Energy Sources

Fill in the answers to the chart for each type of energy source. List at least two pros and two cons for each energy source. Use additional paper if necessary. Please ***use reliable, scholarly sources*** like climate.gov, NASA.gov, EPA.gov, EIA.gov, energy.gov, NRCD.org, and Encyclopedia Britannica.

Type of Energy Source	**How does this source generate electricity?**	**Renewable or Non-renewable?**	**Pros**	**Cons**
Hydroelectric				
Coal				
Tidal				
Nuclear				
Wind				

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Type of Energy Source	How does this source generate electricity?	Renewable or Non-renewable?	Pros	Cons
Solar				
Geothermal				
Oil				
Wave				
Natural Gas				
Biomass				

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Energy Sources

Using the information gathered to fill in the chart, answer the following questions. Use additional paper if necessary.

1.Seven types of energy above all originate with one source. Identify the source and list all seven types of energy that begin with that source.

2.How does climate change relate to renewable and non-renewable energy sources?

3.What energy source(s) are the most sustainable for the future of humanity? Why?

4.What can you or your family do to reduce your usage of fossil fuels?

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Energy Sources Key

Suggested answers below. There may be more correct answers than the ones shown below.

Type of Energy Source	How does this source generate electricity?	Renewable or Non-renewable?	Pros	Cons
Hydroelectric	Water flowing through a dam spins a turbine to generate electricity.	renewable	renewable can help irrigation can meet high electricity demands	damages surrounding river ecosystem can be impacted by drought
Coal	Coal is burned to heat water to make steam. Steam spins a turbine to generate electricity.	non-renewable	established infrastructure	non-renewable releases toxins and CO2 when burned mining damages environment causes acid rain CO2 emissions contribute to climate change
Tidal	Water from the changing tides spins a turbine to generate electricity.	renewable	renewable reliable and predictable form of energy	limited in where it can be implemented maintenance costs due to corrosion from salty water peak energy demand does not always line up with peak tides impacts local environment vulnerable to storms
Nuclear	Heat produced by fission is used to make steam that spins a turbine to generate electricity.	non-renewable	high energy output low need for land no production of CO2	non-renewable waste materials are highly unsafe very high initial cost malfunctions can cause major catastrophe for humans and environment
Wind	Wind spins a turbine to generate electricity.	renewable	renewable lower need for land low cost to operate	noise and visual pollution wind is intermittent can cause some harm to birds and bats

Energy Sources Key

Type of Energy Source	How does this source generate electricity?	Renewable or Non-renewable?	Pros	Cons
Solar	When sun shines on a solar panel, specialized cells, called photovoltaic cells, absorb the sun's energy and turn it into electricity.	renewable	renewable affordable enough to have at home silent	does not work in the dark needs to be moved to match angle of sunlight for maximum efficiency large physical space required requires batteries to store energy to use during dark hours
Geothermal	Reservoirs of hot water from below the surface are pumped out of the ground to generate steam. Steam is then used to spin a turbine to generate electricity.	renewable	renewable small land requirements	needs specific location can lead to surface instability high initial cost
Oil	Oil is burned to heat water to make steam. Steam spins a turbine to generate electricity.	non-renewable	established infrastructure	non-renewable releases toxins and CO2 mining damages environment CO2 emissions contribute to climate change
Wave	Water from waves spin a turbine to generate electricity.	renewable	renewable reliable and consistent form of energy	impacts local environment equipment can be vulnerable to storms maintenance costs due to corrosion from salty water
Natural Gas	Natural gas is burned to heat water to make steam. Steam spins a turbine to generate electricity.	non-renewable	established infrastructure	non-renewable releases toxins and CO2 when burned mining damages environment CO2 emissions contribute to climate change
Biomass	Biomass is burned to heat water to make steam. Steam spins a turbine to generate electricity.	renewable	renewable reduces waste in landfills	large space requirement releases CO2 and other toxins not efficient compared to other sources

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Energy Sources Key

Using the information gathered to fill in the chart, answer the following questions. Use additional paper if necessary.

1.Seven types of energy above all originate with one source. Identify the source and list all seven types of energy that begin with that source.

Biomass, solar, wind, wave, natural gas, oil, and coal energy all originate from the sun's energy

2.How does climate change relate to renewable and non-renewable energy sources?

Many non-renewable energy sources release Carbon Dioxide as a by-product that contributes to global climate change. Most renewable energy sources have little to no carbon emissions to produce energy.

3.What energy source(s) are the most sustainable for the future of humanity? Why?

Renewable energy forms like solar, wind, and hydroelectric power are the most sustainable options for the future. Non-renewable resources are limited and contribute to a great deal of environmental harm.

4.What can you or your family do to reduce your usage of fossil fuels?

Bike, walk, take public transportation, eat less meat, turn off lights, unplug electronics when not in use, use efficient appliances and electronics, recycle, eat less dairy, choose reusable options over single use, invest in solar panels at home, etc.

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