

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 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 was first discovered in Illinois more than 300 years ago. Mining began almost 200 years ago. While the early mining was done with picks, shovels and mules, today's miners employ state-of-the-art techniques to ensure the best coal quality and greatly heightened productivity.

Today, Illinois ranks ninth among coal producing states, mining more than 32 million tons of coal each year in 10 counties. In 2005, 18 Illinois mines employed about 3,900 miners and generated approximately 20,000 spin-off jobs. The typical coal miner earns \$45,450 per year.

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

The Illinois coal industry pumps nearly \$1 billion into the Illinois economy each year. More than 90 percent of Illinois coal is produced for the electric utility industry. Industrial, residential and commercial users account for the remaining 10 percent. Illinois utilities typically utilize 5.7 million

tons of Illinois coal each year. Meanwhile, about three-fourths of Illinois coal is sold to out-of-state electric utilities.

The top eight utility users of Illinois coal in 2005 were: Tennessee Valley Authority, Tampa Electric Company, AmerenEnergy Generating, PSI Energy, Northern Indiana Public Service Company, Gulf Power Company, Springfield City Water Light and Power, and Southern Illinois Power Cooperative. All purchased at least one million tons of Illinois coal in 2005. Tennessee Valley Authority utilities alone use 5.5 million tons of Illinois coal each year.

Illinois coal exports to international markets fluctuate each year due to currency exchange rates and customer demand. Annual exports of Illinois coal have been as high as 2.7 million tons in recent years, although they are presently less than 1 million tons.

Clean Coal Technologies

The research and development of new cleaner coal technologies have progressed since the Clean Air Amendments took effect in 1990. State-of-the-art technologies such as Fluidized Bed Combustion (FBC) and advanced Pulverized Coal (PC) plants have made significant improvements in efficiency and emission control. A new PC plant constructed today versus one constructed 40 years ago will control 95+ percent of sulfur dioxide emissions and 80+ percent of nitrogen oxide emissions. A recently completed U.S. Department of Energy Clean Coal Technology Project showed that FBC technology can control sulfur dioxide to 0.04 lbs./million Btu, nitrogen oxides to 0.06 lbs./million Btu and particulates to 0.004 lbs./million Btu. These emissions are significantly below current New Source Performance Standards.

Progress in coal gasification techniques offers opportunities to use Illinois high Btu coal in coal-to-liquids projects that will produce low sulfur diesel fuel, synthetic natural gas and fertilizer bringing energy security to the United States. These new technologies promise to bring an economic rebound to the coal regions of Southern Illinois.

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State of Illinois Coal Programs

DCEO's Office of Coal Development (OCD) is dedicated to the development and utilization of Illinois' extensive coal resources as a fuel source for the 21st century and beyond. OCD hosts a broad array of programs to provide technology development, public education and financial incentives for infrastructure investment in the coal industry. With offices located in Springfield, Marion and Chicago, OCD staff are readily accessible to representatives of the coal and coal-using industries, as well as government officials and the general public.

The **Illinois Resource Development and Energy Security Act**, signed into law in June 2001, 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. Among its provisions, the Act authorizes \$500 million in general obligation bonds for direct financial assistance to construct new, or expand existing, baseload power plants in Illinois. Public Act 93-0167 adds \$300 million in state-backed (moral obligation) revenue bonds as a financing incentive to new project developers. 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.

Businesses must propose to construct a new electric generating or coal gasification facility or an expansion at an existing electric generating facility, including transmission lines and associated equipment, to provide baseload electric power. The proposed facility or facility expansion must: 1) have an aggregate nameplate generating capacity of 400 megawatts or more for all units at one site, will use coal or gases derived from coal as its primary fuel source at the proposed facility, and will support the creation of at least 150 new Illinois coal-mining jobs, or 2) use coal gasification or IGCC to generate chemical feedstocks, transportation fuels or electricity.

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 \$62.2 million in state, federal and private funds to some 15 universities and other research institutions engaged in clean coal research activities focusing on the needs of coal users and producers in meeting the standards of the Clean Air Act Amendments of 1990. Each year, about 15 research projects receive subgrants totaling \$2 million.

The **Illinois Coal Development Program**, administered by the OCD, under the technical oversight of the ICCI, has provided nearly \$7.5 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 \$141 million to 29 state-of-the-art projects demonstrating advanced coal systems for utility and industrial use. Those funds leveraged more than \$735.7 million in private and public investment. Funding is provided through the Illinois Coal and Energy Development Bond Fund which has a total authorization of \$183 million. The federal government, primarily through the Department of Energy's Clean Coal Technology Program, has been a major partner, committing more than \$200 million in federal funds towards 11 of these projects.

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 \$112.7 million in state dollars and leveraged nearly \$765 million 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 3,000 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.

Promising developments are unfolding. Sulfur dioxide emissions have been reduced by 55 percent in Illinois. Clean coal technologies (CCTs) are generally more efficient than conventional boiler technologies, reducing both fuel use and carbon dioxide emissions. There is evidence that using CCTs also is effective in reducing emissions of mercury, fine particulates, NO_x and other air pollutants. New uses for byproducts are being researched and perfected, such as the use of gypsum in the manufacture of wallboard and fly ash in road-building materials and cement blocks. These successes only serve to spur DCEO's Office of Coal Development forward.

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 Demonstration, and Coal Development are ensuring that Illinois coal will play a role in energizing the 21st Century.

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