

2024 is a new year. A new group, No False Solutions Coalition, delivered its Statement Regarding Emerging Technologies that Represent False Solutions to the Climate Crisis¹, to Pennsylvania Legislators, Regulators and Governor Shapiro on January 8th, 2024. The lead authors of this 47 page document are Sandy Field and Karen Elias, both members of the Climate Reality Project of the Susquehanna Valley, PA. The document “was compiled to educate and inform . . . about emerging technologies that claim to be solutions to the climate crisis but in fact exacerbate the climate crisis, damage the environment, and/or harm public health and do not offer more effective or economically viable solutions than those offered by renewable energy and renewable energy storage technologies.”

Other writers are also concerned that Pennsylvania is “falling behind”. January 2, 2024 the Philadelphia Inquirer published Patrick McDonnell’s commentary, including the statement, “Pennsylvania tightly embraces the fossil fuel industry, preventing sustainable economic growth, energy diversification, and a cleaner future, particularly for young people.”²

The report by Field and Elias discusses the continued extraction and use of fracked gas, hydrogen, advanced recycling of plastics, carbon capture and sequestration, as well as regulatory/policy concerns. The document opens with recognition of Pennsylvania’s history of extraction and ends with Conclusions which point toward changes that will move Pennsylvania faster to the benefits of green energy production. Links to references in the text are listed alphabetically following the Conclusion.

I will not summarize further the contents of this document, because you can easily pick from the topics listed on page 4 to jump to the subjects of most interest to you now. I will refer to this document every time I am motivated to respond to an irresponsible letter from a Pennsylvania legislator regarding the future of energy development in this state.

I wish to return to the subject of carbon sequestration and storage (CCS), discussed in pages 17 to 20 of this Statement. We can hope that the economic forces already in play will soon reduce support for more extraction of fossil fuels. Burning of fossil fuels has already put so much carbon dioxide into our atmosphere that climate scientists predict an inevitable rise in sea levels by 4 to 6 feet by 2100.³

So even if no more fossil fuel is extracted, there will be motivation to remove carbon dioxide from air however possible and put supercritical carbon dioxide deep underground. Doubts about the efficacy of CCS are discussed on page 19. Note that Equinor, an international company, partnered with Shell in supporting Team PA’s bid for a hydrogen hub⁴, was the developer of those two CCS projects in Norway and of another in Algeria.⁵ The Institute for Energy Economics and Financial Analysis published a report describing these sites in June 2023.⁶ In Algeria injected CO₂ migrated upward, as expected, and was stopped by the cap rock, as planned. However, the force of the expansion of CO₂ was so great that the surface of the land over this area was deformed up to 20 to 25 mm even though the storage site was 1 km underground. This could damage the foundation of any structure in that area. Imagine what would happen to the delicate roots of trees in the forest. Injection of CO₂ was halted before enough damage to the cap rock occurred that CO₂ could escape into the atmosphere at that time. Because Algeria has no restrictions on discharging CO₂ directly into the atmosphere that is the course that was taken. Equinor

¹ <https://nofalsesolutionspa.org/no-false-solutions-pa/>

² <https://www.inquirer.com/opinion/commentary/energy-coal-renewables-pennsylvania-rggi-20240102.html>

³ <https://www.ucsusa.org/sites/default/files/attach/2018/06/underwater-analysis-full-report.pdf>

⁴ <https://teampa.com/2022/11/team-pennsylvania-serves-as-lead-applicant-on-hydrogen-hub-concept-paper-submitted-to-u-s-department-of-energy/>

⁵ Energy Procedia. The In Salah CO₂ storage project: Lessons learned and knowledge transfer. Ringrose et al. Volume 37. 2013, p. 6226-6236.

⁶ <https://ieefa.org/articles/norways-carbon-capture-and-storage-projects-augur-geological-risks-global-aspirations-bury>

As requested by Dr. Barbara Brandom, the commenter, subsequent to the CAC meeting, the correct citation is <https://ieefa.org/resources/norways-sleipner-and-snohvit-ccs-industry-models-or-cautionary-tales>

abandoned its attempts to sequester CO₂ under the Algerian desert. It was stated that this process should not be attempted near places where people use buildings.

One may hope that Equinor and its partners have greatly improved techniques of site assessment and injection of carbon dioxide in recent years. In November 2023 the US Department of Energy announced plans to support 16 carbon sequestration projects across 12 states.⁷ No sites in Pennsylvania are under development for CCS yet. However, the PA Senate Committee of Environmental Resources and Energy has approved Senate Bill 831,⁸ describing the use of 'pore space', the potential spaces underground into which fluids, such as supercritical carbon dioxide, may be injected. This Bill is described as, "An Act providing for the injection of carbon dioxide into an underground reservoir for the purpose of carbon sequestration, for the ownership of pore space in strata below surface lands and waters of the Commonwealth, for conveyance of the surface ownership of real property; imposing duties on the Department of Environmental Protection; and establishing the Carbon Dioxide Storage Facility Fund".

We must take this opportunity to educate our legislators about the dangers of CCS. The details of Bill 831, such as how holders of surface rights should be involved in permitting class VI wells (for injection of carbon dioxide), to what extent users of pore space are liable for damages to surface structures, including forest and groundwater, (page 9 of Bill 831 states that no owner of pore space will be liable for the effects of injecting CO₂ for sequestration . . . except as described in Section 8. Liability of the storage operator), should agreement of 60 or 80% of the owners of pore space be required for all of the space to be declared within the storage facility, is the requirement for persons claiming an interest in the pore space, to notify the secretary and the storage operator within 20 days of the publication date of the storage proposal long enough? Note that seismic studies will be performed at all proposed storage sites. "The storage operator shall defend, indemnify and hold harmless the property owner for all claims arising out of entry onto the property by the storage operator. . ." How long is the long term monitoring and management that the state commits to? Given that previous CCS projects did not meet planned goals, how will completion of CO₂ injections be defined? Items 3 and 4 under Conditions for Project Completion are problematic, because injection of fluids, including CO₂ can be followed by followed by seismic activity and/or migration of fluid into new rock strata.

Our voices on these topics must be louder than those of industry.

⁷ <https://www.energy.gov/articles/biden-harris-administration-invests-444-million-strengthen-americas-infrastructure>

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<https://www.legis.state.pa.us/cfdocs/billinfo/billinfo.cfm?year=2023&sind=0&body=S&type=B&bn=831>