



February 2, 2009

Sequestration News

The House Stimulus bill, HR 1, was passed on January 28. The Senate version, S 366, has been approved at Committee level and should go to the floor this week. Both bills contain provisions favorable to CCS technology development. The European Union (EU) has proposed an aggressive plan for the next round of global climate commitments. Their plan would require developed countries to reduce GHG emissions by 30% below 1990 levels by 2020, and 50% by 2050.

CCS in Stimulus Bill

On January 28, the U.S. House of Representatives passed HR 1, the House's version of the Stimulus bill, by a vote of 244 to 188. There were no Democrats voting against the Bill, but only 11 Republicans voted for it. The final Bill is a combination of broad appropriations for Federal spending, and tax cuts. The Congressional Budget Office (CBO), which maintains a "Director's Blog" page at <http://cboblog.cbo.gov/?p=202>, estimates the budget deficit increase from HR 1 at \$820B for the period 2009-19. Provisions of key interest to CCS include \$2.4B in appropriations for CCS technologies under Section 702 of EISA-2007 (Public Law 110-140); and Section 1631, which increases tax credits by 20% for certain types of energy research, and expands those types to include CCS (fuel cells are also included). The assignment of appropriations to Sec.702 sends those funds to the FE RD&D program.

On the U.S. Senate side, stimulus spending provisions (S 336) were approved by the Senate Appropriations Committee on January 27, and tax provisions were approved by the Senate Finance Committee. The Appropriations Committee reports that: "There is \$4.6 billion for Fossil Energy research and development, including \$2 billion for one or more near-zero emissions [power plants with CCS], \$1 billion for the Department's Clean Coal Power Initiative Round III Funding Opportunity Announcement [in addition to FY2009 and prior year appropriations] and \$1.6 billion for a competitive solicitation for projects that demonstrate carbon capture from industrial sources" (the bill language provides \$1.52 billion for industrial CCS). The Bill also overrides the coal-eligibility requirement in the CCPI-3 solicitation by allowing projects to use up to 100% pet coke for fuel (compared to a maximum of 25% pet coke in the issued solicitation), and authorizes projects to "include plant efficiency improvements for integration with carbon capture technology." Report language recommends "a second closing date on or after April 1, 2009 for the receipt of new or modified applications." Report language also directs \$50M of the total to be used for "site characterization for a minimum of 10 candidate geologic sequestration formations." Additional tags include \$20M for geologic sequestration training and research under Section 705(b) of

PL 110-140, and \$10mm for program direction funding. The Senate Finance Bill includes language similar to the House Bill's tax credit for CCS-related research. In addition, Section 1151 of the Finance Bill amends Section 45Q of the tax code to clarify that the \$10/ton tax credit for CO₂ used with EOR is creditable only if the CO₂ is disposed of "in secure geological storage. Section 1704(b) provides that CCPI funds awarded under EPACT-2005 Section 1703(c)(1)(C) can be used for a loan guarantee. The Senate bill should go to a floor vote this week.

EPA and CCS

On January 22, EPA-Region 8 filed a formal objection to the South Dakota Title V air permit for the Big Stone II power plant. The permit did not satisfy a number of technical requirements for "netting out" of applicability for certain emissions (e.g., reducing emissions at an existing unit so that there is no new "net" emission from adding a new unit at a facility). In addition, the state used an interesting approach to regulating hazardous air pollutants (HAPs) at the new unit. The state mandated reductions at the unit that would not meet the minimal applicability requirements for HAP regulation. EPA objected to the manner in which this was implemented, but not to the basic approach. Some environmental groups read the EPA action as an effort to stall permitting of the new unit until EPA or Congress imposes requirements for CO₂ control for new coal fired power plants. The state has 90 days to resolve the issues raised by EPA's objections.

EPA has finalized selective portions of a new source review (NSR) regulatory package proposed on September 12, 2007. The rule facilitates "Flexible Air Permits," or permits that accommodate flexible operation of a facility without requiring the facility to obtain a new permit. The 125 page final rule can be downloaded from: <http://www.epa.gov/nsr>.

An important court decision involving TVA coal-fired power plants was issued by the U.S. District Court for the Western District of North Carolina. The Attorney General of North Carolina had sought reductions in air emissions from TVA's Tennessee power plants, stating that the plumes drifted into North Carolina and impacted North Carolina air quality. The court agreed with respect to 4 plants, and disagreed with regard to several others. The decision is significant because it creates a new pathway for requiring major reductions in SO₂, NO_x, and mercury emissions from coal-fired power plants, separate from the Federal CAIR rules and whatever EPA rules augment CAIR as a result of litigation over the 2005 rulemaking.

Changes in Congressional and Administration Leadership

The President has selected Jody Freeman to be legal counsel to Carol Browner in her capacity as head of the White House Office of Energy and Climate Change. Dr. Freeman is a Harvard Law Professor and wrote an *amicus* brief to the Supreme Court supporting climate regulation in *Massachusetts vs. EPA*. Senator Byrd's Appropriations Committee is now Senator Inouye's Appropriations Committee, as the Chairmanship changed with the new Congress. Senators Susan Collins of Maine, Lisa Murkowski of Alaska and George Voinovich of Ohio join the Committee to replace four retiring and defeated former members. Ranking member Thad Cochran (R-Miss.) announced the new appointments last week. Charles Houy, the former clerk of the Defense Subcommittee, will lead the spending committee as the new staff director. He is a 25-year veteran of the Appropriations Committee's professional staff. The new deputy staff director is Margaret Cummisky, the former staff director of the Commerce Committee. The former clerk of the Commerce, Justice, and State Subcommittee, Lisa Helms, also joins the full committee in a professional staff member post. Rob Blumenthal, who was previously communications

director for the Commerce Committee, will now be serving that role for the Appropriations Committee. His deputy is John Bray, former press secretary for the Appropriations Committee.

The House Science Committee, which has oversight of energy-related R&D, is now chaired by Representative Baird of Washington. In a web-posted "Agenda Overview," the Committee highlighted plans "to work on issues including energy technology development, climate and weather monitoring." In regard to energy, the Agenda cited implementation of the ARPA-E program, oversight of programs already authorized -- including CCS, and addressing new challenges including "pipelines for new fuels and CO₂." The new head of Representative Baird's old Research and Science Education) Subcommittee, Representative Lipinski of Illinois, has been active in energy issues and supported the "H-prize" approach to encouraging innovation via large cash prizes to inventors.

<http://democrats.science.house.gov/Media/File/ForReleases/111thSTAgenda.pdf>

Canada & CCS

Canada has included a budget proposal for a \$1B "Green Energy Fund" to support clean energy, including CCS. Alberta already has a \$2B fund for financing CCS projects.

http://www.theglobeandmail.com/servlet/story/RTGAM.20090127.wbudget_energy0127/BNStory/budget2009/home

Australia & CCS

Opposition parties in Australia are saying that the emerging GHG control program will cause the ZeroGen project to fail unless the Federal Government changes its emissions trading scheme. ZeroGen is working to develop a low emissions plant but says that under the proposed carbon pollution reduction scheme it may be forced to buy permits. In a letter to Resources and Energy Minister Martin Ferguson, the company said it should be exempted from buying carbon permits as it is a research and development project. It has warned that if it has to buy permits the project may become unviable. The Queensland Government has provided \$100 million for the project and Prime Minister Kevin Rudd has voiced his support for it. A spokesperson for Mr. Ferguson says the minister will address the issues raised in ZeroGen's letter in "due course". Last year, the Government allocated \$100 million to the formation of the Carbon Capture and Storage Institute. Under the proposed carbon pollution reduction scheme, all revenue from the sale of permits will be used to compensate households for rising costs. The Government's climate change adviser, Professor Ross Garnaut, had urged the Government to allocate about a third of collected revenue to clean energy research and development.

<http://www.abc.net.au/news/stories/2009/01/19/2468820.htm?section=business>

China & CCS

China has announced plans to boost output of fossil fuels over the next six years. The country projects that it will double output of natural gas to 160 billion cubic meters by 2015. China also plans to increase production of coal by 30% from 2007 levels to more than 3.3 billion tons in 2015. The announcement was made by Hu Cunzhi, chief planner of the Ministry of Land and Resources in Beijing. The Chinese government also plans to increase output of oil by 7% to 200 million tons annually. Despite the country's ambitious programs to boost renewable energy, fossil fuel use keeps growing at break-neck speed. China's carbon dioxide emissions from fossil fuel use rose to 6.2 billion tons in 2006, according to the Netherlands Environmental Assessment Agency. Beijing has set itself a domestic energy efficiency

target – which it is on track to miss – and is currently discussing whether to implement a domestic carbon trading scheme for its provinces. (*Point Carbon*, January 8)

Brazil & CCS

Greenhouse gas emissions from Brazil's fossil-fuel power stations will nearly triple by 2017. The government has outlined a big expansion of coal, gas and oil generation in a new report, which would take emissions from thermo-electric power stations to 39.2 million tons of carbon dioxide equivalent in 2017. Currently the sector emits 14.4 million tons. The 10-year energy plan for 2008-17 forecasts that a major increase in fossil fuel generation will be needed to meet demand, with even greater rises if plans for new hydro-electric dams are held up. The plan, produced for the Ministry of Mines and Energy (MME) by the Energy Research Corporation (EPE), envisages the construction of 68 new power stations burning coal, gas, diesel and oil by 2017, adding to the 77 fossil fuel-based plants currently in operation. Brazil's president, Luiz Inacio Lula da Silva, has placed a high priority on increasing generating capacity sufficient to avoid a repeat of the power rationing imposed during 2001-2002 to avoid rolling blackouts. (*Point Carbon*, January 9)

Italy & CCS

Italy's government will give its go-ahead to plans by the country's biggest utility, ENEL, to convert major oil-fueled plant to coal according to Economic Development Minister Claudio Scajola. ENEL has been seeking for years authorizations to convert its 2,640 MW Porto Tolle plant in northern Italy to coal, part of its long-term target to have half of its power generated by coal-fired plants. ENEL's project, which foresees slashing the station's capacity to 1,980 MW and the use of "clean coal" technology while reducing CO₂ emissions, has run into fierce opposition from environmentalists. Engel had hoped to receive a key environmental approval by the end of 2008. (*Energy Central*, January 15)

The EU & CCS

The EU has proposed that the next round of climate commitments at Copenhagen seek a 30% reduction in GHG emissions below 1990 levels by 2020, for developed countries. Developing countries (including China) should limit collective emissions "to 15-30% below business as usual levels by 2020." The overall goal is for global emissions to peak by 2020, and decline to less than 50% of 1990 levels by 2050. <http://europa.eu/rapid/pressReleasesAction.do?reference=IP/09/141&format=HTML&aged=0&language=EN&guiLanguage=en>

European governments have agreed to invest 730 million Norwegian kroner (NOK) in joint European laboratories for CCS. A third of that total will be spent in Norway and the Norwegian National Technical University (NTNU) and SINTEF will coordinate the international effort. Five CO₂-specific laboratories will be built in Trondheim. A total of 15 laboratories will be built around the European Union. Norwegian authorities are expected to contribute between 30-50% of the total funding of NOK 720 million. Nine countries participated in submitting an application to the EU body that decides on new scientific facilities funded under the union. The go-ahead means that NTNU and SINTEF will coordinate the development of CO₂ laboratories at a total cost of NOK 730 million in Norway, Germany, France,

Switzerland, the Netherlands, Hungary, Poland, Croatia and Denmark. The five new laboratories to be built in Trondheim are:

- An absorption laboratory (technology for scrubbing CO₂ from flue-gases with the aid of chemicals) for €8 million (NOK 72 million)
- A materials and process technology laboratory for €4 million (NOK 36 million)
- A combustion technology laboratory for €4 million (NOK 36 million)
- A storage technology laboratory for €4 million (NOK 36 million)
- A refrigeration laboratory (technology for separating CO₂ out of gas mixtures by freezing) for €3 million (NOK 27 million).

All of these laboratories will be equipped with a completely new generation of laboratory equipment, and they will be available to scientists from all EU and EEA countries. Details on the other ten facilities are not yet available. <http://www.sintef.no/Home/Press-Room/Research-News/Trondheim-to-host-five-CO2-laboratories/>

Tumbling European carbon prices may force investors to leave the market. That's the warning from traders in the EU's market for carbon allowances, where prices fell recently to an all-time low of €12.46 in the benchmark December 2009 contract. Prices for carbon have slid from a record high of over €30 in July to less than half of that by the beginning of 2009. This is against the backdrop of a \$100 fall in crude oil prices over the same period, and a deepening global economic downturn that has slashed demand for electricity across the 27-nation bloc. Hedge funds in particular are likely to withdraw from carbon markets if prices remain weak. A recent study by New Energy Finance estimated the size of the EUA carbon market to be \$92 billion in 2008. Selling of spot EUA's is expected to rise when Poland, one of the largest emitters in the EU, issues 2008 allowances to factories and power plants that may be keen to sell surplus EUAs before the market falls further. Meanwhile, the growing prospect that the economic downturn will be longer and deeper than originally feared has prompted some market observers in recent weeks to slash price forecasts for EUAs. Verified figures for emissions in power plants and factories covered by the EU's emissions trading scheme in 2008 will be published in early April. But even if figures show a big short position – which would indicate that the EU was successful in imposing a tight cap of the first year of the current phase – EUA prices will remain weak well into next year at least because of an expected deep recession, observers said. Fortis reckons prices could remain weak until 2014, while some other analysts said they may slash forecasts for 2009 and 2010. Participants in the market for UN-backed carbon credits said earlier this week that plunging EUA prices were likely to reduce activity in the market for Kyoto credits, which are estimated to be worth around \$10 billion in 2008. (Point Carbon, January 16)

Research from consultancy group Ecofys finds that phasing in limits on how much CO₂ a power station can emit could sharply cut the sector's greenhouse gas pollution. In the most extreme scenario, two-thirds of the power sector's carbon emissions – or more than 800 million tons – could be cut if a limit of 150 grams per kilowatt hour was imposed on all power stations in 2010. Commissioned by several environmental groups, the research will bolster attempts to re-introduce the Emissions Performance Standard (EPS) legislation later this month. The report can be found at: http://www.ecofys.com/com/publications/reports_books.asp

Discarded during last year's climate talks, new EPS legislation will be voted on by the environment committee of the EU parliament on January 22. Ecofys research emphasizes the different results that EPS could achieve if phased in through stages for both new and existing plants. Imposing a tough limit of 150 grams of carbon dioxide per kilowatt hour on just newly built coal-fired power plants from 2010

would cut the sector's greenhouse gas emissions by 10% by 2020. Introducing a less stringent 350 grams per kilowatt limit for newly built plant from 2010, which then is extended to all plants by 2015, could save up to 46% of the power sector's emissions by 2020. (*Point Carbon*, January 13)

CCS Related Reports

The US Climate Change Science Program posted 5 new climate-related reports on its website, on Jan 16. The reports addressed uncertainty in decision making; coastal sea level rise; thresholds of climate change in ecosystems; the impact of aerosol particles on climate; and past climate variability at high latitudes (Arctic). The reports are available at: <http://www.climatescience.gov/>

ClimateWire (Jan 29) reports that a paper published in Nature concluded that ocean iron fertilization is less effective at capturing CO₂ than advocates argue. The Nature study was based on a naturally fed fertilization event, which had 2-3 times more plankton growth and CO₂ absorption than iron-poor waters, reflecting a much lower efficiency of iron use than expected.



The U.S. Carbon Sequestration Council (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.