

## Carbon Capture Industry Poised for Growth Following Anticipated 45Q Guidance

*IRS seeks comments on key technical questions under the 45Q Credit regime that should spur industry growth.*

### Key Points:

- The 45Q Credit, which was significantly broadened in 2018, provides a tax credit for each metric ton of qualified carbon oxide captured at qualified carbon capture facilities.
- The IRS announced (Notice 2019-32, I.R.B. 2019-21 1187) its intent to issue regulations and other guidance resolving key questions under Section 45Q and is soliciting public comments through July 4, 2019.
- Guidance is expected to resolve open legal questions and remove barriers to investment in the carbon capture sector.
- Favorable guidance may enable tax equity investments in carbon capture equipment.

More than a year after the overhaul of the carbon capture tax credit in Section 45Q of the Internal Revenue Code (the 45Q Credit), the Internal Revenue Service (IRS) is finally set to address a number of important technical issues necessary for the industry to make full use of these new tax benefits. The issues at hand include how to define when carbon dioxide (CO<sub>2</sub>) is sequestered in “secure geological storage,” the circumstances under which leaked CO<sub>2</sub> should result in recaptured tax credits, and tax policy questions addressing how tax equity investments should be structured in this sector. Clear answers to these important questions should help spur industry growth and enable the participation of tax equity investors who will be needed to monetize the 45Q Credits.

### Background

US oil and gas companies have sequestered CO<sub>2</sub> for purposes of enhancing oil recovery (EOR) for decades. Most of the sequestered CO<sub>2</sub> is “natural” CO<sub>2</sub>, mined and extracted from CO<sub>2</sub> wells, then compressed and transported to the oil field via pipeline. Amid mounting concerns over the role of CO<sub>2</sub> in changing the climate, regulators and policy makers have explored opportunities to harness EOR and other sequestration mechanisms as long-term and scaleable solutions to reduce CO<sub>2</sub> emissions.

One such effort is the expansion of the 45Q Credit as part of the Bipartisan Budget Act of 2018 (the BBA). The 45Q Credit promises to transform the CO<sub>2</sub> market in two ways. First, it will provide a financial incentive to replace “natural” CO<sub>2</sub> for “anthropogenic” CO<sub>2</sub>— that is, CO<sub>2</sub> emitted from man-made sources

(including in connection with the operation of refineries, power plants, cement plants and other energy, industrial and manufacturing processes). Second, the 45Q credit will provide a financial incentive to sequester CO<sub>2</sub> for applications beyond EOR, including an incentive to sequester CO<sub>2</sub> solely for the purpose of permanently securing the gas underground. In other words and simply put, the 45Q Credit will materially expand the supply and the demand for anthropogenic CO<sub>2</sub> by providing significant financial incentives for market participants.

## Scope and Application

The new 45Q Credit provides a tax credit for each metric ton of qualified carbon oxide captured at qualified carbon capture facilities. Qualified carbon oxide generally means any CO<sub>2</sub> or carbon oxide that is captured from an industrial source by carbon capture equipment (limited to CO<sub>2</sub> in the case of carbon capture equipment placed in service prior to the enactment of the BBA) that would otherwise be released into the atmosphere and that is measured at the source of capture and verified at the point of disposal, injection or utilization. Similarly, CO<sub>2</sub> captured by any facility that uses carbon capture equipment to capture CO<sub>2</sub> directly from the ambient air is a qualified carbon oxide to the extent it is measured at the source of capture and verified at the point of disposal, injection, or utilization.

A qualified carbon capture facility is any industrial facility or direct air capture facility that meets all of the following criteria:

- Construction has or will begin before January 1, 2024.
- The construction of the carbon capture equipment has or will begin before January 1, 2024, or the original planning and design for the industrial or direct air capture facility includes the installation of carbon capture equipment.
- The facility captures in excess of a specified quantity of carbon oxide (generally a lower threshold than under prior law).

The 45Q Credit is available for the first 12 years after a qualifying carbon capture facility is placed in service. The credit begins at US\$22.66 per ton for carbon oxide disposed of in secure geological storage and US\$12.83 for carbon oxide used in EOR or other permitted uses (discussed further below), and increases in prescribed amounts until 2026, after which time it increases annually based on an inflation adjustment. Taxpayers claiming the revised 45Q Credit are no longer subject to an overall program cap, which eliminated the significant uncertainty under the prior credit formulation.

Following the enactment of the BBA, the 45Q Credit may be claimed by either:

- The taxpayer that owns the carbon capture *equipment* (though not necessarily the industrial facility at which the equipment operates) and either physically or contractually ensures the disposal of the carbon oxides
- The taxpayer that disposes of or uses (either in EOR projects or other permitted uses) the carbon oxides

This election should provide significant flexibility to structure carbon capture projects in a manner that attracts capital investment.

## Comments on Guidance Under Section 45Q

The IRS is currently soliciting comments on a number of aspects of the 45Q Credit regime, including:

### 1) Definition of “secure geological storage”

To qualify for the 45Q Credit, a taxpayer must either physically or contractually ensure disposal of captured CO<sub>2</sub> in secure geological storage.

Congress has instructed the Treasury, in consultation with the Administrator of the Environmental Protection Agency (the EPA), the Secretary of Energy, and the Secretary of the Interior, to establish regulations for determining adequate security measures for the geological storage of qualified carbon oxide to ensure the carbon oxide does not escape into the atmosphere. Prior guidance listed storage at deep saline formations, oil and gas reservoirs, and unmineable coal seams as potentially qualifying secure geological storage under conditions to be determined by the Treasury.

Prior to the BBA, Notice 2009-83 provided interim guidance that looked to the EPA’s Greenhouse Gas Reporting (GHG) and Underground Injection Control (UIC) regulations, as well as the 2006 Intergovernmental Panel on Climate Change Guidelines for National Greenhouse Gas Inventories (IPCC Guidelines) in order to establish secure geological storage. The GHG reporting rules do not require control of greenhouse gases; rather, they require certain sources to monitor and report emissions. Taxpayers claiming the 45Q Credit are required to use the methodology in the GHG reporting rules to measure, at the source of capture, the amount of CO<sub>2</sub> captured, and this amount must be consistent with the taxpayers’ GHG reporting. Though the IPCC Guidelines and UIC regulations provide helpful guidance in determining whether there are adequate security measures for the geological storage of qualified carbon oxide, those rules were developed in other contexts.

The IRS is currently evaluating whether different or additional storage criteria should be established for Section 45Q purposes, including whether State certification is a viable alternative to EPA GHG reporting rules. Notably, California has developed its own CCS storage protocol as part of its Low Carbon Fuel Standard program. A more targeted and clearer standard for adequate security measures for secure geological storage purposes is vital for the design, construction, and operation of the facilities disposing of the captured carbon, and for potential investors in a carbon capture project.

### 2) Limitations on tax credit recapture

Congress in Section 45Q(f)(4) mandated the Treasury to issue regulations to provide for recapturing the benefit of the 45Q Credit with respect to any qualified carbon oxide that ceases to be captured, disposed of, or used as a tertiary injectant. The key questions around tax credit recapture pertain to how long the recapture period stays open and whether there should be an exception for events that are beyond the control of any person, such as earthquakes or natural disasters. Force majeure exceptions to tax credit recapture and reasonable time periods in which previously claimed tax credits may be recaptured will be important criteria to attract investment to the carbon capture sector.

### 3) Clarity on permitted uses other than EOR

While most of the current focus of the carbon capture industry is on EOR, Section 45Q identified alternative permitted uses of CO<sub>2</sub> that qualify for tax credits. These include:

- The fixation of qualified carbon oxide through photosynthesis or chemosynthesis, such as through the growing of algae or bacteria

- The chemical conversion of such qualified carbon oxide to a material or chemical compound in which such qualified carbon oxide is securely stored
- The use of the qualified carbon oxide for any other purpose for which a commercial market exists other than the EOR process, as determined by the Treasury

The amount of qualified carbon oxide used for tax credit purposes is measured under a “lifecycle greenhouse gas emissions” determination defined under the Clean Air Act, which generally measures the aggregate quantity of direct or indirect greenhouse gas emissions related to the full “lifecycle” of the relevant product. The full lifecycle includes all stages of fuel and feedstock production and distribution, delivery, and use of the finished product to the ultimate consumer.

The IRS is evaluating what types of photosynthesis or chemosynthesis processes should be permitted uses, whether other commercial uses should be considered permitted uses (such as the production of synthetic fuels from captured carbon oxide), and whether guidance should be issued to define the boundaries of the “lifecycle greenhouse gas emissions” of any particular product.

#### **4) Monetizing the 45Q Credit**

Owners of carbon capture equipment will almost certainly need to make use of the tax equity structures that are now widespread in the wind and solar energy sector. Tax credits are far more valuable to large banks or corporates with predictable tax liabilities that can be offset with tax credits than they are to developers with limited tax liability. The primary challenges associated with adapting tax equity financings from the renewable energy sector to the carbon capture industry will involve striking a balance between contractually protecting tax investors from the risks associated with a new technology and ensuring that the investment is properly structured as equity for tax purposes, which is a pre-requisite to qualifying for tax credits.

A partnership flip is the most common form of tax equity structure used in the solar and wind market. In a typical partnership flip, the tax equity investor and the project developer form a partnership to own and operate a project. The tax equity investor is allocated 99% of income, loss, and tax credit until it reaches a target yield. After the tax equity investor achieves its target return, the partnership “flips” — and the tax equity investor’s share of income, loss, and tax credit drops to 5%. Cash is distributed based on a different ratio, of which the majority may go to the project developer both before and after the flip. Partnership flip transactions are structured as preferred equity investments and often straddle the line between debt and equity for tax purposes. The IRS formally blessed a typical wind flip partnership in 2007 with a safe harbor that forged the template used to finance tens of billions of dollars in wind and solar projects over the past decade.

The IRS safe harbor for wind transactions was the culmination of a sustained industry push to gain certainty on the threshold tax question as to whether a tax equity investor had sufficient attributes of equity ownership to merit the benefit of tax credits. The IRS designed the safe harbor to ensure that certain key features of equity ownership would remain with a tax equity investor, including:

- The tax equity investor must maintain at least a 5% interest in the investment at all times.
- Only a small portion (25%) of the tax investor’s capital commitment is contingent on the receipt of tax credits.
- The project must assume the risk that the available wind resource is less than projected.

- The developer must not guarantee the wind resource.

While tax equity investment in the renewables sector often includes strong contractual protection and indemnities in favor of the tax investor, variability in operating revenue and costs are shared among the parties. Over time, tax investors agreed to assume operational and wind resource risks as it became clear that wind and solar were dependable technologies and variability risk could be mitigated through a preferred equity structure that ensured the tax investor was paid its return before the developer.

Tax equity partnerships for carbon capture are likely to follow a different template than wind and solar, in large part because the technology, operations, and contractual arrangements differ from wind and solar power projects.

A typical carbon capture project might involve equipment that is connected to an industrial facility that emits CO<sub>2</sub>. The equipment would capture, purify, and compress the CO<sub>2</sub> and then transport the final product via a dedicated pipeline to an EOR field for injection and ultimate sequestration. A special purpose entity would own the equipment and would enter into long-term contracts with the CO<sub>2</sub> emitter and EOR operator to ensure both volume and price protection. Tax investors in a project company that own carbon capture equipment would likely seek some level of protection against operation variability and pricing and volumetric risks associated with the input and offtake contracts.

The IRS will need to decide what level of risk mitigation is appropriate for an investor in carbon capture equipment that seeks to claim the 45Q Credit. Unlike in the wind power context, some level of resource and offtake protection, both in terms of price and availability, may well be appropriate for a complex and cost-intensive technology such as carbon capture. Tax equity investments in carbon capture technology may also be suitable for a more relaxed contingent equity standard that permits a tax equity investor to defer a significant portion of its capital commitment until the tax credits are generated.

## Implications

Given the significant policy focus on investing in sustainable energy technologies, clear guidance from the IRS should prime the pump for capital investments in this emerging sector. Stakeholders can expect to significantly shape the scope and contents of guidance under Section 45Q, and the resulting transactional opportunities that may be created as a result of the guidance. Comments to the IRS are due on or before July 4, 2019. Well-advised stakeholders should consult with their tax and environmental advisors now to submit comments and drive this market opportunity.

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