State of Illinois
Department of Commerce and Economic Opportunity

2012

The Illinois Coal Industry

Report of Office of Coal Development

June 2012

Cover Photo: *The new Prairie State Energy Campus in Washington County hired 550 coal miners, technicians and corporate personnel to operate the 1600-megawatt power generating facility and adjacent coal mine. (Photo: Prairie State Energy, 2011)*

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Mission

Industries involved in the mining, transportation and use of coal account for billions of dollars in economic activity, thousands of jobs for Illinoisans and stability to many communities across the state. New mines have opened or are about to open for business. Mine-sector employment is on the rise, and Illinois coal output is higher than in any year since 1999. Against this backdrop, Illinois remains dedicated to expanding coal markets, both domestic and foreign, and maximizing the economic benefits that are closely associated with the use of the state's extensive coal resources.

Vision

New opportunities for marketing coal mined in Illinois are just over the horizon -- here in the Midwest, across the nation and around the globe. Assistance provided by the Office of Coal Development is paying off in terms of private sector investment, job growth and higher worker productivity. Looking ahead, we seek to secure the long-term acceptance of the responsible use of coal by pursuing several important initiatives. These include providing the framework for the most efficient and environmentally sensitive energy facilities to be developed in Illinois, supporting that effort by advancing carbon capture and storage technologies and fostering growth in coal sales through export marketing activities. These strategies also include sustaining a vital and economically significant coal production industry in the state and ensuring worker health and safety as the highest priority, day in and day out, in Illinois coal mines.

STATE OF ILLINOIS
DEPARTMENT OF COMMERCE & ECONOMIC OPPORTUNITY

PAT QUINN
GOVERNOR

DAVID VAUGHT
ACTING DIRECTOR

The Honorable Pat Quinn
The Honorable John Cullerton
The Honorable Christine Radogno
The Honorable Michael Madigan
The Honorable Tom Cross

Dear Governor Quinn and Members of the Illinois General Assembly:

Illinois is blessed with coal resources worth more than $48 billion. Our broad strategy is to support the safe mining and transportation of coal. We maintain a top-rank coal research and development effort that leverages the brain power of our universities and scientific institutes. We remain focused on advancing 21st century technologies to ensure we stay competitive while addressing the many environmental challenges related to the extraction and utilization of coal. We seek to increase exports of Illinois coal to boost our economy.

It has been more than 200 years since the first coal was loaded on flatboats and floated down the Big Muddy River in southern Illinois. But the pick-axes and canaries in the cages are long gone. Today's miners use high-dollar, highly mechanized equipment, sometimes guided by GPS technology. Automated conveyor belts bring coal to a surface cleaning plant that removes impurities before the coal leaves the site. The destination could be as close as across the road, to the new $5 billion Prairie State Energy Campus in Washington County. It could be a power plant in Tennessee or on the west coast of Florida. And today we are pleased to see record amounts of coal sent off by rail or barge to an ocean vessel, and on to a foreign port.

I come from Illinois coal country. I know the legacy, and I continue to learn about the potential for Illinois coal from miners, from coal scientists and from executives who have chosen to invest billions of dollars in the future of the Illinois coal industry. We are living in an exciting and challenging era for the producers of coal in Illinois. This report documents some of our successes to date, but it is no time to rest.

Sincerely,

David Vaught
Acting Director

Coal Development Milestones 2010-11

- *About 38 billion tons of coal reserves are readily available for mining in Illinois. These reserves have an assessed value of about $48 billion.*

- *Coal mine employment rose 19.2% from 2010 to 2012, as over 680 workers found well-paying coal jobs.*

- *The $5 billion Prairie State Energy Campus took shape in 2010-11 with 4,000-plus workers on site during peak construction and 550 permanent, high-wage jobs being created at the 1,600 megawatt Washington County power facility fueled by Illinois coal.*

- *Illinois Basin coal exports increased 180%, from 2.5 million short tons (MT) to 7 MT from 2010-11, helping to meet growing demand for energy in European, South American and Asian markets.*

- *Annual output from Illinois mines increased about 13% from 2010 to 2011, reaching nearly 38 MT with forecasts of 60 MT per year by 2014-15, a number not seen since the early 1990s.*

- *A pilot site in Decatur became the first U.S. location for large-scale injection of carbon dioxide for storage. Meanwhile, final engineering work was about to begin on FutureGen 2.0, the nation's "flagship" approach to near-zero emissions from a coal-to-energy facility.*

- *Coal mine safety remained a top priority in Illinois, as some $6.4 million in coal development funds was used to keep mine inspection and site permitting functions operational as state budgets tightened.*

Contents

2012 and Beyond: Coal as a Fuel of the Future

The path to coal's future is being mapped by some of the brightest men and women in the world. Here in the United States, Illinois has become a clear leader in this pursuit: opening new mines, creating jobs and fostering multi-billion-dollar facility investments. Looking ahead, Illinois is pioneering the safe underground storage of greenhouse gas and has been chosen to host FutureGen 2.0, the nation's "flagship" project in using coal with near-zero harmful emissions. DCEO is at the front of the Illinois effort, striving to ensure optimum use of our coal resources by supporting coal research and development, the demonstration of new technologies, improvements in energy efficiency and upholding environmental regulations that protect our air, water and land.

Behind this focus by Illinois and its leaders is the never-ending pursuit of reliable and affordable energy. Most-often, the total cost of energy trails only housing as the average household's second-largest expense. Surveys of business leaders in all sectors cite energy costs as among the top-five issues in choosing to expand or relocate operations. On an even larger scale, access to affordable fuel has driven global geo-political behavior as much as any single factor. It is the reason for the "U.S. Strategic Petroleum Reserve," and it has been the fuse for deployment of U.S. military force when enemies have tried to use fuel as a competitive strategy. Meanwhile, power outages across the U.S. serve as a frequent reminder that most Americans are not ready to live without electricity for heating, lights, and an increasing array of gadgets that plug into the wall.

As we prepare to meet society's needs today and in the future, it is important to remember that coal is the only abundant fuel resource native to Illinois. Across the U.S., coal accounts for nearly half of the fuel used to generate electricity for homes, offices and factories. Every energy forecast talks of growing reliance on renewable power, with its practical use becoming even more significant when advanced battery technology allows better storage of energy generated by windy or sunny days.

However, the same forecasts predict substantial amounts of coal will remain part of the U.S. portfolio of baseload, 24/7 electric power, in a diversified energy portfolio alongside renewables, natural gas, oil, and nuclear energy.

Simply put, coal is the bridge to future energy choices throughout the world. As table 1, *Change in Coal Consumption,* illustrates Europe and the former Soviet Union were the only two regions with declining coal consumption between 1980 and 2010, falling 32% and 42% respectively.[1] Meanwhile, millions of other populations across the globe were gaining access to electricity for the first time. Asia's share of global coal use rose from 24% to 63% from 1980-2010, for example, and the continent's ongoing coal demand has fueled large increases in global coal production.

Table 1. Change in Coal Consumption

Regional coal consumption percent change from 1980 to 2010		**Percent of global coal consumption**	
World	94%	**1980**	**2010**
Asia	403%	24.3%	63.1%
North America	50%	18.2%	14.0%
Europe	**-32%**	34.2%	12.0%
Former Soviet Union	**-42%**	18.2%	5.5%
Africa	92%	2.7%	2.7%
Oceania	96%	1.8%	1.9%
Central & South America	156%	0.5%	0.6%

Source: http://www.eia.gov/todayinenergy/detail.cfm?id=4390

In meeting domestic and international demand, the goal of DCEO and the Office of Coal Development (OCD) is to make coal safer to mine and cleaner to use. Illinois supports the largest state-sponsored coal research and development program in the nation. OCD works closely on mine safety with the Illinois Office of Mines and Minerals and on environmental concerns with the Illinois Department of Natural Resources and the Illinois Environmental Protection Agency. In furtherance of common goals, OCD partners with the Illinois Commerce Commission, the Illinois State Geological Survey, the Illinois Clean Coal Institute, and the Southern Illinois University Carbondale Coal Research Center.

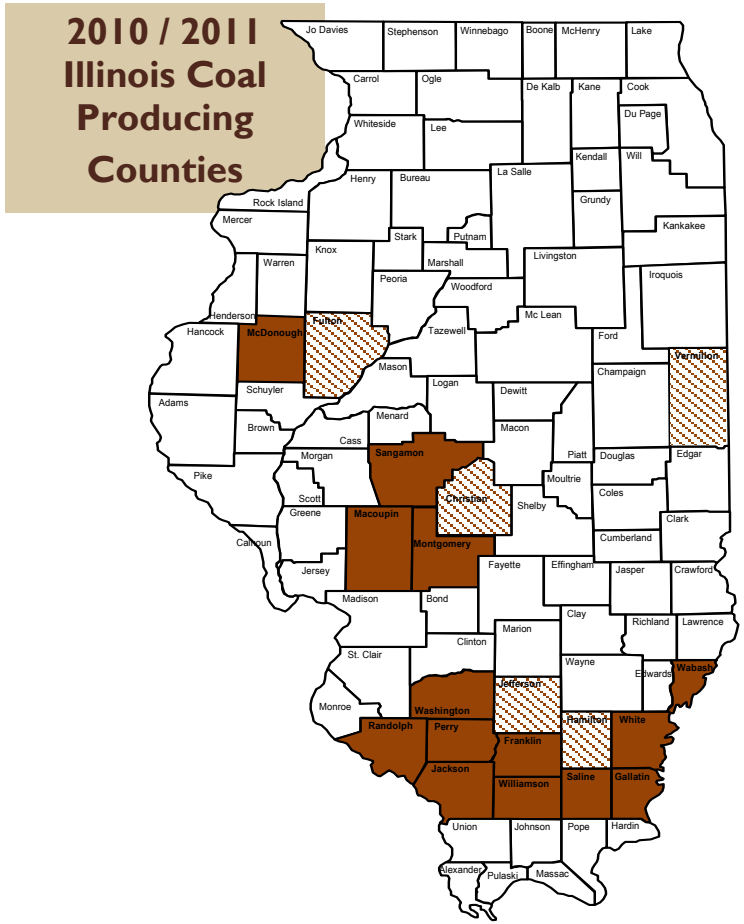
[1] U.S. Energy Information Administration, International Energy Statistics http://www.eia.gov/todayinenergy/detail.cfm?id=4390

What Coal Means to Illinois: Jobs, Investment, Export Trade

Bituminous coal that formed over millions of years is paying dividends to businesses and communities in Illinois today. Coal production is on the rise. Illinoisans are going to work, and central and southern Illinois communities are benefitting.

The National Mining Association reports that the average coal miner was paid $78,153 in 2010.[2] The same report contrasted that income with the $49,524 average salaries earned in all private industries.

The local and regional impact of a new coal mining operation or coal user is almost unparalleled across the economic development spectrum. During the construction phase, specialists arrive to build ventilation shafts, slopes and develop the underground infrastructure. Since many of the workers come from out-of-town, community restaurants, gas stations and area hotels are the first to see extra dollars in their cash registers. As the construction phase ends, the permanent jobs of engineers, electricians, mechanics and coal machinery operators will begin. Home, auto, even boat sales spike. Schools get new students. Charities get new donors and volunteers. The tax base grows, and a cycle of 20-plus years of economic



[2] National Mining Association. Annual Coal Mining Wages vs. All Industries, 2010. www.nma.org/pdf/c_wages_state_industries.pdf

prosperity is born.

This scenario is the same around all of the new and expanding coal facilities in Illinois. While the southern one-third of the state accounts for the most tonnage being mined today, "Coal Country" in Illinois goes as far north and west as the Macomb area, east nearly to the Indiana border in Vermilion County and to the fringes of the St. Louis area into Randolph and Washington counties.

As growth of the industry has moved from the stage of promise to tangible investment, populations have been energized by something many thought they might never see again: revival in Illinois coalfields. State institutions, regional organizations and local community groups have formed partnerships to take maximum advantage of the opportunity. Nowhere is this more the case than in Illinois' southernmost counties. New mines have opened, or about to open, in Franklin, Hamilton, Macoupin, Montgomery, Saline, Washington and Williamson counties. The average coal mine employment for 2010 and 2011 can be found in table 2.

On January 1, 2012 coal mine employment was up by more than 680 persons, or 19.2% over January 1, 2010.

The region is ideally suited, in many ways. It is anchored by Southern Illinois University Carbondale and its Coal Research Center. In partnership with the Illinois Clean Coal Institute in Carterville, SIUC offers world-class expertise in coal research and mine engineering. Substantial coal miner safety and training programs also have been spawned at Rend Lake College and the affiliates of Illinois Eastern Community Colleges. There are startup firms building underground mining equipment or otherwise servicing the industry. Investments also have been made to upgrade the availability of health care and financial services around the new coal boom towns.

Table 2. 2010 and 2011 Coal Production and Employment

Operating company name	Mine name	County	2010 Prod	2011 Prod	2010 Empl	2011 Empl
Mach Mining LLC	Mach #1 Mine	Williamson	5,795,493	7,226,500	145	161
The American Coal Company	New Era Mine	Saline	5,774,752	4,963,211	652	561
Peabody Midwest Mining, LLC	Gateway Mine	Randolph	3,197,579	3,334,776	198	227
Big Ridge Inc	Willow Lake Portal	Saline	2,920,225	2,234,623	460	492
White County Coal, LLC	Pattiki	White	1,657,057	2,199,078	301	327
Arch Coal, Inc.	Viper Mine	Sangamon	2,475,257	2,098,366	305	314
Peabody Midwest Mining, LLC	Wildcat Hills Mine - CG Pit	Gallatin	2,127,949	1,897,146	176	193
MaRyan Mining LLC	Shay No. 1 Mine	Macoupin	1,027,224	1,829,122	71	111
Knight Hawk Coal, LLC	Prairie Eagle U/G	Perry	1,573,202	1,750,702	101	112
The American Coal Company	New Future Mine	Saline	616,533	1,783,046	294	362
Friendsville Mine LLC	Friendsville Mine	Wabash	997,475	1,275,023	54	82
Peabody Midwest Mining, LLC	Wildcat Hills Mine U/G	Saline	748,814	1,018,246	93	122
Prairie State Generating Company LLC	Lively Grove Mine	Washington	0	1,002,059	26	178
Knight Hawk Coal LLC	Prairie Eagle South U/G	Perry	843,955	958,919	42	45
Tri County Coal, LLC	Crown III Mine	Macoupin	1,310,941	934,682	307	213
M-Class Mining LLC	M-C No. 1 Mine	Franklin	324,493	855,868	65	145
Knight Hawk Coal, LLC	Red Hawk	Perry	509,604	532,977	35	35
Patton Mining LLC	Deer Run Mine	Montgomery	20,639	491,227	25	80
Knight Hawk Coal, LLC	Creek Paum Mine	Jackson	650,211	381,479	60	52
Knight Hawk Coal, LLC	Prairie Eagle	Perry	270,345	306,871	39	47
Eagle River Coal, LLC	Eagle River Mine No. 1	Saline	0	300,914	7	27
Black Nugget LLC	North Grindstone Mine	McDonough	194,778	165,782	28	26
Knight Hawk Coal, LLC	Hawkeye Mine	Randolph	0	140,113	0	11
Illinois Fuel Company LLC	I-1 Mine	Gallatin	117801	52923	22	18
White Oak Resources LLC	White Oak No. 1	Hamilton	0	0	0	78
			33,036,526	**37,733,653**	**3,506**	**4,019**

SOURCE: 2010 and 2011 Production EIA. http://www.eia.gov/coal/data.cfm#production . 2010 and 2011 Employment numbers: U.S. Department of Labor, Mine Safety & Health Administration (MSHA), Sum of Average Annual Employment. http://www.msha.gov/drs/asp/extendedsearch/statebycommodityoutput2.asp

New Coal Facilities Are High-Stakes Endeavors

In terms of scope, cost and impact, downstate Illinois had never seen anything like the $5 billion Prairie State Energy Campus (PSEC) project. At the peak of construction, more than 4,000 workers were employed at the new Prairie State power plant and adjacent coal mine in Washington County. Construction wages approached $1 billion. Once construction was complete, PSEC created approximately 550 permanent, high-paying, skilled jobs for miners, power plant workers and corporate personnel.

Prairie State Energy Campus created approximately 550 permanent, high-paying skilled jobs for miners, power plant workers and corporate personnel.

These folks live, eat, work and play in the communities surrounding the facility. PSEC will contribute more than $785 million annually in economic activity in the Illinois economy – totaling $23.6 billion over 30 years.[3] PSEC also will stimulate the creation of another 860 jobs in Illinois with annual earnings of another $40 million. The Campus is the largest contributor to the Washington County tax base.

[3] http://www.prairiestateenergycampus.com/pages.asp?pagemainlevel=10&pageid=98

On the coal mining side, one of the industry's brightest successes is Knight Hawk Coal Company. KHC opened with only 12 employees in 1998 in Jackson County. Today the company has grown to over 600 employees, with a payroll and benefits of $40 million per year. In the fall of 2011, Knight Hawk invested $100 million in its operations. Another $100 million will be invested in the next few years as a new portal is developed at its Prairie Eagle underground mine in Perry County.

In addition to Knight Hawk, some of the state's largest coal producers have invested several billion dollars in Illinois coal reserves and development costs of new coal mining operations.

These developments, which will pay dividends for decades to come, include:

- Foresight Energy has invested over $1.6 billion in four Illinois mining complexes and related transportation infrastructure. Collectively, the mines will employ more than 800 workers and produce nearly 25 million tons of coal annually, with a market value of $750 to $900 million per year.
- Peabody Energy is expanding Gateway Mine in Randolph County by 40%. Capital investments are about $175 million. Gateway Mine provides more than $64 million in direct and implied economic benefits in the area.
- White Oak Resources intends to invest more than $400 million to develop the new White Oak Mine in Hamilton County. The mine will have 350 employees at full production.

Companies with New Mines in Illinois 2010-11

Eagle River Coal
- *Eagle River Mine*

Foresight Energy
- *Deer Run Mine*
- *M-C No. 1 Mine*

Knight Hawk Coal Company
- *Golden Eagle Mine*
- *Hawkeye Mine*
- *Mary's River Mine*

Peabody Midwest Mining
- *Gateway Mine North*

Prairie State Generating
- *Lively Grove Mine*

The American Coal Company
- *New Future Mine*

White Oak Resources
- *White Oak Mine No. 1*

- Arch Coal, which made a move back into Illinois in 2010, had put its expansion plans on hold at the time of this publication. It had considered investing up to $300 million in a new Lost Prairie Mine in Perry County, creating 250 jobs with a payroll in the range of $25-30 million per year.

In 2010, as these mines started to move into coal production, Illinois coal mine employment rose 2.8% from 3,548 to 3,649. By January 1, 2012, employment had risen to 4,232 or up 19.2%.[4] Overall, coal mine employment was up by more than 680 persons in 2012 from 2010.

Overall Coal Production on the Rise in 2010-11

In 2010 and 2011, Illinois coal production was 33.4 and 37.7 million tons (MT), respectively.[5] In 2011, coal was extracted from 24 mines in 14 counties.

Six new mines opened. Preliminary reports show the new mines produced more than 5.4 MT of coal during start-up and employed approximately 700 persons.[6] At full production the mines are expected to add 20 MT of new coal production. More new mines are permitted and in various stages of development. The total production capacity of the mines in development will add more than 14 MT per year when fully developed.

Illinois coal production is expected to reach more than 60 MT in the next few years, a number not seen since the early 1990s.

Illinois Looks at Strong Move in World Coal Market

The demand for U.S. “steam” coal is rising, particularly in Europe, South America and Asia. Illinois coal producers exported more than 2.5 MT of coal in 2010. The Illinois Export Council anticipates final 2011 exports to be near 7.0 MT.

[4] 2011 4th Quarter Employment numbers reported to MSHA by reporting coal mines and found on http://www.msha.gov/drs/asp/extendedsearch/statebycommodityoutput2.asp

[5] http://www.eia.gov/cneaf/coal/weekly/weekly_html/archmonth.html (accessed 4/18/2012)

[6] Mine Safety & Health Administration. http://www.msha.gov/drs/asp/extendedsearch/statebycommodityoutput2.asp

Steam, also known as “thermal” coal, fuels power stations than feed electricity into public power grids. It also is used by industries that process grain products, chemicals, paper, cement and bricks.

In 2011, U.S. steam coal exports to Europe were up 124% from 2010.[7] Asia saw a 59% increase. India, in fact, is one of the world's fastest growing importers of thermal coal. Exports to Africa were up 106.9%. Traders and analysts believe additional potential remains in the European Union, as more and more South African coal is being diverted from the western hemisphere toward Asia, encouraging European generators to seek alternative sourcing from Central Appalachia and the Illinois Basin.

U.S. producers, including Peabody Energy and Foresight Energy, are forming partnerships with buyers in China and India. Those markets will be easier to access out of southern U.S. ports when expansion of the Panama Canal is completed in 2015, allowing so-called "cape-sized" vessels to traverse the Central American isthmus. According to a report in *American Coal*, a growing spot market for U.S. coal shipments also has emerged.[8] Ports on the East Coast at Hampton Roads, VA, and the Gulf Coast at New Orleans, have developed top markets for U.S. coal trading.

This potential for Illinois coal overseas has caused the Illinois Office of Coal Development to contract with Energy Ventures Associates to prepare a preliminary export market study that will pinpoint prime sites for expansion, as well as any logistics barriers that would undercut the value of Illinois-mined coal in overseas markets.

[7] Energy Information Administration. Table 9. U.S. Steam Coal Exports (Short Tons) Year to Date 2011, 2010. http://www.eia.gov/coal/production/quarterly/pdf/t9p01p1.pdf
[8] Guillory, Brooklyn, Argus Media Ltd. americancoalonline.com. Issue 2 2011. American Coal. (accessed 4/18/2012)

Steam coal: All non-metallurgical coal

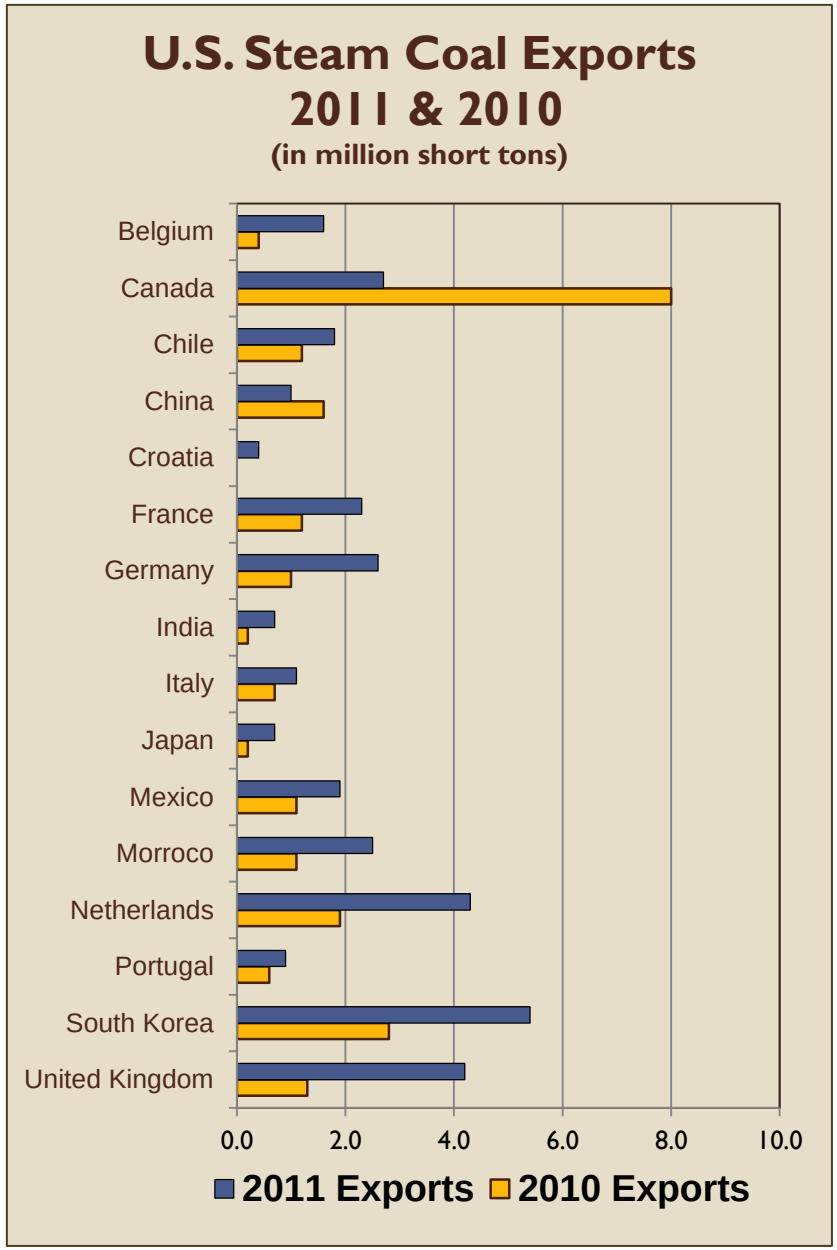
The Energy Information Administration (EIA) Short-term Energy Outlook for April 2012 forecasts U.S. steam coal exports to remain strong but to be below the 37.6 MMst exported in 2011. U.S. steam coal exports are expected to be 32.6 MMst in 2012 and 31.5 MMst in 2013. U.S. coal exports averaged 24.2 MMst in the decade preceding 2011.

Steam Coal Exports by Customs District

Customs District	2010	2011
Eastern Total	***5.8***	***11.7***
Baltimore	*2.0*	*3.9*
Norfolk	*3.5*	*7.4*
Southern Total	***7.4***	***16.2***
Mobile	*0.3*	*0.9*
New Orleans	*6.7*	*14.9*
Western Total	***5.1***	***7.4***
Anchorage	*0.9*	*1.1*
Los Angeles	*0.7*	*1.4*
Seattle	*3.5*	*4.9*

2010 steam coal exports totaled 25.6 million tons. 2011 steam coal exports rose to 37.7 million tons, a 47.4 percent increase.

Illinois coal producers exported 2.5 MT of steam coal in 2010 and approximately 7 MT in 2011.



Enhanced Shipping Options Gives Illinois Export Market Edge

Just as U.S. railroads and waterways transport Illinois farm products to feed the world, the same established shipping modes and routes give Illinois a window into world markets. And the capacity to serve U.S. ports is growing to meet expanded buyer demand at foreign destinations.

On the railroad side, car loadings destined for overseas markets continue a steady climb.

Canadian National Railway, which serves five major Illinois mining locations, also is in an expansion mode to capture tonnage bound for export. The CN has Mississippi River access at East St. Louis, IL, and Ohio River access at Consolidated Grain & Barge near Mound City, IL, and Calvert City, KY. The CN also has considerable through-haul capacity to the Port of New Orleans.

Illinois coal is transported on the Canadian National Rail Way to the Calvert City, KY, terminal where it is loaded onto barges.

CSX, which has been aggressive in expanding its Illinois-mined tonnage, recently added 7,000 new cars to service the company's Newport News, VA, export terminal. Each car holds 4,520 cubic feet of coal, a maximum payload of 122 tons, and a

9-ton increase over older versions. CSX coal exports have risen from 13 MT in 2006 to 40.2 MT in 2011.[9] CSX expects exports to remain strong in 2013 and beyond.

A growing player in the future of Illinois rail coal is likely to be the Norfolk Southern Railroad (NS), which has single-line haul potential to eastern ports, and can reach all rail destinations throughout North America in concert with other carriers. NS also has access to rail transfer facilities on the East and Gulf Coasts, the Great Lakes, and the Illinois-Mississippi-Ohio Waterway for rail-to-barge transloading.

The Union Pacific Railroad (UP) delivers coal to electric power plants across the nation, West Coast and Gulf Coast ports, and facilities on the Mississippi and Ohio Rivers and Great Lakes. UP can provide rail-to-barge, rail-to-lake cargo vessel and rail-to-ocean vessel services, as well as all-rail transportation. It serves several rail-to-river barge transfer facilities on the Mississippi and Ohio Rivers. These installations are equipped for direct discharge from railcars to barges. The UP also provides direct service to two mines in Illinois and accesses the remaining mines through interchange with other railroads.

Port and terminal facilities also are the targets of new investment by major American coal companies. All Class 1 Railroads can load through the IC RailMarine Terminal on the lower Mississippi River, Gulf Coast. The terminal, which has state-of-the-art equipment, storage and blending facilities, was acquired in 2011 by up-and-coming Illinois producer Foresight Reserves, which took over from the CN Railway and renamed the facility Convent Marine Terminal. Annual throughput capacity at Convent will be expanded from 5 MT to 8 MT of coal in the near-term and to 16 MT per year in the long-term. The terminal accommodates Panamax-sized vessels.

Also at the Gulf, Dutch trader Trafigura plans to revitalize the Burnside terminal in Ascension Parish, LA, and raise capacity to 10 MT per year. It will have both rail-to-vessel and barge-to-vessel capabilities. When completed the terminal will be a state-of-the-art bulk terminal for coal and other products.

[9] Spencer, Hawes. April 3, 2012. http://www.readthehook.com/103074/sleek-and-black-new-csx-coal-cars-roll-through. (accessed 4/18/2012)

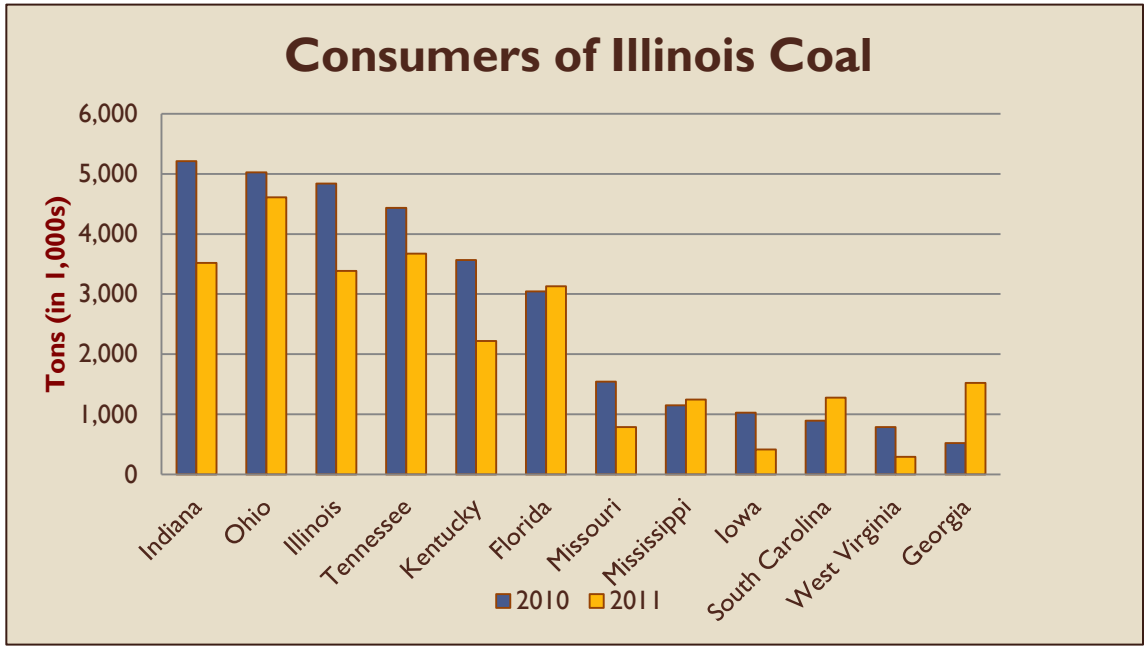
Meanwhile, coal logistics giant Kinder Morgan Energy Partners (KMP) will increase coal export capacity to 45 MT per year from the 30 MT it handled in 2011. KMP is investing up to $1.2 billion for capital expenditures at its terminals, which includes KMP's International Marine Terminal in Port Sulphur, LA.[10] Arch Coal has signed a long-term agreement with KMP to ship coal at guaranteed minimum volumes through KMP-owned terminals on the Gulf Coast and its Cora, Cahokia and Kellogg river terminals in Illinois. Arch plans to increase its export business fourfold in the next decade, eventually possibly including coal from new Illinois Basin mines.

[10] The McGraw-Hill Companies, Platt's Coal Trader April 19, 2012

Illinois Has Growing Consumer Base

The utilization footprint for Illinois-mined coal continued to grow in 2010-11. Top users, by state, were facilities in Ohio, Tennessee, Indiana, Florida and Illinois, all taking more than 3.0 MT. Facilities in Kentucky, Georgia, South Carolina and Mississippi received more than 1.2 MT. More than 525,000 tons were shipped to Missouri and Alabama. Smaller amounts were also used in Iowa, Wisconsin, West Virginia, Minnesota, Arkansas, Pennsylvania, Louisiana, Texas and Michigan.

In terms of individual domestic buyers, the Tennessee Valley Authority and Dayton Power & Light Company both received approximately 4.0 MT of Illinois coal in 2011. More than 1.2 MT went to Northern Indiana Public Service Company, Georgia Power and Light Company, South Carolina Public Service Authority, Progress Energy Florida, Mississippi Power Company and the City of Springfield, IL. Seminole Electric Cooperative Inc., Kentucky Utilities Co., Duke Energy Ohio Inc., Union Electric Company, PowerSouth Energy Cooperative and Southern Illinois Power Cooperative received more than 500,000 tons each.



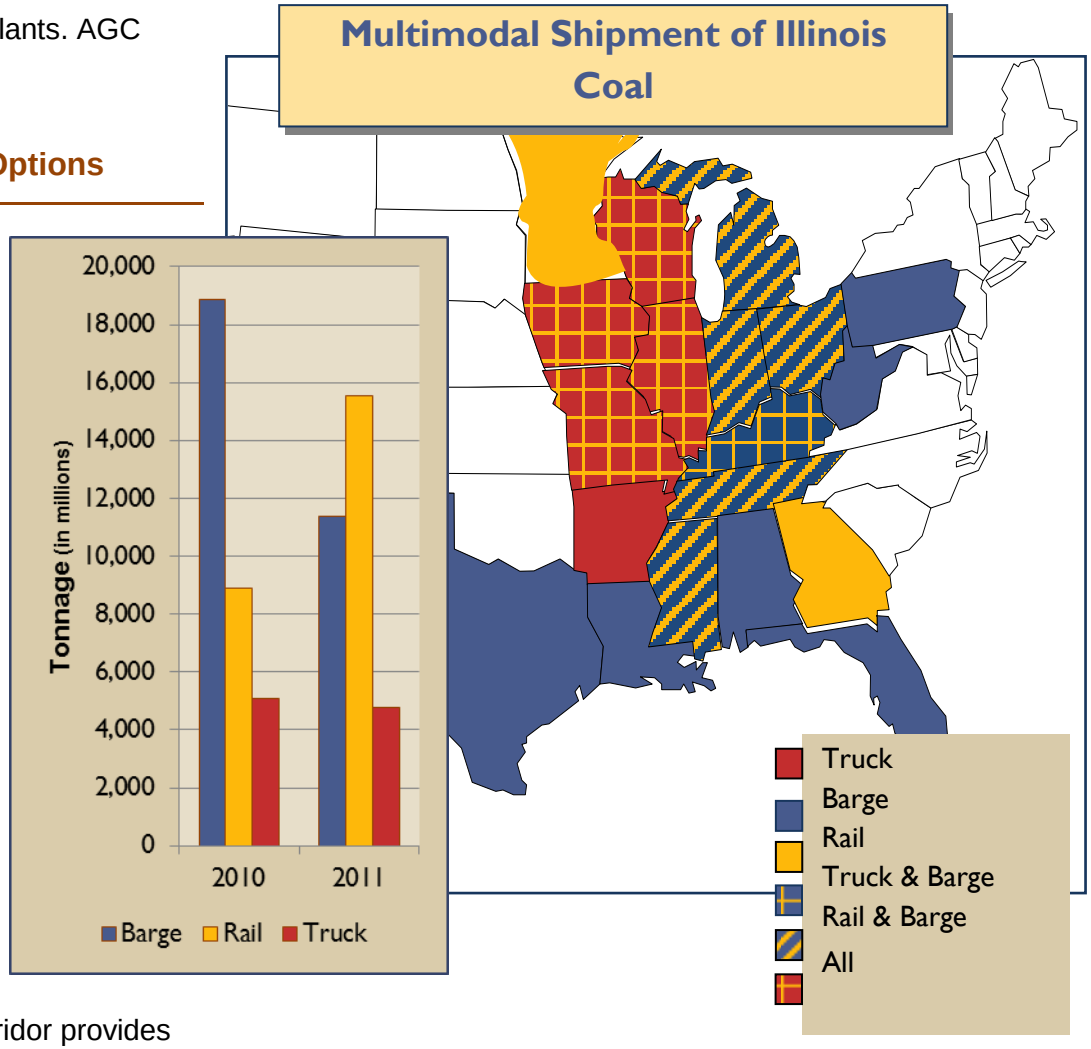
Agriculture products giant Archer Daniels Midland (ADM) was the largest

industrial consumer. ADM bought more than 1.4 MT of Illinois coal for its Illinois and Iowa grain processing plants. AGC Division of APG Inc. in Indiana used 1.3 MT.[11]

Illinois has Diverse Mine-to-Market Options

Key to the success of the Illinois coal industry is one of the largest and most comprehensive transportation networks in the United States. In 2010 and 2011, Illinois coal was distributed by rail, barge and truck to more than 52 locations in 17 states outside of Illinois.[12] Illinois also enjoys marketing advantages by virtue of a highly developed infrastructure of waterborne shipping no other state can match.

Illinois has 7,196 miles of railroad track and 1,118 miles of navigable rivers, lakes and canals, with direct links to the Atlantic Ocean and the Gulf of Mexico. In addition, three coast-to-coast interstate highways pass through Illinois, and the Interstate 55 corridor provides

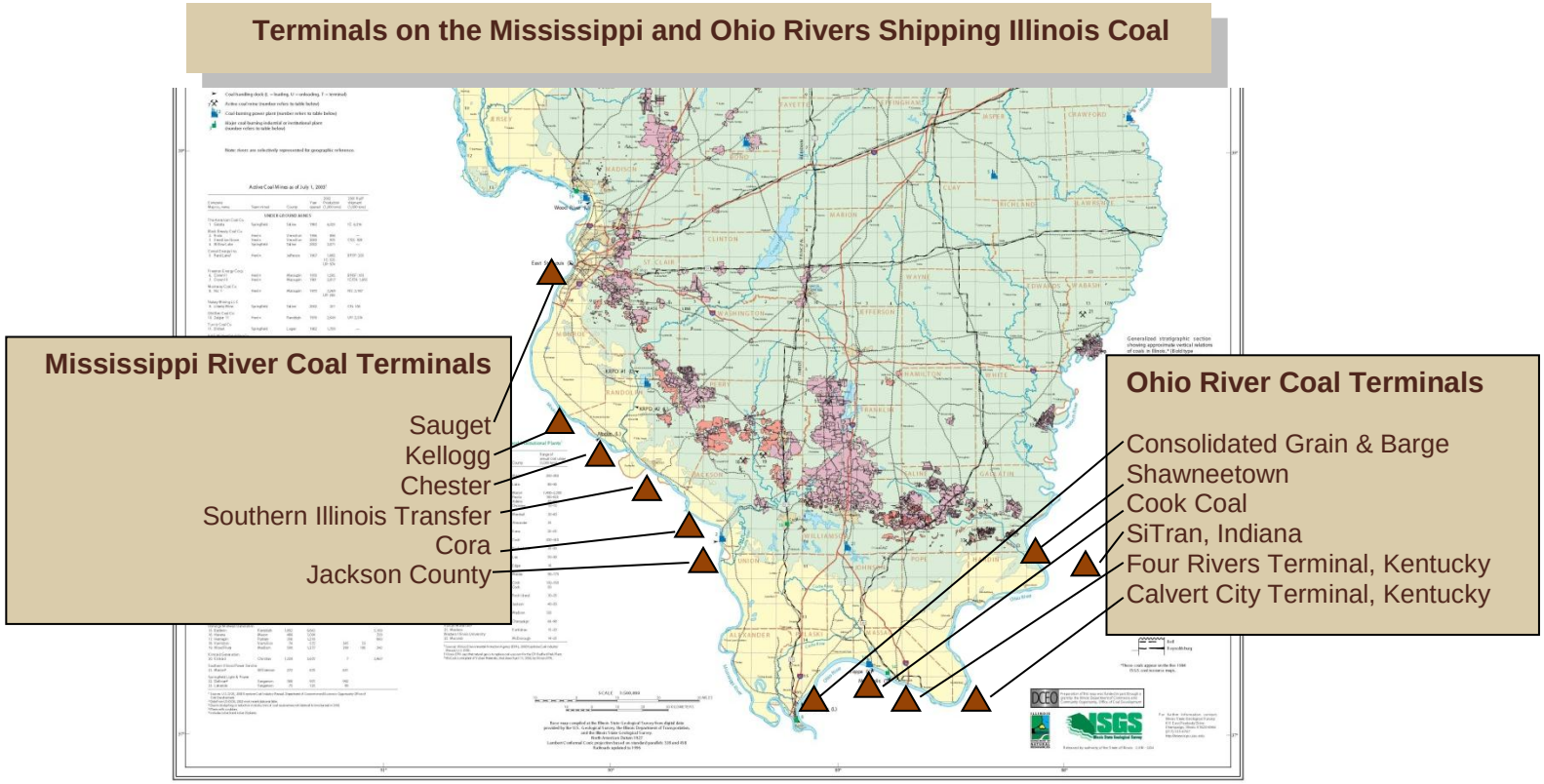


[11] Energy Information Administration, Monthly Utility and Nonutility Fuel Receipts & Fuel Quality Database 2008 and Beyond. 2011 Jan. - Dec. data http://www.eia.gov/cneaf/electricity/page/eia423.html (accessed 4/18/2012)

[12] http://www.eia.gov/coal/distribution/annual/pdf/o_10foreign.pdf . http://www.eia.gov/coal/distribution/annual/pdf/o_10state.pdf

an important link between Chicago and the Port of New Orleans.

The state's western border, for example, is defined by 580 miles of the upper Mississippi River. The Ohio River forms 133 miles of the southern border of Illinois, from Mile 848 at the Indiana state line through Mile 981 at the confluence of the Ohio and Mississippi River at Cairo, IL.[13] Illinois coal mines have access to six coal terminals between East St. Louis, (Milepost 177) and Cairo on the Mississippi River and six terminals on the Ohio River between Evansville, IN and Cairo. Shipping options for Illinois coal mines can be found in table 3.



[13] http://outreach.lrh.usace.army.mil/States/IL/Default.htm

Table 3. Multimodal Distribution of Illinois Coal

Operator name	Mine name	Shipping method(s)	2010 Tonnage	2011 Tonnage
Mach Mining LLC	Mach No. 1	CN, Barge	5,795,493	7,226,500
The American Coal Company	Galatia - New Era, New Future	CN, Barge, Truck	6,513,430	6,525,802
Peabody Midwest Mining LLC	Gateway	UP, Barge, Truck	3,197,579	3,334,776
Big Ridge Inc	Willow Lake	Barge, Truck	2,915,224	2,234,623
White County Coal LLC	Pattiki	EVWR, Barge	1,657,057	2,199,078
Arch Coal	Viper	Truck	2,420,288	2,098,366
Peabody Midwest Mining LLC	Wildcat Hills Cottage Grove	Truck, Barge	2,127,949	1,897,198
MaRyan Mining LLC	Shay No. 1	UP, Truck, Barge	1,027,224	1,829,122
Knight Hawk Coal LLC	Prairie Eagle UG	CN, Truck, Barge	1,573,202	1,750,702
Friendsville Mine LLC	Friendsville	NS, Truck	1,080,096	1,212,733
Peabody Midwest Mining LLC	Wildcat Hills Underground	Truck, Barge	748,814	1,018,030
Prairie State Generating Co. LLC	Lively Grove	Mine Mouth for PSEC	115,600	1,002,059
Knight Hawk Coal LLC	Prairie Eagle South	CN , Truck, Barge	843,955	958,919
Tri County Coal LLC	Crown III	CN, Truck	1,296,941	934,682
M-Class Mining LLC	MC No. 1	CN, Barge	323,209	855,868
Knight Hawk Coal LLC	Red Hawk	CN, Truck, Barge	509,604	532,977
Patton Mining LLC	Deer Run	CN, Truck	20,639	491,227
Knight Hawk Coal LLC	Creek Paum	CN, Truck, Barge	650,211	381,479
Knight Hawk Coal LLC	Prairie Eagle	CN, Truck, Barge	270,345	306,871
Eagle River Coal LLC	Eagle River Coal Mine		0	300,914
Black Nugget LLC	North Grindstone	Truck	194,778	165,782
Knight Hawk Coal LLC	Hawkeye	CN, Truck, Barge	0	140,113
Illinois Fuel Company LLC	I-1	Rail, Truck	117,801	42,842
White Oak Resources LLC	White Oak No.1 -opens in 2014	CSX	0	0

Railway Legend: CN = Canadian National, UP = Union Pacific, NS = Norfolk Southern, EVWR = Evansville Western
Production Tonnage Source: 2011 Mine Safety & Health Administration http://www.msha.gov/drs/asp/extendedsearch/statebycommodityoutput2.asp

Installation of Cleaner Coal Technology Opens New Markets for Illinois Producers

After 21 years of declining or flat coal sales, Illinois Basin producers are starting to benefit from upgrades to much of the power generating fleet in the south and southeastern United States. With most plants now equipped with controls such as Flue Gas Desulfurization (FGD) systems, these "scrubbed" plants can burn high-sulfur Illinois and continue to meet or exceed emission standards for sulfur and mercury. In growing its market share in the region, Illinois gains from a vibrant transportation network, via rail and barge, that makes its coal products reliable and price-competitive.

A forecast by the McIlvaine Company in World FGD Markets, a continually updated online data source, anticipates that over the next 12 years owners of coal-fired power plants will spend $200 billion to add FGD systems to existing and new combustion units.[14] Over 800,000 MW of coal-fired boilers will be fitted with scrubber systems. Over 2,000 new power units will be installed, at an average cost of $100 million/unit. China will be the largest purchaser of these systems followed by the United States. The forecast is based primarily on known projects through 2013. European power producers also are building a large number of new coal-fired plants with FGD. These units are 30% more efficient than the older units that are being retired, with a co-benefit from the efficiencies of CO_2 reduction.

Steven Moss reports in July 2010 Power magazine that circulating fluidized bed (CFB) technology has been broadly applied in Europe and China.[15] In 2010, more than 34 CFB scrubbers were in operation on coal-fueled units in Europe. Fourteen projects were operating in China. CFB systems have been successfully installed at plants firing high-sulfur (up to 3.5%) coal. CFB units also can be designed for 99% removal of sulfur dioxide (SO_2). As scrubbers and other clean coal technology is installed around the world, more market opportunities will open for Illinois coal.

[14] The McIlvaine Company http://www.californiagreensolutions.com/cgi-bin/gt/tpl.h,content=2758 accessed 4/5/2012

[15] Steven Moss *(smoss@ ne-environmental.com)* Nooter/Eriksen Environmental Technologies, North American licensee of the Graf-Wulff CFB scrubber technology. http://www.powermag.com/water/Circulating-Fluid-Bed-Scrubbers-Bridge-the-Gap-Between-Dry-and-Wet-Scrubbers_2806_p3.html. (accessed 4/5/2012)

Illinois Coal Prices

Spot price: The price for a one-time open market transaction for near-term delivery of a specific quantity of product at a specific location where the commodity is purchased at current market rates. (Prices as of 6-22, 2012)

Appalachian Region, Bituminous Coal

NAPP - Northern Appalachia $64.40
13,000 Btu, <3.0 SO2

CAPP - Central Appalachia $56.10
12,500 Btu, 1.2 SO2

Western Region, Sub-bituminous Coal

PRB - Powder River Basin $8.50
8,800 Btu, 0.8 SO2

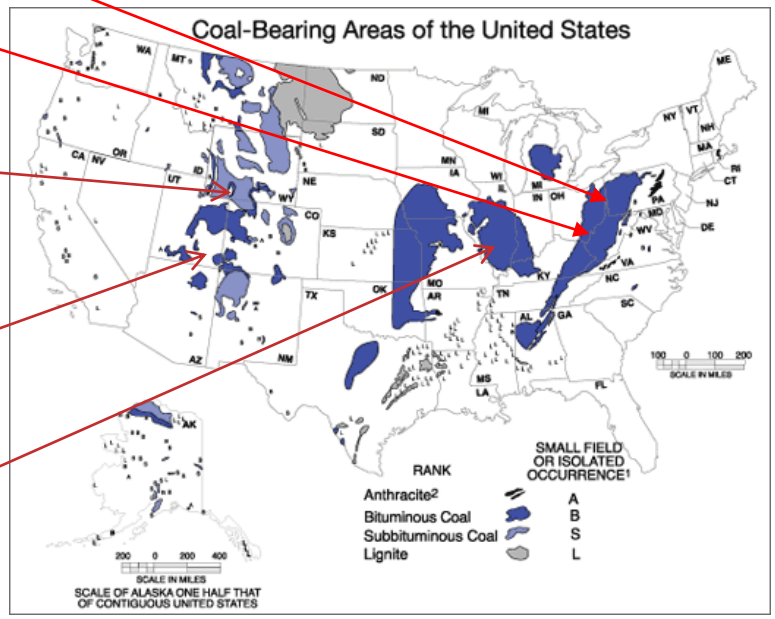
Western Region, Bituminous Coal

UB - Uinta Basin $35.50
11,700 Btu, 0.8 SO2

Interior Region, Bituminous Coal

ILB - Illinois Basin $46.50
11,800 Btu, 5.0 SO2

While most coal is mined and sold to meet the terms of 3- to 5-year contracts, "spot prices" such as those shown, provide important insight into the relative costs of coal from various U.S. production regions. Coal from Wyoming's Powder River Basin (PRB), for example, is lower in Btus, or heat rate, but also has set the price floor in markets, including most of Illinois, where it can be delivered competitively. The source of the price spread is the cost of production (equipment and labor). PRB coal is abundant in thick seams, near the surface of eastern Wyoming, where huge surface mines fill hundreds of 100-car unit trains per day. The reverse is true in the eastern coal regions called Northern Appalachia and Central Appalachia. Prices for that region have been historically high for two reasons: proximity to high electric demand in the eastern and northeastern United States, as well as, good positioning to reach Atlantic Coast points of export.



Illinois Basin coal, in contrast, has been forced to deal with swings in the U.S. marketplace, competing with PRB coal throughout the Midwest while using the price spread to its advantage in picking up easy-to-serve customers in the southeast U.S. and Florida.

Illinois Coal Research, the Nexus of Innovation

As the marketplace for coal has become increasingly competitive, the state of Illinois has backstopped Illinois coal producers since 1982 with the Illinois Coal Research Program. The program's goal is to develop and use Illinois' extensive coal resources as a fuel for the next century. Directed by the Illinois Clean Coal Institute (ICCI), the technical arm of OCD, outside researchers and institutes conduct R&D, evaluate studies and develop scientific concepts to assist producers and users of Illinois coal.

Research and technology development has addressed issues related to clean coal technologies, mining productivity and miner safety. ICCI encourages interaction between small businesses, universities, research centers, industry, the U.S. Department of Energy and/or other federal and state agencies to provide multi-disciplinary expertise and cost-sharing that is necessary for a successful research program.

In FY2011, $3.6 million in funding through the R&D grant program leveraged $3.3 million in private research funds. Grantees include the Illinois Coal Research Center, on the campus of Southern Illinois University Carbondale, a center of excellence in coal, energy and environmental research for more than three decades. The Gas Technology Institute in Des Plaines, the University of Illinois at the Urbana-Champaign campus, and the Illinois Institute of Technology in Chicago also received DCEO FY2011 grant funds for cutting-edge research in areas such as coal miner safety, coal gasification, pre- and post-combustion carbon dioxide (CO_2) capture, and changes in chemical and mechanical coal properties with exposure to sequestered CO_2. Together these projects advance Illinois goals of making coal mining safer and coal use cleaner.

In 2011, mining safety research included studies of: ground control in the development areas of longwall mines, the characterization of coal dust and breathable silica dust for the purpose of developing engineering controls to improve miners'

health; artificial roof supports around mining areas for enhanced safety and productivity; an innovative water spray system for dust control on continuous mining machines, and better engineered wooden cribs for mine support and increased ventilation.

Research on coal mining and use processes to protect the environment included studies on:

- Reducing energy consumption and carbon footprint through improved coal production practices,
- Processing coal through dry beneficiation, employing an electric field to eliminate certain unwanted minerals from the coal, rather than using water in coal processing,
- Improving mine vicinity water quality analysis to determine the presence of zinc, mercury, arsenic, and selenium in surface water discharges to determine if further regulation is necessary,
- Analyzing changes in coal properties as a result of carbon sequestration,
- Studying the conversion of coal directly into chemicals using only water and oxygen,
- Evaluating dry sorbent technology for pre-combustion CO_2 capture,
- Testing hybrid membrane absorption processes for post-combustion CO_2 capture,
- Reducing energy consumption in the capture of CO_2, using a hot carbonate absorption process, and
- Demonstrating a method for recovering ultra-small coal particles from waste streams of coal processing plants.

The results of these projects will be published on the ICCI web site at www.icci.org along with the research of more than 60 research universities and institutions that have received previous state grants. In 2011, the findings of research projects were also presented at international conferences throughout the United States, and in Spain, China and India.

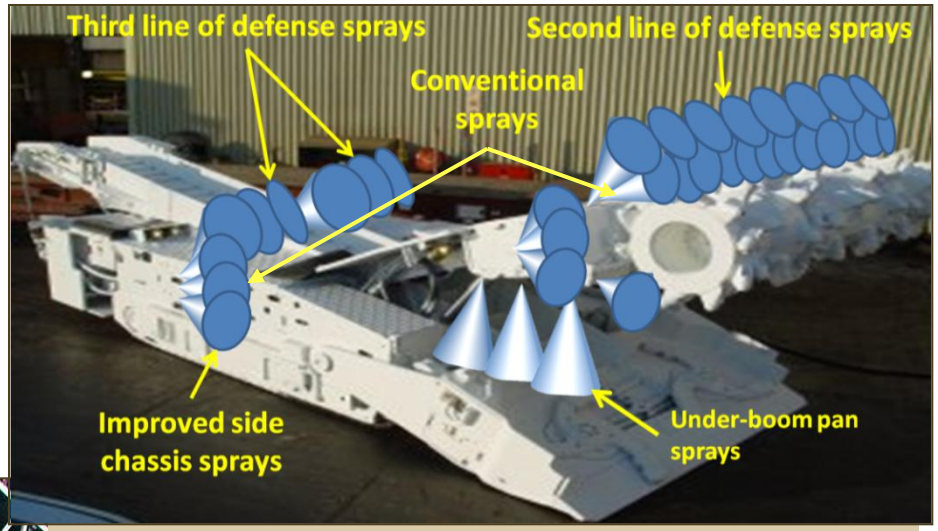
Projects that Improve Worker Safety

Coal mine safety remained a top priority in Illinois, as some $6.4 million in coal development funds was spent to keep Office of Mines and Minerals mine inspection and site permitting functions operational as state budgets tightened. The Office of Coal Development also directly supported safety enhancement at individual facilities and funding successful research projects such as those outlined below.

Safer Breathing Underground

Dust control has become a major operations control issue as National Institute of Occupational Safety and Health research has indicated that coal workers incidence of pneumoconiosis, commonly referred to as black lung disease, has turned upward in the last 10 years after decades of decline.

In a recent SIUC research project, principal investigator Dr. Paul Chugh provided the roadmap to mitigating the harmful effects of coal dust on underground personnel. His research helped develop an innovative water spray system for continuous mining machinery. It is an extension of the "second line of defense sprays" concept developed by Chugh and field tested on a limited scale at two mines in Illinois.



The project team engineered the spray system at Knight Hawk Mine on a continuous miner before it was sent to the manufacturer for implementation.

The system includes sprays around the cutting drum, outer bit ring sprays, chassis sprays and side sprays. About 10 to 15 feet behind these sprays are sprays that cover the area between the mining machine's chassis and the mine roof and ribs.

Laboratory studies indicated the system could produce a significant improvement in the reduction of both coal and quartz dust. Chugh's team developed a mock-up of the operation in the laboratory and evaluated the spray coverage areas. The team then demonstrated the spray system to professionals from two coal companies, the State of Illinois and the federal Mine Safety and Health Administration (MSHA). Based upon highly positive comments, the project team has designed spray blocks for commercial implementation and field demonstration.

One of the state's more innovative coal operators, Knight Hawk Coal Co. agreed to demonstrate the system at one of its Southern Illinois mines. The project team engineered the spray system in cooperation with the coal company and the continuous miner manufacturer. The system will be implemented on mining machines during planned rebuild operations. The performance of the spray system in the field will be documented and compared with the unmodified continuous miner.

Improved Roof Support

A second research project at SIUC involved the study of artificial supports around longwall mining areas to improve overall safety and productivity. The research team met with a district roof control specialist from MSHA to discuss roof control issues, roof bolt performance, seasonal-effects on bolt tension, roof deterioration, horizontal stresses and mining practices. A roof-fall data base for the period January 1, 2005 through May 15, 2010 was developed and analyzed to define characteristics of roof falls. A three-dimensional model was developed for immediate roof strata above the No. 6 coal seam in Southern Illinois. It is being applied to improve primary and secondary roof support as well as stability of longwall set-up rooms. Overall, this study has enhanced the knowledge base for improving ground control at intersections and in set-up rooms for longwall mining. Results of this study have already been implemented in the field, and it is expected that they will be extensively used by future longwall mining operations planned for Illinois.

Coal Competitiveness Grant Helps Manufacturer Meet Equipment Demand

All equipment -- whether as small as a hand-held gas detector or as large as a 20-ton piece of mining equipment -- must be approved by MSHA before being allowed in an underground coal mine. In order to receive approval, there must be no likely explosion hazard under normal operation when used in methane-rich air or coal dust.

As mining companies replace old electric or battery-powered vehicles with more versatile, diesel-powered vehicles, there became a need to retrofit and adapt commercial diesel trucks to receive MHSA certification.

Above: Just one of the 90 Dodge Ram trucks modified by SIME for Williamson Energy. Below (left): One of the trucks modified for underground service. Below (right): the fabrication shop at Southern Illinois Mine Equipment.

In 2007, Williamson Energy approached Weeks Chevrolet Chrysler Jeep Dealership in West Frankfort, to take on the retrofit challenge. Southern Illinois Mine Equipment, LLC (SIME) was established in December 2009. By the end of 2011, SIME had completed orders for 90 Dodge Ram trucks to be used in underground coal mines.

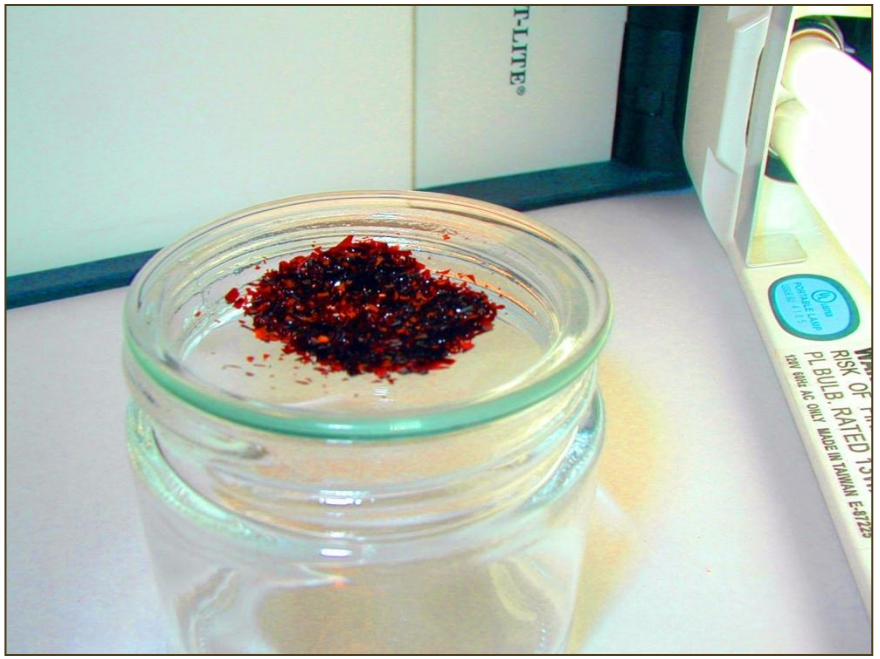
SIME received an FY2012 Coal Competitiveness Program grant to purchase more shop equipment in order to meet the coal industry's growing demands for heavy- and light-duty trucks, service and fuel trucks, man-trips for moving miners from place to place underground, and emergency underground transport. Orders for 2012 include more than 90 trucks, 120 jeeps and 15 Polaris 4x4s.

SIME is adding 20 full-time employees to the six full-time and seven part-time employees it already has. SIME is one of only two companies in the United States currently building these specialized MSHA-approved mine vehicles.

Research Grants Make Coal Cleaner to Use and Reduce Cost of Carbon Capture

Chemical CO_2 Transport

A project at University of Illinois at Urbana-Champaign assessed the potential for carbon dioxide capture and storage by chemical reactions. The CO_2 would become incorporated into new inorganic or organic products that would be extremely stable. Chemical compounds of natural origin that react with CO_2 were used. These "phenols" are poisonous acidic compounds present in tars from coal and wood that, when dissolved, make a weak liquid mixture and



Tannins showed a high degree of uptake of carbon dioxide in a study of carbon capture and storage by chemical reactions.

are used as a disinfectant.

The substances showing the highest degree of CO_2 uptake were the condensed tannins, materials found in many seeds and barks. Catechin, a model compound related to these tannins, reacted readily with bicarbonate in water to give a red product containing added CO_2 in the form of carboxyl groups.

Simplified Gas Cleanup

A 2010 Coal Research Program grant to Gas Technology Institute in Des Plaines assisted with the development of a single process to remove multi-contaminants from advanced gasification systems using Illinois coals. The University of California Sulfur Recovery Process-High-Pressure (UCSRP-HP) process removes chlorides, ammonia, trace heavy metals (mercury, selenium, arsenic and cadmium), carbonyl sulfide and hydrogen sulfide from the coal-derived syngas. A preliminary economic evaluation of the process shows it has the potential to save 9% on the otherwise costly production of electricity integrated with CO_2 capture. Coupled with advanced separation technology, it could expand the savings to over 13%.

Alston Power Inc. is conducting a multi-year test program to develop and test oxy-fuel tangentially fired technology for retrofit to existing boilers at coal-fired electric plants.

Oxy-combustion for CO_2 Capture

A project at Alstom Power investigated oxy-combustion for CO_2 capture from coal-fueled power plants. The basic concept of oxy-combustion is to replace combustion air with a mixture of oxygen and recycled flue gas, thereby creating a high CO_2 content in the flue gas stream that can be more simply processed for sequestration or a high purity, saleable by-product. The technology can be applied to both new and existing plants. Alston Power Inc. is conducting a multi-year

test program to develop and test oxy-fuel tangentially fired technology for retrofit to existing boilers. This project evaluated high-sulfur Illinois coal and found that sulfur would need to be removed before the gas is recirculated to the furnace.

Illinois First in U.S. to Demonstrate CO_2 Storage

Illinois achieved a milestone in the injection of captured carbon dioxide (CO_2) at one of two carbon capture and storage (CCS) demonstration projects at Decatur. The multi-agency, federally funded Midwest Geological Sequestration Consortium (MGSC) has begun injecting CO_2 at the Decatur site for the first large-scale (million-metric ton-plus) 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. Partners in the project are the U.S. Dept. of Energy, Archer Daniels Midland, Schlumberger Carbon Services, MGSC and the Illinois State Geological Survey, part of the Prairie Research Institute at the University of Illinois.

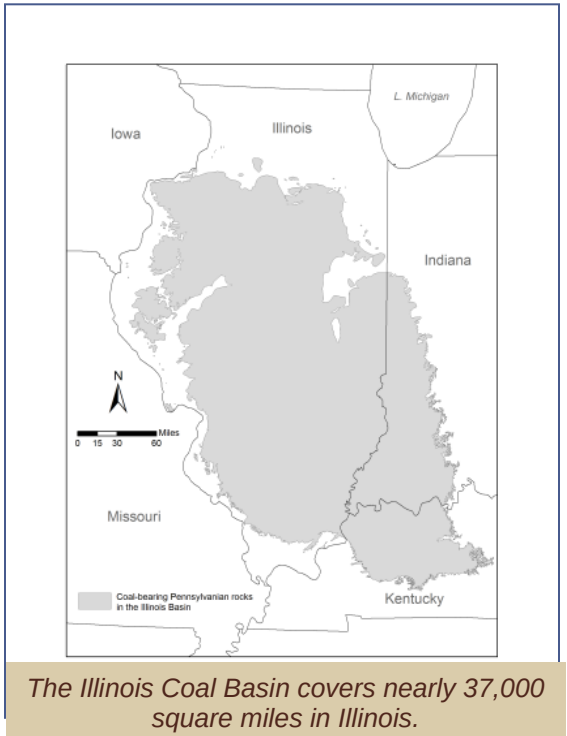
Meanwhile, a CO_2 storage test, or characterization well, for FutureGen 2.0 has been completed in Morgan County. The well confirms that the Mt. Simon Sandstone has ideal characteristics for storage of CO_2, similar to what was identified for MGSC project in Decatur and in Mattoon, once the site of the FutureGen project. The Mt. Simon Sandstone, roughly one mile below the corn and bean fields of Illinois, is the thickest and most widespread saline reservoir in the Illinois Basin. The Basin covers two-

Note the size of the injection wellhead compared to the parking blocks on either side of it at the Illinois Basin – Decatur Project carbon sequestration demonstration site.

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 tons. Above it, several layers of shale serve as impermeable cap rock to hold the CO_2 in place. These successful projects give Illinois a strong competitive advantage in using geological sequestration for carbon management.

Coal Resources Are Abundant

The Illinois Basin covers nearly 37,000 square miles in Illinois and extends into portions of southeastern Indiana and western Kentucky. Illinois' estimated recoverable reserves are reported to be nearly 38 billion tons. Of the estimated recoverable reserves, 27.8 billion tons are suitable for underground mining, and about 10.1 billion tons are available through surface mining methods.



The Illinois Coal Basin covers nearly 37,000 square miles in Illinois.

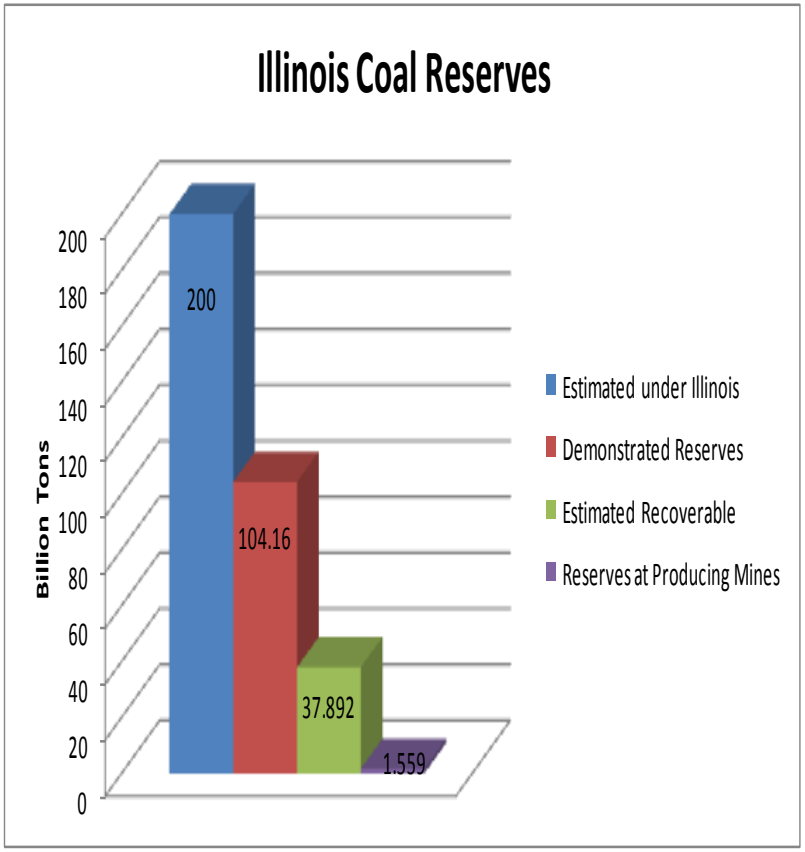
Of the reserves referenced above, the coal most likely to be mined within the next five years, perhaps longer, is the 1.559 billion in recoverable reserves in coal deposits at active, producing mines.

Extensive data on the location and composition of coal, taken from core samples taken throughout Illinois, is available from the Illinois State Geological Survey, part of the Prairie Research Institute. The Survey Web site provides maps, publications, and data sheets addressing coal characteristics, seam thickness, and availability of resources. The following information was excerpted from "Coal Geology in Illinois".[16] For more information and detailed maps, see http://www.isgs.uiuc.edu/maps-data-pub/coal-maps.shtml.

[16] Korose and Elrick, Coal Section, Illinois State Geological Survey, Natural Resources Building, 615 E. Peabody Dr., Champaign, Il 61820, Tel: 217/244.2414, email: korose@isgs.illinois.edu, elrick@isgs.illinois.edu. http://www.isgs.uiuc.edu/maps-data-pub/coal-maps/pdf-files/Illinois-coalgeology.pdf

Illinois Ranks 3rd in Bituminous Coal Reserves

About 200 billion tons of coal is estimated to lie underground in Illinois. This gives Illinois the third-largest total coal reserves of any state, and Illinois is second only to Montana in terms of demonstrated reserve base. Also, Illinois has the largest overall bituminous coal reserves and the largest, strippable bituminous coal reserves anywhere in the United States.[17]



The Energy Information Administration (EIA) reported the following figures for Illinois bituminous coal reserves in its 2010 Coal Reserves Database.[18] Illinois' demonstrated reserve base was 104.16 billion tons as of January 1, 2010. The demonstrated reserve base includes coal that has been mapped, and is concentrated at a depth and seam thickness deemed minable given existing technology.

A second way to measure coal is termed "recoverable reserves," which means coal in the demonstrated reserve base considered recoverable or able to be mined. Excluded is tonnage unavailable due to land use restrictions or currently economically unattractive for mining.

[17] http://www.isgs.uiuc.edu/maps-data-pub/publications/geobits/geobit12.shtml
[18] United States. Energy Information Administration. Report No: DOE/EIA-0584 (2010). Data for 2010. Report Released: November 2011. Table 15 http://www.eia.gov/coal/annual/pdf/table15.pdf February, 10, 2012.

Table 4. Coal Seams Mined in Illinois

Correlation of coal seams and rock formations in the Illinois Basin

Illinois		Indiana		West Kentucky		Standardized terms	
Modesto Fm.		**Shelburn Fm.**		Sturgis Fm.	Coiltown (W. Ky. No.14) Baker (W. Ky. No. 13) Paradise (W. Ky. No. 12)	**Shelburn Fm.**	
Carbondale Fm.	**Danville (No. 7)** Jamestown **Herrin (No. 6)** **Springfield (No. 5)** Summum (No. 4) Shawneetown **Colchester (No. 2)**	Dugger	Danville (VII) Hymera (VI) **Herrin**	Carbondale Fm	**Herrin Fm** (W. Ky. No. 11) Briar Hill (W. Ky. No. 10) **Springfield** (W. Ky. No. 9) Ruff Well **Dekoven** (W. Ky. No. 7) **Davis** (W. Ky. No. 6)	Carbondale Fm	**Herrin** **Springfield** Houchin Creek Survant **Colchester**
		Petersburg	**Springfield (V)** Houchin Creek Survant (IV)				
		Linton Fm	**Colchester (IIIa)**				
Spoon Fm	**Dekoven/Seelyville** **Davis** **Murphysboro** New Burnside Bidwell Rock Island (No. 1)	Staunton Fm.	**Seelyville (III)** Buffaloville	Tradewater Fm.	Manningtown (W.Ky.No.4)	Tradewater Fm.	
Abbott Fm	Willis Reynoldsburg	Brazil Fm	Minshall Upper Block Lower Block		Bell (W. Ky. No. 1b)		
C Caseyville Fm.	Gentry	Mansfield Fm	Mariah Hill Blue Creek St. Meinrad Pinnick French Lick	Caseyville Fm.	Main Nolin	Caseyville Fm.	

Seventeen coal seams have been mined in Illinois. The coals are referred to by geographic names. Several of the more important coals are also referred to by number -- the lower the number, the older the coal.

Most Significant Coal Seams Mined in Illinois

Approximately 85% to 90% of Illinois coal production comes from the Herrin No. 6 and Springfield No. 5 coal seams. Herrin No. 6 coal, is the chief source of coal mined in southern Illinois (outside of the Wabash-Saline-Gallatin County area in southeastern Illinois). The thickness of the Herrin coal seam in southwest Illinois is generally 6 to 8 feet. In southeastern Illinois, the Herrin becomes thinner and irregular.

Springfield coal, No. 5 coal, has been surface mined extensively in western Illinois. It is the only coal that has been mined in Sangamon, Logan, and Menard counties. The Springfield coal has also been mined in southwestern Illinois, principally in Perry, Randolph, Jackson and Williamson counties. It was once mined in small operations in McLean and Edgar counties. The Springfield coal seam has a thickness of 4.5 to 6 feet in most locations.

85% to 90% of Illinois coal production comes from the Herrin No. 6 and the Springfield No. 5 coal seam

Coal Production by County

Since 2007, Illinois coal production has increased in 10 of 14 coal-producing counties over the previous two-year period.

Leading the state in coal output is Saline County, with five active mines producing over 10 MT of coal annually. The largest of the mines, The American Coal Company Galatia Mine, is now referred to as the Galatia Complex consisting of the New Future Mine and the New Era Mine. New Future produces coal from the No. 5 Springfield coal seam, while New Era produces coal from the No. 6 Herrin coal seam. Both mines are expected to produce nearly 3.5 MT per year. Big Ridge Willow Lake Portal consistently produces more than 2 MT annually. Peabody Midwest Mining Wildcat Hills Underground Mine increased its tonnage in 2011 to 1.0 MT. Eagle River Coal, LLC is developing Eagle River Mine No. 1, a surface mine capable of producing 1.5 MT annually.

Williamson County has moved from last place to number two in Illinois coal production in only three years. With more than 7 MT of coal coming from Mach Mining LLC in 2011, the mine known as Mach No. 1 is the most productive mine in Illinois. At 19.04 tons per total man-hour, this new state-of-the-art, longwall mine is more than twice as productive as the second-most productive longwall mine in the nation.[19]

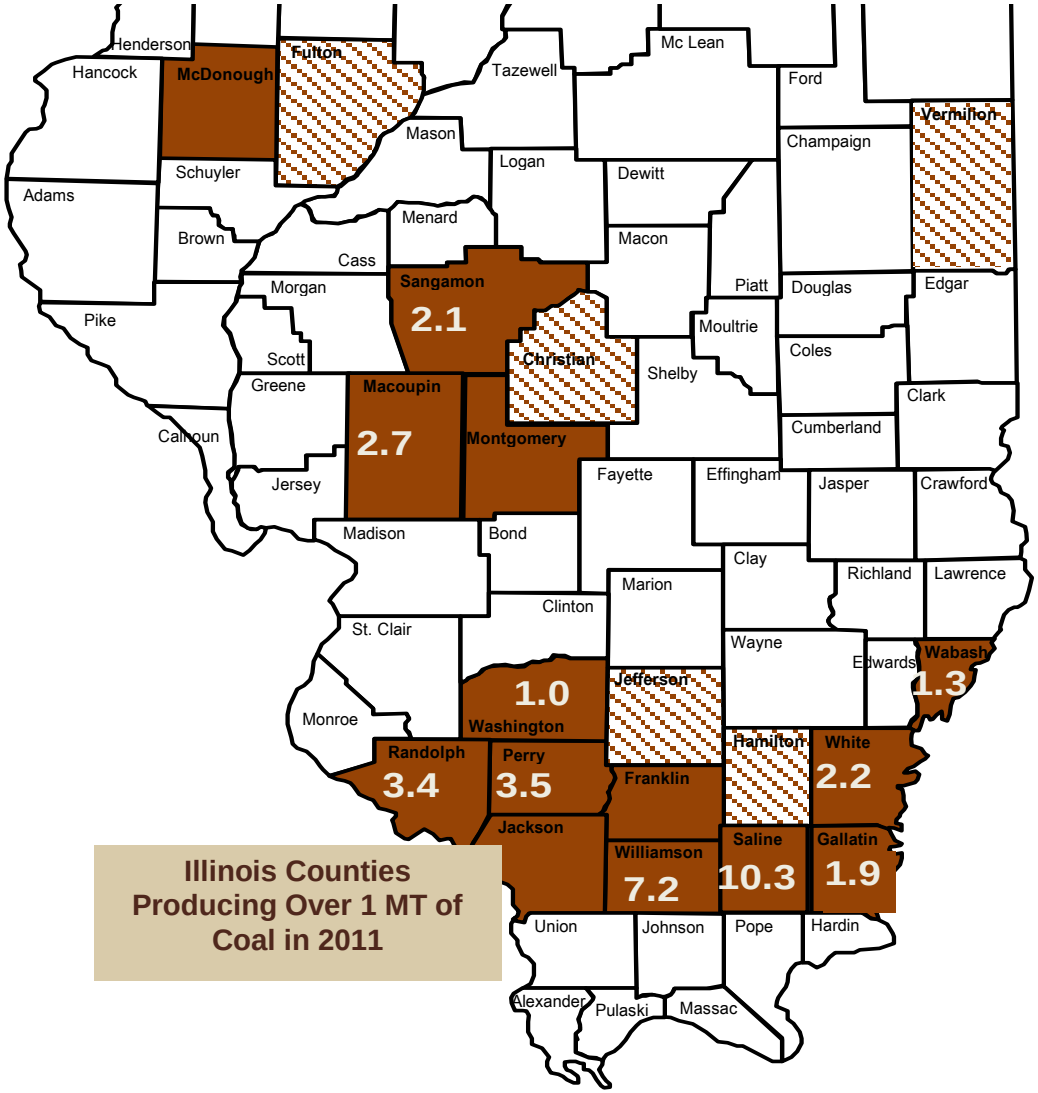
Coal Production by County		
County	**No. of Mines**	**Production(MT)**
Saline	5	10.3
Williamson	1	7.2
Perry	4	3.5
Randolph	2	3.4
Macoupin	2	2.7
White	1	2.2
Sangamon	1	2.1
Gallatin	2	2.0
Wabash	1	1.3
Washington	1	1.0
Franklin	1	0.85
Montgomery	1	0.49
Jackson	1	0.38
McDonough	1	0.16

Perry County is ranked third in coal production with four Knight Hawk Coal (KHC) mines. Slightly over 3 MT came from the Prairie Eagle mines. Ranked a close fourth behind Perry County is Randolph County, with 3.4 MT produced. Peabody Midwest Mining Gateway Mine continues to increase production, reaching more than 3 MT in 2011. Also in Randolph, KHC opened the new surface Hawkeye Mine in mid-2011. Eventually, the mine's output is estimated to be about 500,000 tons per year. KHC has also acquired a permit for Mary's River Mine, previously owned by Peabody Energy. It will produce less than 1 MT annually, boosting Randolph County coal production to approximately 4.5 MT yearly.

Macoupin County ranks fifth in coal production for 2011 with MaRyan Mining Shay No. 1 Mine and TriCounty Coal Crown III Mine producing 2.7 MT of coal.

Arch Coal Viper Mine in Sangamon County and White County Coal Pattiki Mine in White County each produced more than 2.0 MT. Gallatin County mines produced 2.0 MT at Peabody Midwest Mining Wildcat Hills Cottage Grove Mine and a smaller amount from Illinois Fuels I-1 Mine. Friendsville Mine in Wabash County produced 1.2 MT in 2011.

[19] Weir International, Inc., Statistics Production Table. U.S. Longwall Mines - Production and Productivity Year 2011 June Year to Date. CoalUSA. August 2011.



Washington County saw the first coal production in more than a decade as the development of Lively Grove Mine produced 1.0 MT of coal. The mine was nearly complete at the end of 2011. The anticipated annual production of 6.5 MT will be transported by conveyor to the adjacent 1600 megawatt Prairie State Energy Campus.

Franklin County returned to coal production in 2010 and 2011 after 16 years. More than 855,000 tons of coal was produced at M-Class Mining MC No. 1 Mine. Coal was produced in Montgomery County for the first time in almost 30 years. Deer Run Mine in Montgomery County produced nearly 500,000 tons of coal. North Grindstone Mine, a small surface operation in McDonough County produced slightly over 165,000 tons of coal in 2011.

The customers may be as far away as Florida or Georgia, or even the emerging economies of Asia and Africa. Illinois coal once again is in demand. And Illinois workers are ready to supply it.

Effect of Clean Air Regulations on the Illinois Coal Industry

Beginning with the Clean Air Act (CAA) in 1970 and followed by the Clean Air Act Amendments (CAAA) in 1990, a progressive series of environmental regulations established by the U.S. Environmental Protection Agency (EPA) have heavily impacted coal-fueled power plants and the Illinois coal industry. The CAA was created to curb several types of harmful emissions: -- so-called “acid rain” from sulfur dioxide (SO_2), urban smog and other toxic air emissions -- by setting limits on how much of a pollutant can be in the air anywhere in the United States. In 1990, the CAAA were adopted with overwhelming bipartisan support and a promise to cut emissions further. The CAAA set emission standards on existing fossil-fueled generating units. Also in 1990, national ambient air quality standards were established for so-called "criteria" pollutants - SO_2, nitrogen oxides (NOx) and particulate matter (PM) -- and geographic areas of the U.S. were labeled either "attainment" or "nonattainment" zones in terms of air quality.

Utilities Opt for Least-cost Option: Changing Coal Sources

A goal of reducing annual SO_2 emissions by 10 MT below 1980 levels was set in Title IV of the Clean Air Act. A two-phase tightening of the restrictions on fossil-fueled power plants was forthcoming to achieve these reductions. The restrictions, sometimes referenced as the Acid Rain Program (ARP), required the nation’s larger electric generating units to reduce SO_2, NOx and PM. Phase II of the ARP went further, being applied to all fossil-fueled plants over 25 megawatts (MW).

Just before the CAA took effect, Illinois utilities bought 61% of their coal from home-state mines. Over the next 11 years, from 1990 to 2011, Illinois coal sales to Illinois power plants plummeted from 15.4 MT to 2.3 MT.[20] See table 5, *Change in Coal Use by Illinois Utilities.* Benefitting from this dramatic fuel-switching were mines producing low-sulfur coal in Wyoming.

The irony was that Illinois was not using less coal. In fact, total coal consumption in Illinois more than doubled between 1990-2011, from 25.3 MT to 64.2 MT. However, less than 4% of the coal used at Illinois power plants in 2011 came from Illinois mines. In place of native coal, Illinois power producers were consuming 61.4 MT of low-sulfur, low heat-rate (Btu) coal from the Powder River Basin of Wyoming and a small amount from other states. The casualties were the thousands of Illinois coal miners who lost their jobs in the decade of the 1990s.

Effect of Emission Regulation on the Illinois Coal Industry

	Illinois Coal	Out-of-State Coal	Total Coal Used	Illinois Mine Employment
1990	15,394.7	9,858.6	25,253.3	10,129
2009	2,533.4	50,145.8	52,679.2	3,516
2011	2,271.2	61,897.7	64,168.9	4,019

It would not be until 2010-11 that Illinois mine employment would rise again. The new workforce growth came as the use of clean coal technologies became more widespread. It took most of the interim for continued tightening of air emissions standards to force power producers throughout the U.S. to add so-called scrubbers to their power fleets. This made relatively high sulfur content coal more palatable to power producers, and Illinois Basin market share began to grow, especially in the southeastern United States. Illinois coal investors also have capitalized on new demand for Illinois Basin coal resulting from lower volumes of coal being available from Appalachia. In addition, new opportunties began to present themselves in the coal export market, and nations like China and India led a fast-growing world demand for electricity.

[20] Energy Information Administration. http://www.eia.doe.gov/cneaf/electricity/page/eia423.html (accessed 4/24/12)

Table 5. Change in Coal Use by Illinois Utilities

Plant operator	Plant name	EIA 2008 nameplate capacity MW	County	Total Illinois tons 1990 (000s)	Total out-of-state tons 1990 (000s)	Total Illinois tons 2011 (000s)	Total out-of-state tons 2011 (000s)
AmerenEnergy Generating	Coffeen	1,005.4	Montgomery	1,746.4	0	18.7	2,815.5
AmerenEnergy Generating	Meredosia	496.3	Morgan	477.4	40.1	0	450.1
AmerenEnergy Generating	Newton	1,234.8	Jasper	1,074.9	960.2	0	4,824.9
AmerenEnergy Resources	Edwards Station	780.3	Peoria	189.0	1,800.0	0	2,879.9
AmerenEnergy Resources	Duck Creek	441.0	Fulton	861.0	0	175.1	1,063.9
Dynegy Power Corporation	Baldwin	1,892.1	Randolph	3,995.2	0	0	7,623.6
Dynegy Power Corporation	Havana	4880	Mason	0	495.8	0	1,965.1
Dynegy Power Corporation	Wood River	500.1	Madison	472.2	265.3	0	2,073.4
Dynegy Power Corporation	Hennepin	306.3	Putnam	629.7	58.6	0	1,314.6
Electric Energy, Inc	Joppa	1,099.8	Massac	1,756	1,721.5	0	4,721.3
Dominion Energy Services Co.	Kincaid	1,319.0	Christian	2,335.0	0	0	3,255.1
Midwest Generation EME, LCC	Joliet (9 & 29)	1,680.4	Will	0	1,503	0	7,963.6
Midwest Generation EME, LLC	Powerton	1,785.6	Tazewell	0	1,969.0	0	6,700.9
Midwest Generation EME, LLC	Will County	1,268.8	Will	0	856.0	0	2,139.5
Midwest Generation EME, LLC	Waukegan	681.7	Lake	0	850.0	0	2,414.0
Midwest Generation EME, LLC	Crawford	597.4	Cook	0	254.4	0	1,482.5
Midwest Generation EME, LLC	Fisk	374.0	Cook	0.0	400.2	0	968.3
Southern Illinois Power Coop.	Marion	272.0	Williamson	739.0	0.0	789.9	89.7
Springfield City Water, Light & Power	Dallman I-IV**	548.0	Sangamon	922.0	0.0	1,287.5	0
Total Tons in 000s				**15,394.7**	**9,858.6**	**2,271.2**	**61,897.7**

*Users of less than 100,000 tons annually and industrial users were not included.
Source: EIA 2011 December EIA-923 Monthly Time Series File, Fuel Receipts and Cost, Source EIA-923 Schedules 2. http://www.eia.gov/cneaf/electricity/page/eia423.html (accessed 4/24/12)

Regulatory Uncertainty Slows Investment

Federal law requires the CAA to be reviewed every five years and revised if needed. The five-year requirement alone has caused uncertainty among power plant developers and fuel providers, and it continues to effect long-range planning for capital expenditures on new plants or power station upgrades.[21] Even when Congress was unwilling to act, clean air advocates challenged power producers in the federal courts. One set of rules would be promulgated, for example, to lower allowable SO_2 limits. Soon another set of new regulations would be issued, these setting often different timetables for implementation of tighter limits on mercury, perhaps, or particulate matter. At times, too, new regulations would be applied to some, but not all pollution emitters. The result was irregular, uneven and piecemeal regulation. Its effect is documented below in a partial list of clean air regulations impacting the coal-fueled power plants. See table 6, *Emission Regulations Affecting the Coal Industry***.**

As this report is prepared, the US EPA, which is charged with enforcing the Clean Air Act, was being challenged in Congress and in the courts to stall a series of 2012 regulatory changes. These once again seek to reduce site-specific emissions, as well as, what are termed the "cross-state" effects of air pollution, the latter taking the approach first pioneered by the Acid Rain program referenced above.[22]

Also in 2012, the US EPA was about to launch nationwide hearings on proposed standards to curb, for the first time, the emission of carbon dioxide from power plants and industrial sites. The proposed regulations are at the center of the national debate over global warming – and represent perhaps the most closely watched and hotly debated Clean Air initiative in 30 years. The move on CO_2 standards is based on a 2007 U.S. Supreme Court ruling finding that carbon dioxide and other greenhouse gases endanger human health and therefore qualify as pollution to be regulated under the Clean Air Act.

The forthcoming CO_2 standards would leave existing sources untouched (including, significantly, Prairie State in Illinois), but critics noted that the rule package serves as a strong disincentive for new coal-fueled power projects to proceed.

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[21] Luke A. Stewart, Information Technology & Innovation Foundation, June 2010. The Impact of Regulation on Innovation in the United States: A Cross-Industry Literature Review. www.iom.edu/~/media/Files/Report. December 2011.

[22] Paul J. Miller, Ph.D., J.D., Northeast States for Coordinated Air Use Management Boston, MA. **A Primer on Pending Environmental Regulations and their Potential Impacts on Electric System Reliability** Updated February 21, 2012. www.nescaum.org

Table 6. Emission Regulations Affecting the Coal Industry

1970 Clean Air Act

- Limits how much of a pollutant can be in the air anywhere in the United States to curb acid rain, urban air pollution and toxic air emissions

1990 Clean Air Act Amendments (CAAA)

- Sets emission standards on existing fossil-fueled generating units, creates a national permits program and a stepped-up enforcement program

1990 National Ambient Air Quality Standards

- Establishes standards for each of the criteria pollutants -- sulfur dioxide (SO_2), nitrogen oxide (NOx) and particulate matter (PM)) -- to determine "attainment" and "nonattainment "areas in terms of air quality standards.

1995 Phase I of Acid Rain Program (ARP)

- Phase I requires 263 of the largest, dirtiest generating units to reduce SO_2, NO_x and particulate matter (PM)

1998 Emission Targets for 21 states and District of Columbia

- Sets NOx emission targets for each state

2000 Phase II of Acid Rain Program

- Extends ARP to every fossil-fueled plant greater than 25 MW

2005 Clean Air Interstate Rule - replaced with 2011 CSAPR

- Establishes three separate cap and trade programs for reduction, one each for SO_2, $PM_{2.5}$ and NO_x to reduce ozone formation

2010 Mandatory Reporting of Greenhouse Gases

- Requires reporting of greenhouse gas (GHG) emissions from all sectors of the economy

2011 Cross State Air Pollution Rule (CSAPR) (CAA section 110(a)(2)(D)

- Allocates emissions by states
- Requires 28 eastern states to reduce annual emissions of SO_2, NO_x, and/or ozone season NO_x emissions
- *Final ruling expected mid- to late 2012*

2011 Mercury and Air Toxics Standards (CAA Section 112)

- Requires emission standards for coal- and oil-fired electric generating units (EGUs) with a capacity of 25 MW or greater for toxic pollutants: mercury, non-mercury metals, acid gases, and organic air toxins; requires installing Maximum Achievable Control Technology (MACT) for all but organic air toxins; emissions trading is not an option
- Replaces Clean Air Mercury Rule vacated in 2008;
- *Rule pending since late 2000; a number of states including Illinois have adopted mercury rules*

2011 Greenhouse Gas Tailoring Rule (CAA PSD Program & Title V CAA)

- New affected sources need to adopt best available control technology (BACT)for greenhouse gases

Meanwhile, billions of dollars of potential investments in carbon capture and storage (CCS) and new coal-fueled facilities in Illinois are being diverted elsewhere as coal faces intense competition from other energy sources, specifically abundant natural gas produced from underground fracturing of underground shale formations. CCS holds potential for cleaner coal in the U.S. and across the globe, but the utility industry needs to have certainty for financing and deploying these new technologies on a commercial scale. Stewart concluded that as a general rule, regulators should minimize policy uncertainty.

Pending Issues for the Coal Industry

Several pending issues will impact the Illinois coal industry and coal-fueled facilities. Some are covered in table 7: *Pending Legislation.* At the top of the list will be new rules on cooling water use and quality at thermal power plants, mercury and air toxics standards and control over coal combustion residuals, according to an analysis by the North American Reliability Corporation.[23] At the top of the list is the near-term fate of coal power plants, built many decades ago, that are facing sharper competition from other fuels, as well as new anti-pollution regulatons that will be costly to implement.

Already mothballed are older coal plants on small footprints that limit the ability to add pollution controls. These include the Vermilion, Meredosia and Hutsonville power stations dotted throughout central Illinois. In northern Illinois, Edison Electric subsidiary Midwest Generation also has decided to shut down by 2014 its Crawford and Fisk stations, within the Chicago city limits, as well as its Waukegan Power Station. Facing $628 million in upgrade costs to meet to anti-pollution rules, MidwestGen is still undecided as to the fate of facilities in Joliet, Romeoville and Pekin, which have a combined output of 5,000 MW.

The direct impact on the Illinois coal industry will be negligible, however. The electric units listed above are mostly fueled by coal from Wyoming. The MidwestGen fleet, in fact, was acquired in the 1980s from power giant Commonwealth Edison, which

[23] North American Electric Reliability Corporation, "2010 Special Reliability Scenario Assessment: Resource Adequacy Impacts of Potential U.S. Environmental Regulations," NERC, Princeton, NJ (October 2010). Available at http://www.nerc.com/files/EPA_Scenario_Final_v2.pdf . (accessed Jan. 24, 2011)

had switched its Illinois plants from in-state to lower sulfur Wyoming coal to meet clean air standards.

Table 7. Pending Legislation

2012 Proposed Carbon Pollution Standard for New Power Plants

- Establishes a standard of 1,000 pounds of CO2 per megawatt-hour
- New plants using carbon capture and sequestration (CCS) would have the option to use a 30-year average of CO2 emissions

Greenhouse Gas New Source Performance Standards for new industrial sources - proposed rule deadline missed 9/30/2011

National Ambient Air Quality Standards

- Required 5 year review & revision if needed of primary and secondary standards
- USEPA under court order to reconsider fine particulate matter standards; will not review ozone standards before 2013; NO_2, NOx/SOx proposal made July 2011; final rule expected May 2012

Clean Water Act - 316(b) Cooling water use at thermal power plants

- 1982 Effluent guidelines updated in 2010; under court order since 1995 and again in 2007
- Proposed rule targets: Flue gas desulfurization wastewater; discharges of fly ash and bottom ash transport water; leachate from ponds & landfills containing coal combustion byproducts; gasification wastewater and wastewater associated with flue gas mercury controls; cooling water intake structures and waste water discharges; sets uniform impingement controls
- Proposed March 2011; final rule due July 2012; Compliance 3-5 years after final rule

Resource Conservation and Recovery Act - Disposal of coal combustion residuals (coal ash)

- No date for final ruling; neither option will alter status of beneficially used residuals
- Affects ground water monitoring, double liners, closure, dry ash conversion at electric power plants

Clean Energy Standard - 2013

- Requires electric retailers to supply a specified share of their electricity from qualifying clean energy resources
- Compliance credits

Coalbed Methane Extraction (CBM) Rules

Carbon Capture & Storage (CCS) Regulation

- Range of different state standards and rules for permitting, property rights, long-term liability; incentives; pipelines

The US EPA also is proposing first-time regulation of coal combustion residuals (CCRs) to address the risks from the disposal of ash and other wastes generated by power producers. Changes in federal regulations and bringing CCRs under the Resource Conservation and Energy Recovery Act (RCRA) are being closely monitored, as they have the potential to dramatically increase the cost of using coal.[24] CCRs include all ash, slag, and particulates removed from flue gas of coal-fueled power plants. The US EPA has proposed two options for coal ash disposal: 1) as a "special waste" under RCRA subtitle C, or 2) as non-hazardous waste under RCRA subtitle D. If coal ash is regulated as a special waste, existing surface ash impoundments would be phased-out. If regulated as non-hazardous waste, existing impoundment ponds would need to install liners. The US EPA has indicated that neither option would alter the current regulatory status of coal ash that has beneficial uses in construction materials, concrete, and wallboard.

There also is legislative interest in the quality of water discharged after being used to cool power plant equipment. The rules are targeted at monitoring and mitigating problems with waste water from flue gas desulfurization (FGD), gasification and mercury control systems. They also cover ground water impact from discharges of fly ash and bottom ash, leachate from ash ponds and landfills containing coal combustion byproducts. Also being considered for monitoring are cooling water intake structures and waste water discharges. Current cooling water rules were written in 1982 and have been governed by a federal court order since 1995. Forthcoming new regulations will be a version of standards the US EPA proposed in March 2011, with final action due by July 27, 2012.

Under the proposed rules[25] facilities withdrawing at least 25% of their cooling water from an adjacent water body, with a planned intake flow of more than 2 million gallons per day (MGD), will have an upper limit on allowable fish kill related to the intake and discharge systems. Larger facilities that extract at least 125 MGD would be required to conduct studies to determine whether and what site-specific controls are required to reduce the number of aquatic organisms sucked into cooling water systems. New units that add electrical generation capacity at an existing facility would be required to add technology that is equivalent to closed-cycle cooling, sharply limiting intake of water from outside bodies of water.

[24] U.S. EPA. Waste-Non-Hazardous Waste - Industrial Waste. June 17, 2010. http://www.epa.gov/osw/nonhaz/industrial/special/fossil/ccr-rule/
[25] http://water.epa.gov/lawsregs/lawsguidance/cwa/316b/upload/factsheet_proposed.pdf

Promoting Innovative Technology as Result of Regulation

A 2010 cross-industry literature review of the impact of regulation on innovation in the United States by Luke A. Stewart looked at regulation of manufacturing and energy.[26] In his review on the impact of the CAAA on scrubber innovation, Stewart found little evidence that the cost of scrubber units have fallen since their introduction, indicating there had been little technological progress, Bellas (1998). Majumdar and Marcus (2001) found that regulations that are stringent but flexible in terms of the firm's path to implementation are more effective at promoting market innovation. Popp (2003) found that the SO_2 permit market established by the CAAA provided incentives to install scrubbers with higher removal efficiencies, and thus led to more research and development designed to improve the removal efficiency of scrubbers. Further research in 2005 by Lange and Bellas suggest that market-based policies may be useful for inducing sudden breakthrough innovation, but are less suited for stimulating incremental innovation over time. Overall, Stewart noted that regardless the impact of regulation on innovation in general, if regulators simply place innovation at the forefront of their policy analysis along with distributional, fairness and environmental concerns, then the United States will undoubtedly see a marked and sustained improvement in its innovative potential.

Cleaner Coal Technology Moving Forward in Illinois

Nearly every industry has a past that includes environmental shortfalls and product improvement through trial and error. Coal is no different. However, today's coal mines and coal users bear little resemblance to their previous incarnations. The State of Illinois has been instrumental in the improvement cycle, promoting technology research, development and demonstration for cleaner coal usage. This work is paying dividends in safer, less invasive coal production, job creation, energy reliability and cleaner air in host communities.

[26] Luke A. Stewart, Information Technology & Innovation Foundation, June 2010. The Impact of Regulation on Innovation in the United States: A Cross-Industry Literature Review. www.iom.edu/~/media/Files/Report. December 2011.

Even as the use of coal in Illinois was doubling, from 1990 through 2011, total harmful emissions were declining at Illinois power plants that had installed pollution-control technologies. In1999, scrubbers to control sulfur dioxide emissions were used on only 23% of the existing fossil-fueled generating capacity in the U.S.[27] By 2010, the scrubbed generating capacity had nearly doubled to 43%. Scrubbers and other new technologies allow electricity to be produced from coal more efficiently, with the release of fewer major-category pollutants. Researchers have established that a new pulverised coal plant, operating at lower, "subcritical" temperatures and pressures, controls 86% of NOx emissions, 98% of SO_2 emissions and 99.8% of particulate matter.[28] Technology like that in table 8,*Technology to Control Emissions* is available and in place at Illinois power plants using Illinois coal.

The Center for American Progress has studied coal-fueled power plants in the 17 states, including Illinois that have already established mercury emission limits on coal plants. The result was that half of total electricity-generation capacity was coming from plants with FGD units, or so-called, scrubbers or, alternately, Activated Carbon Injection (ACI) systems that slash mercury to meet tough new standards.[29]

Table 8. Technology to Control Emissions

Pollutant addressed	Existing control technologies to address toxic pollutants
Mercury	Selective Catalytic Reduction (SCR) with Flue-gas Desulfurization (FGD), Activated Carbon Injection (ACI), ACI with Fabric Filter (FF) or Electrostatic Precipitators (ESP)
Non-mercury metals	FF, ESP
Acid gases	FGD, Dry Sorbent Injection (DSI), DSI with FF or ESP
Sulfur dioxide	FGD, DSI
NOx	Low-NOx burners; SCR
Ultra-fine particulate matter	FF, wet ESP

The new Prairie State Energy Campus (PSEC) in Washington County is among the cleanest major coal-fueled plants in the nation due to its use of innovative application technologies.[30] PSEC uses Selective Catalytic Reduction (SCR) to control NO_x and mercury. Both wet and dry

[27] Electric Power Annual 2010. Released November 2011. http://www.eia.gov/electricity/annual/pdf/table3.10.pdf

[28] Institute for Energy Research. June 2009. The Facts about Air Quality and Coal-Fired Power Plants. http://www.instituteforenergyresearch.org/2009/06/01/the-facts-about-air-quality-and-coal-fired-power-plants/trackback/. Sept. 2011.

[29] http://www.americanprogress.org/issues/2011/06/mercury_falling.html

[30] http://www.prairiestateenergycampus.com/imagesuploaded/2009-11-16_Environment_Presentation.pdf

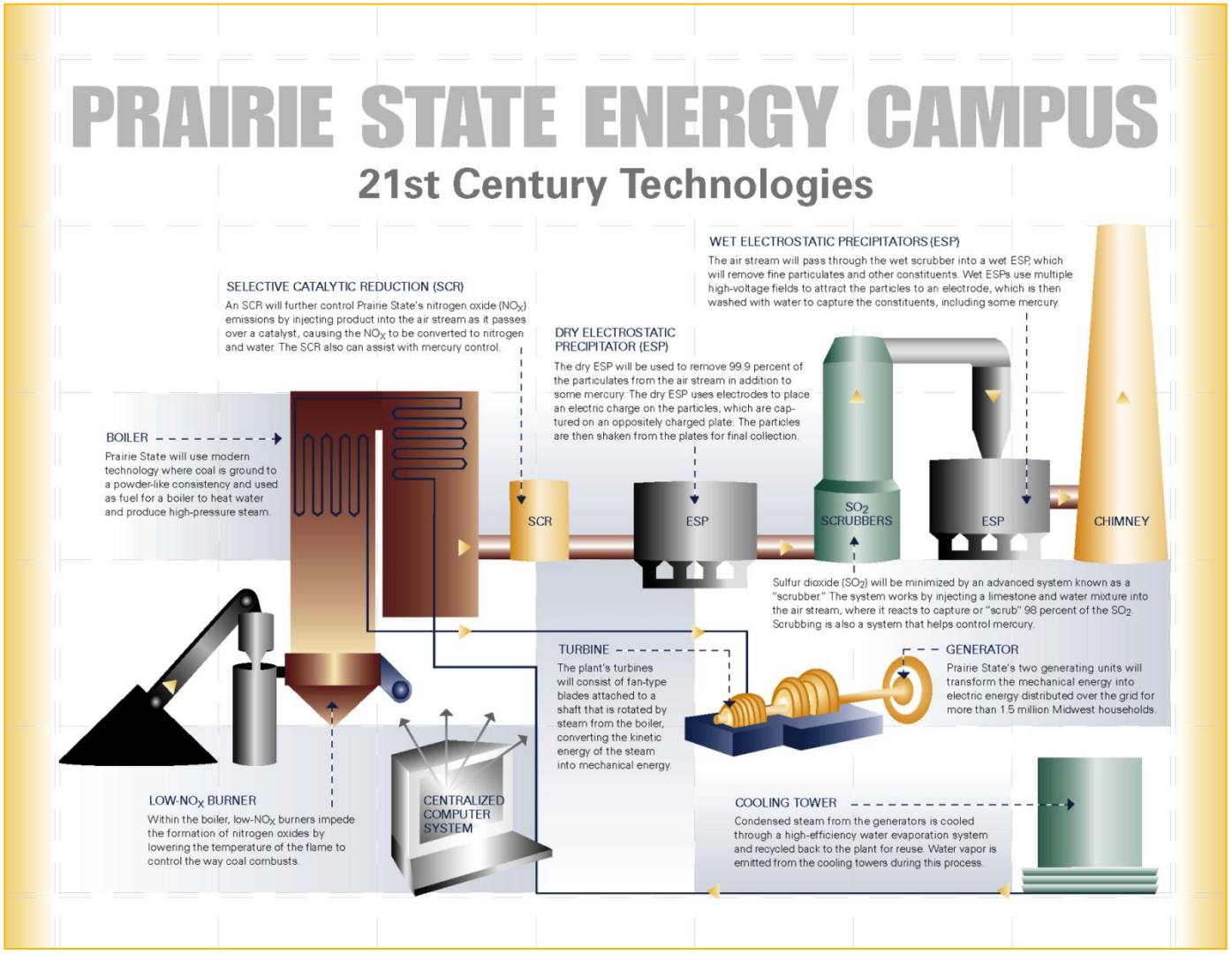
Electrostatic Precipitators (ESPs) remove 99.9 percent of the particulates from the air stream. A sulfur dioxide scrubber captures 98 percent of the SO_2. A Powder Activated Carbon (PAC) system is also used to reduce mercury. Condensed steam from the generator is cooled through a high-efficiency water evaporation system and recycled back to the plant for reuse. Because it is "supercritical," or of higher overall efficiency, PSEC also emits 15 percent less carbon dioxide than the typical U.S. coal plant. The location of the plant at the mouth of a coal mine also eliminates CO_2 emissions associated with coal transportation to the plant site from a mine located elsewhere. In addition, the facility has the potential to accept carbon capture systems when commercially-proven and cost-effective technologies become available. PSEC also opened a new market for Illinois coal and 250 jobs for coal miners. The facility will use 6.5 million tons of Illinois coal annually. See the diagram on page 59 for a visual of how the plant reduces emissions.

Meanwhile, Ameren Energy Resources has invested more than $1 billion from 2001-09 in environmental controls at its Illinois plants. Scrubbers and SCR units were installed at Duck Creek in Fulton County and Coffeen in Montgomery County to reduce sulfur dioxide and NOx emissions. ACI systems to reduce mercury were installed at the E.D. Edwards Plant in Peoria County, the Newton Plant in Jasper County and at the Joppa Plant in Massac County. An ESP unit was also installed at the E.D. Edwards plant to reduce NOx emissions.

Springfield City Water Light and Power (CWLP) completed work on a new Dallman 4 power unit in 2011. The most cost-efficient of the CWLP generating units, the 200 MW generator, is equipped with a activated-carbon injection system for mercury removal, a state-of-the-art cooling tower that eliminates the need to send high-temperature cooling water back into Lake Springfield and a fabric filter system to aid in particulate emission control.

All four CWLP units are equipped with scrubbers to control SO_2 emissions. The scrubbers use limestone to trap SO_2 in the flue gas before it can be emitted into the atmosphere, allowing CWLP to meet federal Clean Air Act requirements while continuing to use high-sulfur Illinois coal. The byproduct from this process, synthetic gypsum, can be used as a soil additive and in cement

making. In 2011, the four Dallman generators used more than 1.2 MT of coal and 354,256 gallons of oil. The net fuel cost of these generators was $23.28 per MWh.[31]



[31] http://www.cwlp.com/electric_division/generation/Dallman.htm (Accessed 3/30/2012)

Benefits of Reducing Air Emissions

The US EPA projects that once its latest round of emissions reductions are implemented in 2016, the pollution reductions will have annual benefits that include up to: 17,000 fewer premature mortalities, 4,300 fewer cases of chronic bronchitis, 10,000 few non-fatal heart attacks, 12,000 fewer hospitalizations for respiratory and cardiovascular disease, 4.9 million fewer days of restricted activity due to respiratory illness and approximately 830,000 fewer lost work days. Further directly related health improvements for children include reducing asthma attacks by 110,000 and hospital admission due to asthma by 6,700. The federal agency also forecasts 10,000 fewer cases of acute bronchitis and approximately 210,000 fewer cases of upper and lower respiratory illness.[32]

As regulation replaces regulatory uncertainty and cleaner coal technology replaces dirtier power plants, citizens and governments will reap the benefits of cleaner air to breathe, reliable, low-cost baseload electricity and thriving economies.

[32] Weiss, Daniel J., Vasquez Valeri, Boss, Stewart. 6/21/2011. Center for American Progress. Mercury Falling. http://www.americanprogress.org/issues/2011/06/mercury_falling.html

Made in the U.S.A. and Mined in Illinois

Coal quality data from over 5,800 samples in Illinois can be found in the Illinois State Geological Survey database at http://www.isgs.uiuc.edu/maps-data-pub/coal-maps.shtml. The information is catalogued by county and longitude/latitude coordinates. The ISGS site also includes statewide maps showing coal resources and coal quality, including structural elevation, depth, thickness, sulfur, and chlorine composition. Statewide maps for trace elements for Herrin and Springfield coal seams include information on ash, total sulfur and pyritic sulfur content to organic sulfur content ratio.

The *Illinois Coal Industry Map, 2011 revision* can be downloaded from the site as a PDF document. The map shows the extent of Illinois' coal deposits, active and inactive surface and underground mines, coal transportation routes, major coal-fueled utilities and industrial facilities, coal docks and tables with production and shipping information.

Characteristics of Illinois Coal

Detailed information on the characteristics of Illinois coal comes from an Illinois State Geological Survey report, *Coal Geology 2010*.[33] Mineral matter, or incombustible components in the coal, varies significantly from place to place. The heat value of Illinois coal ranges from 11,000 Btu/lb in the northwestern part of the state to about 15,000 Btu/lb in the southeastern part of the state.

Sulfur in Illinois coal beds is commonly related to the character of the geology overlying the coal. Usually the coals overlain by marine strata have a sulfur content ranging from 3% to 5% . In certain non-marine areas where 20 feet or more of gray shale sits atop the coal, the sulfur content is less than 2.5%, commonly averaging 1.5%.

[33] Christopher Korose and Scott Elrick, Coal Section, Illinois State Geological Survey, Natural Resources Building, 615 E. Peabody Dr., Champaign, IL 61820. "Coal Geology 2010. http://www.isgs.uiuc.edu/maps-data-pub/coal-maps/pdf-files/Illinois-coalgeology.pdf.

Average Trace and Minor Elements in Illinois Coal (dry basis)			
	Element	Arithmetic Mean	Standard Deviation
As	Arsenic	7.5	8.1
B	Boron	90	45
Be	Beryllium	1.2	0.7
Cd	Cadmium	0.5	0.9
Cl	Chlorine	1671	1189
Co	Cobalt	3.5	1.3
Cr	Chromium	14	6
Cu	Copper	9.2	2.5
F	Fluorine	93	36
Hg	Mercury	0.09	0.06
Li	Lithium	9.4	7.1
Mn	Manganese	38	32
Mo	Molybdenum	8.4	5.7
Ni	Nickel	14	5
P	Phosphorus	87	83
Pb	Lead	24	21
S	Sulfur	2.88%	0.99%
Sn	Tin	0.9	0.7
Th	Thorium	1.5	0.4
U	Uranium	2.2	1.9
V	Vanadium	31	16

Sulfur exists in two forms: organic and pyritic. The organic sulfur content of Illinois coals varies from a minimum of about 0.4% to a maximum of about 5%. Pyritic sulfur varies from nearly zero to as high as 5%.

The average trace and minor elements contained in coal from Illinois mines is reported in the chart (at left). All elements other than sulfur are reported in parts per million tons. Many of these elements are removed in the mine-site cleaning process conducted at virtually all Illinois mines.

The occurrence of ash is irregular and unpredictable for large areas of the individual coal seams. The average ash content of Illinois coals is about 10%, with local variances commonly in the order of 2% to 3%. The composition of mineral matter also varies significantly from place to place and between coal seams. Detailed information on Herrin and Springfield coal seam characteristics may be found in table 9, *Range of Typical Analyses, Herrin Coal and Springfield Coal by Counties.*

A final component buyers use to rate coal is the chlorine content. In the Illinois Coal Basin, surface-mined coal has a lower amount of chlorine than that which is found in deeper underground mines. For coals buried between 0-650 feet beneath the surface, chlorine content averages about 0.1%. Coals between 650-1000 feet deep have chlorine percentage in the rate of 0.2 to 0.5%.[34] A significant portion of total chlorine present in Illinois coal is water soluble.

[34] Chugh, Yoginder P., Southern Illinois University, Best Management Practices to Minimize Sulfate and Chloride Discharges, June 2007. http://www.icci.org/06final/dev05-8chugh.pdf . March 2012

Table 9. Range of Typical Analyses, Herrin Coal and Springfield Coal by Counties (as received)

Counties	Moisture (%)	Volatile Matter	Fixed Carbon (%)	Ash (%)	Sulfur (%)	Calorific Value		Rank Index*	Ash Fusion	
						Btu/lb.	kcal/kg		deg. F	deg. C
Herrin No. 6										
La Salle, Grundy	13-16	36-41	35-40	7-11	3-5	10,500-11,400	5,834-6,334	116-123	1,950-2,150	1,083-1,194
Bureau, Stark, Henry, Knox	6-20	31-35	37-40	8-13	3-5	9,700-10,300	5,389-5,723	111-118	1,900-2,120	1,056-1,178
Peoria, Fulton	15-19	32-35	37-43	8-13	2-4	10,000-10,700	5,556-5,945	111-120		
Sangamon, Macoupin	12-16	35-40	37-41	9-11	3-5	10,400-10,900	5,778-6,056	116-123	1,930-2,160	1,072-1,200
Christian, Montgomery, Bond, Madison	12-14	35-40	38-41	9-11	3-5	10,500-11,000	5,834-6,112	117-125	1,920-2,170	1,067-1,206
Douglas, Vermilion	4-16	32-36	38-41	8-12	1-3	10,400-11,100	5,778-6,167	118-128	2,080-2,220	1,156-1,233
Clinton, St. Clair	10-13	35-40	37-42	9-12	1-4	10,000-10,700	5,556-5,945	121-129	1,920-2,090	1,067-1,161
Marion, Washington, Randolph, Perry	8-12	35-39	38-44	9-13	1-4	10,800-11,300	6,000-6,278	124-133	1,920-2,610	1,067-1,450
Springfield No. 5										
Peoria, Fulton, Tazewell, Schuyler	14-18	33-38	34-40	9-12	2-4	10,100-10,800	5,612-6,000	115-122	1,890-2,270	1,050-1,261
McLean, Logan, Menard, Sangamon	13-17	34-39	35-41	9-12	3-5	10,400-11,000	5,778-6,112	117-125	1,890-2,600	1,050-1,444
Macon, Shelby	12-16	34-39	35-40	8-12	3-4	10,500-11,100	5,834-6,167	119-127		
Edgar	10-12	34-39	35-41	8-10	3-4	10,400-11,000	5,778-6,112			
Randolph, Perry	8-13	35-38	40-44	9-12	4-5	11,000-11,400	6,112-6,334	124-135	2,168-2,174	1,204-1,208
Jackson	8-9	35-36	44-55	1	3-4	11,600-11,800	6,445-6,556	130-135	1,940-2,010	1,078-1,117
Gallatin, Saline, Williamson	5-7	33-38	47-53	2-5	2-5	11,900-12,500	6,612-6,945	132-141	2,040-2,090	1,133-1,161
Gallatin (Eagle Valley)	4-5	34-37	48-52	3-4	3-4	12,400-12,700	6,889-7,056	130-147		

Mining Company Profiles

Alliance Resource Partners (ARLP) is a diversified producer and marketer of coal to major United States utilities and industrial users. Currently the third-largest coal producer in the eastern United States, Alliance has mining operations in the Illinois Basin, Northern Appalachian and Central Appalachian coal producing regions. ARLP also operates a coal loading terminal on the Ohio River at Mount Vernon, IN. Alliance produces a range of steam coals with varying sulfur and heat contents.

ARPL's subsidiary, White County Coal, LLC, has operated the Pattiki Mine near the city of Carmi, in White County Illinois since 1980. The Pattiki complex uses continuous mining units employing room-and-pillar mining techniques to produce high-sulfur coal. The preparation plant has throughput capacity of 1,000 tons of raw coal an hour. Coal from the Pattiki complex is shipped via the CSX and Evansville Western Railway, Inc. (EVW) railroad directly to customers or to various transloading facilities, including the Mt. Vernon transloading facility, for customers capable of receiving barge deliveries. Pattiki has an estimated 59.2 MT of reserves as of Dec. 23, 2011.

Most recently, ARLP committed to acquire and

A DCEO Competitiveness Program grant assisted with an emergency repair on the vertical belt at White County Coal in 2011.

finance development of 200 MT of reserves related to the new White Oak Resources mining complex in Hamilton County. ARLP will lease the reserves back to White Oak in exchange for royalty income. Alliance also will develop the preparation/cleaning plant at the White Oak site. For more information see http://www.arlp.com/.

Arch Coal, Inc., the second-largest U.S. coal producer -- and a western-coal-only mining company in recent years -- made a major move back into the Illinois Basin in 2012 as an active coal-producing enterprise. Along with the company's 49% equity interest in Knight Hawk Coal, which has been producing for many years from Arch coal reserves, St. Louis-based Arch purchased the assets of International Coal Group in 2011, and now operates the highly competitive, low-mining-cost Viper Mine in Sangamon County.

A 42-inch overland conveyor system is being constructed from the new Viper Mine production portal to the coal preparation plant, a distance of approximately five miles.

Viper, the long-time source of coal for Springfield municipal utility City Water, Light & Power, has experienced extensive capital expansion with a new production slope and overland coal haulage conveyor. The mine annually produces 2.0 MT of steam and stoker coal from the Springfield seam for a broad mix of power producers and industrial accounts.

Arch Coal also is currently permitting the Lost Prairie Reserves in Perry County in southern Illinois. The company's 736 MT of coal reserves in Illinois make Arch one of the top investors in the future of the coal industry in the state. For coal specifications see http://www.archcoal.com/aboutus/ourmines.aspx.

Eagle River Coal LLC became a new player in Illinois coal with its opening of the new Eagle No. 1

Mine in May 2011. The new surface mine, located 2 1/2 miles south of Harrisburg, in Saline County, is expected to produce about 750,000 MT annually from the Colchester, Davis and Dekoven seams. The mine has an estimated 10.2 MT in reserves. For more information contact harlis48@hotmail.com.

Foresight Energy Partners LP is a relatively new entrant into the coal business, with its assets, including 3 billion tons of coal reserves, concentrated in Illinois. The arrival of Foresight and owner Chris Cline created a buzz across the industry as the firm moved quickly to invest $1.6 billion in four Illinois mining complexes: Mach Mining (Williamson County, opened in 2006), M-Class (Franklin, 2010), Patton/Deer Run (Montgomery, 2012) and MaRyan/Shay (Macoupin, reopened in 2009).[35] The mines have a combined production capacity of up to 65 MT of high-Btu, high-sulfur coal per year.

In 2011, Foresight mines produced 10.4 MT of coal. The same year, Mach Mining LLC's Mach No. 1 Mine became by far the nation's most productive longwall mine, putting out a fraction over 19 tons per total man-hour, nearly double the rate of its nearest competitor. With one longwall unit, Mach has a potential peak production level of 7 MT per year.

Close on its heels is Sugar Camp Energy, LLC, which began ramping up production at the MC-1 Mine in Franklin County in 2010. Patton Mining, LLC Deer Run Mine in Montgomery County also opened in 2010. In addition to the high-investment longwall Foresight facilities, Foresight bought and renovated the former Monterey Mine in Macoupin County and put it back into production in 2009 as the Shay Mine, owned by Foresight subsidiary MaRyan Mining LLC. Foresight's only room-and-pillar mine, Shay has a targeted full production capacity of 3.0 MT per year, with an estimated mine life of 28 years, utilizing 84.8 MT of recoverable reserves in the of Herrin No. 6 coal seam.

Foresight Reserves' Illinois subsidiaries have access to customers by rail or a combination of rail and barge. The company has developed infrastructure that provides each of its mining complexes with direct or indirect access to all five Class I railroads, giving it unique position to sell into multiple domestic and seaborne markets. For more information see www.foresight.com.

[35] Cassell, Barry. Generation Hub. 3/13/2012. http://generationhub.com/2012/03/13/foresight-energy-plans-ipo-fueled-by-growing-illin?utm_medium=eNL&utm_campaign=GHUB_DAILY&utm_term=Original-Member. March 2012

Knight Hawk Coal Company (KHC) in Jackson, Randolph and Perry counties is a home-grown success story in a mining industry otherwise being consolidated into larger and larger corporate entities. Running as a family-operated partnership, and led by former Arch Coal executive Steve Carter and sons Andrew and Josh, KHC has grown steadily. Starting in 1998 with one surface mine producing 800,000 tons, Knight Hawk today operates six mines that produced 4.2 MT in 2011 from both the Springfield and Herrin coal seams.

KHC is the only coal company in Illinois to use a combination of surface mining, highwall mining and underground room-and-pillar mining.

KHC is the only coal company in Illinois to use a combination of surface mining, highwall mining and underground room-and-pillar mining. Creek Paum Mine is the oldest of KHC's surface mines and has been in operation since 1998. The newest surface mine, Hawkeye, opened in 2011. The mining methods come together at the firm's Prairie Eagle complex, where deep "box cuts" at the Prairie Eagle surface mine allow access to Prairie Eagle Underground and Prairie Eagle South Underground. Highwall mining, using a massive horizontal drill to remove coal, is being utilized for the first time in Illinois, also at Prairie Eagle.

KHC's growth plans include two new surface mines, Golden Eagle and Mary's River. All coal from KHC is sent through the preparation/cleaning plant before being transported. Somewhat unique distribution facilities allow KHC to reach a very large market base, and the company has staked a good part of its reputation on its ability to fit certain market niches through blending of coal from various production sources to meet buyers' sulfur or Btu specifications. KHC's mine-to-market system includes trucks, Carbondale Rail Loadout,

served by Canadian National, and Lone Eagle Dock at Chester on the Mississippi River. In 2012, Knight Hawk will generate nearly 5 MT of coal and sell to 40 customers in the U.S. and abroad. For more information see www.knighthawkcoal.com.

Peabody Energy, the world's largest coal producer, also is the largest producer in the Midwest, shipping about 30 MT of coal annually from Illinois and Indiana mines to electricity generators and industrial customers throughout the Midwest. The mines are a cornerstone of economic development in southern Illinois, representing the largest capital investments, paying the highest wages and creating the most secondary economic activity of an economic sector. The mines include the underground Gateway Mine in Randolph County, the surface Cottage Grove Mine and the underground Wildcat Hills Mine and the underground Willow Lake Mine in Gallatin and Saline counties.

The Willow Lake Preparation Plant has the capability to blend or segregate according to coal quality. The Wildcat Hills Mine uses a fine coal screening plant to reduce the amount of fines in certain products. The resulting fines are added back to the agent used in the blasting phase of surface mining, to augment the blast energy and reduce the overall blasting cost. Coal is shipped by truck to customers or by truck or rail to docks on the Ohio and Mississippi rivers, where it is loaded onto barges.

Peabody also was the catalyst for developing one of the newest and most efficient coal-fired power plants in the nation -- the Prairie State Energy Campus in Washington County (photo at left). The company's 800 megawatt (MW) Unit 1 was put into full

Prairie State Energy Campus employed approximately 4,000 workers at peak construction.

commercial operation in early June 2012, with the second unit set to go on line in late 2012. Both units will be fueled with coal coming from across the road, where the Lively Grove Mine has an estimated life of 30 years, 200 MT of coal reserves from the No.6 seam, and will output an estimated 6.7 MT of coal annually. For more information see http://peabodyenergy.com.

Springfield Coal Company, an employee-led successor to Illinois coal mainstay Freeman-United Coal, continues to operate the Crown III underground room-and-pillar mine in Macoupin County and the North Grindstone surface mine in Schuyler County. Both have been in production since 1981. Both mines ship coal to commercial customers by truck and rail. Crown III, operated by Tri-County Coal, a contractor, has approximately 10 years of reserves left. For more information contact jrobertson@Springfieldcoal.com.

The American Coal Company Galatia Complex, in operation since 1982 in Saline County, continues to hold its place as the largest mining complex in Illinois. It consists of two underground coal mines, New Era Mine and the New Future Mine. New Era uses a longwall unit to mine coal from the No. 6 seam. New Future continues to take coal from the No. 5 seam via longwall. Coal at the Galatia Complex has lower sulfur content than much of the coal in Illinois. Coal is shipped by truck, the Canadian National Railway and by barge from terminals on the Ohio and Mississippi Rivers. For more information see http://www.ohiovalleycoal.com/map.shtml.

Vigo Coal Company owns the Friendsville Mine in Wabash County, Illinois. All of the coal travels via Norfolk Southern to the Alcoa-Warrick Plant in nearby Evansville, IN., where it accounts for about 40% of the smelting coal used by Alcoa. For more information see http://vigocoal.com.

White Oak Resources, LLC began construction in 2011 on its White Oak No. 1 Mine in Hamilton County, where the company is making a total capital investment of $400 million. Full production capacity for cleaned coal at White Oak No. 1 is 6.5 MT per year. The mine has an estimated reserve of 1.1 billion recoverable tons of Herrin No. 6 seam coal. The reserves underlie most of Hamilton County. The mine will ship coal to its customers via the CSX Railroad. White Oak is expected to have 350 employees when it reaches full production in 2014. Primary targeted markets are the southeastern United States and international coal buyers. For more information see http://whiteoakresources.com.

Illinois Coal Sales & Marketing Contacts

Sales/Marketing Contact	Controlling Company/Operating Company (if different)/Mine Name(s)	Transportation Options
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Mr. Andrew Carter, Vice President/Sales **Knight Hawk Coal LLC** **500 Cutler-Trico Road** **Percy, IL 62272** **Phone: 618-426-3662, ext 249** **Email: andrewcarter@knighthawkcoal.com** **URL: http://www.knighthawkcoal.com/**	Knight Hawk Coal LLC/Creek Paum Knight Hawk Coal LLC /Prairie Eagle - Surface, UG, South Knight Hawk Coal LLC /Red Hawk Knight Hawk Coal LLC /Hawkeye	Rail: Canadian National Truck to Barge
Mr. Ed Lane, Sales Manager **Murray Energy Corporation** **101 Prosperous Place, Suite 125** **Lexington, KY 40509** **Phone: 859-543-9220** **Email: elane@coalsource.com** **URL: http://murrayenergy.com**	Murray Energy Corp./American Coal Company/New Era Murray Energy Corp./American Coal Company/New Future	Rail: Canadian National
Mr. Scott Mayer, Director of Transportation **Peabody CoalSALES LLC** **7100 Eagle Crest Blvd.** **Evansville, IN 47715** **Phone: 812-434-8568** **Email: smayer@peabodyenergy.com** **URL: http://www.peabodyenergy.com**	Peabody Energy/Peabody Midwest Mining/Gateway Peabody Energy/Peabody Midwest Mining /Willow Lake Peabody Energy/Peabody Midwest Mining /Wildcat Hills UG Peabody Energy/Peabody Midwest Mining /Wildcat Hills Peabody Energy/Peabody Midwest Mining /Cottage Grove	Rail: Union Pacific Truck to Barge Truck to Barge
Mr. Tony Rowser, Director of Sales & Marketing **Foresight Management** **Mobile: 219-670-4236** **Email: trowser@clineres.com**	Williamson Energy LLC/Mach Mining LLC/Mach No.1 Macoupin Energy LLC/MaRyan Mining LLC/Shay No. 1 Sugar Camp Energy LLC/M-Class Mining LLC/MC No.1 Hillsboro Energy LLC/Patton Mining LLC/Deer Run	Rail: Canadian National Rail: Union Pacific, Norfolk So. Rail: Canadian National Rail: Union Pacific, Norfolk So.

Ms. Jennifer Robertson, Customer Service Manager **Springfield Coal Company/Sales** **3008 Happy Landing Dr.** **Springfield, IL 62711** **Phone: 217-793-7443** **Email: jrobertson@Springfieldcoal.com**	Tri-County Coal LLC/Crown III Black Nugget LLC/North Grindstone	Rail: Canadian National Truck
Mr. John Harman, President of Operations **Vigo Coal Company, Inc.** **528 Main Street, Suite 202** **Evansville, IN 47708** **Phone: 812-759-8446** **Email: info@vigocoal.com** **URL: http://vigocoal.com**	Friendsville Mining LLC/Friendsville	Rail: Norfolk Southern
Mr. Jim Plaisted, General Manager/Sales **White County Coal LLC** **771 Corporate Dr. Suite 800** **Lexington, KY 40503** **Phone: 859-685-6362** **Fax: 859-885-6364** **Email: jimplaisted@arlp.com** **http://www.arlp.com/operations/il_pattiki.htm**	Alliance Resource Partners LLC/White County Coal LLC/Pattiki	Rail: Evansville Western
Mr. Scott Spears, Chief Executive Officer **White Oak Resources LLC** **121 S. Jackson Street** **P.O. Box 339** **McLeansboro, IL 62859** **Phone: 618-643-5500** **Fax: 618-643-5516** **Email: sspears@whiteoakresources.com** **URL: http://www.whiteoakresources.com/**	White Oak Resources LLC (opening 2014)	Rail: CSX
Joe Pearson, President **Eagle River Coal LLC** **29 West Raymond Street** **Harrisburg, IL 62946** **harlis48@hotmail.com**	Eagle River Coal (open 2014)	Truck to Barge

OCD: A Partner in Progress

DCEO's Office of Coal Development is dedicated to the enhanced development and use of Illinois' extensive coal resources. Coal grant programs administered by OCD have leveraged more than $3 billion in private investments in Illinois. Coal grant projects have been used to improve coal-related infrastructure and to fund coal research, as well as to develop and demonstrate new technologies that use coal cleanly and efficiently. Taken together, these projects have provided jobs for thousands of construction workers, created hundreds of coal mining jobs and increased economic activity in many areas of Illinois.

New Illinois Law Supports Carbon Management

Illinois took a big step toward managing CO_2 emissions in 2011 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 (ICC) for issuance of a certificate of authority for the construction and operation of CO_2 pipelines. These pipelines provide options for companies to ship CO_2 to storage facilities or sites where the greenhouse gasses can be used to produce crude oil from otherwise played out U.S. oilfields. Some of these so-called “enhanced oil recovery” options include storage of CO_2 at little or no cost.

Program Investments and Private Dollars Leveraged

DCEO program	Dollars spent thru FY2011 (in millions)	Dollars leveraged thru FY2011 (in millions)
Coal Research & Development	$75.4	$186.6
Coal Competitiveness	$181.8	$2,067.3
Coal Technology Demonstration	$151.3	$756.5

In practice, PA97-0534 amends the Illinois Gas Pipeline Safety Act to include the transportation of carbon dioxide. The Act empowers 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 the proposed Chicago site for a coal-to-synthesis natural gas plant as a “clean coal SNG brownfield facility.” Provisions also were added concerning long-term sourcing agreements for offtake of the plant's product.

The Illinois Public Utilities Act was amended, as well, to align the definitions of clean coal facility, clean coal SNG facility, sequester, SNG facility, substitute natural gas or SNG with those in the Illinois Power Agency Act. New language was included to define adjusted final capitalized plant cost, final capitalized plant cost and total capitalized asset cost, 220 ILCS 5/3-124, ...125, ...126 respectively.

Coal Education Highlights

The Office of Coal Development coordinates several activities annually as part of its mission to raise public awareness about the importance of coal and the issues surrounding it. An important component are programs, such as those discussed below, that are directed toward school-age children.

The annual Coal Art and Essay Contest Awards Program brings forth creative work by hundreds of students from throughout Illinois. The 25 winners from grades 5-8 arrive with relatives and teachers to be recognized for their artistic ability and enthusiasm for one of Illinois' natural resources at an awards reception at the Executive Mansion. Publishing the winning posters and essays in a Coal Calendar is the first time their work has been selected for professional publication—but in some cases probably not the last.

The posters and essays demonstrate the students' creativity and originality in demonstrating their understanding of the importance of the coal mining industry in Illinois. Topics include comparing and contrasting mining processes in the 1900s to those of today; describing a recent environmental rule for power plants and the emissions it seeks to remove; telling how coal mining has played a role in the family or local community; profiling one of the industry's important present or historical figures or events; describing job opportunities and careers in the Illinois coal industry and related fields, or describing how mine safety laws

and regulations have improved mining conditions and coal miner safety.

The annual Teachers Coal Education Conference is of equal significance in meeting OCD's obligation to provide fact-based information about Illinois' coal resources. The four-day event provides first-hand information to enrich the classroom teacher's knowledge of the factual and scientific basis behind what is a sometimes-controversial topic. Presenters are top professionals in their respective fields. These include coal producers, coal mining engineers, geologists, mine safety inspectors, staff from the Office of Mines & Minerals Mine Reclamation, Mine Permitting and the Environmental Protection sections, power plant engineers, coal researchers, and instructors from the coal miner training programs at Rend Lake College and Illinois Eastern Community Colleges. Their presentations cover mining processes, cleaner coal technology, miner safety, the uses of coal, careers in mining, mine economics, geology, coal formation and the history of mining. Teacher-leaders share lessons and activities that address the Illinois State Learning Standards for the educators to incorporate into their classroom curriculum.

Attendees tour an underground coal mine, a surface coal mine and a coal-fueled power plant. The agenda is full, but there is time for the teachers to ask questions and talk with the professionals to gain a better understanding of the industry. Each year, the conference welcomes educators from across the state, as well as educational staff from the Chicago Museum of Science and Industry.

Teachers evaluating the Coal Education Conference in 2011 provided 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."

In addition to the above activities, DCEO staff regularly provides statistics and information to policymakers, economic developers and citizens seeking to learn facts about Illinois coal and the industries it supports. OCD also helps distribute the 2011 version of the Illinois Coal Industry Map, prepared in conjunction with the Illinois State Geological Survey. Electronic and printed resources are also available by contacting OCD at 500 East Monroe, Springfield, Illinois 62701-1643 or www.illinoiscoal.biz.

Looking Ahead

In today's world, a meaningful state coal development program must do more than simply support coal production and affiliated businesses. It must help develop the best and safest mining practices. It must support training programs that guarantee coal producers access to reliable and productive workers. It must foster greater public awareness of the economic importance of coal to Illinois. It must take the lead in facilitating the expansion of sales of Illinois coal in global markets. Finally, and perhaps most importantly, it must be a driving force in modernizing the fleet of energy facilities that use coal as a feedstock – seeking to replace older, inefficient, high-emissions plants with facilities equipped with the best of cleaner coal technologies.

With the challenges outlined above DCEO has taken steps to sharpen its focus. Some projects underway include:

- University of Illinois-Springfield economists are preparing an updated, independent analysis on the economic impact of the Illinois coal industry.
- A consulting firm, Energy Ventures Analysts has been retained to advise coal producers/shippers, OCD and the Illinois Trade Office on policies and investments to enhance the value of Illinois-mined coal in international markets. These reports will be available in early fall 2012.
- University of Illinois-Urbana educators have launched an independent education program evaluation and will recommend enhancements and updates to the curriculum offered to teachers, as well as other useful public awareness activities. The effort is being led by the U of I's Advanced Energy Technology Initiative and Illinois Science, Technology, Engineering and Mathematics Initiative.

Illinois looks forward with guarded optimism to further enhancing the use of its coal resources – at a rate of growth well above that of the Illinois economy as a whole. Coal industry success will mean more jobs, more private-sector investment and more export trade. It will mean safer working environments and a reduced imprint on the environment.

Market breakthroughs have come not only in the quantity of coal mined, but also in diversity of customer base. Illinois producers, for example, are selling nearly 3 times more tonnage to international buyers than in 2009. Meanwhile, in domestic markets, Illinois coal is being blended into, or has displaced entirely, coal previously mined in Central Appalachia. The reason is two-fold: a lower price structure for Illinois Basin coal, coupled with eastern U.S. markets, from Ohio to Florida, now having a power fleet where new emissions controls such as “scrubbers” are in place, removing decades-long barriers for producers of higher-sulfur fuels like Illinois coal.

There continue to be unknowns, however, in terms of the scale of growth. With regulators poised to act on greenhouse gas reduction policy, and political opponents dug in against coal expansion in any form, there are challenges in telling the new story of Illinois coal. In addition to curbs on CO_2 emissions, other new environmental regulations have resulted in older, less efficient coal plants being shut down, in Illinois and elsewhere. In fact, how Illinois moves forward will be a model for other states where decision-makers must make tough decisions about what types of power-generation facilities are built to meet future energy needs.

One hope, still alive as this report goes to press, is that up to $3 billion worth of next-generation coal-to-power and coal-to-natural gas (SNG) facilities will be built in Illinois. The state remains the host site for a revised $1.3 billion FutureGen 2.0 oxy-combustion project that will retrofit a western Illinois power station with near-zero emissions technology involving carbon capture and sequestration (CCS) of more than 90% of the facility’s CO_2 output.

FutureGen is the capstone of efforts, led by the Office of Coal Development, in which Illinois has pursued a public policy of fostering deployment of coal gasification facilities. Gasification and related technologies are the needed linkage to the future of coal in what is likely to be a carbon-constrained world. Illinois also should benefit substantially from its early-in-the-game investments in the Decatur-ADM CO_2 injection project and the proposed development of the Denbury Resources Midwest CO_2 Pipeline.

Industry-watchers have observed that any coal state in the nation would be gratified to have any one of the above projects on the drawing board. But we have been given world-class resources; thus, it is our clear mission and public duty to use our resources as wisely and effectively as we know how.

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