

**House Natural Resources Subcommittee on Energy and Mineral Resources Hearing; "The Opportunities and Risks of Offshore Carbon Storage in the Gulf of Mexico."; Testimony by Tip Meckel, Senior Research Scientist, Bureau of Economic Geology, The University of Texas at Austin, Austin, Texas**

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Thank you for inviting me today to provide testimony to the House Subcommittee on Energy and Mineral Resources oversight hearing titled: "The Opportunities and Risks of Offshore Carbon Storage in the Gulf of Mexico."

I serve as a Senior Research Scientist at the Gulf Coast Carbon Center at the Texas Bureau of Economic Geology at The University of Texas at Austin. My expertise is in geology and geophysics, with a specialty in carbon dioxide storage.

During my 15 years working full time on Carbon Capture and Geologic Storage (CCS), I have worked closely with the U.S. Department of Energy - National Energy Technology Laboratory under the Office of Fossil Energy and Carbon Management. My colleagues and I have led a half dozen CCS demonstration projects utilizing over \$70 million dollars in Federal funding. Our Center has also interacted with many companies that are actively developing CCS projects, including offshore, both in the United States and internationally.

Beginning in 2010, I initiated a research program to evaluate the offshore Gulf of Mexico for CCS. I have completed three multi-year offshore CCS storage research projects to date, with one ongoing for the western Gulf of Mexico. We now have the first example of a successful State lease for offshore CO<sub>2</sub> storage, indicating commercial market interest and viability of IRS Section 45Q tax credits for accelerating project deployment.

Lastly, my colleagues and I at the Center are currently in regular dialog with the Bureau of Ocean Energy Management (BOEM) and the Bureau of Safety and Environmental Enforcement (BSEE) on topics related to offshore CCS.

In the United States, and globally, we are faced with the unprecedented challenge of providing abundant affordable and reliable energy, while simultaneously mitigating the effects of climate change associated with industrial emissions.

Both the International Panel on Climate Change (IPCC) and the International Energy Agency (IEA) have stated repeatedly over the last decade that trying to address our energy needs and associated industrial emissions will be both more expensive and less effective without carbon capture and geologic storage. Simply put, CCS is not a 'want', it is a 'need'.

It is important for the subcommittee to recognize that while CCS is a relatively new topic for the offshore, there are over 20 years of experience in developing and deploying CCS technology in the United States, a recognized leader in CCS. Multiple examples of successful industrial projects exist. The primary technology components needed are at a very high Technology Readiness Level (TRL), and projects can proceed safely and effectively today.

With regard to subsurface storage capacity, the Offshore Continental Shelves (OCS) represent the national end-game for effective CCS deployment at the scale needed to mitigate existing and future emissions. In particular, the Gulf of Mexico basin is one of the most studied geologic regions in the world. Currently available

subsurface data are sufficient to initiate storage projects today. Multiple technical studies identify hundreds of gigatons of storage capable of addressing national emissions for decades.

Considering the opportunities that offshore CCS affords, it is important to recognize the following:

- \* An offshore CCS industry would facilitate the mitigation of significant quantities of CO<sub>2</sub> emissions from industrial point sources, and would increase the nation's ability to reach stated greenhouse gas emissions reduction targets.
- \* The development of a successful offshore CCS industry will both retain and create significant long-term, diverse, and high-paying jobs.
- \* Development of offshore CCS will lead to international competitiveness in a rapidly evolving global energy transition.
- \* Offshore CCS can be an important part of addressing environmental justice issues related to the energy transition.
- \* The opportunity exists to re-purpose existing infrastructure nearing the end of its production cycle for CCS and avoid decommissioning costs.

Considering the risks that CCS presents, the following points are critical to understand:

- \* CCS science is mature and subsurface injection of CO<sub>2</sub> for emissions abatement is demonstrably safe and effective.
- \* Primary risks include migration of buoyant fluids toward the surface and marine environment via legacy wellbores or geologic pathways.
- \* The management of induced pressure in the subsurface associated with CO<sub>2</sub> injection is important for understanding project location and adjacent proximity, while minimizing potential for induced seismicity.
- \* The technologies needed for effective monitoring of subsurface CO<sub>2</sub> injection projects are mature.
- \* The costs of CCS are currently quite high. Current IRS tax credits (similar in structure to those for solar and wind development) valued at \$39/ton are capable of initiating some projects, but tax credit values closer to \$85/ton would generate a significant additional increase in project deployment.
- \* Public perception of CCS is uneven, although many become more supportive once they are provided additional information on the benefits and risks.

In conclusion, I believe the Gulf of Mexico represents the single best opportunity for developing a U.S. CCS industry that can effectively address national emission reduction strategies at the required scale. The opportunities are economically impactful, can significantly mitigate emissions for reaching our national targets, and the risks are manageable and monitoring is mature. We are ready to proceed.

I encourage the subcommittee to recognize the ability to simultaneously address future abundant affordable and reliable energy needs while reducing industrial emissions and addressing climate change by establishing permitting and regulations needed for safe and timely development of an offshore CCS industry in the OCS.

Thank you for the opportunity to provide these perspectives, and I am happy to field any questions you may have as time allows.

Read this original document at:

<http://docs.house.gov/meetings/II/II06/20220428/114674/HHRG-117-II06-Wstate-MeckelT-20220428.pdf>

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