**Energy Notes – Pt. III**

V. **Energy sources**

Primary vs. secondary – Electricity is a secondary energy

source because another energy source must be used to produce it.

A. **Fossil fuels**

1. **coal** – solar energy stored in the remains of ancient plants

a) 20% of the US’s energy, 42% of electricity

b) **nonrenewable** – being used faster than it can be

replaced

c) Technology has increased the available **reserves** –

amount still to be removed from an area.

d) Advantages

1) Many power plants already in the system

2) Relatively cheap and plentiful

e) Disadvantages

1) Mining causes environmental damage

2) Burning coal produces air pollutants (CO2) and acid

rain

2. **Natural gas** – solar energy stored in the remains of

microscopic sea creatures

a) 35% of all energy, 25% of US electricity

b) Advantages

1) Relatively cheap and plants are already built

c) Disadvantages

1) They are **nonrenewable** –they are being used much

faster than they can be replaced.

2) When burned they produce CO2.

3) They give off CO2 that may contribute to global

warming.

C. **Nuclear energy** – Breaks apart the nuclei of unstable

uranium atoms.

1. 19% of US electricity

2. Advantages

a) Produces enormous amounts of energy and about 1m3

of waste per year,

b) No air pollution

3. Disadvantages

a) Produces radioactive wastes that must be disposed of

safely.

b) There are very small amounts of uranium available,

and it’s nonrenewable.

C. **Hydroelectricity** – uses the gravitational potential energy

of water in lakes and rivers to produce electricity.

1. Advantages

a) It is **renewable** – energy source that can be replenished

continually

b) No air pollution

2. Disadvantages

a) Damages river habitats and animal life cycles

b) Limited availability. Also, lakes may fill up with silt.

E. **Alternative Energy Sources**

1. **Solar Energy** - two types

a) **Thermal collectors (passive)** – sunlight heats water in

pipes that is piped throughout the house

b) **Photovoltaic cells** – cells that convert light (radiant)

energy directly into electricity.

c) Advantages

1) No air pollution

2) Sunlight is an **inexhaustible resource** – an energy

resource that can’t be used up

d) Disadvantages

1) Expensive to build and maintain.

2) Large number of cells required to produce large

amounts of energy.

2. **Geothermal energy** – hot rock layers in the Earth’s crust to heat water and the steam is used to turn turbines

a) Advantages

1) Inexhaustible resource

2) No air pollution

b) Disadvantages

1) Very limited availability

2) Cannot produce large amounts of electricity.

3. **Wind** – uses wind to turn turbines

a) Advantages

1) No pollution

2) Inexhaustible resource

b) Disadvantages

1) Not consistent, can be too much or too little wind

2) Takes many windmills to produce large amounts of

electricity

3) Poses a threat to birds and other wildlife