Alabama Energy Choices

Use energy data to predict trends and weigh tradeoffs

ES.6 "Obtain, evaluate, and communicate information to describe the use of renewable and nonrenewable energy sources. a. Analyze and interpret data on the origins and availability of renewable and nonrenewable forms of energy to predict..."

NAME _____ DATE _____

1 READ AND MARK

Read it twice

YOUR JOB Underline one sentence about where an energy source comes from, circle the two table values for the source that changed most, and number two details you could use to argue for or against an energy choice.

A Changing Electricity Mix

1. Imagine a small Alabama utility tracking the electricity its customers used. The table shows invented annual totals, not real statewide records. Each year adds to 100 gigawatt-hours, so changes show a shift in sources rather than growth in total use. Use the two measured years to test what a future mix might look like.

INVENTED ALABAMA UTILITY ELECTRICITY USE

Source	2022 (GWh)	2025 (GWh)
Natural gas	50	45
Coal	30	20
Solar	10	25
Hydroelectric	10	10

2. Coal and natural gas formed from ancient organic matter over millions of years. Their supplies are finite, and burning them releases carbon dioxide. Sunlight continually reaches Earth, while flowing water can be renewed by rainfall. Solar output falls at night, and drought can reduce hydroelectric output. In Alabama, those limits matter when electricity demand stays high.

3. Natural gas plants can increase output when sunlight fades, but fuel prices can change and their emissions add to warming. Solar panels produce electricity without combustion, but storing their power for nighttime use costs money. Hydroelectric dams can provide steady power when reservoirs have enough water, yet new dams may disrupt river habitats. A future forecast should state its assumptions.

2 ANSWER WITH EVIDENCE

Use the passage

1. Which source gained the most from 2022 to 2025, and by how many GWh? What would continuing this trend suggest?

2. How did the combined use of coal and natural gas change? What does this suggest about the utility's reliance on finite fuels?

3. Suppose each source changes by the same number of GWh from 2025 to 2028 as it did from 2022 to 2025. Predict the 2028 amounts for coal and solar.

4. What risk could make the table's hydroelectric trend unreliable in a future year? Support your answer with a table value and a cause from the passage.

3 YOUR TURN

Your own words

Plan a 100 GWh electricity mix for this utility in 2028 using all four sources. A drought limits hydroelectric power to 5 GWh, and a new solar project can supply no more than 30 GWh. State each amount, then defend your plan with a benefit and a risk, using the 2025 data and details from the passage.

ANSWER KEY

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HIGH SCHOOL · ES.6

PART 1 · READ AND MARK

Underline one sentence about where an energy source comes from, circle the two table values for the source that changed most, and number two details you could use to argue for or against an energy choice. Accept any marking that follows this job and points at the right text.

PART 2 · ANSWERS

#	QUESTION	ANSWER
1	Which source gained the most from 2022 to 2025, and by how many GWh? What would continuing this trend suggest?	**Solar gained 15 GWh, from 10 to 25 GWh. If the trend continues, the utility will use more solar electricity.**
2	How did the combined use of coal and natural gas change? What does this suggest about the utility's reliance on finite fuels?	**Combined use fell from 80 to 65 GWh, a drop of 15 GWh. The utility became less reliant on finite fuels.**
3	Suppose each source changes by the same number of GWh from 2025 to 2028 as it did from 2022 to 2025. Predict the 2028 amounts for coal and solar.	**Coal would fall by another 10 GWh to 10 GWh. Solar would rise by another 15 GWh to 40 GWh.**
4	What risk could make the table's hydroelectric trend unreliable in a future year? Support your answer with a table value and a cause from the passage.	**Hydroelectric use was 10 GWh in both measured years, but drought could reduce the rainfall that replenishes reservoirs and lower future output.**

PART 3 · YOUR TURN (SAMPLE ANSWER)

My 2028 mix is 55 GWh of natural gas, 10 GWh of coal, 30 GWh of solar, and 5 GWh of hydroelectric power, for a total of 100 GWh. Solar rises from 25 GWh in 2025 and produces electricity without combustion. Natural gas rises from 45 GWh because its plants can increase output when sunlight fades. This choice also has a risk: burning more gas releases carbon dioxide.

Accept any four-source plan totaling 100 GWh with hydroelectric power at or below 5 GWh and solar at or below 30 GWh. The argument should use accurate 2025 values and explain a benefit and a risk supported by the passage.