Name _____ Date _____

Comparing Water Use in Electricity Generation Answer Key

Have each student select two energy resources and write a brief comparison of the role of water in the generation of electricity from the two resources.

Student responses will vary, but should include the following information for two of the energy resources:

Resource	Information to Include
coal	A lot of water is used for cooling at the thermoelectric plant, but most is returned to the source. Water is used in mining, transporting, and cleaning coal. Water use at the plant can result in problems for aquatic life when water levels drop too low and when warmer water is returned to the source. Water contamination can occur from runoff from mining.
oil	A lot of water is used for cooling at the thermoelectric plant, but most is returned to the source. Water is used in drilling, though most of it is not freshwater. Water is extracted along with oil, and only some of it can be recovered for reuse. Water use at the plant can result in problems for aquatic life when water levels drop too low and when warmer water is returned to the source. Water contamination can occur from chemicals used in the drilling and extraction process.
natural gas	A lot of water is used for cooling at the thermoelectric plant, but most is returned to the source. Water is used in the hydrofracking process. Water is extracted along with natural gas, and only some of it can be recovered for reuse. Water use at the plant can result in problems for aquatic life when water levels drop too low and when warmer water is returned to the source. Water contamination can occur from chemicals used in the hydrofracking process.
hydroelectric energy	A lot of water is used to generate electricity, but most of it is returned to the river. Some water is consumed from surface evaporation at the reservoir. Cooler, less oxygen-rich water can be released into the river from the reservoir, which can stress or kill sensitive aquatic life.

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Comparing Water Use in Electricity Generation Answer Key, continued

Resource	Information to Include
solar energy	Solar thermal plants use a lot of water for cooling, but most of it is returned to the source. Water use at the plant can result in problems for aquatic life when water levels drop too low and when warmer water is returned to the source. Photovoltaics do not require the use of water.
biomass	A lot of water is used for cooling when biomass is burned, but most is returned to the source. Water use at the plant can result in problems for aquatic life when water levels drop too low and when warmer water is returned to the source.
wind energy	No water is used for electricity generation from wind turbines, but a little water is consumed in cleaning the turbines.
geothermal energy	A lot of water is used to generate electricity, but most of it is returned to the source. In some geothermal plants, water is also used for cooling, but most of it is returned to the source. Since some chemicals are used in the process of drilling for the water, groundwater contamination is possible.

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