Coal power in the United States

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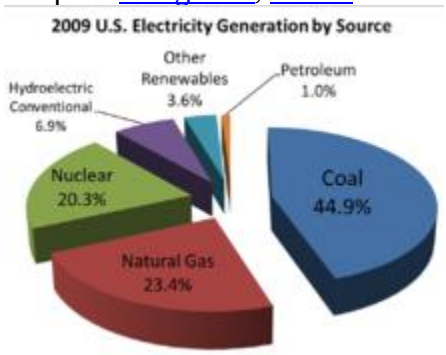
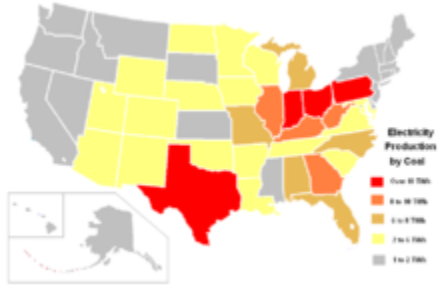


Sources of electricity in the U.S. in 2009.[1]
See also: Coal mining in the United States



Electricity production from coal power by state in the USA in July 2006.

Coal power in the United States accounted for 42% of the country's electricity production in 2011.[1] Utilities buy more than 90 percent of the coal mined in the United States.[2]

In 2009, there were 1436 coal-powered units at the electrical utilities across the US, with the total nominal capacity of 338.732 GW[3] (compared to 1024 units at nominal 278 GW in 2000).[4] The actual average generated power from coal in 2006 was 227.1 GW (1.991 trillion kilowatt-hours per year),[5] the highest in the world and still slightly ahead of China (1.95 trillion kilowatt-hours per year) at that time.[6] Back in 2000, the US average production of electricity from coal was 224.3 GW (1.966 trillion kilowatt-hours per year).[5] In 2006, the U.S. consumed 1,026,636,000 short tons (931,349,000 metric tons) or 92.3% of coal for electricity generation.[7]

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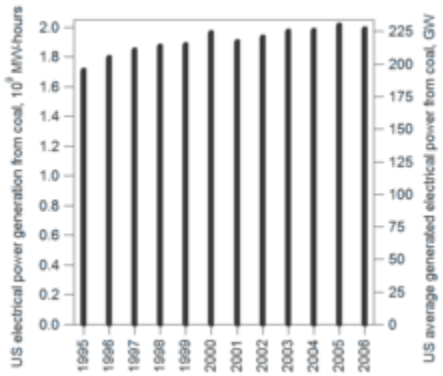
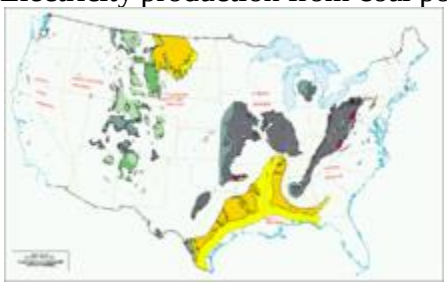
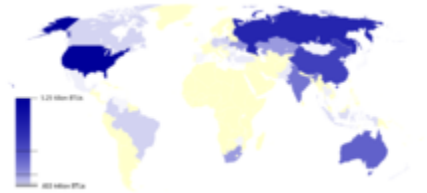
Recent trends, comparisons, and forecasts



Electricity production from coal power by year in the USA from 1995 to 2006.



Coal reserves in the USA in 1996.



Coal reserves in BTUs as of 2009

Further information: Coal phase out

Average share of electricity generated from coal in the US has dropped from 52.8% in 1997 to 45.0% in 2009.[1]

The coal plants are mostly base-load plants and account for about 32% of the peak electricity production in the summer, when the electricity demand is the highest and the auxiliary (mostly non-coal) plants are added to the grid.[8]

As of 7/7/11, utility companies will shut down and retire aging coal-fired power plants following the Environmental Protection Agency's (EPA) announcement of the Cross-State Air Pollution Rule (CSAP).[9]

Canceled and slowed proposals

- On October 19, 2007, the Kansas Department of Health and Environment was the first government agency to reject a permit for a new coal-fired plant on the basis of carbon dioxide emissions which had been planned by the Sunflower Electric Power Corporation.[10]
- Southwestern Power Group's Bowie Power Station proposed an IGCC plant that was scrapped in favor of a natural gas plant. Regulatory uncertainty was cited as one of the reasons.
- A Florida Power & Light's Glades Power Plant proposed plant of 1,960 MW was rejected by the Florida Public Service Commission. Uncertainty over possible future carbon taxes was cited as one of the reasons.
- An air permit for a plant in Kentucky was rejected in August 2007 in a circuit court on the basis that the air pollution control analysis was inadequate.
- Cancellation of 8 (out of promised 11) proposed coal plants of former TXU Corporation in Texas by the current owners, Kohlberg Kravis Roberts & Co. and TPG, was finalized on October 15, 2007.[11]

Safety

Coal power has historically been known for being a dangerous working environment.[*citation needed*] The Mine Safety and Health Administration of the United States Department of Labor reports deaths by state and year

for the period of 1996 to 2009; total deaths for that time frame were 437. In the US there were 47 deaths in 2006, 34 in 2007, and 30 deaths in 2008.

Accident types include:

- Power haulage - 47%
- Electrical - 13%
- Machinery - 9%
- Falling material - 7%
- Ignition/explosions - 7%

- Slips/falls - 4%
- Explosives - 4%
- Other - 9%

Reference: [1]

Environmental impacts

In the United States, three coal-fired power plants reported the largest toxic air releases in 2001 [12]:

- CP&L Roxboro Steam Electric Plant in Semora, North Carolina. The four-unit, 2,462 megawatt facility is one of the largest power plants in the United States.
- Reliant Energy's Keystone Power Plant in Shelocta, Pennsylvania.
- Georgia Power Bowen Steam Electric Generating Plant in Cartersville, Georgia.

The Environmental Protection Agency classified the 44 sites as potential hazards to communities, which means the waste sites could cause death and significant property damage if an event such as a storm, a terrorist attack or a structural failure caused a spill. They estimate that about 300 dry landfills and wet storage ponds are used around the country to store ash from coal-fired power plants. The storage facilities hold the noncombustible ingredients of coal and the ash trapped by equipment designed to reduce air pollution.[13]

Acid rain

Further information: Acid rain

Byproducts of coal plants have been linked to acid rain.

Sulfur dioxide emissions

86 coal powered plants have a capacity of 107.1 GW, or 9.9% of total U.S. electric capacity, they emitted 5,389,592 tons of SO_2 in 2006 – which represents 28.6% of U.S. SO_2 emissions from all sources.[14]

Carbon footprint: CO_2 emissions

Main article: Greenhouse gas emissions by the United States

Emissions from electricity generation account for the largest share of U.S. greenhouse gases, 38.9% of U.S. production of carbon dioxide in 2006 (with transportation emissions close behind, at 31%). Although coal power only accounted for 49% of the U.S. electricity production in 2006, it was responsible for 83% of CO_2 emissions caused by electricity generation that year, or 1,970

Tg of CO_2 emissions. Further 130 Tg of CO_2 were released by other industrial coal-burning applications.[15]

Mercury pollution

U.S. coal-fired electricity-generating power plants owned by utilities emitted an estimated 48 tons of mercury in 1999, the largest source of man-made mercury pollution in the U.S.[16] In 1995-96, this accounted for 32.6% of all mercury emitted into the air by human activity in the U.S. In addition, 13.1% was emitted by coal-fired industrial and mixed-use commercial boilers, and 0.3% by coal-fired residential boilers, bringing the total U.S. mercury pollution due to coal combustion to 46% of the U.S. man-made mercury sources.[17] In contrast, China's coal-fired power plants emitted an estimated 200 ± 90 tons of mercury in 1999, which was about 38% of Chinese human-generated mercury emissions (45% being emitted from non-ferrous metals smelting).[18] Mercury in emissions from power plants can be reduced by the use of activated carbon.

Public debate

Advocates

In 2007 an advertising campaign was launched to improve public opinion on coal power titled *America's Power*. This was done by the American Coalition for Clean Coal Electricity (then known as Americans for Balanced Energy Choices), a pro-coal organization started in 2000.

Opposition

In the face of increasing electricity demand through the 2000s, the US has seen a "Growing Trend Against Coal-Fired Power Plants". In 2006 through 2007 there was first a bullish market attitude towards coal with the expectation of a new wave of plants, but political barriers and pollution concerns escalated exponentially, which is likely to damage plans for new generation and put pressure on older plants.[19] In 2007, 59 proposed coal plants were cancelled, abandoned, or placed on hold by sponsors as a result of financing obstacles, regulatory decisions, judicial rulings, and new global warming legislation.[20][21]

The Stop Coal campaign has called for a moratorium on the construction of any new coal plants and for the phase out of all existing plants, citing concern for global warming.[22] Others have called for a carbon tax and a requirement of carbon sequestration for all coal power plants.[23]

The creation in January 2009 of a Presidential task force (to look at ways to alter the energy direction of the United States energy providers) favors the trend away from coal-fired power plants.

See also

- Coal mining in the United States

- Coal power in China
- Mountaintop removal mining
- Superfund

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23. ^ Cap-&-Trade and Carbon Tax Legislation

External links

- Carbon-emissions culprit? Coal

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- Clean Air Watch

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- Statistics on existing U.S. coal-fired plants

- State Coal Profile Index Map

- Coal production in the United States – an historical overview

- Is America Ready to Quit Coal?

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Coal power in North America

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