

Release and Catch: Government Subsidies for Moving CO₂ Around

A new Food & Water Watch (FWW) investigation reveals substantial flaws, oversight problems, and disastrous unintended consequences of the main vehicle for subsidizing carbon capture and storage (CCS). The program, known by its tax designation as 45Q, provides money for each ton of carbon dioxide (CO₂) that companies capture and bury underground. The value of this potentially trillion-dollar annual cash spigot for fossil fuel companies has been consistently increased in recent years, despite a history of nearly \$1 billion in improperly claimed credits. Recent cuts and changes to federal agencies including the Internal Revenue Service (IRS) and the U.S. Environmental Protection Agency (EPA) further endanger the already inadequate guardrails attached to this program.

FWW analysis of regulatory filings and government data finds that as much as 60 percent of CO₂ considered “captured” in the United States is naturally occurring CO₂ separated from fossil fuels at natural gas processing plants. FWW also finds that 45Q creates an “extract to burn” business model for other fossil fuels, raising emissions and costing taxpayers billions.

The 45Q Program Has a History of Maleficence, Yet Oversight Is Only Weakening

The 45Q credit has a history of fraud and abuse, and there is limited publicly available information on the total value of the 45Q tax credit or whether specific facilities claim the credit.¹ A 2020 U.S. Treasury Department Inspector General investigation found that nearly \$1 billion in 45Q credits had been improperly claimed without meeting the EPA’s requirements for storage and monitoring. In other words, corporations claimed the credits without proof that the CO₂ was effectively stored.²

Since 2020, Congress has increased the value of the 45Q credit to \$85 per ton and eliminated the distinction between oil extraction and sequestration.³ Agencies have also weakened some of the requirements to qualify for the credit.⁴ For example, the IRS now only requires that companies pay back 45Q credits on CO₂ leaks occurring within three years after they claim the credit.⁵ While the CO₂ would need to remain stored for thousands of years to have a climate benefit, corporations can keep 45Q credits for carbon that only stays in the ground for as little as four years.⁶

No single government agency has full access to the data used to oversee the 45Q program. The EPA does not implement 45Q and has no access to taxpayer data.⁷ However, the IRS relies on the EPA by requiring capturing companies to submit their Greenhouse Gas Reporting Program identification numbers and the volumes of CO₂ injected by their operations.⁸ Corporations can then

self-certify volumes of CO₂ reported for 45Q that they also report to the EPA under this program.⁹ Alternatively, companies can instead choose to avoid the EPA entirely by claiming 45Q through a separate certification process under the non-governmental organization the American National Standards Institute (ANSI).¹⁰ The EPA requires reporting of CO₂ covered this way, but does not approve these plans or cooperate with the IRS to verify the 45Q credit.¹¹

Weak 45Q Rules Reward Drilling for CO₂

Providing money for emissions capture creates a perverse incentive. Corporations might get into the pollution creation business just to bank tax credits when they capture that new pollution. For this reason, the 45Q program as initially promulgated was supposed to exclude “a facility that produces CO₂ from CO₂ production wells at natural CO₂-bearing formations.”¹² The goal was to limit tax credits to CO₂ “that, absent capture and disposal, would otherwise be released into the atmosphere.”¹³ However, this report shows that largely as a result of weakened 45Q rules, a large portion of CCS — including some of the largest operational CCS facilities — violate or exist in the gray areas of these provisions.

As early as 2010, natural gas processing facilities, capturing essentially natural CO₂, claimed that they qualified for CCS tax credits.¹⁴ While the EPA and the IRS often refer to these facilities as “industrial carbon capture,” a category that meets 45Q requirements,¹⁵ even CCS advocacy organizations sometimes describe these facilities as capturing “naturally occurring CO₂.”¹⁶ Following pressure to erase the distinction between natural and anthropogenic CO₂, in 2021, the IRS ruled that the prohibition on natural CO₂ only applied to wells that extract more than 90 percent CO₂ by volume.¹⁷ The IRS also created an exception allowing facilities that “capture” naturally occurring CO₂ from reservoirs that are above 90 percent CO₂ to claim 45Q credits, as long as there is also a commercially viable non-CO₂ product present in the reservoir and the project is not dependent on credits for viability.¹⁸ For reservoirs that are less than 90 percent CO₂ by volume, 45Q credits can be the primary motivation for extraction.¹⁹

How Fossil Fuel Corporations Are Reclassifying Their Naturally Occurring CO₂ as “CCS”

The redefinition of existing fossil fuel facilities also creates the illusion of progress on CCS. According to the EPA, between 2016 and 2023, carbon sequestration grew from 3.09 million to 16.3 million metric tons per year; however, carbon capture from industrial facilities declined over the same period from 17.2 million to 16.1 million metric tons per year.²⁰ A closer examination of EPA-permitted CCS projects shows that many of the largest “carbon capture” projects are just redefined fossil fuel facilities.²¹ Between 2016 and 2023, the number of Subpart UU facilities (a class of waste injection well) declined by 24 while the number of Subpart RR facilities (the EPA’s “sequestration” category) increased by 19. Over the same period, underground injection of CO₂ under Subpart UU declined by 17.4 million metric tons, more than the increase in Subpart RR “sequestration” during the same time period.²²

These redefined facilities are primarily natural gas processing plants. In the U.S., some natural gas is pumped to the surface during extraction alongside impurities such as CO₂ and hydrogen sulfide (H₂S).²³ Natural gas processing plants remove the valuable hydrocarbons from this mixture,

creating an “acid gas” waste stream consisting primarily of H₂S and CO₂, but with other impurities such as water, nitrogen, and light hydrocarbons. This gas is then injected underground for disposal.²⁴ FWW estimates that natural gas processing facilities (built for CCS or reclassified to access 45Q) account for around 60 percent of carbon “captured” in the United States.²⁵

This paper conversion is happening because natural gas processing plants can access the 45Q tax credit by “converting” existing acid gas injection wells to “Subpart RR and 45Q.”²⁶ For example, the Lucid Red Hills gas plant in the Permian Basin injects acid gas from natural gas processing, and was originally built in 2012-2013.²⁷ Under the new permitting category, Red Hills could count CO₂ injected into an existing well as “geologically sequestered.”²⁸ Lucid claims that it applied for this rebrand in order to qualify for 45Q.²⁹

Giving Tax Credits to CCS Risks Paying Corporations to Create Additional Pollution

In 2021, ExxonMobil touted its Shute Creek facility in Wyoming as the largest carbon capture facility in the world.³⁰ Built in 1986 and expanded by adding an acid gas injection well in 2005, the facility’s 2005 10-K filing to the U.S. Securities and Exchange Commission does not mention CCS, describing the natural gas processing plant as merely another gas processing and acid gas injection project.³¹ The facility began acid gas injection in 2005, incidentally injecting CO₂ because the facility processes gas that is 66 percent CO₂ and only 21 percent methane.³² However, ExxonMobil had to remove the naturally occurring CO₂ in order to market the natural gas, and by 2009 the company provided around 4 to 5 million metric tons of CO₂ annually for enhanced oil recovery (EOR).³³

Reinjecting produced CO₂ for tax credits creates the risk that companies begin producing otherwise unprofitable CO₂-rich gas, injecting only a portion and emitting the rest. At ExxonMobil’s Shute Creek facility, every cubic foot of methane is extracted alongside 3.14 cubic feet of CO₂.³⁴ At 2024 prices, one cubic foot of natural gas sold at the main natural gas market was worth \$0.0023, while each cubic foot of CO₂ used for EOR at a new CCS project is worth \$.0044 per cubic foot.³⁵ A newly built facility that extracted a similar ratio of CO₂ to natural gas as Shute Creek and injected CO₂ for EOR would make 6.1 times as much money from the CO₂ tax credits as from selling natural gas.³⁶

While the IRS nominally restricts the extraction of purely naturally occurring CO₂ for CCS, it does nothing to limit another natural source of CO₂ ripe for extraction: the carbon bound up in fossil fuels. Just as 45Q incentivizes corporations to extract extra naturally occurring CO₂, the credit also subsidizes overproduction of other fossil fuels in order to harvest their lucrative carbon emissions (assuming they manage to get failed carbon capture technology to work).

In 2024, coal-fired power plants paid an average of \$2.55 per million Btu of coal³⁷; that much coal, when burned, will emit CO₂ worth up to \$8.14 if captured.³⁸ In other words, carbon capture plants could buy coal just to burn it, capture half of their emissions, and make a profit. Additionally, regional coal prices can be as low as \$0.81 per million Btu, leading to an even stronger incentive for some carbon capture operations.³⁹

Incentives for natural gas are similar. In 2024, natural gas-fired power plants paid \$3.03 per million Btu of natural gas⁴⁰; if burned, this gas contains carbon worth up to \$4.50 in 45Q credits.⁴¹

However, this is a national average, including costs that power plants must pay for transportation to

locations far from the wellhead. Henry Hub (the primary U.S. spot market for natural gas) prices in 2024 averaged \$2.19 per million Btu, low enough to support an “extract to recapture” business model.⁴²

This risk is not conjecture: Enchant Energy’s failed plan to re-open and CCS retrofit the San Juan Generating Station coal plant in New Mexico projected receiving up to twice as much revenue from 45Q credits as from electricity sales.⁴³ After including revenue from selling CO₂ for oil production, Enchant projected receiving between 1.4 and 3.3 times its electricity revenue from CO₂.⁴⁴ For Enchant, this project represented a “model” for the CCS industry.⁴⁵

Even the “purest” forms of CCS face a similar perverse incentive. Occidental Petroleum’s plans for a million metric ton per year direct air capture plant would profit by capturing carbon extracted from the earth and released into the air from combustion.⁴⁶ Generating the electricity required to run direct air capture equipment would create more greenhouse gas emissions than the CO₂ captured by the equipment. According to calculations by FWW, capturing one ton of carbon dioxide from the atmosphere using electricity from fossil fuels would create greenhouse gas emissions equivalent to 3.5 tons of CO₂.⁴⁷

Conclusion

Numerous problems plague the reckless 45Q program which, in its current form, funds natural gas processing and other forms of naturally occurring CO₂ extraction that barely qualify as CCS. 45Q lacks the transparency and additionality requirements needed to ensure that 45Q does not simply pay corporations to generate new sources of pollution. Absent long-term accountability and cradle-to-grave oversight, 45Q is handing billions to fossil fuel corporations without even ensuring that the CO₂ stays underground.

Endnotes

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