U.S. Energy Information Administration
Independent Statistics and Analysis

Energy in Brief — What everyone should know about energy

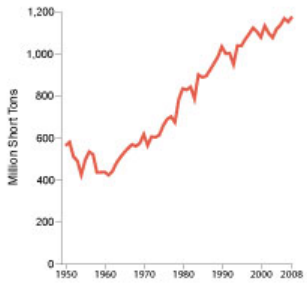
Last Updated: February 25, 2010

What is the role of coal in the United States?

Due to its relatively low cost and abundance, coal is used to generate about half of the electricity consumed in the United States. Coal is the largest domestically-produced source of energy. Coal use, however, results in higher amounts of carbon dioxide per unit of energy than the use of oil or natural gas.

Coal production has increased over the past 60 years.

U.S. Coal Production, 1950-2008

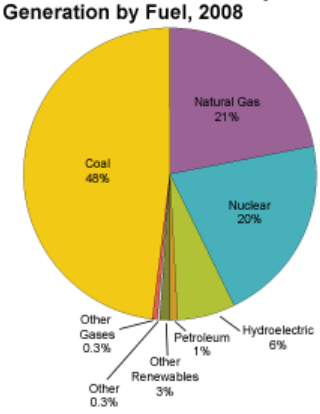


Source: U.S. Energy Information Administration, *Annual Energy Review 2008* (June 2009).

See larger graph on page 3.

Nearly half of U.S. electricity is generated from coal.

U.S. Electric Power Industry Net Generation by Fuel, 2008



Source: U.S. Energy Information Administration, *Electric Power Annual* (2010).

See larger graph on page 4.

Did You Know?
Different types of coal have different characteristics including sulfur content, mercury content, and heat energy content. Heat content is used to group coal into four distinct categories, known as ranks: anthracite, bituminous, subbituminous, and lignite (in decreasing order of heat content).

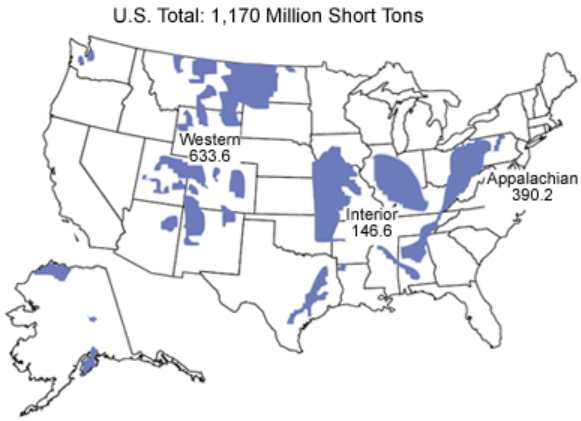
There are by far more bituminous coal mines in the United States than the other ranks (over 90% of total

Coal is an Abundant U.S. Resource with Multiple Uses

Did You Know?
In 2008, Wyoming produced 468 million tons of coal, or almost 40% of the coal mined in the United States. West Virginia was the second largest producer, with 158 million tons (13%).

The United States is home to the largest recoverable reserves of coal in the world. In fact, we have enough coal to last more than 200 years, based on current consumption levels. Coal is produced in 25 States spread across three coal-producing regions, but approximately 75% of current production originates in just five States: Wyoming, West Virginia, Kentucky, Pennsylvania, and Montana.

Coal Production by Coal-Producing Region, 2008
(Million Short Tons)



Note: Totals do not include refuse recovery.

Source: U.S. Energy Information Administration, *Annual Coal Report 2008* (September 2009).

See larger map on page 5.

About 93% of U.S. coal consumption is in the electric power sector, but coal also has certain industrial applications such as cement making and conversion to coke for the smelting of iron ore at blast furnaces to make steel. A small amount of coal is also burned to heat commercial, military, and institutional facilities, and an even smaller amount is used to heat homes.

Over the past 10 years, about 5% of the coal produced in the United States, on average, has been exported. The United States also imports a small amount of coal; some power plants along the Gulf Coast and the Atlantic Coast find it cheaper to import coal by sea from South America than to have it transported from domestic coal mines.

The United States has more than 1,400 coal-fired electricity generating units in operation at more than 600 plants across the country. Together, these power plants generate almost half of the electricity produced in the United States and consume about one billion short tons of coal per year. (Annual coal consumption in the electric power sector is expected to drop below one billion short tons in 2009 for the first time since 2002.)

The share of our electricity generated from coal is expected to decrease by 2035. However, our growing demand for electricity is expected to lead to an increase in the actual amount of coal used, in the absence of new policies to limit or reduce emissions of carbon dioxide and other greenhouse gases. Such new policies could significantly change the outlook for coal use.

Coal Is a Relatively Inexpensive Fuel

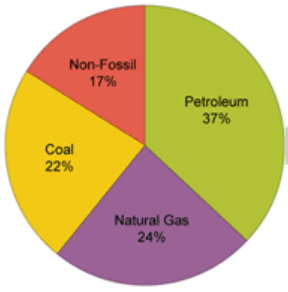
Although some natural gas plants are more efficient than coal plants at generating electricity, the fuel cost of generating one kilowatthour of electricity from natural gas generally is higher than that of coal. In addition, coal prices have historically been much less volatile than those of natural gas due, in large part, to the existence of long-term coal supply contracts.

mines), but the subbituminous mines (located predominantly in Wyoming and Montana) are so much larger that they produce almost as much coal per year as the bituminous mines.

Environmental Effects from Using Coal

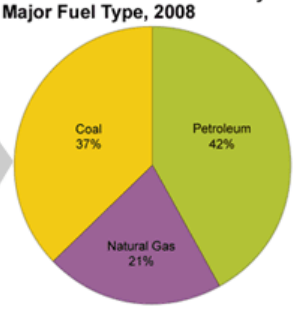
Coal is plentiful and fairly cheap relative to the cost of other sources of electricity, but its use produces several types of emissions that adversely affect the environment. Coal emits sulfur dioxide, nitrogen oxide, and mercury, which have been linked to acid rain, smog, and health issues. Coal also emits carbon dioxide, a greenhouse gas that has been in the news because of its link to climate change. Coal accounted for 37% of the total U.S. emissions of carbon dioxide released into the Earth's atmosphere in 2008. Without proper care, coal mining can have a negative impact on ecosystems and water quality, and alter landscapes and scenic views.

U.S. Primary Energy Consumption by Major Fuel Type, 2008



Source: U.S. Energy Information Administration, *Annual Energy Review 2008* (June 2009).

Resulting U.S. Energy-Related Carbon Dioxide Emissions by Major Fuel Type, 2008



Source: U.S. Energy Information Administration, *Emissions of Greenhouse Gases in the United States 2008* (December 2009).

See larger graph on last page.

Outlook for Future Coal Use

The economics of burning coal may change if the U.S. Congress approves legislation that restricts or otherwise controls carbon dioxide emissions. For example, a cap-and-trade program to regulate carbon dioxide emissions would likely increase the cost of burning coal because of its carbon content, and thereby cause power companies to consider using less carbon-intensive generating technologies such as nuclear, renewables, and natural gas.

Efforts are now underway to develop new technologies to burn coal without emitting as much carbon dioxide into the atmosphere. Scientists are exploring the possibility of carbon capture and sequestration (CCS), which seeks to capture up to 90% of the carbon dioxide from coal plants before it is emitted into the atmosphere and then store it below the Earth's surface. CCS would theoretically address much of coal's carbon dioxide emissions but faces many economic and technological hurdles.

Learn More

- 2008 Annual Coal Report
- Coal Projections Through 2035
- Energy Explained: Coal
- Energy Explained: Electricity in the United States
- Energy Explained: Energy and the Environment
- Clean Coal Technology Compendium (NETL)

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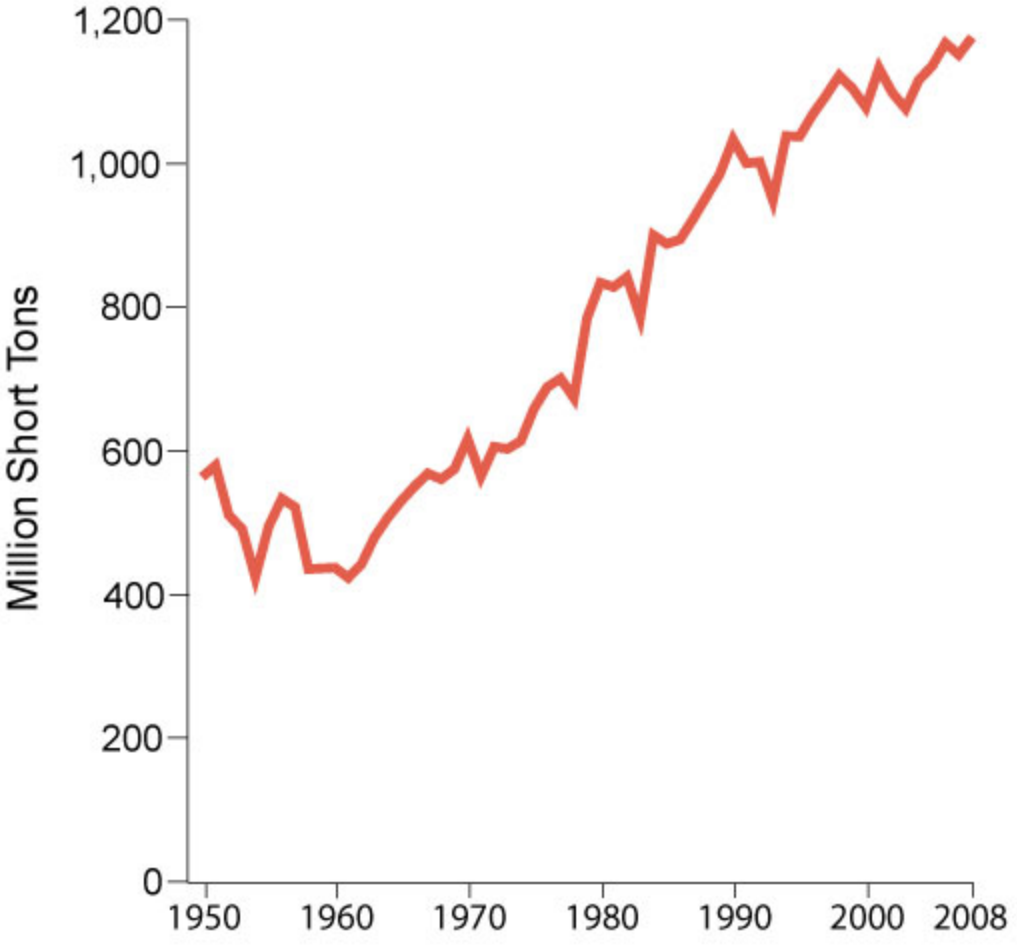

Source: U.S. Energy Information Administration, *Annual Energy Review 2008* (June 2009).

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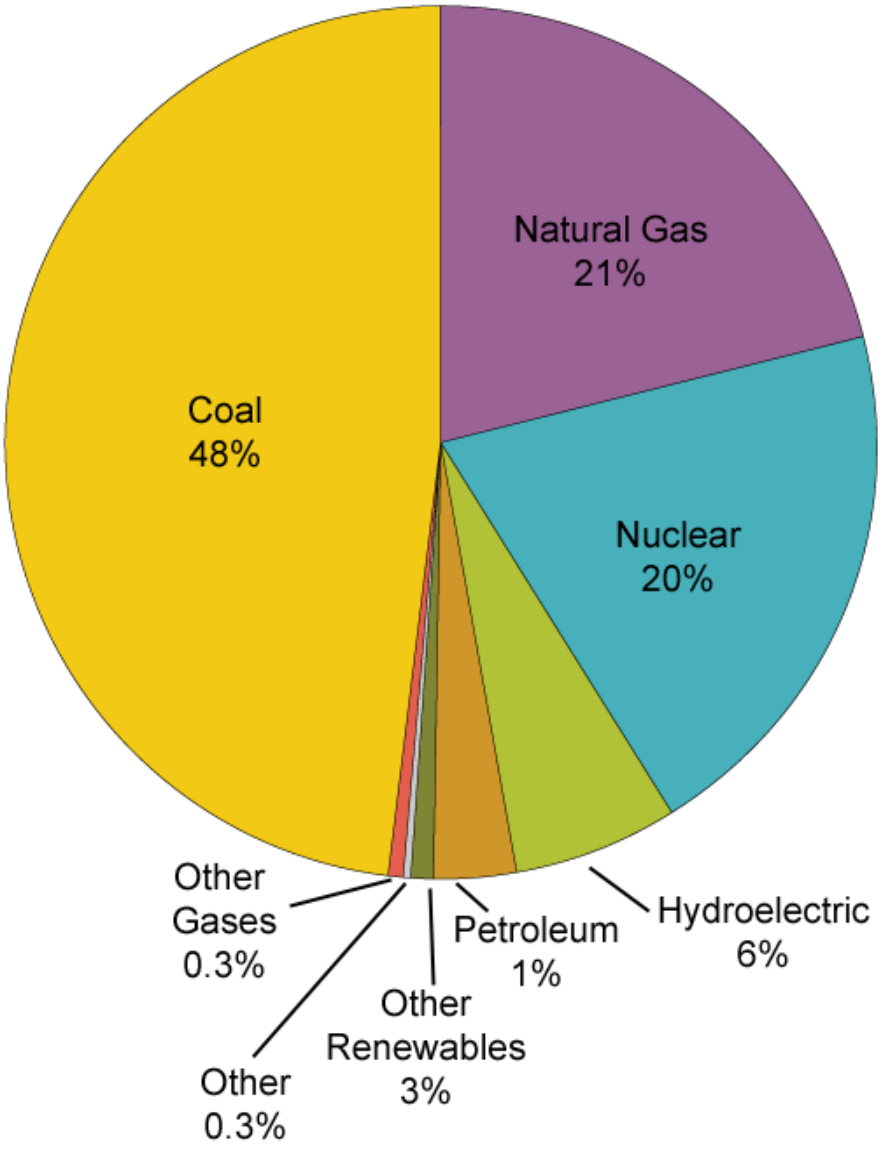

Source: U.S. Energy Information Administration, *Electric Power Annual* (2010).

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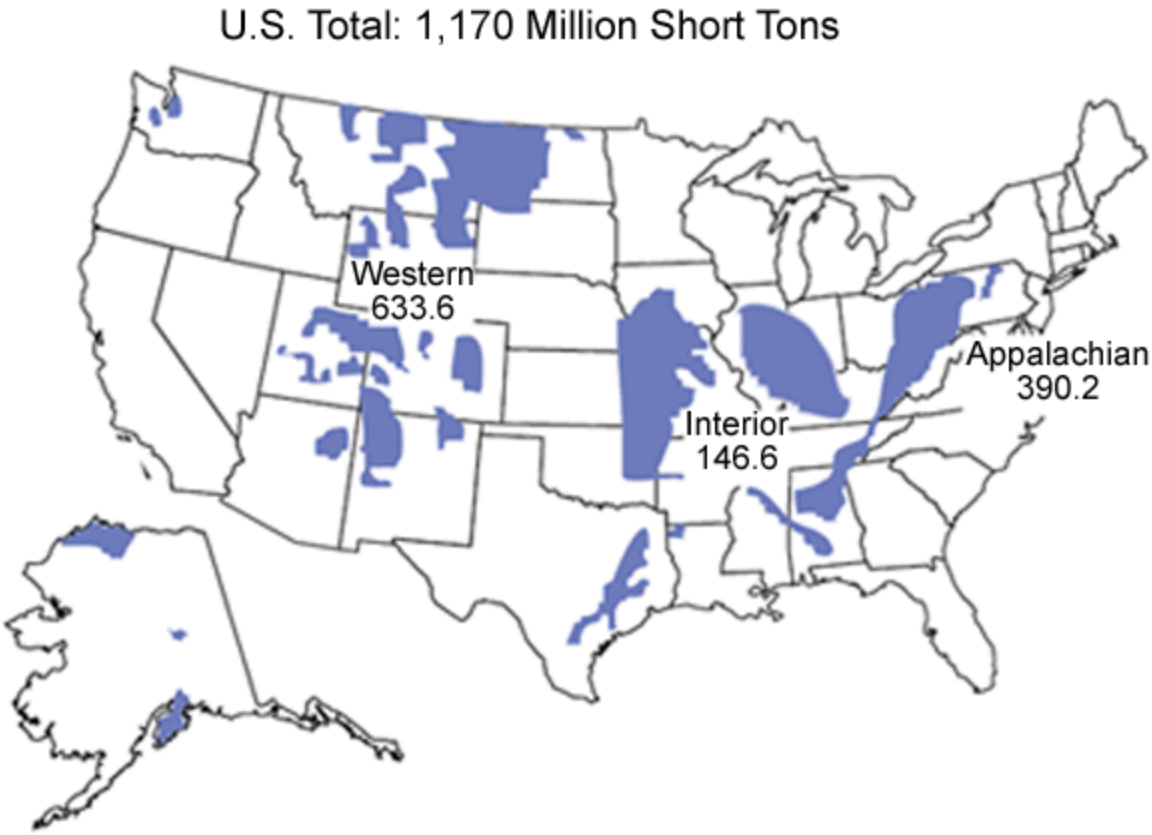

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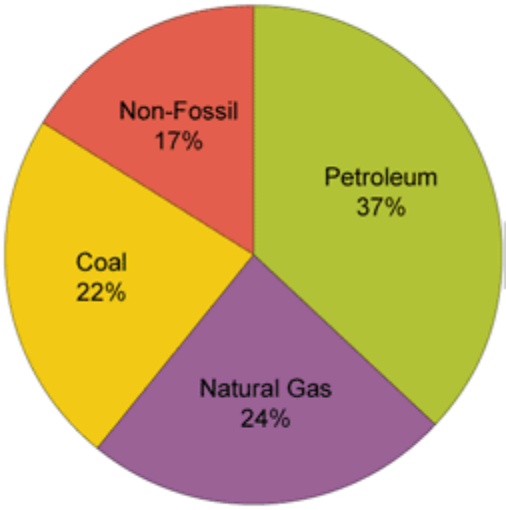

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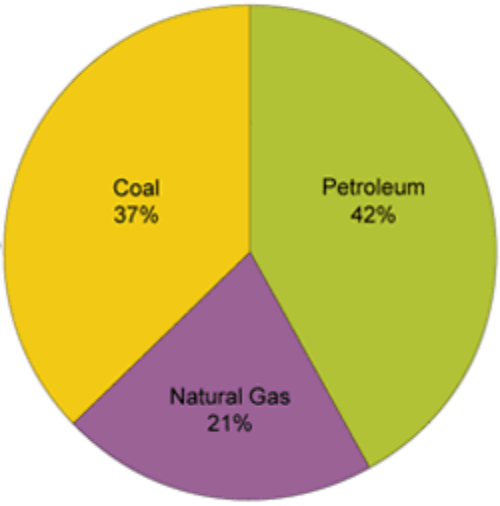

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