



## Biomass Energy

### Good numbers for biomass energy

Energy in wood: 8,500 – 9,500 btu/lb for oven dry wood (varies by species)  
7,750 btu/lb for wood pellets  
4,300 btu/lb for green wood  
12,000 green tons/year/megawatt required for biomass-to-electricity  
65 - 115 gallons Ethanol/ton oven dry wood

---

### More details concerning biomass-to-electricity:

One 50 MW power plant will use between 550,000 and 650,000 tons of green wood per year using an 80-90% operation capacity, 8,000 hrs per year, and 4,300 btu/lb green wood .

A large coal plant has a process with a heat rate that requires 10,000 btu/kWhr. Smaller wood plants have lower heat rates and require 13,000 btu per kWhr.

*Source: Bulpitt, Georgia Institute of Technology*

---

### Biomass-to-electricity calculations:

4,300 btu per pound of green wood chips = 8,600,000 btu/green ton

8,600,000 btu /13,000 btu = 661 kWhr per green ton = 1.5128 green tons per MWhr

1.5128 green tons per MWhr x 8,000 hours = 12,102 tons per MW per year

12,102 tons x 50 MW = 605,120 green tons per year for a 50 MW biopower plant

*Source: Nathan McClure, Georgia Forestry Commission*

---

### Paying \$200/ton for wood pellets is the same as paying:

- \$1.67 per gallon for heating oil
- \$1.18 per gallon for propane
- \$12.50 per (1,000 ft<sup>3</sup>) for natural gas
- \$0.04 per kWhr for electricity

*Source: The Wood Pellet Heating Guidebook, Massachusetts Department of Energy*