

Draft Outline for the California CCS Review Panel Report to Sponsoring Agencies

(October 14, 2010)

I. Executive Summary (5-6 pages)

II. Overview of the Review Panel Process

1. Brief Overview of CCS and Its Potential Role in California
 - a. CA Energy needs and possibilities and CO₂ within that reality including electric vehicles.
 - b. Other industry large point CO₂ sources Cement, Refineries, Ethanol plants
 - b. Recommendation that California adopt formal policy that CCS is valuable and appropriate to meet carbon reduction goals
2. Review Panel's Mandate
 - a. Meetings
 1. April 22, 2010
 2. June 2, 2010
 3. August 18, 2010
 - b. Testimony
 1. List in Appendix
 - c. Written Comments
 1. List in Appendix
 - d. Technical Advisory Committee Support
 1. List of papers in Appendix

III. California Policy Context for CCS

1. Current State Policy
 - a. AB32

1. Proposed Cap and Trade Regulation – Role of CCS in the Scoping Plan
 2. Mandatory Reporting Regulations
 - b. Low Carbon Fuel Standard (although part of AB32, I thought we might break it out separately)
 - c. Emissions Performance Standard/SB 1368

2. Perspectives on the Role of CCS in California (reference www.ethree.com/California_2050.html)
 - a. Industry Perspectives
 1. Oil & Gas Industry
 - a. Possible compliance paths
 - b. Benefits and GHG Impacts of CO₂-EOR
 2. Power Generation, including commentaries on the need to utilize end use efficiency, demand response, and renewable energy systems to achieve long-term AB32 goals
 - a. Application to natural gas-fired generation
 3. Other Industries (Cement; beneficial reuse)

3. Suitable Geologic Formations in California
 - a. Oil & gas formations
 - b. Deep Saline formations [reference Mr. Bruno's Presentation from August 18, 2010 entitled "CO₂ Injection and Storage in Saline Aquifers" and TAC Report entitled "Review of Saline Formation Storage Potential in California"; Mr. Myer's April 22, 2010 Presentation entitled "Subsurface Technology Overview"; June 2, 2010 map entitled "CA CO₂ Sources and Potential Sinks"]

4. Health & Safety Issues and related history
 - a. Human health considerations
 - b. Environmental considerations (specifically including, but not limited to, seismicity)

5. California CCS Policy Context in Comparison with Federal Developments and Activities in Other States
 - a. Federal Overview
 1. Enacted Requirements
 - a. Source Emissions
 - i. Clean Air Act after Mass v. EPA
 - ii. Tailoring Rule (takes effect Jan 2, 2011)
 1. EPA policy guidance on BACT (expected fall 2010)
 - iii. EPA GHG Reporting Rule (publication of final rule imminent)
 1. Reporting
 2. Measuring, Reporting & Verification
 - iv. EPA Conditional Exemption for CCS Under RCRA (proposal expected fall 2010)
 - b. Pipelines
 - i. Safety (DOT)
 - ii. Siting (primarily state)
 - iii. Rate Regulation (limited STB role)
 - c. Geologic Injection and Storage
 - i. Safe Drinking Water Act
 - ii. EPA UIC Class VI Rule (publication of final rule imminent)
 - iii. Stewardship (federal considerations)
 - iv. MMV (geologic storage compliance, cap-and-trade compliance, etc.) – recommend uniform, non-duplicative standards/Pew process_
 - d. Financial Support/Incentives (White Paper Forthcoming)
 - i. Federal stimulus/project support [cite recent report of the President’s Task Force]/DOE programs, R&D, FutureGen 2.0 etc.
 - ii. Section 45 tax credit
 - iii. Loan Guarantees
 - iv. Others

- b. Brief Overview of Policy Developments in Other States [reference Mr. McCoy's April 22, 2010 Presentation entitled "State Legislative and Regulatory Actions: Review, Motivation, and Effects on Geologic Sequestration of Carbon Dioxide"]

IV. Issues Requiring Attention and Resolution to Enable Safe and Effective CCS Demonstrations & Commercial Deployment in California

- 1. The Regulatory Framework for CCS Projects [reference Ms. Burton's April 22, 2010 Presentation entitled "Permitting – Existing Regulatory Authority and Jurisdiction in California"; Mr. Fish's June 2, 2010 Presentation entitled "Carbon Capture and Storage California Permit Process Identification of Gaps"; HECA Presentations from June 2, 2010 Meeting; Mr. Melzer's Presentation from the June 2, 2010 meeting; TAC reports on permitting]
 - a. What constitutes "The Project"?
 - 1. Treatment of "Capture" Under Current CA Law
 - 2. Regulation of Pipelines Under Current CA Law
 - a. Fire Marshall
 - 3. Regulation of Geologic Injection Under Current CA Law
 - a. DOGGR (Class II EOR Only)
 - b. Class V R&D (EPA Region 9)
 - c. Class VI (will depend on forthcoming rule)
 - 4. Regulation of Geologic Storage Under Current CA Law
 - a. Not addressed and DOGGR has disclaimed authority/interest
 - 5. Options for California [pros and cons]
 - b. One-Stop Shopping/Unitary Permitting
 - 1. CPUC Authority Over Utilities and Related Infrastructure
 - a. "Related" understood to mean grid, not pipelines, but presumably could include "all connected" infrastructure
 - 2. Other Source Types – Outcome Less Clear
 - 3. Options for California [pros and cons]
- 2. Regulation and Permitting of CO₂ Pipelines
 - a. Safety
 - b. Siting

- c. Rate regulation
 - d. Options for California [pros and cons]
- 3. Ownership of Pore Space for CO₂ Storage [reference April 22, 2010 Presentation by Mr. Fish entitled “CCS: Property Law and Liability Issues”; TAC reporting on pore space]
 - a. No State Law
 - b. Options for California [pros and cons]
- 4. Requirements for Measurement, Monitoring and Verification (MMV) [reference April 22, 2010 Presentation from TAC entitled “Greenhouse Gas Accounting for Carbon Capture and Storage”; TAC report on MMV]
 - a. No well-defined State Law or Regulation
 - b. But Lots of Relevant Models from Elsewhere and CARB has mechanisms to independently review and, where relevant, adopt a third-party effort into State regulation
 - c. Impact of MRV requirement under EPA’s forthcoming GHG Reporting Rule
 - d. Options for California [pros and cons]
- 5. Long-Term Stewardship of Storage Sites [reference Mr. O’Connor’s June 2, 2010 Presentation entitled “Environmental Perspectives of Geologic CCS; TAC report on stewardship”]
 - a. Federal/State Interactions
 - b. Options for California [pros and cons]
- 6. Role of Public Outreach, Education and Acceptance
 - a. Lots of good work by WESTCARB and others
 - b. Options for California [pros and cons]
- 7. Commercial Considerations/Incentives/Policy Drivers
 - a. Significant policy/fiscal incentives do not exist in California
 - b. Incentives for Initial Early Movers
 - 1. MOU structure
 - c. Incentives for Established Projects

1. New legislation
- d. Options for California [pros and cons]

8. Environmental Justice – Peridas

V. Review Panel Recommendations

1. The Regulatory Framework for Permitting CCS Projects
2. Regulation and Permitting of CO₂ Pipelines
3. Ownership of Pore Space for CO₂ Storage
4. Requirements for Measurement, Monitoring and Verification
5. Long-Term Stewardship of Storage Sites
6. Role of Public Outreach, Education and Input
7. Commercial Considerations/Incentives/Policy Drivers
8. Environmental Justice
9. Draft Resolution/Legislative Language

VI. Appendices

White Papers