

## Renewable energy

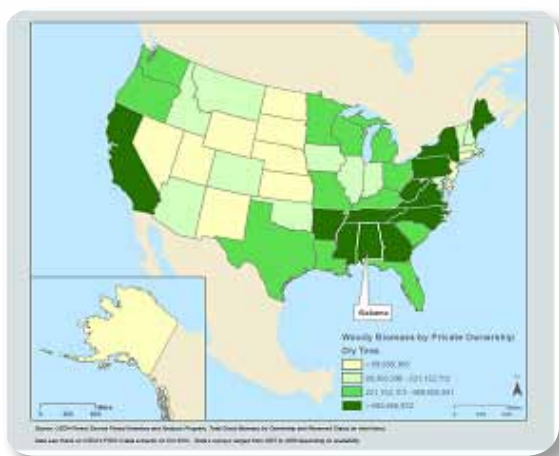
Alabama has abundant forests and greenfields to sustain immediate cultivation of biomass. With 35 percent more timberland today than in 1970, the state's timberland is growing faster than can be harvested. With more forest than Connecticut, Delaware, Massachusetts, New Hampshire, and Rhode Island combined, Alabama is a biomass factory waiting to be tapped.

### Biomass Access

Alabama is at the center of the richest wood biomass region of the U.S.

- With more than 880 million dry tons of woody biomass in private ownership, Alabama stands ready to be a major player in biomass energy development.
- Alabama has 22.7 million forested acres (9,186,364 hectares), which is 71 percent of the state's total landmass of 32 million acres (12,949,940 hectares).
- Alabama ranks third in standing timber among the 48 contiguous states with 28.3 billion cubic feet.
- Timberland in Alabama increased by 650,000 acres (263,045 hectares) since 1990 and by 1.1 million acres since 1981.
- More than 80 percent of Alabama woodlands is privately and non-industrially owned.
- Some 25.7 percent of Alabama's timberland is plantations; 72 percent is naturally regenerated. Diversity is the word: hardwoods (45 percent); pine (41 percent); mixed pine and hardwoods (14 percent.)

Alabama ranked fourth nationally in 2007 for biomass electricity generation, with "potential for more than 500,000 metric tons of biomass a year in certain areas of the state (dark green in map at right) and between 150 and 500 metric tons in several other areas.



- Alabama's soil is well-suited for growing switchgrass, making the state a potential site for the installation of bioenergy plants.
- Alabama is a top producer of energy from wood resources and contains one of the world's largest solid biofuel plants designed to produce 520,000 metric tons of wood pellets each year.
- Sixty percent of Alabama's biomass is found in forest resources, which is 17 percent more than the average in the South, and 31 percent more than the average in the rest of the United States.
- From 2008 to 2009, Alabama renewable energy and energy efficiency companies secured more than \$25.4 million in venture capital and private equity investments (Bloomberg New Energy Finance).

### Alabama Farmland and Other Biomass Sources

There are 48,500 farms in Alabama encompassing 9 million acres (3,640,170 hectares), with the average farm size being 186 acres. Crops grown on these

farms are easily transported via Alabama's excellent highway network.

## Corn

Alabama corn producers harvested a total of 250,000 acres (101,171 hectares) in 2010. Yield per acre was 116 bushels. Production totaled 29 million bushels.

In 2010, the value created in production totaled more than \$139 million.

Alabama ranked 28th nationally in corn grain production. Top states were Iowa, Illinois, Nebraska, Minnesota and Indiana.

## Soybeans

Alabama soybean producers harvested 345,000 acres (139,616 hectares) in 2010. Yield per acre was 26 bushels. Production totaled 8.97 million bushels.

The value of 2010 production was \$104.6 million. The average price per bushel was \$11.20.

## Renewable Energy Companies

A keen interest in alternative energy has emerged in Alabama. Below is a sampling of new facilities announced since 2006.

- Alabama BioEnergy                      Biodiesel fuel from soy
- Allied Renewable                        Energy biodiesel fuel
- Athens Biodiesel, LLC                  Biodiesel production
- Biodiesel Logic Inc.                    Biodiesel processing equipment
- Cello Energy                              Biofuel production
- Gulf Coast Energy                      Biodiesel and ethanol production
- Lee Energy Solutions                  Wood pellet plant
- Molded Fiber Glass                    Windmill enclosures
- Natures Earth Pellet                  Wood pellet plant
- New Glass Concepts                  Wood pellet plant
- Teledyne Brown Engineering      Service module for nuclear plants

## Biomass Energy Program

The Biomass Energy Program, an initiative of the Alabama Department of Economic and Community Affairs (ADECA) Energy Division, has promoted wood waste as an alternative biomass energy source for more than two decades.

Participants have reduced production costs by using waste from wood chips, sawdust and bark in new and/or converted wood-fired combustion systems. The steam or hot air produced from combustion is often used in dry kilns or electric power generation. Millions of dollars are saved annually, not only in avoided energy costs, but waste disposal costs.

This program assists both wood industry and non-wood industry businesses in installing biomass energy systems, providing up to \$75,000 in interest-subsidy payments on loans to install approved projects. Eligible applicants include industrial, commercial and institutional facilities; agricultural property owners; landfill gas projects; and city, county and state governments.

## Tax Credits and Incentives for Renewable Fuel Production

Companies investing in the development of a biofuel production facility may be eligible for a tax credit of up to 5 percent of capital costs. Companies may claim this credit against the state income tax or the financial institution excise tax liability the project generates each year for up to 20 years. For the purposes of the credit, "biofuel" is defined as a motor vehicle fuel produced from grain, starch, oilseeds, vegetable, algae, animal or fish materials including fats, greases and oils, sugarcane, sugar beets, sugar components, tobacco, potatoes and lignocellulosic or other biomass.



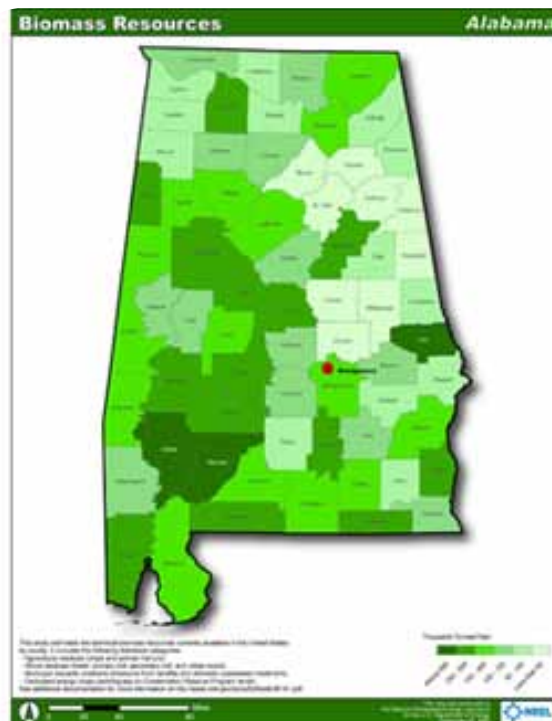
To be eligible, the capital costs of the production facility must be at least \$2 million, if the facility is not located in a “favored geographic area” and \$500,000 if the facility is located in a favored geographic area. A “favored geographic area” is defined as an area or county designated as an enterprise zone or an area the Alabama Department of Industrial Relations considers to be less developed. In addition to the capital cost requirement, there is also a wage requirement and an employment requirement. Please visit the Alabama Department of Revenue for more details on eligibility.

### Biomass Research in Alabama

Alabama is at the forefront of biomass renewable energy research. With the help of the partners below, the state is working together to find the best way to integrate and perfect the use of biofuels into power generation. Each of Alabama’s seven research institutions has a college of engineering. Applied research is conducted on solar power, fuel cells, aerodynamics, nano-science, microelectronics, advanced materials, emissions, biomass and more.

Bioenergy research assets in Alabama include:

- ADECA-Energy Division
- Troy University, Montgomery
- Alabama A&M University
- Tuskegee University
- Alabama Clean Fuels Coalitions
- University of Alabama at Birmingham (UAB)
- Alabama DOE EPSCoR Program
- University of Alabama in Huntsville (UAH)
- Alabama State University
- University of Alabama
- Auburn University
- University of Montevallo
- Center for Alternative Fuels
- University of North Alabama
- Southern Research Institute
- University of South Alabama
- Troy University
- University of West Alabama
- Troy University, Dothan



### Renewable Energy at Alabama Power

Renewable and alternate energy has the potential to supply electricity with reduced or zero emissions of carbon dioxide. Although the options for renewable energy are limited in the Southeast, Alabama Power, Southern Company and our partners continue to research and evaluate alternate and renewable sources that show promise for producing cost-effective and reliable energy in Alabama.

In 2010, Alabama Power installed four solar panel arrays on the roof of its corporate headquarters to capture energy from Birmingham’s summer sun. The arrays combine to generate only 4 kilowatts of electricity, but for APC the installation had less to do with energy production than ongoing research into the feasibility of emerging renewable energy technology.

Southern Company developed an advanced one-of-a-kind, clean coal power generation, in partnership with the U.S. Department of Energy at the National Carbon Capture Center in Wilsonville.

Southern Company and Alabama Power are participating with the federal government in a project to explore the feasibility of using “woody biomass,” primarily small diameter wood available from forest-thinning activities, as an energy source by blending it with coal. The wood is being harvested from the Talladega National Forest, in cooperation with the U.S. Forest Service. Initial wood chip production tests have been encouraging, and co-firing tests are planned.

In a partnership with Alabama Power, the Westervelt Company will provide 7.5 megawatts of renewable energy from wood byproducts that Alabama Power will use to further diversify its mix of fuel sources.

Alabama Power is testing several solar technologies, as well as wind power technologies, atop our Birmingham headquarters.