

CCS REGULATION

NEWSLETTER

Welcome to the CCS Regulation Newsletter. This is produced by the **MIT Carbon Capture and Sequestration Technologies Program**. It is a quarterly report designed to keep the reader up-to-date with the current regulatory news and issues surrounding Carbon Capture and Storage (CCS).

For more information about the program, please see <http://sequestration.mit.edu>

Regulation for Underground Storage of CO₂ Passed by U.S. States

Over the past few years, several U.S. states have passed legislation that specifically addresses the issue of underground storage of CO₂. This article gives a brief synopsis of the issues covered in that legislation. More details can be found in a working paper at http://sequestration.mit.edu/pdf/US_State_Regulations_Underground_CO2_Storage.pdf

Seven major issues have been identified that are covered by the legislation and this article compares how the different states have treated these issues. The major issues are: liability, the establishment of a storage fund, pore space ownership, CO₂ ownership, unitization, primacy, and interstate issues.

Liability

Six states have addressed the issue of long-term liability and transfer of ownership to the state post-injection. Five states have established a timeframe where after a set number of years the monitoring and liability of the CO₂ storage site may be transferred to the State. In comparison, Kansas is the only state that has ruled it will not be liable or responsible for any CO₂ injection or storage site.

These bills define four distinct timeframes after which project operators may, or may not, transfer liability to the State:

- 0 Years. Offshore Texas and Illinois (FutureGen project only)



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- **10 Years:** North Dakota and Louisiana. Proof of well integrity is required at time of transfer. In Louisiana the monitoring of the site is solely covered by the storage fund. If this fund were to run out, there is no back-up legislation currently established to monitor the CCS sites.
- **30 Years:** Montana. 15 years after well closure the operator can obtain a certificate of completion. 15 years afterwards the project can be transferred to the state (a total of 30 years). This process is optional, the operator can chose not to transfer the storage site liability to the state.
- **Never:** Kansas

Storage fund

Six states have established funds for the long-term management and monitoring of the CCS sites. The money is assigned to these post closure funds from the fees paid by the project operator for various permits, project applications, cost per metric ton of CO₂ injected, closure fees etc. Each state is slightly different:

- **Kansas:** \$4,500 application fee plus \$100/well. \$0.05/ metric ton CO₂.
- **Louisiana:** Fee per metric ton not assigned. However minimum payment for 120 months with a maximum payment of \$5 million per operator. Also addresses damage payments.
- **Wyoming:** Fee per ton of CO₂ injected not designated.
- **North Dakota:** Payment required to two funds. Short term administrative fund: \$0.01/metric ton CO₂. Long term \$0.07/ ton CO₂.
- **Texas (onshore):** \$75,000 application fee plus \$50,000/yr for each well. \$0.10/ metric ton of CO₂.

- **Montana:** Optional fund. No amounts assigned.

Pore space

Wyoming, Montana and North Dakota have ruled that the pore space is the property of the surface owner. Although some states may allow transfer of ownership or leasing of the pore space.

Unitization

Montana and North Dakota have ruled that unitization of the storage site may occur when owners of 60% of the pore space agree to unitization. Wyoming has ruled that unitization requires approval by owners of 80% of the pore space, although this may be changed to 75% under special appeal.

CO₂ Ownership

Six states, (MT, WY, ND, OK, LA and TX) have addressed who is responsible for the CO₂ once it has been injected into the ground. All six states have ruled that the surface and pore space owners are not responsible for the injected CO₂. The operator owns and is responsible the CO₂ when it is in the ground, unless assigned by a contract.

Primacy

WY, TX, OK, MT and WV have passed legislation which outlines that the occurrence of subsurface minerals take precedence over pore space and as such CO₂ storage. Some states have to prove that CCS would not affect, damage or impede future development of existing mineral reservoirs.

Interstate Issues

West Virginia is the only state that introduces the possibility of interstate issues. West Virginia's (HB 2860, 2009) allows

	Liability	Storage Fund	Pore Space	CO ₂ owner	Unitization	Primacy	Inter- state
Montana	X	X	X	X	X	X	
Wyoming		X	X	X	X	X	
North Dakota	X	X	X	X	X		
Oklahoma				X		X	
Kansas	X	X					
Illinois	X						
Louisiana	X	X		X			
Texas (onshore)		X		X		X	
Texas (offshore)	X	X					
West Virginia						X	X

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Federal CCS Regulation News and Updates

April 2, 2013. Sen Chris Coons (D-DE) reintroduced SB 795, the Master Limited Partnership Parity Act. The bipartisan bill aims to widen the scope of the federal tax code to include clean energy technologies, including CCS. The existing federal tax code provides private capital for fossil fuel projects. The aim of this bill is to expand the eligibility for this funding.

<http://www.districtenergy.org/blog/2013/04/24/senators-introduce-s-795-master-limited-partnerships-parity-act/>

May 21, 2013. Rep McKinley (D-WV) reintroduced a bipartisan bill that would prohibit the EPA from finalizing carbon standards for new or existing power plants until CCS is deemed economically and technologically feasible. The previous bill died last year in the House Energy and Commerce Committee.

<http://ghgnews.com/index.cfm/lawmakers-propose-to-link-epa-carbon-standards-ccs-feasibility/>

June 25, 2013. President Obama outlined his climate change strategy. The President included a proposal to increase "clean energy" funding by 30% in the FY 2014 budget to approx.\$7.9 billion.

<http://www.mondaq.com/unitedstates/x/259240/Climate+Change/President+Obama+Announces+Climate+Change+Strategy+for+Second+Term>

July 1, 2013. The EPA has sent a revised GHG emissions standards for new power plants to the White House for review. The confidential draft is in response to President Obama's request for a new proposal.

<http://ghgnews.com/index.cfm/epa-submits-new-carbon-standard-for-white-house-review/>

July 3, 2013. The DOE released its draft loan guarantee solicitation for comment. The \$8 billion fund is under DOE Section 1703 Loan Guarantee program which was

established under the 2005 Energy Policy Act and is for innovative and advanced fossil energy projects and facilities that reduce pollution, including CCS.

<http://ghgnews.com/index.cfm/doe-unveils-draft-loan-guarantee-solicitation-for-fossil-projects/>

August 1, 2013. Senate Democrats released a \$30.2 billion draft appropriations bill which would increase funding for the EPA by approximately \$101 million or 1.25% from 2013 levels. These funding levels are significantly higher than those submitted in July 2013 by the House Appropriations Committee which proposed a 34% budget cut to EPA.

<http://www.bna.com/senate-proposes-funding-n17179875621/>

September 20, 2013. The EPA has issued new proposals for stricter carbon pollution limits for all new power plants, including gas-fired power stations. Under the new rules, any new coal plant built in the United States would need to install CCS.

The EPA will release new restrictions on existing power plants next year.

Proposed limits for fossil fuel-fired boilers and IGCC units. These limits require capture of a portion of the CO₂:

- Coal (12 month operating period): 1,100 lbs CO₂/MWh
- Coal (84 month operating period): 1,000-1,050 lbs CO₂/MWh

The EPA proposal of standards for natural gas-fired stationary combustion units:

- Larger units (> 850 mmBtu/hr): 1,000 lbs CO₂/MWh
- Smaller units (≤ 850 mmBtu/hr): 1,100 lbs CO₂/MWh

News Source: <http://www.reuters.com/article/2013/09/20/us-usa-energy-emissions-idUSBRE98J03A20130920>

EPA Website: <http://www2.epa.gov/carbon-pollution-standards/2013-proposed-carbon-pollution-standard-new-power-plants>

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International Regulatory News

Germany

May 3, 2013. There is a push in Germany and the UK to set a CO₂ floor price in response to a recent failure to shore up prices at EU level. Germany has suggested €15/tonne of CO₂ equivalent (tCO₂e) which is significantly higher than the current price of €3 tCO₂e.

<http://www.icis.com/heren/articles/2013/05/03/9665230/push-for-co2-floor-price-underway-in-germany-and-uk.html>

Canada

May 6, 2013. Canada has committed nearly \$10 billion in new federal funding for CCS related projects. The majority of the money will be dedicated to researching more efficient ways of capturing CO₂ from Alberta's oilsands.

<http://www.globalccsinstitute.com/institute/news/harper-commits-82m-clean-energy-projects>

Australia

May 17, 2013. The Australian Government has proposed cutting \$662 million from CCS programs as part of its 2013-14 budget. This cut would affect Australia's CCS Flagship programs and the CarbonNet and the Collie South West Hub projects.

<http://ghgnews.com/index.cfm/new-australian-budget-would-dig-deep-into-ccs-project-funding/>

China

May 30, 2013. The Economist Intelligence Unit has published that China's CO₂ emissions are projected to grow by 40% in 2020 from 2010 levels.

<http://www.bloomberg.com/news/2013-05-30/china-to-release-about-40-more-carbon-dioxide-by-2020-eiu-says.html>

UK

June 4, 2013. Energy legislation is making its way through the UK Parliament which would stimulate £110 billion (\$170 billion) in clean energy investment by 2020. The aim is decarbonization of the power sector by 2030 and economy wide emission reductions of 50% by 2030. The Parliament rejected an amendment to the bill which would have locked the power sector into tough carbon cuts from 2014 (2 years earlier than planned) and limited new gas plants being built after 2020.

<http://www.reuters.com/article/2013/06/04/us-britain-energy-bill-idUSBRE9530SR20130604>

China

June 18, 2013. China has launched the first domestic carbon market in Shenzhen.

<http://www.ft.com/cms/s/0/ccf2987e-d808-11e2-9495-00144feab7de.html>

Korea

June 19, 2013. The Korean Government has announced plans to invest ₩23 billion (US\$20.3 million) to develop new CCS technologies. Elsewhere the Korea Carbon Capture and Sequestration R&D Center (KCRC) is seeking proposals for the implementation of the Korea CCS 2020 Project.

http://www.kcrc.re.kr/eng_projects_01

EU

July 3, 2013. The European Parliament has voted for the backloading of 900 million carbon emissions as a short term solution to the oversupply in its carbon marking, which has been affecting the Emissions Trading Scheme (ETS).

<http://www.renewableenergyworld.com/rea/news/article/2013/07/europe-votes-to-rescue-emissions-trading-scheme>

US-China

July 10, 2013. The US and China have agreed to 5 new action initiatives with the goal to reduce GHG, including a provision to increase CCS.

<http://www.state.gov/r/pa/prs/ps/2013/07/211768.htm>

EU

July 24, 2013. The European Investment Bank said that it would stop lending to coal fired power stations, unless they emit less than 500gCO₂/KWh in a move to help meet the EU climate targets.

<http://www.reuters.com/article/2013/07/24/eu-coal-finance-idUSL6N0FU32R20130724>

China

September 12, 2013. China's State Council is banning the construction of new coal fired power plants near Beijing, Shanghai and Guangdong to cut pollution.

<http://www.forbes.com/sites/christopherhelman/2013/09/12/the-war-on-coal-goes-global-china-bans-new-plants-as-obama-epa-plans-killer-regs/>

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CCS Project News

May 10, 2013. The DOE announced that Leucadia's Lake Charles gasification project in Louisiana would have few environmental impacts.

<http://ghgnews.com/index.cfm/doe-louisiana-capture-project-would-have-few-enviro-impacts/>

May 10, 2013. The DOE announced \$1.8M in new funding for 12 CCS related projects. Each project will receive around \$150,000. The grants are part of a larger 88 project \$16M DOE effort to provide clean energy technologies.

<http://ghgnews.com/index.cfm/doe-announces-18m-for-small-business-ccs-projects/>

May 14, 2013. Air Products is now operating its Port Arthur CCS Project in Texas. The 1 Mt/yr of CO₂ captured will be used for EOR in Denbury's West Hastings Unit. The project is the DOE's first large scale CCS project to come online.

<http://www.environmentalleader.com/2013/05/14/air-products-carbon-capture-project-online/>

May 14, 2013. South Korea is planning to launch its emissions trading scheme around the end of 2014 to reduce emissions by 30% by 2020. It is projected that the price of carbon could reach \$90 per tonne of CO₂.

<http://www.businessgreen.com/bg/news/2267757/report-south-korea-to-launch-worlds-most-ambitious-carbon-trading-scheme>

May 16, 2013. The Latrobe City Council has announced that the reduction in Federal awards from \$200M to \$15M will make it difficult to continue with the Latrobe Valley Project.

<http://www.abc.net.au/news/2013-05-16/funding-changes-prompt-doubt-over-latrobe-valley/4693596>

May 17, 2013. The World Bank's International Finance Corporation has agreed to support Masdar's project. The agreement could provide up to US\$1.5 billion in financing to Masdar for clean energy projects in Abu Dhabi and around the world.

<http://www.thenational.ae/business/industry-insights/energy/world-banks-ifc-agrees-to-support-masdar-projects>

May 17, 2013. Aker Solutions has been awarded a contract from Norcem, in cooperation with the European Cement Research Academy to perform a CO₂ capture test from a cement production plant in Norway.

<http://www.environmentalleader.com/2013/05/17/aker-solutions-conducts-worlds-first-cement-co2-capture-tests/>

May 24, 2013. South Korea has started capturing carbon at its Boryeong Thermal Power Plant. The 10MW test project will capture 80 kt/yr.

<http://www.globalccsinstitute.com/institute/news/s-korea-constructs-its-first-carbon-capture-facility>

May 24, 2013. W.A. Parish CCS project in Texas was awarded \$167M from the DOE.

<http://behindtheplug.americaspower.org/2013/05/department-of-energy-awards-texas-coal-project-167-million.html>

May 31, 2013. ADM is wrapping up its surface construction at the Decatur Industrial CCS project in Illinois.

<http://ghgnews.com/index.cfm/adm-wrapping-up-surface-construction-work-at-decatur-site/>

June 2, 2013. SSE's Peterhead power station announced that it is reducing its electricity capacity by 2/3rds in 2014. The company has insisted that the cutback will not affect its chances of winning the UK Government's £1 billion CCS competition of which it is a final contender.

<http://www.heraldsotland.com/business/company-news/warning-bell-over-energy-charges-as-sse-plans-to-slash-capacity-at-peterhead.21230969>

June 28, 2013. Tenaska has announced the cancellation of its Taylorville and Trailblazer CCS projects due to the decrease in the coal market as a result of cheaper natural gas and renewables.

<http://ghgnews.com/index.cfm/two-more-ccs-projects-to-end-in-illinois-texas/>

July 5, 2013. The White Rose CCS project is the only CCS project contending for a share of the EU NER300 grant money. In total 33 applicants applied for around €750M in funding.

<http://www.businessgreen.com/bg/news/2279812/white-rose-ccs-project-in-the-running-for-latest-eu-green-funding>

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State CCS Regulation News and Updates

Indiana

May 3, 2013. Indiana's Senate passed SB 510 which alters the previously agreed 30-year purchasing agreement to buy energy from Leucadia's subsidiary Indiana Gasification's project at Rockport IN. SB 510 addresses substitute natural gas contracts and removes the contract, made in 2011 with Leucadia, to buy the SNG at a pre-negotiated price. The Senate requires a new round of regulatory review of the project.

As a result of the unstable legislative environment, work on the Rockport project has been suspended and Denbury has suspended its construction of its Midwest pipeline network. The \$2.8 billion Rockport Gasification project capturing 5.5 Mt/yr of CO₂, would have been Denbury's only source of CO₂ for EOR in the region.

<http://ghgnews.com/index.cfm/developer-suspends-most-work-on-indiana-gasification-project/>

<http://ghgnews.com/index.cfm/denburye28099s-hope-for-midwest-co2-pipeline-likely-dashed/>

California

May 23, 2013. SB 34 was placed on the Senate Appropriations Suspense File moving it closer to being considered in the full California Senate. SB 34 is a bill that requires the State Air Resources Board to create a methodology for CCS. Upon the creation of this plan, the Board is then instructed to establish a regulatory framework for CCS.

<http://www.calegistsats.com/bills/sb-34-greenhouse-gas-carbon-capture-storage/>

North Dakota

August 23, 2013. North Dakota is the first state to apply for primacy to oversee the permitting of geological sequestration Class VI wells under the EPA's UIC program. Primacy will allow North Dakota to adapt and grant Class VI well permits in its state.

<http://ghgnews.com/index.cfm/nd-requests-authority-to-oversee-co2-sequestration-well-permitting/?>

CCS Project News Continued from Page 5

July 9, 2013. Shell and SSE are continuing with their Peterhead CCS Project after admitting defeat in their attempt to obtain EU NER300 funding.

<http://www.bbc.co.uk/news/uk-scotland-north-east-orkney-shetland-23241629>

July 9, 2013. MRCSP has announced the start of a 0.5 Mt/CO₂ injection field test in Michigan's Northern Reef Trend Oil Field.

<http://www.ogfi.com/articles/2013/07/mrcsp-begins-field-tests-in-michigan.html>

July 17, 2013. The Big Sky Partnership has begun injection tests in Wallula WA, to see if 1,000 t/CO₂ can be stored in ancient basalt formations.

<http://www.bigskyco2.org/research/geologic/basaltproject>

August 2, 2013. Southern Company's Kemper County IGCC CCS project costs have overrun an additional \$160M and are now up to \$4.72 billion.

<http://ghgnews.com/index.cfm/southerne28099s-shareholders-absorb-additional-450m-to-cover-kemper/>

August 8, 2013. National Grid has successfully completed test drilling of a CO₂ storage site in the North Sea. Preliminary indications are that the site is viable for CO₂ storage.

<http://www.carboncapturejournal.com/news/national-grid-completes-test-drilling-for-north-sea-co2-storage-site/3357.aspx?Category=all>

September 17, 2013. Aquistore is complete and ready to inject 1Mt/yr of the CO₂ captured at SaskPower's Boundary Dam project near Estevan Canada.

<http://www.leaderpost.com/business/Aquistore+project+complete+over+budget/8919789/story.html>

September 20, 2013. Norway has cancelled the development of a full-scale CCS project at Mongstad, although CCS research will continue at the site.

<http://www.dnaindia.com/scitech/1891626/report-norway-drops-carbon-capture-plan-it-had-likened-to-moon-landing>

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Publications and Releases

May 10, 2013. The Climate Registry has launched the GHG Reporting Database. This is a free online tool which compares federal, regional and state GHG reporting requirements.

<http://www.theclimateregistry.org/government-services/data-transfer/>

May 15, 2013. The Carbon Capture and Storage Cost Reduction Task Force said in a report that carbon capture is able to be competitive by 2020.

<http://www.bloomberg.com/news/2013-05-15/carbon-capture-able-to-be-competitive-by-2020s-u-k-group-says.html>

May 16, 2013. The CCS Cost Reduction Task Force, an industry-led joint task force established by the U.K. government, published "The potential for reducing the costs of CCS in the UK". The report outlined 7 steps that the U.K. government could take to incentivize CCS RD&D in the short-term. The final [report](#) argues that CCS can be cost competitive with nuclear and other renewables in the U.K. by the 2020s. CCS is possible but only if the government does more to incentivize its development.

<https://www.gov.uk/government/publications/ccs-cost-reduction-task-force-final-report>.

May 20, 2013. The Environment Agency Abu Dhabi (EAD) has released the results of its inaugural GHG Inventory Project for Abu Dhabi. The project delivered a comprehensive database for all sectors.

<http://www.ameinfo.com/ead-announces-completion-greenhouse-gas-inventory-342312>

June 19, 2013. The UK CO₂ Storage Evaluation Database, CO₂ Stored, has been developed by the British Geological Survey (BGS) and The Crown Estate. The online database

contains over 600 potential CO₂ storage sites offshore UK.

<http://www.carboncapturejournal.com/news/uk-offshore-co2-storage-database-launched/3319.aspx>

June 26, 2013. The USGS has released its U.S. Geologic Carbon Sequestration Assessment. It shows that the US has 2,400 to 3,700 Gt of CO₂ storage capacity.

<http://www.usgs.gov/newsroom/article.asp?ID=3628>

June 27, 2013. The CO₂ Capture Project (CCP) has released its 2012 annual report online. The report identifies progress in technologies and operational approaches to advance CCS. CCP is a partnership of seven energy companies that are working to advance CCS technologies. 2013 is the final year of the CCP and the focus for this year is on delivering results from demonstrations.

<http://www.globalccsinstitute.com/institute/news/ccp-releases-2012-report>

July 3, 2013. The IEA has released its Technology Roadmap for 2013 in which it states that the next 7 years are critical for CCS.

http://www.iea.org/publications/freepublications/publication/Embargo_CCS_Roadmap_2July.pdf

August 23, 2013. The Alberta Government released a draft CCS Regulatory Framework Assessment asking for public input on dozens of conclusions and recommendations for CCS oversight in the province.

<http://www.energy.alberta.ca/CCS/pdfs/CCSrfNoAppD.pdf>

Upcoming Publications

The Interstate Oil and Gas Compact Commission's (IOGCC) Carbon Geologic Storage Task Force will release its latest report in the fall 2013. The report will focus on liability issues related to CCS.

<http://www.prweb.com/releases/2013/8/prweb11022525.htm>

Image: Page 1: Photographer Steve Mellon. Post-Gazette. <http://www.post-gazette.com/stories/news/health/wva-study-uneartly-higher-health-risks-in-coal-mining-communities-387564/>

This newsletter was constructed using information from internet searches. The websites used have been cited.

Holly Javedan compiled this report. For more information, questions and comments please email javedan@mit.edu. Thank you.