Opponent Testimony to HB 170

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There are many risks involved with the entire process of Carbon Capture and Sequestration (CCS), from the capture of carbon dioxide emissions from industrial sources to the final injection stage in Class VI wells. According to the report titled "Evaluation of the Potential for Gas and CO2 Leakage Along Wellbores" in the January 2009 publication of *SPE Drilling and Completion*, "In the case of CO2 sequestration, the storage unit must be near leak free, to the atmosphere or other geological formations, to justify the costs and to meet safety requirements and greenhouse gas reduction objectives."

Costs are a significant issue surrounding this process. Without enormous tax-payer subsidies and tax incentives, CCS is not affordable for industry. The Congressional Budget Office said in a 2023 report, "Federal Financial Support for CCS research totaled $5.3 billion over the 2011–2023 period."

Current tax credits under 45Q are $85/ton of CO2. "A major dilemma for 45Q is that CCS has both high capital and high operating costs, which means that when the credit is no longer available after 12 years, Electricity Generating facilities would likely stop capturing and storing CO_2. Even with the billions of dollars of investment, CCS hasn't made a dent in CO2 emissions. "Fifteen CCS facilities are currently operating in the United States. Together, they have the capacity to capture 0.4 percent of the nation's total annual CO2 emissions. An additional 121 CCS facilities are under construction or in development. If all of them were completed, they would increase the nation's CCS capacity to 3 percent of current annual CO2 emissions."

In addition to being expensive and hazardous, after nearly 50 years, CCS facilities do not deliver on their promises. There is a long list of failed or discontinued CCS projects including the Petra Nova coal plant in Texas.

Norway's Sleipner project saw injected CO2 migrate to an unexpected layer and it is now migrating in multiple directions, potentially escaping. Norway's Snøhvit project's first attempt at disposal had to be cancelled due to rising pressure.

Chevron's $2.7 billion Gorgon project in Western Australia, the world's largest CCS project, has consistently failed to achieve its target of capturing 80 per cent of the

CO_2 in the project's gas stream. According to the IEEFA, the project has captured approximately only 40% of its targets for the first five years of operation.

"Deep borehole stress measurements at West Virginia's Mountaineer coal-burning power plant on the Ohio River indicated a severe limitation on the rate at which CO_2 could be injected without the resulting pressure build-up, initiating slip on preexisting faults," according to a study published in the Proceedings of the National Academy of Sciences of the United States of America.

The fact that Ohio has over 36,000 orphan oil wells also adds to the risks of injecting high pressure CO_2 into Ohio's Appalachian counties.

These issues highlight the geological uncertainties and potential risks associated with CCS which include:

(1) the operational risks of capturing, compressing, transporting and injecting CO_2;

(2) the risk of blowouts or very rapid CO_2 release from wells;

(3) the risk that CO_2 put into long term geologic storage will leak into shallow aquifers and contaminate potable water by lowering pH and increasing dissolved metals and other components;

(4) the risk that sequestered CO_2 (and possibly associated methane gas) will leak into the atmosphere reversing the climate change benefits of sequestration and perhaps requiring repayment of CO_2 sequestration credits.

We have viable, proven sources of energy that will reduce carbon emissions. CCS is too risky, too expensive and unable to truly reduce carbon emissions.

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