The Southeast has limited potential to develop renewable resources on a large scale.

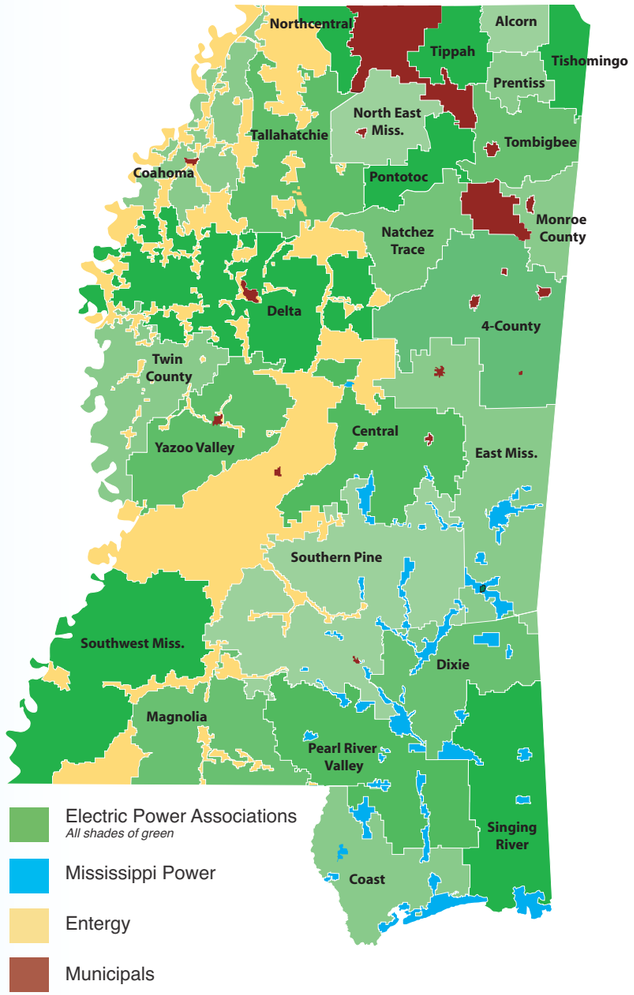
- The projected growth for electric power capacity is higher in the Southeast than in other parts of the country, requiring numerous generating sources to be built.
- Large-scale wind generation will not work in the Southeast because of inconsistent, irregular wind patterns.
- Solar power is inefficient for the region due to low solar radiation levels and continuous cloud cover.
- Biomass from wood or wood products is a possibility in the Southeast but limited to major timber-producing areas. Burning large amounts of wood, which emits carbon dioxide, would require new facilities or major adaptations of existing ones. Boilers designed to burn coal cannot readily burn other materials.
- The potential to develop methane gas from landfills exists but it would produce low generation output with high capital costs.
- Existing hydroelectric power resources are more than 50 years old, and building new hydro resources would likely face strong opposition; however, the federal government should invest in the nation's hydro resources to upgrade the facilities and increase output.
- Geothermal resources for electric power generation are located primarily in the West.

RESEARCH AND DEVELOPMENT

The electric cooperatives in Mississippi support research and development funding and with demonstration projects. But the nation's lack of a comprehensive energy policy has stifled funding for research and development for clean coal technologies, improvements in the transmission grid and new energy sources. The electric cooperatives and their member-owners in Mississippi encourage Congress to develop a comprehensive energy plan with a realistic timeline that designates funding for research and development. This must be done before a renewable energy mandate is imposed.

Energy costs for consumers must be considered.

April 2009



The future of electric service

Will Mississippians be able to afford it?
Will it be available when they need it?

As the advocate for more than 1.7 million Mississippians who receive their electric service from an electric power association, we ask for your support in:

- *protecting our quality of life through affordable and reliable electricity*
- *finding realistic, workable solutions for future energy needs*
- *ensuring a clean environment*

ALCORN COUNTY ELECTRIC POWER ASSOCIATION
1909 South Tate Street • Corinth, MS 38834 • www.ace-power.com

Renewables

Comparing reality with expectations

The primary focus of the development of renewable energy resources in the United States is wind, solar, hydroelectric, biomass and geothermal. Yet the availability of these resources is limited in the Southeast.
In addition:

- Renewable resources cannot replace the scale of conventional electric generation; 94 percent of the Southeast's power is generated by coal, nuclear or natural gas.
- Due to their intermittent availability, renewable resources require 100 percent backup from conventional electric generating resources (such as natural gas, coal and nuclear).
- Replacing conventional electric generating resources will do little to reduce dependence on foreign energy because less than one percent of electric energy generation comes from petroleum products.

The real issue for the Southeast, unlike other regions, will be the high cost to consumers. Transforming an electrical system that is already economical, reliable, and meets current environmental regulations will add cost for consumers.

POWER ace ASSOCIATION

ALCORN COUNTY ELECTRIC POWER ASSOCIATION

Renewables

Comparing reality with expectations

RENEWABLE ENERGY RESOURCES

Without question, the United States needs to expand the use of renewable energy. But it is unrealistic to believe that America can totally replace major parts of its current electric generating system without sacrificing reliability or increasing costs. Renewables will benefit some areas of the country while other areas, like the Southeast, will be unable to meet renewable mandates. This requires a regional approach.

Continued rising demand for electric energy – from both growth in population and advanced electronics – requires new generating facilities. Renewables are limited in the Southeast and can only provide a small portion of needed electric power generation today.

The federal government projects growth in electric energy consumption equivalent to 450 large power plants (an additional 226,000 megawatts) by 2030. It is simply impossible for the Southeast to meet its share of electric generation with renewables, due to limited wind, solar and geothermal availability. The cost to consumers will be significant.

WIND ENERGY

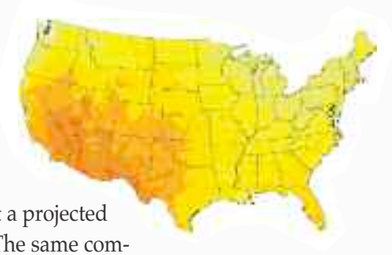
Several regions in the United States have persistent and strong winds much of the year, but the Southeast is not so fortunate. The Southeast doesn't experience sustained winds exceeding 12 miles per hour. Optimal wind speeds for generation are a sustained 12 to 30 miles per hour.

- The wind equivalent of a typical base load plant would require as much as 300 square miles of turbines. A Texas wind farm project with a capacity of 4,000 megawatts, announced in 2008, will cost $10 billion to build and will require 400,000 acres (625 square miles). Wind facilities are available to generate electric power only about 30 percent of the time and must be backed up with another fuel source, such as natural gas.
- By comparison, a nuclear plant would cost about half that amount, provide nearly the same output, require a small fraction of the land area and generate electric power nearly 90 percent of the time. Grand Gulf Nuclear Station in Port Gibson, Miss., occupies fewer than 4 square miles.

SOLAR ENERGY

Solar energy systems use the sun's radiation to produce heat and electricity. Although it may seem that sunlight is plentiful in the Southeast, the sun's radiation in this region is *not sufficient to generate electric energy on a large scale.*

- Large solar facilities may be most feasible in California and the Southwest. One 850-megawatt project announced by an independent power producer will use 34,000 solar collection panels (each 38 feet tall and 40 feet wide) installed on 12 square miles of mostly federally owned land in the Mojave Desert—at a projected cost of $1 billion. The same company has applications pending for 75 other projects, encompassing more than 900 square miles elsewhere in the state. By comparison, Washington, D.C., encompasses 68.3 square miles, and the area of Rhode Island is 1,000 square miles.
- Solar energy is best used for small-scale applications, such as water heating. The life expectancy on a household solar panel is approximately 20 years. There is no cost benefit because solar panels would cost about $45,000 for a 2,000-square-foot home, which equates to 36 cents per kilowatt-hour of electricity. The Southeastern average is 11 cents per kilowatt-hour.



BIOMASS

Biomass energy is produced by processing and burning organic material, which emits carbon dioxide. Wood and wood waste are the largest sources of biomass energy, followed by solid waste landfills, mainly in the form of methane gas produced by decomposition of the waste. Output of electric energy from biomass is, at best, small scale, making overall costs high.

- PowerSouth Energy Cooperative in Alabama conducted a study in 2007 on using methane gas from 10 landfills scattered throughout its service area. The projected output of electric energy was 25 megawatts, a minimal amount compared to an average size electric generating plant of 400-500 megawatts.
- Biomass energy from wood or wood waste products has potential in the Southeast, but it is confined to timber-producing areas. Additional cost considerations include transportation and development of more efficient harvesting practices of the wood products. Wood or wood waste facilities would generate small amounts of electric energy with a high cost and would produce emissions.

GEOTHERMAL

Geothermal energy is energy from the hot interior of the earth. Fissures in the earth's crust allow water heated by geothermal energy to rise naturally to the surface at hot springs and geysers. In the western United States, wells drilled into the earth allow heated steam or water to escape to the surface in a controlled manner to operate steam turbines and electricity generators. Underground water temperatures must exceed 100 degrees in order to produce electricity. Temperatures in the Southeast are about half that.

HYDROELECTRIC POWER

Hydroelectric power is electricity produced from flowing water. As a result, hydro output varies widely according to rainfall. Most hydroelectric power is produced at large facilities built by the federal government on rivers in the western United States. Numerous smaller facilities operate in the Southeast, and these have been producing electric power for more than 50 years. Few opportunities exist for building new large-scale hydroelectric facilities, and existing facilities are not being considered as renewable resources under new mandates being discussed. The federal government should invest in hydro facilities because they are low-cost energy sources with no emissions.

THE COST OF RENEWABLES

Any move away from conventional generating sources will significantly affect electricity costs in the Southeast, where coal, natural gas and nuclear are the predominant fuels. The result will be a significant transfer of wealth from the region, which will adversely affect jobs, growth, industry and overall quality of life. A diversity of generating sources provides a flexible mix of economical choices, and ensures reliability and availability. Renewable energy resources can supplement the mix in the region but cannot effectively replace the existing system that has been built over the past 75 years.