



# Session 3: Accounting for CO<sub>2</sub> in geologic sequestration

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Resolving the Legal and Regulatory Challenges to Geologic Sequestration of CO<sub>2</sub>—A CCSReg Project Workshop

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# The big picture is critical: CCS is an emissions reduction technology

No GHG limits



No commercial CCS

## CO<sub>2</sub> Accounting for CCS:

1. Demonstrates that CCS is a valid emission reduction technology
2. Protects the integrity of the GHG reduction program



# Model legislation: Title V- Accounting for Sequestered Carbon Dioxide

## **Sec 502. Inventory Accounting**

- Supplements EPA mandatory GHG reporting requirements (40 CFR Part 98 Subparts W and RR)

## **Sec 503. Integrating GS with a GHG emission reduction program**

- Applies only if a Federal GHG emission reduction program is in effect
- Agnostic as to form of program (cap & trade, emission performance standard,....?), but stationary sources and GS sites must have compliance obligations

### **Leakage:**

The release to the atmosphere of CO<sub>2</sub> that was injected for geologic sequestration

### **Compensatory action:**

A requirement to submit allowances or to take other action to compensate for measured leakage in accordance with a federal GHG reduction program

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# Inventory accounting

Assess efficacy of the overall CCS system

Operators of each stage of a CCS project should be required to report the mass of CO<sub>2</sub> handled [Sec. 502(b)]

## Stationary source



- CO<sub>2</sub> captured
- CO<sub>2</sub> exported

## Pipeline



- CO<sub>2</sub> imported
- CO<sub>2</sub> exported

## Geologic sequestration site

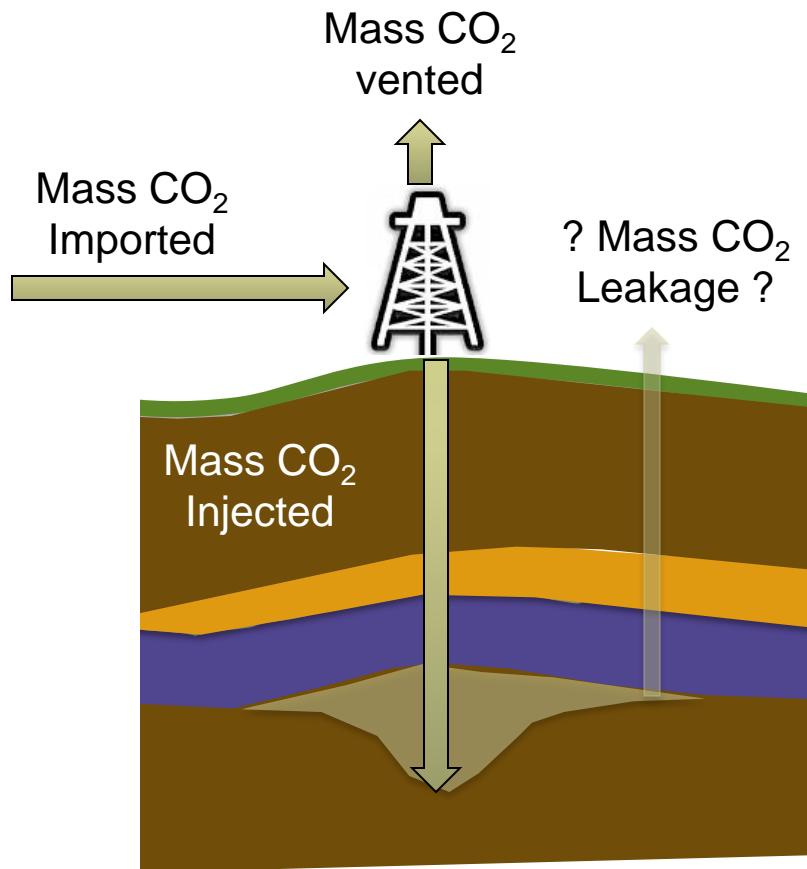


- CO<sub>2</sub> imported
- CO<sub>2</sub> vented
- CO<sub>2</sub> injected
- CO<sub>2</sub> leakage

The Administrator will reconcile the reporting annually [Sec 502(c)]

- Report on the quantity of CO<sub>2</sub> sequestered in the U.S.
- Determine if any CO<sub>2</sub> is lost or accounted for
- Require compensatory action from parties responsible for lost CO<sub>2</sub> [Sec 503(d)]

# Integrating GS with a GHG emission reduction program



## Monitoring for leakage

- Site specific
- Monitoring technologies have limits but are improving
- At most sites, monitoring could detect leakage quantities that matter emanating from geologic or manmade leakage pathways

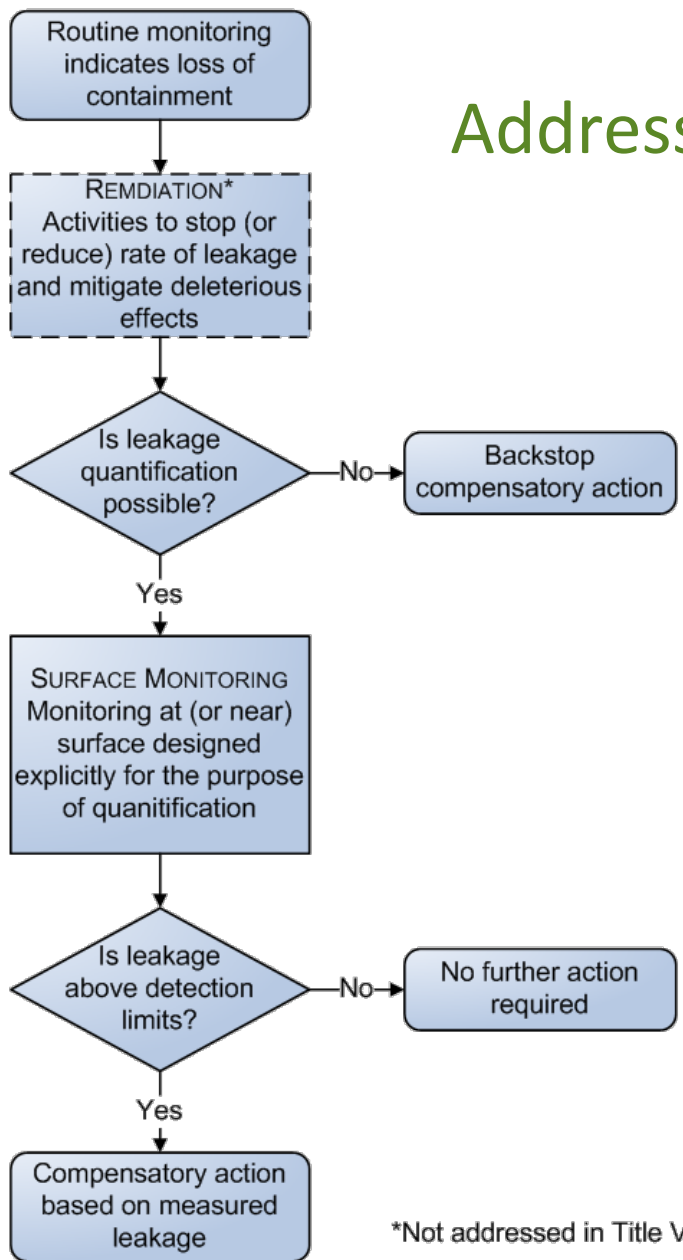
## Model Legislation Sec. 502(a)

- If subsurface monitoring indicates CO<sub>2</sub> is contained, then no surface monitoring for leakage is required, and no leakage is reported
- Administrator must set detection limits for surface leakage monitoring

## Addressing potential leakage at GS sites

### Backstop compensatory action: [Sec 503 (c)(e)]

- Required if there is loss of containment and the administrator determines that surface leakage monitoring is not possible.
- Set as a fraction of the total amount of CO<sub>2</sub> sequestered at the site, (determined by the Administrator) to compensate for potential leakage.



# Questions for discussion

- Is the concept of "backstop compensatory action" practicable?
- Should GS sites be permitted if leakage monitoring may not be possible?
- Unintended consequences of inventory monitoring?
- Offsets vs. avoided emissions – Stationary sources outside an emissions reduction program?
- Treatment of EOR?