
**BIOMASS** is produced from vegetable oils, animal fats, recycled restaurant greases, and other byproducts of plant, agricultural, and forestry processing or industrial/human waste products. It is converted to electricity in a process similar to converting fossil fuels to heat or electricity.

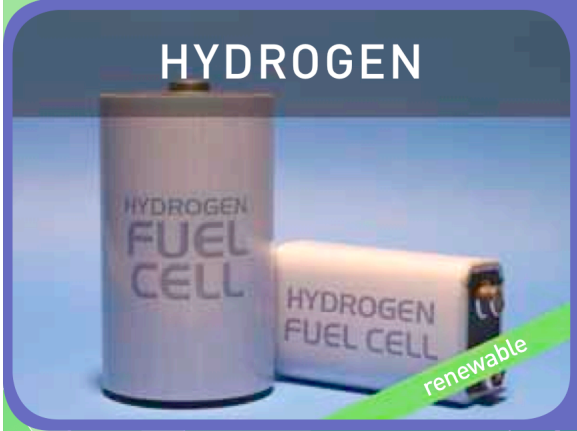
**PROS**
- Abundant supply
- Fewer emissions than fossil fuel sources
- Can be used in diesel engines
- Auto engines easily converted to run on biomass fuel

**CONS**
- Source must be near usage to cut transportation costs
- Emits some pollution as gas/liquid waste
- Increases nitrogen oxides, an air pollutant emissions
- Uses some fossil fuels in conversion

**ETHANOL** is a subset of biomass that is manufactured from alcohols, ethers, esters, and other chemicals extracted from plant and tree residue. It can be made from corn, sugar, wheat, and barley.

**PROS**
- Easily manufactured
- Fewer emissions than fossil fuel sources
- Carbon-neutral ($CO_2$ emissions offset by photosynthesis in plants)

**CONS**
- Source must be near usage to cut transportation costs
- Extensive use of cropland
- Less energy in a gallon of ethanol than in a gallon of gasoline and diesel fuel
- Costs more than gasoline to produce
- Currently requires government subsidy to be affordable to consumers
- Requires engine conversion to be used as fuel


**HYDROGEN** is found in combination with oxygen in water, but it is also present in organic matter such as living plants, petroleum, or coal. Hydrogen fuel is a byproduct of chemically-mixing hydrogen and oxygen to produce electricity, water, and heat. It is stored in a "cell" or battery.

**PROS**
- Abundant supply
- Water vapor emissions only
- Excellent industrial safety record

**CONS**
- More expensive to produce than fossil fuel systems
- Currently uses a large amount of fossil fuels in the hydrogen extraction process
- Storage and fuel cell technology still being developed

**GEOTHERMAL ENERGY** is generated by heat in the earth's core. It is found underground by drilling steam wells (like oil drilling). There is a global debate as to whether geothermal energy is renewable or nonrenewable.

**PROS**
- Produces about 1/6 the $CO_2$ that a power plant using natural gas emits
- Efficient
- Minimal environmental impact

**CONS**
- Geothermal fields found in few areas around the world
- Wells could eventually be depleted
- Expensive start-up costs