

Fifth Annual Conference on Carbon Capture & Sequestration

Steps Toward Deployment

Policy

Sequestration and Success: The Cost Impact of Reporting Protocols and Other Requirements

Mr. Jesse E. Gandee and Dr. Patrick R. Esposito

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Background

- Under multiple research opportunities Augusta Systems has reviewed the existing regulatory requirements for terrestrial and geologic sequestration projects
- Research projects reveal
 - Variability in GHG programs
 - Variation in requirements for different types of sequestration

Objectives

1. Provide information on transaction costs associated with terrestrial sequestration
2. Present existing regulatory concerns associated with geologic sequestration
3. Discuss the monitoring and verification protocols associated with geologic sequestration that could result in future regulations

Role of Transaction Costs in Establishing Markets and Novel Commodities

- Transaction costs encountered by investors in carbon sequestration projects
- Transaction costs experienced by regulatory organizations
- Relationship between transaction costs and regulatory requirements

Transaction and Regulatory Requirements for Terrestrial Sequestration Projects

- Research conducted under Phase I USDA SBIR, “Economic Feasibility Study of Agricultural Coops as Catalyst in GHG Markets”
- Included review of previous research and telephone survey for monitoring and verification cost data
- Identified numerous transaction costs for farm owners
 - Contract negotiation costs
 - Project validation
 - Project monitoring and verification
 - Certification of environmental asset

Regulatory Cost Estimates

Contract Negotiation Costs	Mean of \$68,000
Monitoring On-Farm Terrestrial Projects	\$.50 to \$3.00 Per Acre \$.10 to \$13.00 Per ton of Carbon
Verification On-Farm Terrestrial Project	Mean of \$20,000
Certification On-Farm Terrestrial Project	Mean of \$22,000
Validation	Mean of \$25,000

Potential Monitoring and Accounting Issues

- Research conducted under SECARB
 - Southern States geologic sequestration
 - Current regulatory and permitting requirements
- Current regulations
 - NEPA EIS
 - SDWA UIC
 - Carbon liability concerns
 - State-level drilling permits
 - Transportation permits
 - Project close-out requirements
- Observed during the development of projects

Monitoring and Verification Protocols

- National and international
 - Canada GHG Offset System
 - California Climate Action Registry
 - Regional Greenhouse Gas Initiative
 - ISO 14064
- Commonalities
 - Observes mostly terrestrial sequestration
 - Carbon monitoring and verification is a dynamic process
 - Programs observe various terminology and monitoring technologies

Monitoring and Verification Protocols (cont.)

- Geologic sequestration
 - ISO 14064
 - USDOE BNL 2004 publication
 - Limited information
- Monitoring dynamic process
 - Physical monitoring of CO₂
 - Modeling of CO₂
 - Risk analysis
- Monitoring requirements are uncertain

Summary of Previous Research

- To develop geologic sequestration projects
 - Carbon market transaction costs
 - Meet current regulations and permitting concerns
 - Monitoring and verification technology costs
- Are regulatory costs significant?

Options to Reduce Regulatory Costs

- Economies of scale for monitoring inputs
- Extend the monitoring intervals
 - Could affect the integrity of the project
- Development of cost-effective technologies
 - Sensor and GHG accounting software
- Diminish search and negotiation costs
 - Development of carbon exchange

Conclusions

- Objective of carbon sequestration
 - Support the welfare of citizens
 - Minimize regulatory costs
- Previous research revealed
 - Current and expected regulations
 - Could diminish geologic sequestration project viability