

Coal Basics

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Coal is a rich source of energy formed from plants that grew in swamps tens to hundreds of millions of years ago. The plants were buried deeply under younger and younger layers of dirt and rock, heated, and compressed into a carbon-rich rock.^[1] Burning coal releases **more carbon dioxide** per unit of energy produced than any other fossil fuel.^[2]

Why does coal matter?

The United States has more estimated recoverable coal reserves than any other nation except China and is a net exporter of coal. In 2017, coal provided 30% of the electricity consumed across the country, and 93% of coal consumed in the United States was used to generate electricity.^[3]

How does geoscience inform decisions about coal?

Geoscientists locate coal resources, assess coal deposit volume and extent, and determine coal quality and composition for use in different industrial processes.^[4] Geoscientists also study the impacts of coal production and consumption on air and water quality, and work on the remediation of [land](#) and [water](#) that have been affected by coal production.

References

- ¹[Coal Explained, EIA](#)
- ²[How much carbon dioxide is produced when different fuels are burned? EIA](#)
- ³[Use of Coal, EIA](#)
- ⁴[Coal Assessments Overview, USGS Energy Resources Program](#)

Learn More

Introductory Resources

- [Coal Explained](#) (Webpage), *Energy Information Administration*
Web overview of how coal was formed, types of coal, coal production (mining, processing, and transporting), where U.S. coal comes from, imports and exports, how much coal is left, uses of coal, prices and price outlook, and environmental impacts of coal.
- [What You Need to Know: Fossil Fuels](#) (Webpage), *The National Academies*
An in-depth overview of the current role of each fossil fuel energy source in the United States, the benefits and disadvantages of each energy source, and opportunities and challenges for using that energy source in the future. (Discusses coal, oil, and natural gas.)
- [What You Need to Know: Advanced Coal Technologies](#) (Webpage), *The National Academies*
An overview of new technologies to increase the efficiency of electricity generation and reduce the CO₂ emissions from coal.

Resources for Educators

- Education Resources Network, *AGI's Center for Geoscience & Society*
Search for coal resources in: [Professional Resources](#), [Organizations](#), [Curricula & Instruction](#), [Teaching Media](#), [Outreach Programs](#)
- NGSS Performance Expectations, *Next Generation Science Standards*
[4-ESS3-1](#), [MS-ESS3-1](#)
- NGSS [Disciplinary Core Ideas](#), *Next Generation Science Standards*
ESS3.A

Frequently Asked Questions

[Which states are the largest producers and consumers of coal?](#)

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[What is coalbed methane?](#)

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[What are the different types of coal?](#)

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[What types and amounts of energy are produced in each state?](#)

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[How much of U.S. carbon dioxide emissions are associated with electricity generation?](#)

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Maps & Visualizations



[Interactive visualization of United States coal data](#)

U.S. Energy Information Administration

The U.S. Energy Information Administration's Coal Data Browser provides a variety of state-specific and nationwide visualizations for their coal reports and data sets. The annual data sets go back to 2008 and can be displayed as a time series graph, bar graph, U.S. map, or coal basin map. Data set...

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