Name_____Class_____Date_____

Earth's Energy Resources Learning Targets

Target	With Help	On My Own	Teach It
1. I know the three fossils fuels and can explain how and from what each is formed.			
2. I can list the three factors that determine the type of fossil fuel that forms.			
3. I know the fourth nonrenewable resource and what element is used.			
4. I can describe some advantages and disadvantages of each nonrenewable resource.			
5. I can explain how some devices store vampire energy.			
6. I can predict long-term effects of using up versus conserving fossil fuels.			
7. I can identify the source of energy used most in the US and why it's used over the others (advantages of).			
8. I know five renewable energy resources.			
9. I can describe some advantages and disadvantages of each renewable resource.			

<u>Know these definitions</u>:

Fossil fuel – nonrenewable resources formed over millions of years ago from the remains of prehistoric organisms; coal, oil, and natural gas
nonrenewable resources - resources that are used faster than they can be replaced by natural processes in a relatively short amount of time
renewable resources – resources that can be replaced by natural processes in a relatively short amount of time
nuclear energy – energy released from atomic reactions
reclamation – a process in which mined land must be recovered with soil and replanted with vegetation
solar energy – energy from the Sun
wind farm – a group of wind turbines that produce electricity
hydroelectric power – electricity produced by flowing water
geothermal energy – thermal energy from Earth's interior
biomass energy – energy produced by burning organic matter such as wood, food scraps and alcohol
anthracite – the hardest type of coal
impermeable rock – layers of rock through which oil and natural gas cannot pass
vampire energy – energy used by appliances and other electronic equipment that are plugged in 24 hours a day

Name_____Class_____Date_____

Target 1:

Fossil Fuel	Coal	Oil	Natural Gas
Formed from:	Plants	Plankton	Plankton
How formed:	**(See bottom of page 133.)**Plants are buried over long period of time and are broken down leaving mainly carbon. High temps and pressure compress material until peat is formed. Over time, peat changes to coal.	**(See #3 on page 134.)** Plankton died and fell to the ocean floor. Layers of sediment buried their remains and bacteria decomposed them. High temps and pressure caused the sediments to change into oil.	**(See #3 on page 134.)** The same as oil, but if temps and pressure are great enough, natural gas is formed.

Target 2:

Type of organic matter	Temperature and pressure	Length of time matter was buried

Target 3: Nuclear energy is considered a nonrenewable resource. Uranium is mined for its use.

Target 4:

Nonrenewable Resource	Advantages	Disadvantages
Coal	Easy and direct, inexpensive, easy to transport, used to heat buildings and produce steel and concrete	Limited supply, habitat disruption and fragmentation for underground mines or strip mines, soil & water pollution from runoff, air pollution from burning, release CO_2
Oil	Easy and direct, inexpensive, easy to transport, used for gasoline, fuel oil, diesel and kerosene, and making plastics	Limited supply, habitat disruption and fragmentation for wells, pollution (oil spills,) release CO_2
Natural Gas	Easy and direct, inexpensive, easy to transport, used to heat homes, less pollution than other fossil fuels	Limited supply, habitat disruption and fragmentation for wells, pollution, release CO_2
Nuclear energy	Small amount of uranium for large amount of energy, little/no pollution	Limited supply of uranium, reactors must be carefully monitored, waste materials must be safely stored

Target 5: Vampire energy is the energy used by appliances and other electronics that are plugged in 24 hours per day, and although they may be "off," they still consume energy. Microwaves, washing machines, TVs, computers are some examples of appliances that use vampire energy.

Target 6: **If we use up fossil fuels there will not be a fairly inexpensive energy source. If we conserve the fossil fuels, we can hopefully make them last longer until we come up with a different way to provide energy for a large number of people.**

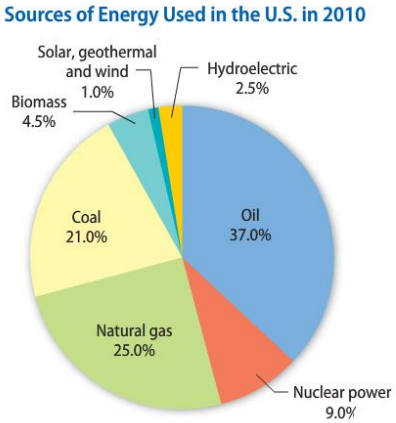

Figure 7 About 92 percent of the energy used in the United States comes from nonrenewable resources.

Target 7: According to the graph, fossil fuels are used for energy more than other resources in the US. For the most part, these resources are easy to obtain, are reliable, and are inexpensive compared to other resources.

Targets 8 & 9:

Table 1 Renewable Resources—Advantages and Disadvantages Go Online!

Renewable Resource	Advantages	Disadvantages
Solar energy	• nonpolluting • available in the United States	• less energy produced on cloudy days • no energy produced at night • high cost of solar cells • requires a large surface area to collect and produce energy on a large scale
Wind energy	• nonpolluting • relatively inexpensive • available in the United States	• large-scale use limited to areas with strong, steady winds • best sites for wind farms are far from urban areas and transmission lines • potential impact on bird populations
Water energy	• nonpolluting • available in the United States	• large-scale use limited to areas with fast-flowing rivers or great tidal differences • negative impact on aquatic ecosystems • production of electricity affected by long periods of little or no rainfall
Geothermal energy	• produces little pollution • available in the United States	• large-scale use limited to tectonically active areas • habitat disruption from drilling to build a power plant
Biomass energy	• reduces amount of organic material discarded in landfills • available in the United States	• air pollution results from burning some forms of biomass • less energy efficient than fossil fuels, costly to transport