



CCS Regulatory and Liability Frameworks

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1



Overview

- Main Points
- Role of regulations
- Regulations governing components of CCS
- Regulatory challenges or gaps
- Other issues to consider

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2

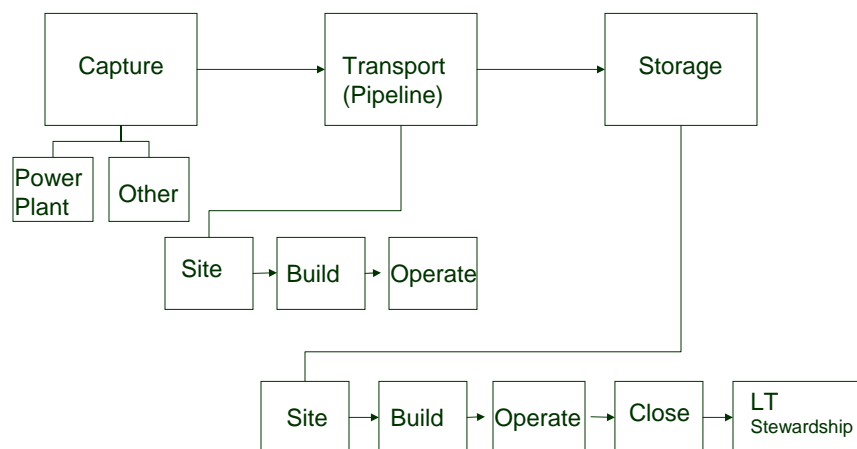
Main Points

- There are extensive regulatory frameworks governing the components of CCS
- Integration of these into a comprehensive approach for CCS – and for a climate change mitigation strategy -- requires additional work

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3

Major Components of CCS Projects



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4

Role of Regulations

- Protection of property rights
- Ensure public and ecosystem health and safety
- Achieve State of CA climate change policy objectives

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5

Protection of Property Rights

- Long history of oil and gas production in CA – 1st laws dating to 1915
- Today CA Laws for Conservation of Petroleum & Gas (Publication PRC01) establish procedures for securing mineral rights and unitizing fields; model for CCS?
- To extent CCS is in public benefit, is further eminent domain authority warranted? Do saline reservoirs suggest alternative of state-owned pore space?

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6

Existing Regulations Ensure Safety of the Components of CCS

- CA Environmental Quality Act of 1970 and Laws for Development, Regulation and Conservation of Oil and Gas Resources
- EPA Underground Injection Control Program (UIC) governs injections of liquids (Class I waste disposal, Class II oil/gas waste, Class V experimental
- Natural Gas Storage rules
- Clean Air Act requirements
- CEC permitting of power plants

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7

But Challenges Remain...

- None of existing rules a perfect fit :
 - Site selection is a fundamental CCS safeguard
 - By design, CCS increases pressure on a reservoir
 - CO2 different than oil, natural gas, hazardous or non-hazardous waste
 - CA experience is in oil/gas fields, not saline reservoirs
- CA and Class II rules may require changes in site characterization; well design; MMV; and long-term stewardship including requirements, assignment of liability and financial assurance
- Class I too restrictive for purpose? And, only 3 Class I wells in CA and state does not have primacy
- Natural Gas rules cover operational use; assume NG removed when well is closed

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8

CCS as Climate Change Mitigation

- Few existing analogs
- Integration with climate policy:
 - How is CCS treated or permitted under a climate policy?
 - Do we need a manifest system of sorts to transfer climate responsibility with CO₂?
 - From a climate change policy perspective, how is leakage addressed?

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9

Some Other Considerations

- Will EPA develop a new UIC classification (Class VI) and potential interface with CA program
- Resource needs to develop and implement a CCS regulatory program in CA
- Legislative authority (if any) necessary for components of a CCS regulatory program

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10

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11

Background Slides - Liability

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12

Closing a CCS Well

- During post-closure, MMV will be used to confirm behavior and movement of the injected CO₂
- Contingent on compliance with requirements during the operating life of the well and demonstration of expected behavior post closure, wells could obtain a certificate of closure
- Additional long term stewardship activities will include MMV to ensure CO₂ remains confined, well bore maintenance, prevention of unintended drilling within the area confining the CO₂

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13

LT Liability - Issues to Address

- Ensuring there is adequate funding and an entity to carry out the MMV and maintenance activities
- Ensuring there is an acceptable process and funding to mitigate or remediate any potential damages that arise
- Ensuring there is a process for those incurring damages to seek compensation

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14



Models for LT Liability Management

- Financial Assurance Requirements – require operator to set aside funds for some period to cover potential future costs
- Government assumption or limitation of some of the risk – for example, Price Anderson Act, Vaccine Injury Compensation Program, RCRA, CERCLA, National Flood Insurance