RENEWABLE ENERGY

Using renewable energy in industry

SECTOR OVERVIEW

Renewable energy technologies can produce the energy needed for many industrial applications, such as process heating and cooling, space heating, air conditioning, lighting and powering electric motors and machinery. Renewable fuels can also be used as feed-stocks and raw materials for product manufacturing. The type of renewable technology used in industrial facilities depends on the type of energy required, access to the renewable energy source and the design of the industrial facilities and processes.

BENEFITS

Along with energy efficiency, renewable energy can help you meet the energy needs of your industrial facility and more.

Renewable energy technologies can help you:

- Reduce building operation costs
- Decrease reliance on imported fossil fuels
- Cut pollution and greenhouse gas generation
- Enhance state and local economies by creating jobs

Certain renewable energy technologies can also provide:

- Improved air circulation
- Reduced sizing requirements for heating, ventilation and air conditioning equipment
- Reduced peak demand for electricity
- Waste mitigation
- Architecturally appealing building elements
- Enhanced public image

INDUSTRIAL RENEWABLE ENERGY OPTIONS

TECHNOLOGY	APPLICATION	REQUIRES	ADDED BENEFITS
Bioenergy fuels used in fuel cells, gas engines and turbines, internal combustion engines, or steam engines and turbines	Electricity, space heating and cooling, process heating and cooling, water heating and cooling, biodiesel fuel	Continuous source of organic material from farm wastes, wood wastes, food processing wastes, waste water treatment, and agricultural crops	Reduced pollution from waste streams, control of odors, control of gas emissions, reduced operating costs, backup power
Daylighting	Natural lighting	Buildings designed for daylighting	Lower lighting and HVAC costs, productivity benefits
Geothermal heat pump	Space heating and cooling, water heating and cooling	Land available for vertical or horizontal shafts or wells, summer cooling requirement	Increased comfort with in-floor radiant, or exchanger-driven heating and cooling systems, no roof mounted components
Hydroelectric — water turbine, generator	Electricity	Adequate run-of-river flow, electronic controls for effective turbine control, well designed intake screens for fish, when possible use an existing dam to limit regulatory uncertainty	Nonconsumptive water use, controllable baseload power, dammed water can be used for flood control, water reservoir, recreational use, expanded habitat for fish and water fowl
Solar electric (also known as photovoltaics)	Electricity	Unobstructed access to the sun	Electricity production usually matches electricity use, can be incorporated into building structure as roofing or glazing
Solar space heating — thermal mass heating	Space heating	Radiant heating for spaces such as warehouses, assembly, shipping, processing facilities	Improved comfort
Solar space heating — transpired air collector	Space preheating and heating, process heating	Large south-facing wall, high ventilation requirements	Improved air quality
Solar water heating	Hot water, preheated water	Unobstructed access to the sun	Hot water production usually matches hot water use
Wind machine	Electricity	Good wind resource, space for tower	Small footprint, land surrounding tower available for other uses

EXAMPLES IN WISCONSIN

Many Wisconsin industrial facilities, large and small, are using renewable energy systems. Among them are:

- McCain Foods, Plover — Anaerobic digestion of wastewater from potato processing operations
- Madison Municipal Sewerage District, Madison — Anaerobic digestion of municipal wastewater and waste cheese whey
- Winnebago County Landfill Gas Electric Facility, Oshkosh — Internal combustion engines turn landfill gas to electricity, recovered heat is used in county maintenance facility
- South Shore Wastewater Treatment Plant, Oak Creek — Waste aircraft deicer from General Mitchell International Airport codigested with municipal waste

TAX BENEFITS

Certain renewable energy technologies are eligible for tax benefits. Below are brief descriptions of federal and Wisconsin tax policies related to renewable energy. For more information on these tax policies, see the Database for State Incentives for Renewable Energy at www.dsireusa.org. Also, be sure to consult your tax advisor because tax benefits change frequently.

SOLAR AND GEOTHERMAL BUSINESS ENERGY TAX CREDIT (FEDERAL)

The federal business energy tax credit is a 10 percent tax credit available to commercial businesses that invest in or purchase energy property in the United States. Energy property is defined as either solar or geothermal energy. Solar energy property includes equipment that uses solar energy to generate electricity, to heat or cool (or provide hot water for use in) a structure or to provide solar process heat. Geothermal energy property includes equipment used to produce, distribute or use energy derived from a geothermal deposit.

WIND AND BIOMASS RENEWABLE ELECTRICITY PRODUCTION CREDIT OR WIND ENERGY PRODUCTION TAX CREDIT (FEDERAL)

The Renewable Electricity Production Credit, also called the Wind Energy Production Tax Credit, is a per kilowatt-hour tax credit for electricity generated by qualified energy resources defined as wind, closed-loop biomass or poultry waste. Available during the first ten years of operation, the Renewable Electricity Production Credit provides a 1.5 cents per kWh credit adjusted annually for inflation. The adjusted credit amount for 2002 is 1.8 cents per kWh.

SOLAR AND WIND ENERGY EQUIPMENT EXEMPTION (WISCONSIN)

This statute exempts taxpayers from any value added by a qualified renewable energy source for property tax purposes. Qualified equipment includes any active solar equipment and any wind devices as well as transmission equipment, but "does not include equipment or components that would be present as part of a conventional energy system or a system that operates without mechanical means."

JOB CREATION AND WORKER ASSISTANCE ACT OF 2002 SPECIAL DEPRECIATION (FEDERAL)

The Job Creation and Worker Assistance Act of 2002 allows businesses to take an additional 30 percent depreciation on solar, wind and geothermal property in the first year. The 30 percent depreciation only applies to property purchased after September 10, 2001 and before September 11, 2004, which is placed in service before January 1, 2005. This depreciation allowance can be taken along with the depreciation allowance provided under the Solar, Wind and Geothermal Modified Accelerated Cost Recovery System.

SOLAR, WIND AND GEOTHERMAL MODIFIED ACCELERATED COST RECOVERY SYSTEM (FEDERAL)

Under the Modified Accelerated Cost Recovery System, businesses can recover investments in solar, wind and geothermal property through depreciation deductions. This benefit establishes a set of class lives for various types of property, ranging from three to 50 years, over which the property may be depreciated. For solar, wind and geothermal property placed in service after 1986, the current property class is five years. This depreciation allowance can be taken along with the depreciation allowance provided under the Job Creation and Worker Assistance Act of 2002.

FINANCIAL INCENTIVES

Focus on Energy Incentives include Cash-Back Rewards and grants for feasibility studies.

NET ENERGY BILLING

All investor-owned electric utilities (and many municipal utilities and electric cooperatives) allow customers who have renewable electric systems with a capacity of 20 kW or less to direct surplus power back to the grid when their system is generating more power than they require and draw power from the grid when the customer needs more power. Contact your electric utility for more information.

POWER PURCHASE AGREEMENTS

A power purchase agreement with a utility typically pays the producer of renewable electricity a premium above the utility's "avoided cost," which is the price the utility pays for electricity produced from fossil fuels. Contact your local electric utility for more information.

RENEWABLE ENERGY PRODUCTION INCENTIVE (FEDERAL)

Incentive payment from the federal government on energy produced from solar, wind, biomass or geothermal energy. Available to state or municipal utilities and nonprofit electric cooperatives.

UTILITY PROGRAMS

Some utilities offer equipment leasing programs, rebates, low interest loans, ownership of equipment and grant programs. Contact your electric utility for more information.

EDUCATIONAL OPPORTUNITIES

WORKSHOPS

Scholarships are available for attending workshops on renewable energy. Workshops offer practical information that can help you select the renewable energy technologies appropriate for your facility.

DEMONSTRATION SITES

Demonstration sites and tours are available that show renewable energy systems in action on industrial and commercial buildings throughout Wisconsin.

SITE ASSESSMENTS

If you would like more in-depth information about how renewable energy can be added to your facility, we can arrange for a consultant to visit your site.

FOR MORE INFORMATION

focusonenergy.com

Visit this site for fact sheets on various renewable energy topics; case studies about industries that have implemented renewable energy technologies; the Renewable Energy Yellow Pages, which consists of consultants, contractors and suppliers of renewable energy technologies, and workshop and demonstration site information.

www.dsireusa.org

The Database of State Incentives for Renewable Energy (DSIRE) is a comprehensive source of information on state, local, utility and selected federal incentives that promote renewable energy. Visit this site for more information on incentives available for renewable energy technologies.

Focus on Energy is a public-private partnership offering energy information and services to energy utility customers throughout Wisconsin. The goals of this program are to encourage energy efficiency and use of renewable energy, enhance the environment and ensure the future supply of energy for Wisconsin. **800.762.7077 focusonenergy.com**