Renewable Energy

1. How much of the United States energy production is from renewable sources?
2. What are the two major issues with our reliance on nonrenewable energy sources?

**Hydroelectricity**

1. How does electricity work?
2. What does a **watt** measure?
	1. How many watts does a light bulb use?
	2. How many watts does a car use?
3. What does a **kilowatt-hour** measure?
4. How do **hydroelectric** plants generate electricity?
5. Describe how dams impact each of these aspects of the surrounding ecosystem:
	1. Nutrients:
	2. Sedimentation:
	3. Ecosystem behind the dam:
	4. Water temperature:
	5. Fish:
6. What disadvantage do dams have compared to fossil fuel or nuclear plants?

**Wind Power**

1. How do wind turbines generate electricity?
2. What are **wind farms**, and why are they necessary?
3. What are the potential ecological impacts of wind power?
	1.
	2.
	3.

**Geothermal Power**

1. How does **geothermal power** generate electricity?
2. Explain what each of these wells at a geothermal plant do.
	1. Injection well:
	2. Production well:

**Solar Power**

1. Why is solar power so difficult to harness if there is so much of it?
2. How does **parabolic solar collection** convert sunlight into electricity?
3. How do **photovoltaic cells** generate electricity?
4. Shade in areas of this map of the United States that would be ideal for solar, hydropower, wind, and geothermal energy collection.



|  |  |  |  |
| --- | --- | --- | --- |
|  Solar | Hydro | Wind | Geothermal |

**Heat**

1. What is **biomass**?
2. What are the two downsides of using biomass as a source of heat?
	1.
	2.

1. How do **passive solar heat** structures gather heat from the sun?
2. How do **active solar heat** structures gather heat from the sun?

**Fuel for Transportation**

1. What are **biofuels** made from?
	1. What is the biggest source of biofuel currently? Why is this a problem?
2. What do **hydrogen fuel cells** do to generate electric current in a vehicle?
	1. What is the disadvantage of using hydrogen for fuel?
3. What type of battery is now used in electric and hybrid cars?
	1. What advantage does this battery have over lead-acid and nickel-metal hydride?

**Promoting Renewables and Efficiency**

1. What is **energy efficiency** a measurement of?
2. Define each of these methods used to encourage renewable energy use by consumers:
	1. Distributional surcharges –
	2. Renewable portfolio –
	3. Green pricing –
3. What is the purpose of the federal **energy star program**?
4. What caused the sudden spike in U.S. fuel economy during the 1970s? When did it begin to increase again?