

Coal in Illinois

The coal mining industry has a rich and proud tradition in Illinois. Coal plays a vital role as an energy source, and the industries involved in the mining, transportation and utilization of coal provide thousands of jobs for Illinoisans and economic stability to many communities across the State.

Coal underlies 37,000 square miles of Illinois -- about 65 percent of the state's surface. Estimated recoverable coal reserves in Illinois (38 billion tons) account for almost one-eighth of total U.S. coal reserves and one-quarter of the nation's bituminous coal reserves. Illinois' coal reserves contain more energy (in Btu) than the oil reserves of Saudi Arabia and Kuwait.

Each day, every American uses about 20 pounds of coal in the form of inexpensive and increasingly clean coal-based electricity and other products.

Production and Markets

Coal mining began in Illinois almost 200 years ago. While the early mining was done with picks, shovels and mules, today's miners employ state-of-the-art technology to work safely, ensure high coal quality and heighten productivity.

The Illinois coal industry pumps nearly \$1 billion into the Illinois economy each year. Illinois ranks 8th among coal producing states, mining more than 33 million tons of coal each year in 14 counties. In 2010, 21 Illinois mines employed about 3,600 miners and generated approximately 20,000 spin-off jobs. The typical coal miner earns \$65,000 per year.

Coal mined in Illinois is classified as "bituminous," with high energy values ranging between 10,000 and 14,000 Btu/lb. It takes less than one pound of Illinois coal to produce one kilowatt-hour of electricity.

More than 80 percent of Illinois coal is produced for the electric utility industry. Industrial and commercial users account for the remaining 20 percent. Illinois utilities typically use 2.5 million tons of Illinois coal each year. Meanwhile, about

three-fourths of Illinois coal is sold to out-of-state electric utilities.

The top five utility users of Illinois coal in 2009 purchased at least 1 million tons of Illinois coal each. Leading the way was Tennessee Valley Authority, which used 4.7 million tons. Others were: Dayton Power & Light Company, Northern Indiana Public Service, Tampa Electric, City of Springfield, and Duke Energy Indiana.

Illinois coal exports to international markets fluctuate each year due to currency exchange rates and customer demand. In 2008, Illinois exported 3 million tons of coal. Forecasts project coal exports to reach 9 million tons in 2011, as demand for energy grows in places such as China, India, elsewhere in Asia and in Europe.

Clean Coal Technologies

"Clean coal technologies" describe a new generation of energy processes that sharply reduce air emissions and other pollutants from coal-fueled energy facilities. In the early 1980s and early 1990s, technologies were focused on the environmental challenges of acid rain. Fluidized bed combustion, flue gas desulfurization (scrubbers), low NOx burners, electrostatic precipitators, and fabric filters were developed to address these issues. Today's clean coal technologies focus on mercury control, capturing particulate matter, coal gasification, carbon management and increased efficiencies.

Oxygen-blown gasifiers offer the unique opportunity to capture and sequester, or store, nearly pure carbon dioxide. Advanced coal gasification techniques offer opportunities to use Illinois high-Btu coal in coal-to-liquids projects that will produce low-sulfur diesel fuel, synthetic natural gas and fertilizer, enhancing U.S. energy security and amplifying job creation in the United States.

DCEO support for the Illinois coal industry is showing signs of big dividends as coal mine employment and production are on the rise. Between December 2009 and December 2010 coal mine

employment rose 2.8 percent from 3,548 to 3,649. By October 2011, employment rose to 4049, or 14.1 percent from December 2009.

The US Energy Information Agency coal production estimates as of Dec. 31 show Illinois coal production up 3 million tons or 9% over last year. The final revised number won't be in until all of the 4th quarter data from MSHA is collected, but as of now Illinois coal production is 36.4 million tons for 2011, the highest since 1999.

State of Illinois Coal Programs

DCEO's Office of Coal Development (OCD) is dedicated to the development and use of Illinois' extensive coal resources as a fuel source for the 21st century. OCD provides technical and financial support to Illinois' coal and energy industries. Funding is awarded for basic research and development on coal and its utilization, as well as commercial-scale demonstration of promising coal utilization technologies. Education and marketing programs develop and convey appropriate messages about the importance of Illinois coal in the state's job development efforts and in meeting domestic and international energy needs.

The **Illinois Coal Revival Program**, administered by OCD, provides significant tax and financing incentives and direct support to developers who build substantial new coal-fired electric generating stations or coal gasification facilities in Illinois. It includes additional incentives for the coal mines that will supply these plants and the transmission network that will carry the expanded load.

Financial assistance in the form of grants may be used for capital facilities consisting of buildings, structures, durable equipment and land at the new generation facility. The amount of financial assistance is determined by the state occupation and use taxes, commonly known as sales taxes, to be paid on Illinois-mined coal used at the new facility.

The **Illinois Coal Research Program**, administered by OCD and under the technical oversight of the Illinois Clean Coal Institute (ICCI), is recognized as a national leader among state coal research programs. Since its inception in 1985, the Coal Research Program has provided grants totaling more than \$69.9 million in state, federal and private funds to more than 15 universities and other research institutions. Laboratory-scale research projects initiate and advance technologies in the areas of coal combustion systems, coal residuals management, and coal preparation. Each year, about 15 research projects receive sub-grants totaling \$2 million.

The **Illinois Coal Development Program**, administered by the OCD, under the technical oversight of the ICCI, has provided nearly \$14.6 million in state funds to advance promising new coal research technologies, through the proof-of-concept stage, to the commercial demonstration stage. Processes include technology maturation, technology transfer and related studies. Priorities for the Development Program are established by tracking key markets and projecting how technology can take advantage of these issues to improve markets for Illinois coal.

The **Illinois Coal Demonstration Program**, administered by OCD, exemplifies successful cooperation between the private and public sectors to put advanced coal technologies into commercial-scale operation. Since its inception in 1981, the Illinois Coal Demonstration Program has committed more than \$151.3 million to 34 state-of-the-art projects demonstrating advanced coal systems for utility and industrial use. Those funds leveraged more than \$756.5 million in private and public investment. Funding is provided through the Illinois Coal and Energy Development Bond Fund which has a total authorization of \$185 million.

Potential projects must exhibit commercial readiness, economic feasibility, technical innovation and environmental acceptability. Each project provides near- and long-term benefits to the state of Illinois,

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primarily in the form of economic growth through the creation of new construction, mining, manufacturing, technical and secondary service-sector jobs, increased tax revenues and reduced unemployment. These projects help meet state environmental objectives by reducing air emissions, improving energy efficiency and making better use of Illinois' natural resources.

DCEO's Illinois Coal Competitiveness Program is structured to encourage capital investments and infrastructure improvements by producers, shippers and consumers of Illinois coal. Launched in 1996, the program is aimed at making Illinois coal more competitive in domestic and offshore markets. To date, the program has granted more than \$181.8 million in state dollars and leveraged \$2.2 billion in private investment in the Illinois coal industry infrastructure.

The **Illinois Coal Education Program** educates Illinois students on coal issues through the development and distribution of kindergarten-12th grade classroom instructional programs and materials. By providing suitable curricula, OCD is ensuring that today's students and tomorrow's adults understand the importance of coal in their lives.

Each year, OCD holds the Illinois Coal Calendar Contest to raise coal awareness in schools and homes. More than 2,500 fifth- through eighth-grade students submit entries from dozens of schools throughout Illinois. A reception is held at the Executive Mansion in Springfield to acknowledge winning students and their teachers. Winning pictures and essays are included in DCEO's annual Illinois Coal Calendar and distributed to 10,000 homes and offices.

Our Mission: Volatile natural gas prices, an increasing energy demand in emerging economies of the world led by China and India, and political turmoil in oil producing regions of the world are driving forces for the development of domestic fuel sources.

Through the activities of OCD, there is ever-growing recognition of the importance of Illinois bituminous coal to the state and nation. OCD is working to ensure that Illinois' most abundant energy resource remains a key part of a multi-fuel strategy for electric generation. OCD is also working to build new opportunities for Illinois coal to be used in the production of domestic energy supplies such as: coal-to-liquids, coal-to-natural gas, coal to produce ethanol, coal-to-hydrogen, and enhanced oil and coalbed methane recovery. Coal will continue to symbolize a way of life with a proud heritage in many Illinois communities.

Not succeeding in our mission means more than the loss of mining jobs. Many sectors of the Illinois economy derive benefits from the coal industry. Mining generates spin-off jobs in transportation, manufacturing and retail trades, providing economic security and social structure for many Illinois communities while generating additional state and local tax revenues. In short, a reduction in the use of Illinois coal will take a human toll, as well as an economic one.

The state of Illinois and its energy industries are committed to the development and application of technologies for the environmentally sound use of

Illinois coal. OCD strives to ensure the continued development of Illinois' coal resources and the protection of our natural environment. OCD efforts in the areas of Coal Competitiveness, Coal Research, Coal Education, Coal Technology Development, and Coal Technology Demonstration are ensuring that Illinois coal will play a role in energizing the 21st Century.

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