



CO₂ Capture Project

NGO Focus Group Meeting

Wednesday November 2nd 2005

Sulgrave Room, Fairmont Hotel, 2401 M Street NW, Washington DC 20037

Meeting Objectives

Communicate the program, objectives and expected results of the CO₂ Capture Project Phase 2.

Provide opportunities for ongoing engagement and participation to help shape and steer the program in 2005-8.

Participants

Anna Aurilio
Matthew Bromley
David Hawkins
Antonia Herzog
Joe Kruger
Jeff Logan
Sasha Mackler
Andrew Spahn
Kate Zyla
Sarah Wade
Gardiner Hill
Iain Wright
Linda Curran
Scott Imbus
Jim Provias
Stephen Kaufman
Bruce Wilcoxon

PIRG
PEMBINA
Natural Resources Defense Council
Natural Resources Defense Council
RFF
World Resources Institute
NCEP
NARUC
Pew Center
AJW
CO₂ Capture Project & BP
CO₂ Capture Project & BP
CO₂ Capture Project & BP
CO₂ Capture Project & Chevron
CO₂ Capture Project & Suncor
CO₂ Capture Project & Suncor
CO₂ Capture Project & ConocoPhillips



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Meeting Structure and Content

Presentations were given by CCP participants (see agenda below), outlining technologies being developed by CCP Phase 2:

Agenda

Time	Agenda items	Action	Leader
8.00am	Continental Breakfast available in the meeting room		Connie
8.30am	Welcome, Introductions, Safety, Review Agenda	Information	Iain Wright & Gardiner Hill
9.00am	CO ₂ Capture and Storage (CCS): the Global Context	Information	Iain Wright
9.30am	Introduction to CCP (Phases 1 and 2)	Information	Iain Wright
9.45am	CCP2 Capture Program	Information	Stephen Kaufman
10.45am	Break		Connie
11.00am	CCP2 Storage Program (SMV)	Information	Scott Imbus
12.30pm	Buffet Lunch		Connie
1.30pm	CCP2 Policies Program	Information	Bruce Wilcoxon
2.00pm	CCP2 Communications Program	Information	Iain Wright
2.30pm	CCP2 Overall Program (2005-2008): Discussion <ul style="list-style-type: none"> • NGO Feedback 	Feedback and Discussion	Sarah Wade
4.00pm	Close		



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Questions and Feedback

Session Summary

Feedback focused primarily on the policy ramifications of the CCPs work as well as the safety and verifiability of injection and storage:

1. NGOs observed that the posture of the CCP regarding climate change and the long term role of fossil energy will have a big impact on the public perception of CCS.
2. NGOs urged the CCP to take a more proactive stance through its policy activities.
3. NGOs also supported the efforts to develop a certification framework to help communicate the risks and mitigation options associated with CCS and to begin to establish guidelines for selecting CCS locations.
4. NGOs expressed interest in working with the CCP to modify the future briefings to help achieve more productive engagement between the CCP members and the NGO community.

The following summary of questions (Q) or comments (C) and answers (A) or discussion (D) attempts to group questions:

1. Capture Technology
2. Storage, Monitoring and Verification (SMV) and Safety
3. Policies and Initiatives
4. Future Steps.

Q1. It seems like there will be some if not great difference between CO₂ from combustion used for commercial-scale injection and the relatively pure (food grade) CO₂ used in much of the research scale injection. If the stored CO₂ contains higher levels of Sox, NO_x and other chemicals, will this effect both injection and storage options?

A1. This is a factor being considered in the research. While a significant amount of R&D and EOR is being conducted using relatively pure CO₂, there is a significant level of experience in acid gas injection and BP's proposed UK DF-1 project would use CO₂ from a 350MW (industrial-scale) hydrogen-fired CCGT (which is relatively pure CO₂).

Q2. Will CCP II be able to complete the risk assessment / certification model presented in the policies discussion?

D/A2. The CCP is attempting to do this. The NGOs strongly endorsed the idea of creating this framework and also suggested some kind of advisory group to provide additional input to that process. This will be considered by the CCP2 Board.

Q3. How can the CCP help to ensure public safety and the absence of both chronic and acute leakage over the long term?

A3. The CCP is doing what it can through modeling and field testing to develop confidence in the veracity of long term storage as well as the ability to detect and mitigate leaks. In addition, the policy group is considering options to manage the long-term responsibility / liability for storage reservoir integrity.

Q4. How can the public have confidence in the adequacy of the MMV?

A4. The CCP will continue to share its results with policy makers and the public through the release of papers and future volumes of the CCP work. There are several other



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collaborations conducting related R&D work and they have access to scrutinize the results of the CCP effort.

Q5. How do the technical specifications of the wells being used in the well integrity study compare to the technical specifications for wells constructed under US EPA's UIC Class I and Class II specifications? It would be helpful if the CCP study could be related to those design standards.

A5. CCP will consider modifying its studies to make such a comparison.

Q/C6. There is a growing concern that the probability of triggering dangerous levels of climate change (e.g., 2 degrees change over the century) will be too high even if atmospheric CO₂ concentrations are held at 550ppm. The probability of preventing such change increases as the targets are dropped to 450ppm. These concerns are expressed in two papers which can be found at the following sites:

- *No.93: How Much Warming are we Committed to and How Much Can be Avoided?* B. Hare, M. Meinshausen (October 2004) can be found at the following website: http://www.pik-potsdam.de/pik_web/publications/pik_reports/index_html#report_93
- *On the Risk to Overshoot 2 °C* (Malte Meinshausen) (Paper 1535-1555) can be found at the following website: <http://www.stabilisation2005.com/programme2.html>

Can CCP explore what it would take to accelerate deployment of the technologies being developed through the CCP process and the implications of such acceleration on atmospheric CO₂ concentrations? A related question: What is the real incentive for any company to seriously invest in CCS? How can the momentum be increased?

A6. CCP Board will consider this report back.

Q7. What is the potential deployment timeline for the capture technologies being studied as part of CCP 2?

A7. The capture technologies being studied in the CCP are new technologies being developed. That means it will take a number of years for any of them to be developed to the stage of being ready for pilot testing. Once a new technology is tested at pilot scale, it will be tested at progressively larger scale until it is ready for commercial deployment. The CCP is also researching storage options. It is important to note that the capture technologies being used in current storage research projects are "off the shelf" technologies, not the new technologies being developed by the CCP. The reason for using off the shelf capture technologies is to mitigate the technology risk associated with trying an untried capture technology in large scale storage projects. There was a slide entitled "The CCP2 Time Sequenced Portfolio" presented during the CCP 2 Capture Program discussion which outlines the near-, mid- and long-term timeline for demonstration scale development of the capture technologies being assessed by the CCP. Commercial deployment would be expected a 4-10 years following those dates.

Q8. Are the obstacles to large-scale deployment of the capture technologies primarily related to the requirement for technology or policy?

A8. CCS could be deployed today on a widespread scale, but the costs are relatively high because there has never been any commercial reason to do this. If a long-term, stable policy framework is put in place, industry will invest in further technology development (to reduce the cost of deployment and the risk of scale-up) and (if economic), can deploy the technology on a large scale. This is the key message of the short movie that has been prepared by CCP.



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Q9. What is the concept of unitization in the oil and gas industry? It has been mentioned as a conceptual framework for structuring the liability for long term CO₂ storage. Is the CCP looking at this?

A9. Unitization apportions ownership rights in an oil or gas field that extends over multiple leases. Oil and Gas companies assume the concept could be extended to apportion multi-participant risks and rewards in a geological storage project. However CCP sees no benefit in studying this framework specifically.

Q10. What carbon prices are required to achieve large scale global response?

A10. The CCP has not taken up this question directly but the Board will consider a study to explore the impact that increased R&D funding could have on accelerating the deployment of CCS technologies.

Q11. How does spending on CCS comport with the concern about government making a balanced spending plan? Can the CCP demonstrate that government incentives and spending on CCS are in balance with government spending on renewable energy, energy efficiency and other clean energy technologies?

A11. The member companies of the CCP each have their own diverse portfolio of investments in clean energy technologies as do the three governments involved in the CCP. The CCP believes that CCS can be one part of a diverse set of options used to address climate change and is proceeding accordingly.

Q12. How does the CCP propose that the long-term liability for storage be handled? Does it expect the government to take this on at some point and if so, through what mechanism? Are there any lessons to be drawn from the thinking about the long term liability of storing nuclear waste?

A12. The CCP policy group is beginning to consider and identify options for managing the long term liability issues and will continue to vet those ideas with stakeholders in future briefing sessions.

Q13. Is there any effort underway to develop some kind of guideline or hierarchy that will guide companies to use the best geologic formations?

A 13. The CCP planned to complete a certification framework during Phase 1 but was unable to finish the study. This framework would serve as a checklist for selecting sites and designing storage projects. CCP plans to complete this work during Phase 2 and will share it with stakeholders.

Q14. Can the CCP engage in a more collaborative process in setting up future briefings? It would be good if stakeholders could have a say in setting dates, making presentations of their own (two-way communication) and possibly including a broader range of stakeholders. It would be useful to engage in discussion about a central question of balancing the need/desire for sustainable energy and the need to address emissions from existing infrastructure.

A14. Yes.