

Sources of Renewable Energy From Sterling Planet, Inc.

What is solar energy? Solar energy technologies use the sun's energy and light to provide heat, light, hot water, electricity and even cooling for homes, businesses and industry. There are two main types of solar energy for electricity production: (1) Solar photovoltaics or PV, in which solar cells made of semiconducting materials convert sunlight directly into electricity and (2) Systems that concentrate the sun's heat to produce electricity.

What is wind energy? Modern windmills - or wind turbines - use the wind's energy to generate electricity. Wind turbines are mounted on a tower to capture the most energy. At 100 feet or more above ground, they take advantage of the faster and less turbulent wind and catch the wind's energy with propeller-like blades. Wind turbines can be used as stand-alone applications, or they can be connected to a utility power grid or even combined with a solar photovoltaic system. Wind turbines are often built close together to form a wind plant or wind farm.

What is small hydro? Flowing water creates energy that can be captured and turned into electricity. This is called hydroelectric power or hydropower. The most common type of hydroelectric power plant uses a dam on a river to store water in a reservoir. Water released from the reservoir flows through a turbine, spinning it, which in turn activates a generator to produce electricity. But hydroelectric power doesn't necessarily require a large dam. Some hydroelectric power plants just use a small canal to channel the river water through a turbine. Hydro facilities with 30 megawatts or less generating capacity are considered *small hydro*. Typically, small hydro facilities have less impact on fish and wildlife habitats.

What is bioenergy? Bioenergy is diverse, renewable and sustainable energy from plant and other organic matter that is used to generate electricity. Today, wood waste is the largest source of bioenergy. But many other sources of bioenergy can now be used, including other plants, residues from agriculture or forestry, vegetative and food processing waste, bioenergy crops and even the fumes from landfills (landfill gas).

What are wood residues? This is leftover wood waste or forest droppings that would otherwise be unused. No whole trees are cut down and used for electricity production.

What is landfill gas? Landfill gas is the natural byproduct of organic decay. This landfill gas is half or mostly methane, a trace gas that is 23 times more damaging than carbon dioxide in global warming potential – unless it's used to generate electricity. Then, methane transforms from a harmful waste into a fuel source that is environmentally beneficial.

What are the special benefits of bioenergy

Environmental Protection - Climate experts agree that bioenergy production does not contribute to global warming because growing plants remove carbon dioxide - a major greenhouse gas - from the air, offsetting any carbon dioxide emissions from bioenergy generation. Bioenergy projects using landfill gas, the natural byproduct of organic decay, offer additional environmental advantages. These generators harvest the methane in landfill gas, preventing its release into the air and mitigating its environmental impact. If released, methane is 23 times more detrimental than carbon dioxide in global warming potential.

Economic Stimulus - Homegrown bioenergy creates jobs. The U.S. Department of Energy's National Renewable Energy Laboratory reports that for every megawatt of bioenergy produced, 4.9 jobs are created. Additionally, bioenergy is a new opportunity for rural economies, which benefit through new investments and increased demand for crops formerly considered waste products.

Baseload Electrical Output - Unlike wind and solar projects, bioenergy generators provide large-volume baseload capacity and operate continually, much like regular large power plants - Plus, bioenergy can be stored and used later as needed. While using environmentally preferable renewable energy for fuel. Bioenergy generators are reliable, typically operating with 90+% availability and providing electricity in large volume during times of peak energy demand, when it's needed most. By contrast, wind - another highly attractive renewable energy source - is most efficient during the evening, when there is less demand for energy.

Sustainability - As long as the sun shines and plants grow and later decay, there will be bioenergy sources available for electricity production.

Greater Energy Independence - More bioenergy use means improved energy security. Bioenergy can reduce dependence on imported energy, also conserving oil and other nonrenewable energy sources.

For more information about Sterling Planet, one of the clean energy sources that GWIPL works with, go to <http://www.sterlingplanet.com/index2.php>