

South Carolina Biomass Brief



Information about Biomass in South Carolina

Presented by the South Carolina Energy Office





Introduction to Biomass in South Carolina

Biomass Basics

For thousands of years, people burned wood to cook their food and heat their homes. It was only when the Industrial Revolution began that the use of fossil fuels started to increase, eventually dominating as the world's primary source of energy. When burned, fossil fuels emit carbon dioxide and other substances into the air. The millions of tons of these emissions released into the atmosphere each year adversely impact our environment.

Biomass fuels present a solution to this and many other concerns. Biomass offers safe ways to provide relatively inexpensive and environmentally benign fuels from reliable and renewable domestic sources of energy. Since South Carolina has no uranium, coal, oil, or natural gas reserves but does have several biomass resources, the progressive use of biomass fuels for energy has immense economic potential in the state.

Another major reason to intensify the use of biomass fuels is to reduce the U.S. dependency on imported fossil fuels, especially petroleum and natural gas. Gulf Coast hurricanes Katrina and Rita in 2005 made it clear to all Americans that our "pipeline lifeline" could end in a matter of minutes, putting our country and everyday way of life in an economic tailspin.

Biomass is a desirable source of energy because it is available over much of the earth's surface. Unlike fossil fuels, it is renewable. Since it has little or no net contribution to the global warming of the earth, it is more environmentally friendly than fossil fuels.

Biomass refers to any plant mass harvestable for conversion to fuel, as well as to any animal and human wastes convertible to solid or gaseous fuels. Thus, it includes a broad range of materials biological in nature, such as agricultural and forestry products, farm and wood waste products, selected garbage, and manure and other animal wastes.

Current Consumption

The majority of energy consumption in South Carolina comes from fossil fuels (63.6 percent). Of this percentage, petroleum provides 28.5 percent, coal provides 25.6 percent, and natural gas accounts for 9.5 percent. Nuclear energy contributes 31.4 percent of the total energy consumption in the state, although it is the source of 57 percent of the electricity generated in South Carolina (nearly half of which is sold out-of-state). Biomass energy provides 3 percent of the total U.S. energy consumption, but less than 5 percent of the total South Carolina energy consumption. South Carolina has an abundance of biomass resources. This makes the progressive use of biomass fuels for energy attractive in South Carolina.

Following are some brief descriptions of biomass activities in South Carolina.



Biomass Education in South Carolina

Biomass – Lesson Plans on Alternative Fuels

Biomass – Lesson Plans on Alternative Fuels were co-sponsored by the SC Farm Bureau Federation (SCFB) and the South Carolina Energy Office (SCEO) through a grant provided by the US

Department of Energy's Special Projects Program.

Each lesson, authored by South Carolina teachers, focuses on biomass. Lesson plans are aligned to the South Carolina Curriculum Standards, and activities and extensive background information are included. Lesson plans were sent to every middle and high school in South Carolina with any combination of grades 7 through 12, as well as to every school district's Science Curriculum Coordinator. SCFB's Ag in the Classroom program offers free grade-specific lesson plans, related materials, and year-round in-service workshops to South Carolina teachers, schools and school districts.



Solid Fuels Activities

Santee Cooper to Burn Wood Chips at Jefferies Station Power Plant

Santee Cooper is moving forward on a \$4.4 million biomass project to burn wood chips at its Jefferies Station near Moncks Corner.

The U. S. Forest Service will sell 75,000 tons of wood annually to Santee Cooper from its tree-thinning project in the Francis Marion National Forest. This project will help reduce fire hazards, enhance the red cockaded woodpecker habitat and create a beneficial economic partnership between the two public entities. The 1.2 million tons of wood that will be chipped for Santee Cooper are from trees and limbs too small to be used at paper mills and lumber plants.

It is estimated wood chips burned in a mixture of 90 percent coal/10 percent wood will produce a fuel savings of approximately \$1.4 million a year, significant during these times of increased fuel costs. More than 10 megawatts of green energy will be created, and the process will help reduce emissions of sulfur dioxide, nitrogen oxide, and mercury while producing no net carbon emissions.

Furthermore, the project will provide a boost on the economic development front, adding ten direct jobs, and also potentially attracting new industry to South Carolina.

The \$4.4 million will be used to retrofit Jefferies and install the biomass handling system, which includes adding wood chippers, a storage bin and a truck tilting lift to safely and efficiently lift the 8 ½ truckloads of wood that will arrive at the station on a daily basis.

University of South Carolina to Add Waste Wood Gasification System

The University of South Carolina will soon add a waste wood gasification system to its central energy system, using existing waste products from sawmills, logging and timber operations in

the Midlands to produce 60,000 pounds of steam per hour (about 85 percent of campus steam needs) and approximately one megawatt of electricity.

The biomass energy plant will utilize 10-20 million tons of South Carolina homegrown energy each year, saving students and taxpayers almost \$2 million annually while improving air quality through substantially reduced emissions of sulfur dioxides, nitrogen dioxides and particulate matter.

About \$1.5 million in wood waste expenditures will be pumped into the South Carolina economy, displacing spending now going to oil and natural gas producers in Gulf States and abroad. Furthermore, campus operations will be significantly protected from future oil and natural gas supply disruptions, such as those occurring in late summer of 2005.

Furthermore, there are several private and public partners investigating using wood waste and other waste to generate energy in Aiken County at a private industry steam plant.



Gaseous Fuels Activities

Since 1999, the South Carolina Energy Office has partnered with the U.S. Environmental Protection Agency's Landfill Outreach Program (LMOP) in an effort to reclaim and use landfill gas in the state. Concentrated efforts on the Landfill Gas to Energy (LFGTE) projects have resulted in significant energy and environmental benefits to the state.

The largest South Carolina Landfill-Gas-To-Energy project, totaling approximately \$12 million in costs, became operational in 2003 at the Palmetto Landfill in Spartanburg County. Methane gas, piped 9.5 miles from the landfill to BMW's automotive manufacturing facility near Greer, supplies more than 25 percent of the plant's energy needs. BMW's project is unique in that the methane gas is used to fuel four turbines at the BMW factory. The turbines generate electricity and process steam. Most other landfill gas projects produce electricity at the landfill and use it only for electricity or direct heating.

In 2001, Santee Cooper became the first electric utility in the state to generate and offer Green Power to its customers from the 3 megawatt Horry County Landfill Generating Station near Conway. The company opened its second Green Power facility, a 5.4 megawatt station in 2005. Located at Allied Waste's Lee County Landfill, it makes electricity from three 1.8 megawatt engines that use methane gas as fuel. Screaming Eagle in Richland County opened in March and is capable of generating 5.5 megawatts of power.

The fifth Santee Cooper landfill-gas-to-energy project will enter commercial operation this year is Anderson Regional Landfill in Richland County. Anderson Regional Landfill expects to become operational in October 2006. This additional facility will bring Santee Cooper's total Green power generation to 25 megawatts.

Santee Cooper and Allied Waste have signed an agreement with the Richland Northeast Landfill. Two LFGTE projects in the negotiation stages with Waste Management are Oak Ridge Landfill, Dorchester County, and Hickory Hill Landfill, Jasper County.

In 2006, South Carolina State Senate Bill 1245 passed, which created tax credits for manufacturers purchasing landfill gas to power facilities. The provision allows a manufacturing facility to claim up to 25 percent of the landfill gas energy costs starting in the 2006 tax year and unused tax credits may be carried forward up to ten years.

JW Aluminum

JW Aluminum recently signed a contract with Berkeley County to utilize a readily available source of green power - landfill gas. JW Aluminum will build a new smelter plant powered by methane gas from the Berkeley County landfill. The \$5 million dollar project is among the first of its kind in the country according to the United States Environmental Protection Agency.

The agreement is a win-win for the company and the state. The JW Aluminum smelter not only means better air quality and a reliable, local energy source of energy for businesses, but is good news for the state's economy. Instead of purchasing fossil fuels from elsewhere, the company can spend the money it saves here. Giving JW Aluminum a steady supply of natural gas with a stable price which helps their profitability and that profitability helps keep jobs. The county can expect to be paid a quarter million dollars a year for the gas in addition to applicable property taxes.

Other environmental spin-off projects are also being developed. The county plans to use the heat from the aluminum plant to dry county sewage sludge to sell as fertilizer. Additionally, the county plans to expand its wastewater treatment plant to the landfill where treated water will be sent to Carolina Nurseries for irrigation. Additional methane energy will also power the Berkeley County Water and Sanitation Authority offices or sold to other businesses.



Liquid Fuels Activities

Liquid Fuels in South Carolina

Alternative fuels are seen as a means to decrease the nation's dependence on foreign oil and increase energy security through domestically produced products. At this time, alternative fuels are defined as any fuel that is substantially non-petroleum, yields energy security and demonstrates environmental benefits. The South Carolina Energy Office has focused on biodiesel and ethanol in its efforts to displace conventional petroleum products.

Biodiesel, or B20, refers to the blend of 20 percent biodiesel and 80 percent diesel. It is a clean-burning alternative fuel produced from domestic, renewable resources such as soybeans. Biodiesel can be blended at any level with petroleum diesel to create a biodiesel blend from B1 to B99. It can be used in compression ignition (diesel) engines with no major modifications. Biodiesel is simple to use, biodegradable, nontoxic, and essentially free of sulfur and aromatics.

Ethanol, or E85, is the term for motor fuel blends of 85 percent ethanol and 15 percent gasoline. Besides its superior performance characteristics, ethanol burns cleaner than gasoline; it is a completely renewable, domestic, environmentally friendly fuel that enhances the nation's economy and energy independence. Vehicles that run on E85 are called flexible fuel vehicles (FFVs) and are specially manufactured to run on the fuel; however, any vehicle can run on E10 which is a blend of 10 percent ethanol and 90 percent gasoline. There are over 50 makes and models of FFVs from major vehicle manufacturers such as Ford, General Motors, Daimler Chrysler, Mercury, Mazda, Isuzu, Mercedes Benz and Nissan.

Liquid Fuels Activities – Biodiesel

Carolina Biofuels

Carolina Biofuels, a new division of the Taylors, South Carolina-based company Carolina Polymers, rolled out their first load of biodiesel fuel on March 14, 2006. Their manufacturing facilities are currently in full operation, and are expected to produce 10 million gallons of biodiesel fuel by summer 2006, with production projected to grow to over 30 million gallons annually. A large percentage of the fuel produced at Carolina Biofuels will be sold to the Spinx Company, an upstate petroleum marketer committed to providing South Carolina's drivers with alternative fuels. Carolina Biofuels supports South Carolina industry by using locally-grown soybeans to make their fuel, and as production ramps up, they will create between 20 and 30 jobs in the Taylors, S.C. area.

Southeast BioDiesel

In 2006, Southeast BioDiesel plans to build three new biodiesel production facilities that will refine waste cooking grease (yellow grease) into biodiesel fuel. They plan to locate one of these plants in the Charleston/Summerville area of South Carolina. Southeast BioDiesel will contract with companies that collect yellow grease for disposal to transport the grease to their biodiesel production facility. They will refine the yellow grease into biodiesel fuel and glycerin, which is a byproduct of the process by which biodiesel is produced. Southeast BioDiesel has yet to determine whether the glycerin that is produced will be re-used within the plant or sold for use in soaps and other consumer products.

Carolina Soya

Carolina Soya & Energy is a soybean processing plant in Estill, an economically blighted area in Hampton County, South Carolina. Carolina Soya processes soybeans, extracts the crude oil and hulls, and produces soybean meal as feed ingredients in poultry rations and other animal feeds marketed throughout the Carolinas, Georgia, and Florida. The company processes one out of every three bushels of soybeans grown in South Carolina and Georgia.

Carolina Soya will invest \$8 million to add a soybean oil refinery to its existing soybean processing plant. The new plant will produce soybean oil that can be used in food products and as feedstock for industrial uses, such as biodiesel. The company is in the process of obtaining the necessary operating permit.

SC Department of Education

The SC Department of Education is investigating making its own biodiesel to power the buses that carry 371,000 students a day to public schools. They are in the early stages of determining

whether it would be economically feasible for the state to make its own biodiesel and mix it with petroleum-based diesel to fill up its fleet of 5,000 buses. The state hopes to operate its buses on B20, which is a blend of 20 percent biodiesel and 80 percent petroleum-based diesel.

The school bus fleet needs 66,000 gallons of fuel a day to keep running. To make B20, the state would have to produce approximately 13,000 gallons of biodiesel each day. School cafeterias alone cannot provide enough waste oil. An informal survey of the school districts reported that their volume is only about 14,000 gallons a month. In some districts, the grease is sold to soap and pet food manufacturers.

Furman University

Furman University students are turning castoff dining hall grease into an environmentally friendly fuel that will supply about half the campus' diesel needs for its lawnmowers, backhoes and tractors. The students are making the fuel for about 60 cents a gallon and sell it at a mark-up to Furman's Services Department to raise money for their organization, Environmental Action Group (EAG). At the pump, diesel fuel is more than \$2 a gallon.

EAG can produce 55 gallons of fuel over two days with about three hours of student labor. It will produce about 2,500 gallons a year. The main limitation is that they don't have more dining hall grease.

Liquid Fuels Success Stories

In order to have a sustained effort to promote alternative transportation fuels, the South Carolina Energy Office led the way in organizing the Palmetto State Clean Fuels Coalition (PSCFC), a voluntary partnership of stakeholders working together to reduce energy used for transportation and reduce the impacts of transportation on the quality of life and the environment of South Carolina. The PSCFC received its official designation as a Clean Cities program in August 2003, and currently there are almost 90 Clean Cities programs in the nation. There are currently over 75 stakeholders who have committed to expanding the use of alternatives to gasoline and diesel fuel and are promoting alternative fuels in the nine-county coalition area. The PSCFC serves a population of over 1 million citizens in the counties of Chester, Lancaster, Union, York, Richland, Lexington, Newberry, Fairfield and Aiken in South Carolina. While the PSCFC has focused primarily on these nine counties in the past, demand from other counties has meant that outreach and education activities on alternative fuels such as ethanol and biodiesel are needed statewide. When the Coalition requests redesignation in 2008, it will ask for statewide status.











SCEO, in partnership with the PSCFC, has aggressively marketed ethanol and biodiesel in the state. Successes in promoting ethanol infrastructure through education, outreach and funding opportunities mean that South Carolina currently has a total of 26 publicly accessible E85 stations around the state.

Both E10 and E85 blends are available across the state, and over 6.1 million gallons (these numbers represent FY04-05 and FY05-06 combined) of ethanol displaced conventional gasoline in South Carolina through private sector consumption as well as through government usage. Four publicly accessible biodiesel stations around the state have made B20 available to consumers as well as government, and over 800,000 gallons (these numbers represent FY03-04,

FY04-05 and FY05-06 combined) of cleaner burning B20 displaced conventional diesel fuel. Two more E85 stations will come on-line in 2006 in the Rock Hill/Fort Mill area. Below is a list of current E85 and B20 publicly accessible refueling stations in the state.

E85 and Biodiesel Locations:
















Columbia





Gervais Street Exxon located at 1421 Gervais St., Columbia 
Pitt Stop #35 located at 2020 Bluff Rd., I-77 Exit 5, Columbia 
Pitt Stop #40 located at 4800 Forest Dr., I-77 Exit 12, Columbia 
Pitt Stop #28 located at 595 Spears Creek Church Rd., I-20 Exit 82, Elgin 
Pitt Stop #13 located at 7409 Broad River Rd., I-26 Exit 101, Irmo 
Pitt Stop #16 located at 5019 Augusta Rd., I-20 Exit 58, Lexington 
Pitt Stop #42 located at 1928 Airport Road, West Columbia 
Corner Pantry #101 located at 1425 Bluff Rd., I-77 Exit 5, Columbia 
Spinx #149 located at 1619 Decker Blvd., I-77 Exit 15, Columbia 
United Energy Distributors West located at 2470 Fish Hatchery Rd., West Columbia 



Irmo C-Mart located at 7353 Nusery Road, Columbia 

Upstate – Greenville



Spinx #138 located at 1519 Whitehorse Rd., I-85 Exit 44B, Greenville  
Spinx #130 located at 1510 Woodruff Rd., I-385 Exit 35, Greenville 
Spinx #179 located at 2901 N. Pleasantburg Dr., Greenville  
Spinx #121 located at 2497 S Highway 14, I-85 Exit 56, Greer  
Spinx #166 located at 100 W. Wade Hampton Blvd., Greer 
Spinx #189 located at 3135 Brushy Creek Rd., Greer 
Spinx #190 located at 2601 Locust Hill Rd., Taylors  
Spinx #165 located at 5598 North Highway 14, Landrum  
Spinx #199 located at 7252 Moorefield Memorial Highway, Liberty  
Spinx #178 located at 2 Tigerville Rd., Travelers Rest  
Spinx #134 located at 1301 Fairview Rd., Simpsonville  
Spinx #225 located at 220 East Greer St., Honea Path  
Spinx #201 located at 549 East Standing Springs Rd., I-385 Exit 30, Simpsonville 

Spinx #193 located at 697 Fairview Rd., I-385 Exit 27, Simpsonville 
Spinx #148 located at 2921 Greer Highway, Marietta 
Spinx #169 located at 107 Charlotte Highway, Lyman 
Gasland USA #9 located at 1121 Hyatt St., I-85 Exit 90, Gaffney 
Gasland USA #8 located at 901 N. Mountain St., I-85 Exit 102, Blacksburg  **OPENING SOON!**






Florence

Breaker's #1 located at 2074 West Evans St., Florence 



Aiken

United Energy Distributors #1 located at 1046 Toolebeck Rd., Aiken  

Orangeburg

Henry's located at 1969 Old Edisto Dr., Orangeburg   **OPENING SOON!**
Smith's 66 and Marine located at 1692 Columbia Rd., Orangeburg  
East Coast Energy located at 488 W. Boyce St., Manning 

Rock Hill

Fairway BP located at 1010 Carolina Place Dr., I-77 Exit 85, Fort Mill 
Fort Mill Conoco located at SC 160, Fort Mill  **OPENING SOON!**

The PSCFC funded a total of nine of the before-mentioned E85 stations with monies set aside by the South Carolina Department of Health and Environmental Control from an environmental fine against Willamette Industries.

In addition to publicly accessible refueling stations that both consumers and the government can use, a number of governmental entities have E85 and B20 infrastructure for restricted use by local, state and federal government entities. The first E85 station came about as a result of the partnership between the South Carolina Department of Health and Environmental Control, the South Carolina Energy Office and the PSCFC as DHEC constructed the first ethanol refueling station in Columbia in 2001. This station, located at the DHEC refueling facility at 2600 Bull Street, allows state and local government fleets to refuel at the site. DHEC currently averages the sale of about 60,000 gallons a year at this site.

In addition, DOE's federal installation at the Savannah River Site has two 10,000 gallon above ground storage ethanol tanks outfitted with a key-card system. FFVs refueling onsite are required to refuel with ethanol 100 percent of the time. Usage at the site averages about 250,000 gallons of E85 a year. SRS has over 500 alternative fueled vehicles in their fleet of 1,400 vehicles.

Work on previous SEP Special Projects grants in the area of alternative fuels is ongoing and includes the installation of an above-ground, 3,000 gallon ethanol storage tank at the University of South Carolina for its fleet, and the retrofit of four 65,000 gallon tanks at United Energy in Aiken to store and dispense ethanol and biodiesel. The SCEO received in 2004 a Special Project grant award in the Clean Cities category to promote E85 infrastructure in the Rock Hill area (York County), the state's only county that is in non-attainment for ground level ozone.

Through the efforts of the PSCFC, 1,627 Alternative Fuel Vehicles (AFVs) in government and private fleets are using alternative fuel 100 percent of the time in the PSCFC service area. Through 2008, stakeholders representing both government and private businesses have committed to add over 2,000 operational alternative fuel vehicles to South Carolina's roads.

Recent Liquid Fuels Activities

Biofuels Showcase

The Palmetto State Clean Fuels Coalition and the SC Energy Office hosted a Biofuels Showcase in November, 2005. The event featured speakers from the National Biodiesel Board, National Ethanol Vehicle Coalition, and FuelCellSouth. They educated participants on ethanol (E85),

biodiesel (B20) and hydrogen alternative transportation fuels, and provided information about opportunities to use these domestically- produced and cleaner burning fuels.

Fleet managers from Georgia Power and City of Rock Hill provided their experiences with converting fleets to alternative fuels such as ethanol, biodiesel, and compressed natural gas (CNG). The showcase also included a Ride-and-Drive event where attendees were able to ask questions of GM, Ford and DaimlerChrysler representatives, and then test drive ethanol and hybrid vehicles.

Beyond a Billion Gallon Celebration

The Palmetto State Clean Fuels Coalition (PSCFC) and the South Carolina Energy Office joined over 80 Clean Cities coalitions across the nation in October 2005 in celebrating the displacement of over one billion gallons of petroleum. Through the promotion of alternative fuels (such as ethanol, biodiesel, and compressed natural gas) and alternative fuel vehicles, hybrid electric vehicles, idle reduction applications and fuel economy improvements, the Clean Cities initiative reached the milestone of displacing one billion gasoline gallon equivalents of petroleum. During the Beyond a Billion Gallon event, the Andy Thomas Radio Show featured a live broadcast on alternative fuels at the South Carolina State Fair to eight stations statewide to approximately 150,000 listeners.

GM Provides E85-Capable Pickup Truck for Use in South Carolina

In September 2005, the South Carolina Energy Office coordinated with the Governor's Office for the use of an E85 capable Chevy Avalanche from General Motors for one year at no cost. The South Carolina Department of Agriculture received the vehicle and is using it as part of its fleet. The E85 Avalanche is a flexible fuel vehicle (FFV) and this promotion is part of a campaign by GM and the Governors' Ethanol Coalition to increase the awareness of ethanol and flexible fuel vehicles. South Carolina Agriculture Commissioner Hugh Weathers is promoting the brightly decorated E85 Avalanche in his day-to-day activities with the SC Department of Agriculture. Response to the FFV truck has been tremendous and it was a featured display at the South Carolina State Fair in October 2005 where over 200,000 people had the opportunity to view the vehicle.



Biomass Projects by the S.C. Energy Office

South Carolina Biomass Energy Potential in South Carolina: A Conspectus of Relevant Information

The South Carolina Energy Office completed an inventory of existing publications, studies and reports relating to the actual or potential use of biomass energy in South Carolina. Over the years, a number of studies have been conducted covering some, but not all, of the information relevant to actual and potential use of various feedstock sources in South Carolina and the Southeast, and barriers found when initially converting to a biomass feedstock resource. *Biomass Energy Potential in South Carolina: A Conspectus of Relevant Information* identifies:

- Existing information useful for developing and implementing biomass energy projects in South Carolina; and
- Information gaps in the knowledge base for developing and implementing biomass energy projects in South Carolina.

The study indicates South Carolina has sufficient information regarding the availability of woody biomass for direct combustion, landfill gas, and soybeans, corn and other agricultural products that can be used to produce ethanol and biodiesel.

South Carolina Biomass Council

Another project of the South Carolina Energy Office is formation of a South Carolina Biomass Council, which will bring together all segments of the South Carolina economy interested in achieving significant market penetration of biomass technologies and bio-based products. The Council will conduct a variety of market conditioning efforts at the local, state, and regional levels of government.

The Biomass Council will use committees and working groups to develop and advocate a plan to increase use of biomass energy in South Carolina. The committees include the Gaseous Fuels Committee (with working groups on Agriculture and Food Products, and Sewage and Solid Waste); the Solid Fuels Committee (with working groups on Timber Sources, and Non-timber Sources such as agricultural residues and solid waste); the Liquid Fuels Committee (including working groups on ethanol and on biodiesel); the Alternative Products Committee (identify alternative uses for biomass resources); and the Policy and Incentives Committee, which will promote biomass utilization through various means.

Each committee and working group will analyze feedstock availability, examine current energy production and use, analyze the economics of energy production from the feedstocks, analyze environmental costs and benefits, determine barriers to production and use, propose recommendations for greater use, and provide roadmaps for implementation of recommendations.

Biomass Energy Utilization in South Carolina

The South Carolina Energy Office is now undertaking a new project titled, *Biomass Energy Utilization in South Carolina – Filling the Information Gaps*, to provide additional research needed to maximize South Carolina’s biomass energy potential.

The important missing information includes data on sewage treatment plants, poultry manure, and yellow grease from food preparation. Information on these resources will enable public and private decision-makers to determine the political and economic desirability to invest public and private resources in efforts to derive useful energy from these sources.

The new study will:

- Determine amount and locations of potentially recoverable useful energy from sewage treatment facilities in South Carolina, along with an analysis of economics and barriers of recovering and utilizing such energy.

- Determine amount and locations of potentially recoverable useful energy from manure and litter at chicken and turkey operations in the South Carolina, along with an analysis of the economics of and barriers to recovering and utilizing such energy.
- Determine amount and locations of potentially recoverable useful energy from yellow grease produced in food service operations in South Carolina, along with an analysis of the economics of and barriers to recovering and utilizing such energy.

A fourth major information need is an overview analysis of the potential economic and environmental benefits of significantly increasing utilization of biomass energy resources in South Carolina. The business community, the environmental community, and, most importantly, governmental decision-makers, lack sufficient information to justify major investments of public and private resources into development of biomass energy resources. This project will provide an overview analysis of potential economic and environmental benefits of biomass energy utilization in South Carolina in order to give private and public decision-makers the rationale and motivation needed to make biomass-friendly policy and biomass-friendly investments.

Biomass Inventories

The South Carolina Energy Office has developed two web-based inventories relevant to biomass energy. One is an inventory of all known users of biomass energy in the state, and the other is an inventory of all known producers of biomass that can be used for energy production. According to these inventories, 55 industrial operations in South Carolina are annually using about 4 million tons of woody biomass for energy purposes. We have also identified 115 producers of waste wood products who can make available annually about 5.5 million tons of woody biomass for energy purposes. Additionally, there are five landfill-gas-to-energy projects with a combined capacity of 25 MW, producing over 183,000 MWH of electricity annually. The inventories can be viewed by going to www.energy.sc.gov and clicking on Sustainability and Renewable Energy. From there, click on the “Biomass” link.

Alternative Energy Legislation

Two pieces of legislation passed in the South Carolina House & Senate significantly increased incentives for alternative vehicles, fuels, and renewable energies. In H.4810 (Alternative Energy Proviso in the Budget Bill for FY 2007) there are various incentives for individuals and businesses to purchase alternative fuels, including tax rebates which will provide a:

- 1) \$300 sales tax rebate for in-state purchases of all Flex-Fuel Vehicles (FFV), capable of operating on E85 motor fuel;
- 2) \$300 sales tax rebate for in-state purchases of all hydrogen fuel cell vehicles;
- 3) \$300 sales tax rebate for in-state purchases of plug-in hybrid gasoline-electric vehicles;
- 4) \$500 for purchase of equipment that results in the conversion of a conventional hybrid gasoline-electric vehicle to a plug-in hybrid gasoline-electric vehicle;

Incentive payments will provide:

- 1) a five cents incentive payment to the retailer for each gallon of E85 fuel sold;
- 2) a five cents incentive payment to the retailer for each gallon of B20 fuel sold;
- 3) a five cents incentive payment to the retailer or wholesaler for each gallon of B20 fuel sold as dyed diesel fuel for "off road" uses;

And tax income credits will provide:

- 1) a business or personal income tax credit of twenty cents for each gallon of biodiesel motor fuel produced mostly from soybean oil and sold;
- 2) a business or personal income tax credit of thirty cents for each gallon of biodiesel motor fuel a majority of which is produced from feedstock other than soybean oil;

S.1245 will add similar incentives for alternative fuels and also solar energy and landfill gas:

- 1) an ethanol facility will receive twenty cents for every gallon they produce above the original designed production capacity of the facility.
- 2) an ethanol facility will receive seven and one-half cents for every gallon of ethanol produced before denaturing;
- 3) a qualified commercial facility for dispensing renewable fuel is allowed a tax credit equal to twenty-five percent of the cost to the taxpayer for constructing and installing pumps, storage tanks, and related equipment used for dispensing or storing renewable fuel;
- 4) a tax credit for twenty-five percent of the costs to install a solar energy heating or cooling system, or both, in a building owned by the taxpayer;
- 5) a tax credit for twenty-five percent of the costs incurred by a taxpayer for methane gas taken from a landfill to provide power for a manufacturing facility.

H.4312, the Hybrid Vehicle Bill provides a state income tax credit for purchases of certain hybrid, fuel cell, alternative fuel or lean burn technology vehicles. Consumers who purchase one of these vehicles that are eligible for the federal tax credit on such purchases also qualify for the state tax credit if they claim the federal credit. The amount of state income tax credit a qualified vehicle purchaser will receive is 20 percent of the credit amount they receive for their federal income taxes, based on the combined city/highway metric or standard set by federal Internal Revenue Code Section 30B. The state income tax credit for purchase of hybrid vehicles will remain in place permanently, and will not be phased out, like the federal credit.



In Conclusion

The South Carolina Energy Office continues to promote the production and use of biomass, and strives to monitor biomass activity in our state. For continued updates of these activities and more, please visit our website at www.energy.sc.gov and click on the “Sustainability and Renewable Energy” link.

Please help the South Carolina Energy Office to keep this brief current. If you have any suggestions or updates to our list of biomass activities in South Carolina, please contact:

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