

California Carbon Capture and Storage Review Panel

CARBON CAPTURE AND STORAGE CALIFORNIA PERMIT PROCESS IDENTIFICATION OF GAPS

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Scoping the Permitting Process For CCS in California

- This presentation looks at a high level at the permitting process for CCS projects in California.
- The goal is to identify for discussion:
 - The diversity of permitting paths
 - Opportunities for cooperation among agencies
 - Opportunities to develop consistent CO2 standards
 - Gaps to be filled by new statutes or rules



Agencies with Potential Major CCS Role

- California Air Resources Board/Air Districts
- California Division of Oil, Gas & Geothermal
- California Energy Commission
- California Public Utilities Commission
- California State and Regional Water Boards
- U.S. EPA Region 9
- See Elizabeth Burton's 4/22/10 Presentation



Other Entities with Potential CCS Permitting Role

- Counties
- Water Districts
- Air Quality Management Districts
- Municipal Power Authorities
- Federal Land Management Agencies
- State Land Management Agencies



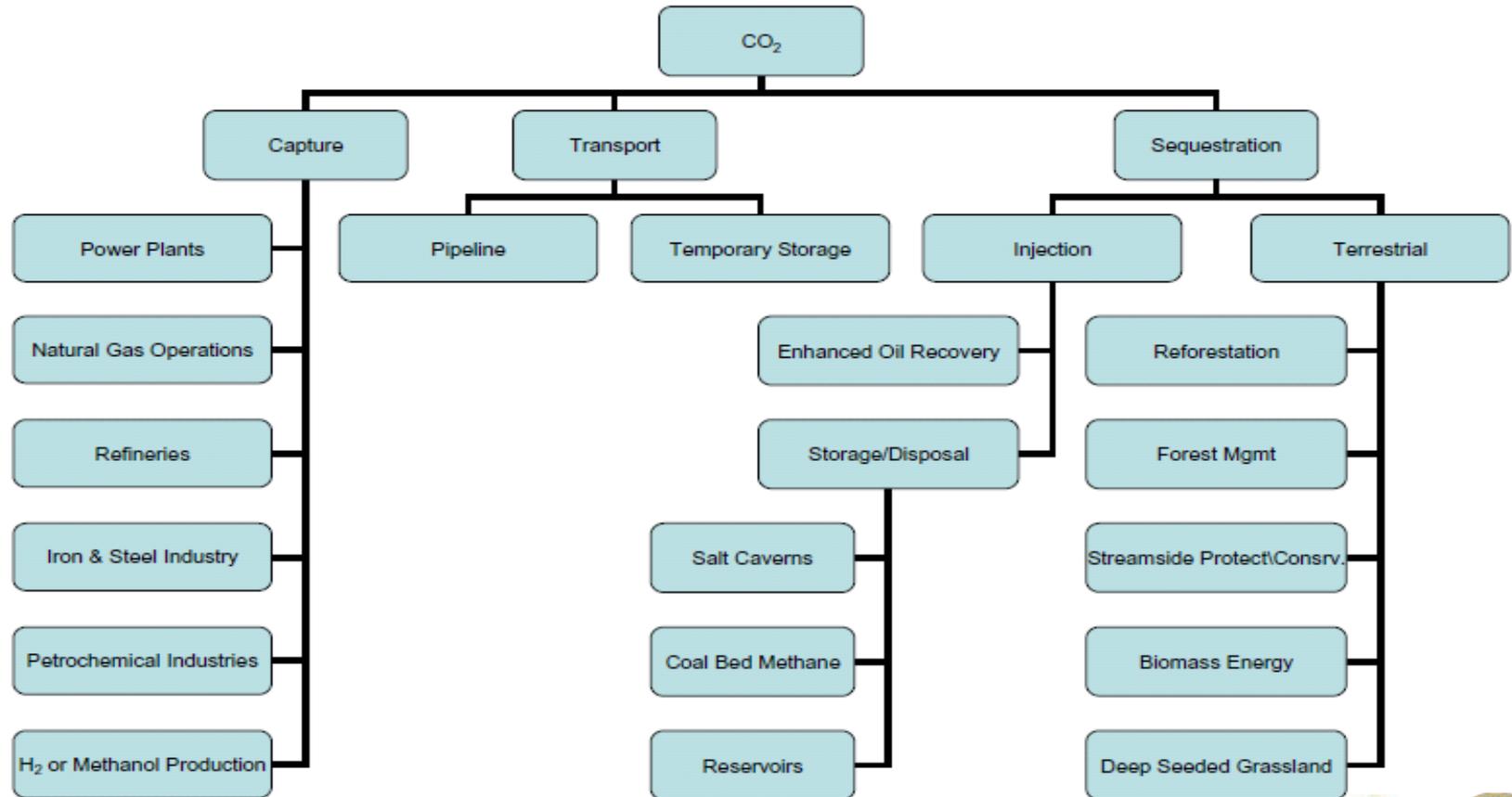
Where Are the Gaps?

- CCS requires EPA Class VI injection well rules; will California seek primacy to administer these rules?
- California can clarify ownership of and develop mechanism for acquiring pore space.
- MOU's are needed among federal, state, and local agencies to clarify their roles in permitting.
- State agencies need to develop consistent protocols for CO2 sequestration monitoring, reporting and verification.
- State agencies need GHG guidelines under CEQA.



CO₂ From Capture to Sequestration

West Coast Regional Carbon Sequestration Partnership



WEST COAST REGIONAL CARBON SEQUESTRATION PARTNERSHIP



Capture Issues

- CPUC and CEC regulate long term baseload contracts for CO2 emitted per MWh – SB 1368.
- CEC, Counties, and other “lead agencies” consider whether CO2 emissions are a significant impact and prescribe mitigation (CEQA or equivalent).
- ARB implements AB 32 – measuring emissions and implementing emission reductions.
- Air Districts – can apply their own GHG standards to emission sources.



Capture Issues

- New consistent standards that might help:
 - A threshold for significance of CO₂ emissions under CEQA
 - ARB protocol to quantify the mitigation/emission reduction credit from CCS
 - Coordination between ARB and Air Districts regarding performance standards, emission reduction targets
 - Adoption of the above by other responsible agencies under CEQA in permitting CO₂ emission sources

New projects would have clarity regarding the need for mitigation and the quantity of mitigation achieved by CCS.



Transport Issues

- Gas pipelines built by gas utilities can acquire easements by eminent domain under federal and state law.
- Pipelines to transport CO₂ are not yet authorized to acquire easements by eminent domain.



Sequestration Issues - Land

- Land Ownership - Projects may involve land owned by multiple sovereigns:
 - Federal Land – Bureau of Land Management, US Forest Service, US Fish & Wildlife Service, National Park Service, DOT, DOD
 - Tribal Land
 - State of California (Parks, DOT, Districts)
 - Counties, Cities
- Each land management agency has its own permitting process.
- Projects on federal land generally require NEPA analysis.
- State agencies often have concurrent jurisdiction.



Sequestration Issues - Land

- New policies that might facilitate CCS:
 - Authorize the use of land owned by California state, county and local governments for CCS
 - Adopt unitization or eminent domain authority to provide for acquisition of private pore space for sequestration
 - Review county comprehensive plans and zoning codes review to assure that CCS can be permitted
 - Create MOU's between federal and state agencies and among state agencies for joint permitting processes to improve coordination and reduce duplication of effort



Example Federal – State Agency MOU's: Geothermal and Solar

- MOU between BLM and DOGGR for geothermal projects involving federal land. 2008
- MOU between BLM and CEC on joint review of Solar Thermal Plants. 2007
- MOU between FERC and California agencies for review of wave energy projects. 2010
- Similar MOU's for permitting CCS projects would be helpful.



Example State Agency MOU: Class II Wells

- DOGGR and State Water Boards have an MOU for permitting Class II wells for enhanced oil recovery (EOR) (1991)
 - DOGGR has lead role in regulating Class II injection wells for EOR
 - Regional Water Quality Control Boards consult with DOGGR and regulate surface discharges, but do not issue a permit for Class II injection wells for EOR
- Similar MOU's relating to CCS permitting may be helpful among CPUC, CEC, DOGGR, Water Boards, Air Quality Control Boards and Counties.



Sequestration Issues– Permitting – Multiple CO2 Standards

- Depending on project location and scope, different agencies will serve as lead agency for CEQA (similar to NEPA - allows the lead agency to require mitigation for significant impacts).
- Lead agency will determine whether CO2 impacts are significant and may require mitigation. “Responsible” agencies will contribute expertise.
- Consistent CEQA standards relating to CO2 would help, e.g. a significance threshold for CO2, consistent monitoring, reporting and verification policies.



Sequestration Issues – Permitting – Multiple CO2 Standards

- If CCS is permitted in conjunction with a new power plant (> 50 MW), CEC will be the lead agency and its process is equivalent to CEQA.
- If CCS is permitted in conjunction with a cement plant, foundry, refinery, or ethanol plant, the County may be the lead permitting agency for CEQA, or perhaps the Air Quality Control District.
- If CCS is permitted alone, as a merchant facility, perhaps the County will likely be lead agency.



Sequestration Issues - Permitting – Multiple CO2 Standards

- CPUC and CEC focus on facilities meeting SB 1368 standard for 1100 lbs. CO2 per MWh of power.
- Air Quality Control Districts (e.g. San Joaquin) may have GHG performance standards for sources.
- ARB focuses on meeting AB 32 goals to reduce CO2
- No consensus regarding credit for CCS under any of the above standards.
- Consistent monitoring, reporting and verification are desirable.



Sequestration Issues – Role of EOR

- Enhanced oil recovery (EOR) can use natural or anthropogenic CO₂. Not considered CCS by states.
- Much of the CO₂ remains in the geologic formations.
- If appropriate monitoring, reporting and verification protocols are adopted, can CO₂ trapped during EOR be counted as sequestered?
- Would this encourage use of anthropogenic CO₂ for EOR, contributing to AB 32 goals? SB 1368 goals?
- There are no protocols for determining how much sequestration occurs at EOR projects.



Thank you!

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