

Carbon Sequestration Discussion of Findings

ETIC May 1-2, 2008

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This document is meant to serve as a tool that may or may not be used by ETIC members as they discuss carbon sequestration draft legislation and/or findings and recommendations. The study tasks are taken directly from the ETIC work plan for studying carbon sequestration, as approved in October 2007. If the ETIC adopts findings and recommendations they can be incorporated into a report that will be presented to the committee in July for approval.

Study task:

Determine the feasibility of geological and terrestrial carbon sequestration in Montana and the characteristics of areas of the state where carbon could be sequestered.

ETIC response: The ETIC kicked off the interim by traveling to Colstrip to tour the Colstrip Steam Electric Station and hosting its October 4-5, 2007 meeting there to learn about the feasibility of limiting carbon emissions at Montana's largest energy generation facility. At the October meeting, members heard from numerous speakers on the subject of geological carbon sequestration including: Gordon Criswell, environmental manager for Colstrip Steam Electric Station; John Talbott, project manager for the Big Sky Carbon Sequestration Partnership; Tom Richmond, division administrator for the Montana Board of Oil and Gas; Bonnie Lovelace, Department of Environmental Quality water protection bureau chief; and Paul Suket, vice president and deputy general manager for Basin Electric and Basin Cooperative Services. A paper covering the feasibility of sequestration was prepared by staff and shared with ETIC members in advance of the November 8, 2007 meeting. At the November meeting, Ted Dodge, Project Broker, of the National Carbon Offset Coalition presented information on terrestrial sequestration.

Finding: The Big Sky Carbon Sequestration Partnership, led by Montana State University, one of the U.S. Department of Energy's seven regional partnerships, is examining the feasibility of both terrestrial and geological sequestration in Montana.

Finding: The Big Sky Carbon Sequestration Partnership has found that CO₂ sequestration storage potential in depleted oil and gas fields in Montana is about 1 billion metric tons of CO₂. Saline aquifers in the state present about 200 billion metric tons of CO₂ storage potential.

Finding: In Montana several saline aquifers, or large geological domes, are being studied as potential long-term storage sites.

Finding: The National Carbon Offset Coalition includes seven Montana nonprofit corporations that help landowners and other public and private organizations participate in market-based conservation programs to offset greenhouse gas emissions.

Finding: Major agricultural states can potentially sequester more than 8% of the 1.9 billion metric tons of greenhouse gas emitted in the United States annually, according to a report by the U.S. Department of Agriculture.

Recommendation:

Study task:

Examine methods and technologies for the geological and terrestrial sequestration of carbon.

ETIC response: At the October 4-5, 2007 meeting in Colstrip, members heard from numerous speakers on the subject of geological carbon sequestration including: Gordon Criswell, environmental manager for Colstrip Steam Electric Station; John Talbott, project manager for the Big Sky Carbon Sequestration Partnership; Tom Richmond, division administrator for the Montana Board of Oil and Gas; Bonnie Lovelace, Department of Environmental Quality water protection bureau chief; and Paul Suket, vice president and deputy general manager for Basin Electric and Basin Cooperative Services.

A paper discussing methods and technologies used for sequestration was prepared by staff and shared with ETIC member in advance of the November 8, 2007 meeting. At the November meeting, Ted Dodge, Project Broker, of the National Carbon Offset Coalition also presented information on terrestrial sequestration.

Finding: As identified by the Big Sky Carbon Sequestration Partnership, the region including Montana has a range of geologic sites for CO₂ storage including depleted oil reservoirs, unminable coal seams, carbonate saline aquifers, and basalt formations.

Finding: Terrestrial carbon sequestration can include cropland, rangeland, methane offsets, and forestry. In northcentral Montana there are at least two projects underway to monitor and verify terrestrial carbon offsets.

Recommendation:

Study task:

Review the findings and recommendations of the Montana Climate Change Advisory Committee related to carbon sequestration.

ETIC response: At the November 8 meeting, the ETIC heard from DEQ Director Richard Opper and Energy and Pollution Prevention Bureau Chief Lou Moore. They outlined the "Energy Supply" recommendations of the Montana Climate Change Advisory Committee's report related to sequestration. In addition, the ETIC was updated on the Environmental Quality Council's climate change study, which focuses on the CCAC recommendations.

Finding: The MCCAC reached unanimous consensus on 54 policy recommendations for reducing greenhouse gas emissions in the state to 1990 levels by 2020 and released the Montana Climate Change Action Plan outlining each of the recommendations.

Finding: The Environmental Quality Council is reviewing the recommendations and has selected 15 of the recommendation for in-depth review.

Recommendation:

Study task:

An inventory of sources and volumes of carbon produced in Montana.

ETIC response: In November 2007, the ETIC was presented with a report prepared by staff that outlined emissions in Montana. The information was gathered using information from sources including: the Center for Climate Strategies greenhouse gas inventory, which was prepared under contract for the DEQ; federal Energy Information Administration reports that track greenhouse gas emissions through the Voluntary Reporting of Greenhouse Gases Program; the U.S. Environmental Protection Agency Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990-2005; and the EPA Clean Air Act acid rain program inventories.

Finding: Activities in Montana account for about 37 million metric tons of carbon dioxide equivalent emissions or 0.6% of all greenhouse gas emissions in the United States. Electricity use, transportation, and agriculture are the principal emissions sources.

Finding: Total greenhouse gas emissions from the four largest Montana power plants totaled 18 million metric tons of CO₂-equivalent emissions in 2004.

Finding: The 2005 EIA report (based on 2003 data) shows 32.7 million metric tons of CO₂ being emitted in Montana, 18.3 million metric tons resulting from electric power.

Recommendation:

Study task:

A review of existing state and federal regulations governing carbon sequestration.

ETIC response: Prior to the ETIC May 2008 meeting, members received a report prepared by the National Council of State Legislatures outlining state activity related to sequestration. A supplemental report examining activities in Wyoming, Washington, New Mexico and Oklahoma was included. During the May meeting, Bonnie Lovelace with the DEQ also will update the committee on Congressional hearings on the topic. At the January 2008 meeting, the ETIC received an in-depth overview of the Interstate Oil and Gas Compact Commission (IOGCC) proposal. A discussion concerning jurisdiction also was part of that presentation.

Finding: There is a limited framework of existing legislation regarding carbon sequestration. However, many states are working through policy discussions that deal with

regulatory frameworks, related to CO₂ storage. Wyoming, earlier this year, was the first state to adopt an in-depth regulatory scheme.

Finding: Two bills were passed and approved during Montana's 2007 Legislative and Special Sessions that address the carbon issue--House Bill No. 25 (HB 25) approved during the regular 2007 session, and House Bill No. 3 (HB 3), approved during the 2007 special session. Both bills address, to some degree, the issue of carbon sequestration, particularly as it applies to power generation and equipment.

Finding: The Interstate Oil and Gas Compact Commission (IOGCC) drafted a report titled "Carbon Capture and Storage: A Regulatory Framework for States," which includes a series of recommendations on a CO₂ framework. The report analyzes technical, policy, and regulatory issues related to storage of carbon dioxide in the subsurface, including oil and natural gas fields, saline formations, and coal beds.

Finding: In October 2007, the EPA announced plans to establish rules for geological sequestration. The EPA currently uses the Class V experimental technology well permits for pilot CO₂ sequestration projects. The new regulations will ensure that a permitting system for CO₂ injection is consistent with what is now in place under the Safe Drinking Water Act, according to the EPA. The Safe Drinking Water Act is established under the Underground Injection Control program. The EPA will propose regulatory changes to the UIC program in the summer of 2008.

Finding: The Energy Independence and Security Act of 2007 appears to give the EPA explicit authority under the Safe Drinking Water Act to regulate the injection of carbon dioxide. The 110th Congress continues to review multiple other bills related carbon capture and storage.

Recommendation:

Study task:

The costs and benefits of carbon sequestration.

ETIC response: A report discussing the costs and benefits, including risks, was prepared by staff for the committee's November meeting. In addition the ETIC heard from several speakers who discussed costs and benefits including: Bonnie Turner, NextGen Energy Council; Gordon Criswell, environmental manager for Colstrip Steam Electric Station; Dave Ryan, energy engineer, National Center for Appropriate Technology; Steven Aumeier, Director Energy Systems and Technologies Division, Idaho National Laboratory; and Ben Brouwer, with AERO.

Finding: The costs of carbon capture and sequestration are uncertain, and may be determined in part by successful commercial demonstrations of carbon capture and storage, carbon market prices, and by state and federal decisions regulating carbon emissions.

Finding: Risks to humans include the potential for potable aquifer contamination and the possible risk of induced seismicity due to movement of displaced fluids.

Finding: Benefits range from reducing greenhouse gas emissions to providing new

markets for the agriculture industry. The National Energy and Technology Laboratory notes that sequestration works toward implementation of National Energy Policy goals to develop new technologies and supports international collaborations to reduce greenhouse gas emissions and intensity. Sequestration can provide potential economic benefits in oil and gas fields, via enhanced oil recovery.

Recommendation:

Study task:

A review of the liability issues related to sequestration and legal issues related to surface vs. subsurface, ownership issues.

ETIC response: In October 2007 the ETIC heard from the Northern Plains Resource Council, where surface and sub-surface rights were discussed. In advance of the November meeting, ETIC staff attorney Todd Everts prepared a legal opinion on the topic of surface and sub-surface rights in Montana to assist committee members in a discussion about ownership issues. The report also addressed the issue of liability.

Finding: Because there are a number of unknowns about carbon sequestration and because jurisdictional questions remain, the issues of liability and ownership will likely evolve as additional regulatory issues are determined.

Finding: The question of liability may be addressed differently, depending on whether the stored carbon is considered a pollutant or a commodity. Potential responsible parties for carbon sequestration could include: storage site landowners, injectors, operators, transporters, generators, lenders, or contractors. Transfer of liability to government also has been discussed.

Finding: In looking at other states for guidance in this area, there are limited examples. Wyoming has not addressed the liability issue, but has created a task force to further examine related matters. The Wyoming Legislature established that pore space is owned by the surface owner.

Recommendation:
