State of Illinois
Department of Commerce & Economic Opportunity

Office of Coal Development FY2011 Annual Report

Coal, the engine that spurs economic development

What do Peabody Energy, Eagle River Coal, Foresight Energy, Arch Coal Company, Alliance Coal Company, and Knight Hawk Coal, have in common? Together they have invested billions of dollars in Illinois over the past decade.

As a result, more than 4,000 employees drive from every county in a 50-mile radius of the new and expanded mines. The average mining salary, about $76,000, purchases homes, vehicles and necessities in their home communities.

Local businesses supply the mines with everything from diesel fuel to office supplies. New shops, restaurants, and gas stations are thriving.

Meanwhile, Prairie State Energy Campus (PSEC), the cleanest coal-fueled, electric generating station in the U.S., is located in Washington County, 60 miles southeast of St. Louis. At peak construction, more than 4,000 employees worked on the 1,600 MW facility and adjacent coal mine. Prairie State will fire up in late spring 2012, with about 550 miners, power plant workers and corporate personnel holding permanent jobs at the site.

Illinois coal empowers more than lights.

PSEC will stimulate an extra $80 million of earnings and income into the Illinois economy, including $64 million in the region. It will contribute some $785 million annually in economic activity in the Illinois economy — a whopping $23.6 billion over 30 years. More than 90 percent of this money will go back into the region.

In 2010, PSEC employees donated 1.5 tons of food and more than 700 toys to needy children and families in 12 local communities.

Together, Tenaska in central Illinois, Power Holdings in southern Illinois, and Chicago Clean Energy in northern Illinois could multiply this growth in economic activity three times in three diverse areas of the state.

Illinois coal research, the nexus of innovation

The Illinois Coal Research Center on the campus of Southern Illinois University Carbondale has been a center of excellence in coal, energy and environmental research for more than three decades.

Current research includes studies in coal gasification, changes in chemical and mechanical coal properties with exposure to carbon dioxide (CO_2), and synergies in coal/biomass co-gasification.

Gas Technology Institute in Des Plaines, University of Illinois Champaign, and Illinois Institute of Technology in Chicago also received DCEO FY2011 grant funds for cutting edge research in areas such as post-combustion CO_2 capture, reactive properties of coal/biomass mixed fuels, and identifying sources for wet FGD sorbents.

The Illinois Clean Coal Institute is the technical arm of DCEO's Coal Research and Development Program. In FY2011, $3.6 million in funding through this grant program leveraged $3.3 million in private funds. Project results are published in scientific journals and at www.ICCI.org.

Special points of interest:

- The 550 new jobs at Prairie State Energy Campus will stimulate an extra $80 million earnings and income annually.
- DCEO can right economic disparities by using Illinois' unique coal resources in three diverse areas of the state.
- Cutting edge coal research is happening in Illinois.

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SIU professor of engineering receives U.S. patent

The Atlas cribs are stronger and about half the weight of traditional wood roof supports. The open design cuts the cost of mine ventilation.

Paul Chugh, professor of mining and mineral resources engineering at Southern Illinois University Carbondale, received a U.S. patent for Atlas underground roof support. Known as "cribs," the new wood products are stronger, stackable and weigh about half as much as traditional wood blocks now used for third-level roof support in underground mines. The Atlas open design eases critical air circulation, reducing operating costs by cutting the power needed to maintain safe ventilation.

Three Illinois companies have signed on to manufacture the cribs once the final patent is complete. Chugh and his team, meanwhile, are already working on design improvements and have filed an addendum to the patent.

Other recently completed research projects partially funded through the DCEO Coal Research and Development Program were published in Power Magazine and CoalAge Magazine. In 2011, Illinois coal research scientists were invited to make formal research presentations at international conferences and meetings in Istanbul, Turkey, Calgary, Canada, San Antonio, TX, Baltimore, MD, Clearwater, FL Pittsburgh, PA,, Cleveland, OH, and Chicago IL.

Topics covered oxy-combustion technology, using vegetation as indirect measurement of CO_2, chassis-mounted sprayers creating a "water curtain" for dust control, flue gas heat recovery in power plants; evaluation of dry sorbent technology for CO_2 capture; liquefaction of Illinois coal and syngas cleanup.

Coal education highlights

"The pride in the coal mining industry is refreshing!"

"The trip down in the mine was a once-in-a-lifetime experience."

Teachers evaluating the 14th Annual Coal Education Conference provided the best endorsement possible, including comments such as:

"The trip down in the mine was a once-in-a-lifetime experience."

"The pride in the coal mining industry is refreshing!"

"Best conference I've ever attended."

The 4-day event provides first-hand, factual information to enrich the classroom teacher's knowledge of an often controversial topic. The conference also welcomed educational staff from the Chicago Museum of Science and Industry.

DCEO also has a successful partnership with the Labor and Industry Museum in Belleville.

Twenty-five Illinois middle school students, their parents and teachers, were invited to the Governor's Mansion to celebrate the selection of their artwork or essays for the 23rd edition of the Coal Calendar.

In addition to the above activities, DCEO staff continue to provide mine tours, statistics, and information to policymakers regularly.

New Illinois legislation supports carbon management

Governor Quinn signed the Carbon Dioxide Transportation and Sequestration Act August 23, 2012.

Illinois took a big step toward coping with CO_2 emissions with the enacting of the Carbon Dioxide Transportation and Sequestration Act, Public Act 97-0534. The new law establishes a process through the Illinois Commerce Commission for ICC issuance of a certificate of authority for the construction and operation of CO_2 pipelines.

CO_2 pipelines provide options, including some at little or no costs for companies to ship CO_2 to storage facilities or sites where it can be used to produce crude oil from otherwise played out U.S. oilfields.

The Illinois Gas Pipeline Safety Act was amended to empower the ICC to set safety standards for the transport of CO_2 and for facilities used for underground storage.

Also, the Illinois Power Agency Act was amended to define a "clean coal SNG brownfield facility" and provisions were added concerning sourcing agreements, sequestration permitting, oversight and investigations.

Illinois demonstration of CO_2 storage first in U.S.

Illinois achieved a milestone in the injection of captured carbon dioxide at one of two carbon capture and storage (CCS) demonstration projects at Decatur.

The Midwest Geological Sequestration Consortium (MGSC) has begun injecting CO_2 at the Decatur site for the first million-metric tonne demonstration of carbon sequestration in the U.S. The CO_2 will be stored permanently in the Mt. Simon Sandstone more than a mile beneath the Illinois surface. MGSC is partnered with Illinois State Geological Survey, part of the Prairie Research Institute at the University of Illinois, the U.S. Dept. of Energy, Archer Daniels Midland and Schlumberger Carbon Services.

The CO_2 storage characterization well for FutureGen 2.0 has been completed in Morgan County. The well confirms the characteristics of the Mt. Simon Sandstone formation that were also found at Decatur and Mattoon.

Roughly one mile below the corn and bean fields in Illinois, the Mt. Simon Sandstone is the thickest and most widespread saline reservoir in the Illinois Basin. The Basin covers two-thirds of Illinois and reaches into western Indiana and western Kentucky. The reservoir has an estimated CO_2 capacity of 11 to 151 billion metric tonnes. Above it, several layers of shale serve as an impermeable cap rock to hold the CO_2 in place.

These successful projects give Illinois a competitive advantage in using geological sequestration for carbon management.

Close-up view of injection wellhead at Illinois Basin – Decatur Project carbon sequestration demonstration site.

Mine investments boosting Illinois coal production

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 4,049, or 14.1 percent from December 2009.

Foresight Energy, Peabody Energy and Arch Coal have recently purchased coal reserves in Illinois. Supported by grants through the Coal Competitiveness Program, they are investing hundreds of millions of dollars in capital improvements and machines to equip these mines with the latest production and safety technology.

Five Illinois mines lead underground mines throughout the nation in mine productivity. The number one long wall mine produces more than twice the coal per manhour of its nearest competitor. Coal production is expected to increase 60 percent or more from 33.5 million tons in 2009 to 53 million tons by 2016.

These investments are strengthening the economy in communities where the coal miners live, work and play.

"By October 2011, employment rose to 4,049 or 14.1 percent from December 2009."

Illinois coal export market on the rise

Coal exports from New Orleans, LA grew 171%, from 5,142 MT to 13,936 MT between September 2010 and September 2011.

Alliance Resource Partners announced a $525 million investment in White Oak Mine near McLeansboro. The investment includes railcar loading facilities. The mine is expected to produce 6 to 6.5 million tons annually. One-third to one-half of the coal could go to export.

Subsidiaries of Foresight Energy are completing the mine development stage on two mines. Deer Run Mine and M-Class Mine #1 began shipping coal near the end of FY2011 and are each on target for producing more than 6 million tons per year. Some of this coal will also be exported.

Average weekly coal commodity spot (open market) prices for Illinois Basin coal rose from $41.40 per short ton to $47.80 in FY2011. September 2011 steam coal export prices from the Gulf Coast to Europe and Africa were $76.35, up from $65.24 in 2010.

Illinois coal is transported by barge and rail to ports on the Gulf Coast for export to Europe and Africa.

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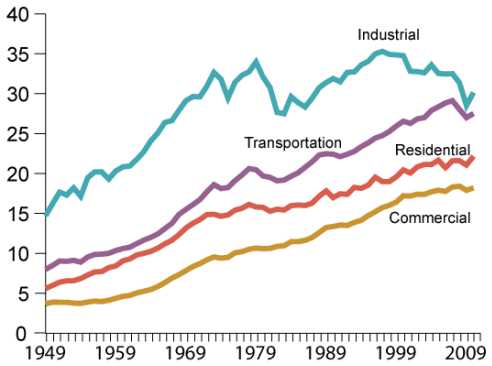
Energy Consumption by Sector, 1949-2010

Quadrillion Btu



Source: U.S. Energy Information Administration, *Annual Energy Review 2009*, Table 2.1a, and Monthly Energy Review (June 2011), preliminary 2010 data.

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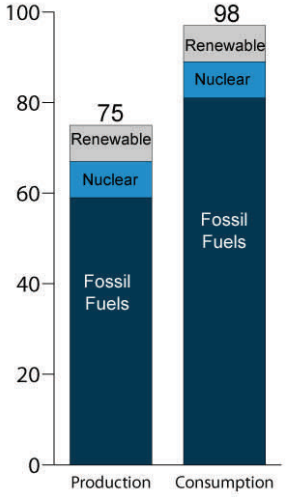
U.S. Primary Energy Production and Consumption, 2010

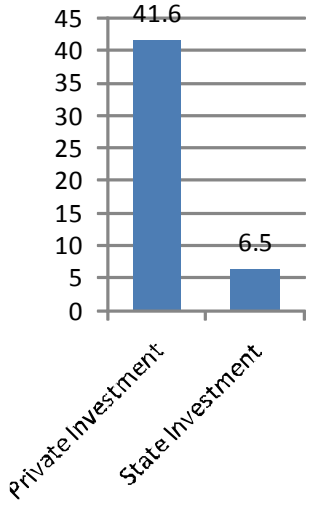
Quadrillion Btu



Source: U.S. Energy Information Administration, *Annual Energy Review 2010*, Table 1.1 (October 2011).

OCD FY2011 Performance

Coal Competiveness Program Investment



The mission of DCEO Office of Coal Development (OCD), as set forth in Illinois statute, is to operate a broad suite of grant and education programs designed to increase the use and socioeconomic importance of coal mined in Illinois. These programs cover investment and involvement in an increasingly wide array of activities.

Evolution of the programs has been substantial, driven by the introduction of new technology and the external environmental and economic forces that impact Illinois coal mining.

The success of the Office can be documented by continued private sector investment in coal producing and coal consuming facilities in Illinois, creation and retention of mining jobs, increased participation in coal education and marketing pursuits, and finally how well the State of Illinois has positioned itself to meet the complex mid– and long-term challenges facing the industry.

In FY2011, the Coal Competitiveness Program operated at a reduced level as the state dealt with a payments backlog. The available $6.5 million helped leverage $41.6 million in private investment on projects that involved carbon management, new mine development, an overland conveyor system and an underground electronic tracking system.

Developers show a continued interest in building four new coal-to-energy facilities with a combined value of more than $10 billion. They would set new standards by sequestering CO_2 a mile below the surface.

These projects — FutureGen, Power Holdings, Tenaska and Chicago Clean Energy — promise the same kind of economic jolt that Washington Co. has seen with the $4 billion Prairie State Energy Campus. These projects will also provide a secure fuel source and affordable electricity to millions of homes and businesses in the region.