



Office of the Ohio  
Consumers'  
Counsel

Your Residential Utility  
Consumer Advocate

CONSUMERS'  
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## Renewable Energy Sources

# BIOMASS ENERGY



### What is biomass energy?

Biomass is a renewable resource that can be used to generate electricity, produce heat or fuel certain automobiles. It can be developed for use in solid, liquid or gaseous states. The sources for biomass energy are organic matter such as municipal and industrial waste, methane gas from landfills, plants, unused vegetable crops and tree waste.

People have been using biomass for thousands of years when wood was first burned to cook food and keep warm. Even now, wood and wood waste are still the largest sources of biomass energy used. Biomass can be used for fuel, power

production and products that typically would be derived from fossil fuels, such as natural gas or coal. Today, there are five different methods for using biomass to generate energy. Those methods are:

- ▶ Direct combustion – the burning of dry organic matter, such as wood;
- ▶ Chemical conversion – the conversion of soybean and canola oil to bio diesel or ethanol;
- ▶ Pyrolysis – the heating of organic compounds to produce gases;
- ▶ Anaerobic digestion – the conversion of sewage and animal waste to methane;

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## RENEWABLE ENERGY SOURCES BIOMASS ENERGY

# CONSUMERS' FACT SHEET

The Office of the Ohio Consumers' Counsel (OCC), the residential utility consumer advocate, represents the interests of 4.5 million households in proceedings before state and federal regulators and in the courts.

The state agency also educates consumers about electric, natural gas, telephone and water issues.

For more information, please visit the OCC website at [www.occ.ohio.gov](http://www.occ.ohio.gov).



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- Fermentation – the creation of ethanol by fermenting and distilling sugar solutions that can be used to fuel automobiles.

These biomass processes are used to create energy for industrial processes and residential purposes as well. For example, by using methane gas from landfills to create electricity, electric utilities can purchase and provide biomass-derived power to be sent to residential customers.

### Statewide and national outlook

Biomass accounts for more than half of the renewable energy produced in the United States. In Ohio, several sites across the state use biomass energy to light and heat homes and fuel certain automobiles.

According to the [U.S. EPA's Landfill Methane Outreach Program](#), Ohio has developed 21 "Landfill Gas-to-Energy" projects with a total of 48 megawatts for electricity purposes and delivering 32 million cubic feet per day for heating purposes. Several of the projects use the biomass energy directly but some generate electricity to sell to a third party. In addition to the operating projects in Ohio, there are 21 more candidate landfill projects still available for development. There also is potential for a number of smaller scale projects across the state.

Throughout the nation, there are 558 operational landfill biomass projects and about 510 candidate landfills considered for biomass projects that have yet to be developed.

Ohio has six operational ethanol plants that have a capacity to produce 478 million gallons of ethanol annually.

Biofuels, such as biodiesel are widely used not only in the United States, but in other countries as well. Brazil is the second largest producer of ethanol fuel and is the world's largest exporter. In 2010, the United States and Brazil produced 87.8 percent of the world's biofuels supply. Additionally, Germany has the largest output of biofuels in Europe.

### Pros and cons of biomass energy

Biomass energy does emit carbon dioxide when burned. Living organic matter, however, can typically absorb the carbon dioxide when biomass energy is used in a responsible manner. It is considered a renewable resource since the plants used in biomass energy can be grown over and over again.

On the other hand, depending on the source of the biomass, the emissions from burning biomass for energy may emit a variety of pollutants into the air. This may cause health issues in some people. Except for the direct combustion in "trash to energy" type power plants, biomass is considered more environmentally friendly than traditional fossil fuels. Also, there are some people who believe that some biomass materials would be better used as food (as in the case of corn), fertilizers for crops and other items rather than burning them for energy.

### Additional resources

For additional information on biomass energy, visit these organizations:

[Green Energy Ohio](#)

[U.S. Department of Energy Biomass Program](#)

[National Renewable Energy Laboratory Biomass Research](#)

[U.S. EPA Landfill Methane Outreach Program](#)