

Energy Source Quick Reference Guide

Fossil Fuels

The remains of plants, animals and microorganisms that lived millions of years ago

Crude Oil – These are the common fuels created from the processing of Crude Oil

Gasoline – Fuel for internal combustion engines

• **Diesel Fuel / Fuel Oil** – Used for transportation and heating

• **Lubricants** – Motor oils, hydraulic fluids, greases, etc.

• **Liquefied Petroleum Gas** – LPG – Methane, Ethane, Propane, Butane

• **Natural Gas** – Also known as Liquefied Petroleum Gas (LP Gas)

▶ Deposits are found underground (usually associated with oil fields) and require processing to remove unwanted gasses

▶ The Natural Gas used in homes is almost pure methane gas

• **Coal** – Coal is a readily combustible black or brownish-black sedimentary rock primarily composed of carbon. Often sulfur is present.

Biomass – Solids to be burned for heat

▶ Biomass is the stored energy in organic materials made from plants and animals. Some examples of biomass fuels are wood, crops and manure.

▶ Biomass is a renewable energy source because we can always grow more trees and crops, and animal waste will always be available.

Ethanol – Gasoline Additive

▶ Also known as Grain Alcohol – Ethanol is made by fermenting and then distilling starch and sugar crops – Maize, sorghum, potatoes, wheat, sugar-cane, cornstalks, fruit and vegetable waste.

▶ A little more expensive to produce than gasoline. Pure grain alcohol is rated at 106 octane. Is used to boost the octane in gasoline and is safe for most vehicles. U.S. Gasoline has up to 10% ethanol (E10).

• **Biodiesel** – Diesel Fuel Additive

▶ Biodiesel is the name of a clean burning alternative fuel, produced from domestic, renewable biomass resources. Biodiesel is the end product after glycerin is chemically removed from fat or vegetable oil.

▶ Biodiesel contains no petroleum, but it can be blended at any level with petroleum diesel to create a biodiesel blend. It can be used in compression-ignition (diesel) engines with little or no modifications.

▶ Biodiesel is simple to use, biodegradable, nontoxic and essentially free of sulfur and aromatics. Fuel-grade biodiesel must be produced to strict industry specifications in order to insure proper performance.

▶ Biodiesel will gel in very cold temperatures, just as the common #2 diesel does. Blends of 5% biodiesel (B5) or less have virtually no impact on cold flow. Higher blends are adequately handled with the same fuel management techniques as #2 diesel.

Organic (Biomass and BioFuels)

from renewable resources

Solar – There are two methods of capturing energy from the sun:

1. Using the sun's radiant energy to heat water in snaking tubes on a building's roof. This hot water can be used to heat a home through heat transfer devises.
2. Using the sun's radiant energy to energize special photo cells which, in turn, create electricity. This is called 'Photovoltaics'. Electricity must be used immediately or stored in a battery cell.

• **Electricity** –

▶ Primary grid electricity generation in the United States:

Coal 51%, Nuclear 21%, Natural Gas 17%, Hydroelectric 7%, Renewable 2%, Petroleum 2%

▶ Consumers can generate electricity with windmills, paddlewheels in moving water and solar photovoltaics. Surplus electricity can be sold back to the local power company, stored in battery cells or used to heat water which can be stored for future demand.

WaterStove Fuels

Most WaterStoves have a firebox designed to burn solid fuels. Many models can also burn liquid or gaseous fuels by attaching a fuel specific burner to the firebox door.

Liquid-

Fuel Oil

Biodiesel

Waste Oil
(used lubricants)

Gaseous -

Propane

Natural Gas

Solid -

Coal

Wood

Corn, etc.

Other WaterStove Heat Sources

Solar -

Hot water from a solar source can be plumbed directly to a WaterStove's insulated hot water reservoir.

Electricity -

Electric heating elements can be installed inside the WaterStove's water reservoir to convert surplus electricity into hot water.