

# Fossil Fuels and Alternative Energy Sources

“Unless someone like you cares a whole awful lot,  
Nothing is going to get better, it's not.”  
-The Lorax



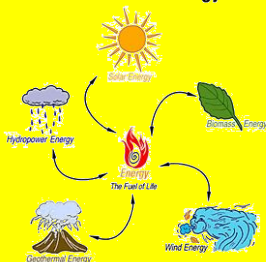
## What are energy sources?

Please watch this video on youtube entitled Renewable Energy 101:  
<https://www.youtube.com/watch?v=T4xKThjcKaE>

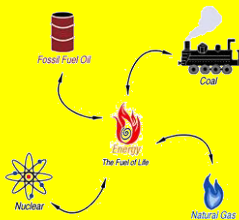
**Renewable Energy:** Can be regenerated in a short amount of time or is basically unlimited. Not used as heavily in the United States.











**Non-renewable Energy:** Can't be replaced in a short amount of time and are limited. Primary source of energy in the United States.

Renewable Energy



Non-Renewable Energy



U.S. Energy Consumption by Source 2006					
	<b>PETROLEUM</b> nonrenewable transportation, manufacturing	38.8%		<b>BIOMASS</b> renewable heating, electricity, transportation	3.3%
	<b>COAL</b> nonrenewable electricity, manufacturing	22.6%		<b>HYDROPOWER</b> renewable electricity	2.9%
	<b>NATURAL GAS</b> nonrenewable heating, manufacturing, electricity	21.6%		<b>GEOTHERMAL</b> renewable heating, electricity	0.35%
	<b>URANIUM</b> nonrenewable electricity	8.2%		<b>WIND</b> renewable electricity	0.25%
	<b>PROPANE</b> nonrenewable manufacturing, heating	1.9%		<b>SOLAR</b> renewable light, heating, electricity	0.1%

# Non- Renewable Resources

Please watch this video on youtube entitled Fossil Fuels 101:

<https://www.youtube.com/watch?v=zaXBVYr9lj0>

**Fossil Fuels:** are nonrenewable energy resources that form in the Earth's crust over millions of years from the remains of once living organisms through immense amount of heat, pressure and time. Will not be replenished in a human lifetime. In a power plant, fossil fuels are burned to heat water, which produces steam to turn a turbine. The turbine spins which powers a generator to produce electricity.

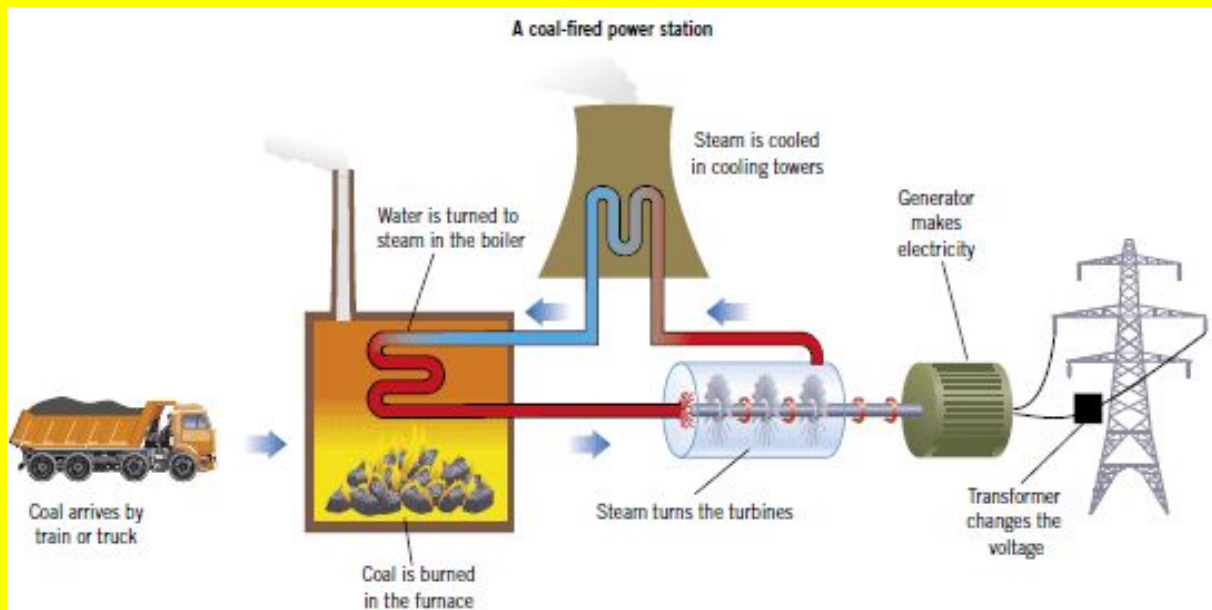
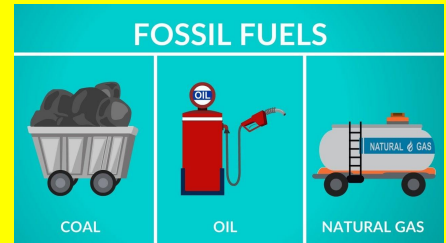
Examples: Coal (solid), Oil/Petroleum (liquid) and Natural Gas (gas)

## Advantages:

- Inexpensive
- Reliable

## Disadvantages:

- Pollution (oil spills, air pollution, acid rain/ Contribute to Global Warming)
- Destruction of land to collect the fossil fuels
- Take millions of years to form (once we use all of them up, they are gone for good)
- Non-Renewable



# Solar Energy

Please watch this video on youtube entitled Solar Photovoltaics 101:

<https://www.youtube.com/watch?v=gl5tY5Noacc>

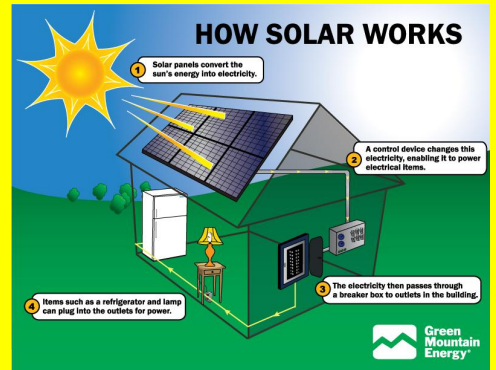
The energy of the sun can be converted to electricity using photovoltaic or solar cells. (See diagram below)

## Advantages

- No pollution
- No noise
- Solar energy will last as long as the sun shines.
- Cut down on electric bill
- Renewable

## Disadvantages

- Can be expensive to install
- Limited amount of electricity depending on location (places that are in the shade/ places where there is not many hours of daylight at times)



# Wind Energy

Please watch this video on youtube entitled Wind Power 101:

<https://www.youtube.com/watch?v=Z5c50-hcD0>

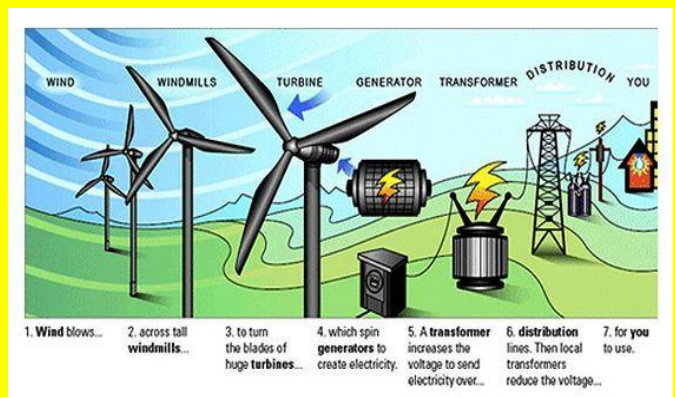
Windmills use wind energy spin a turbine connected to electric generator to produce electricity.

## Advantages

- No pollution
- Wind is free (however the building of the turbines is not. Once they are built, they are sustainable.)
- Renewable

## Disadvantages

- No Wind=No Energy (Location)
- Can be loud
- Pose a threat to wildlife



# Hydroelectricity

Please watch this video on youtube entitled Hydropower 101:

<https://www.youtube.com/watch?v=q8HmRLCgDAI>

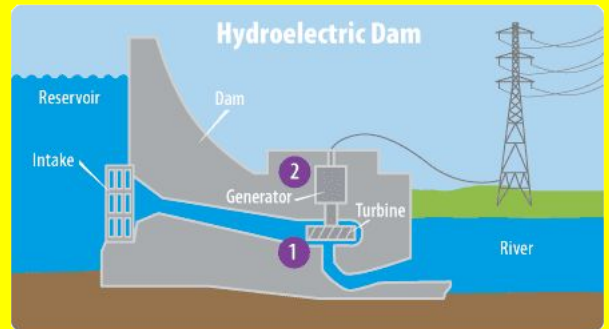
Electricity is produced from moving water through a turbine which causes it to spin. The turbine is connected to a generator which produces electricity.

## Advantages

- No pollution
- Reliable- Control amount of water flow
- Renewable

## Disadvantages

- Loss of natural habitat when dams are built.
- Expensive to build (Hoover Dam costed \$49 million dollars to build in 1931)
- Flooding/droughts



# Biomass

Please watch this video on youtube entitled Biomass 101:

<https://www.youtube.com/watch?v=yHWcddUZ35s>

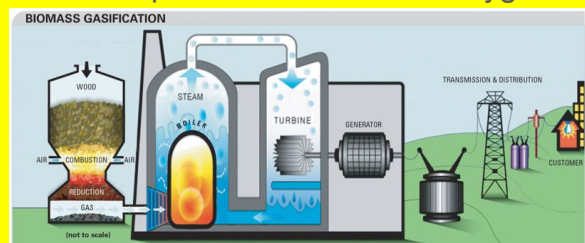
Organic material (wood, crops, waste materials) store energy from the sun. When they are burned, they release steam which causes a turbine to move to power a generator which creates electricity.

## Advantages

- Add value to agricultural crops
- Growing more crops reduces CO<sub>2</sub> in the atmosphere and increases oxygen.
- Create Jobs

## Disadvantages

- Loss of natural habitat
- Pollution



# Geothermal

Please watch this video on youtube entitled Geothermal 101:

<https://www.youtube.com/watch?v=DFQrE91kZwk>

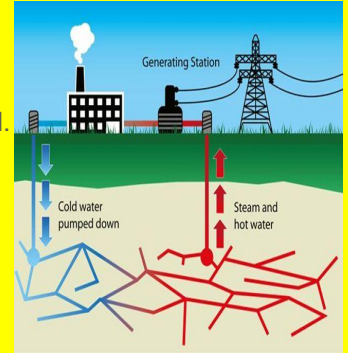
Geothermal energy is produced by heat within the Earth's crust. Geothermal wells are drilled into Earth's crust. Geothermal heat produces steam which turn turbines to power a generator producing electricity.

## Advantages

- Little to no Pollution
- No outside fuel source is needed
- Power Stations do not take up much room and can be built underground.

## Disadvantages

- Can only access in certain Locations (most active regions of geothermal development are in the most tectonically and volcanically active regions of the world.)
- Cost \$\$\$
- Run out of steam



# Nuclear Energy

Please watch this video on youtube entitled Nuclear Energy 101:

[https://www.youtube.com/watch?v=44ovdxOvP\\_A](https://www.youtube.com/watch?v=44ovdxOvP_A)

Energy found in the nuclei of atoms. Power plants convert this to electrical energy through either a fission (splitting atoms) or fusion (combining atoms) reaction.

## Advantages:

- Do not produce air pollutants or Carbon Dioxide
- Produced from Uranium (element most commonly used)
- No greenhouse gases are produced

## Disadvantages:

- Nuclear explosions
- Start up costs are high
- Radioactive waste
- Non-renewable

