

Coal—Illinois' Black Treasure

Beneath much of Illinois lies a black treasure—coal. Illinois coal deposits began to form more than 300 million years ago during the Pennsylvanian Period, when the land that is now Illinois was near the equator. In a succession of dense, tropical swamps, the ancestors of modern ferns and scouring rushes grew as tall as trees, while dragonflies with wingspans of up to 2 feet droned over the forest floor. Beneath the swampy water, thick deposits of plant debris accumulated and were buried to form peat.

Over millions of years, the layers of peat were compressed into coal. This process created more than seventy-five layers, or "seams," of coal that range from a few inches up to 10 feet thick. Some of the coal seams cover thousands of square miles in Illinois and adjacent states, but most occur in small, more limited areas. Depending on where you live in Illinois, a coal seam may lie close to the land surface, or it may be buried more than 2,000 feet down. Only about thirty coal seams are thick enough to mine.

Who uses coal? You do!

Most people don't realize it, but coal is still a vital source of energy that supports our economy and standard of living. Coal provides heat that turns water into steam, driving electrical generators. In this way, coal generates over half of the electricity produced in the United States. About one-third of the coal mined in Illinois is burned in power plants in the state; much of the rest is shipped to power plants in other midwestern and southeastern states, and even to Europe and Africa.

Illinois coal also provides electrical power and heat at large manufacturing and food processing plants. More than 1 billion tons of coal are consumed each year in our country—nearly 4 tons of coal per person! Annually, as much as 45 million tons a year of this coal is Illinois coal.



Coal-powered Abbott Power Plant, Champaign, Illinois.

How much coal is there?

Illinois' recoverable reserves of coal are larger than those of any state east of the Mississippi River and the third largest in the country, behind only Montana and Wyoming. About 200 billion tons of coal are estimated to lie underground in the state. Only about 38 billion tons of that coal can be recovered economically, however. There are four main reasons why the remainder of the coal is not recoverable:

- unfavorable geologic conditions
- surface developments, such as towns and roads
- inefficient mining processes
- limitations of current technology

How is coal mined?

Coal is mined by surface or underground methods. In surface mining, where the coal lies close to the surface, large earth-moving equipment is used to remove the earth materials above the coal seam. The coal is then scooped up, processed, and transported. The remaining earth materials are put back into the hole, and the surface is restored to its original contour and land use.



Surface mining at Arch of Illinois' Captain Mine, near DuQuoin.

In underground mining, miners use special machines to tunnel through the coal seam. In some mines, about half of the coal is left behind in the form of large pillars to support the overlying land surface. This type of mining is called room-and-pillar mining. In other underground mines, all of the coal is extracted in certain areas and the ground above the coal seam is then allowed to settle in a controlled pattern. This method is called longwall mining.

In Illinois, the most accessible of the near-surface deposits have already been mined out. For the most part, future mining is expected to be underground. Regardless of the mining method used, Illinois law requires the mines to operate in a manner that will not cause permanent damage to the land surface.



Installing roof bolts at a roof and pillar mining operation, Galatia Mine in southeastern Illinois.

What is the future of the Illinois coal industry?

The high-sulfur content of Illinois coal requires expensive technology to burn it cleanly enough to meet environmental regulations. Competition from low-cost, low-sulfur western coal has resulted in the closing of a number of Illinois coal mines and in the loss of mining jobs. However, new technologies now being studied will in the future provide utilities with more efficient and environmentally safer methods of using Illinois coal. Because the state has large reserves of recoverable coal that can be mined at relatively low cost, these new technologies may allow utilities to continue to use Illinois coal well into this century and beyond. Many areas in southeastern Illinois still have not been adequately prospected for coal, and future exploration there may lead to the discovery of additional coal reserves that can be mined economically.



A coal barge at the loading facility at Cora, Illinois, is ready for Mississippi River transport to waiting markets.

Is there coal on my land? Is it valuable?

If you own land in the southern two-thirds of the state, there is a good chance that coal lies beneath it. Whether or not someone will eventually want to mine the coal depends on many factors: the thickness, depth, and quality of the seam; the mining conditions; the overall size of the deposit; and the distance the coal must be transported to reach customers.

Learn more about coal and Illinois geology by contacting the Illinois State Geological Survey (isgs@uiuc.edu or 217/333-4747).

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