RENEWABL

HYDROPOWER

Energy. It surrounds us. We thrive on it. We cannot survive without it.

There are many types of energy, sources of power. For centuries, America has relied heavily on coal, wood, oil and natural gas for its energy. However, increased concerns about the nation's addiction to foreign oil and related national security issues and improving technologies have caused a surge in the search for energy sources that are ***renewable***. The commitment to renewable energy is stronger today than ever before and it is building.

Today renewable energy comes in many different forms. Whether harnessing biomass, methane digesters, wind, or solar power for electricity or converting forest and farm products into transportation fuels, the processes all make use of local resources, strengthening local economies and reducing American dependence on foreign oil.

Primary Renewable Energy Sources

Biomass—organic matter that is converted to energy—can be used for fuels, power production and products that would otherwise be made from fossil fuels. While wood is still the largest source of biomass energy, the use of other agricultural products is rapidly increasing (i.e. using corn for ethanol, soybeans for biodiesel and converting manure into electricity).

BIOMASS

GEOTHERMAL

Wind turbines are the modern equivalent of the windmills used by past generations to harness the wind's energy. Pressure from the wind drives the turbine's rotor, and the turning shaft spins a generator to make electricity.

The sun's heat can be captured through various devices and converted into electricity. **Solar power** is a clean, safe alternative that continues to become more competitively priced.

Hydropower, or hydroelectric power, captures energy from flowing water and turns it into electricity. Similar to wind energy, flowing water causes a turbine to spin, and the spinning turbines are connected to a generator that produces electricity.

The Earth's internal heat—thermal energy—can be used to heat and cool buildings and to generate electricity. **Geothermal power** is produced when the hot water and steam from reservoirs are distributed through pipes or used to drive turbines.

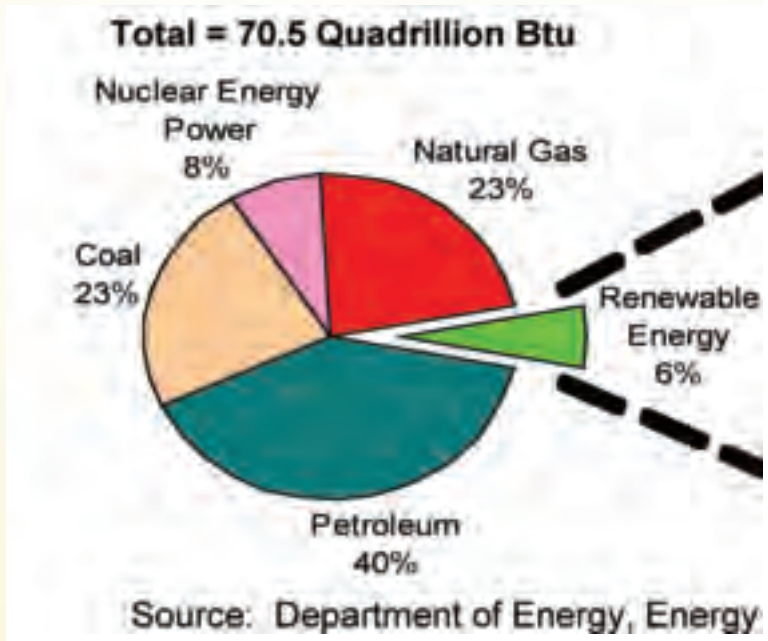
On a national scale, renewable energy accounts for a relatively small but quickly growing portion of the energy consumed in the United States today (see Figure 1). Renewable energy accounted for six percent of U.S. energy consumption in 2004, nearly half of which came from biomass. While wood has historically provided a majority of biomass energy, corn ethanol is currently the fastest growing renewable energy source. However, it is recognized that in order to meet transportation fuel needs, the greatest potential comes from cellulosic sources. Examples include trees, corn stover, switch grass and urban residues (i.e. landfills).

WIND ENGERGY

NACD President Elect Olin Sims shows NACD CEO Krysta Harden the wind turbines on his Wyoming ranch.

Although they constitute a much smaller portion of America's renewable energy supply, advances are also being made in developing energy from solar, wind, methane (anaerobic) digesters and geothermal resources. Additional research efforts are also ongoing to use tidal energy and biomass from algae as sources of renewable energy.

Figure 1: The Distribution of Renewable Energy Co



Future Potential

In April 2005, the U.S. Departments of Agriculture and Energy released a joint report assessing the energy potential of the two largest potential biomass sources—energy and agriculture lands. The study found that forest and agricultural lands could produce a combined 1.3 billion dry tons of biomass, enough to meet one third of the current demand for transportation fuels. To put it in perspective, the fuel from 1.3 billion dry tons of biomass would be equivalent to the United States' peak crude oil production that occurred in 1970.

Americans' energy consumption is growing. Will we meet the increased demand with energy produced within our borders or increase our exports, making us more energy dependent?

Agriculture Secretary Mike Johanns is optimistic. He said: "Renewable fuels help to power our nation. They provide income for rural America. They are gentler on our environment, and they offer an alternative to foreign sources of oil. Our challenge is to increase the production and use of alternative energy across this great nation, to maximize its potential so that renewable fuels are an economically viable and sustainable alternative."

Sources: USDA Farm Bill Energy Paper *http://www.usda.gov/documents/Farmbill07energy.pdf;* DOE Energy Information Administration; USDA Billion Tons Study *http://feedstockreview.ornl.gov/pdf/billion_ton_vision.pdf;* National Renewable Energy Lab: *www.nrel.gov;* 25x25 *www.25x25.org.*

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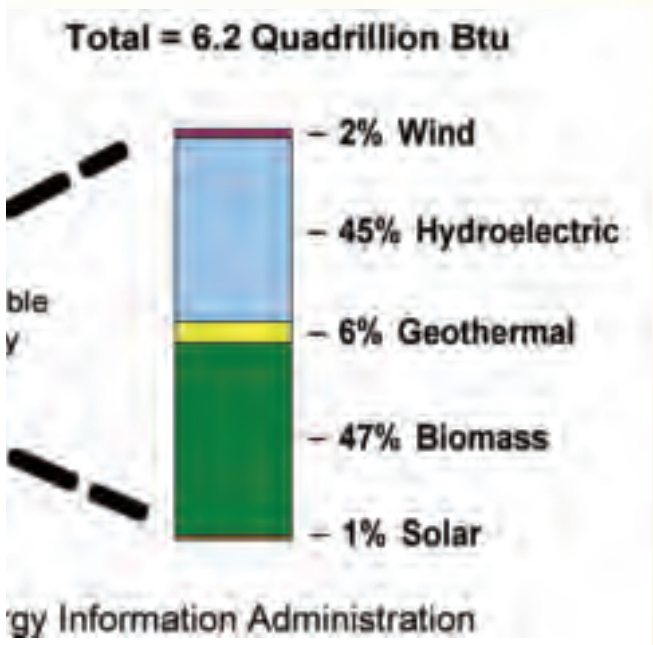


SOLAR POWER

Congressional Actions on Energy Policy

As fuel prices and the cost of energy inputs increase, Congress looks for ways to offset these pressures on rural economies and agricultural production through renewable energy policy. Domestic renewable energy production also supports local market prices, bringing competition to commodity markets and creating local value added benefits for rural communities.

Through the 2002 Farm Bill, Congress inserted new renewable energy provisions through the Energy Title – the first ever in a Farm Bill. These provisions, falling solely under the jurisdiction of the House and Senate Agriculture Committees, promote federal procurement of biobased products, provide grants for development of biorefineries; energy audits for farmers; and loans and guarantees farmers and small businesses to purchase renewable energy systems. These areas fall to USDA's Rural Development to implement.

There is an important distinction between the programs that are operated by the U.S. Department of Energy and those operated by the U.S. Environmental Protection Agency (EPA).

In 2005, Congress passed the Energy Policy Act and created the Renewable Fuels Program and the Renewable Fuels Standard (RFS). The RFS sets a minimum level of renewable fuel production each year starting with 4 billion gallons in 2006, and reaching 7.5 billion gallons in 2012. This provision amends the Clean Air Act, and is administered by the EPA.

Congress also drives renewable energy market expansion through tax credits for production and use of renewable fuels, among other energy savings items. Dating back to the late 1970s, Congress has historically provided gas tax exemptions for ethanol blends. Current law provides a tax credit of 51 cents per gallon through 2010. Biodiesel blenders receive up to a $1.00 per gallon tax credit through 2008 and small biodiesel producers receive a 10 cent per gallon income tax credit.

As the House and Senate Agriculture Committees prepare for the 2007 Farm Bill, renewable energy is a hot topic. However, these committees will want to consider elements that technically only fall into the jurisdiction of Agriculture and expanding the RFS or addressing tax credits would not. The RFS and tax credits have had significant positive impacts on renewable fuels markets and there is discussion about expanding these provisions. However, the marketplace may take over and do more than Congress to drive further market development.

Districts Dive into Renewables

From Forest and Farm to Biorefinery

Independence County Conservation District, Arkansas

Located in the center of a thriving mix of agriculture and forest industries in north central Arkansas, the Independence County Conservation District seized opportunities provided in the federal farm and energy bills to move its region into biofuels production. Working cooperatively with FutureFuel Chemical Co., Ozark Foothills RC&D Council and Ozark Woodland Owners Association, district members provided the Eastman plant the regional bioenergy feedstock and biofuels market data it needed to make a corporate decision about converting its facility into one of the nation's first integrated biorefineries. In a little over a year, the Eastman plant is proceeding toward a 40 million gallon per year biodiesel production rate; preparing to begin wood pellet production in December; testing a range of biolubricants; and examining the feasibility of developing a cellulosic biomass-based ethanol production facility.

The District Board continues its leadership role, helping landowners prepare to provide the bioenergy feedstocks necessary to supply the bioenergy industry. They provide equipment to conduct trial plantings of canola as a winter energy crop with the above partners and Monsanto Seed Company. The Board's expertise has been recognized at the state level where legislators and department heads have them leading a task force to develop proposed bioenergy legislation for consideration in the 2007 legislative session.

For more information on the Independence County Conservation District's excellent renewable energy work, contact Ron Bell at (870) 793-4379 or *rbellowoa@cox-internet.com.*

Establishing the Oilseed and Biodiesel Industries in Washington State

Spokane County Conservation District

The Spokane County Conservation District is coordinating the efforts of several public agencies, private industry and agricultural producers to develop the biodiesel industry in Eastern Washington. These efforts include the production of agricultural feedstocks, building oilseed processing facilities, developing biodiesel processing plants and increasing demand for the fuel.


The Spokane District's 2002 VW TDI Beetle has more than 45,000 miles on 100% biodiesel.

The District is assisting five area farmer cooperatives to build the processing facilities and a plant capable of producing 5 million gallons of biodiesel annually. They helped the cooperatives develop business and financial plans, and secured $2.85 million in low interest loans to help finance the $8.5 million project.

In order for the farmers to be able to supply oil for use in biodiesel, a complete oilseed industry needs to be established including a crushing facility and markets for the meal left behind. A biodiesel industry can only succeed if high-value markets for the meal are established, such as soil amendments, soil fumigants, pesticides, herbicides and fertilizers.

It is through the combined efforts of the Spokane County Conservation District, local farmers and farmer cooperatives, public agencies and private industry that the oilseed and biodiesel industries will become a reality for the Spokane region.

For more information on the Spokane County Conservation District's work in this area, please go to *www.sccd.org* or contact Jim Armstrong at *jim-armstrong@sccd.org* or (509) 535-7410.