Biomass boilers use various forms of biomass energy such as wood chips or pellets, native grasses such as switchgrass or Big Blue Stem, biodiesel, straight vegetable oil (SVO), or animal fats and greases in place of conventional fossil fuels such as coal, fuel oil and natural gas. Biomass energy, or bioenergy, is considered to be a sustainable form of energy because it renews itself at a frequent rate. Depending upon the type of biomass, it can be lower in cost, readily available, and its emissions less damaging to the environment.

**What are biomass boilers?**

**How are they used?**

Depending on the type of boiler you have and the type of biomass fuel you’ll be using, you may be able retrofit your existing boiler. Many industrial boilers are designed to burn multiple fuels in order to take advantage of the fuel most economically available.

If your boiler uses fuel oil, you may be able to burn liquid forms of biomass fuels such as biodiesel, SVO, or animal fats and greases with little or no modification. If your boiler is designed to burn solid fuels like coal, you may be able to modify it to accept non-liquid biomass fuels such as wood chips or pellets, shelled corn or switch grass. Some industrial boilers may be able to burn industrial wastes such as wood refuse, waste coals, restaurant grease or animal byproducts.
**Where can you get them?**

While many industrial boilers are designed to burn multiple fuels, there is an increasing demand for biomass boilers due to changing emission regulations, legislation regarding generating energy from biomass, and the rising costs of fossil fuels. In Pennsylvania, there are several boiler manufacturers producing biomass boilers.

**What is their potential for Pennsylvania?**

Businesses, schools and hospitals are increasingly using biomass boilers in Pennsylvania due to their many advantages. Biomass boilers use a renewable energy source, are carbon neutral, and are cleaner burning.

By using agricultural byproducts, businesses can reduce their fuel costs, utilize a waste product and achieve fuel flexibility. It also ensures stable fuel prices and availability, boosts rural economies and improves U.S. energy security. In addition, pending legislation requires energy providers to produce a percentage of their electricity from renewable resources.

**What issues are limiting their use?**

Most solid biomass has a lower energy density than coal. [Kristie – we should use the energy density graph (Btu/lb vs. various feedstocks] This is due to higher moisture and oxygen content of the biomass. As a result, some companies utilize the cofiring concept where approximately 20 percent of the heat input is from biomass and 80 percent is from a fossil fuel. This will raise the energy density of the fuel, while still reaping the benefits of biomass.

Some additional concerns include getting authorization from state regulatory agencies to use biomass. These agencies may not have emissions data from biomass fuels such as animal fats and restaurant grease and may not want to authorize the use of these fuels.

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**Additional Resources**


Penn State Fact Sheet – Biomass Energy: [http://www.abe.psu.edu/extension/factsheets/h/H82.pdf](http://www.abe.psu.edu/extension/factsheets/h/H82.pdf)

Penn State Biomass Energy Center: [http://www.bioenergy.psu.edu/](http://www.bioenergy.psu.edu/)

Penn State Fact Sheet – Biomass Energy: [http://www.abe.psu.edu/extension/factsheets/h/H82.pdf](http://www.abe.psu.edu/extension/factsheets/h/H82.pdf)


EMS Energy Institute Fact Sheets: [http://www.energy.psu.edu/factsheets.html](http://www.energy.psu.edu/factsheets.html)