



March 31, 2009

## *Sequestration News*

Climate change is expected to be a major theme this week, as the House rolls out text for the next major legislative vehicle. The package will reflect input by the staffs to Representatives' Waxman and Markey, and will likely be very stringent. Representative Boucher has introduced CCS legislation that is similar to his proposed bill from last year. EPA's GHG "endangerment finding" is at OMB for interagency review.

### *Climate and CCS Related Congressional Activity*

Major new climate change mitigation legislation is expected to be released in the House the week of March 30. House Majority Leader Hoyer and 20 other Democrats wrote Representatives Waxman and Markey and urged that their pending climate change bill allow the use of domestic and international forestry credits (as "offset" projects). <http://www.ieagreen.org.uk/march77.htm#1>

Representative Boucher has introduced legislation similar to his bill from last year that would provide about \$1 billion per year (total) for CCS demonstration projects. The projects would be selected and managed by a corporation created as an EPRI "division or affiliate." Revenues would be obtained via a fossil energy-based electricity line charge to electricity consumers (proportional to fuel type).

The "Blue Dog Coalition" (51 conservative House Democrats) has prepared a 3 page summary of principles that it endorses for energy security and climate change. The coalition favors "sound use of all energy sources," and opposes approaches that diminish U.S. energy production or "picking winners and losers."

On March 26, four Republican Congressmen, led by Representative Barton, wrote the U.S. Trade Representative asking questions related to Secretary Chu's testimony that the U.S. is considering adjusting trade duties to protect domestic manufacturers if China refuses to address GHG emissions. The thrust of the letter was opposition to the proposed policy.

Recently proposed bills placing caps on GHG emissions have also limited the amount of "offset" projects which could be credited for meeting allowance obligations. Those opposed to such offsets appear to be motivated either by concerns that such reductions will not be permanent, or by concerns that they will be so cheap that preferred approaches to managing the environment will not receive adequate attention. Farmers are reportedly pressing the Administration to allow greater flexibility in allowing such measures. <http://www.eenews.net/Greenwire/2009/03/27/5/>

A “Blue Green Alliance” between environmental groups and unions has issued a policy statement on climate change legislation. They urge the passage of Capture and Trade (C&S) legislation this year, based on 12 listed principles. One of the principles is that R&D investments in CCS are critical.

The House and Senate Budget Committees have begun the “budget resolution” process for the FY2010 budget cycle. The big news is the enormity of the deficit, and out year deficits, as planned expenditures exceed revenues by wide margins. The Senate plan reduced the Administration’s non-defense discretionary budget for FY10 from \$540 B to \$525 B, or almost 3%. The house budget was not quite as aggressive (1%). The concept of including climate limits via a “reconciliation” measure was dropped from the initial language proposed by House Democrats, although the Chairman’s proposal did contain such an approach for health care and education. Senate Budget Committee Chairman Conrad stated that the Senate’s resolution will not contain any reconciliation language. OMB Director Orszag stated that such provisions could be introduced later in the budget process.

<http://www.eenews.net/gw/2009/03/25/>

### **EPA and CCS**

EPA has referred its “endangerment finding” to OMB for interagency review. This finding, to be issued as a Proposed Rule, is the first step in regulating CO<sub>2</sub> and other GHGs under existing Clean Air Act authority. OMB accepted the package on March 20, but no copy has been made available.

<http://www.reginfo.gov/public/do/eoPackageMain>

On March 25, attorneys general from 8 states wrote EPA/Region 9 “to voice our concerns” regarding the Desert Rock PSD permit. Desert Rock is a 1500 MW pulverized coal power plant proposed to be built near Farmington, NM. The letter focused on the “Johnson memo” stating that, as far as EPA was concerned, CO<sub>2</sub> is not a PSD pollutant. On the same day, a lengthier letter from several environmental groups to EPA/Region 9 expressed similar views. Also on that day, the law firm representing the Desert Rock project wrote EPA/Region 9 supporting the Region’s position, which echoed the “Johnson memo’s” position.

Speaking at the Environmental Council of the States (ECOS) spring meeting in Alexandria, March 23, an EPA representative stated that EPA plans to issue a notice of proposed rulemaking to replace the remanded CAIR rule (SO<sub>2</sub> and NO<sub>x</sub> from power plants in the eastern U.S.) in January 2010, with promulgation of a final rule one year later. The schedule for a mercury rule (CAMR) is less certain. On March 9, 2009, 18 eastern states wrote to EPA Administrator Jackson proposing a “framework” for the revised standards. The framework appears to include an interstate trading concept, an approach not well received by the remanding court.

*Climatewire* (Mar 18) reports that EPA’s Environmental Financial Advisory Board presented a paper on ways to address financial liability from CCS. The Board is reportedly interested in the Price-Anderson paradigm for risk management.

### **Global Economic Downturn & CCS**

The global economic downturn could cut greenhouse gas emissions by as much as 50%, according to a scientist speaking at the Congress on Climate Change. Terry Barker, director of the Center for Climate Change Mitigation Research at Cambridge University, said the recession could cause a reduction in carbon emissions by 2012 bigger than the estimated 35% cut in the 1929-1932 Great Depression. Barker said he already saw signs production in China, but needed more data from the industrialized world

before he could make a more confident prediction.

<http://www.reuters.com/article/environmentNews/idUSTRE52B4DT20090312>

The economic slowdown is creating an opportunity for power companies to accumulate carbon emission allowances at attractive prices according to an official at the Czech utility CEZ. By accumulating the credits now, CEZ is hedging its future carbon emissions. The move will also allow CEZ to maintain steady power generation at its dirty, but profitable coal-fired power plants, which run on relatively cheap domestically-mined lignite, analysts say. CEZ favors acquiring the credits via forward purchases, rather than buying them from the spot market, which is more expensive because it requires additional financing.

[http://news.morningstar.com/newsnet/ViewNews.aspx?article=/DJ/200903101001DOWJONESDJONLINE000423\\_univ.xml](http://news.morningstar.com/newsnet/ViewNews.aspx?article=/DJ/200903101001DOWJONESDJONLINE000423_univ.xml)

### **General CCS Related News**

Climate cooling is receiving additional attention. An article in *Geophysical Research Letters* concludes that global temperatures may fall for the next few decades prior to resuming an upward trend.

<http://www.jsonline.com/news/wisconsin/41870692.html>

The March 25 *New York Times* ran a lengthy tribute article on Dr. Freeman Dyson, a noted physicist. The article highlighted Dr. Dyson's views on climate change, which he appears to believe is not a serious problem.

The Carnegie Endowment for International Peace has published a report: [Nuclear Energy: Rebirth or Resuscitation?](#) The report concludes that nuclear power will not make a "big difference" in either reducing carbon emissions or over-reliance on foreign oil for the next two decades – mostly because we cannot design, permit, and build very many nuclear power plants in that timeframe.

Cathy Zoi, a White House environmental official under President Clinton and CEO of former Vice President Al Gore's Alliance for Climate Protection, is expected to be nominated for DOE Assistant Secretary for EERE.

### **Canada & CCS**

Canada has announced government support for 8 new CCS projects, with government support totaling \$140 million. Included are projects injecting sour gas from a natural gas processing plant, chilled ammonia capture at a power plant, and a \$5 billion Polygeneration/CCS plant.

<http://www.cbc.ca/canada/british-columbia/story/2009/03/26/cgy-carbon-capture-projects-funding.html>

### **South Africa & CCS**

South Africa is planning to have a fully operational CCS demonstration plant by 2020, according to the South African National Energy Research Institute (Saneri), the government body responsible for energy R&D. South Africa emits 40% of CO<sub>2</sub> emissions in Africa – approximately 400 million tons of the gas a year. This represents only 1% of global emissions, according to the Department of Minerals and Energy.

<http://www.individual.com/storyrss.php?story=97779214&hash=0245cb148eb063731a37854d91a1514>

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## China & CCS

Countries that buy Chinese goods should be held responsible for the carbon dioxide emitted by the factories that make them in any global plan to reduce greenhouse gases, according to a statement by Gao Li, director of China's Department of Climate Change. Speaking at a forum sponsored by the Pew Center on Global Climate Change, Gao said "About 15 – 25% of China's emissions come from the products which we make for the world, which should not be taken by us...this share of emission should be taken by the consumers, not the producers" and called the demand a "very important item to make (for a) fair agreement." Gao gave no further details of his proposal, which could nevertheless be controversial as countries like the U.S. already fear that controlling domestic emissions will lead to sharply higher energy prices and possible job losses. Shinsuke Sugiyama, director general for global issues at Japan's Ministry of Foreign Affairs, told the Pew forum that his government views 2009 as a "make or break" year in achieving progress on a new global deal.

<http://www.reuters.com/article/environmentNews/idUSTRE52F5X620090317>

Mudslides that followed the May 12, 2008 Wenchuan, China earthquake may cause a carbon-dioxide release in upcoming decades equivalent to 2% of current annual global carbon emissions from fossil fuel combustion. A new study, presented by Diandong Ren, of the University of Texas at Austin, and his colleagues shows that mudslides wiped away plants and topsoil, depleting terrain of nutrients for plant regrowth and burying swaths of vegetation. The buried vegetable matter will decompose and releases carbon dioxide and other gases to the atmosphere. The expected carbon dioxide release from the mudslides following the Wenchuan earthquake is similar to that caused by Hurricane Katrina's plant damage, according to the report. The authors used a computer model to predict the ecosystem impacts of the mudslides. The team will publish its findings on March 4, 2009 in *Geophysical Research Letters*, a journal of the American Geophysical Union (AGU).

[http://www.redorbit.com/news/science/1648172/wenchuan\\_mudslides\\_could\\_emit\\_greenhouse\\_gas/index.html?source=r\\_science](http://www.redorbit.com/news/science/1648172/wenchuan_mudslides_could_emit_greenhouse_gas/index.html?source=r_science)

## EU Countries & CCS

Falling costs should make CCS technology commercially viable for power generators by 2020, according to a statement by the chief executive of Sweden's Vattenfall AB. Lars Josefsson, the head of the company behind the world's biggest CCS pilot plant, speaking at a conference in London, said the costs for running CCS were likely to come down to as low as 20-25 euro per metric ton of abated carbon emissions by 2020. Josefsson said European carbon emissions prices should rise from around 12 euros per ton to over 40 euros in 2020, making CCS commercially attractive assuming that the countries involved in the carbon market remained committed to fighting climate change.

<http://www.iii.co.uk/shares/?type=news&articleid=7220181&subject=general&action=article>

RWE Power has received a permit from the German city of Cologne to erect and operate a pilot facility for CO<sub>2</sub> flue gas scrubbing. The facility will be built at the coal innovation center at the Niederaußem power plant site. RWE Power intends to gather experience with this project for future large-scale systems to be retrofit by 2020 to modern conventional lignite and hard coal fired power plants. For the CO<sub>2</sub> scrubbing project, RWE Power entered into cooperation with BASF and Linde. RWE Power has earmarked a budget of approximately €80 (\$104) for the entire development project.

[http://pepei.pennnet.com/Articles/Article\\_Display.cfm?Section=ONART&PUBLICATION\\_ID=6&ARTICLE\\_ID=356369&C=PRODJ&dcmp=rss](http://pepei.pennnet.com/Articles/Article_Display.cfm?Section=ONART&PUBLICATION_ID=6&ARTICLE_ID=356369&C=PRODJ&dcmp=rss)

Chris Turney, a professor of geography at the University of Exeter claims to have developed the cleanest way of fixing CO<sub>2</sub> in "biochar" for burial on an industrial scale. Dr. Turney said that by burying the

charcoal produced from microwaved wood, the carbon in the tree can remain safely locked away for thousands of years. The technique could take out billions of tons of CO<sub>2</sub> from the atmosphere every year. Fast-growing trees such as pine could be "farmed" to act specifically as carbon traps – microwaved, buried and replaced with a fresh crop to do the same thing again. Turney has built a 5m-long prototype of his microwave, which produces a ton of CO<sub>2</sub> for \$65. He plans to launch his company, Carbonscape, in the UK this month to build the next generation of the machine, which he hopes will process more wood and cut costs further. He is not alone in touting the benefits of this type of charcoal, known as biochar or biocharcoal. The Gaia theorist, James Lovelock, and NASA's James Hansen have both been outspoken about the potential benefits of biochar, arguing that it is one of the most powerful potential solutions to climate change. In an analysis of geo-engineering techniques recently published in the journal Atmospheric Chemistry, Tim Lenton, a climate scientist at the University of East Anglia, rated producing charcoal as the best technological solution to reducing CO<sub>2</sub> levels.

<http://www.businessgreen.com/business-green/news/2238504/biochar-goes-industrial-giant>

Maersk Tankers, owned by the Danish conglomerate A.P. Moller – Maersk Group, is gearing up to enter into the CO<sub>2</sub> transportation market to help promote CCS. Maersk Tankers has examined the business case for entering into the CO<sub>2</sub> transportation market for either offshore storage or EOR, according to a press release. According to Maersk Tanker studies, more than 750 million tons of CO<sub>2</sub> are emitted from large stationary power plants close to the sea in the North Sea region alone. Fifteen Handysize Gas Carriers (20,000 cbm) could transport more than half of Denmark's annual CO<sub>2</sub> emissions for storage in the North Sea, the equivalent of all CO<sub>2</sub> from large Danish stationary emission sources. Transporting captured CO<sub>2</sub> by sea is cost-competitive and more flexible than pipelines on longer distances or in smaller quantities. <http://www.commodityonline.com/news/Maersk-Tankers-to-enter-carbon-transport-market-15992-3-1.html>

Npower is now planning to treble the size of its CCS pilot project at Aberthaw Power Station, South Wales. The company will submit a planning application soon, with construction potentially scheduled to begin later this year. The existing pilot was the first facility in the UK to capture carbon dioxide direct from a commercially operating power station and Npower said it now intends to increase the size to capture carbon dioxide at a 3 MW scale. RWE had intended the first phase of the Aberthaw CCS project to be 1 MW in scale, before a 25 MW second phase. Npower has already completed commissioning of a test facility at its Didcot power station in Oxfordshire, where research into both post-combustion and oxyfuel CCS technologies can be carried out. In its native Germany, npower's parent RWE is aiming to build its first large-scale CCS facility at Huerth, to come on stream in 2014. The £1.8 billion plant would have an electrical output of around 450 MW, using coal gasification technology complete with a pipeline and storage facility.

[http://www.newenergyfocus.com/do/ecco.py/view\\_item?listid=1&listcatid=32&listitemid=2317&section=Carbon](http://www.newenergyfocus.com/do/ecco.py/view_item?listid=1&listcatid=32&listitemid=2317&section=Carbon)

A team led by Air Products and including Imperial College London and Doosan Babcock Energy Ltd. was presented the Rushlight CCS Award 2008 for work addressing impurity removal in CO<sub>2</sub> waste streams from coal-fired power plants. The Rushlight Awards promote and celebrate the leading environmental technologies and innovations by organizations throughout the UK and Ireland. Air Products' oxyfuel sour compression technology has been demonstrated in experimental work carried out by Imperial College London with actual flue gas from a 160 kW coal-fired rig at Doosan Babcock in Renfrew, Scotland, as part of the Oxycoal-UK Project.

[http://www.yourindustrynews.com/air+products%E2%80%99+green+technology+wins+rushlight+carbon+capture+award\\_25304.html](http://www.yourindustrynews.com/air+products%E2%80%99+green+technology+wins+rushlight+carbon+capture+award_25304.html)

## Australia & CCS

Santos, Australia's third-biggest oil and gas producer has suspended its Moomba carbon storage project. Credit prices to emit carbon dioxide have recently been too low to underpin the investment planned for central Australia's Cooper Basin, according to Santos spokesman Matthew Doman. The company estimated the project would have cost more than \$700 million. Governments and energy companies worldwide are revising plans to build underground storage for carbon dioxide because stalled economies and lower permit prices are making them less attractive. EU emission permits for delivery in December have dropped about two-thirds from the peak price reached on July 1 last year. A low carbon price makes it more profitable for coal-fired power plants to simply buy permits to cover future emissions rather than invest in projects to pump CO<sub>2</sub> underground. Santos said that in June 2007 it had proposed to the federal Government to pump CO<sub>2</sub> into its depleted fields at the Moomba site, provided that pipelines could be built to coal-fired power plants in the east that needed to dispose of the waste gas to comply with emissions targets. Santos and General Electric canceled a low-emissions venture in Queensland in 2007. In May, BP and Rio Tinto dropped a plan to build a carbon capture power plant in Western Australia <http://www.theaustralian.news.com.au/story/0,25197,25136614-5017996,00.html>

On March 10, 2009, the Australian government released draft legislation for its proposed greenhouse gas emissions trading scheme, the Carbon Pollution Reduction Scheme (CPRS), in the form of the Carbon Pollution Reduction Scheme Bill 2009 and five related bills. The CPRS bill closely follows the 'policy positions' set out in the white paper, *Carbon Pollution Reduction Scheme: Australia's Low Pollution Future* (December 15, 2008). However, much of the detailed policy content suggested by the white paper is to be contained in regulations and is as yet unspecified. The CPRS Bill would commit Australia to a cap-and-trade emissions trading scheme to commence on July 1, 2010. The proposal is a cap-and-trade system having no baseline-and-credit features and no carbon tax features. It will cover all six of the greenhouse gases which are widely recognized internationally (GHGs) with provision for regulations to specify further GHGs. The CPRS will not contain a statutory "costs pass-through mechanism." The CPRS Bill states as an object: the Federal Government's long-term target of a 60% reduction in national GHG emissions from 2000 levels by 2050, and its mid-term target of a reduction by between 5 – 15% below 2000 levels by the end of 2020. Precise annual caps will be prescribed by regulation: in fact the CPRS Bill sets no targets or caps; it contemplates that they will be set later. The CPRS will have a price cap for the first 5 years of its operation. The price cap will be A\$40 per ton of carbon dioxide equivalent (CO<sub>2</sub> e) at the start of the CPRS, rising at roughly 5% per year. The proposed bill included a number of provisions that applied to coal and to CCS. Section 5.2 points out that CCS Regimes have now been enacted at both Federal and state levels in Australia. The Offshore Petroleum Amendment (Greenhouse Gas Storage) Act 2008 became effective during November 2008. The first CCS acreage release is expected to occur at the end of March 2009. Onshore CCS legislation has also been passed in Victoria and Queensland. There is no express treatment of CCS in the CPRS Bill. However, GHGs that are captured and permanently stored do not fit within the definition of 'emission' in the CPRS Bill (because they are not 'released into the atmosphere' as required by the components of that definition), and in particular, GHGs that are captured and permanently stored in accordance with an injection license granted under the Offshore Petroleum and Greenhouse Gas Storage Act 2006 do not fit within that definition. Nevertheless, the operator of a facility for CCS Facility will be liable for any fugitive emissions from the operation and it is not clear whether, and if so to what extent, GHGs which have been captured and stored at a CCS Facility but which subsequently leak from it are excluded from the definition of "emission." In addition, section 9.1 by reference to the white paper that was the basis for this legislation, indicates that there would be specific direct assistance, possibly in the form of free permits, for the coal-fueled electricity generation sector. The principal features of Part 9 of the CPRS Bill are the following: assistance is limited to those assets which were in existence on June 3, 2007, assistance is

limited to the first 5 years of the CPRS assistance and will be in the form of the issue of free AEU, the number of which will be capped. AEU will not be issued if generation assets do not pass the “power system reliability test” for the relevant financial year, and free units may be withheld in the 2013-2014 and the 2014-2015 financial years if a “windfall gain declaration” is in force in relation to a particular generation asset. [http://www.linexlegal.com/content.php?content\\_id=83603](http://www.linexlegal.com/content.php?content_id=83603)



*The U.S. Carbon Sequestration Council ([www.uscsc.org](http://www.uscsc.org)) is a not-for-profit, 501(c)(3), organization established as an authoritative source of information to inform and to educate on all matters pertaining to carbon sequestration.*