



STATE OF ILLINOIS

# FY2012 Annual Report

## Office of Coal Development

### Special points of interest:

- Coal grant programs leveraged \$5.20 for every \$1.00 issued.
- Exports fueled increase in coal production & employment
- Illinois has the first large scale demonstration of carbon sequestration in the U.S.
- Local manufacturers expand to meet coal industry needs.

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### OCD, leveraging private dollars and creating jobs in FY2012

DCEO Office of Coal Development (OCD) grant programs are doing the job they were intended to do:

- Leverage private investment in mine infrastructure
- Improve miner safety
- Advocate the use of cleaner coal technologies to comply with environmental regulations,
- Identify new domestic and international markets for IL coal
- Improve coal extraction, preparation and transportation systems, and
- Conduct education and awareness campaigns

To this end we are proud to provide this annual update and accounting of the funds and activities of OCD.

OCD has three grant programs that leverage private investment to advance the

research, development and demonstration of cleaner coal technologies and improve the safety and efficiency of the Illinois coal industry. For every \$1 in state funds, the programs leveraged \$5.2 in private investment.

In FY2012 Coal Competitiveness Program grants provided \$9.1 million towards the costs associated with new ventilation fans, longwall shields and power centers, business expansion at two manufacturing companies, a feasibility study for new coal-powered electricity generation in east central IL, rail upgrade to service coal exports and replacement of a mine conveyor belt. In all, the projects leveraged \$83.1 million in private investment and created 182 new jobs right here in Illinois.

Coal Demonstration Program  
*(Continued on page 2)*

### Input / Output \$1 / \$5.20

#### Coal Competitiveness Program State Input

\$9.1 million in grant funds

#### Private Output

13 projects  
\$83.1 million in private investment in Illinois coal industry  
182 new jobs

#### Coal Demonstration Program State Input

\$16.1 million in bond funds

#### Private Output

6 projects  
\$39.3 million in private investment in the demonstration of cleaner coal technology for emission reductions  
20 construction jobs created

#### Coal R&D Program State Input

\$2.7 million in grant funds

#### Private Output

15 projects  
\$2.7 million in private investment  
82 research publications

### FY2012 Illinois Coal Facts

- 14.1% increase in coal production
- Coal mines employed 3,941 persons.
- The average mining salary was \$76,371.
- Mines were located in 14 counties.
- The average open market sales price was \$46.81 per short ton.
- 70% of the coal was used by electric utilities.
- 14% of the coal was used by industrial and institutional consumers for steam production.
- 64% of the coal produced was sold to out-of-state utilities.
- Southern Illinois Power Cooperative, Archer Daniels Midland, and Springfield City Water, Light and Power used 4.7 million tons of Illinois coal.



Installing Wire-line logs Morgan County

## FutureGen 2.0 project advances

FutureGen 2.0, initiated in October 2010 by the U.S. Department of Energy (USDOE), can be divided into two distinct, but related projects.

The Power Plant Project involves the retrofit and re-powering of a fossil-fueled power plant in Meredosia with an advanced oxygen-combustion technology.

This technology is designed for 98% CO<sub>2</sub> capture during steady-state operations, and will reduce SO<sub>x</sub>, NO<sub>x</sub>, mer-

cury and particulate emissions to levels well below applicable regulatory requirements. The USDOE has committed \$590 million to this portion of the project.

The CO<sub>2</sub> Pipeline and Storage Project will transport more than 1 million metric tons of CO<sub>2</sub> in a newly constructed pipeline to the storage facility in Morgan County, a distance of about 30 miles. The USDOE has committed \$459 million to this project.

Both the power and pipeline projects are currently in the planning, permitting and design phase. Project construction is anticipated to begin in early 2014, with commercial operations commencing in mid-2017.

At the peak of construction, 700-1000 jobs are estimated to be created. The power plant and pipeline are expected to create 100 to 125 full-time on-site jobs.

**“The three studies will be available in 2013.”**

## Public awareness & coal education updates

In today’s fast-paced, ever-changing world, the transfer of knowledge can take place almost instantaneously. The coal office is changing with the times, albeit methodically with the make-over of the DCEO web site.

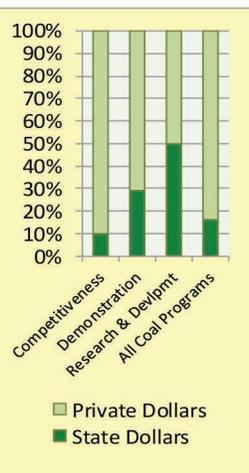
The final reports of all coal research and development projects are accessible in a database on the Illinois Clean Coal Institute web site at [www.icci.org](http://www.icci.org). Results can

be searched by title/abstract, principal investigator, institution or funding year. A link will be available on the new DCEO web site also.

The coal curriculum for grades K-12 is undergoing an extensive study by AETI and I-STEM at the University of Illinois-Urbana Champaign. Recommendations of the study will be included in the design of the new curriculum.

A study by Energy Ventures Analysis Inc., *Realizing Illinois’ Coal Export Potential*, is providing a detailed study of the Illinois coal export market.

The University of Illinois-Springfield is performing a study on the economic impact of the Illinois coal industry on the State. The three studies will be available in the late spring of 2013.



## OCD, leveraging private dollars and creating jobs in 2012

(Continued from page 1)

grants of \$16.1 million advancing the use of Morphysorb solvent and Selexol solvent for carbon capture in IGCC plants, increasing SO<sub>2</sub> removal efficiency at Dallman Unit 33, improving automatic combustion control systems for coal boiler operation, and improving electricity generating efficiency at SIPC through the installation of variable frequency drives

to reduce internal power usage of fan motors. The projects leveraged \$39.3 million in private investment.

The Research & Development Program awarded \$2.7 million to complete 18 projects at research institutions and universities in Illinois. The projects included developing stable mining geometries for longwall mining that improve mine safety and operational efficiency, using

dry separation technology to reduce water usage, advancing the development of carbon nanotubes as Fisher-Tropsch catalysts, and evaluating risk assessment models to determine the potential of Illinois coal for sequestering CO<sub>2</sub>.

Research results were published in 82 publications and presented at national and international conferences.

## New coal mines prompt manufacturers expansion

As new Illinois coal mines began ordering specialized mining equipment, two local manufacturing companies grasped an opportunity for expansion. The projects were partially financed with grants from the Illinois Coal Competitiveness Program.

**Magnum Steel Works, Inc.** of Mt. Vernon, the manufacturer of underground mining equipment, received a \$1 million grant to expand the existing plant to allow for increased productivity. The \$14.8 million expansion will

allow the plant to quadruple manufacturing and sales within four years. The project is a huge boost to the community. Employment will increase from 32 jobs to 152 full-time jobs while increasing payroll from \$960,000 to \$4.72 million.

**Southern Illinois Mine Equipment, LLC (SIME)** of West Frankfort is one of two companies in the country that retrofits heavy and light duty trucks to meet Mine Safety & Health Administration permissibility certifica-

tion necessary for use in underground coal mines.

SIME uses innovation and newly applied technology to retrofit trucks, jeeps and 4x4s into service and fuel vehicles, man-trips, parts and maintenance trucks, and ambulances for transportation underground.

SIME received a \$482,324 grant in a \$4.8 million expansion of its business. SIME is adding 20 full-time employees.



*SIME received orders for more than 90 trucks, 120 jeeps and 15 Polaris 4x4s to be retrofitted with MSHA approved equipment.*

## Coal technology research advances carbon dioxide capture

A project at the University of Illinois at Urbana-Champaign assessed the potential for carbon dioxide capture and storage by chemical reactions. The CO<sub>2</sub> would become incorporated into new, extremely stable, inorganic or organic products.

Condensed tannins, materials found in many seeds and barks, showed a high degree of uptake of CO<sub>2</sub>.

A project at Alstom Power

investigated oxy-combustion for CO<sub>2</sub> capture from coal-fueled power plants. The basic concept of the process is to replace combustion air with a mixture of oxygen and recycled flue gas, thereby creating a high CO<sub>2</sub> content in the flue gas stream that can be more simply processed for sequestration or sold as a high purity, salable byproduct.

The technology can be ap-

plied to both new and existing plants.

Partners in a carbon capture and storage demonstration project at Archer Daniels Midland Decatur achieved a milestone in the injection of captured CO<sub>2</sub> into the Mt. Simon Sandstone. The project is the first large-scale demonstration for carbon sequestration in the U.S.

*“The project is the first large-scale demonstration for carbon sequestration in the U.S.”*

## Coal technology project reducing water usage in coal prep

The current practice of wet coal cleaning, although highly efficient, poses economical and environmental challenges to coal operators. FGX technology provides a coal preparation method that does not involve water and the associated water treatment processes.

In a previous study by Dr. Manoj K. Mohanty at Southern Illinois University Carbondale, the FGX dry separa-

tor was shown to successfully clean coarse, larger than 1/4 inch, coal at a much lower cost in comparison to wet cleaning methods.

Building on these findings, the Illinois Clean Coal Institute provided \$124,956 to Southern Illinois University Carbondale for a Phase 2 evaluation of the FGX dry separation technology for use on both coarse and fine, less than 1/4 inch, coal.

The SIU researchers designed and tested a deck and air flow system to obtain optimal performance.

Data from this and the Phase 1 project were instrumental in helping an Illinois coal mining company with selection of the FGX technology for their coal preparation needs. The completely dry process is environmentally friendly and cost effective.



*Visiting commercial FGX installation at Eagle River Mine in southern Illinois.*

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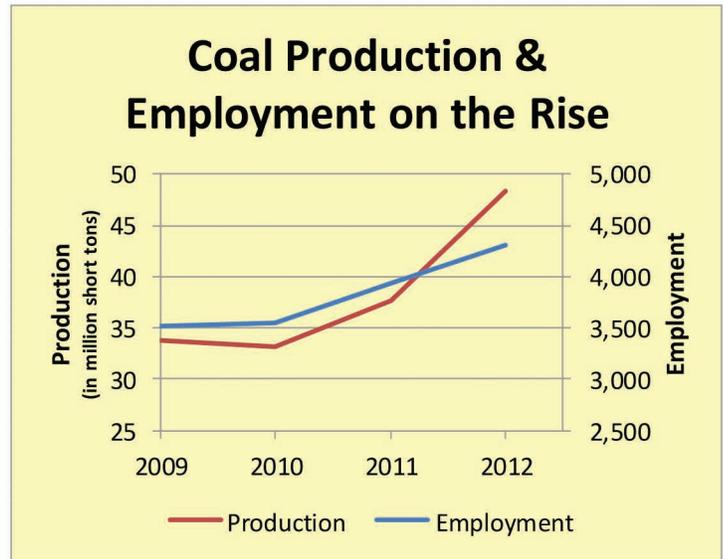
Illinois coal: jobs at home, fuel abroad

Illinois coal production increased 14% between July 2, 2011 and June 30, 2012. The increase was a direct result of the opening of six new mines employing 800 persons.

Exports of Illinois coal also rose substantially in 2011 and 2012. The primary reasons for the increases were the growth in the global steam coal market, the marketing efforts by coal producers and traders, the increased acceptance of Illinois-quality coal, and, most importantly, the competitiveness of Illinois coals versus alternative sources available in the global market.

Illinois coal was shipped to Canada, Mexico, Chile, Europe, India, South Korea and China in fiscal year 2012.

Coal Production & Employment on the Rise



Illinois coal was transported to 18 countries in FY2012



Map shows destinations. Lines not intended to show routes.