

What is Biomass?

Simply explained, biomass is vegetation -- for example, trees, grasses, plant parts such as leaves, agricultural waste products, and ocean plants. Being extremely efficient solar collection systems, plants will produce and store energy in the form of carbon as they grow.

During photosynthesis, plants combine carbon dioxide from the air and water from the ground to form carbohydrates, which form the building blocks of biomass. The solar energy that drives photosynthesis is stored in the chemical bonds of the structural components of biomass. If we burn biomass efficiently (which extracts the energy stored in the chemical bonds), then oxygen from the atmosphere combines with the carbon in plants to produce carbon dioxide and water.

Biomass is one of the oldest fuels known to man. Although basic, the primitive campfire illustrates the nature of using biomass for power. When biomass is burned, it produces heat. In a power plant, this heat is used to turn water into steam. The steam is then used to turn turbines, which are connected to electric generators.

Prior to 1875; the United States primary energy supply was from biomass. And back then, an acre of native grass provided the energy to fuel a horse -- then the country's only means of transportation! (That's roughly what it took to pasture one.) Today, using that same quantity of native grass as a biomass resource, enough fuel can be created to drive a car 10,000 miles!

There is actually an abundance of biomass in virtually every part of the world that can be tapped to create power. If we used all the biomass potentially available today, the energy content in that fuel would produce an estimated 2,750 Quads. (1 Quad is equal to 1,000,000,000,000,000 BTUs) At present, the world population uses only about 7% of the available annual production of biomass.

Biomass is probably the most underutilized renewable resource in the U.S. today. How much of this alternative energy material is available for use in this country right now? Here is an example. Space heating accounts for approximately 50% of our total annual energy budget and is also responsible for more than 25% of our total Green House Gas emissions. Approximately six quadrillion BTU's of energy were consumed for space heating in the United States, representing about \$45 billion in expenditures. According to the 1997 census there are 101 million homes in the US. The current available biomass resources could potentially heat the equivalent of 260 million homes!

By displacing more polluting forms of energy generation, biomass resources for energy will also assist America in reducing its dependence on Persian Gulf oil and cut emissions of those harmful greenhouse gases. Using Biomass for energy technologies will also create jobs and fuel economic growth across America.

Using biomass to create energy showcases many unique qualities that can provide a plethora of environmental benefits as well. It can help mitigate climate change, reduce acid rain, soil erosion, water pollution and pressure on landfills, provide wildlife habitat, and help maintain forest health through better management.

More than any other resource, biomass is capable of simultaneously addressing the nations' energy, environmental, and economic needs. Biomass is the logical alternative fuel of the future.