Report on Activities of WVCCS Working Group

Presented by:
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INTRODUCTION

Regulatory drivers for carbon capture and sequestration (CCS)

- President's goal for 83% reduction in CO_2 by 2050
- USEPA's BACT Guidance (November 2010)
- Potential Congressional action

Early movers

- IOGCC
- States
- USEPA Class VI UIC rules

Recent developments

- National Coal Council
- West Virginia CCS Working Group

USEPA BACT GUIDANCE

USEPA BACT GUIDANCE*

- CCS is not in widespread use
- CCS is considered "available" for:
  - "fossil fuel-fired" power plants
  - industrial facilities with high-purity CO_2 streams (e.g., hydrogen production, ammonia production, natural gas processing, ethanol production, ethylene oxide production, cement production and iron and steel manufacturing)
- CCS may be presently available where CO_2 can be sold for EOR
- Research may make CCS more widely applicable in the future

***http://www.epa.gov/nsr/ghgdocs/ghgpermittingguidance.pdf (December 2010)**

IOGCC

IOGCC MODEL STATUTE*

- Agency approval
- Eminent domain
- Trust Fund
- Liability Release
- Cooperative Agreements
- EOR Exemption

***Interstate Oil and Gas Compact Commission, CO2 Storage: A Legal and Regulatory Guide for the States, at** http://iogcc.publishpath.com?Websites/iogcc/pdfs/Road-to-a-Greener-Energy-Future.pdf **(Dec. 2007)**

UIC RULES

CLASS VI UIC RULES*

Goals

- Protect underground sources of drinking water
- No requirement to capture/sequester CO_2

Safe Drinking Water Act does not provide authority to address:

- Capture and transport of CO_2
- Property rights
- Liability transfer
- Accounting for GHG reductions

New Category – Class VI

***75* Fed. Reg. 77230 (December 10, 2010)**

Exemption from RCRA (proposed) 76 Fed. Reg. 48073 (August 8, 2011)

NATIONAL COAL COUNCIL

NATIONAL COAL COUNCIL*

- CCS has not progressed fast enough due to
  - Technical issues
  - Funding incentives
  - Regulatory and permitting (including pore-space ownership and liability
- Use of coal with CCS provides opportunity to significantly reduce GHG emissions

*"Expedited CCS Development: Challenges and Opportunities", March 18, 2011

NATIONAL COAL COUNCIL

SELECTED RECOMMENDATIONS:

- Accelerate near term (2015-2020) development of commercial scale CCS for coal-based generation
- Promote CO_2 storage opportunities for EOR
- Exempt CCS from RCRA and CERCLA
- Reduce regulatory barriers with PSD and NEPA
- Allow a CCS permit to authorize use of pore space which is not being used by its owner
- Limit an operator's legal liability during operation phase
- Transfer liability during post closure phase

WEST VIRGINIA

INITIAL WEST VIRGINIA LEGISLATION*

- **Legislative findings.**
  - (6) There is increasing pressure, both nationally and worldwide, to produce electrical power with an ever-decreasing amount of carbon dioxide emissions;
  - (7) West Virginia is a state rich in natural resources, and its economy depends largely upon the demand for energy produced from materials found within the state, not the least of which is coal;
  - (8) As demand for energy produced from alternative and renewable resources rises, new technologies are needed to burn coal more cleanly and efficiently if West Virginia is to remain competitive as an energy producing state; …
  - (11) Although the state is committed to expanding its portfolio of alternative and renewable energy resources, electricity generated from these resources is insufficient in the near term to meet the rising demand for energy;
  - (12) It is in the public interest to advance the implementation of carbon dioxide capture and sequestration technologies into the state's energy portfolio;

* W. Va. Code 22-11A-1, et seq. (2009)

INITIAL WEST VIRGINIA LEGISLATION

Addressed:

1. UIC Permitting
2. Financial responsibility
3. Exempted EOR
4. Established Work Group

Did not address:

1. Pore space usage
2. Property issues
3. Liability
4. Eminent domain

CCS Working Group Mandate*

- To "develop a long-term strategy for the regulation of carbon dioxide sequestration in West Virginia."
- To issue a final report to the Legislature July 2011 which, among other things,
  - "[r]ecommend[s] any legislation that the working group may determine to be necessary or desirable to clarify issues regarding the ownership and other rights and interest in pore space"
  - "[r]ecommend[s] methods of facilitating the widespread use of carbon dioxide sequestration technology throughout West Virginia."

***W.Va. Code 22-11A-6 (2009)**

MEMBERS OF WEST VIRGINIA CCS WORKING GROUP

Experts in carbon dioxide sequestration or related technologies:

Grant Bromhal – National Energy Technology Laboratory

Cal Kent, Ph.D. – Marshall University

Ken Nemeth – Southern States Energy Board

Richard Winschel – Consol Energy, Inc.

Expert in environmental science:

Stephanie R. Timmermeyer, Esquire – Timmermeyer PLLC

Expert in geology:

Tim Grant - National Energy Technology Laboratory

Attorneys with expertise in environmental law:

David M. Flannery, Esquire - Jackson Kelly PLLC

Leonard Knee, Esquire – Bowles Rice McDavid Graff and Love, LLP

MEMBERS OF WEST VIRGINIA CCS WORKING GROUP

Expert in engineering:

Paul Kramer – Allegheny Energy, Inc.

Experts in the regulation of public utilities in West Virginia

Billy Jack Gregg

Earl Melton - WV Public Service Commission

Representative of a citizen's group advocating environmental protection:

Vickie Wolfe – WV Environmental Council

Representative of a coal power electric generating utility advocating carbon dioxide sequestration development:

Tim Mallan – Appalachian Power

MEMBERS OF WEST VIRGINIA CCS WORKING GROUP

Engineer with an expertise in the underground storage of natural gas:
John Leeson – Dominion

Chairman of the National Coal Lessors:
Nick Carter – Natural Resource Partners

Representative of the Coal Association:
Jim Laurita – MEPCO

Representative of West Virginia Land and Mineral Owners Association:
Alan Dennis – Penn Virginia Coal Company

Representative advocating the interest of surface owners of real property:
David B. McMahon, Esquire

REPORT TO THE LEGISLATURE

Findings and Recommendations with Respect to the Development and Widespread Deployment of Carbon Dioxide Sequestration throughout West Virginia

By:

West Virginia Carbon Dioxide Sequestration Working Group

July 1, 2011

http://www.dep.wv.gov/executive/Documents/WVCCS%20Working%20Group%20Final%20Report%20-%20June%2030,%202011.pdf

WVCCS Working Group
Feasibility Conclusions

- Significant reduction in GHG likely
- CCS is only part of solution
- Public safety / still needs to be resolved
- Cost impact in early stages of development

WVCCS Working Group
Geology and Technology Conclusions

- CO_2 storage up to 226 years
- Storage below 2500 feet needed for supercritical CO_2
- Once injection ceases, pressure will return to pre-injection levels
- Site characterization takes only a few years with some cost estimates of $60 million
- Sequestration operations are similar to oil and gas operations

WVCCS Working Group
Legal Conclusions

- An alternative to the wholesale conveyance of property rights is necessary
- Not all use of private land results in a compensable taking
- Use of pore space below 2500 feet should generally be considered public use
- A trust fund should be linked to liability transfer
- A robust regulatory program is necessary
- New legislation is required

RECOMMENDED CCS LEGISLATION

KEY ELEMENTS OF RECOMMENDED LEGISLATION

1. Permitting
2. Pore space usage
3. Eminent domain / pooling
4. Other property interests
5. Operational liability
6. Post-closure liability
7. Post-closure management
8. CCS Working Group
9. Cooperative agreements
10. Legislative reports
11. Penalties
12. Groundwater exemption
13. PSC

PERMITTING

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WEST VIRGINIA CARBON DIOXIDE SEQUESTRATION ACT

Environmental Permitting

- State permit required
- State permit would implement UIC
- Existing facilities deemed to have permit
- Experimental wells authorized
- No injection into formation with minerals
- EOR wells exempt
- Other agencies pre-empted, except PSC
- Permit application fee authorized

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WEST VIRGINIA CARBON DIOXIDE SEQUESTRATION ACT

Regulatory Fee

- Cover reasonable cost of regulation
  - WVDEP
  - WVPSC
  - Other states
- May not exceed lesser of:
  - $150,000 per year; or
  - 1 cent per tonne of injected CO_2

PORE SPACE USAGE

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Additional legislative findings

(13) …ensure that geologic formations throughout the state can be used for the purpose of carbon dioxide sequestration;

(14) …declare as a public use the use of certain deeper geologic formations …so long as those geologic formations do not have a current or reasonably foreseeable use for a qualifying purpose;

(15) …provide for a coordinated statewide program authorizing access to and use of specific areas of the geologic formations, regulating the injection, storage and withdrawal of carbon dioxide, and fulfilling the state's primary responsibility for assuring compliance with the federal Safe Drinking Water Act…

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WEST VIRGINIA CARBON DIOXIDE SEQUESTRATION ACT

Required property rights

- Must have (or anticipate) all necessary rights.
- Not necessary to take formations below 2500 feet which are not currently being used
- Property rights are addressed during permitting
- If no current use of formation below 2500 feet, then permit allows use
- If another use possibility arises after permitting, parties are authorized to negotiate a plan for development of new use if it would not interfere with CCS

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Rationale for public use

(a) too costly to acquire rights not necessary
- title work: $100 million / project
- transaction costs related to taking
- payment for usage rights

(b) public interest in removing GHG outweighs private land use

(c) not all use of private land results in compensable taking: See,
- Causby [328 U.S. 258 (1946)] – aircraft over-flights
- Penn Central [438 U.S. 104 (1978)] – landmark preservation
- Loretto [458 U.S. 419 (1982)] – television antenna
- FPL Farming [2003 WL 247183 (Texas)] – waste injection
- Lucas [505 US 1003] – land use regulation

EMINENT DOMAIN / POOLING

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Eminent domain / pooling

- not necessary for pore space below 2500 feet which does not have a current use
- if CCS project impairs use of a "necessary" right
    - alter CCS project,
    - negotiate acquisition of rights, or
    - condemn or pool
- condemnation / pooling not allowed for
    - mineral formations
    - geologic storage more shallow than 2500 feet
    - pipelines used to withdraw CO_2
    - other CCS facilities
- compensation may not consider value for CO_2 sequestration
- tax records are sufficient to initiate condemnation / pooling
- eminent domain authority created under other law is preserved

OTHER PROPERTY INTERESTS

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WEST VIRGINIA CARBON DIOXIDE SEQUESTRATION ACT

Other property interests

- Inverse condemnation preserved for per se physical taking of necessary property
- CCS operator relieved of tort liability for any taking
- Allowable for others to drill through CCS formation
- Correlative rights not altered
- CO_2 owned by operator during operational phase
- CO_2 owned by owner of right-to-use the geologic formation post-closure (surface owner – if not known)
- Extraction of CO_2 for profit requires agreement of owner of right-to-use geologic formation

OPERATIONAL LIABILITY

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Operational Liability

a. Operator retains liability

b. Liability limitations

- Cap compensatory damages ($250,000)
- Cap punitive damages ($1,000,000)
- 10 year statute of limitations
- Limit medical monitoring

POST-CLOSURE LIABILITY

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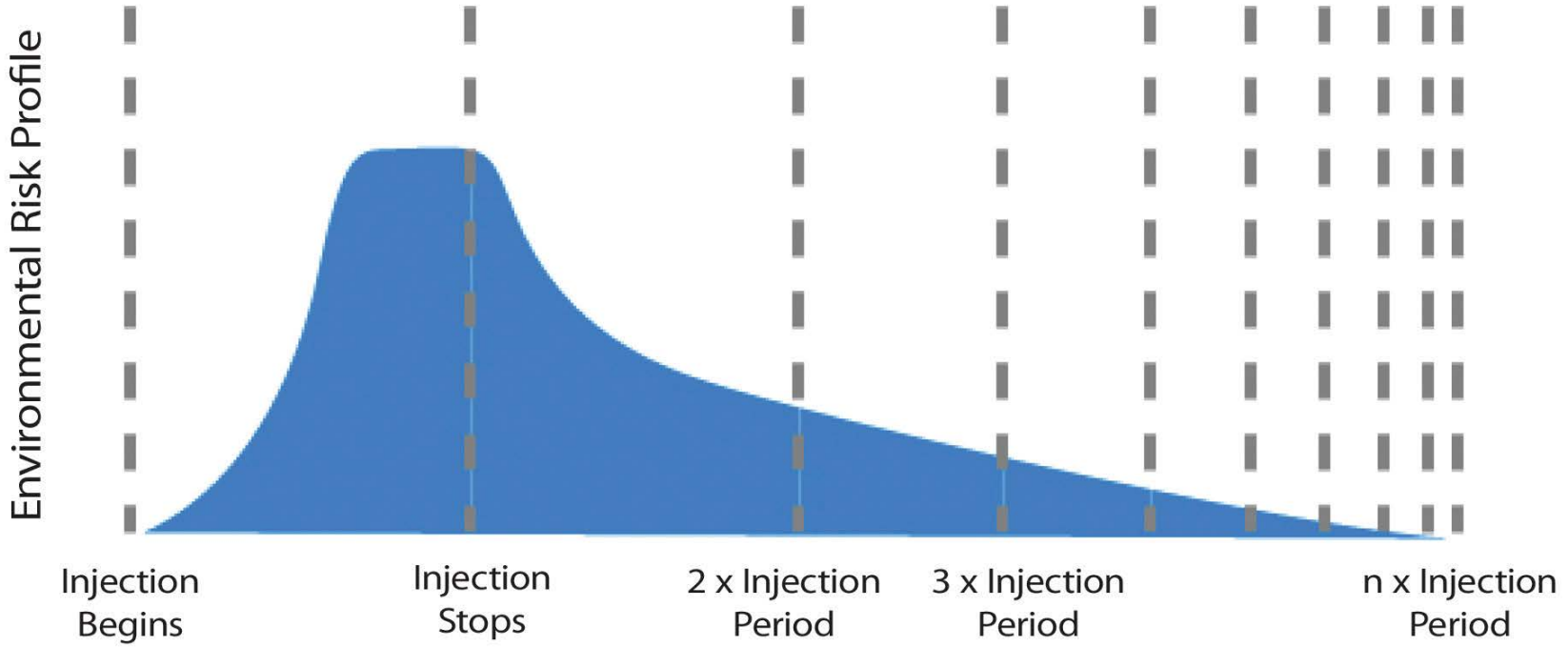
Post-closure Liability

- Liability transfers to Carbon Dioxide Management Authority 10 years post-closure
- Trust fund established
  - 7 cents per tonne of injected CO_2
  - $50 million cap
  - Account for multiple facilities
  - Adjust to reflect risk assessment

Schematic Risk Profile for a CO2 Storage Project
(Benson, 2007; WRI presentation)



POST-CLOSURE MANAGEMENT

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Post-closure management

- WVDEP assumes Stewardship responsibility
- WVDEP costs paid by trust fund
- Trust fund can also be used for:
  - Plugging
  - Insurance premiums
  - Claims
  - Reimbursing cooperating agencies

CCS WORKING GROUP

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CCS Working Group

- continued involvement for 5 years
- advise secretary
- recommend rules

COOPERATIVE AGREEMENTS

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Cooperative agreements

- Reciprocal agreements would allow for border states to agree on:
  - Public use of pore space
  - Rights to amalgamate property

LEGISLATIVE REPORTS

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Legislative reports

- DEP to submit reports to the Legislature.
- The Carbon Dioxide Management Authority to submit reports to the Legislature.
- Both trust funds will be subject to yearly accounting.

PENALTIES

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Penalties

- Same as water pollution laws
  - Civil - $25,000 / day
  - Civil administrative - $5,000 / day (max: $20,000)
  - Criminal - $10,000 - $25,000 / day; imprisonment

GROUNDWATER EXEMPTION

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Groundwater Protection Act

- Expand exemptions to include Class VI CCS wells

PSC

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PSC

- Jurisdiction expanded to include CO_2 pipeline or facilities.
- Certificates convenience and necessity.
  - Required for “public utility”; and “certified private operator”
  - Not required for “private operator”.
  - Certificate authorizes eminent domain authority; private operators would have no such authority

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Gas and Pipeline Safety

- PSC authorized to regulate CO_2 gas and pipeline safety
- Carbon dioxide included in definition of “gas” and “transportation of gas”

CONCLUSIONS

- West Virginia Legislature has indicated its intention to provide leadership in CCS
- 2009 law provided the initial framework for CCS development
- WVCCS Working Group recommendations are intended to provide additional legislative authority needed for next generation projects

CONTACT INFORMATION

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