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# Out of Sight, Out of Mind: Pushing $CO_2$ Storage Offshore

- *The oil and gas industry plans to invest billions of dollars to build carbon dioxide ($CO_2$) storage projects in the Gulf of Mexico.*
- *Risks related to the proposed projects include the lack of regulations for CCS activities in federal waters and the weak regulatory history of key agencies.*
- *The industry's dependence on the 45Q federal subsidy is a huge financial risk to industry and to taxpayers, who could be on the hook for hundreds of billions of dollars.*
- *The rush to leap from onshore projects averaging a million metric tons of $CO_2$ per well to "hubs" storing more than 100 million metric tons per year is an untested, unproven idea.*

## Executive Summary

The oil and gas industry is moving forward with a massive experiment in the Gulf of Mexico, planning to invest billions of dollars to build carbon dioxide ($CO_2$) storage projects in state and federal waters. The industry believes a simplified permitting pathway, high concentrations of industrial and gas processing $CO_2$ emitters, and the long-term security of federal tax credits via the 45Q program will make this infrastructure development profitable. IEEFA believes the industry and its advocates are ignoring or vastly understating a series of risks that could cost investors and taxpayers billions of dollars.

Substantial areas of subsea land in Texas waters have either been leased by the oil and gas industry for $CO_2$ storage or are currently on offer for storage leases to support plans for large $CO_2$ storage hubs. Additional acreage has been leased in the outer continental shelf (OCS) territory managed by the Department of Interior's Bureau of Ocean Energy Management (BOEM). Taken together, leased holdings currently total about 2,400 square miles, almost the area of Delaware.

Industry announcements include claims for up to 140 million metric tons per year of $CO_2$ in three large offshore hubs: ExxonMobil's Houston Ship Channel CCS; Repsol's Aves Carbon Capture and Storage project near Corpus Christi; and Chevron's Bayou Bend project near the Beaumont/Port Arthur area. $CO_2$ storage projects of this size have not been tested or commercialized anywhere in the world, either on land or at sea. In 2024, permanent $CO_2$ storage was limited to modest amounts of $CO_2$, amounting to about 10 million metric tons per annum (Mtpa) globally, with just 3.6 Mtpa injected in offshore operations.[1] The scale of the proposed CCS transport and storage hubs in the subsea area of Gulf of Mexico is almost 40 times larger.

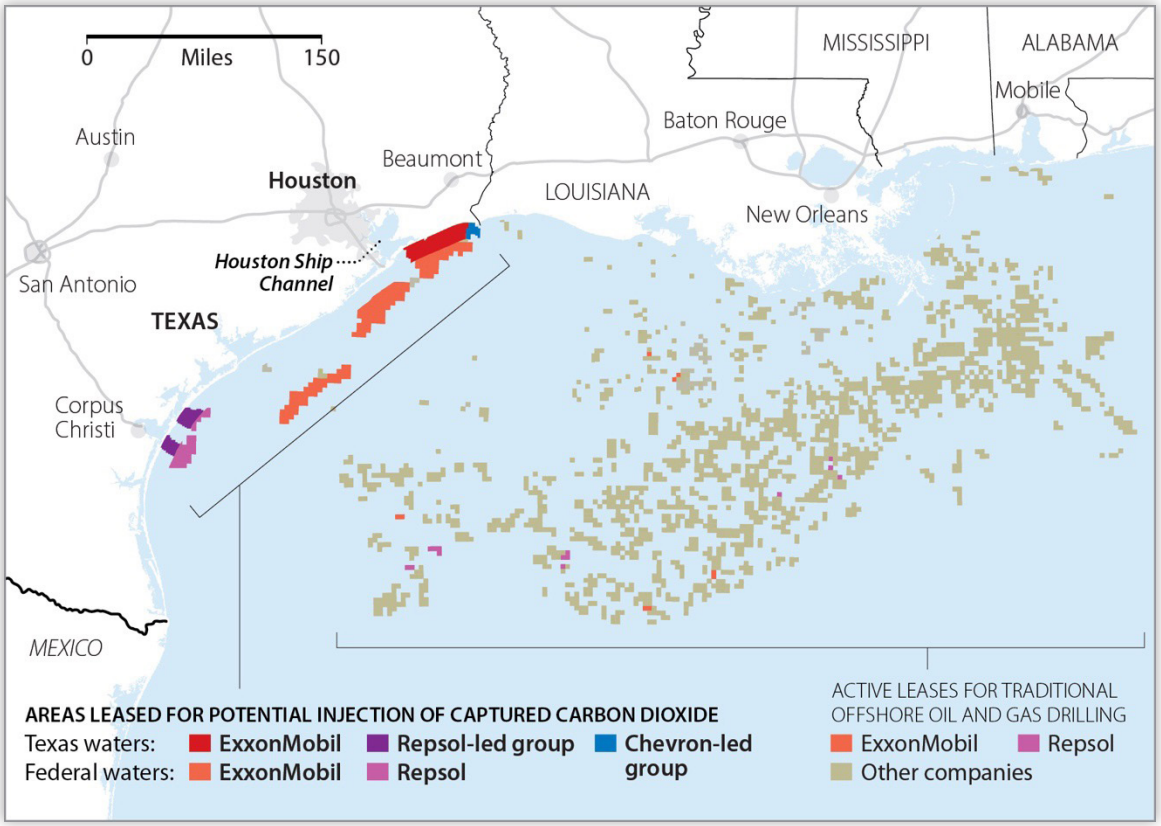
Permanent geological storage of $CO_2$ is a process that is still in the early stages of development, commercialization and expansion. While industry claims extensive experience with $CO_2$ management and injection for storage, most projects are located onshore and involve enhanced oil recovery (EOR), which uses $CO_2$ to force more oil out of the ground. Additional risks related to the massive proposed projects include the lack of regulations for CCS activities in federal waters and the weak regulatory history of key federal agencies. Finally, the industry's dependence on the 45Q federal subsidy to make such projects feasible represents a huge financial risk to industry and to taxpayers, who could be on the hook for hundreds of billions of dollars.

## Existing and Potential CCS Leases Offshore Texas and in Nearby Federal Waters Are Extensive

CCS proponents see offshore tracts as offering a trifecta of favorable geologic storage conditions, proximity to $CO_2$ sources, and simplified permitting on state- and/or federally owned land.[2] The comparative ease of working with a single landowner for pipeline permitting and access to large volumes of potential storage space are especially attractive propositions, offering cost savings as well as preventing potential delays due to public opposition. Public opposition has been particularly problematic for new $CO_2$ pipeline permitting due to significant resistance to the use of eminent domain, as well as concerns about $CO_2$ pipeline safety.[3,4,5]

Submerged lands in Texas state waters and the outer continental shelf are managed separately. The Texas General Land Office (GLO) leases subsea tracts extending three marine leagues (about 10 statute miles) from the coast and the Department of Interior's (DOI) Bureau of Ocean Energy Management (BOEM) oversees leases in the outer continental shelf. Figure 1 shows active holdings for CCS activities in Texas waters as well as leased areas in federal waters that are intended for $CO_2$ storage.

**Figure 1: Large Active Leases for Potential Carbon Dioxide Storage in Texas State Waters and Federal Waters**




*Sources: Texas General Land Office, BOEM, Company announcements*

Texas GLO has conducted three lease sales for $CO_2$ storage projects since 2021. The territory in Texas' offshore waters allows CCS activities under existing state regulations. Thirty-year storage leases have been signed for almost 700 square miles (420,000 acres) of submerged lands managed by the state.[6]

ExxonMobil is currently the largest holder of submerged land leases for CCS, securing 271,000 acres of territory in 2024.[7] In January 2025, the Texas attorney general approved ExxonMobil's formal request that all terms of the solicitation response and lease award remain confidential.[8] Public disclosure of terms is a general requirement of a lease award from the GLO, and no other company has requested that their $CO_2$ storage agreements or bids remain out of the public eye.

A new lease offering was announced by GLO in June 2024 for almost 1,600 square miles (1.13 million acres) of submerged lands for $CO_2$ storage. Lease awards were scheduled to have been made in January 2025 but there has been no public announcement of awards made, if any, or cancellation of the offering.[9]

The OCS, subsea territory that is federally owned with oil and gas leasing managed under BOEM, is located beyond Texas waters. While the 2021 Infrastructure Investment and Jobs Act (IIJA) included a revision to the Outer Continental Shelf Lands Act (OCSLA) to allow carbon storage,[10] no lease sales for this use have been conducted officially and CCS activities are not authorized under the terms of current oil and gas leases.[11] Even so, there have been several large lease acquisitions in the OCS that are located adjacent to acreage leased for CCS activities in Texas state waters.

BOEM has held three rounds of lease sales in the Gulf of Mexico since the 2021 revision to the OCSLA (one round in 2021 and two rounds in 2023) that have resulted in winning bids for large areas of contiguous tracts that appear to be intended for carbon storage.[12,13] Leases backed by ExxonMobil and Repsol currently hold five-year oil and gas leases for a total of almost 1,700 square miles (1.15 million acres) of subsea territory in the western planning area of the Gulf of Mexico. It is unclear whether tracts leased under the 257, 259 and 261 sales will be eligible for $CO_2$ storage.[14] ExxonMobil has lobbied extensively for modification to lease terms to allow the conversion of existing leases and other companies advocate for a "multiple use" lease.[15,16]

Lease terms for $CO_2$ storage in the OCS do not exist, in part, because there are no regulations for such activities in the OCS. BOEM and the Bureau of Safety and Environmental Enforcement (BSEE) were directed to develop these rules within a year of IIJA's passage in November 2021.[17] Regulations would be functionally equivalent to the EPA Class VI underground injection control (UIC) program or similar in states with primacy. A draft rule is slated to be released for public comment in May 2026.[18]

While BOEM is responsible for issuing regulations and managing the leasing process, BSEE will be responsible for enforcing regulations for offshore operations of $CO_2$ storage projects. This will be a new area of enforcement for an agency that has been criticized for having a weak track record. Reports from the Government Accountability Office (GAO) have found the agency to have performed insufficient oversight and decommissioning of pipelines (2021) and to have had a weak track record on oil and gas infrastructure decommissioning that exposed the federal government to substantial costs (2024).[19,20] A key finding in the 2024 report was that only $3.5 billion was held in reserve to cover the cost of decommissioning, but a potential $40 billion to $70 billion could be required. This lack of funding for essential decommissioning work from abandoned projects is a critical issue with carbon storage projects. In such cases, the potentially enormous costs of long-term monitoring, management and liability could be transferred to the federal government.

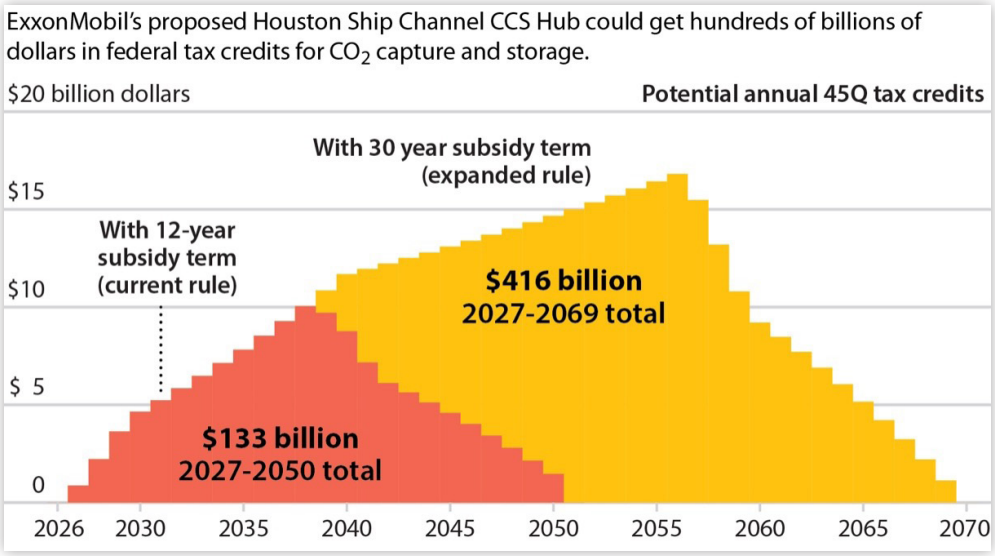
## 45Q Federal Carbon Capture Tax Credit Will Provide Billions in Subsidies

The federal 45Q tax credit is the primary subsidy for CCS projects in the U.S. It allows companies to claim $85 per metric ton of $CO_2$ captured and stored or used. Once a company begins capturing $CO_2$ at a facility, it can claim 45Q credits for 12 years. The credit is transferable and can be sold to another entity seeking tax credits, representing an additional source of revenue for companies. There are currently no caps on the amounts that can be claimed by a single taxpayer or for the 45Q program overall, either on an annual or programmatic basis.[21, 22] For the large CCS storage hubs planned, companies would not claim 45Q directly but would be paid by emitters for transport and disposal of $CO_2$ captured.

Of the three major offshore hub projects in the region, Bayou Bend and Aves have not announced specific storage targets. Instead, announcements have focused on the amount of $CO_2$ that could potentially be captured from nearby emitting facilities.

Only ExxonMobil has disclosed specific storage targets for the Houston Ship Channel hub. For the Houston Ship Channel CCS project, ExxonMobil has announced its goal to inject 50 million metric tons annually (Mtpa) of $CO_2$ by 2030 and ramp up to 100 Mtpa as early as 2040.[23] Figure 2 shows a theoretical implementation plan that would involve initiating capture and injection in 2027 and ramping up quickly to meet 2030 and 2040 goals. Under this scenario, the 45Q credit is assumed to be available for 12 years and its value would increase annually to adjust for inflation, assumed to be 2.3% in this estimate.[24]

**Figure 2: Estimated 45Q Tax Credits for the Proposed Houston Ship Channel CCS Hub**




*Source: IEEFA estimates based on ExxonMobil announcements*

Under the plan, hundreds of billions of dollars of taxpayer money from 45Q alone will subsidize the ExxonMobil project. Cumulative 45Q claims related to the hub could reach $90.2 billion by

2040 and $132.7 billion by 2050. It should be noted that current 45Q rules require construction of capture facilities to begin before 2033. This analysis assumes capture capacity additions will be made through 2040, in line with ExxonMobil's stated goal of reaching 100 million metric tons of injection by then.

Since the 45Q credits can only be claimed for 12 years, there are no incentives for emitters to continue capturing $CO_2$ at facilities that have lifespans of 25 to 30 years. Operating carbon capture equipment is expensive, and emitters are likely to stop running the equipment when 45Q credits are no longer available. If all emitters stop capturing and storing $CO_2$ when credits expire, the hub will see injection of just 705 million metric tons of $CO_2$, rather than the 1,800 million metric tons that would be stored if the project reached maximum storage levels in 2040 and maintained them through 2050.

The oil and gas industry has been lobbying for an extension of the 45Q credit to 30 years to ensure continued payment for carbon capture.[25] If the credit were extended to 30 years, 45Q expenditures for this project would balloon to $227 billion cumulatively by 2050 and would keep paying out until 2069, with a total price tag for taxpayers of $416 billion.

## Conclusion

Leases of submerged lands in federal and state waters offshore Texas herald the shift of industry attention from onshore to offshore $CO_2$ storage zones. The oil and gas industry favors expansion into offshore storage chiefly because these areas offer simplified pipeline and injection zone permitting pathways compared to the complexity of working with multiple landowners and concerned citizens.

However, the rush to leap from modest storage projects averaging a million metric tons of $CO_2$ per well per year to "hubs" that collectively promise to store more than 100 million metric tons per year is an untested, unproven idea. The vast amounts of money available via the 45Q credit incentivize the deployment of technology and systems that have not been tested on the scale proposed by companies such as ExxonMobil, and taxpayers could end up paying billions.

## Endnotes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## About IEEFA

The Institute for Energy Economics and Financial Analysis (IEEFA) examines issues related to energy markets, trends and policies. The Institute's mission is to accelerate the transition to a diverse, sustainable and profitable energy economy. www.ieefa.org

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Anika Juhn is an energy data analyst with the Institute for Energy Economics and Financial Analysis with expertise in data analysis, spatial data analysis, and cartography. Her research at IEEFA has focused on fossil hydrogen production and issues surrounding carbon capture and storage.