

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.

Basics



Petroleum ("oil") and natural gas form from tiny plants and algae that settled in seas or lakes millions of years ago. This organic material reacts under heat and pressure to form oil and/or gas.[1] Petroleum products include gasoline, heating oil, propane, and kerosene. Not to be confused with gasoline, natural gas is mostly methane — a clear, odorless gas. When burned, oil and gas release abundant energy as well as carbon dioxide and water. [Read more](#)

Frequently Asked Questions

What are tar sands?

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What is renewable natural gas?

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What is coalbed methane?

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What is produced water?

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What types and amounts of energy are produced in each state?

U.S. Energy Information Administration

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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.



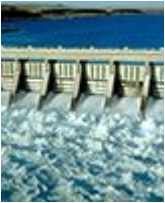
Geothermal Energy

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.



Hydropower

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.



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.



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.

Maps & Visualizations



Interactive map of offshore sand and gravel resources of the United States
Bureau of Ocean Energy Management

The Bureau of Ocean Energy Management's Marine Minerals Information System (MMIS) provides an interactive map with information on offshore sand and gravel resources for 18 states on the Atlantic and Gulf coasts of the United States. The system includes: Sand and gravel resources Marine...

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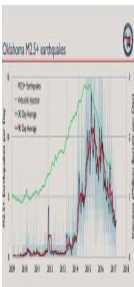


Subsurface Data in the Oil and Gas Industry

Introduction Drilling for oil and gas is expensive. A single well generally costs \$5-8 million onshore and \$100-200 million or more in deep water.1 To maximize the chances of drilling a productive well, oil and gas companies collect and study large amounts of information about the Earth's...

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State Responses to Induced Earthquakes

This webinar features experts from state government in Oklahoma, Texas, and Ohio, who will discuss the range of state-level actions and approaches taken by these three oil- and gas-rich states to monitor and reduce the occurrence of induced earthquakes.

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