

Renewable Energy Primer (PART 4 – BIOMASS/LANDFILL GAS) - courtesy of Power Scorecard

Next to using less electricity, purchasing renewable energy or energy that comes from non-fossil based sources is a great choice if you want to reduce your contribution to Climate Change. This week we will discuss **Biomass** and **Landfill Gas** sourced electricity.

The term "biomass" encompasses diverse fuels derived from timber, agriculture and food processing wastes or from fuel crops that are specifically grown or reserved for electricity generation. Biomass fuel can also include sewage sludge and animal manure. At present, most biomass power plants burn lumber, agricultural or construction/demolition wood waste or convert biomass into methane gas that fuels steam generators.

Large municipal or industrial landfills produce methane gas that can be burned to drive generators. Microorganisms that live in organic materials such as food wastes, paper or yard clippings cause these materials to decompose and emit methane gas and carbon dioxide (CO₂). Landfill gas is collected from landfills by drilling "wells" into the landfills and collecting the gases through pipes. The US Environmental Protection Agency (EPA) requires all large landfills to install collection systems at landfill sites to minimize the release of methane, a major contributor to global climate change with 23 times the negative impact on a pound-by-pound basis as CO₂.

What are the environmental impacts? Whether combusting directly or engaged in gasification, biomass and landfill gas resources do generate air emissions. Biomass fuels create nitrogen oxides (NO_x). NO_x is the generic term for a group of highly reactive gases that are often seen as a reddish-brown layer over many urban areas. NO_x emissions vary significantly among biomass combustion facilities depending on their design and controls. Another air quality concern associated with biomass plants is particulates although these emissions can be readily controlled through conventional technologies.

Both biomass plants and landfill gas-burning release the primary greenhouse gas carbon dioxide (CO₂). However, the cycle of growing, processing and burning biomass recycles CO₂ from the atmosphere. If this cycle is sustained, there is little or no net gain in atmospheric CO₂. Similarly, both biomass and landfill gas reduce the release of methane gas.

Find out more about *biomass* and *landfill gas* energy and other renewable sources of energy check at <http://powerscorecard.org>.

For past Renewable Energy Primer information, go to the Bedford Green Page http://www.bedfordny.info/html/green_tips.htm.