Vol. XXII No. 4 February 18, 2000

Secretary Richardson, President Clinton promote renewable energy technologies

by Judy Farrell

Editor's Note: This is the first in a two-part series on the Federal government's renewable energy initiatives.This article focuses on the initiatives themselves. The second article, will focus on ways Western is helping to promote renewable resources to meet our goals.

In this century, our vehicles may run on used French fry oil. Our homes may be powered by the Earth's heat. And the wind and sun may produce electricity for our computers and lights.

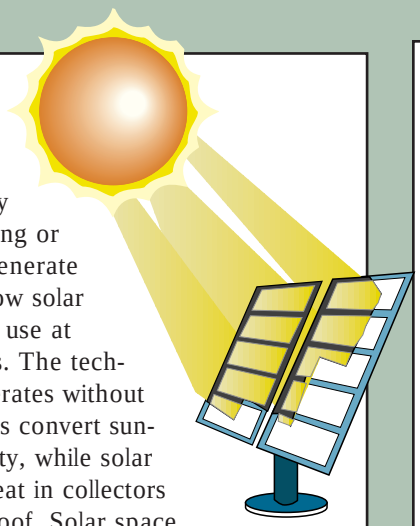
A series of executive orders and DOE initiatives hope to tap these and other

(See next page)

Know your renewable energy sources

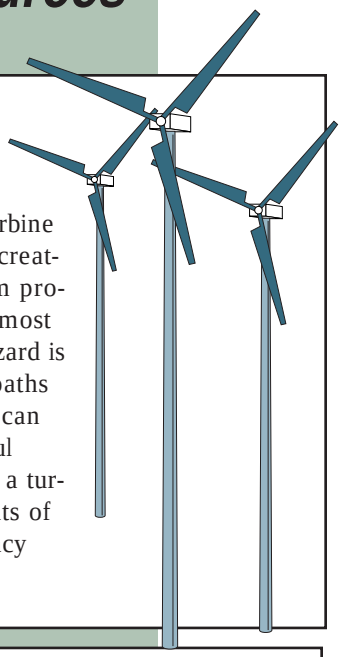
Solar energy

The sun's radiant energy is captured by a collection device. It may be used to heat a building or water, or captured to generate electricity. Batteries allow solar energy to be stored for use at night or on cloudy days. The technology is quiet and operates without emissions. Photovoltaics convert sunlight directly to electricity, while solar water heaters gather heat in collectors usually mounted on a roof. Solar space heaters use solar panels to recirculate building air or preheat ventilation air from outside.



Wind energy

The movement of wind creates mechanical energy, turning a wind turbine that powers a generator, creating electricity. The system produces no emissions. The most serious environmental hazard is installing turbines in the paths of migrating birds, which can be avoided through careful planning. Before locating a turbine, careful measurements of wind velocity and constancy help find the best site.

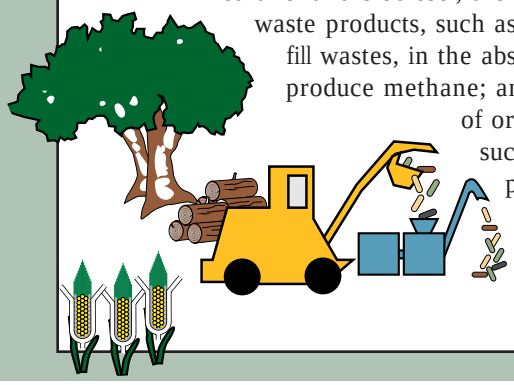


Geothermal energy

Geothermal technology taps heat energy from reservoirs beneath the Earth's surface. It can heat residences, businesses or industrial plants or be used to generate electricity. Geothermal heat pumps pull the Earth's heat to the surface, where it can heat homes and businesses.

Biomass energy

Biomass energy is generated from plants or other organic material. Burning wood in a fireplace is a form of biomass energy, albeit an inefficient one. Biomass energy technologies include plant-derived fuels such as ethanol and biodiesel; the breakdown of waste products, such as manure and landfill wastes, in the absence of oxygen to produce methane; and the combustion of organic materials such as wood or paper to produce thermal energy.



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renewable resources as an increasingly important part of the nation's energy mix.

In fact, DOE's goal is to have 25,000 megawatts of wind, solar, geothermal and biomass renewable power generating capacity on-line by 2010. Specific goals include:

- Putting 1 million solar energy systems on the roofs of homes and buildings by 2010.
- Supplying at least 5 percent of the nation's electricity needs with wind energy by 2020.
- Tripling the use of biobased products and bioenergy by 2010.
- Supplying at least 10 percent of the West's energy needs with 20,000 MW of installed geothermal energy by 2020.

The Million Solar Roofs Initiative

Announced in 1997, the Million Solar Roofs Initiative was the first of the renewable energy initiatives. To date, more than 910,000 commitments have been made to participate, and 57,900 systems have been installed on rooftops across the country. Some systems provide heat and electricity for only the building where they reside. Others are grid-connected, generating electricity for distribution to other customers as well.

The U.S. Department of Energy is working with partners in the building industry, other Federal agencies, the solar energy industry, financial institutions, state and local governments and non-governmental organizations to remove market barriers to solar energy use and to develop and strengthen demand for solar energy products and applications.

Wind powering America

Like the sun, wind offers a clean source of energy. In the past few years utilities across the country have launched wind energy programs. The popularity of this technology stems from rapidly decreasing costs. While wind energy cost about 40 cents per kilowatthour in 1980, today's efficient large wind turbines (500 kW and larger) spin it out for between 4 and 6 cents per kWh, and costs continue to drop.

In 1999, the U.S. had approximately 2,500 MW of grid-connected wind energy, up from 10 MW in 1980.

Wind Powering America seeks to continue this trend. It aims to double the number of states with more than 20 MW of wind capacity to 16 by 2005, and triple that number to 24 by 2010.

Western's service territory has vast wind resources. North Dakota has been called the "Saudi Arabia of wind energy" due to the potential of stiff Great Plains gusts.

Bioenergy and biobased products

Announced in August 1999, this initiative seeks to stimulate the biomass energy industry. DOE has awarded more than $13 million in financial assistance to promote industry growth.

Biomass is organic materials produced by photosynthesis. Its uses are diverse. For example, ethanol produced from corn is biomass energy. So is methane captured by placing covers over manure lagoons, then used to generate electricity.

Since it comes from crops and wastes, biomass energy has the potential to create jobs and spur economic development. It also gives farmers the opportunity to expand into a new market, making their operations more profitable. Since Western's service territory includes excellent farm and agricultural areas, biomass resources are plentiful.

GeoPowering the West

Under the Earth's surface lies natural energy in the form of hot water and hot rock. When tapped, these resources offer a clean, reliable source of radiant heat and electricity generation.

Ground-source heat pumps also tap the power of the Earth's heat. Coils in the ground capture energy and make it usable in homes and businesses.

Geothermal resources abound in the western U.S., leading to this geothermal energy initiative.

(Note: Farrell is a technical writer with RSI at the CSO.)