ALTERNATIVE ENERGIES

**INTRODUCTION**

Petroleum (oil) is a fossil fuel and a non renewable resource. As our supply of petroleum dwindles and prices rise, the search for alternative fuels intensifies. Learn more about petroleum alternatives below.

**COAL**

PROS

* Proven technology.
* Inexpensive.
* Efficient.

CONS

* Major producer of greenhouse gases.
* Cause of acid rain.
* Not a renewable resource.

**SOLAR POWER**

Solar power harnesses energy from the sun.

PROS

* No pollution after manufacturing and transporting solar panels.
* Silent technology.
* Allows the harnessing of energy in areas that are off the grid.
* Solar panels can be installed on rooftops.
* Energy can be stored for use during non-sunny times.

CONS

* Initial cost of panels is high.
* Sun dependent (don't work when it is overcast or at night).

**HYDROELECTRIC ENERGY**

Hydroelectric energy is created when water flows downhill and the water is then used to drive turbines. In a hydropower plants water flowing through a dam turns a turbine, which turns a generator.

PROS

* Large amount of electrical power can be produced by a moderately sized station.
* Sustainable.
* Proven technology.
* No CO2 emissions.

CONS

* Building of dams is usually environmentally destructive.
* Species loss can occur when dams are built.

**NATURAL GAS**

PROS

* Proven technology.
* Easily transported.
* Emissions are lower than other fossil fuel sources.

CONS

* Not a renewable resource.

**HYDROGEN**

Hydrogen is the most common element on Earth. It must be separated from other elements to be used for energy.

PROS

* Hydrogen is a clean fuel.
* Sustainable resource.

CONS

* Hydrogen is commonly separated by using natural gas or other fossil fuels.
* Expensive infrastructure needed for production, storage and transportation.
* Can be dangerous explosive.

**BIOMASS FUEL**

Biomass fuel uses biological material, such as corn and switchgrass to create fuel. Can be used to create pellets for heating systems or to make ethanol for vehicles.

PROS

* Renewable.
* Proven technology.
* Can be used to burn waste from agriculture

CONS

* Creates pollution.
* Expensive technology.

**GEOTHERMAL ENERGY**

Geothermal Energy uses heat from inside the Earth. Three main types of geothermal energy include heat pumps (pumps heat from earth's surface), hot water from near earth's surface, hot dry rocks (Obtains heat from rock by digging deep wells).

PROS

* If done properly can be sustainable.
* Non-polluting.
* Little environmental impact.

CONS

* Construction of power plants can have negative environmental impact.
* Geothermal sites can run out of steam.
* Initial expense is high and can require a lot of space.

**WIND ENERGY**

Wind energy is created when the power of wind is harnessed usually using wind turbines.

PROS

* Non-polluting.
* Sustainable.
* Well proven technology.
* Can be used on small scale (individual homes or businesses).

CONS

* Only works when the wind blows.
* Unsightly to some.
* Susceptible to lightning damage.
* Some turbines are noisy.
* Can be problem for birds (disruption of migratory patterns, killed by turning blades).

**NUCLEAR ENERGY**

Nuclear energy comes from the splitting of atoms. The heat that is produced can create steam to power turbines that power a generator.

PROS

* No greenhouse gases.
* Produces large amounts of energy.

CONS

* Expensive.
* Nuclear Waste Disposal.
* Nuclear Accidents.
* Possibility of plutonium from the fission reaction being used during war or terrorist attack.
* Not a renewable resource.

**OCEAN ENERGY**

Ocean energy can come from ocean waves, tides or ocean thermal energy

PROS

* Sustainable.
* Non-polluting.

CONS

* Current technology is not cost effective.
* Not proven on commercial scale.
* Potentially damaging to sea bed and sea life.

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