

Oklahoma *Biomass and Bioenergy Overview*

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GENERAL OVERVIEW

In 2003, Oklahoma consumed an estimated 1,490.9 trillion Btu (436.9 billion kWh) of energy, ranking 25th nationally.¹ Petroleum accounted for about 35 percent of total consumption, with natural gas and coal providing another 26 and 26 percent of the state's energy, respectively. Biomass supplied over 23.3 trillion Btu (23.6 billion kWh), or about 2 percent of Oklahoma's total consumption, ranking it 30th compared to other states nationwide.¹

Oklahoma's total energy consumption increased by over 318 trillion Btu (93.1 billion kWh) between 1980 and 2001, an average annual increase of 1.1 percent. Electricity consumption increased by over 63.3 trillion Btu (18.5 trillion kWh), an annual increase of 2.3% over the same period. Annual per capita petroleum use for transportation was estimated to be 23 barrels for 2001, an increase of 5.6 barrels since 1980.²

FOREST-BASED RESOURCES

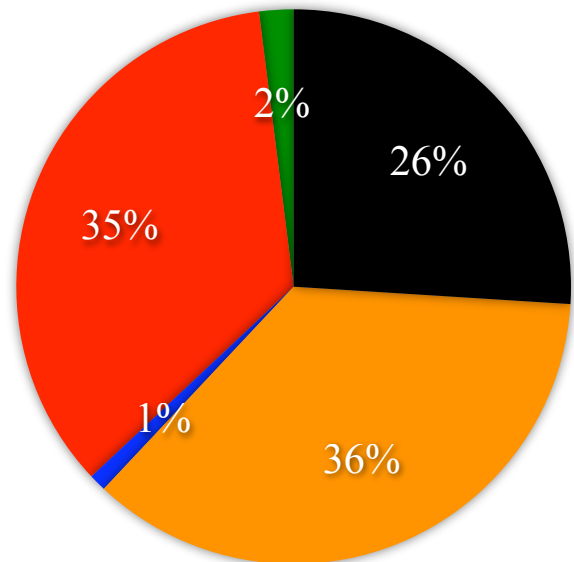
Oklahoma has approximately 7.7 million acres of forestland.³ In 2003, It was estimated that the state produced 400,000 dry tons of harvesting residues that could potentially be available for energy production.⁴ Another study indicated that primary mill residues provide 633,000 dry tons of wood residues annually.⁵ However, all of the residue is currently in use for energy or other products. Secondary mill residues add another 23,000 dry tons annually.⁵

Urban wood waste in Oklahoma is projected to amount to 377,000 dry tons per year.⁵

AGRICULTURAL RESOURCES

Oklahoma has over 14.8 million acres of cropland.⁶ The state could produce 1.6 million dry tons of agricultural residues annually for use in energy.⁵ At a market price of \$40/dry ton, dedicated energy crops could produce 3.6 million additional dry tons of biomass.⁷ One study estimated that on Conservation Reserve Program (CRP) land alone, 407,000 dry tons of switchgrass and 28,000 million dry tons of willow and hybrid poplar could be produced each year.⁵ Management of farm animal manure could provide an

Oklahoma Energy Consumption by Source, 2003



- Coal
- Natural Gas
- Hydroelectric
- Petroleum
- Biomass

Source: Energy Information Administration¹

additional 47,000 tons of methane annually.⁵

CURRENT ACTIVITIES

The primary focus of attention for Oklahoma has been the Clean Cities Program. Two coalitions, the Central Oklahoma Clean Cities Program and the Tulsa Area Clean Cities Program, are present in the state. The Central Oklahoma Clean Cities program has collaborated with Williams Energy Services, Oklahoma State University, and the University of Oklahoma to explore using buffalo grass, prairie grasses, and grain residues for the production of ethanol.⁸

Oklahoma's State Energy Committee has recently approved a plan by Gov. Brad Henry to establish the Oklahoma Bioenergy Center. Biofuels research at Oklahoma State University, the University of Oklahoma, and the Samuel Roberts Noble Foundation

would be coordinated through the center. The center would also help educate farmers and ranchers in making the transition to energy crops.⁹

Approval has been granted for industrial zoning for the proposed site of a new ethanol plant in Wagoner, OK. The plant is being developed by Ethanol Energy LLC. Construction of the plant should begin in spring 2007. The plant initially would produce about 50 million gallons of ethanol annually, with the ability to expand to 100 million gallons. The project would provide 31 full-time jobs, about 90 temporary construction jobs, and a boost to growers and the rural economy.¹⁰

Oklahoma has been offering net metering since 1988. Municipal utilities and investor-owned utilities under the jurisdiction of the Oklahoma Corporate Commission are required to file net-metering tariffs for customer-owned renewable energy and combined heat and power facilities up to 100 kW in capacity.¹¹ Oklahoma also has three landfills producing methane and another 12 identified as potential producers.¹²

LINKS TO OTHER OKLAHOMA RESOURCES

Oklahoma Department of Commerce, Energy Office http://www.okcommerce.gov/index.php?option=com_content&task=category§ionid=4&id=164&Itemid=712

Oklahoma Department of Agriculture, Food, and Forestry <http://www.oda.state.ok.us/>

Oklahoma Division of Forestry Services <http://www.oda.state.ok.us/forestry-home.htm>

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. Oklahoma Energy Statistics. 2006. http://www.eere.energy.gov/states/state_specific_statistics.cfm?state=OK
- 3) Oklahoma Department of Agriculture, Food and Forestry. Oklahoma Forests. <http://www.oda.state.ok.us/forestry-okforestshome.htm>
- 4) U.S. Department of Agriculture, Forest Service Forest Inventory and Analysis Unit Timber Product Output Data 2003. <http://srsfia1.fia.srs.fs.fed.us/>
- 5) 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>
- 6) U.S. Department of Agriculture, National Agricultural Statistics Service. 2002 Census of Agriculture. Oklahoma State Data. <http://www.nass.usda.gov/>

Oklahoma's Biomass Resources	
Corn Produced (Silage and Grain)¹³	1,241,800 tons
Soybeans Produced¹³	109,650 tons
Wheat Produced¹³	2,448,000 tons
Conservation Reserve Program¹⁴	1,056,032 acres enrolled
Municipal Solid Waste¹⁵	5,297,137 tons generated
Logging Residues⁴	655,000 dry tons
Poultry¹³	263,000,000 head
Livestock¹³	7,683,200 head

7) Biomass Feedstock Availability in the United States: 1999. State Level Analysis. Marie E. Walsh, Robert L. Perlack, Anthony Turhollow, Daniel de la Torre Ugarte, Denny A. Becker, Robin L. Graham, Stephen E. Slinisky, and Daryll E. Ray. <http://bioenergy.ornl.gov/resourcedata/index.html>

8) U. S. Department of Energy Office of Energy Efficiency and Renewable Energy, National Renewable Energy Laboratory, NREL/FS-540-32182. May 2002.

9) Oklahoma Department of Commerce, State Energy Office, State Energy Committee Approves Governor's Plans to Fund a Bioenergy Center <http://www.okcommerce.gov/index.php?option=content&task=view&id=1616&Itemid=712>

10) Oklahoma Department of Commerce, State Energy Office, Wagoner City Council OKs Zoning for Ethanol Plant http://www.okcommerce.gov/index.php?option=com_content&task=category§ionid=4&id=164&Itemid=712

11) Oklahoma Incentives for Renewables and Efficiency, Rules, Regulations, and Policies, Oklahoma – Net Metering, <http://www.dsireusa.org/library/includes/map.cfm?State=OK&CurrentPageId=1&RE=1&EE=1>

12) Environmental Protection Agency Landfill Methane Outreach Program Active Program Map (July 13, 2006). <http://www.epa.gov/lmop/docs/map.pdf>

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

14) 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

15) 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>