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Alabama *Biomass and Bioenergy Overview*

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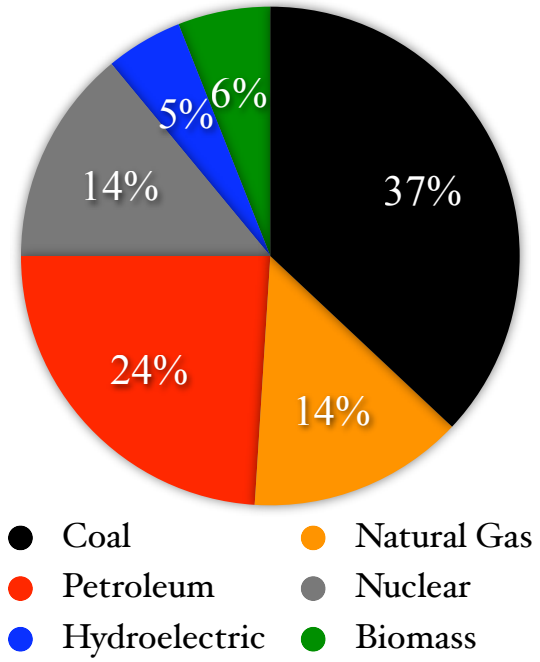
GENERAL OVERVIEW

Alabamans consumed approximately 2013.5 trillion Btu (590.1 billion kWh) of energy in 2003 (16th nationally). Coal (37%), petroleum (24%), natural gas (14%), and nuclear (14%) power were the major sources of that energy (Figure 1).[1] The state used 156.3 trillion Btu (45.8 billion kWh) of energy derived biomass in the residential, commercial, and industrial sectors.[1] Approximately 6% of the state's energy needs came from biomass resources, ranking it 4th compared to other states nationwide.[1] Total energy consumption in Alabama increased by 295 trillion Btu (86.5 million kWh) between 1980 and 2001, an average annual increase of 0.8 percent. Electricity consumption rose by 98.5 trillion Btu (28,867 million kWh) during the same period, an average annual increase of 2.2 percent.[2] Per capita petroleum use for transportation was estimated to be 18 barrels for 2001, an increase of 1.9 barrels since 1980.[2] Alabama has the potential to generate about 87.7 trillion Btu (25.7 billion kWh) of electricity from biomass fuels, or 100 percent of the current residential electricity use in the state.[3]

Alabama Energy Consumption by Source, 2003



Source: Energy Information Administration[1]

FOREST-BASED RESOURCES

Alabama has about 23 million acres of forested land.[4] An estimated 900 million oven dry tons of biomass is in the state's forests.[6] At the current rate of harvesting, Alabama's forests are expanding. There is 125% more pine inventory and 150% more hardwood inventory in the state's forests than 50 years ago.[5] Woody biomass availability is generally good in Alabama. Each year, approximately 1 billion cubic feet of timber is harvested, creating over 2.7 million dry tons of logging-related wood waste.[6] It is also estimated that there are approximately 2.7 million oven-dry tons of cull tree biomass that could be made readily available for energy use in Alabama. Additionally, primary wood manufacturing generates another 6.8 million dry tons of wood manufacturing waste.[6] It is important to note that 99% of this manufacturing waste is already in use through established markets in items such as fuel, fiber for pulp and panels, and mulch. An estimated 100,000 dry tons of urban wood wastes are generated in the state each year.[6] There are currently 5-6 logging operations in the state that are not only harvesting timber, but are also harvesting woody biomass. These operations primarily sell wood waste through fuel wood markets.[5]

AGRICULTURAL RESOURCES

Determining the amount of agricultural biomass that could be available from crops, but more importantly crop residues, is difficult to quantify. Alabama has over 3.7 million acres of cropland.[8] In Alabama, it was estimated that 391,000 dry tons of agricultural residue biomass could be produced each year.[9] If dedicated energy crops are also considered, an estimated 6,588,812 dry tons could be produced each year.[10] Another study estimated that on Conservation Reserve Program (CRP) land alone, 2.7 million dry tons of switchgrass and 1.9 million dry tons of willow and hybrid poplar could be produced each year.[9] Management of farm animal manure could provide an additional 94,000 tons of methane annually.[9] Poultry production in the state also produces a valuable

amount of biomass. These operations produce approximately 1.5 million tons of litter per year.[10]

CURRENT ACTIVITIES

The U.S. Department of Energy's Office of the Biomass Program is contributing almost $2 million to a project involving biomass gasification research at a facility in Birmingham, Alabama. The project is aimed at converting a wide variety of biomass sources into energy.[11] The Department is also investing in an Alabama-based project focused on assessing the pretreatment and hydrolysis conditions to maximize biogas production from poultry litter.[12]

At the state level, there is some activity by government agencies to encourage the use of biomass and bioenergy by the state's residents and businesses. The state Department of Economic and Community Affairs Division of Energy, Weatherization, and Technology offers interest subsidies of up to $75,000 for loans (with interest rates no greater than two percent above the prime rate) for installing biomass energy and waste fuel systems in commercial, industrial, agricultural, and institutional facilities.[13] A tax deduction is also available for state residents who install a wood burning heating system.[13]

The Southern Company is piloting a biomass gasification project at their Wilsonville Development facility, utilizing wood to create energy. The company is also using biomass at the Plant Gadsden by co-firing switchgrass with coal in their boilers. Based on the good results thus far, the company has committed to a three year demonstration of this process at the Gadsden plant.[14] The City of Eufaula is using bioenergy to power the city's school bus fleet. Using recycled restaurant grease, the system hopes to run all their buses on biodiesel. Alabama also currently has three landfills that are producing methane for energy production and another 21 identified as potential sites.[15] Overall, the state has 46 facilities involved in the production of biopower.[16]

Alabama's Biomass Resources
Corn Produced (Silage and Grain)[17]
412,640 tons
Soybeans Produced[17]
90,000 tons
Wheat Produced[17]
78,300 tons
Conservation Reserve Program[18]
491,587 acres enrolled
Municipal Solid Waste[19]
6,996,344 tons generated
Logging Residues[6]
2.7 million dry tons
Poultry[17]
1,121,609,000 head
Livestock[17]
1,533,000 head

LINKS TO OTHER ALABAMA RESOURCES

Alabama Department of Agriculture and Industries
http://www.agi.state.al.us/

Alabama Department of Economic and Community Affairs Biomass Energy Program
http://216.226.178.189/txtlstvw.aspx?LstID=7d865154-617a-495b-afb8-5cf4271b56ed

Alabama Forestry Commission
http://www.forestry.state.al.us/

CITATIONS

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