

Fundamentals of Wood to Energy

Clallam
*net*Works

Fact Sheet – The Benefits of Biomass Energy Production

Biomass energy generation represents an opportunity to combine two separate and important functions: renewable energy production and environmentally productive disposal of wastes and residues. Processing methods include combustion for heat, steam, and electricity; co-firing with fossil fuels for reduction of green house gas emissions; gasification for production of biofuels and industrial chemicals; and fermentation for conversion to ethanol. In addition to direct contribution of waste disposal and clean energy production, biomass-to-energy provides many ancillary benefits such as avoided costs, environmental improvements, rural economic development opportunities, and greater energy security.

- Bio-energy serves national energy needs and offsets use of fossil fuels.
- Reductions in fossil fuel consumption lower green house gas (GHG) emissions reducing risk of global warming and long-term climate change.
- Fossil fuel offsets, from domestically produced energy alternatives such as bio-energy, help to strengthen strategic assurance of a secure national energy supply while providing local utilities a price hedge against unanticipated spikes in energy costs.
- Domestically produced energy offers positive economic adjustment to U.S. trade deficits while generating job and tax benefits for local economies (direct jobs – 4-5/MW; tax revenues ~ \$47,000/MW).
- Energy generated from biomass that is otherwise municipal solid waste (MSW) reduces garbage volumes sent to landfills.
- Biomass utilization to produce energy results in significant reduction of smoke and particulate emissions from open burning of agricultural and forest residues (controlled combustion for energy releases carbon emissions that are < 5% of green fuel weight; open fires release carbon emissions that can be as much as 50% of green fuel weight).
- Biomass utilization adds value to forest product industry raw material returns which re-enforces infrastructure sustainability while broadening opportunities for forest restoration activities.
- Biomass-to-energy projects are often located in rural areas at the end of the transmission grid. Development of rural distributed power installations can result in voltage stabilization and transmission load reductions with avoided line losses. The EPA estimates 9% of electricity is lost to line loss.
- Biomass is the largest source of U.S. renewable energy. Unlike wind or solar energy, bio-energy is firm, on-demand, and available for electricity, heat and steam. Biofuels can be provided as solids, gases, or liquids.
- Biomass is a renewable feedstock for sustainable generation of clean energy.