



Natural Gas

What is Natural Gas?

Natural gas is a **fossil fuel** like petroleum and coal. Natural gas is called a fossil fuel because most scientists believe that it was formed from the remains of ancient sea plants and animals. When the plants and tiny sea animals died, they sank to the bottom of the oceans where they were buried by sediment and sand, which turned into **sedimentary rock**. The layers of plant and animal matter and sedimentary rock continued to build until the pressure and heat from the Earth turned the remains into petroleum and natural gas.

Natural gas is trapped in underground rocks much like a sponge traps water in pockets. Natural gas is really a mixture of gases. The main ingredient is **methane**. Methane has no color, odor, or taste. As a safety measure, natural gas companies add an odorant, **mercaptan**, to the gas so that leaking gas can be detected (it smells like rotten eggs). People use natural gas mostly for heating. Natural gas should not be confused with gasoline, which is made from petroleum.

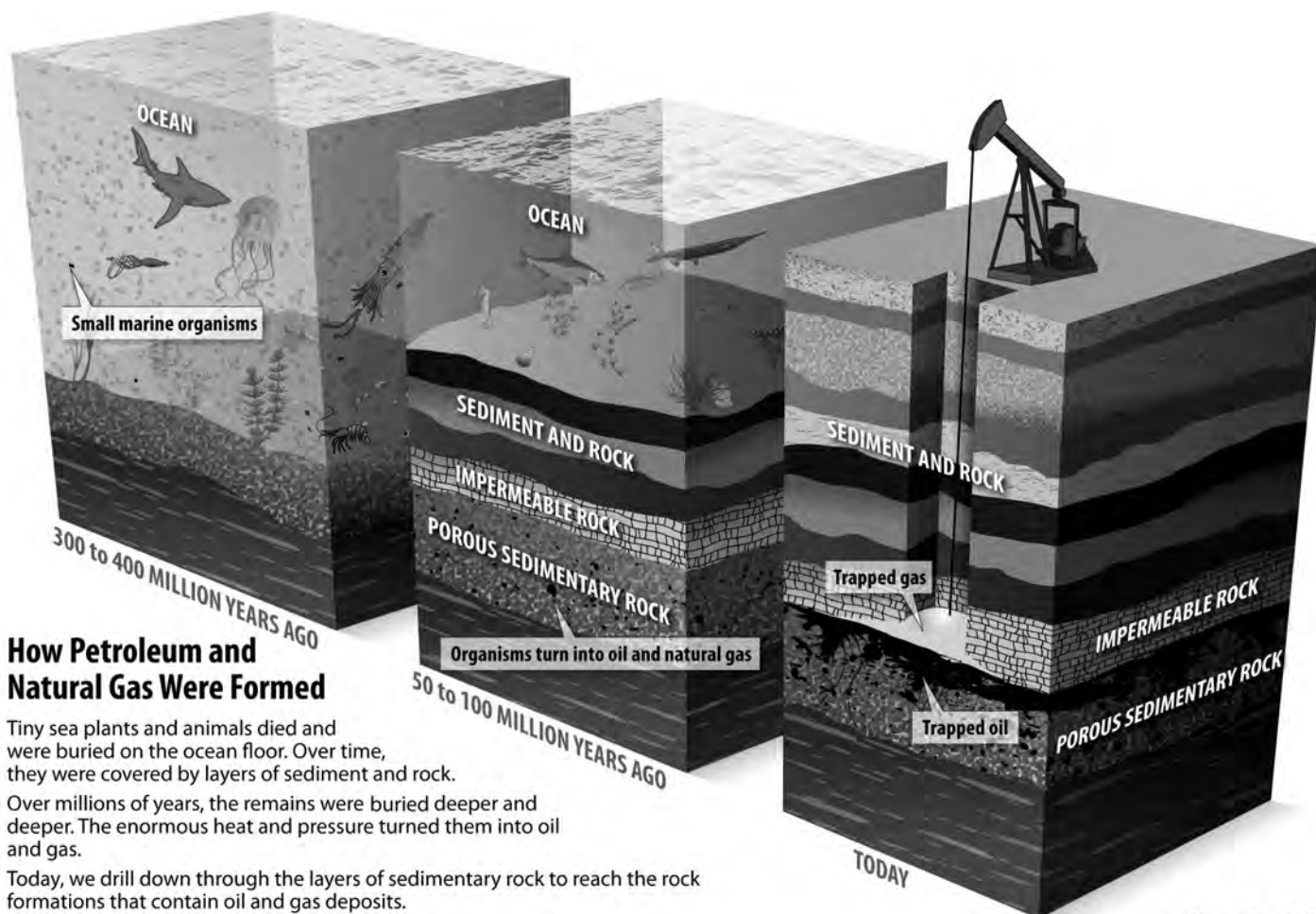
Natural gas is almost always considered **nonrenewable**, which means we cannot make more in a short time. However, there are some renewable sources of methane, such as landfills.

History of Natural Gas

The ancient people of Greece, Persia, and India discovered natural gas many centuries ago. The people were mystified by the burning springs created when natural gas seeped from cracks in the ground and was ignited by lightning. They sometimes built temples around these eternal flames and worshipped the fire.

About 2,500 years ago, the Chinese recognized that natural gas could be put to work. The Chinese piped the gas from shallow wells and burned it under large pans to evaporate sea water to make salt.

In 1816, natural gas was first used in America to fuel street lamps in Baltimore, Maryland. Soon after, in 1821, William Hart dug the United States' first successful natural gas well in Fredonia, New York. It was just 27 feet deep, quite shallow compared to today's wells. Today, natural gas is the country's second largest supplier of energy, after petroleum.



How Petroleum and Natural Gas Were Formed

Tiny sea plants and animals died and were buried on the ocean floor. Over time, they were covered by layers of sediment and rock.

Over millions of years, the remains were buried deeper and deeper. The enormous heat and pressure turned them into oil and gas.

Today, we drill down through the layers of sedimentary rock to reach the rock formations that contain oil and gas deposits.

Note: not to scale

Producing Natural Gas

Natural gas can be hard to find since it is trapped in porous rocks deep underground. Scientists use many methods to find natural gas deposits. They may look at surface rocks to find clues about underground formations. They may set off small explosions or drop heavy weights on the surface to record the sound waves as they bounce back from the rock layers underground.

Natural gas can be found in pockets by itself or in petroleum deposits. Natural gas wells average 5,000 feet deep!

After natural gas comes out of the ground, it is sent to a plant where it is cleaned of impurities and separated into its various parts. Natural gas is mostly methane, but it also contains small amounts of other gases such as propane and butane.

Today natural gas is produced in 32 states, though just five states—Texas, Wyoming, Oklahoma, Louisiana, and New Mexico—produce 65 percent of our supply. Natural gas is also produced offshore. Eleven percent of natural gas production came from offshore wells in 2009. Scientists estimate that we have enough natural gas to last for 110 years at current prices and rate of consumption.

Natural gas can also come from other sources, such as the methane gas found in coal. **Coal bed methane** was once considered just a safety hazard to miners, but now it is a valuable source of energy. Another source of natural gas is the gas produced in landfills. Landfill gas is considered a renewable source of natural gas since it comes from something continually produced—trash.

Shipping Natural Gas

Natural gas is usually shipped by pipeline. About two million miles of pipelines connect gas fields, to cities, to homes and businesses. Natural gas is sometimes transported thousands of miles in these pipelines to its final destination. It takes about five days to move natural gas from Texas to New York.

Eventually, the gas reaches the city gate of a local gas utility. Smaller pipes carry the gas the last few miles to homes and businesses. A gas meter measures the volume of gas a consumer uses.

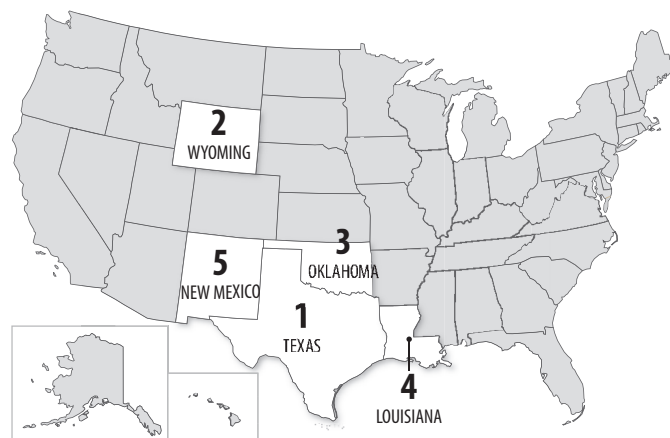
Who Uses Natural Gas?

Just about everyone in the United States uses natural gas. **Industry** is the biggest user. Industry burns natural gas for heat to manufacture goods. Natural gas is also used as an ingredient in fertilizer, glue, paint, laundry detergent, and many other items.

Residences, or homes, are the second biggest users of natural gas. Five in ten homes use natural gas for heating. Like residences, commercial buildings use natural gas mostly for heating. **Commercial** users include stores, offices, schools, churches, and hospitals.

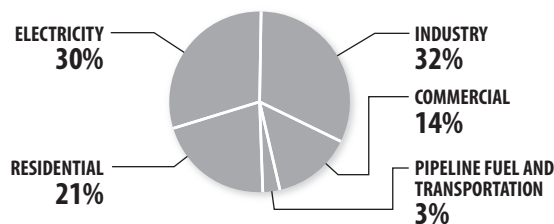
Natural gas can also be used to generate electricity. Many new power plants are using natural gas as fuel because it is so clean-burning and can produce electricity quickly when it is needed for periods of high demand.

Top Natural Gas Producing States, 2009



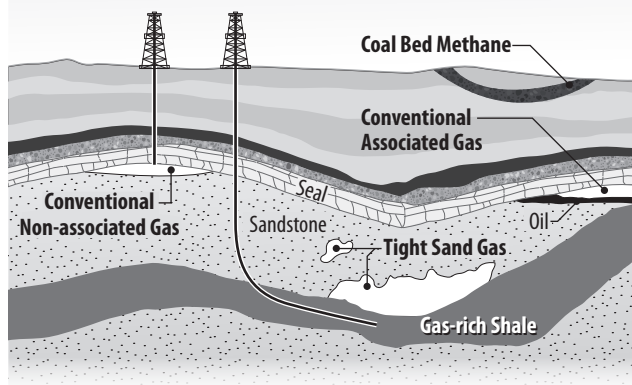
Data: Energy Information Administration

U.S. Natural Gas Consumption by Sector, 2009



Data: Energy Information Administration

Locations of Natural Gas



A small amount of natural gas is also being used as fuel for automobiles. Natural gas is cleaner burning than gasoline, but to use it, vehicles must have special equipment.

Natural Gas and the Environment

Burning any fossil fuel, including natural gas, releases emissions into the air, including carbon dioxide, a greenhouse gas.

Natural gas and propane are the cleanest burning fossil fuels. Compared to coal and petroleum, natural gas releases much less sulfur, carbon dioxide, and ash when it is burned. Scientists are looking for new sources of natural gas and new ways to use it.