

Energy Choices Close Up

Compare energy sources by asking evidence-based questions.

S6E6.a "Ask questions to determine the differences between renewable/sustainable energy resources (examples: hydro, solar, wind, geothermal, tidal, biomass) and nonrenewable energy resources (examples: nuclear: uranium, fossil fuels: oil, coal...)"

NAME _____

DATE _____

1 READ AND MARK _____ Read it twice

YOUR JOB Underline each renewable resource, circle each nonrenewable resource, and number the two questions in paragraph 3 that help you compare them. These marks will show how supply and effects help people make energy choices.

Where Does Energy Come From?

- ① Before school, a family may use electricity for lights, a refrigerator, and phone charging. Electricity can come from different energy resources. Solar panels collect energy from sunlight, wind turbines use moving air, and hydroelectric systems use flowing water. Geothermal plants use heat from inside Earth. Tidal systems use moving ocean water, while biomass uses recently grown plant material or organic waste. These resources can be renewed naturally on human time scales, but their supply can change with weather, seasons, and location.
- ② Other energy resources are nonrenewable. Coal, oil, and natural gas are fossil fuels made from ancient living things over millions of years. Nuclear power uses uranium, a metal mined from Earth. These supplies are limited because people use them far faster than nature replaces them. Burning fossil fuels can release gases that warm Earth's climate and pollutants that affect air quality. Nuclear plants produce very low direct carbon dioxide emissions during operation, but their radioactive waste needs careful long-term management.
- ③ When you compare resources, ask questions such as, "Can nature replace this resource soon enough for people to keep using it?" and "What effects happen when we use it?" A renewable resource is not automatically sustainable. For example, biomass can be renewable if plants are regrown, but cutting forests faster than they regrow is not sustainable. Communities may use solar and wind for electricity, gasoline from oil in cars, natural gas for cooking, and geothermal heat in some buildings. Asking clear questions helps people choose resources for daily needs.

2 ANSWER WITH EVIDENCE Use the passage

1 How do solar energy and fossil fuels differ in how quickly nature can replace them?

2 Why can biomass be renewable but not sustainable?

3 Give one energy resource and one everyday use for it that the passage names.

4 Which question in paragraph 3 would help you decide whether coal is renewable? Use information from the passage to answer that question for coal.

3 YOUR TURN Your own words

Choose one energy resource used in your home or community. Write 4 or 5 sentences that identify it as renewable or nonrenewable, describe one everyday use, ask one question about whether its use can be sustainable, and answer your question with a reason.

PART 1 • READ AND MARK

Underline each renewable resource, circle each nonrenewable resource, and number the two questions in paragraph 3 that help you compare them. These marks will show how supply and effects help people make energy choices. Accept any marking that follows this job and points at the right text.

PART 2 • ANSWERS

#	QUESTION	ANSWER
1	How do solar energy and fossil fuels differ in how quickly nature can replace them?	Solar energy is renewed naturally on a human time scale. Fossil fuels take millions of years to form and are used much faster than nature replaces them.
2	Why can biomass be renewable but not sustainable?	Biomass is renewable when plants are regrown. It is not sustainable if forests are cut faster than they can regrow.
3	Give one energy resource and one everyday use for it that the passage names.	Answers may include solar or wind for electricity, oil for gasoline in cars, natural gas for cooking, or geothermal energy for heating buildings.
4	Which question in paragraph 3 would help you decide whether coal is renewable? Use information from the passage to answer that question for coal.	The question is, "Can nature replace this resource soon enough for people to keep using it?" Coal is not renewable because it takes millions of years to form and people use it faster than nature replaces it.

PART 3 • YOUR TURN (SAMPLE ANSWER)

My community could use solar energy to power lights in a library. Solar energy is renewable because Earth's supply of sunlight is naturally renewed every day. Could the library use solar panels sustainably if it also protects land and uses materials carefully? Yes, solar can be a sustainable choice when the panels are placed and managed to limit harm.

Accept equivalent wording that accurately distinguishes resources renewed on human time scales from limited resources that take extremely long periods to form. For the open response, accept reasonable sustainability questions and answers supported by a valid reason.