

Hydropower

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Basics



Hydropower uses the energy from moving water to power machines or generate electricity. Used for over two thousand years in water mills, today hydropower is more commonly associated with electricity generation. Hydropower has been used to generate electricity since the late 19th century, and remains the largest source of renewable energy worldwide.

Hydroelectric power plants are usually built inside dams. The reservoir of water that collects behind the dam provides a steady supply of water, which passes through giant turbines to generate electricity. Hydropower is particularly common in places with high rainfall and lots of topography, such as Washington and Oregon, which together produce around 40% of the hydroelectricity generated in the United States. [Read more](#)

Frequently Asked Questions

[What are the major sources and users of energy in the United States?](#)

U.S. Energy Information Administration

[How much U.S. electricity is generated from renewable energy?](#)

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[How much of world energy consumption and electricity generation is from renewable energy?](#)

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Coal

Coal is a carbon-rich rock formed from plants that grew millions of years ago. Coal is a major source of electricity in the United States and the [largest source of energy for electricity generation worldwide](#).



Energy

All of the energy we use comes from the Earth, its atmosphere, or the Sun. Some resources are mined or extracted, like coal, uranium, oil, and gas. Others, like wind, solar, tidal, biomass, and hydropower resources, are harnessed at the Earth's surface. Geoscientists play an essential role in developing energy resources and evaluating their environmental impacts.



Geothermal Energy

Geothermal energy is harvested by drilling into underground reservoirs of steam or water heated by the Earth. While western states like California and Nevada [lead the country in geothermal energy production](#), emerging technologies may make it possible to extract geothermal energy throughout the United States.



Hydraulic Fracturing

Hydraulic fracturing is a technique used in one step of the extraction of energy resources. Sometimes referred to as "fracking," its wide application over the last decade has led to debate over its risks and benefits.



Nuclear Energy

Nuclear energy is produced from fission, which splits the large atoms of heavy elements like uranium into smaller atoms, releasing enormous amounts of energy. Thirty U.S. states have nuclear power plants, and nuclear energy makes up around [20% of the U.S. electricity supply](#).



Oil and Gas

Petroleum ("oil") and natural gas are hydrocarbons that formed over millions of years under heat and pressure deep in the Earth.

Petroleum and natural gas are the largest sources of energy in the United States.



Renewable Energy

Renewable energy comes from sources that are constantly replenished, like running water, the heat of the Earth, the Sun's light, or wind. Renewables account for around **11% of U.S. energy consumption and 17% of electricity production.**



Solar Energy

Solar energy is energy from the Sun, which can be harnessed in several ways. Solar panels use the **photovoltaic effect** to generate electricity directly from sunlight. The Sun's heat can be used directly to heat **water** or air, or it can be **concentrated** to boil water, driving steam turbines that generate electricity.



Wind Energy

Wind energy is harnessed by wind turbines, which convert the energy of the wind into electricity. Wind energy is one of the largest sources of **renewable energy**. Wind farms can now be found in more than 40 states.

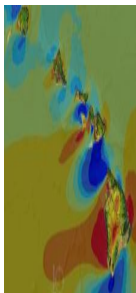
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Interactive map of renewable energy in Hawaii

Hawaii State Energy Office

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2018, United States Geological Survey

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