

Federal Section 45Q Inflation Adjustment

Recent enhancements to the federal Section 45Q tax credit, coupled with significant investments in the full suite of carbon management technologies enacted during the 117th Congress, represent the single largest federal investment in the development and deployment of carbon management technologies and provide a strong market signal to begin deploying these technologies to address pollution across sectors. However, as new and updated clean energy tax credits, including 45Q, were being negotiated in Congress, economic headwinds were already beginning to shift the economics of clean energy project deployment dramatically.

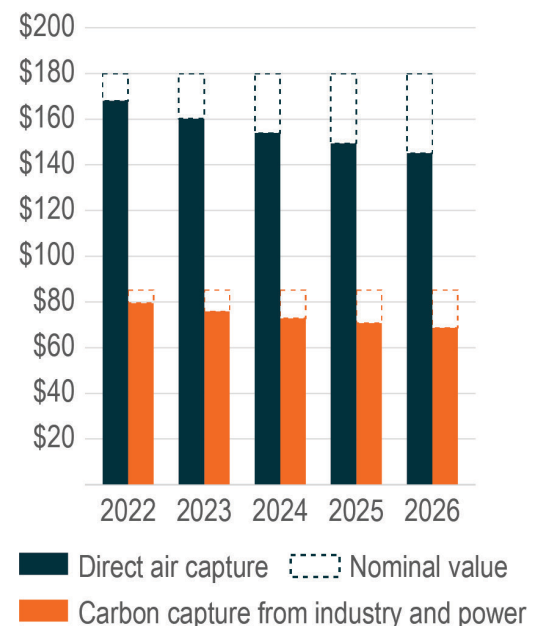
CHANGING ECONOMIC FUNDAMENTALS

In 2022, the United States was impacted by some of the highest inflation rates in four decades, with the Consumer Price Index peaking in June 2022 at a 12-month change of 9.1 percent. The largest increases were seen in energy, ranging from 13.7 to 70.4 percent.¹ **As a result, the costs of deploying carbon management technologies, even with higher 45Q credit levels, changed rapidly over a short period of time.** Between 2020 and 2022, chemical plant construction costs were estimated to have risen 36 percent, pipeline transport costs rose 24 percent, and storage infrastructure costs rose 20 percent.² In turn, **project developers and equipment providers have identified inflation as a significant deployment barrier**, with some developers reporting that in certain cases, equipment costs have increased more than 50 percent since 2021.

IMPACTS ON RECENT CARBON MANAGEMENT POLICY

Effect of Inflation on the Value of the 45Q Tax Credit: Since the enactment of essential enhancements to the tax credit in 2022, these same inflationary pressures have had a significant impact on 45Q credit levels. According to a report and analysis published by the Energy Futures Initiative (EFI), **inflation rates between 2020 and 2022 had already consumed about half of the value increase of the credit for carbon capture retrofits in power and industry with geologic sequestration.**³ Though not explicitly included in the EFI analysis, direct air capture facilities will require many of the same construction needs as a carbon capture facility, indicating a similar cost increase for direct air capture facilities has likely occurred. The Great Plains Institute then projected that the credit will further erode an additional 14 percent by 2026 if inflation rates ease to 3 percent by 2026 (see Figure 1). Under the current statute, the federal Section 45Q tax credit does not begin adjusting the credit value for inflation until 2027, when it begins to be annually adjusted with a base index year of 2025.⁴ Even as the economy continues to rebound following high inflation rates of the past several years, real 45Q credit value will continue to erode before the credit begins adjusting for inflation in 2027, significantly impeding the technology deployment and emissions reduction potential of the program.

45Q Credit Real Value (2021\$)



1 US Bureau of Labor Statistics, "Consumer Prices up 9.1 Percent over the Year Ended June 2022, Largest Increase in 40 Years."

2 US Bureau of Labor Statistics, "Producer Price Index by Industry: Drilling Oil and Gas Wells"; US Bureau of Labor Statistics, "Producer Price Index by Commodity: Final Demand: Finished Goods"; Chemical Engineering Magazine, "Chemical Engineering Plant Cost Index."

3 Moniz et al., "Turning CCS Projects in Heavy Industry & Power into Blue Chip Financial Investments."

4 Internal Revenue Service, Credit for carbon oxide sequestration.

By the end of 2026, due to inflationary pressures, an analysis conducted by the Great Plains Institute projects the real value of the credit in 2021 dollars will be approximately \$68 for critical to decarbonize sectors, industrial and power. For the Direct Air Capture credit, the analysis projects the real value of the credit in 2021 dollars to decrease from \$180 to \$145.

Note: 2021 dollars were used in this analysis due to bipartisan marker bills increasing credit levels to \$85 and \$180/metric ton introduced in 2021.

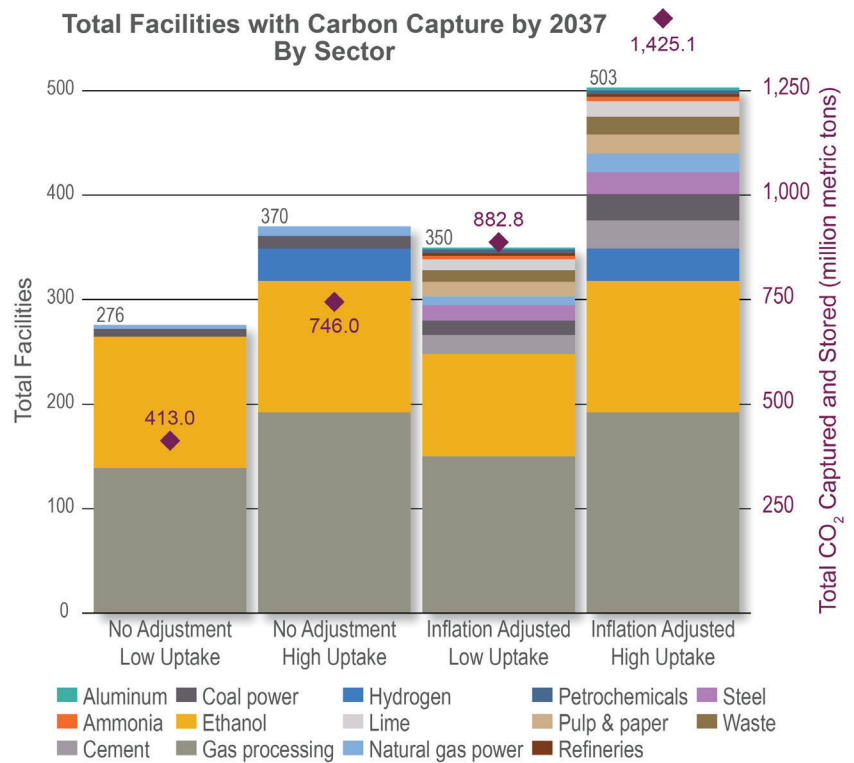
Long-Term Impact of Slower Deployment on Cost Reduction: Since the restructuring of the 45Q tax credit under the 2018 FUTURE Act, more than [200 projects](#) have been announced, spanning the full technology value chain. For many of these projects to move forward, they will rely on the robust 45Q credit levels established by the 117th Congress. However, inflation’s erosion of the tax credit is creating a disincentive for project development and deployment across the entire carbon management value chain. Notably, material increases in project costs are stalling projects in the development pipeline, which will ultimately lead to fewer projects reaching a positive “final investment decision.” **As a result, fewer projects will be built during the remainder of this critical decade, having long-term negative effects on the speed and scale of deployment, the near-term reduction in greenhouse gases, and the ability to protect and create family-sustaining jobs.**

US Risks Falling Behind in Commercial Deployment: The US leads the world in the commercialization of carbon management technologies, however, if we neglect to accelerate investment and sustain robust policy support for these technologies, the US is at risk of falling behind other countries. Nations like Canada, China, the UK, and the EU are positioning themselves as leaders in developing carbon management expertise, infrastructure, and supply chains that will make it difficult for the US to maintain influence over the sector if we do not maintain consistent support.

POLICY SOLUTION

Increased credit values provided to projects developed in the industry, power, and direct air capture sectors are the cornerstone of enhancements made to the 45Q program in 2022. However, unlike other low- and zero-emissions technology tax credits recently reformed or created under the 117th Congress, the 45Q tax credit value is not adjusted for inflation until 2027. As determined by the Great Plains Institute, a substantial portion of the value increase advocated for in 2021 bipartisan marker bills and realized in recent enhancements to the tax credit has been eroded due to significant inflation in both capital goods costs and energy price increases. **To prevent further reduction of the credit value and help sustain critical project deployment, 45Q should be adjusted for inflation beginning immediately, using 2021 as the base year for the dollar figure.**

Altering the base year for adjusting for inflation can have a measurable impact on the value of the credit over time and potentially allow more sectors to economically capture CO₂ (see Figure 2). **Adjusting the base index year to 2021 would provide a nearly 25 percent nominal value increase to the credit by 2026, consistent with the real credit levels intended by Congress through the introduction of bipartisan marker bills in 2021 compared to the current statute.¹**



Uptake indicates the percent of facilities with economically favorable capture conditions that install carbon capture. Low uptake assumes 60-70% uptake rate, high uptake assumes 90% uptake rate.

¹ Using the Gross National Production: Implicit Price Deflator through 2023, then assuming a similar inflation scenario as figure 1.