BIOMASS BINGO

ANSWERS

A. Can name two biomass fuels

B. Knows what anaerobic means

C. Can explain the difference between diesel and biodiesel

D. Knows two chemical elements present in all biofuels

E. Knows the energy transformation when ethanol is used in an internal combustion engine

F. Knows what percentage of total U.S. renewable energy needs come from biomass

G. Has used a form of biomass for cooking

H. Knows what biofuel was once used to light lamps and came from the ocean

I. Can point to something in this room that could be used as a biofuel

J. Knows what pure methane smells like

K. Knows a source of biomass in use for thousands of years

L. Has used a form of biomass for home heating

M. Knows what aerobic means

N. Knows what percentage of total U.S. energy need is met by biomass

O. Knows the chemical name for CH_4

P. Knows what the 85 in E85 stands for

A Ethanol Biodiesel	**B** The absence of oxygen	**C** Diesel is petroleum based. Biodiesel is a blend of diesel and biofuels.	**D** carbon and hydrogen
E Chemical energy is transformed into: thermal, sound and (motion)	**F** 48%	**G** Wood or charcoal cooking fire/ grill	**H** Whale oil from blubber
I Wood, paper, alcohol	**J** Methane is odorless	**K** Wood	**L** Wood stove or fireplace Ethanol fireplace insert
M Requiring the presence of oxygen	**N** 4.54%	**O** Methane	**P** The fuel is 85% ethanol, 15% gasoline.

COAL BINGO

ANSWERS

A. Knows what type of rock coal is

B. Can explain the purpose of clean coal technology

C. Can name three of the top five coal producing states

D. Knows what is compressed over time to form coal

E. Knows the top two uses of coal

F. Can name two types of coal

G. Can name the country with the most coal reserves

H. Can name one of the two types of coal mining

I. Can name one of the factors leading to the formation of coal

J. Can name one advantage and one disadvantage of using coal

K. Knows how most coal is transported

L. Knows the form of energy stored in coal

M. Has seen a coal mine

N. Has never seen coal

O. Knows the element in coal that contributes to acid rain

P. Knows the greenhouse gas released when coal is burned

A Organic sedimentary	**B** Removes pollutants (sulfur, NOx) before, during, and after burning	**C** Wyoming, West Virginia, Pennsylvania, Illinois, Kentucky	**D** Peat
E Electricity generation Non-CHP(combined heat and power) Industry	**F** Anthracite Bituminous Subbituminous Lignite	**G** United States	**H** Surface mining Deep mining
I Time Heat Pressure Originates with stagnant water / swamp	**J** **Advantage:** energy density, supply, domestic **Disadvantage:** Pollution, greenhouse gases, mine safety	**K** Railroad car	**L** Chemical energy
M Ask for details	**N**	**O** Sulfur	**P** CO_2

ENERGY BINGO

ANSWERS

A. Has seen a wind turbine

B. Can name two fossil fuels

C. Has never seen coal

D. Uses a solar clothes dryer

E. Has visited a power plant

F. Can name two ways to save energy at home

G. Uses a hand-operated can opener

H. Can name two ways to increase a car's MPG

I. Recycles aluminum cans

J. Has seen geothermal energy

K. Has seen a photovoltaic cell

L. Can name two renewable energy sources

M. Knows the cost of a kilowatt-hour of electricity for residential customers

N. Knows how natural gas is usually transported

O. Knows which fuel is used in barbecue grills

P. Knows how uranium atoms give off energy

A Student should share location.	**B** Coal, Petroleum, Natural Gas, Propane	**C** (no answer needed)	**D** Students should be able to describe a clothes line.
E Students should describe plant or location of plant.	**F** Turning off lights, Insulation, Saving water, etc.	**G** (no answer needed)	**H** Tire pressure, Maintenance, Removing excess weight
I (no answer needed)	**J** Student should describe volcano, geyser, or hot spring.	**K** Student should list where: home, street light, calculator, etc.	**L** Hydropower, Solar, Geothermal, Wind, Biomass
M 15 cents/kWh national average	**N** Pipeline	**O** Propane	**P** Nuclear Fission

ENERGY EFFICIENCY BINGO

ANSWERS

A. Can name two ways to increase a car's MPG

B. Can name three ways to save energy at home

C. Can name three ways to save energy at school

D. Has at least one ENERGYSTAR® appliance at home

E. Knows the definition of *energy efficiency*

F. Knows the definition of *energy conservation*

G. Knows what an ENERGYSTAR® label means

H. Knows what SEER is

I. Knows the type of bulb that uses one quarter of the energy of incandescents

J. Knows where to find an EnergyGuide label

K. Can name one appliance that should be run only when fully loaded

L. Uses day lighting in the classroom instead of overhead lights

M. Sets this item differently at day and night and for the season

N. Knows the number one use of energy in the home

O. Has an energy conservation team at school

P. Knows whether energy is the first, second, or third highest expenditure in a school district (choose one)

A Proper tire inflation, Drive the speed limit, Slow acceleration	**B** Switch to CFLs, use a programmable thermostat, wash clothes in the cold water, etc.	**C** Turn off computers/lights/ appliances when not in use, close doors and windows, etc.	**D** Ask for location/description
E Using technologies to continue activities at the same level while using less energy	**F** Choosing to use less energy through alternative behaviors or actions	**G** The product meets energy efficiency requirements	**H** Seasonal energy efficiency ratio of cooling output/by power consumption
I CFL	**J** On appliances and products for homes and business	**K** Clothes washer	**L** Ask for details
M Programmable Thermostat	**N** Heating/cooling	**O** Ask for description/details	**P** Second, the first is personnel

HOME ENERGY SAVINGS BINGO ANSWERS

A. Knows the average cost per kilowatt-hour of electricity for residential customers

B. Can name two renewable energy sources

C. Has an ENERGY STAR® appliance at home

D. Knows which energy source generates the most electricity in the U.S.

E. Can name two ways to save energy at home

F. Can name two ways to save energy while using a car or truck

G. Knows what uses the most energy in a home

H. Knows how electricity is generated

I. Can explain energy efficiency

J. Knows the cheapest source of light

K. Knows what a smart strip is used for

L. Knows how appliances and electronics earn the ENERGY STAR® rating

M. Knows what a lumen is

N. Can name two water-saving habits

O. Knows a greenhouse gas produced by the burning of fossil fuels

P. Knows what LED stands for

A $0.17 in 2025	**B** Biomass Geothermal Hydropower Solar Wind	**C** Ask for description	**D** Natural gas (40.8%)
E Use a programmable thermostat, turn lights/devices off when done, keep doors and windows closed when heat or A/C is on, etc.	**F** Keep tires inflated, change air filter, remove unnecessary items from trunk, avoid fast starts and hard stops, etc.	**G** Heating and cooling, or just heating	**H** Steam, water, or wind turn a turbine, spinning a generator; PV cells change light into electricity directly
I Energy efficiency is the energy-saving step that focuses on how much energy devices use to do their job	**J** The sun/daylight	**K** Senses when TV is off and turns off related devices	**L** The most efficient devices in their class earn the rating–refrigerators against other refrigerators, etc.
M SI unit for measuring the total amount of light emitted by a source	**N** Take showers instead of baths, turn water off while brushing teeth, repair leaky faucets, etc.	**O** Carbon dioxide	**P** Light-emitting diode

HYDROGEN BINGO

ANSWERS

A. Knows the atomic number of hydrogen

B. Knows the percentage of U.S. energy consumption supplied by renewables

C. Knows the process that produces energy in the sun's core

D. Can define energy carrier

E. Knows what a fuel cell is

F. Can define distributed generation

G. Knows a process that separates water into hydrogen and oxygen

H. Knows the number of neutrons in a hydrogen atom

I. Knows in what form energy from the sun travels to the Earth

J. Can name four renewable energy sources

K. Knows the percentage of U.S. energy consumption supplied by fossil fuels

L. Knows the top energy carrier used in the U.S.

M. Knows the U.S. percentage of world population

N. Can name four renewable energy sources

O. Knows the U.S. percentage of world energy consumption

P. Can name two ways hydrogen is used today

A The atomic number for hydrogen is 1	**B** Renewables supply about 9 percent of U.S. energy consumption	**C** Fusion of hydrogen into helium produces energy in the sun's core	**D** A system or substance that moves energy from one place to another
E A device that uses chemical reaction to produce electricity - a battery	**F** Distributed generation is electricity produced near the site of the consumer	**G** Electrolysis separates water into hydrogen and oxygen	**H** No neutrons in a simple hydrogen atom (deuterium and tritium isotopes have neutrons)
I Energy from the sun travels to Earth in the form of radiant energy	**J** Renewables: solar, wind, hydropower, biomass, geothermal	**K** Fossil fuels supply almost 83 percent of total U.S. consumption	**L** Electricity is the top energy carrier in the U.S.
M The U.S. contains 4.49 percent of total world population	**N** Nonrenewables: petroleum, natural gas, propane, coal, uranium	**O** The U.S. accounts for 16 percent of total world energy consumption	**P** Used by industry for refining, treating metals, and processing foods; to fuel small hydrogen fuel cells to produce electricity; hydrogen fueled vehicles

HYDROPOWER BINGO

ANSWERS

A. Knows the percentage of U.S. electricity supplied by hydropower

B. Knows another name for the water cycle

C. Knows the process by which water becomes a gas in the water cycle

D. Knows the form of energy of the water stored in a reservoir

E. Can explain what a generator does

F. Knows the federal agency that regulates public hydropower dams

G. Can name the device in a hydropower plant that captures the energy of flowing water

H. Can name the energy source that produces almost half of U.S. electricity

I. Knows the source of energy that drives the water cycle

J. Knows what energy source causes ocean waves

K. Can explain the force that produces tides in the ocean

L. Knows the three main parts of a hydropower plant

M. Knows the process by which water vapor becomes a liquid

N. Knows the state that produces the most hydropower

O. Can explain what a pumped storage facility does

P. Knows how many hydroelectric power plants there are in the U.S.

A 5-10% depending on amount of rainfall	**B** Hydrologic cycle	**C** Water becomes a gas through evaporation	**D** Water vapor becomes a liquid by condensation
E Generator converts kinetic energy into electricity	**F** FERC Federal Energy Regulatory Commission	**G** A turbine captures the energy of flowing water	**H** Natural gas produces 40% of U.S. electricity
I Solar energy drives the water cycle	**J** Ocean waves are caused primarily by wind	**K** Tides are formed by the gravitational pull of the moon	**L** Reservoir, dam, and power plant
M Condensation	**N** Washington State	**O** it has two reservoirs at different heights and circulates water between them	**P** More than 2,500 hydroelectric power plants

NUCLEAR ENERGY BINGO ANSWERS

A. Knows the atomic mass of the uranium isotope used in nuclear power plants

B. Knows the name of the process that releases energy in a nuclear power plant

C. Knows the percentage of electricity produced by nuclear power in the U.S.

D. Knows how much CO_2 is produced by nuclear power plants

E. Can name at least one other use for nuclear energy

F. Has visited a nuclear power plant

G. Knows how many nuclear reactors are operating in the U.S.

H. Knows the country that generates the most electricity from nuclear power

I. Can name the country that generates the highest percentage of its electricity from nuclear energy

J. Knows where nuclear waste is currently stored in the U.S.

K. Can name something in our everyday lives that exposes us to radiation

L. Knows the name of the part of the nuclear power plant where thermal energy is released

M. Knows the atomic number of uranium

N. Knows what uranium is processed into for use as nuclear fuel

O. Knows the name of an acceptable on-site storage method for spent fuel

P. Knows the U.S. state that generates the most electricity from nuclear power

A U-235	**B** fission	**C** 17.7% in 2025	**D** none
E weaponry medicine	**F** ask for location/description	**G** 94 reactors, 54 plants	**H** U.S.
I France (63.91% in 2023)	**J** on-site at reactors	**K** air travel, foods, medical technologies, smoke alarms, ceramics, clocks, etc.	**L** reactor
M 92	**N** ceramic pellet	**O** spent fuel pool or dry storage cask	**P** Illinois

OFFSHORE WIND BINGO

ANSWERS

A. Has used wind energy for transportation

B. Knows how tall an offshore wind turbine can be

C. Can name two renewable energy sources other than wind

D. Can explain how wind is formed

E. Knows what an anemometer does

F. Can describe how electricity is transported from offshore to the coast

G. Can name two factors to consider when siting an offshore wind farm

H. Knows how electricity is generated by a wind turbine

I. Has seen a modern wind turbine

J. Knows how wind speed is measured

K. Can describe the wake effect

L. Knows the energy efficiency of a wind turbine

M. Can name the location of the first U.S. offshore wind farm

N. Can name two myths many people believe about wind turbines

O. Knows the name of the foundation pole used in shallow, sandy waters

P. Knows what a gear box does

A Sailboat, Sailboard, etc.	**B** 500 ft or more (currently > 800 ft)	**C** Biomass Geothermal Hydropower Solar	**D** The sun heats Earth's land and water surfaces differently. Warm air rises, cool air moves in.
E Measures wind speed	**F** Buried underwater cables	**G** Wind speed and consistency, Wildlife, Public opinion, Access to grid, Seafloor geology, etc.	**H** Turbine spins a shaft, which spins a generator producing electricity
I Ask for location/description	**J** Meters per second, with anemometer	**K** When air exiting a turbine is turbulent and/or slowed down	**L** The Betz Limit is 59% for wind, today's wind turbines are about 25-45% efficient.
M Rhode Island	**N** Noisy, unpredictable, expensive, interferes with TV and communication signals, etc.	**O** Monopile	**P** Connects low-speed shaft to high-speed shaft and increases the rotational speeds to produce electricity

OIL AND NATURAL GAS BINGO

ANSWERS

A. Knows the main components of natural gas

B. Can name a state that is a top 5 producer of petroleum

C. Knows what percentage of oil used in the U.S. that is imported

D. Knows how natural gas is measured

E. Knows two ways to increase a car's MPG

F. Knows what percentage of U.S. electricity is generated by natural gas

G. Knows the type of rock most petroleum is found in

H. Knows two industrial products that use natural gas as a feedstock

I. Knows what percentage of total energy is supplied by petroleum

J. Used petroleum to get to the workshop today

K. Knows two uses of natural gas in the home

L. Knows the two types of atoms found in oil and natural gas molecules

M. Has seen crude oil

N. Knows the method refineries use to separate crude oil into useful products

O. Knows how natural gas is transported

P. Knows what OPEC stands for

A methane	**B** Texas, New Mexico, North Dakota, Colorado, Oklahoma	**C** About 42%	**D** Cubic feet
E Proper tire inflation, regular oil change, don't keep extra weight in their car, etc.	**F** About 40%	**G** Sedimentary	**H** Fertilizer, ink, glue, paint, plastic, insect repellent, synthetic rubber, man made fabrics, etc.
I 37.0%	**J** Ask for description/details	**K** Hot water heating, cooking, clothes dryer, fireplace	**L** Hydrogen, Carbon
M Ask for description/details	**N** Fractional distillation	**O** Pipeline	**P** Organization of Petroleum Exporting Counties

RENEWABLE ENERGY BINGO

ANSWERS

A. Has been to a renewable power plant

B. Knows which state generates the most geothermal energy

C. Can name at least three renewable energy sources

D. Knows the percentage of electricity produced by renewable sources in the U.S.

E. Can name two types of biomass

F. Knows the source of energy that drives the water cycle

G. Can name two factors to consider when siting a wind farm

H. Has used a solar clothes dryer

I. Has seen a modern wind turbine

J. Knows the renewable source that produces the most energy in the U.S.

K. Knows the renewable source that produces the most electricity in the U.S.

L. Knows the cost per kilowatt-hour of electricity for residential customers

M. Knows how radiant energy travels through space

N. Can name two kinds of hydropower

O. Has used wind energy for transportation

P. Can name the device in a hydropower plant that captures the energy of flowing water

A Ask for location/description	**B** California	**C** Solar Hydropower Wind Geothermal Biomass	**D** 21%
E Wood, crops, manure, garbage, landfill gas, alcohol fuels, ethanol, and biodiesel	**F** Solar energy	**G** Wind speed, wind blocks,environmental impact, ability to transport electricity to population centers, etc.	**H** Anyone who has hung clothes to dry outside
I Ask for location/description	**J** Biomass	**K** Wind	**L** The national average is 15 cents per kWh for residential customers
M In electromagnetic waves (or transverse waves)	**N** Pumped storage or run of river hydroelectric power plant, tidal power, wave power, ocean thermal energy conservation	**O** Sailboat, Sailboard, etc.	**P** A turbine captures the energy of flowing water.

SAVING THE FUTURE BINGO

ANSWERS

A. Has reused or repaired something

B. Knows two ways to use less energy for heating water

C. Uses LED bulbs at home

D. Can name two ways to save energy at school

E. Knows how to use a programmable thermostat

F. Turns off the faucet while brushing teeth

G. Knows how to reduce air leaking into and out of your home

H. Wears a sweatshirt or uses a blanket to stay warm in the winter

I. Turns off the lights when leaving a room

J. Can name one appliance that should be run only when fully loaded

K. Recycles at home

L. Knows two ways to save energy on heating and cooling your home

M. Can name two ways to save energy at home.

N. Has walked or rode a bike to school

O. Knows two ways to use less water at home

P. Has used solar energy to dry clothes

A Ask for description	**B** Take short answers, use cold water in washing machine, lower temperature of hot water heater, etc.	**C** Ask for location in home	**D** Turn off computers/lights when not in use, close doors and windows, etc.
E Program the thermostat differently at day and night and for the season	**F** Ask for description	**G** Caulking, sealing, weatherstripping cracks around doors and windows	**H** Ask for description
I Ask for description	**J** Clothes washer	**K** Ask for description	**L** Use a programable thermostat, wear warm clothes/use extra blanket in the winter, on sunny days close blinds in summer/open blinds in winter, etc.
M Switch to LEDs, use a programmable thermostat, hang clothes to dry, etc.	**N** Ask for description	**O** Turn off faucet while brushing teeth, take short shower instead of a bath, fix leaking toilet, collect rainwater to water the garden, etc.	**P** Ask for description

SCIENCE OF ENERGY BINGO

ANSWERS

A. Knows what type of reaction releases thermal energy

B. Knows the form of energy that comes from the sun

C. Knows one way to store energy

D. Knows the form in which our bodies store energy

E. Knows the force responsible for the attraction between the Earth and nearby masses

F. Knows why rubbing your hands together makes them warm

G. Can name a form of kinetic energy

H. Has visited a thermal power plant

I. Knows where most energy on Earth originates

J. Knows what type of reaction absorbs thermal energy

K. Has used a radiant clothes dryer

L. Knows what form of energy is stored in most energy sources

M. Knows how an electric generator works

N. Knows what device turns energy from the sun directly into electricity

O. Can name a form of potential energy

P. Knows what energy can be transformed into

A Exothermic	**B** Radiant	**C** Battery, chemical, in a spring, etc.	**D** Chemical
E Gravity	**F** Motion energy is transformed into thermal energy through friction	**G** Radiant, thermal, motion (kinetic), sound, electrical	**H** Anyone who has visited a nuclear, coal, waste-to-energy, natural gas, or geothermal power plant has visited a thermal power plant
I The sun	**J** Endothermic	**K** Anyone who has hung wet clothes on a line has used a solar clothes dryer	**L** Chemical
M Coils of wire surround a magnet. The magnet(s) rotate inside the wire, inducing electrical current in the wire. The coils can also rotate inside magnets.	**N** Photovoltaic cell, PV cell	**O** Chemical, nuclear, stored mechanically, gravitational	**P** Any other form of energy

SOLAR BINGO

ANSWERS

A. Has used a solar clothes dryer

B. Knows the efficiency of the average PV cell

C. Knows the nuclear process in the sun's core

D. Knows how radiant energy travels through space

E. Can explain how solar energy drives the water cycle

F. Has used a photovoltaic cell

G. Drives a solar collector

H. Can explain how solar energy produces wind

I. Knows how plants convert solar energy into chemical energy

J. Uses passive solar energy at home

K. Has seen a solar water heater

L. Has cooked food in a solar oven

M. Can name two advantages of solar energy

N. Knows the energy conversion that a PV cell performs

O. Can explain why dark clothes make you hotter in the sun

P. Owns solar protection equipment

A Has hung clothes outside to dry	**B** 13-30%	**C** Fusion	**D** In electromagnetic waves (or transverse waves)
E Sun evaporates water in lakes and oceans, water vapor rises and becomes clouds, rains to replenish	**F** Ask for location/description	**G** Car without tinted windows is a solar collector-like a greenhouse	**H** Sun heats the Earth's surface unevenly-hot air rises and cooler air moves in
I Photosynthesis	**J** Allows sun to enter through windows for light and heat-has materials that retain heat (masonry, tile, etc.)	**K** Ask for location/description	**L** Ask for description
M Solar energy systems do not produce air pollutants or carbon dioxide, minimal impact on environment, sun's energy is free	**N** Radiant energy to electrical energy	**O** Dark colors absorb more radiant energy and turn it into thermal energy	**P** Sun screen, sunglasses, etc.

WIND ENERGY BINGO

ANSWERS

A. Has used wind energy for transportation

B. Knows the average cost per residential kilowatt-hour of electricity

C. Can name two renewable energy sources other than wind

D. Can explain how wind is formed

E. Knows what an anemometer does

F. Can name two forms of energy

G. Can name two factors to consider when siting a wind farm

H. Knows how electricity is generated by a wind turbine

I. Has seen a modern wind turbine

J. Knows how wind speed is measured

K. Has experienced the wind tunnel effect

L. Knows the energy efficiency of a wind turbine

M. Can name two uses of windmills

N. Can name two myths many people believe about wind turbines

O. Has been to a power plant

P. Knows what a gear box does

A Sailboat, Sailboard, etc.	**B** The national average for residential customers is 15 cents per kWh	**C** Biomass Geothermal Hydropower Solar	**D** The sun heats Earth's land and water surfaces differently. Warm air rises, cool air moves in.
E Measures wind speed	**F** Potential, stored mechanical, chemical, gravitational, nuclear, radiant, thermal, sound, motion, light, electrical	**G** Wind speed and consistency, environment (land and animals), public opinion, access to grid	**H** Turbine spins a shaft, which spins a generator producing electricity
I Ask for location/description	**J** Meters per second, with anemometer	**K** Ask for details	**L** The Betz Limit is 59% for wind, today's wind turbines are about 35-45% efficient.
M Grind grain, pump water, generate electricity, etc.	**N** Noisy, unpredictable, expensive, kills birds, interfere with TV and communication signals, etc.	**O** Ask for location/description	**P** Connects low-speed shaft to high-speed shaft and increases the rotational speeds to produce electricity