Fossil Fuels

1. What are **nonrenewable energy resources**?
2. What are **fossil fuels**?

**Coal**

1. What is **coal** made of?
   1. How does coal change as it is compressed?
2. When did the **Carboniferous Period** take place?
   1. What was the climate like during the Carboniferous period?
3. What new trait did the trees of the Carboniferous period develop?
   1. What happened when the trees died and fell over?
   2. How did the trees alter the climate during this period?
4. What geographic areas today have the greatest coal deposits?
5. What is a **coal seam**?
6. Describe each of these methods of coal mining:
   1. Open-Pit
   2. Strip
   3. Mountaintop Removal
   4. Subsurface
7. What is **acid mine drainage**?
   1. What does it look like?
8. What disease often afflicts coal miners?

**Oil**

1. Describe the process of oil formation.
   1. What geographic areas are rich in oil deposits today?
2. Describe the three steps of oil extraction:
   1. Drill:
   2. Lining:
   3. Collection:
3. Why are oil spills more likely to occur than accidents with coal?
4. Describe three ways oil spills damage the environment:
   1. Birds and mammals:
   2. Benthic organisms:
   3. Fish and plankton:

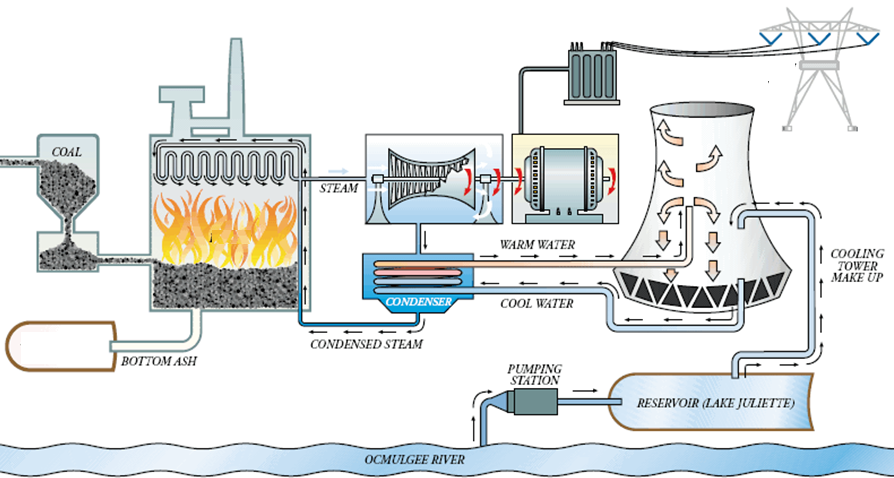
**Natural Gas**

1. What is the primary component of **natural gas**?
2. What is a **gas flare**?
   1. Why do many oil drillers do this with their natural gas deposits?
3. What is **hydraulic fracturing**?
   1. What rock formation is usually fracked?
4. What is the name of the large natural gas formation in the Eastern United States?
5. Describe the three steps of fracking:
   1. Fracking Fluid:
   2. Fracturing:
   3. Sand injection:
6. Describe the two controversial issues behind hydraulic fracturing:

1. Briefly describe each exemption granted to natural gas drillers:
   1. National Environmental Policy Act:
   2. Clean Air Act:
   3. Clean Water Act:
   4. Safe Drinking Water Act:
   5. Resource Conservation and Recovery Act:

**Applications of Fossil Fuels**

1. Label the different parts of a coal-fired power plant.



1. Describe the role of each part in a coal-fired power plant.
   1. Boiler:
   2. Precipitator:
   3. Turbine:
   4. Generator:
   5. Transmission Wires:
   6. Cooling tower:
   7. Ash storage pond:
2. What happens to crude oil when it undergoes **distillation**?
   1. List three products of crude oil distillation.
   2. What is the majority of crude oil products used for?
3. What is most natural gas used for?

**Comparing Fossil Fuels**

1. What is the dirtiest-burning fossil fuel? What is the cleanest-burning?
2. What does **energy return on investment (EROI)** measure?
   1. What does a high ratio mean?
   2. What does a low ratio mean?
   3. Which fossil fuel has the highest EROI? The lowest?
3. What does the **reserves-to-production ratio** estimate?
4. What is the current R/P ratio of each fossil fuel?
   1. Coal
   2. Oil
   3. Natural gas
5. How much of the world’s energy supply is provided by fossil fuels?