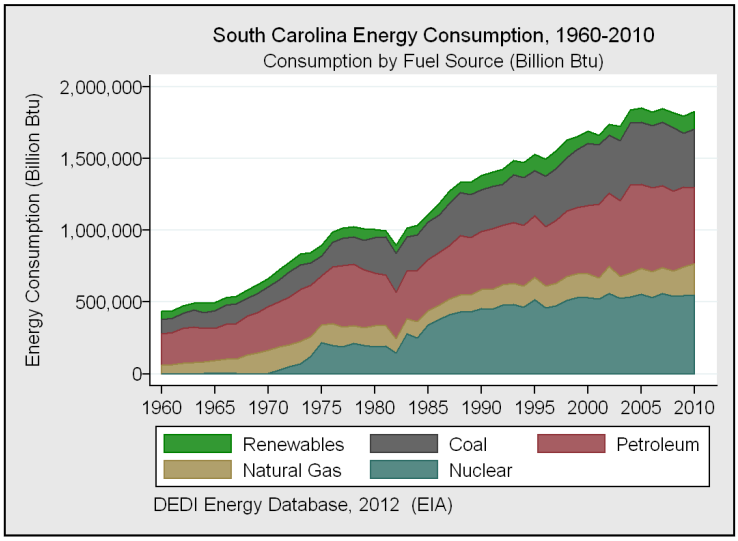




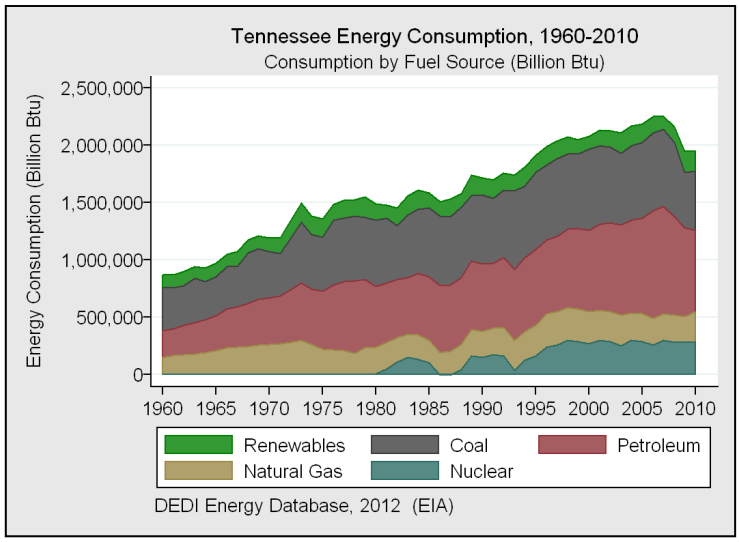


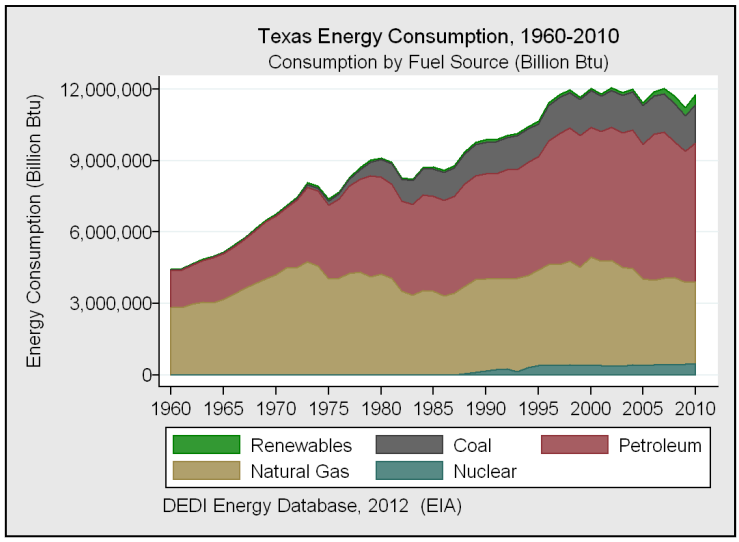


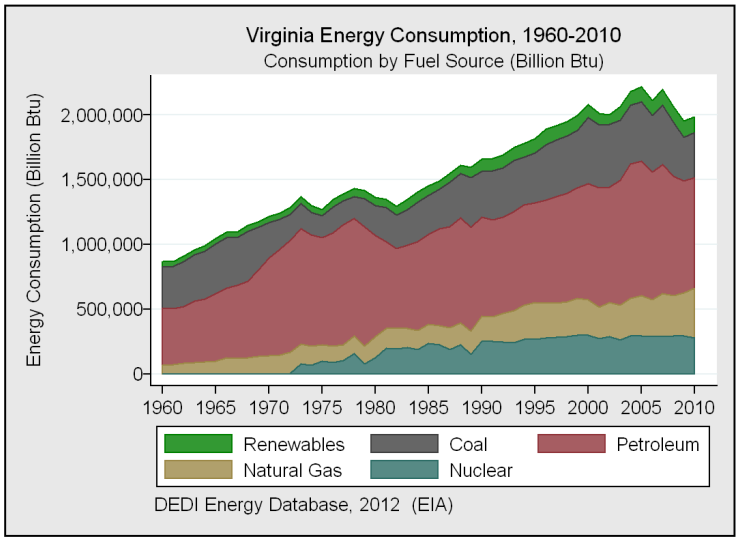


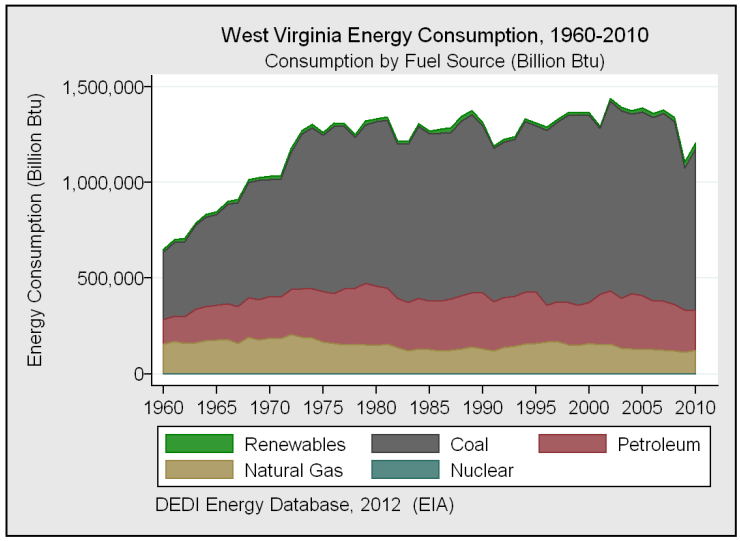


Energy Consumption by Fuel Type

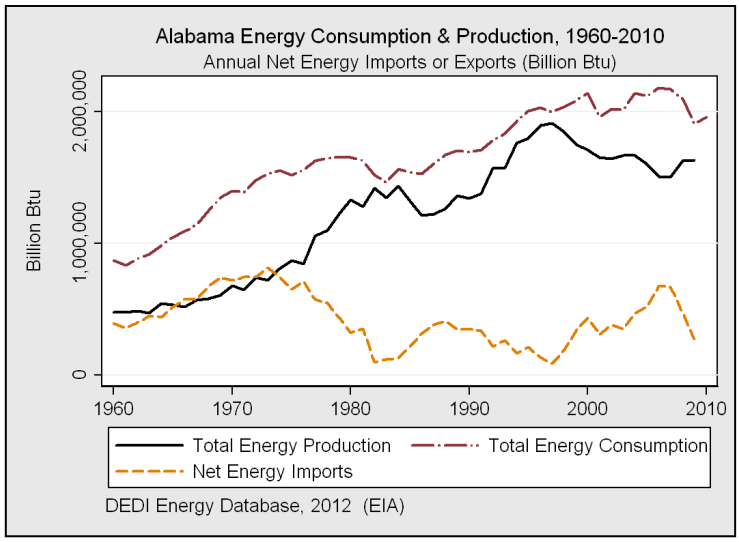


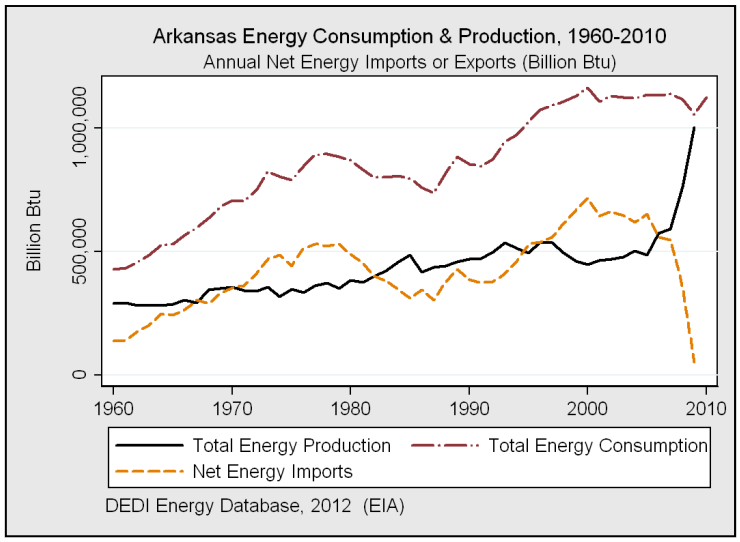


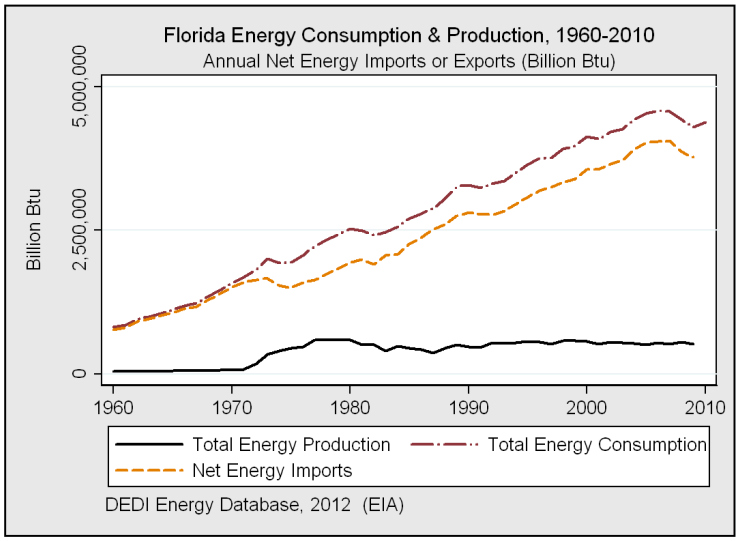


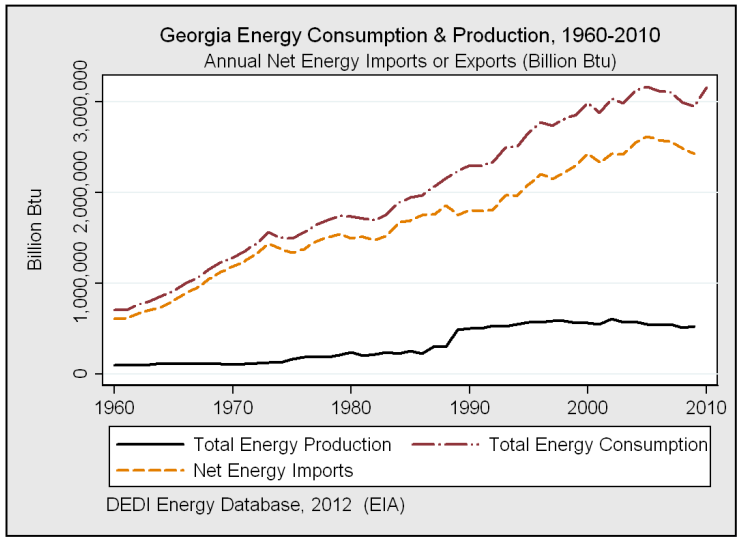


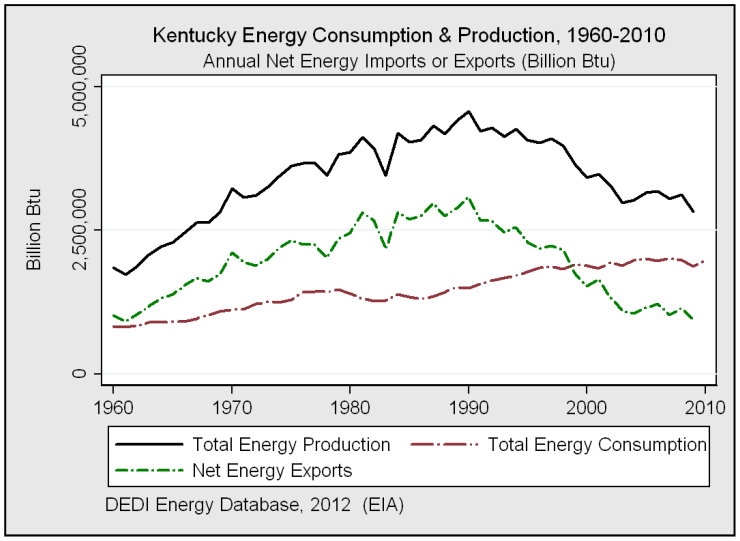
Net Energy Exports

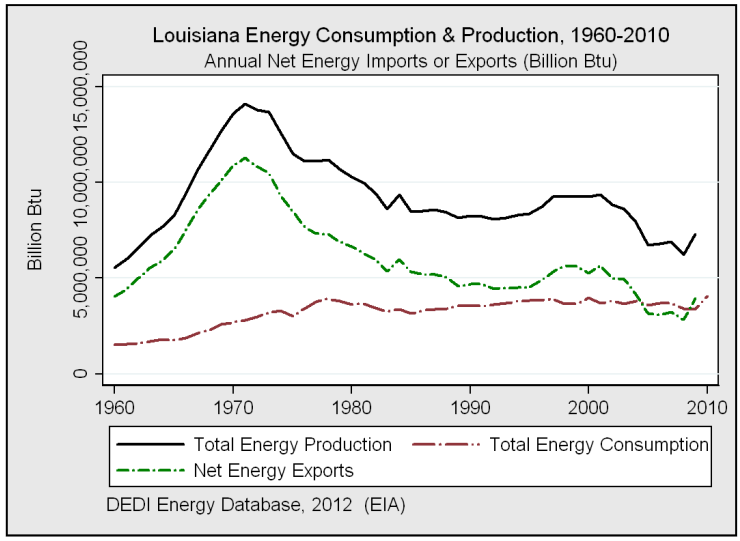




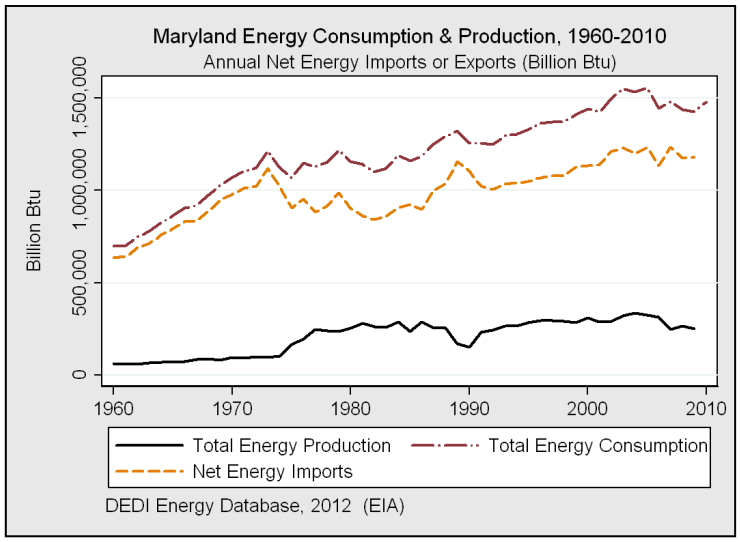


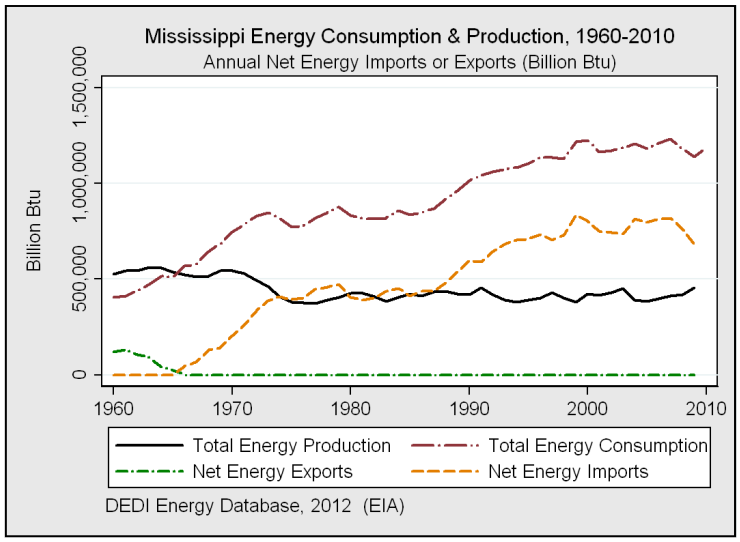


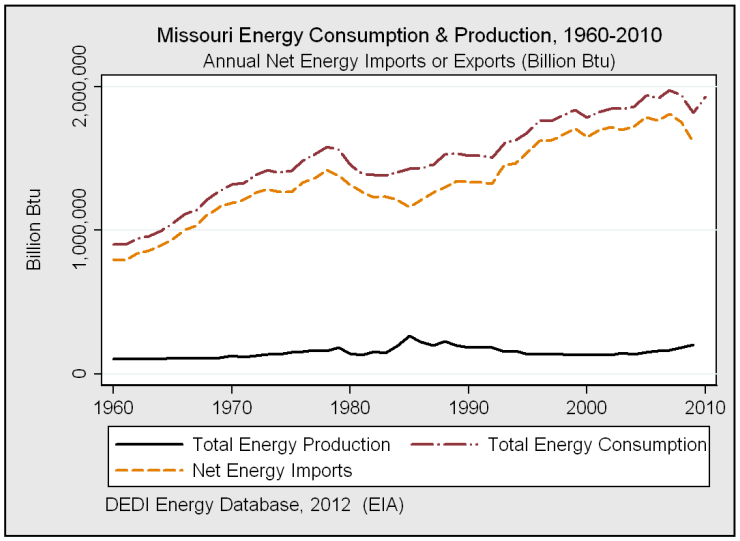


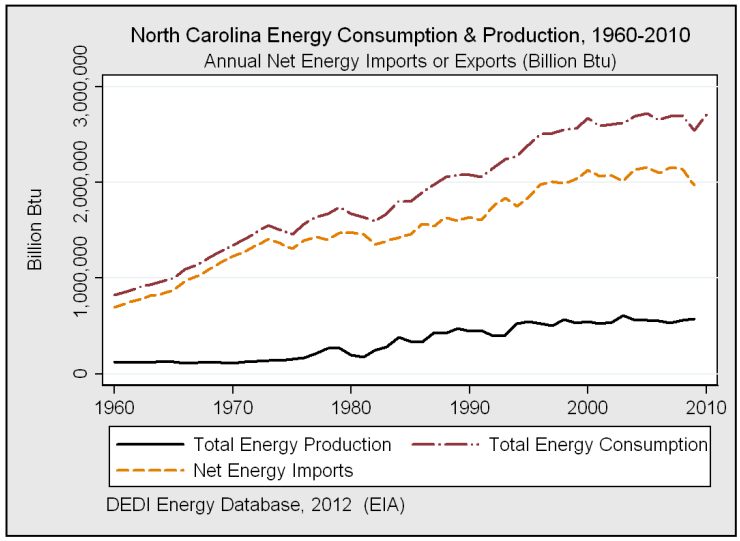


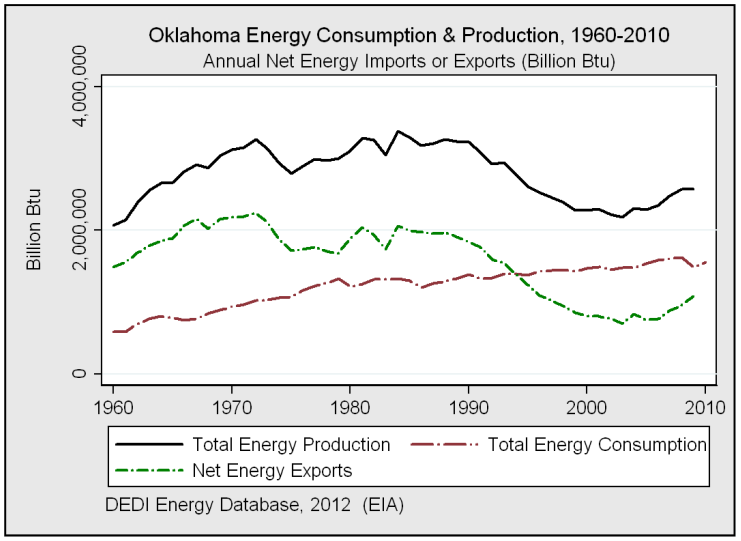
Net Energy Exports

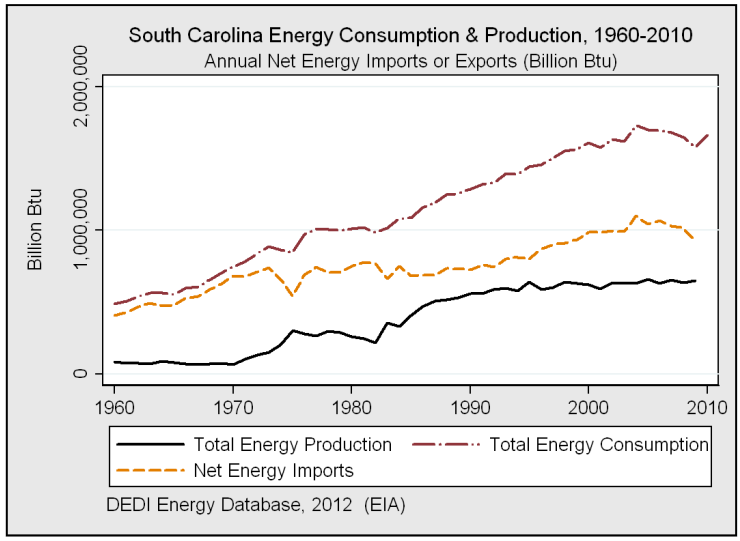




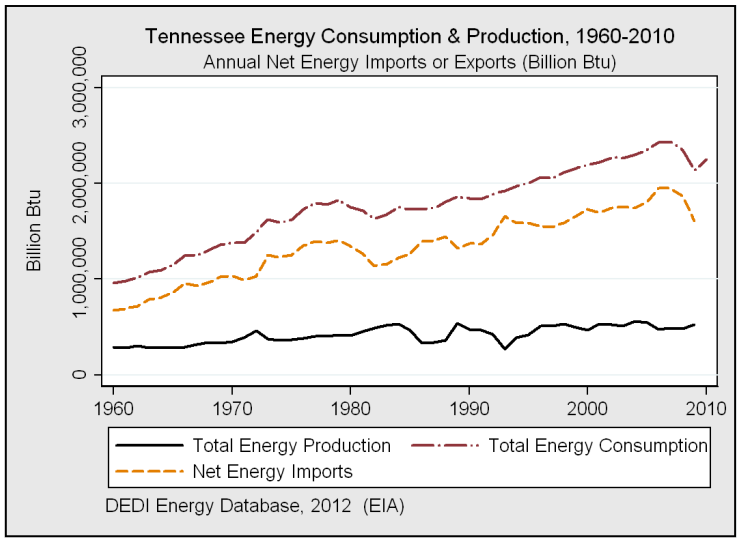


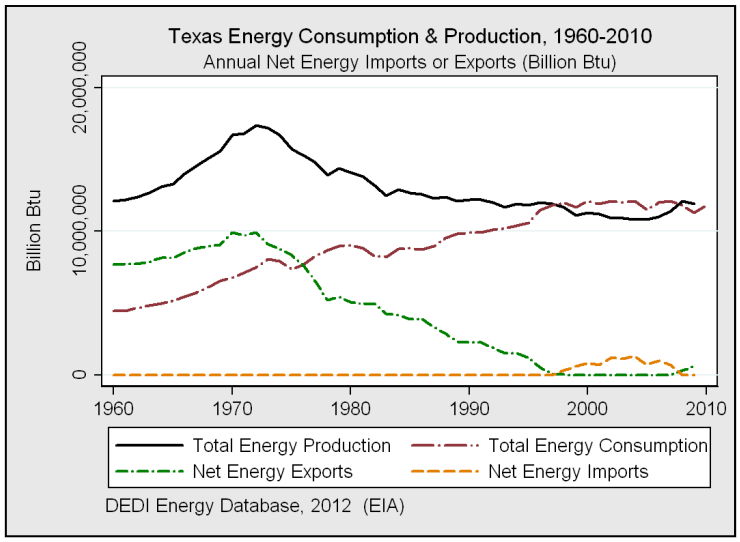


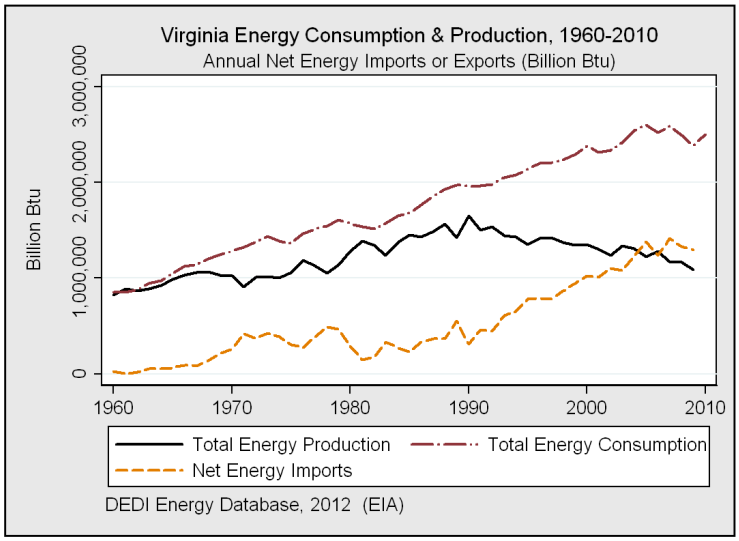


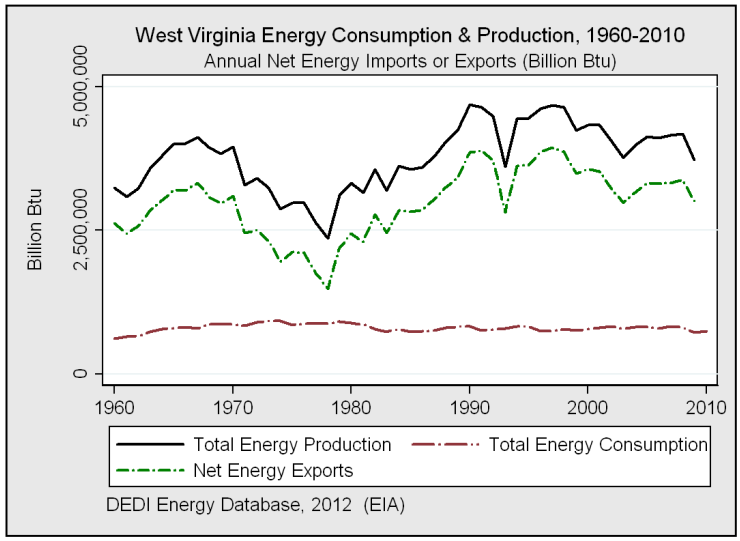


Net Energy Exports









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.(G)

Coal: a naturally occurring, combustible, sedimentary rock containing at least 50% 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 served exclusively by one retail electricity provider.(D)

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.(D)

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.(D)

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).(D)

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.(G)

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.(G)

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.(D)

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.(D)

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.

*** All definitions are cited from the Energy Information Administration (E.I.A) Glossary unless otherwise noted.