

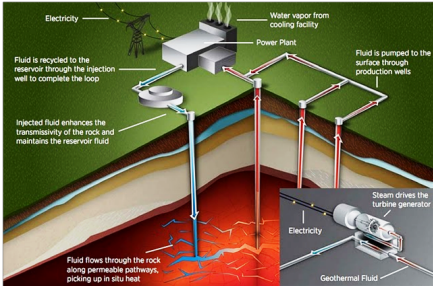



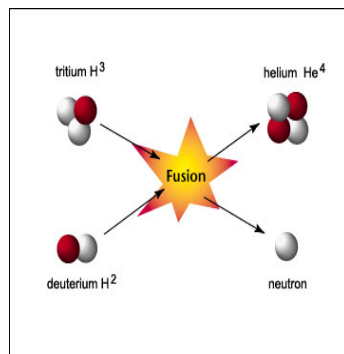
tinyurl.com/nbdz7r9

Energy Source	How does it work?	Pros	Cons
Solar Power	<p>Photovoltaic cells convert the sun's energy into electricity</p> 	<ul style="list-style-type: none">-Causes little environmental impact-Mechanical generators are not required to create energy- free to run	<ul style="list-style-type: none">-The amount of power converted depends on the time of day, time of year, location and weather conditions-Expensive to set up
Wind Power	<p>Air molecules move through turbines and transfer their kinetic energy to make the turbines spin.</p> 	<ul style="list-style-type: none">- Produces no pollutants-Free to run	<ul style="list-style-type: none">- Affects bird population- Since the wind isn't always blowing, it does not always generate electricity.-Expensive to set up.
Hydro Power	<p>Water spins turbines which make electricity</p> <p>3 main ways to do it: put it in swift rivers put it under waterfalls Build a dam and then release the water through the turbine.</p>	<ul style="list-style-type: none">-energy efficient-clean-renewable	<ul style="list-style-type: none">- Decreases fish populations-Disturbs surrounding environment-we must build a dam to do it

<p>Biomass/Biofuels</p>	<p>Organic material made from plants and animals It is basically burning natural things to create heat or fuel. The heat is used to boil water and the steam then rises and powers a turbine, producing electricity.</p>	<ul style="list-style-type: none"> -renewable -safe -biodegradable -reduce air pollution 	<p>-all release CO2</p>
<p>Geothermal Energy</p>	<p>Geothermal energy is obtained by using heat from the earth's core to heat groundwater, which is then distributed to homes and businesses. For deeper reservoirs, the superheated water/steam is piped to the surface to power a steam turbine attached to a generator.</p>  <p>The diagram illustrates a closed-loop geothermal system. It shows a cross-section of the earth with a magma chamber at the bottom. A well is drilled down to a reservoir of geothermal fluid. The fluid flows up through a permeable pathway, picking up heat. At the surface, the fluid is pumped to production wells. It then enters a power plant where steam drives a turbine generator to produce electricity. The fluid is then recycled back to the reservoir through an injection well. Labels include: Electricity, Water vapor from cooling facility, Power Plant, Fluid is pumped to the surface through production wells, Injected fluid enhances the transmissivity of the rock and maintains the reservoir fluid, Fluid flows through the rock along permeable pathways, picking up in situ heat, Geothermal Fluid, and Steam drives the turbine generator.</p>	<p>Geothermal energy is a good alternative to fossil fuel, has an (almost) unlimited supply, and produces no by-product</p>	<p>Drilling for underground reservoirs is both expensive and time consuming, involving heavy machinery and a large impact on the surface. Geothermal energy cannot be used everywhere, due to the absence of plate boundaries.</p>
<p>Oil/Petroleum (fossil fuel)</p>	<p>We drill for crude oil underground in reservoirs. This crude oil is pumped out, transported and refined into petroleum. We burn the petroleum in steam turbines to produce energy. The heat is</p>	<p>It is very useful. We use petroleum for heating oil, jet fuel, tires, plastics, artificial heart valves, eyeglasses and ink.</p>	<p>Production of petroleum releases pollutants and CO2 harming our environment, affecting people's health, and disrupting earth's natural</p>

	used to boil water and the steam then rises and powers a turbine, producing electricity.		climate/carbon cycle. Drilling affects marine and land habitats. At some point we will run out of oil.
Natural Gas (fossil fuel)	Natural gas is a fossil fuel that is burned to generate electricity. The heat is used to boil water and the steam then rises and powers a turbine, producing electricity.	Natural gas is relied heavily on for industry and electricity production because it is very effective and inexpensive. It is also used as a raw material in paint, fertilizer, plastics, dyes, photo film, medicines, and explosives.	Burning natural gases releases pollutants like carbon dioxide into the atmosphere which affects its surroundings. Leaking gases may cause explosions and disrupt marine and land habitats.
Coal (fossil fuel)	Coal, mostly made up of carbon, is acquired through underground mining. After it is acquired, it is often taken to power plants to burn, which generates electricity. Before it is burned, coal is cleaned off, so it can perform to its highest potential. The heat is used to boil water and the steam then rises and powers a turbine, producing electricity.	Coal, unlike many other energy sources, is rather abundant and inexpensive. Additionally, coal is also versatile, having the ability to be in solid, liquid, and gas form. The liquid and gas form of coal burns cleaner, so it is better for the environment. Because of such characteristics, coal is also inexpensive to the consumer.	The burning of coal releases carbon dioxide, sulfur (which can lead to sulfur dioxide when exposed to oxygen which can lead to acid rain), and other pollutants. The extraction process is also harmful to the environment. It is also a fossil fuel which is a non-renewable resource.
Nuclear/Uranium	Extracts power from atom's nucleus by means of nuclear fusion and nuclear fission. Nuclear fusion extracts energy from atoms by combining them together to form a larger atom.	-Compared to fossil fuels, nuclear power is very clean -no pollutants or CO ₂ -produces more energy	-Disposing of the radioactive waste poses many dangers to humans, wildlife, and plants -radioactive waste is not biodegradable

Nuclear fission extracts energy from atoms by splitting apart one atom to form many smaller ones, this form of extraction is also used in nuclear power plants. Electricity is produced when the heat from the chain reactions heat water which produces steam to turn turbines and generate electricity.



-nuclear plants use screens to prevent fish from entering their cooling systems but ends up killing other marine animals.

Why build a house without electricity?

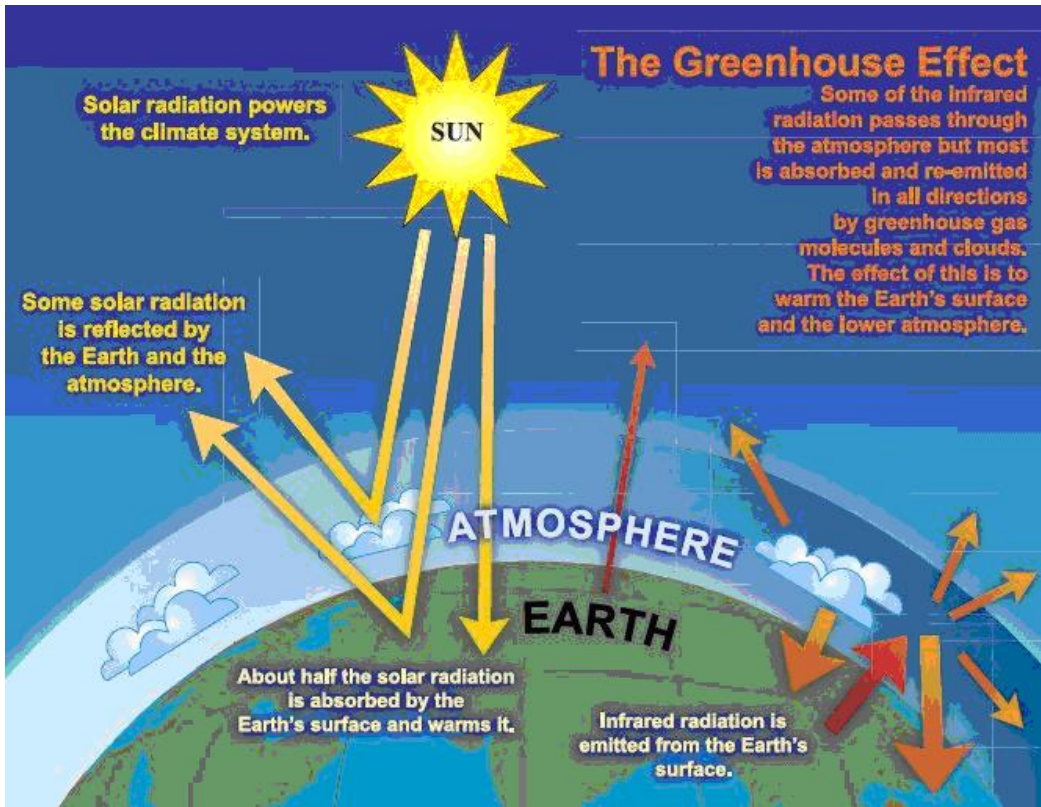
Cost/Economics - The US cost of energy are increasing rapidly since the industrial age. As of right now our cost of electricity is \$1,200 per household per year. The amount of kilowatt hours per year we use 11,460 and the amount of kilowatt hours we use per month are 955 hours. Locally as a city, not including costs for private use like houses, Novato uses \$373,000 per year from PG&E. As a state we use 250,348 kilowatt hours per year. As a country we use 3,749,985 kilowatt hours. As an economic standpoint the amount of energy we use affects greatly the amount of money we spend as a country, state, and cities. The other major issue that we have very slightly addressed as a country, is that our fossil fuels are running out. We only have 150 years left depending we use the fossil fuels at the same rate we are using it now, and as a result renewable energy is the best way to solve this issue as of now.

Climate change - how does it happen? (greenhouse effect, carbon cycle, use of sun's energy):

-Greenhouse gases include carbon dioxide, water vapor, methane, nitrous oxide and several non-natural gases. These gases can be increased mainly by human action. Carbon dioxide is produced nitrous oxide can also be increased by burning fossil fuels or waste products during agricultural or industrial processes. Methane gas is produced in landfills or farming due to decomposition of organic waste. Greenhouse gases have the ability to absorb and trap heat in the Earth's atmosphere. The process where thermal radiation is absorbed into the

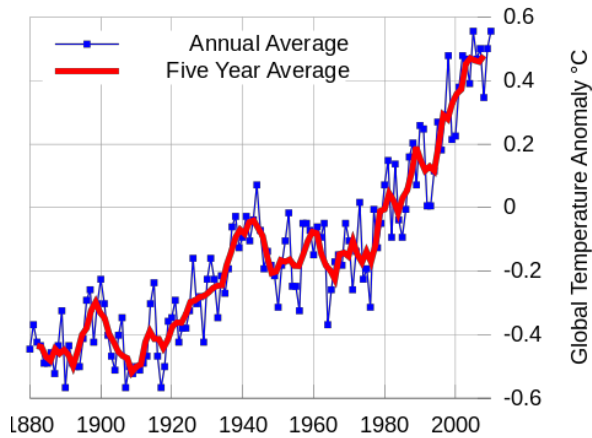
atmosphere because of the gases is called the greenhouse effect. If there are more greenhouse gases in the air, the temperature typically increases and the climate changes. The heat and rays provided by the sun reflect off the Earth's surface and is trapped by the layer of gases present in the atmosphere. Some of the heat is still able to escape, but the planet is definitely warmer with this necessary process that helps sustain life on Earth.

-Carbon is naturally in our atmosphere and is naturally released and taken in in equal amounts. It is released by respiration and decomposition and is taken in by photosynthesis. But when people burn fossil fuels, it releases more carbon into the atmosphere and makes the cycle unbalanced. Because of this, an extra 4 gigatons of carbon is added to the atmosphere every year.



Climate Change - Consequences - what could happen as a result of the changing climate?

The more the greenhouse effect increases the warmer the temperatures close to the earth are. We can see that the temperatures have been rising about 1* C over the time of 120 years.



The more the temperature increases the faster the ice caps melt in the poles. This then mixes with the ocean water. This rises the ocean and waters destroying coastal cities and environments. every year the oceans rises 0.2 of an inch, if this rate continues it will flood coastal cities and destroy our environment. As well as creating flooding the warmer waters and also ruin environments in the water. The other effect is that the warmer waters feed storms such as hurricanes. This can ruin whole cities or towns. Lastly the most known fact is that the warmer temperatures cause drought in certain areas, and an abundant amount of rainfall in other places.