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Carbon Capture and Storage Initiative Aims to Bring Technologies to Market Faster

Led by NETL, National Laboratories, Universities, Industry Begin Research Washington, D.C. — The Office of Fossil Energy's National Energy Technology Laboratory (NETL) has begun research under the Carbon Capture Simulation Initiative (CCSI), partnering with other national laboratories, universities, and industry to develop state-of-the-art computational modeling and simulation tools to accelerate commercialization of carbon capture and storage (CCS) technologies.

CCSI is one of three areas of research under the Carbon Capture and Storage Simulation Initiative announced late last year by Energy Secretary Steven Chu. The others involve developing validation data and experimental work, and developing methodology and simulation tools to assess risk. Work in all three areas will be aided by a new Simulation-Based Engineering User Center that NETL is

creating in a separate but related effort.

CCSI will utilize a software infrastructure to accelerate the development and deployment cycle for bringing new, cost-effective CCS technologies to market in several important ways:

- Promising concepts will be more quickly identified through rapid computational screening of devices and processes.
- The time and expense to design and troubleshoot new devices and processes will be reduced through science-based optimal designs.
- The technical risk in taking technology from laboratory-scale to commercial-scale will be more accurately quantified.
- Deployment costs will be quantified more quickly by replacing some of the physical operational tests with virtual power plant simulations.

CCS is a key component in national efforts to curb climate change. The process involves capturing carbon dioxide (CO₂) from large point sources, such as power plants and industrial facilities, and stor-



ing it in ways that prevent the greenhouse gas from entering the atmosphere.

The U.S. Department of Energy (DOE) has initiated a number of programs to promote CCS, including the Carbon Capture and Storage Simulation Initiative and the CCSI.

While the ultimate goal of the CCSI is to deliver a set of tools that can simulate scale-up of a broad suite of new carbon cap-

ture technologies, from laboratory to commercial scale, the first 5 years of the project will focus on developing capabilities applicable to oxy-combustion and post-combustion capture by solid sorbents and advanced solvents. Among possible carbon capture technologies, these are expected to have the most immediate impact on U.S. pulverized coal power plants, which currently generate nearly half of the nation's electricity and are expected to emit 95 percent of U.S. coal-based CO₂ emissions between 2010 and 2030.

The CCSI is led by NETL and leverages the core strengths of DOE's national laboratories in modeling and simulation. The project brings together the best capabilities at NETL, Los Alamos National Laboratory,

Lawrence Berkeley National Laboratory, Lawrence Livermore National Laboratory, and Pacific Northwest National Laboratory.

The CCSI's industrial partners represent the power generation industry and power equipment manufacturers. The initial industrial partners are ADA Environmental Solutions, Alstom Power, Ameren, Babcock Power, Babcock & Wilcox, Chevron, EPRI, Eastman, Fluor, General Electric, Ramgen Power Systems, and Southern Company. The CCSI's academic participants—Carnegie Mellon University, the University of Pittsburgh, Virginia Tech, Penn State University, Princeton University, and West Virginia University—bring unparalleled expertise in multi-phase flow reactors, combustion, process synthesis and optimization, planning and scheduling, and process control techniques for energy processes. *cl*

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Coal Leader GUEST Editorials

European Union Commission's 2050 Low-Carbon Roadmap

Dear Editor:

The EU Commission's 2050 low-carbon roadmap released recently needs to raise Europe's sights beyond its current 2020 emission reduction targets. While the EU has agreed that emissions must be reduced by at least 80% by the middle of the century, it has not so far set out how to do it. We believe it's vital such a plan starts now rather than in forty years' time, and is a plan that can stimulate the right investment in low-carbon infrastructure and technology, putting Europe on track for a low-carbon fu-

ture.

Now is the right time to discuss the most cost-effective route to achieving our 2050 goals, maximizing growth, jobs and prosperity throughout Europe. We are not starting from scratch; the EU has already cut emissions by 17% from 1990 levels by 2009.

The Commission's roadmap demonstrates both that the current 20% target is not a cost-effective route to the 2050 goal, and that we already have the tools and policies to cut emissions by 25% domestically. The European Energy Effi-

ciency Plan in particular is welcome and shows the big impact reducing energy consumption can have. The case to move to a 30% target by 2020 is now stronger as a result.

At a time when the price of oil is soaring, putting in place an ambitious plan for Europe's low-carbon future has wider benefits than tackling climate change. It will increase the continent's resilience against oil price spikes and reduce its dependence on imported energy. And it will help Europe compete with emerging economies in the fast-growing markets for

green goods and services.

We know that some industries are worried about how they will adapt, but solutions are available. In the best traditions of European cooperation, we can work together to overcome these challenges. We call on all member states to enter into this urgent debate on Europe's future and agree how the roadmap is put into action – ensuring that Europe gets to the front of this low-carbon race, rather than falling behind.

Signed by
• Chris Huhne, Secretary of State for Energy and

Climate Change, UK
• Tina Birbili, Minister of Environment, Energy and Climate Change, Greece
• Andreas Carlgren, Minister for the Environment, Sweden
• Lykke Friis, Minister of Climate and Energy, Denmark
• Rosa Aguilar Rivero, Minister for Environment, Rural and Marine Affairs, Spain
• Humberto D. Rosa, Secretary of State for Environment, Portugal
• Dr Norbert Röttgen, Federal Minister for the Environment, Nature Conservation and Nuclear Safety, Germany *cl*

Rein in the EPA's Carbon Rules

From The Detroit News:

Congress, not an administrative agency, should be accountable for greenhouse gas regulations

The Environmental Protection Agency is claiming authority to regulate carbon emissions. If it is allowed to proceed, it will begin to impose regulations similar to those rejected last year by a

Democratic-controlled Congress, which couldn't muster the votes to support a cap-and-trade carbon regulation plan. The Senate is poised to limit the EPA's authority to impose the costly regulations and should do so.

The EPA has made a finding that greenhouse gases, including carbon dioxide, pose a threat or potential threat to human

health and can be regulated as pollutants. Carbon dioxide, of course, is a key element of the Earth's atmosphere. The EPA's finding is a drastic expansion of its power under the federal Clean Air Act.

Senate Minority Leader Mitch McConnell, R-Kentucky, has introduced amendments to a federal small business act that would rein in the power the EPA has claimed for itself, preserving the power of Congress to impose such regulations rather than have them promulgated by executive branch fiat. A committee of the House has already adopted similar legislation.

Sen. Jay Rockefeller, a West Virginia Democrat, has a competing amendment that would postpone the regulations for two years, while Sen. Max Baucus, D-Montana, has offered an amendment that allows the EPA to move ahead with its car-

bon regulations, but carves out limits and exemptions for small business and agriculture. All of the amendments could come up for a vote as early as today.

The Baucus Amendment is a device to give senators cover to delegate their authority to the EPA without having to accept the responsibility for the economic damage the EPA's regulations may well cause. The EPA announced in December that it would announce preliminary emissions standards for power plants this July and oil refineries in December.

It is estimated that electric utilities will have to install more scrubbers for their coal-fired plants and, the Wall Street Journal projects, ultimately will have to replace about a fifth of the nation's coal plants with natural gas burning operations, which will drive up both the cost

of natural gas and electricity.

If this is to be part of the nation's energy policy, the costs and burdens on the economy should be determined by legislation, not by regulation.

The Senate ought to adopt the McConnell amendment. Congress should be accountable for the outlines of any carbon regulation regime. Failing that, the Senate should adopt the Rockefeller amendment, which at least gives opponents time to pursue the court challenges and administrative responses to the EPA that are already under way, as well as allow Congress to review the regulations. Adopting the Baucus amendment amounts to a punt on the issue — seeming to do something but in reality simply shrugging it off. More should be expected of U.S. senators than that. *cl*

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AEP Seeks To Withdraw Applications For PATH Project

American Electric Power (NYSE: AEP) recently announced it will file, along with FirstEnergy Corp., to withdraw the applications for state regulatory approval of the Potomac-Appalachian Transmission Highline (PATH) project following an announcement by regional grid operator PJM Interconnection that the project has been suspended.

PATH is a joint venture between AEP and the former Greensburg, Pa.-based Allegheny Energy to build a 765-kilovolt, 275-mile transmission project from Putnam County, W.Va., to Frederick County, Md. Allegheny merged with Akron-based FirstEnergy Feb. 25.

Filings in Virginia, Maryland and West Virginia are in response to a directive by regional grid operator PJM Intercon-

nection to suspend further development of the PATH project while PJM conducts a more rigorous analysis of the potential need for PATH as part of its continuing Regional Transmission Expansion Plan. PJM directed the construction of PATH in 2007 to resolve violations of national and local standards for reliable operation of the region's transmission system. Since then, annual studies reaffirmed the need for PATH as the recommended solution for resolving these issues. However, PJM's latest analyses indicate that the need for the project has moved well into the future.

"While we are certainly disappointed by the suspension of PATH and the uncertainties created by the PJM planning process, we do support a



Mike Morris

thorough and detailed analysis of the need for the project. We remain convinced that the project will be needed and plan to move forward with it when PJM completes its review," said Michael G. Morris, AEP chairman and chief executive officer.

PJM has indicated that it will undertake an evaluation of its planning methods through a stakeholder process. This

process will evaluate the criteria used to determine the need for transmission projects under its Regional Transmission Expansion Plan, and determine whether the need for PATH should be re-evaluated in light of any approved revisions to its planning process.

Once this process is complete, PJM will reassess the need for transmission expansion in the region. Until then, the PATH companies will immediately suspend most activities on the project except for those that may be necessary to return the project to active status at the conclusion of PJM's planning process review.

"We are pleased that PJM is evaluating its overall planning process, and we hope that evaluation allows a longer-term view for transmission expansion. In the meantime,

we'll move forward with our other transmission investments including the ETT projects in Texas, our Transco projects within our service territory, and the Prairie Wind project in Kansas that recently received the go ahead from the Southwest Power Pool," Morris said.

AEP is one of the largest electric utilities in the United States, delivering electricity to more than 5 million customers in 11 states. AEP ranks among the nation's largest generators of electricity, owning nearly 38,000 megawatts of generating capacity in the U.S. AEP also owns the nation's largest electricity transmission system, a nearly 39,000-mile network that includes more 765-kilovolt extra-high voltage transmission lines than all other U.S. transmission systems combined. *cl*



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Coal Leader Coal Industry News

Alpha Natural Resources Announces Plans to Establish Two New International Sales and Development Offices

The seaborne markets for both metallurgical and thermal coal appear to be in growth mode for the foreseeable future. With Indian/Asian projected infrastructure improvements requiring additional steel production/usage and increased residential/manufacturing demand requiring more electricity production, these new global requirements for coal are expected to create expanded opportunities for coal producers.

To better prepare to meet the anticipated increased global demand in the long term, Alpha plans to establish two international sales and development offices: one in Sydney, Australia and one in New Delhi, India.

Each office will be focused on increasing Alpha's sales of coal to high growth markets through our existing export platform, as well as unique optimization opportunities. Both offices will also serve to further develop and enhance trading opportunities, market intelligence and strategic relationships in the Asian markets.

Brian D. Sullivan, who most recently was senior vice president and general counsel for the United Company in Bristol, VA, will lead the Australian office. Brian was a key member of the lead-

ership team at United and oversaw the acquisition and divestiture of operating coal assets for the company. Suresh Iyer, most recently vice president of enterprise risk management at Alpha, will lead the Indian office. In previous positions, Suresh has had responsibility for buying, selling and trading coal for domestic and international markets.

Paul Zavolta, director of enterprise risk management and David Deal, director of internal audit, who previously reported to Suresh will both report directly to Eddie Neely.

Arch Coal Announces Management Changes at Eastern Operations

Arch Coal (NYSE:ACI) recently announced that Robert W. Shanks has elected to retire as president of Arch's eastern U.S. operations on March 31 after 35 years of service. Gary L. Bennett, president and general manager of Arch's Coal-Mac, Inc. subsidiary, has been promoted to president of eastern operations, and J. Chris Sykes has been promoted from mine manager to general manager of Coal-Mac.

"Bob contributed to many of the major events that have shaped Arch Coal into the world-class company it is today," said John W. Eaves, Arch's president and chief operating officer. "We sincerely thank Bob for his outstanding contributions to Arch and thank him for serving us one last time with the management

transition.

"Gary brings a wealth of industry experience and expertise to his new position as head of Arch's Eastern Operations," said Eaves. "He is a proven leader with a firm grasp of the Central Appalachian region, and I am confident he will create great value for the corporation in this new role."

Shanks joined Arch in 1976 as a hydrologist after completing his master's degree in civil engineering from Purdue University. He has held a number of engineering, operations and senior management positions during his tenure, most recently as president of eastern operations. Throughout the course of Shanks' career, he either worked at or was associated with every one of the company's operating divisions. In addition to his long and successful history in managing operations, he played significant roles in the Diamond Shamrock acquisition, the 1993 BCOA-UMWA contract negotiations, the Arch Mineral-Ashland Coal merger and the Atlantic Richfield Coal Company (ARCO) acquisition.

Bennett received a bachelor's degree in mining engineering from West Virginia Tech and joined Arch as a senior engineer in 1990. During his 21-year tenure with Arch, he has held various engineering and operating positions in West Virginia, St. Louis and Kentucky. Arch's four eastern general managers and the various staff functions in Charleston, W.Va., will report to Bennett. Bennett will be located in the

Charleston office and will report to Senior Vice President of Operations Paul A. Lang.

Sykes earned a bachelor's degree in mining engineering from Virginia Tech and an executive master's degree in business administration from the University of Charleston, W.Va., in 1999. Sykes has 14 years of experience in the coal industry and with Arch Coal. Sykes most recently served as Coal-Mac's mine manager. He will report to Bennett.

St. Louis-based Arch Coal is one of the nation's largest and most efficient coal producers, with record revenues of \$3.2 billion in 2010. Through its national network of mines, Arch supplies cleaner-burning, low-sulfur coal to U.S. power producers to fuel roughly 8 percent of the nation's electricity. The company also ships coal to domestic and international steel manufacturers as well as international power producers.

Nicholas J. Deluliis Named President of CONSOL Energy

CONSOL Energy Inc. (NYSE: CNX) announced recently that Nicholas J. Deluliis has been named president of CONSOL Energy. J. Brett Harvey, CONSOL Energy chief executive officer and chairman of the board, made the announcement following a meeting of the CONSOL Energy Board of Directors.

"This was an obvious step in the continued growth of CONSOL Energy," commented Mr. Harvey. "Nick performed

exceptionally as chief operating officer. He will continue to keep our company focused on our core values - the top three of which are safety, compliance and continuous improvement."

Mr. Deluliis holds a bachelor's degree in chemical engineering from Penn State, as well as a master's degree in business administration and a juris doctorate, both from Duquesne University. He began his career with CONSOL Energy in the research and development group in 1990. He later became vice president of strategic planning of CONSOL Energy where he was responsible for optimizing the value of CONSOL Energy's assets which, among other things, resulted in the creation of CNX Gas Corporation. He served as the president and CEO of CNX Gas from its inception in 2005 until early 2009. Last year, a short-form merger saw CNX Gas again become a wholly owned subsidiary of CONSOL Energy.

"I appreciate the confidence the CONSOL Energy Board of Directors has placed in me by choosing to name me president," Mr. Deluliis said. "I am honored to take on this new responsibility. The coal and gas assets we have, coupled with the 8,600 people who work for this company, are what keep it strong. By maintaining our focus on our core values of safety, compliance and continuous improvement, I look forward to continuing to help move CONSOL Energy forward in its position as the leading diversified energy producer in the eastern United States. *d*

American Energy Fields, Inc. Finalizes Purchase Agreement

American Energy Fields, Inc. (OTCBB:AEFI) is pleased to announce it has finalized an agreement to acquire a portfolio of breccia pipe targets located on the Arizona Strip within the northwestern Arizona Breccia Pipe District.

The portfolio consists of 61 unpatented lode mining claims on land administered by the Bureau of Land Management (BLM), having a total 29 identified targets with the possibility of identifying additional targets. The Company has locked in an option to purchase the property by making an initial non-refundable payment.

The targets have been identified by Dr. Karen Wenrich, former geologist for the International Atomic Energy Agency (IAEA) and former USGS research scientist, specializing in uranium. Dr. Wenrich has more than 25 years of experience and over 100 publications

on breccia pipe uranium deposits.

These breccia pipes are vertical pipe-like columns of broken rock (breccia) that formed when layers of sandstone, shale and limestone collapsed downward into underlying caverns. A typical pipe is approximately 300 feet in diameter and extends vertically as much as 3,000 feet.

The uranium-bearing breccia pipes of the northern Arizona breccia pipe district are among the highest grade uranium deposits in the United States. In addition to uranium, the breccia pipes are also known to contain rare earth metals, including neodymium, and a variety of other valuable metals, including zinc, vanadium, cadmium, copper, silver, molybdenum, cobalt, nickel, gallium, and germanium.

Previous and current

mining within the northwestern Arizona Breccia Pipe District has yielded

pounds of U3O8 with the average pipe containing about 3 million pounds of U3O8. It is of note that breccia pipes were

mined through the 1980s and 1990s when uranium prices were as low as \$8.00/lb, a result of the high-grade nature of the uranium found in the pipes. The Arizona 1 mine is currently (since December 2009) producing uranium ore through conventional underground mining.

Company President and CEO, Joshua Bleak, stated, "One of our major goals as a Company is to bolster our foothold in uranium exploration and to expand our scope to include rare earth metals. Acquiring these high-grade targets in a region that has been a significant uranium producer will further strengthen this

foothold. We look forward to implement our exploration program to identify and define a uranium resource and to explore the potential for rare-earth element occurrence on these properties."

American Energy Fields (AEFI) is a resource company focused on exploring and developing the natural energy resources of the United States. American Energy Fields' corporate strength lies in its management's experience in the finance and natural resource sectors. AEFI has one of the most prolific mining databases for energy related projects within the United States. With this database, AEF will target and acquire projects with previous production and/or exploration and work towards fully developing those projects to drive revenues and build core reserves. *d*



more than 23.5 million pounds of U3O8 with average grades of 0.65%.

"American Energy Fields, Inc. Finalizes Purchase Agreement to Acquire Breccia Pipe Uranium and Rare Earth Targets in the Northwestern Arizona Breccia Pipe District"

Individual pipes have been known to contain more than 6 million

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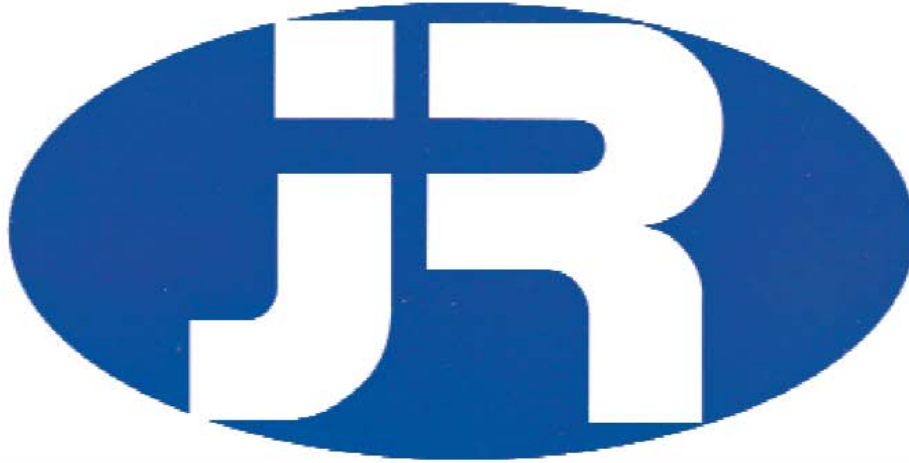
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DOMINION Plans to Convert Three Coal-Fired Power Plants to Renewable Biomass

Dominion Virginia Power, a subsidiary of Dominion (NYSE: D), is planning to convert three Virginia power stations from using coal to biomass, a renewable energy source. The conversions would provide environmental and customer benefits and generate up to \$350 million for their local economies over the next 30 years.

The power stations in Altavista, Hopewell and Southampton County are identical and went into operation in 1992. If the conversions are approved by local governments, the Virginia Department of Environmental Quality and the Virginia State Corporation Commission, they could begin burning

biomass in 2013.

The total economic impact over the 30-year life of the stations would be more than \$350 million, including \$30 million in local taxes, \$180 million for the creation of more than 300 hundred jobs in the forestry and trucking industries and about \$120 million paid to the 90 employees who would work at the stations.

The fuel switch would reduce nitrogen oxides, sulfur dioxide, mercury and particulate emissions, and all of the stations would meet stringent new emissions standards established by the U.S. Environmental Protection Agency.

Dominion Generation CEO David Christian said, "Our proposal to convert these units from

coal to biomass provides customers with economical electricity, delivers environmental benefits and takes advantage of a renewable, low-cost fuel source."

Virginia Gov. Bob McDonnell said, "Conversion of these units to biomass creates jobs and generates tax revenues in a manner that will have a positive impact on the environment. The majority of the biomass product being used – wood slash – is typically left on the ground after timber or logging operations are complete. So, the state is now better utilizing a product that would normally go to waste. The projects are reflective of the 'all of the above' approach we need to take when it comes to energy

production in the Commonwealth. They are essential to expanding our alternative energy portfolio and closing our import gap, not to mention creating good jobs here in the Commonwealth."

Dominion plans to meet the state's voluntary Renewable Portfolio Standard, which calls for 15 percent of the company's generation to be from renewable resources by 2025. The company successfully met the 2010 milestone of 4 percent.

Each of these units can currently produce 63 megawatts of electricity of peaking power, running only when demand is at its highest. When converted, they would generate 50 megawatts each, but operate essentially all of the time. Together,

these stations would provide electricity to about 37,500 homes.

The stations would obtain most of their fuel from the waste wood left from timbering operations and would comply with a Virginia law regulating the use of biomass for electric generation. Dominion will also be adhering to its allocated cap of 1.11 million tons per year of green wood chips and related tree materials.

Dominion is one of the nation's largest producers and transporters of energy, with a portfolio of approximately 27,600 megawatts of generation, 11,000 miles of natural gas transmission, gathering and storage pipeline and 6,100 miles of electric transmission lines. *d*

Democrats Join GOP Fight To Block EPA Climate Rules

According to Associated Press' Dina Cappiello three Democrats are joining a Republican effort in the House to block the Environmental Protection Agency from reducing the gases blamed for global warming.

Rep. Nick Rahall of West Virginia, Rep. Collin Peterson of Minnesota, and Rep. Dan Boren of Oklahoma will sponsor a bill supported by 43 Senate and seven House Republicans that would bar the EPA from using federal law to control greenhouse gases from power plants, refineries and other industrial facilities.

The measure is the latest to be introduced in the Republican-controlled House, where at least a half-dozen bills target the EPA and its efforts to control air and water pollution.

None of the EPA's actions is as controversial as its rules on global warming, which Republicans and some Democrats say will raise energy costs and cause job losses in an already fragile economy. The Obama administration counters that controlling global warming pollution is necessary based on scientific evidence that it is threatening public health and the environment. The EPA also says the rules will ultimately yield more health and economic benefits than costs, much like many other Clean Air Act regulations.

The bill, introduced Thursday in the House and Senate, would not bar states from taking action on global warming gases and preserves a deal between the Obama administration and automakers to boost fuel

economy and to introduce greenhouse gas standards on tailpipes.

While passage of some measure to hamstring the EPA in the House was all but assured by the Republican majority, the addition of three Democrats shows the momentum against the agency's global-warming regulations is growing. The three Democratic sponsors, along with 10 other Democrats, voted in February for a rider to a House-passed budget bill that would have prohibited the EPA from using any money to regulate global warming pollution.

"I am dead set against the EPA's plowing ahead on its own with new regulations to limit greenhouse gases," Rahall said in a statement. Rahall, who worries regulation will harm coal producers in his district, said that Con-

gress should set policy governing global warming gases. Rahall and Boren voted against a Democrat-backed bill setting a limit on such pollution when it passed the House in June 2009.

Peterson supported that bill, which was championed by President Barack Obama, but only after making deals to ease the cost for farmers. The legislation died in the Senate, where Democrats said they did not have enough votes to overcome a Republican filibuster.

South Carolina Republican Lindsey Graham, the only Republican to try to work with Democrats last year to draft a bill to limit greenhouse gases, has also signed on to sponsor the legislation blocking the EPA - along with most Senate Republicans. Graham has long

argued that Congress, not the EPA, should set policies to deal with global warming. But he abandoned his efforts on a bipartisan bill last year after it became clear it was not going to pass because of disagreements over offshore drilling.

Graham was joined by Sen. John McCain, R-Ariz., who in the past has sponsored legislation to curb global warming.

The lead authors of the bill are House Energy and Commerce Chairman Fred Upton, R-Mich., Rep. Ed Whitfield of Kentucky and Sen. James Inhofe of Oklahoma. Inhofe disputes the widespread scientific consensus that the burning of fossil fuels is causing Earth's temperature to rise. *d*

Manufacturers Launch Campaign Against EPA's Aggressive Agenda

The National Association of Manufacturers (NAM) recently launched a multi-state, multi-million-dollar initiative opposing overregulation, new burdens and restrictions imposed by the Environmental Protection Agency (EPA). The campaign calls on Congress and the Administration to carefully consider the severe economic impact these job-killing regula-

tions will have on energy prices and on businesses and families across country.

"At a time when America is rebounding from a serious recession, we need policies that help manufacturers by using incentives to create jobs rather than imposing regulations that create more uncertainty, diminish our competitiveness and discourage investment," said NAM President and CEO

Jay Timmons.

This campaign against new, costly regulations will comprise educational and grassroots efforts, and will kick off with television and radio ads in Arkansas, Maine, Michigan, Missouri, Ohio, and Pennsylvania.

Small, medium and large manufacturers in these states have first-hand experience with the regulatory process and understand the impact it

has on jobs and economic growth. Manufacturers use one-third of the nation's energy supply. It is critical that policies are in place to support access to affordable, reliable and secure energy sources to prevent an increase in the cost of doing business.

"Manufacturers already have invested billions of dollars to comply with federal regulations, but the EPA continues to propose hundreds of new regula-

tions that will raise costs for all consumers, especially manufacturers, undermining their ability to create jobs and compete in the global marketplace," Timmons said.

For more information about the campaign to stop EPA's overregulation or to view one of the ads, please visit

www.nonewregs.org

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11 WEST VIRGINIA TEACHERS EARN ARCH COAL FOUNDATION GOLDEN APPLE CERTIFICATES

The Arch Coal Foundation has recognized 11 outstanding West Virginia teachers with Golden Apple certificates,

according to John R. Snider, Arch Coal vice president, external affairs, eastern region.

"These 11 Golden

Apple recipients received high marks from those judging applications for the Arch Coal Teacher Achievement

Awards, the Arch Coal Foundation's highest honor," said Snider. "We certainly hope these excellent educators are nomi-

nated again for the 2012 program."

The 2011 Golden Apple recipients are:

Tabitha Beall	GilmerCounty High School	Glenville
Mary Blaker	Parkersburg High School	Parkersburg
Laura Bobbera	Gilbert Elementary School	Gilbert
Lee Anne Burton	Monongah Elementary School	Monongah
Andrea Cathell	Morgantown High School	Morgantown
James Dennis	Parkersburg South High School	Parkersburg
Crystal Howell	Chapmanville Middle School	Chapmanville
Meghan Keith	Morgantown High School	Morgantown
Sheila Leach	Huntington High School	Huntington
Nancy Terlizzi	Williamson High School	Williamson
Betty Walker	Fort Ashby Primary School	Fort Ashby

The Arch Coal Teacher Achievement Awards Program is the oldest, privately sponsored teacher recognition program in the state. "We are proud to honor some of West Virginia's top educators in this way and pleased that

hundreds of teachers statewide continue to be nominated for the award each year," Snider added. "West Virginia boasts a large number of excellent teachers in all areas of primary and secondary education."

The teacher recognition awards are underwritten by the Arch Coal Foundation and supported in program-promotion by the West Virginia Department of Education, the WVEA and the West Virginia Library Commis-

sion.

Arch Coal, Inc. is one of the world's largest and most efficient coal producers, with more than 160 million tons sold in 2010. Arch supplies cleaner-burning, low-sulfur coal to customers on

four continents through its national network of mines. In West Virginia, Arch subsidiaries operate the Mountain Laurel and Coal-Mac complexes.

d



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Bart Hyita
CONSOL Energy

Clean Perspectives for Coal Underground Coal Gasification

Despite the ongoing trend towards greater use of renewable energy sources, the fossil fuels, and coal in particular, will continue to be a major source of energy for some time to come. But many of the world's coal reserves are unusable simply because they lie too deep for profitable extraction. On the other hand, using fossil fuels contributes to the rising CO2 concentration in the atmosphere and the resulting global climate change.

Bulgaria's largest privately owned gas com-

pany, Overgas Inc. AD, acting in a consortium of partners from five European countries, has signed an agreement for financial support to a research project on underground coal gasification (UCG) and subsequent sequestration of the CO2 thus liberated. This project is being supported by the European Union with a three million euro grant, awarded in the context of the Research Fund for Coal and Steel (RFCS).

The coal is first to be converted into gas far underground and then

routed to the surface where the energy is ultimately utilized. The waste greenhouse gases are then to be stored in the cavities formed by mining and in surrounding rock.

Overgas is the leader and coordinator of the initiative. Among the partners in the project are renowned European academic organizations and businesses, including DMT GmbH & Co. KG in Essen. DMT will be conducting geological evaluations of the deposits. In addition to economic and environmental aspects,

technical procedures in regard to dual use of the drill holes will be in the foreground. Among the documentation to be generated is a "Best Practice" manual covering final closure of the drill holes and long-term monitoring.

The international team of engineers and scientists is to explore the setting prevailing for the realization of the procedure in Bulgaria. If the results of the study, expected to be completed in 2013, are favorable, then plans for a subsequent field test will be

worked out with industry.

The idea for gasification of coal underground is not new – the process has been the target of extensive development over the past ninety years. Several large-scale power schemes were constructed in the 1980s in the former Soviet Union. Commercial exploitation of this technology is underway in Australia, the United States, Canada, South Africa and China. Offshore UCG permits have been issued in the UK. *cl*

CONSOL Energy Operation Earns Reclamation Award

CONSOL Energy's (NYSE:CNX) Squire Jim No. 1 Deep Mine in Dwell County, WV, earned a 2010 reclamation award earlier this month during an awards luncheon held

at the West Virginia Coal Association's 37th annual Mining Symposium in Charleston, WV.

The award was presented and recognized the Squire Jim Mine for

the "exceptional reclamation of the surface areas of an underground mine." "Returning the land to a useful purpose after mining is one of our goals when we set out to design

a reclamation plan," said Charlie Bauguess, manager of closed properties for CONSOL Energy in Central Appalachia. "This award is special because the nomination must come from our peer group (the reclamation inspectors). As an avid outdoorsman, I am pleased we were able to ensure long-term habitat protection for the native wildlife species in the area."

As the owner of more than 430,000 acres of land in the United States and Canada, CONSOL Energy recognizes the importance of environmental protection and responsible use of the land and its natural resources while energy products that power the nation are produced.

"At CONSOL Energy, we take our responsibility as a steward of the environment seriously," said CONSOL Energy Senior Vice President of Environmental Strategy and Regulatory Affairs Katharine Fredriksen. "This reclamation award from the state of West Virginia is affirmation that, we are not only meeting the letter

of the law as required by our permits, but we are taking it a step further -- providing a useful, long-term purpose for the land after mining."

CONSOL Energy designed and implemented a wildlife reclamation plan for the site that eliminated the mine face-up area and removed the temporary fill associated with the underground mine as part of its reclamation efforts. Following re-grading, the site was planted using native vegetation and trees, including a wildlife seed mixture of Birdsfoot Trefoil, Red Clover, Yellow Clover and White Clover. The wildlife tree species selected included Red Oak, White Oak, Wild Plum, Persimmon, Red Mulberry, Eastern Redbud and Washington Hawthorne. Utilizing these species, CONSOL Energy was able to quickly establish vegetation supporting wildlife on the site. The site is leased to a local hunting and conservation club to allow for long-term wildlife management. *cl*

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AEP To Receive Funds From Global CCS Institute For Commercial-Scale Carbon Dioxide Capture And Storage Project

American Electric Power (NYSE: AEP) will receive funding from the Global CCS Institute to support installation of the nation's first commercial-scale carbon dioxide capture and storage (CCS) system on AEP's Mountaineer coal-fueled power plant in New Haven, WV. Global CCS Institute, based in Canberra, Australia, will provide AU\$4 million (US\$4.01 million) to support the initial engineering and characterization phase of AEP's commercial-scale installation of a CCS system using Alstom's chilled ammonia process to capture at least 90 percent of the carbon dioxide from 235 megawatts of Mountaineer's 1,300 megawatts of capacity.

The captured carbon dioxide, approximately 1.5 million metric tons per year, will be treated and compressed, then injected into suitable geologic formations for permanent storage approximately 1.5 miles below the surface. The system will begin commercial operation in 2015.

"We appreciate the support we are receiving from the Global CCS Institute. Having them involved

to develop technologies that can be deployed worldwide to cut emissions from coal-fueled

AEP and Alstom began operating a smaller-scale validation of the chilled ammonia technology at

logic formations for permanent storage approximately 1.5 miles below the surface.

The Global CCS Institute works with organizations and governments to accelerate the broad deployment of commercial CCS and ensure that the technology plays a role in responding to the world's need for a low carbon energy future. The interim goal of the Institute is to accelerate the development of 20 commercial-scale integration demonstrations. The Institute plays a key role in knowledge sharing across demonstration projects and is working on enabling the regulatory and policy, as well as commercial and financial conditions for CCS to be deployed commercially around the world. It has more than 270 members, including governments such as the United States. For more information, visit www.globalccsinstitute.com.

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AEP's Mountaineer coal-fueled power plant in New Haven, WV.

clearly demonstrates that commercialization of carbon capture and storage technology is an essential component of a successful global climate strategy," said Michael G. Morris, AEP chairman and chief executive officer. "If we are going to address climate change in any meaningful way, we have

electricity generation, which continues to supply a large part of our world's energy needs."

The U.S. Department of Energy is funding 50 percent of the commercial-scale project costs, up to \$334 million. AEP is in discussions with other potential international partners for the project.

Mountaineer in September 2009. That system captures up to 90 percent of the carbon dioxide from a slipstream of flue gas equivalent to 20 megawatts of generating capacity. The captured carbon dioxide, up to 100,000 tons a year, is being compressed and injected into suitable geo-

Virginia's Governor McDonnell Supports Restoring Off Shore Drilling

Virginia's Governor Bob McDonnell issued the following statement after Congressman Bob Goodlatte submitted legislation in the House of Representatives to restore offshore oil and natural gas lease sales off the Virginia coast halted by President Obama last year: "As we have seen right here in Virginia in recent weeks with rising gas prices, failure to prudently and safely develop our domestic energy re-

sources hampers our nation's effort to secure reliable, affordable energy resources not subject to the volatility of markets controlled by overseas producers. Offshore energy development in the Commonwealth will put Virginians back to work, bring new revenues for transportation, and will help our nation move closer to energy independence. To become the energy capitol of the East Coast, Virginia must de-

velop all of our domestic energy sources, from offshore oil and natural gas to wind, solar, coal, nuclear and biomass. Opening these offshore resources to safe exploration and development will result in new jobs and will speed our economic recovery. Some estimates have shown that development of Virginia's offshore energy resources would create 2,578 full-time equivalent positions on an annual basis, induce cap-

ital investment of \$7.84 billion, yield \$644 million in direct and indirect payroll, and result in \$271 million in new state and local revenue.

I applaud Congressman Goodlatte's efforts to introduce this bill, which stipulates that revenue generated from the lease sale and activities will be shared evenly between the state and federal government. The federal share of this revenue will be dedicated to paying off

the federal debt which is at an immoral and unsustainable level.

Allowing the private sector to explore Virginia's offshore natural resources and bring new energy options to Virginia is common sense, and this legislation will ensure that these leases would begin benefitting the citizens of the Commonwealth in 2012."

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Licensing Agreement Moves Two NETL-Patented Carbon Capture Sorbents Closer to Commercialization

Two new patented sorbents used for carbon dioxide (CO₂) capture from coal-based power plants have moved closer to commercialization as a result of a licensing agreement between the Office of Fossil Energy's (FE) National Energy Technology Laboratory (NETL) and ADA Environmental Solutions (ADA-ES).

The nonexclusive agreement facilitates negotiations on intellectual property rights, protects proprietary information, and grants non-exclusive licensing of the new technology. Under federal regulations, NETL is authorized to obtain, maintain, and own patent protection for its inventions, including those funded through collaborative agreements. By granting a commercial license for these sorbents,

NETL can now convey and control the right to make, use, and sell the products and services claimed in the patent, thereby assuring strategic commercialization throughout the coal-fired power plant industry.

CO₂ capture is an important component of carbon capture and storage (CCS) technology, viewed by many experts as an integral part of a portfolio strategy (including increased use of renewable and nuclear energy, and greater efficiencies) for confronting increasing atmospheric carbon dioxide emissions and potential climate change. Coal-based power and industrial plants are essential to U.S. energy production and are projected in many forecasts to remain so for the foreseeable future. But they are also among the most carbon-intensive

energy sources.

FE's comprehensive CCS research includes developing new materials that can capture and release CO₂ at reasonable energy and operating costs. Traditional solvent-based systems consume too much energy, either in operation or during regeneration of the solvents. So FE is developing and testing a wide range of approaches.

A promising solution for affordable CO₂ capture is "dry scrubbing" or chemical absorption of CO₂ using a solid regenerable sorbent. The most important advantage of solid sorbents is the potential to significantly reduce the amount of energy required to capture and release CO₂. These range from alkaline earth metal oxides or hydroxides that can absorb CO₂ at temperatures that typically

range from about 100—300 °C to impregnating a porous substrate with one of the liquid solvents. In all of these, the sorbent can be regenerated in a subsequent step, after the CO₂ is removed. The efficiencies of these processes are highly dependent on the optimum temperature and pressure conditions at which absorption and regeneration are performed. In the case of high-performance sorbents, both of these mechanistic steps occur with the lowest possible energetic and operational costs.

In collaboration with ADA-ES and the Electric Power Research Institute (EPRI), NETL in 2008 began testing candidates for solid-sorbent CO₂ capture in coal-fired power plants. The initial research included a cost analysis and sorbent

screenings at both laboratory and pilot scales. Based on the success of the initial phase, the research project moved to the technology development and pilot-scale demonstration in 2010.

The goals of this phase were to demonstrate a ninety percent CO₂ capture rate at a projected long-term cost that would add less than a 35 percent increase to the cost of producing electricity.

The research resulted in two patents issued to NETL; specifically, U.S. Patent No. 6,547,854, titled Amine Enriched Sorbents for Carbon Dioxide Capture, and U.S. Patent No. 7,288,136, titled High Capacity Immobilized Amine Sorbents. Both patents represent new methods for making low-cost CO₂ sorbents that can be used in large-

NETL Cont. on Page 15

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GE Technology Purifies Water at One of World's Largest Coal Power Plants

GE Water Treatment Process to Provide Ultrapure and Condensate Water for Plant Located in Water Scarce South Africa GE, PD Naidoo & Associates (PDNA) to Build State-of-the-Art Water Treatment Facility for Eskomv South Africa's leading power provider, Eskom, will use GE's (NYSE: GE) innovative water and wastewater technology for the Kusile Power Plant, which, once fully operational, is expected to be one of the world's largest coal-fired power plants. South Africa, at times known for often facing drought conditions, has limited freshwater supply, and GE's technology will provide maximum water reuse for the plant.

GE showcased a number of its innovative water and energy technology solutions deployed throughout Africa at the Power & Electricity World Africa 2011 conference, held recently in Johannesburg.

Eskom's coal-fired power plant is located in Nkangala district municipality within the Mpumalanga province. With water becoming an increasingly limited resource in South Africa, GE's advanced water and

wastewater equipment will filter approximately 250 million liters of water per day to be used in the power plant and will significantly reduce operating costs and increase efficiency.

"Reliable, continuous production of ultrapure water, treatment of wastewater and the ability to reuse water will be vitally important for the successful operation of our new Kusile Power Plant. We chose GE technology based on its extensive experience and ability to provide high quality water treatment options for power plants," said Abram Masango, general manager (mega projects), Eskom.

Under the terms of the contract, valued at over \$40 million, GE will provide water treatment technology to engineering firm PD Naidoo and Associates (PDNA), the engineering, procurement and construction (EPC) contractor, including boiler feed water treatment for ultrapure water, six condensate polishing plants and wastewater treatment.

"Under this EPC contract, PDNA will provide all engineering design, integration construction and monitoring functions to

deliver this vital project to Eskom," said Devan Govender, project director of PDNA Kusile Project.

The boiler feed water treatment will consist of ultrafiltration, cation exchange, degasification to remove carbon dioxide; anion exchange followed

"The boiler feed water treatment will consist of ultrafiltration, cation exchange, degasification to remove carbon dioxide; anion exchange followed by a mixed bed polishing system and then a degasifier to remove oxygen."

by a mixed bed polishing system and then a degasifier to remove oxygen. This system will produce ultrapure water suitable to feed a super critical boiler. In addition, GE is supplying six condensate polishing plant units, which will polish 1,760 tons per hour of condensate water. Finally, to treat the brine generated by the flue gas process, a two train evaporator and a crystallizer

will convert brine to a dry salt suitable for disposal.

"As environmental regulations become more stringent so too does the need for more water conservation and reuse. Industry uses a great amount of water, and water is needed to generate energy," said Jeff Connelly, vice president, engineered systems—water and process technologies for GE Power & Water. "Thus, power plants around the world including the Eskom Kusile Power Plant in South Africa have turned to GE's innovative global water technologies to help meet their pressing water and wastewater needs."

Eskom is a state-owned enterprise that generates approximately 95 percent of the electricity used in South Africa and approximately 47 percent of the electricity generated in Africa. Eskom generates, transmits and distributes electricity to industrial, mining, commercial, agricultural and residential customers and redistributors. Additional power stations and major power lines are being built to meet rising electricity demand in South Africa. Eskom will continue to focus on improving and strengthening

its core business of electricity generation, transmission, trading and distribution.

GE (NYSE: GE) is an advanced technology, services and finance company taking on the world's toughest challenges. Dedicated to innovation in energy, health, transportation and infrastructure, GE operates in more than 100 countries and employs about 300,000 people worldwide.

GE serves the energy sector by developing and deploying technology that helps make efficient use of natural resources. With more than 90,000 global employees and 2010 revenues of \$38 billion, GE Energy www.ge.com/energy is one of the world's leading suppliers of power generation and energy delivery technologies. The businesses that comprise GE Energy—GE Power & Water, GE Energy Services and GE Oil & Gas—work together to provide integrated product and service solutions in all areas of the energy industry including coal, oil, natural gas and nuclear energy; renewable resources such as water, wind, solar and biogas; and other alternative fuels. *d*

Licensing Agreement Moves Two NETL-Patented Carbon Capture Sorbents Closer to Commercialization - Cont From Page 3

scale gas-solid processes. The first entails treating a solid substrate with acid or base and a substituted amine salt, eliminating the need for organic solvents and polymeric materials for the preparation of CO₂ capture systems. The second patent entails treating an amine to in-

crease the number of secondary amine groups and impregnating the amine in a porous solid support. The method increases the CO₂ capture capacity and decreases the cost of utilizing an amine-enriched solid sorbent in CO₂ capture systems.

Under a multi-year study examining ways to

retrofit existing coal fired power plants with carbon capture technology, NETL and its partners (ADA-ES, the Electric Power Research Institute, and Southern Company) will continue to demonstrate the sorbents in a 1 megawatt (about 24 tons CO₂/day) pilot-scale plant and conduct detailed en-

gineering analysis to provide technology cost estimates for post-combustion capture. In the demonstration, solid sorbents are used to separate CO₂ from flue gas. Once the sorbents are saturated, they are processed to isolate purified CO₂ for reuse or sequestration.

The same process also regenerates the sorbents. With initial reports showing a greater than ninety percent capture rate for the patented solid sorbents, further refinements to the technologies and processes surrounding this research offer great promise. *d*

AEP To Receive Funds From Global CCS Institute For Commercial-Scale Carbon Dioxide Capture And Storage Project

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dioxide, approximately 1.5 million metric tons per year, will be treated and compressed, then injected into suitable geologic formations for permanent storage approximately 1.5 miles below the surface. The system will begin commercial operation in 2015. "We appreciate the support we are receiving from the Global CCS Institute. Having them involved clearly demonstrates that commercialization of carbon capture and storage technology is an essential component of a successful global climate strategy," said Michael G. Morris, AEP chairman and chief executive officer.

"If we are going to address climate change in any meaningful way, we have to develop technolo-



Michael Morris

gies that can be deployed worldwide to cut emissions from coal-fueled electricity generation, which continues to supply a large part of our world's energy needs."

The U.S. Department of Energy is funding 50 percent of the commercial-scale project costs, up to \$334 million. AEP is

in discussions with other potential international partners for the project.

AEP and Alstom began operating a smaller-scale validation of the chilled-ammonia technology at Mountaineer in September 2009. That system captures up to 90 percent of the carbon dioxide from a slipstream of flue gas equivalent to 20 megawatts of generating capacity. The captured carbon dioxide, up to 100,000 tons a year, is being compressed and injected into suitable geologic formations for permanent storage approximately 1.5 miles below the surface.

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CCS and ensure that the technology plays a role in responding to the world's need for a low carbon energy future. The interim goal of the Institute is to accelerate the development of 20 commercial-scale integration demonstrations. The Institute plays a key role in knowledge sharing across demonstration projects and is working on enabling the regulatory and policy, as well as commercial and financial conditions for CCS to be deployed commercially around the world. It has more than 270 members, including governments such as the United States. For more information, visit www.globalccsinstitute.com.

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Forbes & Manhattan Sign Three Year Agreement for Coal

According to Reuters, Forbes & Manhattan Coal Corp. has signed a three year agreement for 1.75 million tons of thermal coal with Vitol S.A. ("Vitol"). Vitol will be purchasing thermal coal from the Slater Coal properties at market prices.

Forbes Coal intends to transport the coal to the Navitrade Coal Terminal in Richards Bay using its increased rail transport and capacity with Transnet Freight Rail and Grindrod Terminals. Grindrod Terminals provides certain logistical, handling and stockpiling services to shippers in connection with the shipment of bulk cargoes.

Forbes & Manhattan Coal Corp. Forbes Coal is an emerging mid-tier southern African coal company.

It holds a majority interest in two operating mines. The Company holds a 76.75% interest in Slater Coal (Pty) Ltd., a South African company ("Slater Coal") which has a 70% interest in Zinoju Coal (Pty) Ltd. ("Zinoju"). Zinoju holds a 100% interest in certain coal mines in South Africa (the "Slater Coal Properties").

The Slater Coal Properties comprise the operating Magdalena bituminous mine (the "Magdalena Property") and the Avimore anthracite mine. The mines have a substantial combined resource of coal and each mine has a projected 18 year life span.

In the aftermath of the recent earthquake in Japan and a substantial amount of Japanese nu-

clear power capacity going offline, utility company Chugoku Electric has settled its annual thermal coal contract with Xstrata at just under \$130 per ton. The settlement price exceeds the 2008 record of \$125 per ton, and points towards a stronger demand for thermal coal.

Forbes Coal is in the process of increasing production at both mines and looks to triple production from current levels in the next two to four years using existing infrastructure and capacity. The Company has in-place transportation infrastructure allowing its coal to reach both export corridors and the growing domestic coal market. Forbes Coal has a strong balance sheet and an ex-

perienced coal-focused management team.

The Vitol Group was founded in 1966 in Rotterdam, the Netherlands. Since then the company has grown significantly to become a major participant in world energy markets and is now one of the world's largest independent energy traders. Its trading portfolio includes coal, crude oil, oil products, LNG, natural gas, power, metals and carbon emissions.

Vitol recently established a coal presence in 2006. In the last five years it has rapidly grown to become one of the world's top 5 marketers of coal. In 2010, Vitol marketed over 20 million tonnes of physical coal via long-term offtake contracts in Australia, Colombia,

South Africa and the US and pre-financing arrangements in place in Indonesia, Russia and South Africa. Specifically in South Africa, Vitol has offices in both Johannesburg and Cape Town and currently ships product out of Richard's Bay Coal Terminal and Maputo under long-term offtake agreements to utility and industrial customers in both the Atlantic and Pacific markets. Vitol works closely with junior mining companies in South Africa by assisting with pre-financing and in providing logistics solutions. Further details on Vitol are available on www.vitol.com or email Sabina.Srubiski@forbescoal.com

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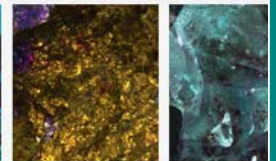


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China To Overtake U. S. in Scientific Output

By: David Shukman:
Science and Environ-
ment correspondent
BBC News

According to BBC News, China is on course to overtake the US in scientific output possibly as soon as 2013 - far earlier than expected. That is the conclusion of a major new study by the Royal Society, the UK's national science academy. The country that invented the compass, gunpowder, paper and printing is set for a globally important comeback.

An analysis of published research - one of the key measures of scientific effort - reveals an "especially striking" rise by Chinese science. The study, Knowledge, Networks and Nations, charts the challenge to the traditional dominance of the United States, Europe and Japan.

The figures are based on the papers published in recognized international journals listed by the Scopus service of the publishers Elsevier.

In 1996, the first year of the analysis, the US published 292,513 papers - more than 10 times China's 25,474.

By 2008, the US total had increased very slightly to 316,317 while China's had surged more than seven-fold to 184,080.

Previous estimates for the rate of expansion of Chinese science had suggested that China might

overtake the US some-time after 2020.

But this study shows that China, after displacing the UK as the world's second leading producer of research, could go on to overtake America in as little as two years' time.

over \$100bn, and as many as 1.5 million science and engineering students graduated from Chinese universities in 2006.

"I think this is positive, of great benefit, though some might see it as a

medium term is clear." Quality questions

The authors describe "dramatic" changes in the global scientific landscape and warn that this has implications for a nation's competitiveness.

According to the report,

mean in increase in quality.

One key indicator of the value of any research is the number of times it is quoted by other scientists in their work. Although China has risen in the "citation" rankings, its performance on this measure lags behind its investment and publication rate.

"It will take some time for the absolute output of emerging nations to challenge the rate at which this research is referenced by the international scientific community."

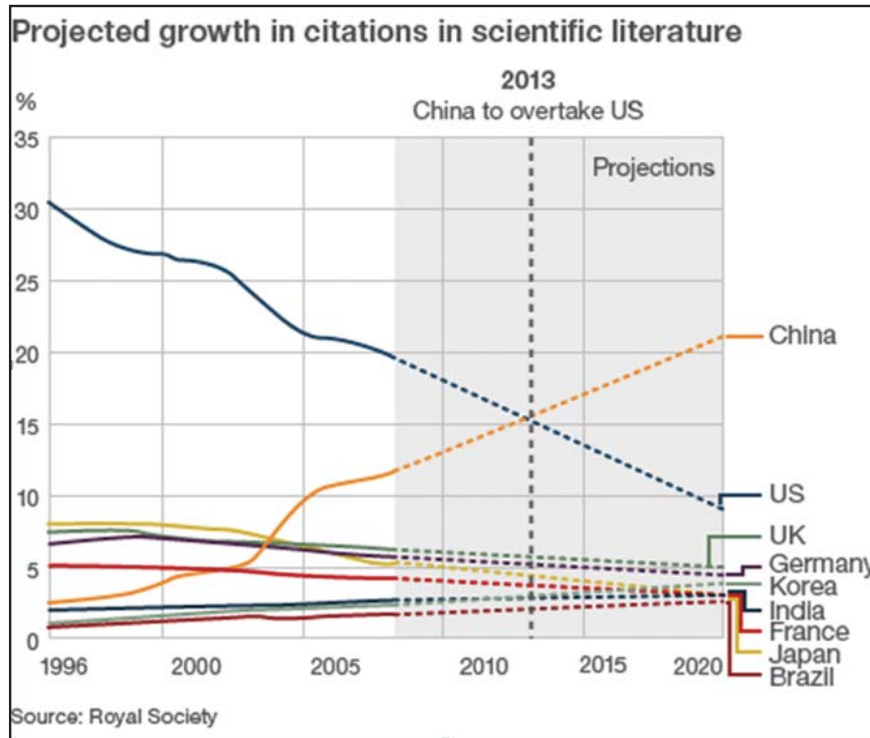
The UK's scientific papers are still the second most-cited in the world, after the US.

Dr Cong Cao, associate professor at Nottingham University's School of Contemporary Chinese Studies, agrees with the assessment that the quantity of China's science is yet not matched by its quality.

A sociologist originally from Shanghai, Dr Cao told the BBC: "There are many millions of graduates but they are mandated to publish so the numbers are high."

"It will take many years for some of the research to catch up to Western standards."

As to China's motivation, Dr Cao believes that there is a determination not to be dependent on foreign know-how - and to reclaim the country's historic role as a global leader in technology. *cl*



"Projections vary, but a simple linear interpretation of Elsevier's publishing data suggests that this could take place as early as 2013," it says.

Professor Sir Chris Llewellyn Smith, chair of the report, said he was "not surprised" by this increase because of China's massive boost to investment in R&D.

Chinese spending has grown by 20% per year since 1999, now reaching

threat and it does serve as a wake-up call for us not to become complacent."

The report stresses that American research output will not decline in absolute terms and raises the possibility of countries like Japan and France rising to meet the Chinese challenge.

"But the potential for China to match American output in terms of sheer numbers in the near to

"The scientific league tables are not just about prestige - they are a barometer of a country's ability to compete on the world stage".

Along with the growth of the Chinese economy, this is yet another indicator of China's extraordinarily rapid rise as a global force.

However the report points out that a growing volume of research publications does not necessarily

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Robert Wright
U. S. Department
of Energy

U.S. Chamber Energy Institute Unveils Plan For Tackling America's Energy Challenges

In an effort to reset the national conversation on energy policy, the U.S. Chamber's Institute for 21st Century Energy recently unveiled a plan designed to offer realistic, bipartisan solutions to our nation's top energy challenges. The five-part plan was formulated after Energy Institute officials returned from the first phase of its Energy Reality Tour, a nationwide dialogue with thousands of business and community leaders on a variety of energy issues.

"From coast to coast, we heard firsthand from business leaders who are frustrated with our energy policy and want Washington to come up with realistic solutions rather than just rhetoric," said Karen Harbert, president and CEO of the Energy Institute, during the unveiling of Facing Our Energy Realities: A Plan to Fuel Our Recovery. "The plan we've put forward high-

lights ways to address the five most pressing problems that are holding us back, from the lack of access to our own energy resources to the bureaucratic and regulatory problems that are preventing us from building almost any energy infrastructure and holding back progress on clean and renewable energy."

In Facing Our Energy Realities: A Plan to Fuel Our Recovery, the Energy Institute lays out a plan to:

- Maximize America's Own Energy Resources – America can make better use of its own abundant energy resources by promoting energy efficiency, producing more domestic energy, improving access to federal lands, and allowing for development of new resources.

- Make New and Clean Energy Technologies More Affordable – To help lessen the costs that impede the use of new and cleaner energy, the En-

ergy Institute proposes committing to innovation and demonstration of new technologies and providing financial mechanisms through a self-funding Clean Energy Bank.

- Eliminate Regulatory Barriers Derailing Energy Projects – Remove unnecessary barriers by creating a predictable regulatory environment, streamlining, not weakening, environmental reviews, and prioritizing siting and permitting of interstate transmission.

- Do Not Put America's Existing Energy Sources Out of Business – Ensure that the Clean Air Act and Clean Water Act are not used indiscriminately to threaten adequate supplies of energy for a smooth transition to a cleaner energy future.

- Encourage Free and Fair Trade of Energy Resources and Technologies Globally – Become more globally integrated by promoting free trade, elimi-

nating trade barriers, and ending discriminatory content and trade policies.

"In this economic and political environment, policymakers are seeking solutions which will get us on the right path without bringing us further in debt," Harbert said. "We're proposing answers such as greater energy efficiency, more domestic production, streamlining, not weakening, environmental review processes, and eliminating trade barriers on clean energy goods and services. All of these solutions come at little or no taxpayer expense, but would dramatically improve our energy security in both the short and long term."

In addition to presenting the plan to Congress and the Administration, the Energy Institute will be launching the second phase of the Energy Reality Tour to build grassroots support from the business

community for the proposals in the plan.

The mission of the U.S. Chamber of Commerce's Institute for 21st Century Energy is to unify policymakers, regulators, business leaders, and the American public behind a common sense energy strategy to help keep America secure, prosperous, and clean. Through policy development, education, and advocacy, the Institute is building support for meaningful action at the local, state, national, and international levels.

The U.S. Chamber of Commerce is the world's largest business federation representing the interests of more than 3 million businesses of all sizes, sectors, and regions, as well as state and local chambers and industry associations.

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Census: Near-Record Level of U.S. Counties Dying

According to Associated Press' Hope Yen And John Raby counties are dying in America.

In America's once-thriving coal country, 87-year-old Ed Shepard laments a prosperous era gone by, when shoppers lined the streets and government lent a helping hand. Now, here as in one-fourth of all U.S. counties, West Virginia's graying residents are slowly dying off.

Hit by an aging population and a poor economy, a near-record number of U.S. counties are experiencing more deaths than births in their communities, a phenomenon demographers call "natural decrease."

Years in the making, the problem is spreading amid a prolonged job slump and

a push by Republicans in Congress to downsize government and federal spending.

"You're the anchors of our Main Streets," President Barack Obama told small business leaders in Cleveland on Tuesday. "We want your stories, your successes, your failures, what barriers you're seeing out there to expand. How can America help you succeed so that you can help America succeed?"

Local businesses in Welch began to shutter after U.S. Steel departed McDowell County, which sits near Interstate 77, once referred to as the "Hillbilly Highway" because it promised a way to jobs in the South. Young adults who manage to attend college, the high-school

dropout rate is 28 percent, compared with about 8 percent nationwide, can't wait to leave. For some reason, the fish in nearby Elkhorn Creek left too.

"There's no reason for you to come to Welch," says Shepard, wearing a Union 76 cap at a makeshift auto shop he still runs after six decades. "This is nothing but a damn ghost town in a welfare county."

In all, roughly 760 of the nation's 3,142 counties are fading away, stretching from industrial areas near Pittsburgh and Cleveland to the vineyards outside San Francisco to the rural areas of east Texas and the Great Plains. Once-booming housing areas, such as retirement communities in Florida, have not been im-

mune.

West Virginia was the first to experience natural decrease statewide over the last decade, with Maine, Pennsylvania and Vermont close to following suit, according to the latest census figures. As a nation, the U.S. population grew by just 9.7 percent since 2000, the lowest decennial rate since the Great Depression.

"Natural decrease is an important but not widely appreciated demographic phenomenon that is reshaping our communities in both rural and urban cores of large metro areas," said Kenneth Johnson, a sociology professor and demographer at the University of New Hampshire's Carsey Institute who analyzed the census numbers.

Johnson said common threads among the dying counties are older whites who are no longer having children, and an exodus of young adults who find little promise in the region and seek jobs elsewhere. The places also have fewer Hispanic immigrants, who on average are younger and tend to have more children than other groups.

"The downturn in the U.S. economy is only exacerbating the problem," said Johnson, whose research paper is being published next month in the journal Rural Sociology. "In some cases, the only thing that can pull an area out is an influx of young Hispanic immigrants or new economic

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U.S. Counties Dying

development."

The predicament is starkest in places like Welch. In the 1960s, McDowell County ranked tops in the U.S. in coal production. Even as it began to stumble, President John F. Kennedy took notice and pushed federal aid to the region. McDowell residents were the first to get federal food stamps when they were rolled out in the Kennedy administration.

After U.S. Steel sold the last of its mining operations by 2003, folks in southern West Virginia began counting on new highway projects to prop up the long-struggling area.

"One of the promises we're waiting to come is the highway," said Carolyn Falin, an assistant schools superintendent in McDowell County. From the east, the Coalfields Expressway would bypass the many two-lane, truck-clogged roads zigzagging through the mountainous region. It would link a freeway to the Virginia state line 65 miles to the southwest. So far, only a few miles are open. Design work on most of it hasn't been finished.

From the west, a 95-mile

King Coal Highway is also envisioned, with some bridge work and a few miles now under construction.

Shepard, who walks to work from a nearby apartment, watched the county's population plummet 80 percent after U.S. Steel's exit. Even with the recent opening of a federal prison, Shepard bemoans the area's decline, including the end of "20 years of the best fishing you ever saw." Nowadays, he says, "you can fish but you won't catch any trout. It's like the coal mines. It's all gone."

Recently the U.S. Senate rejected a \$900,000 appropriation for a proposed interchange of the King Coal Highway and the Coalfields Expressway near Welch.

Dying counties in the U.S. were rare until the 1960s, when the baby boom ended. By 1973, as farming communities declined, roughly 515 counties, mostly in the Great Plains reported natural decrease. The phenomenon then began to show up in industrial regions, such as upstate New York and California. Natural decrease peaked in 2002 at a record

985, or 1 in 3 counties, before increasing births and an influx of Hispanic immigration helped add to county populations during the housing boom.

Following the recent recession, birth rates have dropped to the lowest in a century. Preliminary census numbers for 2007-09 now show that the number of dying counties is back on the upswing. Recent additions include Pittsburgh and its surrounding counties.

James Follain, senior fellow and economist at the Nelson A. Rockefeller Institute of Government at the University of Albany, said a new kind of declining city may be emerging in the wake of the housing bust, metropolitan areas that rapidly overbuilt earlier in the decade and then suffered massive foreclosures.

He cited as examples Las Vegas, Miami, parts of Arizona, and Stockton, Modesto, Fresno and Riverside in California. Like traditional ghost towns, Follain says, portions of these areas could spiral down from persistent loss of jobs and population and lose their reason for being.

Follain also pointed to a tighter fiscal environment in Washington that will limit

help to troubled areas. The Obama administration announced this month it would shrink the government's role in the mortgage system to reduce taxpayer exposure to risk. House Republicans also are pushing federal spending cuts of more than \$61 billion, even if it means reducing jobs.

"It's going to be a very slow recovery," Follain said.

Not all U.S. areas are declining. Most places with the fastest growth since 2000 were able to retain or attract college graduates and young professionals who came for jobs and later started families. Metro areas with diversified economies such as Austin, Texas, Raleigh, N.C., and Portland, Ore., all saw gains in college graduates; other places seeing gains or reduced losses in young adults, such as Washington, D.C., Boston and San Francisco, have burgeoning biotech industries.

In West Virginia, more than 40 of its 55 counties had natural decrease over the past decade. Yet the state still gained population overall, and averted a loss of a U.S. House of Representatives seat based on the 2010 census.

It wasn't because of a last-minute turnaround.

Most of West Virginia's population gains are new residents spilling over into the eastern part of the state from the blossoming Washington-Baltimore metropolitan area. The three counties on the Maryland line, Morgan, Berkeley and Jefferson, each had substantial increases.

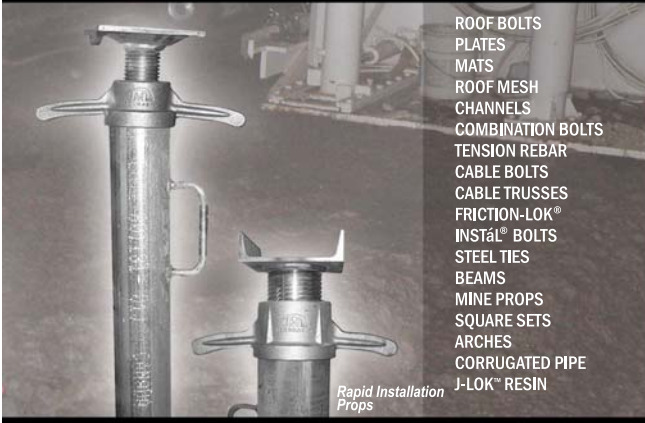
It's a different story in West Virginia's northern panhandle, along the edge of Pennsylvania near Pittsburgh.

On a recent afternoon, a group of students mingled during a cigarette break at West Virginia Northern Community College in Wheeling and chatted about their futures. "It's not that bad an area," said Demetrius Paige, 19, but there are "not a lot of jobs." He plans to leave within six years.

Kayla Murphy, 19, of Moundsville wants to stay in the state and become a nurse to help children like her brother, who has celiac disease and diabetes. She says moving out is the only real option for career-oriented people. They include her boyfriend, who left for Wisconsin to teach history. "You have to," Murphy said. "Working at McDonald's isn't cool."

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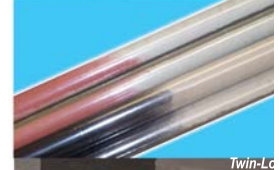
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Underground mines are tough places for haulage vehicles to operate – JOY shuttle cars are designed to meet the challenge. Every element of a JOY shuttle car is engineered to balance performance and efficiency. JOY shuttle cars have a heavy-duty, high-power drive train that enables them to haul loads in extremely arduous conditions. The permanent four-wheel drive system is powered by two 85kW VFD AC traction motors (50kW in lower seam models). Wheel units have been upgraded to

be more robust and durable and the cast pivot axles are virtually indestructible. A four-wheel independent suspension system is also available to help maintain higher tram speeds and improve the operator's comfort in uneven and/or broken roadways.

The JOY shuttle car chassis and rolling gear are designed using Finite Element Analysis (FEA) techniques to find the optimal balance of volumetric load, vehicle dimensions, load-carrying ability and fatigue life. Heavy-duty conveyor reducers and abrasion-resistance conveyor decking further improve reliability and durability. With over 80 units in the field today, JOY shuttle cars are available with an optional remote control system. Remote control permits deeper cuts as the shuttle car, now unmanned, can follow the miner under unsupported roof. This significantly improves the overall productivity of a room and pillar section.

Atlas Copco's Minetruck MT42 Next Generation Underground Trucks

A high speed 42-ton articulated truck, the MT42 has been designed for maximum productivity, increased safety and operator comfort.

The Minetruck MT42 is powered by a 520-hp EPA Tier 3/Stage IIIA Cummins QSX15. The fuel efficient, low-emission engine, coupled with proven drivetrain components, delivers reliable performance and high speed on ramps. The transmission has eight

forward and two reverse gears and features a self-diagnostic system for rapid troubleshooting. A service bay on the side of the truck allows easy access to filters, valve blocks and service points for daily maintenance, and the cabin can be hydraulically tilted to expose the engine bay.

Operator comforts in the standard ISO ROPS/FOPS certified cabin include an air suspended forward-facing seat; a clear, multifunction display monitor; air conditioning; and a trainer's Rear facing cameras – one backup camera and one loading camera covering the box – increase the operator's view from the cabin.

The articulated steering increases maneuverability and allows agile cornering, while the dump system can discharge a full load in just 13 seconds. Front axle suspension further contributes to operator comfort, while also allowing greater speeds on mine roadways. The truck's brakes are spring applied, hydraulic released (SAHR) – the safest in the industry. SAHR brakes eliminate the need for a separate parking brake, are low maintenance and provide extended service life.

“The Minetruck MT42 has safety and performance features that will be very attractive to our customers.

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Keystone Mining Services is the engineering affiliate company of Jennmar Corporation that

oversees research and development. KMS conducts extensive ground control engineering for Jennmar.



KMS has made improvements to its computer modeling packages, including primary and supplemental bolting, pillar design, optimum long-wall orientation and mining sequence, and seam interaction stresses.

The ultimate goal of Keystone Mining Services and Jennmar is to utilize existing and new products and advanced ground control engineering to improve mine safety and productivity.

Bucyrus VAST™ Shovel Simulator Delivers Cost Effective Operator Training!

Bucyrus International, Inc. announced the introduction of the new VAST™ System (Value Added Simulation Training) specifically for Bucyrus electric mining shovels. VAST™ is designed to reduce training costs, increase productivity, and improve training effectiveness. Studies have shown that new operators who receive training with VAST™ prior to field training consistently maintain a higher level of productivity that those who do not receive simulator training. The VAST system has a low cost to purchase and operate; all that is needed is the VAST software, an updated Windows based

PC, a monitor, and two joysticks.

VAST™ gives an introduction to the basics of safe, productive shovel operation and also serves as refresher training for more seasoned operators. Simulator users are placed at the controls of a Bucyrus shovel in a virtual mine and interact with a simulated haul truck. The VAST™ system contains a total of 8 different training modules including:

Cat® 994F Wheel Loader Now Offers Ex- tended High Lift Option

The new Extended High Lift Option for the Cat® 994F Wheel Loader enables the popular mining machine to load Cat 793 and similarly sized trucks more efficiently. The Extended High Lift (EHL) linkage provides 42 inches (1075 mm) more dump clearance compared to the High Lift linkage.



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