

# THE CARBON SEQUESTRATION NEWSLETTER

<http://www.netl.doe.gov/sequestration>

March 2005

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## Sequestration in the News

**Fortune, "Old King Coal Comes Back."** Article contends that coal is here to stay despite the focus on other sources of energy over the last half of the last century. Provides insight into the coal mining operations of the Powder River Basin, focusing on mining and transportation. Article also distinguishes between eastern and western coal and highlights maintenance issues and technological advancements related to the burning of western coal. IGCC is discussed in the context of global warming. Said William Reilly, former EPA administrator, "Coal gasification, when combined with carbon sequestration, has the potential to revolutionize energy production." February 21, 2005, <http://www.wbcsd.org/plugins/DocSearch/details.asp?type=DocDet&ObjectId=13259>

**CBC News, "Apache to spend \$95M to flush out oil with CO<sub>2</sub>."** Apache Canada Ltd. is planning a CO<sub>2</sub> enhanced oil recovery project using anthropogenic CO<sub>2</sub>. The project is located in Southeast Saskatchewan, in the same region of Canada that contains the Weyburn Field, and will tap into the pipeline running up from Dakota Gasification. The provincial Industry and Resources Department said it encouraged the Apache project by offering breaks on taxes and royalties. Even with those breaks, the government says, it hopes to collect an additional \$106 million in royalties and taxes over the life of the project (incremental oil production estimated to be 45 million barrels over 25 years). The article states, "The government says the process is safe, referring to a recent scientific study that projected only about 0.2 percent of the CO<sub>2</sub> stored underground would leak out into the atmosphere over 5,000 years." February 23, 2005, <http://sask.cbc.ca/regional/servlet/View?filename=midale-project050223>

**The Wall Street Journal, "Burial Plan."** Highlights a geologic CO<sub>2</sub> sequestration project, In Salah, being undertaken by BP in a remote region of Algeria. One million tons of CO<sub>2</sub> will be captured from a natural gas processing plant and re-injected into the natural gas-bearing formation. The cost of the CO<sub>2</sub> capture and compression equipment was \$100 million. A history of the project is given, planning for CO<sub>2</sub> injection began in 1997. Also, strategies for CO<sub>2</sub> injection and practical hurdles including land access for injection wells and compressor breakdowns are related. February 4, 2005, <http://online.wsj.com/public/us> (subscription required).

**The Guardian, "CO<sub>2</sub> gases may be buried at sea."** The UK's chief scientist Sir David King, speaking at a climate change conference revealed the British plan to capture carbon dioxide and pump it underground as one of the potential ways of solving a global problem. He also raised concerns that the Chinese were building a large number of coal-fired power stations which would make the problem worse. He said he had asked the Chinese authorities to design the new stations so that if the British carbon sequestration scheme worked, the technology to capture carbon dioxide could be fitted to the Chinese stations. Said Sir David, "The North Sea scheme is an experiment to see if oil wells that are running out could be utilized to store carbon dioxide deep underground. The gas would be taken in tankers to the oilfields and pumped under pressure into the oil wells, which would turn it into a liquid and force out the oil. In the longer term, if the experiment was successful, the world would soon run out of oil wells for all the carbon dioxide being produced. There were, however, many salt water aquifers in the world into which carbon dioxide could be pumped. Producers who wanted to continue using coal and gas could use this method to dispose of the carbon dioxide and their businesses would pay for the costs." February 3, 2005, [http://www.guardian.co.uk/uk\\_news/story/0,3604,1404644,00.html](http://www.guardian.co.uk/uk_news/story/0,3604,1404644,00.html)

**Scientific American, "Capturing Carbon Dioxide."** Article discusses the potential of carbon capture and storage (CCS) to cut emissions of carbon dioxide in light of the Kyoto Protocol coming into force on February 16<sup>th</sup>. Sleipner and Weyburn are cited as examples of commercially viable CCS operations, but the article is quick to point out that CCS is expensive. "There's still a gap between the marketplace and the technology," says Howard Herzog of the Laboratory for Energy and the Environment at MIT. The best way to make CCS cheaper is for government to provide incentives to use it, asserts David Hawkins of NRDC. "Learning by doing is the thing that drives the cost down, not R&D dollars," he adds. DOE carbon sequestration program manager, Scott Klara says he is confident that even for traditional coal plants the cost of CCS can be reduced to \$20 per ton. February 14, 2005, <http://www.sciam.com/article.cfm?chanID=sa004&articleID=0000492C-072B-120D-872B83414B7F013B>

## Sequestration in the News, Cont'd

### **Islam-online.net, "Horrors of Global Warming Highlighted."**

According to conference participants, global warming would boost outbreaks of infectious disease, worsen shortages of water and food in vulnerable countries and create an army of climate refugees fleeing uninhabitable regions. Scientists even gave a detailed timetable of the destruction and distress that global warming is likely to cause to the world. The conference, however, ended on a positive note, with the forum showing how far the argument for carbon sequestration has come, with a series of experts insisting it can be transformed from fiction to fact. February 3, 2005,

<http://www.islam-online.net/English/News/2005-02/03/article08.shtml>

### **The Daily Texan, "Solution to warming: Go underground."**

The article highlights the Frio project and efforts to model CO<sub>2</sub> storage in geologic formations. The article states, "One way to reduce these [greenhouse gas] emissions is to drill wells deep into the Earth's crust and pump pressurized carbon dioxide into salt water aquifers, where it is sequestered for geologic time scales. This might sound bizarre, but researchers feel it is a viable option." Justin Ferrell, a researcher at the University of Texas has performed modeling, simulations, and cost analyses of geologic storage and is quoted, "The cost is about \$1.15 per ton of carbon dioxide, surface to ground. Surface to ground means the price to put the gas down there - any other significant cost is from the pipelines to get the carbon dioxide to the well." February 22, 2005, <http://www.dailytexanonline.com/news/2005/02/22/Focus/Solution.To.Warming.Go.Underground-872198.shtml>

### **E/The Environmental Magazine, "Hiding the Bad Gas."**

Says Einar Haandlken from the Oslo-based environmental group Zero, "Reducing the world's dependency on fossil fuels will take too long. We don't have enough time to do this because we need to cut greenhouse gases immediately." Zero is working with Norway's oil and power industry to remove millions of tons of CO<sub>2</sub> from Norway's fossil-fuelled power plants and pipe them deep under the North Sea into old and existing oil fields. January/February 2005, <http://www.emagazine.com/view/?2167>

### **Oil & Gas Journal, "Acid-gas injection due at LaBarge plant."**

ExxonMobil Corp. has drilled two wells with state and US Environmental Protection Agency approval to be used to inject a combined 60-67 MMcfd of 65% CO<sub>2</sub> and 35% H<sub>2</sub>S below the Madison gas-water contact at 17,500 ft. Injecting the H<sub>2</sub>S will allow the company to shut down the aging sulfur recovery unit, which has high operating and maintenance costs, and exit the weak market for sulfur. Of the plant's output of 250 MMcfd of CO<sub>2</sub>, 80% is sold to three operators of enhanced oil recovery projects in Wyoming and Colorado. Anadarko Petroleum Corp. expects to take nearly all of the rest of the available CO<sub>2</sub> when it boosts injection into its Salt Creek and West Sussex oil fields in the Powder River basin later this year. January 28, 2005, [http://ogj.pennnet.com/articles/article\\_display.cfm?article\\_id=220352&x=y](http://ogj.pennnet.com/articles/article_display.cfm?article_id=220352&x=y) (subscription required)

### **Fuel Cell Works, "Agni Receives Order for 1MW Integrated Fuel Cell Engine Power Plant."**

Agni Inc. confirmed receiving an order for a 1MW Integrated Fuel Cell Engine power plant with carbon dioxide sequestration from a regional oil & gas company. Agni's 1MW Integrated Fuel Cell Engine power plant is comprised of an internal combustion engine, waste heat recovery system, natural gas steam reformer, PEM fuel cells, balance of plant, power inverters, and carbon dioxide recovery system. This plant will recover 6,360 tonnes per annum of Carbon Dioxide. Agni Inc and the client will release more details of the installation within the next 60 days. February 9, 2005, <http://www.fuelcellsworks.com/Suppage2027.html>

### **Financial Times, "The race to curb greenhouse gases heats up."**

Emerging technologies would provide the solution to the problem of climate change, George W. Bush said during his visit to Europe this month. He outlined a way forward based on more collaboration with European researchers and "technologies, such as hydrogen-powered vehicles, electricity from renewable energy sources, and clean coal technology (that) will encourage economic growth that is environmentally responsible." Contemplating about whether there is enough time to wait for emerging technologies to mature, Peter Challoner of Southampton University said, "It's not just that we can't wait for these new technologies. It's that the problem has reached such an extent that we need to think about radical solutions. I've started to think that carbon sequestration might be the best answer." February 25, 2005, <http://www.wbcds.org/plugins/DocSearch/details.asp?type=DocDet&ObjectId=13350>

### **U.P.I., "Climate: Low-carbing the atmosphere."**

Article states that carbon sequestration has become the leading weapon in the U.S. government's arsenal against climate change. Article goes on to discuss the benefits and drawbacks of ocean, terrestrial, and geologic sequestration. Concludes that both the Bush administration and environmentalists see promise in sequestration. January 31, 2005, <http://www.wbcds.org/plugins/DocSearch/details.asp?type=DocDet&ObjectId=12987>

### **News Designerz, "Carbon storage option under microscope at global warming confab."**

A top meeting of world experts on climate change headed towards a close with a close look at ways – considered outlandish only a few years ago – of capturing carbon gases that cause global warming. February 3, 2005, <http://science.news.designerz.com/carbon-storage-option-under-microscope-at-global-warming-confab.html?d20050203>

## Announcements

### **Opportunity to Sponsor Teachers for Climate Change Training.**

In October 2005, The Keystone Center and NETL will host a second training session for the interdisciplinary middle school climate change curriculum-which highlights sequestration technologies. If you are interested in sponsoring a teacher from your area, please contact Brooke Carson, Keystone's director of teacher training at [bcarson@keystone.org](mailto:bcarson@keystone.org) or (970) 513-5843.

More information about the curriculum can be found at <http://www.keystonecurriculum.org/> or by reading the recent Techline at [http://www.netl.doe.gov/publications/press/2004/tl\\_climate\\_curriculum.html](http://www.netl.doe.gov/publications/press/2004/tl_climate_curriculum.html)

**“DOE's Carbon Sequestration Partnership Program Adds Canadian Provinces.”** The Department of Energy announced that the Provinces of Alberta and British Columbia have joined Saskatchewan and Manitoba as Canadian partners in the Regional Carbon Sequestration Partnership program. The Province of Alberta became part of the Plains CO<sub>2</sub> Reduction Partnership in January 2005, and British Columbia joined the West Coast Regional Carbon Sequestration Partnership (WestCarb) in December 2004. *U.S. Newswire*, February 17, 2005, <http://releases.usnewswire.com/GetRelease.asp?id=43282>

**“CO<sub>2</sub> Capture Project heads into second phase.”** The CO<sub>2</sub> Capture Project (CCP) announced the commencement of the second phase of its project to develop technologies that could mitigate greenhouse gas emissions. CCP is a Joint Industry Project with BP, ChevronTexaco, ConocoPhillips, Eni, Hydro, Petrobras, Royal Dutch/Shell Group, and Suncor participating. The second phase of the project (CCP2) will build on the achievements of Phase 1 by developing a focused suite of capture technologies to be ready for pilot testing by the end of 2007. *PR Newswire*, February 21, 2005, <http://www.prnewswire.com/cgi-bin/stories.pl?ACCT=109&STORY=/www/story/02-21-2005/0003065039&EDATE>. For additional information, visit the Carbon Capture Project website at <http://www.co2captureproject.com/index.htm>

**Call for Papers: OGEL Special Issue on Coal.** Oil, Gas & Energy Law Intelligence (OGEL) is seeking prospective authors to contribute previously published or unpublished articles in a forthcoming Special Issue dedicated to exploring the role of coal in future energy demands. Examples of relevant topics include, but are not limited to, clean coal technologies, green technologies, geological and/or carbon sequestration, clean development mechanisms, or emissions trading. Veronica Brieno Rankin is special issue editor. Please contact her directly at: [vjbrieno@mtu.edu](mailto:vjbrieno@mtu.edu) or [MycoGeo@aol.com](mailto:MycoGeo@aol.com)

**“Xcel Energy Joins Carbon Dioxide Reduction Partnership.”** Xcel Energy joined the Plains CO<sub>2</sub> Reduction Partnership, which is one of seven regional carbon sequestration research projects funded by the U.S. Department of Energy National Energy Technology Laboratory. “We are serious about following a multi-faceted approach to addressing emissions of carbon dioxide,” said Xcel Energy Chairman and CEO Wayne Brunetti. “Joining the Plains Partnership is an approach that will dovetail nicely with our own carbon management policy and other carbon sequestration projects.” Xcel Energy also participates in another of these regional partnerships in the Southwestern U.S., as well as a carbon sequestration tree-planting project in the Southern U.S. *Business Wire*, February 8, 2005, [http://home.businesswire.com/portal/site/google/index.jsp?ndmViewId=news\\_view&newsId=20050208005687&newsLang=en](http://home.businesswire.com/portal/site/google/index.jsp?ndmViewId=news_view&newsId=20050208005687&newsLang=en). More information is available on the group's Internet site at <http://www.undeerc.org/pcor/>

**“Augusta Systems of Morgantown, W.Va., has launched a Carbon Offset Opportunity Program.”** The article highlighted the National Energy Technology Laboratory-funded Carbon Offset Opportunity Program developed by Augusta Systems to foster environmental projects that offset or reduce greenhouse gas emissions. The program seeks to instigate such projects by bringing together project developers with investors. Representatives of the program have been working with the West Virginia Coal Association about potential partners in the state, along with power producers and others around the nation. The program (offsetopportunity.com, 304/599-3200) envisions projects such as carbon sequestration, including land reclamation projects on former coal fields, as well as energy efficiency improvements and fuel switching to renewable resources. *Common Ground*, January-March 2005, <http://www.conservationfund.org/?article=2006>

### Science

**“Assumptions Of Effects Of Rising Carbon Dioxide Probed.”** A paper in the February 10 issue of the journal *Nature* entitled, “Abrupt Rise in Atmospheric CO<sub>2</sub> Overestimates Community Response in a Model Plant-Soil System,” takes a closer look at how rising levels of carbon dioxide influence ecosystems. Scientists exposed a mycorrhizal fungal community to either an abrupt or gradual increase in CO<sub>2</sub>. The group exposed to a slow rise in CO<sub>2</sub> concentration showed less of a decline in the number of species per sample of the fungi than did the group exposed to the abrupt change, but the difference was not statistically significant. The findings suggest that previous work has overestimated the magnitude of community and ecosystem responses to carbon dioxide changes, the researchers say. *Science Daily*, February 21, 2005, <http://www.sciencedaily.com/releases/2005/02/050218162213.htm>

### Policy

**“CA. Moves to Protect Ratepayers from Future Greenhouse Gas Regulations.”** A decision by the California Public Utilities Commission (PUC) directs the state's largest electric utilities to include CO<sub>2</sub> costs between \$8-25 per ton when evaluating the economics of future energy resource additions. The GHG value will be added to the prices bid in future request for offers (RFOs), and will be used to develop a more accurate price comparison between and among fossil, renewable, and demand-side bids. The PUC order states, “Regardless of which bid is ultimately selected, the adder will not be paid to that generator or charged to ratepayers; it is an analytic tool only... Thus, the effect of the adder is to potentially change which bids and resources are selected - not to change the price of selected bids.” *ILSR Newsletter*, February 14, 2005, <http://www.sustainablebusiness.com/news/sbnews.cfm?id=5460>

**“CEQ Chairman Jim Connaughton discusses climate change.”** Jim Connaughton, chairman of the White House Council on Environmental Quality, defends the Bush administration's efforts on global warming in a discussion with *E&E Daily* senior reporter Brian Stempeck. Connaughton addresses criticism from the United Kingdom and other nations that are pressuring the White House to take stronger action on climate change, while also describing the administration's efforts to spur the development of new technologies such as carbon sequestration. *E&E TV*, February 2, 2005, <http://www.eande.tv/main/?date=020205>

**“Connecticut to release climate change action plan.”** The Connecticut Governor’s Steering Committee released a climate change action plan that expands programs to use electric, natural gas, and fuel oil more efficiently, and limits CO<sub>2</sub> emissions from power plants through a regional emissions trading program. “This Action Plan is a great step forward as we in Connecticut fight global warming, caused by carbon and other pollutants. Our state government can and must take action to protect the air we breathe and the health of our citizens,” said State Senate President Pro Tempore Donald Williams. “Breathing clean air is the right of every citizen in the state. And they expect nothing less.” *Point Carbon*, February 15, 2005, <http://www.pointcarbon.com/article.php?articleID=6601&categoryID=471>.

To review the plan, visit Connecticut's Official Climate Change Website at <http://www.ctclimatechange.com/>

**“Japan urges industry to cut emissions further.”** Japan’s Ministry of Economy, Trade and Industry (METI) has asked power producers and the industrial sectors for steel, electrical machinery, rubber, paper, industrial vehicle, automotive body, automotive component, machine tool, industrial machinery, and construction machinery to step up action to cut emissions. Companies in Japan have only had voluntary emissions targets, and emissions from 1990 have increased, putting Japan well off its 6 percent reduction target under Kyoto. Twelve sectors including the oil, chemical, and aluminum industries have achieved their voluntary goals, while those singled out by METI now haven’t. Policy-makers in Japan have been discussing a carbon tax as well as a domestic emissions trading scheme for some time, but opposition is significant against both within industry. *Point Carbon*, February 2, 2005, <http://www.pointcarbon.com/article.php?articleID=6376&categoryID=471>

### Geology

**“Feedbacks and the coevolution of plants and atmospheric CO<sub>2</sub>.”** This paper explores the complex network of geophysiological feedbacks associated with the coevolution of land plants, CO<sub>2</sub>, and climate. The authors present a systems analysis of the physiological and geochemical processes involved, identifying new positive and negative feedbacks between plants and CO<sub>2</sub> on geological time scales. *Proceedings of the National Academy of Sciences*, February 1, 2005, <http://www.pnas.org/cgi/content/abstract/102/5/1302>

### Technology

**“New Technology Uses CO<sub>2</sub> to Make Plastic from Orange Peels.”** Using just the oil from orange peel and CO<sub>2</sub>, researchers at Cornell University have found a way to make a high quality, versatile plastic in an environmentally friendly way. Limonene is a carbon-based compound that makes up around 95% of the oil found in orange peel. Led by Professor Geoffrey Coates, the researchers discovered that a derivative of this substance, limonene oxide, could be made to react with CO<sub>2</sub> using a catalyst, producing an environmentally friendly polymer, polylimonene carbonate. The resulting polymer has many of the same characteristics as polystyrene, a petroleum-based polymer that is used to make many disposable plastic products. *Edie News*, January 31, 2005, [http://www.climatebiz.com/sections/news\\_detail.cfm?NewsID=27630](http://www.climatebiz.com/sections/news_detail.cfm?NewsID=27630)

**“Scientists Looking at Ways to Trap Greenhouse Gases.”** Article highlights research underway at Arizona State to neutralize CO<sub>2</sub> by combining it at high heat with serpentine or olivine - two common minerals - in a solution of water, sodium chloride, and sodium bicarbonate. The reaction produces magnesium carbonate, a stable substance that can be buried, turned into road pavement or stored in other ways. Said professor Michael McKelvy, “What we’re trying to do is take what nature does over 100,000 years and do it in less than an hour for 10 bucks a ton” of sequestered carbon. But right now, it costs about \$70 a ton. The researchers, who are working with more than a dozen other scientists in four other laboratories, are trying to make the reaction cheaper by breaking down a coating that forms over the minerals during the conversion process. *The Washington Post*, February 22, 2005, <http://www.washingtonpost.com/ac2/wp-dyn/A42365-2005Feb21>

### Ocean

**“Greenhouse gas turning oceans acid, scientists warn.”** At a conference on climate change held in Exeter, England, a paper by a team of scientists from Britain's Plymouth Marine Laboratory concluded that ocean acidification is likely to affect the entire marine food chain. Although a growing number of studies about ocean acidification have been carried out in recent years, it is only very recently that the whole picture has been put together, and the truly stark nature of the threat appreciated. Another interesting finding disclosed at the conference was by the head of the British Antarctic Survey, Professor Chris Rapley, who said that the vast West Antarctic Ice Sheet, previously thought to be stable, may be beginning to disintegrate - an event that would cause a sea-level rise around the world of more than sixteen feet. *The New Zealand Herald*, February 4, 2005, [http://www.nzherald.co.nz/index.cfm?c\\_id=5&ObjectID=10009477](http://www.nzherald.co.nz/index.cfm?c_id=5&ObjectID=10009477)

### Trading

**“Climate Trust to Stimulate U.S. Carbon Market with \$4.3 Million for Offsets.”** The Climate Trust received \$4.3 million to reduce global warming emissions under Oregon’s innovative climate change regulation. The funds, provided by Portland General Electric, are required to offset carbon dioxide emissions from the new Port Westward power plant. To date, The Climate Trust has funded a diverse \$4 million portfolio to offset 1.6 million metric tons of carbon dioxide. *Climate Trust Press Release*, February 2, 2005, <http://www.climatetrust.org/Climate%20Trust%20Stimulates%20Carbon%20Market.pdf>

**Natsource launches buyers pool.** Natsource launched a private-sector buyers’ pool, the Greenhouse Gas Credit Aggregation Pool (GG-CAP). GG-CAP will purchase and manage the delivery of a large pool of GHG emission reduction that its buyer members can use to comply with EU emissions trading scheme and Kyoto Protocol emission reduction requirements. At first close, Natsource had approximately US\$95 million committed to acquire GHG emission reductions. This amount will increase to approximately US\$130 million within 30 days, the firm said in a press release. *Natsource Press Release*, February 28, 2005, [http://www.natsource.com/uploads/features/Press%20release\\_Feb%2028%2005\\_FINAL.pdf](http://www.natsource.com/uploads/features/Press%20release_Feb%2028%2005_FINAL.pdf)

## Events

March 1-3, 2005, **Carbon Market Insights 2005**, Amsterdam, The Netherlands. The annual gathering for active players in the world's carbon markets. Focuses on Global Markets (including U.S., Canada, Australia, as well as post-2012 discussions including carbon sequestration technology development), CDM&JI, and EU ETS. For conference program and details on registration visit <http://www.pointcarbon.com/category.php?categoryID=401>

March 3-4, 2005, **International Symposium on Interfaces between Climate and Economic Dynamics**, Interlaken, Switzerland. The topics of the symposium include among other things: assessing the economic costs of carbon policy, assessing technological options, and the role of technological change in reducing energy intensity. Further details can be found at the conference webpage at <http://ecolu-info.unige.ch/~nccrwp4/GEMINI-E3/Interlaken.htm>

March 10, 2005, **Future of Coal Conference**, 2:00 p.m. in Room 106 of the Senate Dirksen Building, Washington, DC. The Senate Energy & Natural Resource Committee will hold a conference to discuss a broad array of proposals to address coal challenges. Attendance is open to the public and the media. For conference guidelines and a list of participants visit <http://energy.senate.gov/conference/coalconference.cfm>

March 21-24, 2005, **Third USDA Symposium: Greenhouse Gases and Carbon Sequestration in Agriculture and Forestry**, Baltimore, MD. This symposium will provide a forum for scientists to present recent developments in science and technology relevant to storing carbon and addressing greenhouse gases in managed terrestrial ecosystems. For details and registration see <http://soilcarboncenter.k-state.edu/conference>

April 13-15, 2005, **European CO<sub>2</sub> Capture and Storage Conference – Towards Zero Emission Power Plants**, Brussels. A high-level international conference organized by the European Commission. Attendance is free, but will be by invitation only. To submit your intention to participate, please visit the following web-site [http://scic.cec.eu.int/scic/owa/WEB\\_MTKF.reg\\_form?confID=04RDTCO2](http://scic.cec.eu.int/scic/owa/WEB_MTKF.reg_form?confID=04RDTCO2)

April 18-20, 2005, **GHG Registries and Competing in a Carbon-Constrained World**, Berkeley, CA. Hosted by the California Climate Action Registry and IETA, this two-day event brings together leading experts to discuss the key questions and latest developments related to climate change policy and business strategy. For more information and to register, visit <http://www.climateregistry.org/EVENTS/Conference/>

April 19-22, 2005, **The 16<sup>th</sup> Global Warming International Conference (GW16)**, New York, NY. Over 200 papers and panels will address global and regional Extreme Weather Events, Emissions and Greenhouse Gas Reduction, Low GHG Transportation and Clean Energy Technology, Sustainable Development, and Corporate Learning. For additional information visit <http://www.globalwarming.net>

May 2-3, 2005, **Fourth Annual GreenTrading Summit: Emissions, Renewables & Negawatts**, New York, NY. To obtain more information, visit <http://www.greentradingsummit.com/>

May 2-5, 2005, **The Fourth Annual Conference on Carbon Sequestration**, Alexandria, VA. Abstracts are due March 4, 2005. For more information, visit <http://www.carbonsq.com/> or contact Exchange Monitor Publications at (202) 296-2814.

May 11-13, 2005, **CARBON EXPO 2005**, Cologne, Germany. The annual trade fair and conference dedicated to the carbon market co-organized by World Bank, International Emissions Trading Association (IETA), and Koelnmesse. For more information, please visit [www.carbonexpo.com](http://www.carbonexpo.com)

June 19-22, 2005, **2005 American Association of Petroleum Geologists Annual Convention**, Calgary, Canada. The purpose of this special oral and poster session is to bring together researchers active in the field of CO<sub>2</sub> and acid gas injection in oil and gas reservoirs, coal beds and deep saline aquifers, whether for EOR, ECBM or sequestration, to present current operations, field and laboratory experiments, and integrated studies for the evaluation of sequestration sites and the long-term fate of the injected gases. For more information please visit <http://www.aapg.org/calgary/technical/index.cfm>

May 9-12, 2006, **The 2006 EIC Climate Change Technology Conference - Engineering Challenges and Solutions in the 21st Century**, Ottawa, Canada. This conference will examine engineering solutions that either mitigate or adapt to climate change. CORRECTION: Deadline for proposal submission is March 18, 2006, not March 18, 2005. For guidelines on proposing abstracts please contact Terrance Malkinson at 403-282-1065, or [malkinst@telus.net](mailto:malkinst@telus.net). For additional information visit <http://www.ccc2006.ca>

### Recent Publications

**New Report Posted on NETL Policy/Analysis Page.** The report, entitled "A Primer on Perceptions of Risk, Risk Communication and Building Trust" can be downloaded at <http://www.netl.doe.gov/coal/Carbon%20Sequestration/pubs/reg-issues/TKC%20Risk%20Paper.fin.pdf>

**Brookings Transcript Now Available.** A transcript from a February 9, 2005 Brookings event, "Climate Change Policy: Next Steps," is now available. During the event, Senator Hagel described his then upcoming legislation, where sequestration was mentioned specifically as "the kind of technology that must be employed around the world to achieve results in reducing greenhouse gas emissions." To view the transcript visit <http://www.brookings.edu/comm/events/20050209climate.pdf>. For more information about Senator Hagel's proposal, see the Legislative Activity section of this newsletter.

**"Assessing carbon stocks and modeling win-win scenarios of carbon sequestration through land-use changes."** A relatively new publication by the Land and Water Development Division of the Food and Agriculture Organization of the UN, focuses on inventory of carbon stocks in above- and below-ground biomass and on modeling of scenarios of carbon sequestration through land use changes. The publication can be downloaded at <ftp://ftp.fao.org/agl/agll/docs/carbonstocks.pdf>

### **"Global Warming Bill Means Thousands of New Jobs."**

According to a new study, major global warming legislation would add more than 800,000 new jobs in America by 2025. The bi-partisan bill, the Climate Stewardship Act, would trigger new development and investment in clean energy technologies, bringing much-needed employment to states and diverse job sectors across the country. The analysis predicts some job losses in the coal industry, but those effects could be mitigated through policies to promote deployment of advanced coal technologies, as well as through transition assistance to displaced workers. *NRDC Press Release*, February 10, 2005, <http://www.nrdc.org/media/pressreleases/050210a.asp>. The report, "Jobs and the Climate Stewardship Act," can be downloaded at <http://www.nrdc.org/globalWarming/csa/CSAjobs.pdf>

**National Renewable Portfolio Standard Proposed.** Senator James Jeffords (I-VT) and Representative Tom Udall (D-NM) introduced national renewable portfolio standard (RPS) legislation on February 17, with ten cosponsors in the Senate (S. 427) and six in the House (H.R. 983). The legislation would require that 20 percent of U.S. electricity be derived from clean, domestically produced renewable energy including wind, solar, biomass, geothermal and wave energy by the year 2020. "Climate Change Legislation Introduced," *Climate Change News*, February 21, 2005, <http://www.sustainablebusiness.com/news/sbnews.cfm?id=5532>

### Legislative Activity

**FY2006 Budget Request to Congress.** The proposed U.S. 2006 Energy budget provides \$286 million, an increase of \$13 million over 2005 enacted levels, for the President's Coal Research Initiative. Specifically, \$67 million are allocated for Sequestration R&D. The overall 2006 budget request for DOE's Fossil Energy Research and Development is \$491 million, which is a reduction from the 2005 appropriation of \$572 million. To view a statistical table of DOE's FY 2006 Budget Request to Congress visit [http://www.mbe.doe.gov/budget/06budget/Content/appstat\\_cd.pdf](http://www.mbe.doe.gov/budget/06budget/Content/appstat_cd.pdf)

**Climate Stewardship Act reintroduced.** Senators John McCain and Joe Lieberman reintroduced their plan for a nationwide plan to regulate carbon dioxide emissions, with McCain pledging to go after a vote on the measure within the first legislative vehicle he can find. "Senator Lieberman and I will not give up on this issue," said McCain, noting that many of his Senate colleagues are taking a fresh look at global warming as the topic becomes more mainstream. "We can no longer afford to simply gather data and publish reports," he said. "Senators McCain and Lieberman Actively Seeking Vehicle for Climate Vote," *Environment & Energy Daily*, February 14, 2005, <http://www.sustainablebusiness.com/news/sbnews.cfm?id=5457>. Support from some senators who previously opposed the bill is summarized in, "Senators Warm Up to Emissions Curbs," *Wall Street Journal*, February 23, 2005, <http://www.sustainablebusiness.com/news/sbnews.cfm?id=5555>

**"Hagel Introduces Comprehensive Climate Change Legislation."** U.S. Senator Chuck Hagel (R-NE) introduced legislation to provide a comprehensive approach to dealing with the issue of climate change. The legislative package consists of three bills (S. 386,387,388) which address domestic policy, international policy, and tax policy. They focus on the role of private-public partnerships, technology, and developing countries in reducing greenhouse gas emissions. For bill summaries and the complete text of Hagel's floor statement visit <http://www.swnebr.net/newspaper/cgi-bin/articles/articlearchiver.pl?157008>. *Southwest Nebraska News*, February 16, 2005.

*This newsletter is produced by the National Energy Technology Laboratory and presents summaries of significant recent events related to carbon sequestration. If you'd like to join the e-mail distribution list, email [majordomo@list-manager.netl.doe.gov](mailto:majordomo@list-manager.netl.doe.gov) with "subscribe sequestration" in the body of the message. We encourage you to pass this along to interested persons. Contacts: Scott Klara, [scott.klara@netl.doe.gov](mailto:scott.klara@netl.doe.gov) or Sarah Forbes, [sarah.forbes@netl.doe.gov](mailto:sarah.forbes@netl.doe.gov).*