The Southeast Region

Alabama, Arkansas, Florida, Georgia, Mississippi, North Carolina, South Carolina, Tennessee, Virginia

Diverse and Nonindigenous Energy Sources

The Southeast depends on a diversity of resources to generate electricity: coal, nuclear power, natural gas, hydropower, and biomass. Yet, with the exception of its renewable resources, the Southeast lacks indigenous resources. Although the Southeast holds less than 2 percent of the nation's coal reserves, the region uses coal to generate nearly 60 percent of its electricity. Consequently, the region imports 80 percent of the coal it uses. The Southeast also has a very small natural gas resource, accounting for only 3.5 percent of the nation's natural gas production, yet is looking to natural gas to meet added capacity needs.

Nuclear power is well established in the Southeast, with 32 reactors on-line for a total installed capacity of slightly more than 32,000 megawatts — the most of any region. Currently, the region uses nuclear power to generate about one-fourth of its electricity. Oil and hydropower provide the region with another 37,000 megawatts of capacity.

Environmental and Economic Challenges

With its heavy reliance on coal and nuclear power and its plans to add a large amount of natural gas capacity, the Southeast faces several problems. First, it leads the nation in emissions of carbon dioxide and is second in total production of sulfur and nitrogen oxides. This environmental concern is also an economic concern. The Tennessee Valley Authority (TVA) has estimated that it could cost as much as $1.3 billion to upgrade its aging coal-fired plants to meet the emissions reduction requirements of Phase I and Phase II of the Clean Air Act.

The region has additional economic challenges. It spends $5.6 billion annually to import the coal and oil it uses to generate electricity, money that could be better invested in the region's own economy. Another economic issue derives from the Southeast's dependence on nuclear power. Eventually, the reactors must be decommissioned and the capacity replaced. This is not only a potentially expensive undertaking, but it raises the question of how to replace this capacity — no new nuclear plants are being built or planned.

Renewable Resources Available

The Southeast has the nation's largest biomass resource base, mostly due to abundant supplies of wood. This region already has about 3,000 megawatts of non-hydropower renewable capacity, mostly from biomass power plants owned by industrial firms. These are primarily pulp and paper mills that burn wood waste residues to meet internal energy requirements. Because of these non-utility generators, the Southeast has the highest concentration of biomass capacity in the nation—about one third of the nation's total—more than 80 percent of which uses wood as the fuel source. Based on current technologies and practices, the Southeast utilities, non-utility generators, and the pulp and paper mills could deliver nearly 19,000 megawatts of power from wood; this is about as much power as is currently derived from natural gas, and more than enough power to take care of the region's planned capacity additions.

In the future, the region may be able to derive much more from biomass by using the fast-growing energy crops that are currently being researched. Using such energy crops would also alleviate environmental pressures because, when managed correctly, tree plantations used for electricity would produce no carbon dioxide, no sulfur dioxides, and minimal nitrogen oxides.

Now, several utilities, taking their cue from the forest products industry, are treating biomass as a valuable fuel. They are investigating cofiring — burning the wood along with coal to produce electricity. Introducing biomass as a supplementary energy source in an existing coal-fired power generation system has environmental advantages. Because biomass, in general, has significantly less sulfur than coal, there is a sulfur dioxide benefit, and early test results suggest there is also a reduction in nitrogen oxide emissions.

In addition to biomass, the region has ample supplies of other renewables. For example, Arkansas has enough wind to provide up to 80 percent of its electricity. There is also ample solar energy in this region—averaging about 5 kilowatt-hours per square meter per day.

The TVA has requested competitive proposals for green power options to be available to customers beginning in 2002. The amount of green power purchased will depend on the level of customer interest expressed. Up to 300 megawatts of green power could be added. TVA defines green power as solar, wind, biomass, and geothermal. While existing resources will be considered, new renewable resources will be given preference. Several electric utilities in Florida are exploring green pricing programs as a way to supply solar-generated electricity to customers.