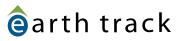# Guardrails on 45Q Reduce Costs and Improve Targeting

Doug Koplow/Earth Track – May 16, 2025

Tax credits for carbon capture, sequestration and utilization (CCUS): massively expensive, little accountability

- **Tax credits are uncapped, beneficiaries largely invisible.** Government budgets are established by Congress, with spending caps. Programs receiving budget allocations can be easily tracked inside of government, and often outside as well. In contrast, 45Q tax credits may be claimed for an unlimited amount of captured carbon by an unlimited number of claimants. Not only is the government's financial exposure uncapped, but compliance with statutory rules is self-reported, and because tax returns are confidential under federal law ([26 USC 6103](#)), only the IRS is legally entitled to know the identities of claimants and the amounts of their claims. For 45Q, gaps in the data on physical flows of CO_2, and a lack of coordination between the US EPA and the US Treasury, make strong auditing impossible. The actual cost to the Treasury can be orders of magnitude higher than was predicted.

- **Political incentives to underestimate budget impacts.** Those promoting a particular tax break have an incentive to minimize the reported budget impacts since a lower fiscal "score" makes legislation easier to pass. This increases the need for accurate data on the scale of 45Q and to control fiscal risks in other ways.

- **Costs to taxpayers of Section 45Q tax credits appear to have been dramatically [under-estimated](#).** The credits provide large subsidies per metric ton for CCUS. When first passed in 2008, the provision established a cumulative, CO_2 tonnage-based cap on spending. However, the Inflation Reduction Act (IRA) of 2022 increased the subsidy rate by at least 70% (more for direct air capture), eliminated any caps on tonnage, broadened eligibility to smaller projects, and extended the eligibility period to claim credits into the 2040s.

  - When the IRA was passed, the [Congressional Budget Office](#) estimated that the 45Q tax credit would cost taxpayers $3.2 billion over ten years.
  - The most recent government estimate, by the [US Treasury](#), projects a 10-year cost of $43 billion over 10 years, more than thirteen times higher.
  - But [independent estimates](#) based on expected carbon capture rates of announced projects indicate the cost to taxpayers could be much larger still: $835 billion, or an average of $46 billion per year between 2025 and 2042 (IEEFA). If increases in 45Q rates and extensions in eligibility promoted by industry and some members of Congress were approved, the taxpayer cost would surge to more than $2 *trillion*.
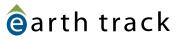
45Q Guardrails: limiting taxpayer losses while improving subsidy targeting

A handful of modifications to 45Q eligibility could reduce taxpayer risks from the subsidy significantly. Drawn from multiple sectors (not just energy), the examples below highlight approaches that have already been deployed to improve targeting of subsidy recipients and constrain fiscal exposure. They illustrate what could be done with 45Q.
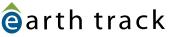
- **Cap fiscal claims.** Taxpayer risk can be limited by establishing a financial cap on the credits that can be claimed. This approach is commonly used at the state-level, and there are examples at the federal level as well. For 45Q, an approved project could still be allocated access to credits for the full 12 years of eligibility, but with associated constraints on credits per year, total claims per project, and aggregate claims across all projects to ensure that taxpayer costs are controlled.[1]

    - *Example:* The **Nuclear Production Tax Credit** (Section 45J) for new, advanced reactors, was originally passed in the Energy Policy Act of 2005. There was a statutorily-set subsidy rate both per kWh (1.8 cents) and per reactor-year ($125m per 1,000 MW of capacity) basis. There was also a national cap (the "national megawatt capacity limitation" or "NMCL") on how much total new reactor capacity could receive the credit. Because each unit kWh of eligible production had a fixed subsidy value, the effect was to cap the overall fiscal price tag of the program. To address concerns that allocated credits would go unclaimed if some allocated capacity didn't ultimately get built, the IRS also established guidelines to reallocate unused NMCL to other reactors (see Notice 2023-24).

    - *Example:* The ***New Markets Tax Credit Program*** provides credits for qualified equity investments in Community Development Entities in low-income areas. The program has an annual tax credit cap ($10 billion for 2024-25) which is allocated among competitive applicants. For the most recent cycle, applications were nearly double the available tax credit allocation.

    - *Example:* The **Qualifying Advanced Energy Project Credit Program** (Section 48C(e)) sets an overall dollar cap on eligible credits, allocated to specific projects reviewed and approved by the US DOE.

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[1] In its 2015 review of state-level efforts to control fiscal risks from tax subsidies, the Pew Charitable Trusts noted that "[o]ne of the strongest protections against surprise increases in tax incentive costs is an annual limit, or cap, on program costs. Caps can work in different ways. In some cases, businesses qualify for incentives on a first-come, first-served basis until the money for the year runs out. In other cases, all businesses apply for the incentives at the same time; then state officials choose which ones will receive them. In still others, every eligible business receives the incentive, but the value of each incentive is prorated to stay under the overall cap."

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- **Limit subsidies to hard-to-decarbonize industries.** Limited taxpayer resources should be targeted only to sectors where decarbonization is technically challenging and there are no feasible alternatives to the products or services from that sector. Examples might include steel, cement and certain chemicals. This restriction would limit 45Q to where it is technically most needed and reduce federal budget exposure, particularly in the near-term. While the current formulation of 45Q does provide higher subsidies for more challenging decarbonization approaches, allowed tonnage in each category is unlimited. The vast majority of projects in the US (and globally) have been for enhanced oil recovery (EOR).[2]

  - *Example:* Although formulated as grants instead of tax credits, DOE's ***Industrial Demonstrations Program*** (IDP) [targeted](#) "eight difficult-to-decarbonize industry groups" rather than being open to any and all sectors. The total anticipated federal support was $6 billion. Despite being more carefully targeted than 45Q and much smaller in terms of fiscal impacts, funding through the IDP program has [been frozen](#) by the Trump administration. In contrast, 45Q remains entirely uncapped.

- **Modify subsidy base from gross carbon oxides captured to net carbon oxides stored.** The 45Q tax credits should be based on net carbon stored, taking into account carbon emissions from capture, transportation, and injection, as well as carbon extracted (and soon released) in the form of oil or natural gas using enhanced oil and gas recovery. Utilization of CO_2 to make products that are quickly burned returning carbon to the atmosphere (see figure 3 [here](#) for examples) should similarly not be eligible.

  - *Example:* Even other tax credits under the Inflation Reduction Act incorporate life cycle assessments, with lower performing production chains generating smaller credits. The Section 45V credits for hydrogen (***Credit for Production of Clean Hydrogen***), while incomplete in that they assess only "well-to-gate" impacts, at least adjust the credit range from 0 to 100% of the available amount based on carbon emissions per unit of hydrogen produced within the portion of the lifecycle evaluated (see "General Summaries" section [here](#)). The EU similarly targets subsidies based on lifecycle impacts in its draft regulation, though unlike the US, incorporates full cradle-to-grave impacts in its regulatory approach.[3]

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[2] [Geoengineering Monitor](#) noted that at the end of 2022 "[t]he share of ongoing and completed CCS projects with EOR is more than 80 percent in the U.S…This means that CCS is predominantly used to extract more fossil fuels." A similar pattern exists globally: [Zero Carbon Analytics](#) reported that "82.5% of existing CCS capacity uses captured CO_2 in enhanced oil recovery (EOR)."

[3] Draft rules for the European Commission state that "[t]he accounting methodology for low-carbon fuels should take into account full life cycle emissions and indirect emissions resulting from the diversion of rigid inputs from producing low-carbon fuels as well as methane upstream emissions and actual carbon capture rates." See European Commission [Ref. Ares(2024)6848064](#) - 27/09/2024.

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- **Increase allocative efficiency of credits using competition.** Within eligible target sectors, access to credits could be competitively allocated based on the lowest subsidy per ton of carbon stored bid by applicants. The approach would replace statutorily-set flat subsidies per metric ton with the bid price. The auction approach could still maintain existing subsidy rates as a cap, but award available credits to lower bidders whenever available. This would reward more efficient industries and ensure that the cost savings from technical improvements are passed back to taxpayers more quickly via bid prices.

  - *Example:* The ***Civil Nuclear Credit Program*** established a total funding limit, then solicited proposals from existing nuclear reactors on how much public funding they would need to keep their reactor open. In this case, there have not been enough bidders to establish robust competition. However, the structure was intended to do so; and in a different market segment, many projects could compete for access to the subsidy. Often, this would enable projects to move forward at a lower taxpayer cost.

  - *Example:* ***Renewable Portfolio Standards*** establish requirements for a specific percentage of market penetration by renewable generation. ***Renewable Fuel Standards*** do the same for transport fuels. In both cases, specific projects are selected based on market competition. While the price trends vary by the specifics of a program (increasing requirements may drive prices up for a while) as well as technical improvements, long-term data demonstrates that prices respond quickly to these shifts, are differentiated across sources, and that savings from technical improvements help push down the cost to consumers of achieving the policy objectives (see LBNL 2024: 33-37).

Capping the 45Q tax credit, limiting it to targeted industries, awarding it based on net carbon reductions rather than gross, and awarding limited credit capacity based on competitive bids would all provide higher returns to taxpayers and the climate from the program, protect taxpayers from runaway 45Q tax credit costs, and ensure the wise use of federal tax dollars.

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