Expansion of the 45Q Tax Credit

The Energy Futures Initiative has compiled a comprehensive overview of the opportunities for application of the expanded federal tax incentives for carbon capture utilization and storage (CCUS), as well as the additional implementation challenges facing CCUS project developers and policymakers.

The Bipartisan Budget Act (BBA) passed by Congress on February 8, 2018 included expanded provisions for carbon dioxide (CO2) capture, utilization, and storage (CCUS). These provisions, based on Senate Bill S. 1535 (FUTURE Act) and its companion legislation in the House, expand and reform the Section 45Q tax credits originally enacted in 2008. They include an increase in the credit value for qualifying projects, a longer time horizon for developers to claim the credit, a more expansive definition of qualifying utilization projects beyond enhanced oil recovery (EOR), and eligibility of direct air capture. The provisions act like a production tax credit and are designed to encourage innovation in and adoption of low-carbon technologies related to CCUS, including direct air capture (DAC) of CO2 and conversion of CO2 into useable products.

The new 45Q provisions have the potential to significantly enhance the development and market diffusion of CCUS technologies and processes in both industrial and power applications, creating commercial opportunities both in the U.S. and abroad. The provisions provide greater market and financing certainty to help attract additional follow-on investment from the private sector. They will also likely help accelerate the pace of innovation in CCUS technologies and processes, and could mitigate asset risk for fossil fuel producers by enabling continued use of fossil fuels in a carbon-constrained world.

While the 45Q provisions represent a major step forward for emissions reductions, the size and duration of the credits may be insufficient to incentivize retrofits for the variety of facilities that are eligible, including many coal and natural gas plants. Also, the long-term post-injection monitoring, reporting and verification requirements could become an impediment for some operators, possibly limiting the universe of those that might otherwise take advantage of the credits.

To address these and other issues, a more comprehensive policy framework may be needed to maximize the value of the credits.

Key recommendations from the report

- The IRS should quickly issue the necessary implementation guidance, including clarification for qualifying projects regarding the commencement of construction.
- Because of the January 2024 timeline to commence construction, companies, states, and investors should act quickly to determine both how to best take advantage of these credits and what actions to take to maximize their utility.
- Tax credit exchange markets should begin to incorporate 45Q credit exchange mechanisms into their business plans.
- Congress should consider additional measures to facilitate and accelerate CCUS deployment, including addressing uncertainties regarding long-term post-injection carbon management, including monitoring, reporting and verification.
- Stakeholders should consider the adoption of a universal registry specifically designed to facilitate transactions between suppliers and buyers of CO2, with transparent and verifiable data, possibly through use of blockchain technology.
- DOE should significantly increase the level of federal R&D invesment in CCUS and largescale carbon removal technologies to accelerate the pace of innovation. Given the trajectory of capacity additions in the electric power sector, R&D investments should reflect a larger focus on natural gas generation.

Nonetheless, the new provisions are a critical step forward and will enable substantial emissions reductions for many facilities, especially industrial sites.

Given the short time to begin construction on projects, developers, states, and investors must act expeditiously to maximize the commercial and financial opportunities enabled by the expanded 45Q provisions and thereby kick-start larger scale deployment of CCUS.

Key findings

Numerous industrial CCUS projects could become commercially viable, especially ethanol, ammonia, and hydrogen plants, where the value of the credit may exceed the cost of capture.

Opportunities for CCUS deployment in the power generation sector (at both coal or natural gas generation facilities) may be more limited, primarily because the value of the credits over the 12 years of eligibility for each qualifying project is likely to be less than the costs for many potential new or retrofit CCUS projects. Other market factors, such as facility age, configuration and performance, as well as market structures for cost recovery, also will limit applicability.

In total, an estimated ~50-100M tons CO2 per year may be captured and stored through expanded 45Q-related deployment. This number will be sensitive to many factors, including public acceptance, the ability to transfer tax credits, the availability of CO2 pipeline infrastructure, and the readiness of storage sites.

More information

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