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Louisiana *Biomass and Bioenergy Overview*

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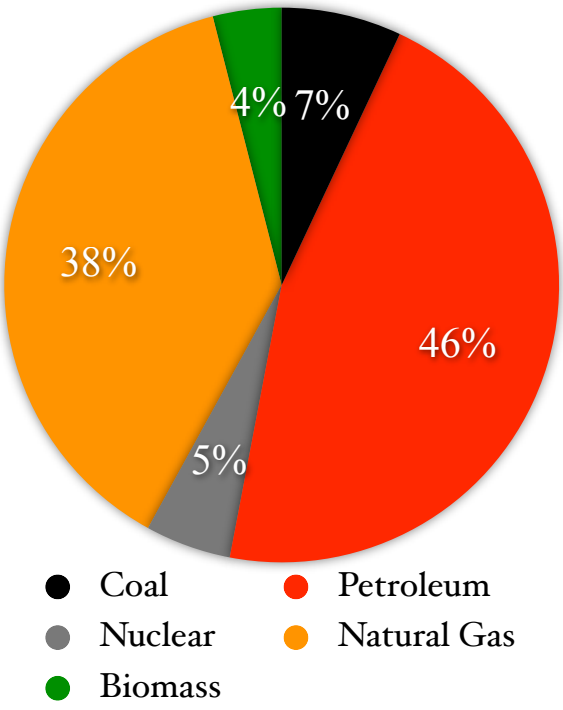
GENERAL OVERVIEW

In 2003, Louisiana consumed an estimated 3,693 trillion Btu (1.1 trillion kWh) of energy, ranking 8th nationally.[1] Petroleum accounted for about 46 percent of total consumption, with natural gas providing another 38 percent of the state's energy. Other major energy sources were coal (7 percent) and nuclear energy (5 percent). Biomass supplied over 140.6 trillion Btu (41.2 billion kWh), or about 4 percent of Louisiana's total consumption, ranking it 5th compared to other states nationwide.[1]

Louisiana's total energy consumption decrease by over 148 trillion Btu (43.4 billion kWh) between 1980 and 2001, an average annual decrease of 0.2 percent. Electricity consumption increased by over 74.4 trillion Btu (21.8 billion kWh), an annual increase of 1.7% over the same period. Annual per capita petroleum use for transportation was estimated to be 28 barrels for 2001, an increase of 4.5 barrels since 1980.[2]

It has been estimated that 22 percent of the state's homes could be powered by biomass energy resources available in the state. The energy available would be 111.8 trillion Btu (6.6 billion kWh) and would be enough to power 367,799 homes at 18,000 kWh per home.[3]

Louisiana Energy Consumption by Source, 2003



Source: Energy Information Administration[1]

FOREST-BASED RESOURCES

Louisiana has over 13.8 million acres of forestland.[4] It has been estimated that logging residues generated on these forestlands could provide 3.01 million dry tons of biomass each year.[3] This would provide enough energy (71.7 trillion Btu or 4.2 million kWh) to power over 234,000 homes.[3] Within the state, about 98 percent of the milling residues such as sawdust, bark, and other debris are already being utilized for energy or other products. The remaining 2 percent could provide 113,432 wet tons of biomass annually for bioenergy.[3] Urban wood waste in the state can provide 314,000 dry tons of biomass annually.[6]

AGRICULTURAL RESOURCES

Louisiana has 5.1 million acres of cropland.[7] In the state, rice straw provides the largest agricultural source of biomass for energy and other products. Approximately 2.2 million wet tons of rice straw is available annually.[3] Rice hulls, not including the 54 percent that are already used for energy, could provide an additional 85,000 dry tons.[3] Farming could also provide 1.5 million wet tons of soybean straw, 320,064 wet tons of wheat straw, and 267,670 wet tons of oat straw annually.[3] Another agricultural resource, corn stover, would provide 350,043 wet tons of biomass each year.[3] Other agricultural crops, such as cotton, sorghum, and peanuts, could provide an additional 171,820 wet tons of biomass residues.[3] Sugarcane bagasse is another significant commodity in Louisiana. Approximately 96 percent of the bagasse is currently used for energy and other products. However, the remaining unused bagasse could provide 122,702 dry tons of biomass.[3]

Livestock manure also provides another significant resource. Cattle manure/biogas could provide 9.9 billion cubic feet of gas annually.[3] This is enough energy to supply almost 22,000 homes. Approximately 944,150 wet tons of poultry litter would also be available each year for energy production.[3]

OTHER RESOURCES

Municipal and industrial waste is also a large source of biomass in the state. About 4.6 million tons of municipal waste is generated each year. Another 8 million tons of industrial waste is also produced. Several cities in the state already burn their waste to generate electricity.

CURRENT ACTIVITIES

BioEnergy International, LLC started building an ethanol plant in spring 2007 that will be able to produce 108 million gallons per year in East Carroll Parish, Louisiana.[8] This is a dry mill operation that will use corn and milo as feedstocks.

Celunol Corporation began operation of its expanded pilot cellulosic ethanol facility in Jennings, Louisiana in November 2006. This facility is will initially produce 50,000 gallons of ethanol per year, expanding to 1.4 million gallons upon completion of a larger-scale demonstration facility targeted for late 2007.[9] The company is considering developing a commercial-scale cellulosic ethanol facility at the site at some point in the future.

Agrilectric Power, in Lake Charles, utilizes the rice hulls that are produced from their Farmers Rice Mill to produce electricity. The plant consumes 300 tons of rice hulls per day, generating 13 megawatts of electricity each year.[3]

Temple-Inland Corporation has a paper mill in Bogalusa that uses sawdust and logging slash to fire a boiler at its plant. After heat is used in the paper making process, the excess heat is used to generate electricity, enough to supply 75% of its annual energy needs or about 60 megawatts.[3]

Louisiana currently has three landfills that are utilizing landfill gas to produce bioenergy. Another 10 landfills have been identified as candidates to join this program.[10]

Louisiana's Biomass Resources
Corn Produced (Silage and Grain)[12]
1,206,800 tons
Soybeans Produced[12]
882,000 tons
Wheat Produced[12]
166,950 tons
Sugarcane Produced (Seed and Sugar)[15]
10,465,000 tons
Conservation Reserve Program[13]
288,540 acres enrolled
Municipal Solid Waste[14]
6,308,427 tons generated
Logging Residues[5]
3.01 million dry tons
Poultry[12]
199,807,000 head
Livestock[12]
886,600 head

The state has also implemented a renewable fuels standard. When production of ethanol reaches 50 million gallons in the state and the wholesale price of ethanol is equal to or less than that of gasoline for over 60 consecutive days, retailers have six months to make ethanol at least 2% of their fuel mixture sold. Similarly, when biodiesel production within the state reaches 10 million gallons, 2% of the diesel sold in the state must be biodiesel.[11]

Since July 1, 2006, the state mandated that any ethanol plant using corn as a feedstock must use at least 20% of the corn crop harvested in Louisiana as a feedstock. Each year thereafter, the percentage must match the national percentage of total corn harvest used for ethanol production. Biodiesel producers must use at least 2.5% of the state's soybean crop as feedstock. In subsequent years, the percentage must also match the national rate.[11]

LINKS TO OTHER LOUISIANA RESOURCES

Louisiana Department of Agriculture and Forestry
http://www.ldaf.state.la.us/

Louisiana State Energy Office
http://dnr.louisiana.gov/sec/execdiv/techasmt/

CITATIONS

1) U.S. Department of Energy, Energy Information Administration, "Table S3. Energy Consumption Estimates by Source, 2003." http://www.eia.doe.gov/emeu/states/sep_sum/html/sum_btu_tot.html

2) Department of Energy, Energy Efficiency and Renewable Energy Program. Louisiana Energy Statistics. 2006. http://www.eere.energy.gov/states/state_specific_statistics.cfm/state=LA

3) Louisiana State University Ag Center. Biomass Energy Resources in Louisiana. Research Information Sheet 102. November 2006. http://www.louisiana4h.org/NR/rdonlyres/79EA5231-C815-433A-8031-BC84CAC423B8/32124/RIS102BiomassEnergy.pdf

4) Louisiana Department of Agriculture and Forestry, Division of Forestry. http://www.ldaf.state.la.us/divisions/forestry/default.asp

5) U.S. Department of Agriculture, Forest Service Forest Inventory and Analysis Unit Timber Product Output Data 2003. http://srsfia1.fia.srs.fs.fed.us/

6) Milbrandt, A. A Geographic Perspective on the Current Biomass Resource Availability in the United States. 2005. U.S. Department of Energy, National Renewable Energy Laboratory. http://www.nrel.gov/docs/fy06osti/39181.pdf

7) U.S. Department of Agriculture, National Agricultural Statistics Service. 2002 Census of Agriculture. Louisiana State Data. http://www.nass.usda.gov/

8) Bioenergy International LLC. http://www.bioenergyllc.com/

9) Celunol Corporation. http://www.celunol.com/

10) U.S. Environmental Protection Agency Landfill Methane Outreach Program Active Program Map (April 3, 2007). http://www.epa.gov/lmop/docs/map.pdf

11) U.S. Department of Energy, Energy Efficiency and Renewable Energy, Alternative Fuels Data Center. Louisiana Incentives and Laws http://www.eere.energy.gov/afdc/progs/state_summary.cgi?afdc/LA

12) U.S. Department of Agriculture, National Agricultural Statistics Service. 2006 Statistics by Commodity. Accessed May, 2007. http://www.nass.usda.gov/

13) U.S. Department of Agriculture, Farm Service Agency. Conservation Reserve Program Summary and Enrollment Statistics, FY 06. http://www.fsa.usda.gov/Internet/FSA_File/06rpt.pdf

14) Simmons, P., N. Goldstein, S. Kaufman, N. Themelis, and J. Thompson Jr. 2006. The State of Garbage in America. BioCycle. 47(3) April 2006. PP. 26-43. http://www.jgpress.com/biocycle.htm

15) U.S. Department of Agriculture, National Agricultural Statistics Service. Louisiana State Agriculture Overview 2005. Accessed May, 2007. http://www.nass.usda.gov/Statistics_by_State/Louisiana/index.asp