

NATIONAL COAL COUNCIL ~ AUGUST 2015

NETL DIRECTOR TO KEYNOTE NCC FALL 2015 MEETING ~ NOVEMBER 4-5 To be hosted at NETL Pittsburgh

Dr. Grace M. Bochenek, Director of the National Energy Technology Laboratory (NETL), is confirmed to deliver the opening keynote address at the National Coal Council's Fall 2015 meeting, November 4-5 at NETL-Pittsburgh. Dr. Bochenek oversees NETL's \$9 billion, 1,800-project portfolio of energy initiatives and parternships with research universities and the private sector. We're delighted she'll be joining us to share her perspective on NETL's activities related to coal technology RD&D.

We'll have a chance to hear from others at NETL as well and learn more about activities underway and planned at NETL's Strategic Center for Coal. An optional afternoon tour of the NETL facility will provide an opportunity for interaction with NETL staff working on key coal-related programs.

Program details and logistics are being finalized. Meeting and hotel registration information will be made available within the next few weeks.

The preliminary agenda:

Wednesday, November 4th

6-8 pm ~ Reception at Host Hotel Site Crowne Plaza South Pittsburgh

Thursday, November 5th

9 am-Noon ~ Full Council Meeting at NETL Noon ~ Networking Lunch at NETL 1 pm+ ~ Optional Tour of NETL Facility

Transportation to-from the Crowne Plaza will be provided for all meeting attendees the morning and afternoon of November 5th. Details to follow.



We have a number of sponsorship opportunities available for this special meeting. Please contact NCC Meetings Manager, Hiranthie Stanford at 202-756-4524 or hstanford@NCC1.org for more information.

We look forward to seeing you in Pittsburgh in November!

NCC LEADERSHIP

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Mike Durham, NCC Vice Chair Principal, Soap Creek Energy

Fred Palmer, Coal Policy Chair Exec. Advisor, Peabody Energy

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Gregory Workman, Dir. Fuels Dominion Resources

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VP Energy Mgt. & Trading Ameren Missouri

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CHAIR ~ Holly Krutka

NCC Staff

Janet Gellici, EVP & COO Hiranthie Stanford Member & Meetings Manager Hunton & Williams Legal Counsel

NationalCoalCouncil.org

1101 Pennsylvania Ave. NW Ste. 600 Washington, DC 20004 (202) 756-4524

NCC's SOCIAL MEDIA INTIATIVES

Someone once said that a journey begins with one step. The National Coal Council is starting to take its first steps in the social media world. The NCC Facebook Page is up and we'll be posting links and snippets of information regularly.

We need your help with www.facebook.com/NationalCoalCouncil.

- On Facebook, please "Like" the NCC page.
- Share important coal industry events and articles to the NCC page.
- Comment on NCC posts.

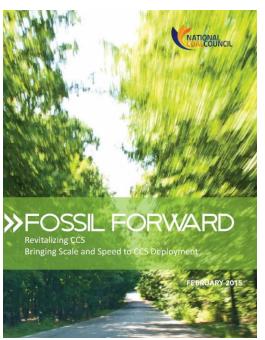
We're also working on NCC Twitter ~ https://twitter.com/CoalCouncil ~ with a huge assist from NCC Communication Committee Vice Chair Dawn Santoianni (Tau Technical Communicatios). Please log on and follow us on Twitter.

Kudos to all members of the NCC Communications Committee for their efforts in advancing the communications and outreach initiatives of the NCC. We have 15 actively engaged members of the Committee who, under the stellar leadership of Holly Krutka (Shenhua Group/Cornerstone Magazine), are rolling up their sleeves to ensure that the good work of the Council does not go unnoticed.

The Committee is currently developing content for the Energy Education section of the NCC website focused around five key areas:

- The Importance of Coal Past, Present & Future
- Keeping the Lights On: Coal's Role in Ensuring Reliability
- Fueling Our Economy
- Advancing Environmental Objectives
- Enhancing Lives with Coal

If you'd like to join the NCC Communications Committee, please contact Holly Krutka at hkrutka@gmail.com.



FOSSIL FORWARD STUDY NOW IN PRINT

An expanded version of the Executive Summary of NCC's latest study for Energy Secretary Moniz is now available in hard copy.

NCC members should already have received a copy of "Fossil Forward-Revitalizaing CCS: Bringing Scale & Speed to CCS Deployment."
Additional copies are availabe upon request.

If you'd like a copy/copies of this document, please send your request to info@NCC1.org.

COAL RESOURCES

U.S. Department of Energy www.doe.gov
Office of Fossil Energy

National Energy
Technology Laboratory
www.netl.doe.gov
Coal & Power Systems

EIA Coal Data Browser www.eia.gov/coal/data/b rowser

ACC Statement on EPA's Clean Power Plan <u>American Coal Council</u> 8-3-15

Five Myths About Coal Washington Post 8-7-15

Gates to double investment in renewable energy projects Financial Times 6-25-15

There are 2,100 new coal plants being planned worldwide ...

Vox Energy &

Vox Energy & Environment 7-9-15

CCS eConference August 13, 1-2;30 pm CST Moderated by NCC Member Karen Obenshain of Edison Electric Institute World Arena

Changing Uses of the Electric Grid: Reliability Challenges & Concerns Electric Markets Research Foundation July 2015

EPA 111d – Improving Coal Plant Heat Rates Storm Technologies

Failure to Deploy Coal
Technologies Puts Climate
Change Goals at Risk
Janet Gellici at Brink
News July 2015

Gellici Speaking Engagements MIT Carbon Sequestration Forum

Cambridge, MA – Oct. 21-22

<u>Carbon Management</u>

<u>Technology Conference</u>

Houston – Nov. 17-19

National Coal Council NationalCoalCouncil.org

NCC Member Focus

Since her appointment to the NCC in 2014, Holly has wasted no time becoming fully engaged with the organization. Holly's energy, enthusiasm, expertise and can do attitude are great assets for NCC. Thank you, Holly, for all you do!

Dr. Holly Krutka is the Executive Editor of Cornerstone, The Official Journal of the World Coal Industry, which was launched in 2013 on behalf of the World Coal Association and is fully sponsored by Shenhua Group. Holly is responsible for implementing the strategic vision set for the journal and managing a team of editors spanning three continents. Since taking her role as Executive Editor, Holly has been focused on the intersection of policy and technology as it relates to coal at the international level. She is especially passionate about advancing the deployment of carbon capture and storage.

Prior to her position with Shenhua, Holly worked at ADA-ES as a Research Scientist & Senior Research Engineer investigating CO2 capture. Her principal research focus was the development of a novel post-combustion CO2 capture technology based on dry sorbents. There are several patents pending and newly approved related to that research.

Holly has been heavily involved with the National Coal Council since 2008. She has played a leadership role in several studies focused on reducing CO2 emissions from coal utilization. Holly currently serves as the Chair of the NCC Communications Committee and is a member of the NCC Executive Committee.

Holly received her BS (magna cum laude) and PhD in Chemical Engineering from the University of Oklahoma.

Holly Krutka 303-588-4322

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HOLLY KRUTKA EXECUTIVE EDITOR CORNERSTONE

THE OFFICIAL JOURNAL
OF THE WORLD COAL INDUSTRY

SHENHUA SCIENCE & TECHNOLOGY RESEARCH INSTITUTE

Cornerstone, The Official Journal of the World Coal Industry, is an open-access journal focused exclusively on coal. The journal covers both policy and technology developments at the international level to bring appreciation to the critical role of coal in the global energy mix and technologies to limit the associated environmental footprint.

Cornerstone subscriptions are provided free of charge thanks to full sponsorship from Shenhua Science and Technology Research Institute, a subsidiary of Shenhua Group, based in Beijing, China. Shenhua Group is a Chinese state-owned, vertically integrated energy company. As of 31 December 2014, the total market capitalization of China Shenhua was US\$64.7 billion, ranking first among all listed coal companies worldwide. In addition to coal mining, Shenhua Group is one of China's largest electricity producers, with an energy mix comprised primarily of coal, but also including assets relying on gas, hydro, wind, nuclear, and solar. Additionally, Shenhua Group has an extensive transportation network composed of rail and seaborne coal. The company boasts one of the best safety records in the world and is a leader in the application of clean coal technologies in China.

Cornerstone is published on behalf of the World Coal Association (WCA), based in London. The mission of the WCA is to defend and grow markets for coal based on its contribution to a higher quality of life globally, and to demonstrate and gain acceptance that coal plays a fundamental role in achieving the least cost path to a sustainable low carbon and secure energy future.

>> FOSSIL FORWARD

Revitalizing CCS:

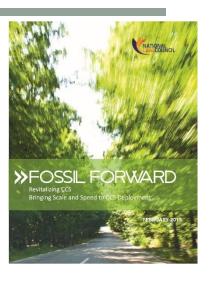
Bringing Scale & Speed to CCS Deployment

In January 2015, NCC members approved a study the Council conducted for the Secretary of Energy assessing the value of the Department of Energy's Carbon Sequestration Program.

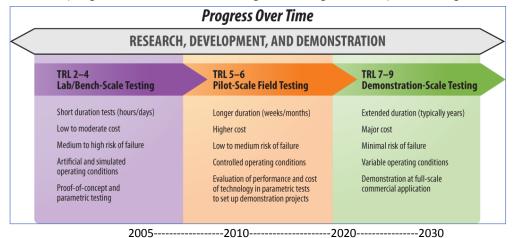
A series of newsletter articles over the next few months details primary findings and recommendations from sections of the report.

Status & Achievements of Current CCS/CCUS DOE Programs

The U.S. Department of Energy (DOE) launched its carbon capture and storage (CCS) program in 1997 with \$1 million in funding. Today, the DOE CCS R&D program has grown to a \$200+ million annual program with a portfolio of nearly 200 projects across the CCS chain in various stages of development.



DOE programs support R&D, pilot scale testing, and commercial scale demonstration and currently focus on two core research technology areas: post-combustion capture and pre-combustion capture. The original Carbon Capture program goal was to have 90% CO₂ capture with 99% permanent storage for a no more than a 10% increase in the cost of services by 2012. These program goals are not the kind of goals that would be set by the private sector, which must envision a path through to commercial application within a reasonable timeframe in order to justify a return on investment. At best, the DOE programs are intended to bring technologies to the point of large-scale demonstration.



Stages of CO₂ Capture Technology R&D

Pilot scale testing is critical for validation and development to move to commercial scale, but the current DOE program structure does not support large-scale pilot projects. While initial laboratory scale data is relatively low cost, pilot work is more expensive and considered a high-risk endeavor both technically and financially due to the uncertainty of technologies. Pilot project budgets are cost prohibitive for small technology development companies and not palatable for larger firms uncertain of the return on investment.

Key Findings

- Significantly more CCS/CCUS pilot and demonstration projects are needed in order to commercially deploy the technology. Without demonstration there can be no commercialization of CCS/CCUS.
- It is impossible to objectively assess progress against the DOE program goals. Goals are overly optimistic in terms of level of performance, cost and projected time to accomplish commercial demonstrations.
- Funding for DOE Programs is Inconsistent with DOE goals. DOE programs have consistently been inadequately funded; significant federal financial support will be necessary for successful deployment of CCS.
- CCS technology is not commercially available at large power plant scale. The state of CCS development within DOE establishes that CCS is not commercially available at this time.
- Opportunities to exploit CO₂ for EOR applications to expedite CCS/CCUS technology are hampered. While EOR has been successfully demonstrated, its further deployment still faces unresolved regulatory issues in the U.S.

NCC Fossil Forward-Revitalizing CCS Study

WHO KNEW?*

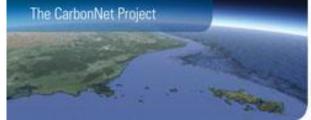
The CarbonNet Project

The <u>CarbonNet Project</u> is investigating the potential for establishing a world class, large-scale carbon capture and storage (CCS) network. The network would bring together multiple carbon dioxide (CO₂) capture projects in Victoria's Latrobe Valley (Australia), transporting CO₂ via a shared pipeline and injecting it into deep underground, offshore storage sites in the Gippsland region of Victoria. This region is widely recognized as a world-class location offering significant potential for CCS. The nearby Latrobe Valley is home to power stations responsible for generating more than 90% of the state's electricity. The adjacent offshore Gippsland Basin has been found to have the highest technical ranking of 25 major basins across Australia and the largest storage potential of any east coast basin.

The project is exploring the potential to capture and store 1-5 million tonnes of CO₂, per year, with the possibility of scaling up. Successful implementation of this project could be the starting point for an expanding commercial scale carbon transportation and storage system, enabling a significant reduction in carbon emissions from electricity in Victoria.

CarbonNet is managed by the Victorian Department of Economic Development, Jobs, Transport and Resources. It is at feasibility and commercial definition stage with extensive research, engineering and commercial studies being undertaken, including modelling of potential CO₂ storage sites. The project is funded by the Australian and Victorian governments.

In June 2015, Victoria's Department of Economic Development, Jobs, Transport and Resources prepared a Knowledge Sharing Report for the Global Carbon Capture and Storage Institute (GCCSI). This report provides a historical perspective of CarbonNet from prior to its inception to today. It is intended to help project participants and their stakeholders understand how the vision of a network hub concept has developed in Victoria, Australia.



http://www.energyandresources.vic.gov.au/energy/carbon-capture-and-storage/the-carbonnet-project

*A regularly featured column on industry, university and government initiatives in support of clean coal technology development & commercialization.



Chair's Advisory Council Members!

The support of the following companies as members of the Chair's Advisory Council contribute significantly to the ability of the National Coal Council to perform its work for the Secretary of Energy.

We couldn't do what we do without them ~ thank you one and all!

Advanced Emissions Solutions Ameren Missouri Arch Coal BNSF Railway Clean Coal Solutions Dominion Energy Jupiter Oxygen Peabody Energy PSEG Southern Company Tri-State G&T

Coal Currents Todd H. Cunningham, Contributing Editor

A brief survey of leading coal industry stories of the past month. Highlighted underlined text links to the cited articles. Right click on highlighted text and select the "Open Hyperlink" option to view the cited article.

CLIMATE CHANGE

President Unveils Plan for Cutting Power Sector's Carbon Emissions

President Obama has unveiled his Clean Power Plan, which mandates a reduction in the power sector's carbon emissions of 32% below 2005 levels in 2030. Plans for meeting the initiative are the responsibility of the states, and are due in September 2016, although two-year extensions will be available. If states decline to draft plans, EPA will do so for them. Compliance is to begin in 2022, with emissions reductions to be phased in until 2030. During the rollout, the President asserted that failing to address climate change would be "shameful," and he cautioned the public not to heed criticism from opponents representing "special interests" and their Congressional allies. The criticism came quickly, from GOP presidential hopefuls, other lawmakers and the private sector. According to National Journal, Senate Majority Leader Mitch McConnell (R-Ky.) said the chamber would explore options including a resolution of disapproval under the Congressional Review Act, riders on appropriations bills and legislation specifically targeting the initiative. Across Capitol Hill, House Speaker John Boehner (R-Ohio) pledged to stop what he termed a "national energy tax," The Hill reported. Meanwhile, the National Mining Association (NMA) requested that the Administration stay the rule pending judicial review; the publication indicated that NMA wrote EPA Administrator Gina McCarthy that the Plan is likely to be reversed on appeal, "because Congress did not give the Agency the power to restructure how the nation produces and consumes electricity."

Clinton Aide Cites Climate, Clean Energy as Key Campaign Themes

Hillary Clinton, frontrunner for the Democratic presidential nomination, has unveiled the first part of her energy and climate change platform. Her positions include continuation of the Obama Administration's tightened emissions standards for the nation's coal-fired power plants and expansion of renewable energy sufficient to power all U.S. homes within a decade of her inauguration. At the same time, The New York Times reported, the candidate promised to "do more to help in coal country," including aiding workers unemployed due to power plant closures. The Clinton campaign said the candidate's speech was part of a broader energy and climate agenda to be rolled out in coming months. While "some environmentalists are dubious about Clinton's commitment to powerfully confronting global warming and fossil fuels," National Journal's Energy Edge indicated, her campaign chairman vowed she would make climate change and clean energy major themes of her race for the White House. Meanwhile, The Hill noted, the American Coalition for Clean Coal Electricity (ACCCE) denounced Clinton's plan as a continuation of the administration's "dog and pony climate show" rather than a recognition of "the role of affordable and reliable coal-based electricity."

ON CAPITOL HILL

House Approves Coal Ash Legislation as White House Threatens Veto

The House has approved a coal ash measure that would alter some aspects of the wide-ranging rule issued by EPA late last year and slated to take effect in October, drawing a veto threat from the White House. The Hill reported that the legislation, HR 1734, introduced by Reps. David McKinley (R-W.Va.) and John Shimkus (R-III.), would establish a state permitting program for coal ash under RCRA rather than the EPA rule's federal regime, which McKinley described as "vague and harmful." However, the publication added, it would delay parts of the rule and weaken or eliminate others, including EPA's ability to strengthen future disposal standards by designating coal ash as a hazardous substance, in contrast to today's non-hazardous designation. While McKinley asserted that the measure would provide more certainty than the EPA rule, the White House called the bill an attempt to "significantly undermine the progress in the EPA rule." A companion Senate bill, S 1803, has been introduced by Sens. Joe Manchin (D-W.Va.) and John Hoeven (R-N.D.)

Coal Currents (continued) ENVIRONMENTAL REGULATION

States Seek to Take Challenge to Emissions Rule to Full DC Circuit Court

Fourteen (14) states have asked the entire 17judge U.S. Court of Appeals for the D.C. Circuit to hear a challenge to the Obama Administration's Clean Power Plan (CPP), a proposal to slash carbon emissions from coal power plants, The Hill reported. The challenge previously had been rejected as premature by a three-judge panel of the court, which pointed out that the Plan had not been finalized, the publication noted. But the states told the full court that under this decision, "an agency can repeatedly threaten regulated parties to make immediate expenditures to comply with an unlawful but not-yet-final rule, and evade legal accountability for this misconduct." Without rehearing, they underscored, "this powerful tool will only further enable agencies to make their policy goals a practical reality before the courts can review their legality." The Hill pointed out that the latest appeal may soon become moot, however, since the administration is planning to make the CPP final as early as the beginning of August.

Appeals Court Overturns Emissions Limits in EPA's Cross-State Air Rule

A federal appeals court has overturned what it characterized as the Environmental Protection Agency's (EPA) excessively stringent limits on power plants' emissions of sulfur dioxide (SO2) and nitrogen oxide (NOx) that cross state borders. The U.S. Court of Appeals for the D.C. Circuit returned the limits to EPA for revision, leaving the underlying Cross-State Air Pollution Rule (CSAPR) intact in the interim. According to Reuters, the appeals court said EPA would have to revise the sulfur dioxide emissions budgets for four states and nitrogen oxide budgets for 11, because it had required states to reduce them beyond the point necessary to keep down-wind states in compliance with federal pollution standards. It directed the Agency to move promptly in setting new budgets. The rule, applicable to 28 eastern states, previously had been challenged at the U.S. Supreme Court. The states involved argued that EPA had exceeded its authority by issuing uniform pollution standards for up-wind states rather than tailoring the standards to the pollutants actually released by individual states, The Hill reported. The high court upheld EPA's basic rule, the publication indicated, but remanded specific state challenges to the D.C. Circuit.

Interior Dept. OKs 25-Year Lease Extension for Navajo Plant and Mine

The Interior Department has approved a 25year site lease extension for the 1,540-megawatt Four Corners Power Plant and Navajo Mine Energy Project in northwestern New Mexico. According to the Department, the project will support continued operation of the remaining two units at the plant, which is owned by five utilities and receives coal solely from the Navajo Tribal Coal Lease Area. In response to EPA's Federal Implementation Plan (FIP) for the Best Available Retrofit Technology (BART) for the facility, Interior reported, operators shut down three of its five units in 2013 and agreed to install selective catalytic reduction (SCR) devices on the remaining two. Cronkite News reported that the deal came less than a month after the plant's operators agreed to settle a lawsuit by federal officials and green groups which claimed that plant emissions violated the Clean Air Act. Under the consent decree that settled the suit, operators agreed to reduce emissions from Four Corners and set aside funds for health and environmental programs.

ENERGY ISSUES

Coal Will Be a Leading Fuel for Foreseeable Future, Moody's Report Says

Unless carbon emissions regulations are accelerated, coal-fired electricity generation, which represented about 27% of total U.S. electric supply in 2014, will continue to be a leading fuel for the foreseeable future, Moody's Investor's Service forecast. In a new report, "Coal-fired Power Plants Won't Soon Be Replaced by Alternative Sources" (subscription required for access), Moody's put the nation's coal-fired electricity generating capacity at almost 300 gigawatts (GW), producing some 1,600 trillion watt hours (TWhe) of electricity in 2014. While the coal-fired sector has declined from a 31% share of total capacity 10 years ago, and Moody's expects 13 GW of capacity to retire this year, the average fleet capacity factor has risen to 61%, from 55% five years ago, the company said. Power produced from coal-fired generation was 44% higher than that from gas-fired sources, and 105% higher than generation form nuclear power, the report added. Meanwhile, "the overall efficiency of the remaining coal-fired generation fleet will continue to improve," a Moody's analyst indicated.

Todd H. Cunningham, who writes the "Coal Currents" column for the Council's monthly National Coal Advisory, is available for additional writing projects involving coal and other energy policy issues. For information on Todd's background and experience, see his LinkedIn profile at www.linkedin.com. To discuss your editorial needs, contact Todd via email at tcunningham03@comcast.net.

Coal Currents (continued) MINING & TRANSPORTATION

Updated Rule on Stream Protection Proposed by Interior Dept.

The Interior Department has unveiled a proposed stream protection rule that would revise the 1983 regulations now in effect, describing it as an effort to keep pace with modern mining practices. The proposal would require coal companies to test and monitor the condition of streams that surface mining might impact before, during and after operations, providing baseline data to ensure detection and correction of possible problems. It also would require companies to restore streams and return mined-over areas to the uses they were capable of supporting before mining. According to Latham's Clean Energy Law Report, the proposed rule would significantly alter OSMRE's decades-old 'Stream Buffer Zone' regulations ... and would expand regulatory oversight in the coal industry." While Interior emphasized the "extensive public outreach" underlying the proposal, and its commitment to working with coalfield communities, PennEnergy reported that GOP lawmakers quickly assailed it. Meanwhile, the National Mining Association (NMA) described the proposal as unnecessary, asserting that significant environmental protections are already ensured by state and federal agencies.

BLM Hosting Listening Sessions on Federal Coal Program

The Interior Department's Bureau of Land Management (BLM) is hosting a series of listening sessions on the federal coal program, seeking information from the public on how it can best carry out its responsibilities to ensure taxpayers receive a fair return on federally managed coal resources, possibly through raising the royalty rate applied. The sessions began in Washington, D.C., in late July, and will continue with an Aug. 11 meeting in Billings, Mont.; Aug. 13, Gillette, Wyo.; Aug. 18, Golden, Colo. (livestream option available); and Aug. 20, Farmington, N.M. BLM manages 310 active coal leases, covering some 475,000 acres in 10 states. About 40% of the coal produced in the U.S. comes from federal resources. In announcing the sessions, Interior Secretary Sally Jewell said they represent an opportunity "to better understand how taxpayers, stakeholders and local communities perceive the federal government's coal program today and how we can improve and strengthen it for future generations."

IN THE INDUSTRY

Public-Private RD&D Partnerships Seen a Key to Enhancing Coal's Value

Collaborative public-private partnerships are needed to ensure that coal-based electricity generation can continue as a key component of the nation's generation portfolio, a new report says. The "CURC-EPRI Advanced Coal Technology Roadmap," prepared by the Coal Utilization Research Council (CURC) and the Electric Power Research Institute (EPRI), updates a 2012 report. According to the authors, it provides "a detailed pathway to deliver first-of-a-kind, low-carbon coal technology options by 2025-2035, and details the RD&D for technologies that will enhance the value of both existing and future coal plants in the U.S. generation fleet. It specifies that major RD&D priorities include improving existing plant performance, developing carbon capture and storage technologies, highly efficient advanced ultrasupercritical coal plants, coal gasification technologies, and transformative technologies that can achieve step change in efficiency, reduced emissions levels, and cost. The document was developed in response to several market conditions, including but not limited to the impact of regulations to limit greenhouse gas emissions (GHG) from fossil-fueled power plants and the availability and growth of low-cost, domestic supplies of natural gas.

INTERNATIONAL INTEREST

WCA Calls on World Bank to Recognize Coal's Role in Global Development

With the International Energy Agency (IEA) estimating that global electricity production from coal is expected to grow by about one-third by 2040, the World Coal Association (WCA) has called on the World Bank to recognize the fuel's vital role in bringing affordable, reliable electricity to hundreds of millions of people in developing countries. According to *PennEnergy*, WCA Chief Executive Benjamin Sporton cited China as the leading example of a country that had developed rapidly using coal. "Over the past three decades the country has connected 99% of its population to the grid and seen its economy grow at an astonishing rate," he wrote. "None of this development would have been possible without the use of coal." Sporton pointed out that high efficiency, low-emissions technologies and carbon capture, use and storage have the potential to dramatically reduce emissions from coal-fired power plants, while still meeting demand, the publication reported. "It is only by treating climate and development objectives as integrated priorities" that we will successfully overcome global challenges, he underscored.