Application of 45Q to Projects and Opportunities

(and related topics)

Keith Tracy

Elysian Ventures

Carbon Management Workshop (26th Annual CO_2 Conference)

Tuesday, December 8, 2020

Bush Convention Center - Midland, Texas

2020 CO_2 Conference
December 8-10

Topics

- Annual 45Q update
- Impact of 45Q on carbon capture project development
- “Direct Pay” and status of 45Q legislative efforts
- Update on Elysian Ventures projects
- Why “Blue” is so important to the carbon capture industry
- Interconnection of Section 43 EOR credits and 45Q credits
- CO_2 Pipeline update (quality specification and safety record)
- Environmental, Social and Governance (ESG) Reporting
- CO_2 Storage Percentages/Rates
- Appendix: 45Q overview

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2020 Update on 45Q (1 of 3)

- Incentive for carbon capture and storage activities
- Federal income tax credit (Section 45Q of Internal Revenue Code)

- Section 45Q amended on February 9, 2018
  - Increased credit values, lowered annual minimum thresholds, expanded credit claimants, etc.

- Midland CO_2 Conference December 2018 full-day seminar
  - "45Q and CO_2-EOR's Vital Role in Carbon Management"
  - https://co2conference.net/product/2018-co2-and-ccs-seminar/

- IRS request for comments on May 20, 2019 (Notice 2019-32)
  - 116 comments submitted

2020 Update on 45Q (2 of 3)

- "Beginning of Construction" guidance published by IRS on March 9, 2020 (Notice 2020-12)
  - Similar to wind energy tax credit "beginning of construction guidance"
  - Start: either "5% safe harbor" or "physical work test" based on facts and circumstances
  - Continue to completion: continuous efforts or program to complete, and "6-year safe harbor"
  - Other subjects: Single Project Rule (aggregation); retrofits, contractors, and mid-construction transfers
  - Generally well received by the carbon capture industry
- "Tax Equity Partnership Allocations" guidance published by IRS on March 9, 2020 (Rev. Proc. 2020-12)
  - Safe harbor for partnerships that the IRS will treat as having proper 45Q credit allocations
  - Similar in some respects to partnership structures authorized for wind energy, rehabilitation, and refined coal tax credits, with 45Q garnering more favorable terms in some instances
  - Traditional tax equity partnership flip structure is permissible:
    - Investor must invest up front at least 20% of total investment amount; remainder may be paid over time
    - Up to 50% "paygo" and paygo amount does not have to consider operating expenses
    - Take-or-pay or supply-or-pay contract provisions are permissible
  - Generally well received by the carbon capture industry
  - Additional clarity on minor points would be appreciated

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2020 Update on 45Q (3 of 3)

- Proposed Regulations issued by IRS: 85 Fed. Reg. 34050-34075 (June 2, 2020)
  - Definitions: carbon capture equipment, industrial facility, electricity generating facility, qualified EOR/EGR project; binding written contract; others
  - Secure Geologic Storage: ISO 27916:19 option for EOR; EPA GHGRP Subpart RR for EOR and non-EOR
  - Utilization: lifecycle analysis (LCA) requirements explained; other utilization issues remain unaddressed
  - Recapture: current-year offset; 5-year lookback; regulations required by 2008 law were finally proposed
  - Other general rules: distinguish injection, disposal and utilization; extensive reporting requirements; election to allow credit to storage operator; annualization of first year of operations
  - Option: can rely on the proposed regulations as temporary regulations
  - Proposed regulations favorably received by industry, but many details still to be resolved
  - 63 comments submitted to the IRS during 60-day comment period
  - August 26, 2020 hearing: 15+ hearing participants, with some follow-up written comments
- Final Regulations
  - Under development by IRS and Treasury
  - Expected in Q1-Q2 2021
  - Possibility that some “utilization” topics may be addressed by guidance

45Q General Checklist

The following requirements are critical to qualify for 45Q credits:

- ❑ What is captured: Must capture Qualified Carbon Oxide (essentially carbon monoxide or carbon dioxide)
- ❑ How is it captured: Must use Carbon Capture Equipment to perform the capture function
- ❑ Where is it captured: Carbon Capture Equipment must be placed in service at a Qualified Facility
- ❑ When are the timing deadlines: Must satisfy Beginning of Construction deadline for Carbon Capture Equipment/Qualified Facility
- ❑ How is it stored: captured carbon oxide must be sequestered or stored using one of the following methods:
  - Utilized – non-underground storage such as algae and cement
  - Injected – stored in Secure Geologic Storage and used as a tertiary injectant in a Qualified EOR/EGR Project, or
  - Disposed of – stored in Secure Geologic Storage and not used as a tertiary injectant in a Qualified EOR/EGR Project (i.e. saline aquifer)
- ❑ Who claims the credit: either the Taxpayer to whom the credit is attributable, or the Credit Claimant (if election is made)
  - How: Option to satisfy Tax Equity Partnership safe harbor
- ❑ What to avoid: avoid having the credit Recaptured by the IRS
- ❑ How Much is the credit: new Credit Value amounts for Carbon Capture Equipment placed in service on or after Feb 9, 2018

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Impact of 45Q on Carbon Capture Projects

- Materiality
  - Highly significant economic driver to capture anthropogenic CO_2 emissions and inject/dispose underground
- What if no 45Q?
  - Absent 45Q, most US carbon capture and storage projects under development would not exist
  - 10 or less projects in US history prior to 2018 45Q amendments
  - 30+ projects in US are currently announced
- Delays
  - Some projects have been slower to develop due to delay by IRS/Treasury for over 2 years to issue proposed regulations and tax equity partnership guidance
  - Over 700 days after law was passed (February 9, 2018), tax equity partnership guidance was provided
  - Final regulations still to come after 1,025+ days
- Some industry learnings from amended 45Q
  - Tax equity transactions are complex, with limited tax equity players
  - Many insurers and investors perceive risks at levels greater than reality
  - Direct pay amendment would spur on carbon capture activity like never before

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45Q Direct Pay

- Direct pay = treat the credit as a payment of estimated tax
- Result: Any estimated tax payments in excess of tax liabilities are returned to taxpayer

Without direct pay	Without direct pay
Incentive remains indirect, through the large corporate tax equity investor	Incentive is directly at project company level
$$$ go to investor, lawyers, consultants and others, and $ to sponsor/developer	$$$$ go to project sponsor/developer

- Impacts on development cycle of having direct pay:
  - Free up more development capital, and that initial capital for any project is hardest to raise
  - Eliminate tax equity investor from deal structure
  - Reduce risks of project
  - Decrease development costs
  - Reduce development cycle of carbon capture projects by 3-6 months

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45Q Legislative Proposals (2019-2020)

- Direct Pay or increased efficiency by providing option to treat the 45Q credit as estimated tax:
  - At 85% level: HR 7330 (Thompson – GREEN Act); HR 2 (DeFazio – Moving Forward Act - passed the House)
  - At 100% level (no discount): HR 8858 (McKinley – ACCESS Act introduced Dec 3, 2020); S 4966 (Capito – 45Q CCUS Amendments Act, introduced Dec 7, 2020). NOTE – Elections for 85% and 100% levels are made by regulations that IRS must later adopt
  - At 90% level: HR 7896 (Bergman - RECOUPS Act): NOTE - Election is made by statute, not regulation
- Adjust minimum annual thresholds:
  - Decrease minimum threshold level from 100,000 to 50,000 metric tons/yr (& increase credit values for DAC plants): HR 5883 (Schweikert)
  - Eliminate all annual minimum threshold amounts of carbon oxide: HR xxxx [anticipated]
- Extend 45Q beginning of construction deadline:
  - 1 year: HR 5156 (Sewell); HR 7579 (Burgess); S 4041 (Cornyn)
  - 2 years: HR 2 (DeFazio – Moving Forward Act - passed the House); HR 7330 (Thompson – GREEN Act of 2020)
  - 5 years: HR 7516 (DeGette); S Amdt 1374 to S 2657 (Capito, Whitehouse, Barrasso & Cramer); S 4966 (Capito – 45Q CCUS Amendments Act, introduced Dec 7, 2020)
  - 10 years: HR 8858 (McKinley – ACCESS Act introduced Dec 3, 2020)
  - Eliminate deadline: HR 5883 (Schweikert)
- Other:
  - Relax EOR/EGR and Secure Geologic Storage definitions: S 2263 (Hoeven – CO_2 Regulatory Certainty Act)
  - Enhanced transferability of 45Q credit to numerous parties: S 3032 (Bennet – Renewable Energy Transferability Act)
  - Eliminate the 45Q program by not allowing credits for Qualified CO_2 captured after the date the bill is enacted: HR 7781 (Omar)
  - Adopt exemption to taxpayer privacy rules and require IRS to report who received how much 45Q credits: HR 7781 (Omar)
  - Erase power plants from 45Q, eliminate sections 43 and 48A and 48B, and establish new production and investment credits under new 45T and 48D as well as Clean Energy Bonds: S 1288 (Wyden - Clean Energy for America Act)

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Elysian Ventures Projects

- Elysian principal has experience with 4 of the operating carbon capture projects in the world
- Elysian has announced one project with Starwood Energy Group and the Oil and Gas Climate Initiative (OGCI) to capture CO_2 emissions from an existing natural gas power plant
- Elysian has other projects under various stages of development

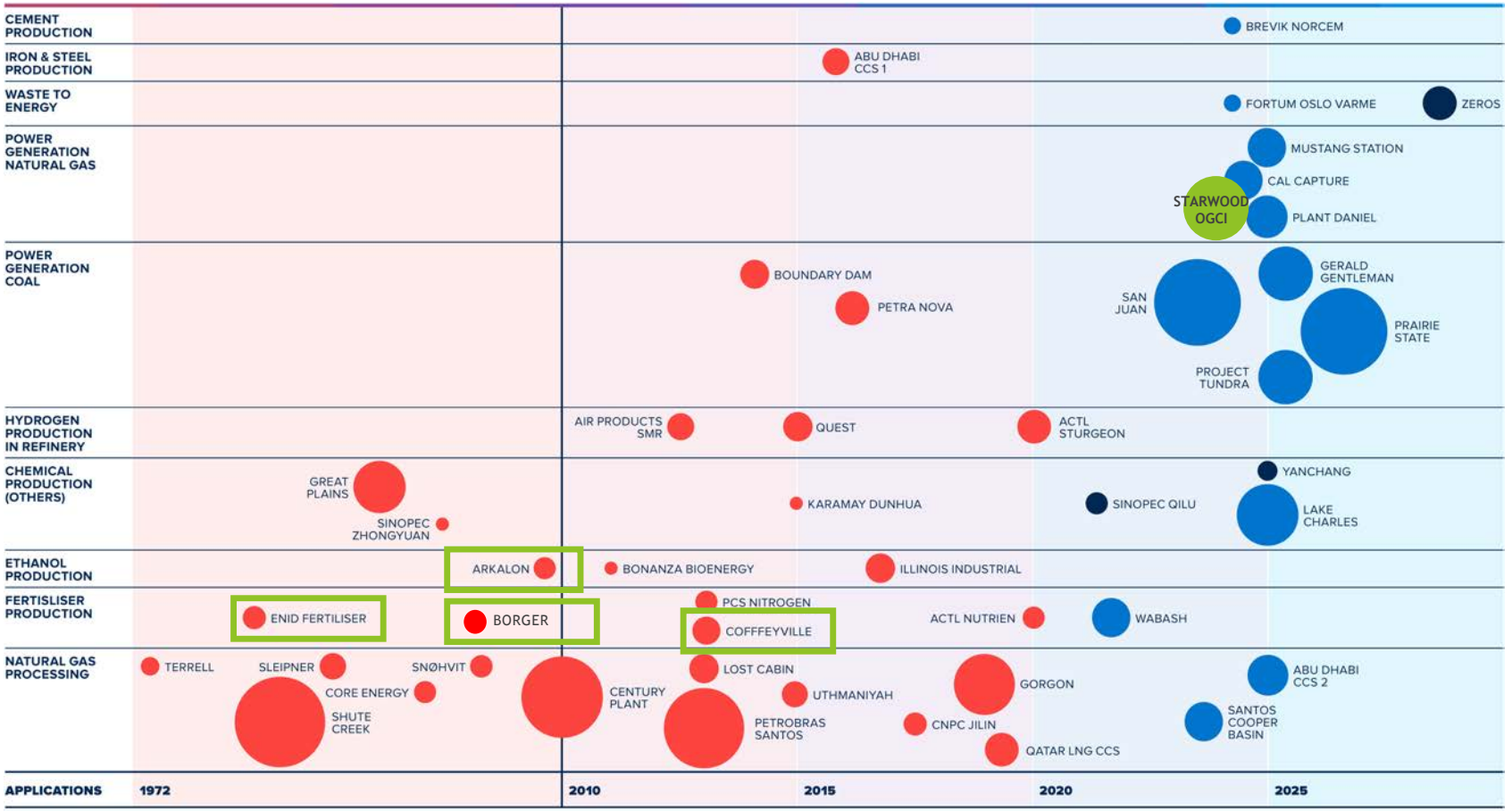

FIGURE 6 A PORTFOLIO OF COMMERCIAL CCS FACILITIES IN VARIOUS POWER AND INDUSTRIAL APPLICATIONS FACILITIES INCLUDE THOSE IN OPERATION, UNDER CONSTRUCTION AND IN ADVANCED DEVELOPMENT. AREA OF CIRCLES IS PROPORTIONAL TO CURRENT CCS CAPACITIES. Source: Global Status of CCS December 2020 Report (Global CCS Institute)

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Elysian Ventures Project

Elysian's first major announcement was a development partnership with the Oil and Gas Climate Initiative (OGCI)'s Climate Investments fund and Starwood Energy Group to develop post-combustion carbon capture on an existing gas-fired power plant

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Elysian-Starwood-OGCI Project

- World's first Blue Power™ plant (natural gas power plant with carbon capture)
  - Carbon capture and storage project announced in April 2020
  - Driven by 45Q tax credits
- Anticipated capture of 1.5+ million metric tons of CO_2 per year
  - Plan to capture 90+% CO_2 emissions
  - Captured CO_2 is currently slated for Enhanced Oil Recovery (EOR)
- Feasibility, and basic engineering and design, is complete
- Current activities:
  - Front-End Engineering and Design (FEED) Study ongoing
  - All development activities, including permitting, securing commercial contracts and raising tax equity investments to monetize all 45Q tax credits
  - Anticipated financial close in 2021
- First of a kind in US power sector:
  - Carbon capture effort is 100% privately funded
  - No DOE or other public funds involved

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Blue.

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1 Green Natural Gas is also defined as (1) fossil-fuel natural gas combined with carbon offsets, (2) synthetic natural gas or biomethane from landfills or anerobic digesters, and (3) fossil-fuel natural gas produced with low methane emissions.

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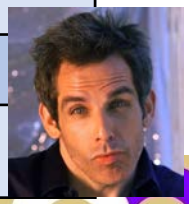

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Interconnection of Section 43 EOR credits and 45Q credits

- 45Q allows lower credit values for Qualified EOR/EGR Projects
  - Qualified EOR/EGR Projects must be certified under Section 43
- What if an EOR/EGR Project chooses not to obtain Section 43 certification?
  - A hyper-technical interpretation of 45Q could possibly allow the higher credit values to be claimed
  - Some in the CO_2-EOR industry have asserted this incorrect interpretation
  - That interpretation is counter to every aspect of the policy that supported 45Q in 2008 in the first place, and the 2018 amendments that expanded the credit
  - That interpretation was rejected by the IRS in the 2020 proposed regulations, and that interpretation should be withdrawn by those who have inappropriately asserted it
  - Continuing that interpretation is detrimental to the entire carbon capture and CO_2-EOR industry, and puts at risk the entire application of 45Q for EOR/EGR projects
- 45Q should continue to be properly interpreted as requiring EOR/EGR projects to obtain Section 43 certification, or otherwise not receive any 45Q credits at all

[Section 43 credits will likely be in play in 2021 due to low oil prices in 2020]

CO_2 Pipeline Update

- Permian pipeline system quality specification was revised in late 2019
- Anticipates more anthropogenic sources of CO_2 to be transported on the system

Permian CO_2 Pipeline Network – Quality Specification
(bold is new as of end of 2019; italics is required by only one operator)

CO_2	≥ 95 mole %	Pressure	>2070 psig *(or sufficient to enter pipeline)*
Water	≤ 30 lbs/mmcf	**Hydrogen**	**≤ 1 mole %**
H_2S	≤ 20 ppm by volume	**CO**	**≤ 4,250 ppm by weight**
Sulphur	≤ 35 ppm by weight	**NOx, SOx, Amines, Particulates**	**≤ 1 ppm by weight, each**
Temperature	≤ 120°F, ***but ≥65°F***	***Argon***	***≤ 1% by volume***
Nitrogen	≤ 4 mole %	***Mercury***	***≤ 5 nano grams per liter***
Hydrocarbons	≤ 5 mole %	***Ammonia***	***≤ 50 ppm by weight***
Oxygen	≤ 10 ppm by weight	***Compressor Lube Oil Carry Over***	***≤ 50 ppm by weight, and shall not cause fouling of pipeline, equipment or reservoirs***
Glycol	No liquid, and ≤ 0.3 gal per mmcf	***Other***	***Shall not contain impurities deleterious to pipeline, equipment, downstream systems or reservoirs***
Liquids	***Free of liquids at delivery pressure, and not produce condensed liquids in the pipeline at pipeline pressure and temperature***		

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CO_2 Pipeline Safety Record

- CO_2 Pipelines have a very strong safety record
  - The public needs to be better informed of the long-term safety record
- US Department of Transportation (DOT) regulates CO_2 Pipelines through its Pipeline and Hazardous Materials Safety Administration (PHMSA), Office of Pipeline Safety (OPS)
  - 49 CFR Part 195 rules and regulations apply to CO_2, crude oil, gasoline and anhydrous ammonia lines
  - Incorporates API Specifications and Recommended Practices, ASTM standards, ASME pipeline codes for design and integrity management, AGA standards, and NACE corrosion prevention recommended practices
- "Mile-for-mile, CO_2 pipelines appear to be safer than other types of pipelines regulated by OPS."[1]
- CO_2 Pipeline safety record remains outstanding[2]

	Fatalities	Injuries	Leaks
Oil, gas, ammonia pipelines	296	457	5,983
CO_2 pipelines	0	1	26

[1] Carbon Dioxide (CO_2) Pipelines for Carbon Sequestration: Emerging Policy Issues, Congressional Research Service Report for Congress, RL33971 pg 16 (2008)
[2] CO_2 Pipeline Transport Issues, SPE CCS Conference (Nov 2009)

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Environmental, Social and Governance (ESG) Reporting

- ESG disclosures for many companies have evolved from a “nice to have” to a “must have”
  - A comprehensive reporting template and methodology describing the management of economic, social and environmental impact of the company
    - “Sustainability Reports” information is not necessarily ‘financially material’ but is ‘supplemental’ to required SEC disclosures
  - “Corporate Sustainability” is a newer corporate management model focused on growth and profitability through intentional business practices in 3 areas:
    - Environmental: existing and future actions taken to reduce environmental impact and carbon footprint, such as recycling, water usage, energy sources, and emissions reductions
    - Social: maintaining the approval of stakeholders, employees and the local community, and taking good care of people both inside and outside of the business
    - Governance: compliance and good corporate governance to spend resources in ways that align with stakeholder and management values while seeking long term profitability for the company
  - “Corporate Social Responsibility” (CSR) Reports are similar, but are often broader and may only look backward on what a company has done to contribute to society
- Carbon capture is a component of ESG efforts, but not all ESG efforts currently include carbon capture
- Companies need to understand that carbon capture is one of the only methods to physically reduce CO_2 emissions, and can be deployed relatively quickly
  - Example: Large tech companies seem to be focused on carbon removal, but not carbon capture and storage
  - Carbon removal (i.e. DAC Plants) needs additional incentives to become “economic”

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CO_2 Storage Percentages/Rates

- CO_2 "storage percentages" or "storage rates" are 99+%
  - Two EOR companies report CO_2 storage rates of 99.9+%[1]
  - The amount of CO_2 that is injected but "leaked" is <0.1%, and its all at the surface facilities
- Results are consistent with study of 250 million metric tons injected over a 50-year period[2]
  - Predictive model showed only 102 metric tons of "leakage"
  - Storage percentage: 99.99999959%
- Determining and publishing CO_2 storage percentages/rates is important
  - The terms "storage rate" or "storage percentage" should be used to describe subsurface operations
- EOR/Storage operators should know and voluntarily announce CO_2 storage percentages/rates
  - People outside our industry have a misperception of "high leakage rates"; that should be addressed with facts
    - Even the IRS thinks it is possible for an operator to "leak" more CO_2 than was injected in a given year
    - IRS adopted rules in 2020 to "recapture" the 45Q credits when system losses exceed system injection in a single year
  - Storage percentages/rates should be field specific, if possible

[1] Occidental Petroleum Low Carbon Ventures March 2019 presentation pg 16; Core Energy email calculating system loss of <0.05% in 2018-2019.

[2] Lackey, et al., *Managing well leakage risks at a geologic carbon storage site with many wells*, 88 International Journal of Greenhouse Gas Control 182-194 (2019), available at https://doi.org/10.1016/j.ijggc.2019.06.011.

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Developing and operating carbon capture projects that decarbonize power and industrial facilities

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Appendix: 45Q Overview (pages 20-39)

45Q is a carbon capture, utilization and storage (CCUS) incentive

US federal income tax credit for physically capturing CO_2 and storing it underground or in products

Tax credits are claimed on a per metric ton basis

- The more CO_2 is captured and stored, the greater the tax credit benefits

12-year tax credit for new capture operations

Value of the credit increases each year (generally)

45Q effectively puts a price on carbon

45Q General Checklist

The following requirements are critical to qualify for 45Q credits:

- ❑ What is captured: Must capture Qualified Carbon Oxide (essentially carbon monoxide or carbon dioxide)
- ❑ How is it captured: Must use Carbon Capture Equipment to perform the capture function
- ❑ Where is it captured: Carbon Capture Equipment must be placed in service at a Qualified Facility
- ❑ When are the timing deadlines: Must satisfy Beginning of Construction deadline for Carbon Capture Equipment/Qualified Facility
- ❑ How is it stored: captured carbon oxide must be sequestered or stored using one of the following methods:
  - Utilized – non-underground storage such as algae and cement
  - Injected – stored in Secure Geologic Storage and used as a tertiary injectant in a Qualified EOR/EGR Project, or
  - Disposed of – stored in Secure Geologic Storage and not used as a tertiary injectant in a Qualified EOR/EGR Project (i.e. saline aquifer)
- ❑ Who claims the credit: either the Taxpayer to whom the credit is attributable, or the Credit Claimant (if election is made)
  - How: Option to satisfy Tax Equity Partnership safe harbor
- ❑ What to avoid: avoid having the credit Recaptured by the IRS
- ❑ How Much is the credit: new Credit Value amounts for Carbon Capture Equipment placed in service on or after Feb 9, 2018

Other Considerations

What is captured

Qualified Carbon Oxide

Carbon Capture

45Q credit is limited to capture of CO_2 or CO ("carbon oxide")

- Was only CO_2 prior to February 9, 2018

Must be either an emission captured from an Industrial Facility, or direct air capture (DAC)

- Absent capture of the emission, it would have otherwise been released to the atmosphere

Must be measured at the source of capture

Must be verified where it is Utilized, Injected, or Disposed

No credit allowed for Recycle CO_2 at an EOR/EGR project

How is it captured

Carbon Capture Equipment

Must use Carbon Capture Equipment to perform the capture function

Broad definition of “Carbon Capture Equipment” in the Proposed Regulations issued in June 2020

- All components of property needed to separate, purify, dry, compress, treat, process, liquefy, pump, capture, or perform some other physical action to capture CO_2 – or to remove it from the atmosphere through DAC
- Includes all components of property used to capture or process the CO_2 until it is transported for storage
- Does not include pipelines or transport vessels to transport CO_2 to its storage location
- May include a gathering and distribution system upstream of a pipeline

Similar but not identical definition of Carbon Capture Equipment in Notice 2020-12

- Beginning of Construction guidance from Feb 2020 contains slightly different definition

Anticipate more harmonized definitions in the Final Regulations and a possible revision to Beginning of Construction guidance

Where is it captured

Qualified Facility

- Carbon Capture Equipment must be placed in service at a Qualified Facility
- Qualified Facility must be one of the following:
  1. Industrial Facility is a facility that produces CO_2 from
     - a fuel combustion source or fuel cell, or
     - a fugitive CO_2 emission source, or
     - a manufacturing process (manufacture of any product other than CO_2 that is intended to be sold at a profit or used for a commercial purpose)
     - Excludes a CO_2 production well that produces from a natural CO_2-bearing formation
  2. Electricity Generating Facility is a facility subject to MACRS Asset Class 49.11, 49.13 or 49.15 (i.e. generating power for sale)
  3. Direct Air Capture (DAC) Plant is a facility that uses Carbon Capture Equipment to remove CO_2 directly from ambient air or atmosphere
- Must capture minimum amount of CO_2 to qualify (annual threshold):
  - Power plant selling power on the grid: 500,000 metric tons/year
  - Special rule for utilization: 25,000 metric tons/year, if Qualified Facility emits ≤500,000 metric tons/year
  - Any other facility: 100,000 metric tons/year
  - Annualization is permitted for first year of operations

Applicable Facility

- Qualified Facility placed in service before Feb 9, 2018, and
- No 45Q was claimed for any captured CO2 prior to 2018

Applicable Facility Election

- In any tax year where facility captures ≥500,000 metric tons, election can be made to deem facility as placed in service on Feb 9, 2018 (effectively qualifying for high value tax credits)


Source: NRG

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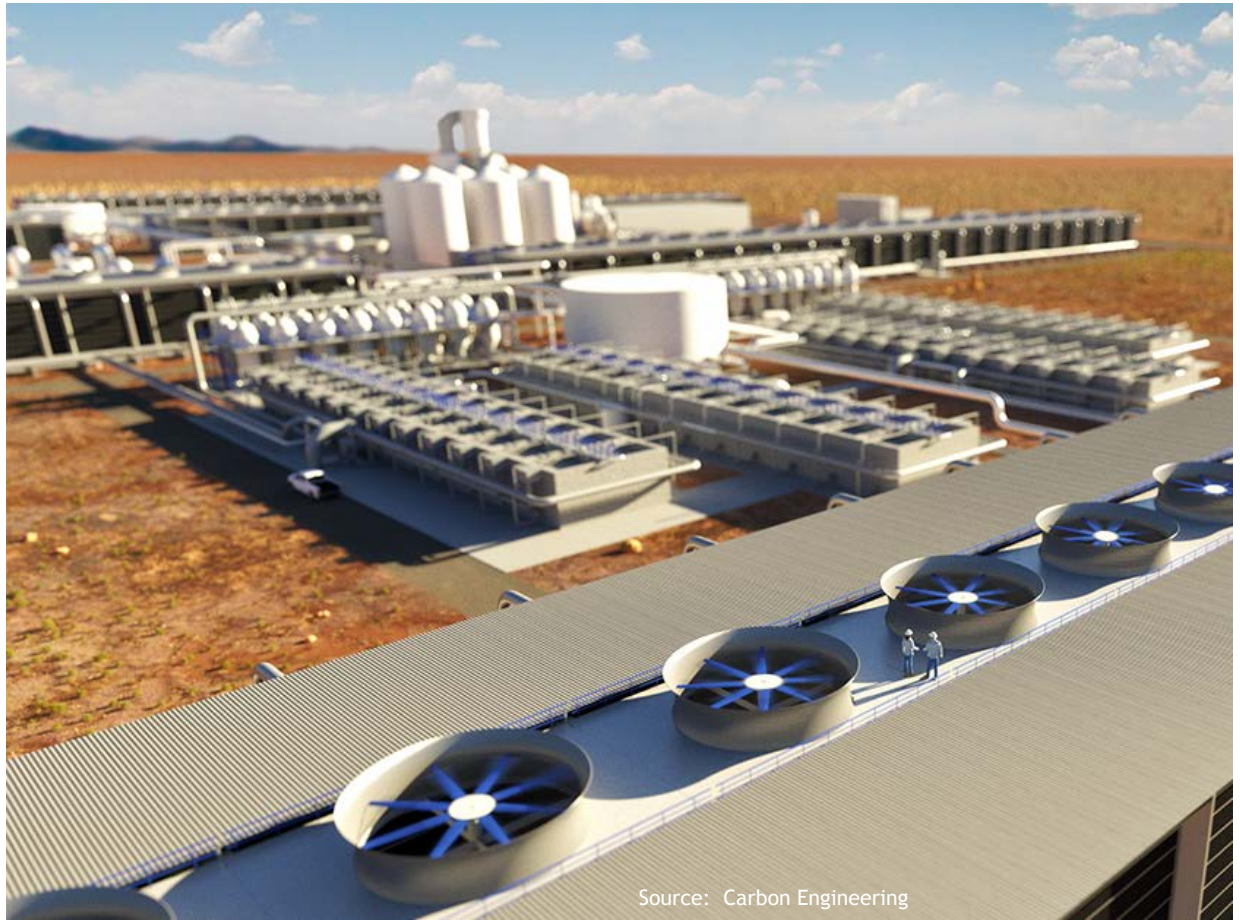
Where is it captured

45Q and Direct Air Capture (DAC) Plants

Direct Air Capture Facility



- DAC Plant must use Carbon Capture Equipment to remove CO_2 directly from ambient air or atmosphere
  - Must exclude facilities that capture CO_2 using natural photosynthesis or CO_2 that was deliberately released from the subsurface
- Must meet the requirements of a Qualified Facility
- Must capture at least 100,000 metric tons/year
- CO_2 must be measured at the source of capture
- CO_2 must be verified where it is Utilized, Injected, or Disposed

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When are the timing deadlines

Beginning of Construction Requirement

Construction must begin on the Qualified Facility before Jan 1, 2024

Construction must begin on the Carbon Capture Equipment before Jan 1, 2024 – unless the original planning/design of that Qualified Facility includes installation of Carbon Capture Equipment

IRS Notice 2020-12 contains many details on "beginning of construction" requirements, and answers 3 important questions:

1. What must be done to "begin" construction?
   - Construction can begin by doing physical work of a significant nature (Physical Work Test), or by paying/incurring 5% or more of the total cost of the Qualified Facility or Carbon Capture Equipment (5% Safe Harbor)
2. Once construction is commenced, what is the deadline by which the equipment/facility must be operational?
   - Construction must continue to completion with limited excusable disruptions, or the facility/equipment must be placed in service within the "6 Year Safe Harbor"
3. Can multiple units of equipment or facilities be combined as a "single project" for purposes of beginning of construction? Can they later be disaggregated so that at least some can meet the 6 Year Safe Harbor?
   - Yes, and yes

Carbon Capture Equipment

Source: Bloomberg

How is it stored – Option 1

Utilization

- 45Q credits are available if the minimum amount of captured CO_2 is stored through Utilization
- Utilization – Captured CO_2 must be utilized in one of the following ways:
  - Growing of algae or bacteria or other fixation through photosynthesis or chemosynthesis
  - Chemically converting CO_2 to a material or chemical compound where the CO_2 is securely stored
  - Use of the CO_2 for any other purpose for which a commercial market exists

Utilization Process

How is it stored – Option 1

Utilization - LCA

- Amount of CO_2 utilized is determined based on a lifecycle GHG analysis (LCA) of CO_2 isolated or displaced
- LCA report requirements:
  1. Performed by or verified by a 3rd party
  2. Be consistent with ISO 14044:2006
  3. Technical review by DOE
  4. Must be approved by the IRS, in consultation with DOE and EPA
  5. Full product lifecycle analysis required (proposed regulations)
- What remains to be clarified by the IRS:
  - Whether the LCA requirement implies an extension of "utilization" to GHGs other than CO_2
  - Whether utilization allows for 45Q credits when CO_2 is used to make a product but is not captured or stored
  - More definition concerning the "commercial market" catchall provision, such as (a) whether it includes transportation fuels, (b) whether it is limited to a product (instead of a service); and (c) the process for commercial markets to be approved by IRS
  - Whether the LCA requirement only serves the function of verifying the amount of capture CO_2, and only serves to ensure the utilization process does not emit more GHGs than the amount of CO_2 captured in the first place
  - Details regarding the LCA report: whether approved LCA reports will be made public, whether LCA reports of others can be relied upon, and what are the baselines and boundaries of the LCA
  - How is additional Carbon Capture Equipment capacity determined in the utilization context

How is it stored – Option 2

Injection or Disposal

- 45Q credits are available if captured CO_2 is stored through Injection or Disposal
  - Approved locations include oil and gas reservoirs, deep saline formations, and unminable coal seams
- Both Injection and Disposal require CO_2 to be placed in Secure Geologic Storage so that CO_2 does not escape into the atmosphere
  - Injection:
    - Use the captured CO_2 as a tertiary injectant in a qualified EOR/EGR Project and disposing of it in secure geologic storage
    - Secure Geologic Storage Requirement: Must comply with EPA GHGRP Subpart RR, or ISO Standard 27916:19
  - Disposal:
    - Dispose of the captured CO_2 in secure geologic storage and not using it as a tertiary injectant in a qualified EOR/EGR Project
    - Secure Geologic Storage Requirement: Must comply with EPA GHGRP Subpart RR
- Annual certification and documentation:
  - If using Subpart RR, taxpayer may self-certify amount of CO_2 claimed
  - If using ISO Standard 27916:19, documentation must be certified by independent qualified engineer or geologist
  - Complete documentation and certification must be provided to the IRS annually

CO_2 Injection Well

Who claims the credit – Part 1

Taxpayer or Credit Claimant

- Credits are claimed by the Owner of the Carbon Capture Equipment
  - Exception: if Carbon Capture Equipment was placed in service before Feb 9, 2018, then credit is claimed by the person who performs the capture (and that Capture Operator might be different than the Owner)

- Owner (or Capture Operator) must physically or contractually ensure the capture and the Utilization, Injection or Disposal of the CO_2
  - A contract ensuring Utilization, Injection or Disposal must be a "binding written contract", which must:
    - Provide for enforcement of other party's obligation of Utilization, Injection or Disposal
    - Obligate the Injector/Disposer to comply with applicable Regulations regarding Secure Geologic Storage
    - Obligate the Injector/Disposer to promptly inform Owner (or Capture Operator) of all information pertinent to any recapture event
  - Whether contract can include liquidated damages provision will likely be clarified
  - Contract information must be reported to IRS

- OPTION: Credit Claimant Election – 45Q(b)(3)
  - Owner (or Capture Operator) may elect to allow the credit be claimed by the "Credit Claimant" – the person who does the Utilization, Injection or Disposal (storage company operator)
  - Election may be partial or full amount of the credit, and may involve multiple Credit Claimants
  - New elections required annually, using Form 8933
  - Reporting Requirements

Who claims the credit - Part 2

Tax Equity Partnerships

- Significant tax credit amounts require an investor that has large tax appetite to take advantage of the tax credit
- Tax Equity Partnership Flip Structure – highlights:
  - Revenue Procedure 2020-12 "safe harbor", like wind energy production credits but more favorable in some areas
  - Investor/Partner needs to be an equity holder rather than secured lender or credit purchaser
  - Project Company (or Partnership) would own the Carbon Capture Equipment and claim the credits
  - Tax items (including 45Q tax credits) may (and will) be allocated different than cash
  - Investor must make up-front Unconditional Investment of at least 20% of total expected investment
  - Up to 50% of Investor's consideration may be contingent ("Pay-Go")
    - Operating expenses are not treated as part of contingent investments
  - Developer cannot have Call/Purchase Rights
  - Investor may have Put/Sale Rights at FMV
  - Many guarantees are permitted, including:
    - Performance of any act necessary to claim the credit, such as guarantee of Injection or Disposal
    - Avoiding any act that would result in Recapture
  - Long-term take-or-pay, take all, supply-or-pay, supply all, and store-or-pay contracts are allowed
  - Allocation guidance appears to authorize (for the first time ever) a Project Company to operate without revenue other than receipt/distribution of the tax credits (ie Disposal)

	Developer		Investor	
	Cash	Income/Loss, and 45Q Credits	Cash	Income/Loss, and 45Q Credits
Period 1	100%	≥1%	0%	≤99%
Period 2	0%	≥1%	100%	≤99%
Period 3	≤95%	≤95%	≥5%	≥5%

- Period 1 lasts until date certain, or date Developer receives $x cash return
- Period 2 lasts until "Flip Point", when Investor has achieved agreed-upon IRR (after-tax). Flip Point could possibly occur before Period 1 ends

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What to avoid

Recapture

- "Recapture" is where Qualified CO_2 is Captured, Injected or Disposed and 45Q credits are claimed as a result, but then the Qualified CO_2 later leaks or ceases to be Captured, Injected or Disposed
  - "Leaked Amount of Qualified CO_2" is the amount of CO_2 that ceases to be Captured, Injected or Disposed, and the quantity is the amount that leaked to the atmosphere as determined by how Secure Geologic Storage is demonstrated (i.e. MRV Plan)
- "Recapture Event" only occurs if there is an instance of Recapture Qualified CO_2 in a tax year during the Recapture Period
  - "Recapture Qualified CO_2" is the amount by which the Leaked Amount of Qualified CO_2 that year exceeds the Qualified CO_2 Injected or Disposed that year
  - *Current Year Offset Principle* prevents some potential recapture instances because potential for Recapture only emerges if the Leaked Amount of Qualified CO_2 in a tax year exceeds the amount of Qualified CO_2 Injected or Disposed in that same year
  - The "Recapture Period" is the time period between (a) the date of first injection or disposal of the Qualified CO_2 and (b) the earlier of (i) the date the monitoring period ends under the secure geologic storage rules (i.e. the MRV Plan) and (ii) 5 years after the last taxable year in which a 45Q credit was claimed
- "Recapture Amount" is the value of the 45Q credit recaptured, calculated on a last-in-first-out (LIFO) basis
- Recapture Amount is taken into account in the tax year when the leak is identified and reported
  - Exception: Recapture Event occurs in the year Qualified CO_2 is deliberately removed from a Secure Geologic Storage Site
- Recapture Amount is allocated pro rata if there are multiple taxpayers or multiples units of Carbon Capture Equipment involved

How Much is the Credit

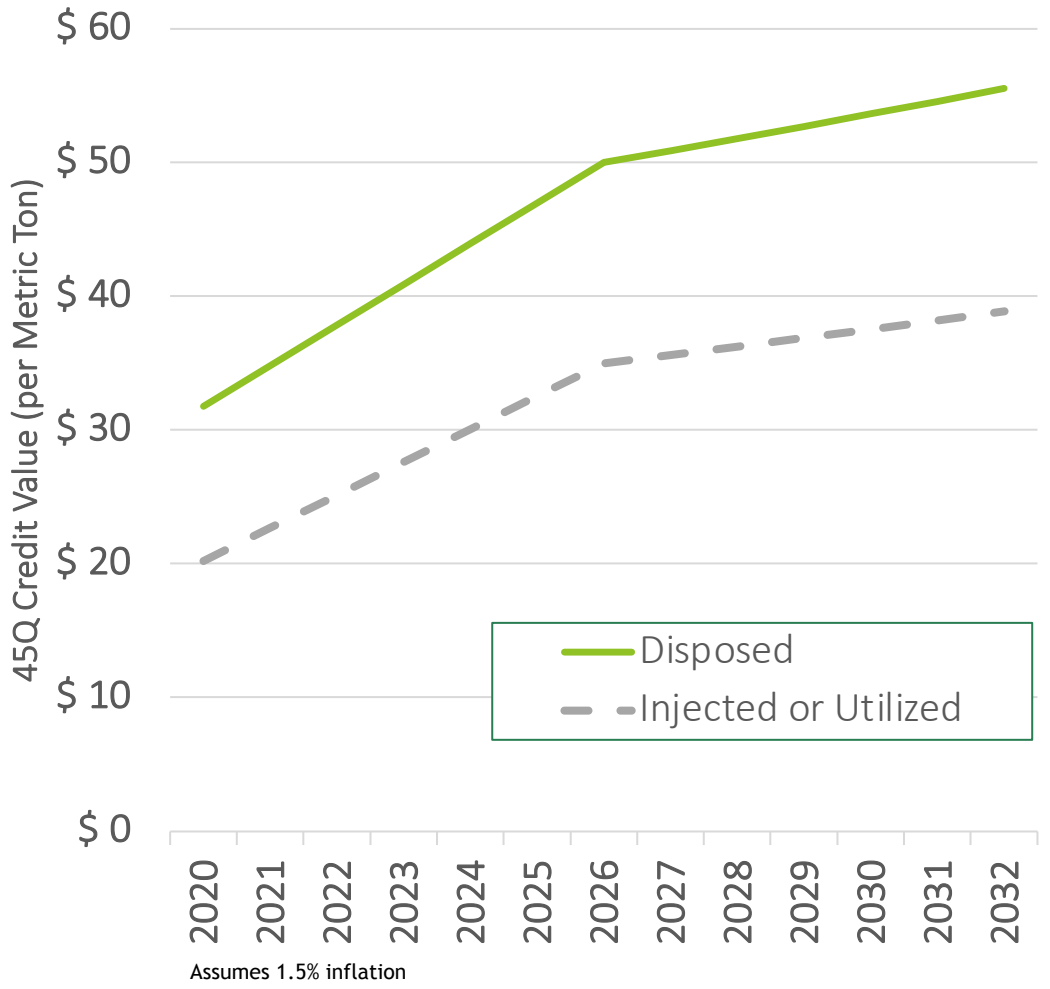
45Q Tax Credit Value

- Value of 45Q tax credit increases annually (per metric ton)
  - $20.22 (in 2020) up to $35 (in 2026) if Injected or Utilized
  - $31.77 (in 2020) up to $50 (in 2026) if Disposed
- Values in 2027 and beyond are inflation adjusted

Examples:

- 100,000 metric ton/yr capture project placed in service in 2021, tax credits over 12 years totaling:
  - ~$40 million, if Injected or Utilized
  - ~$57 million, if Disposed
- 500,000 metric ton/yr capture project placed in service in 2021, tax credits over 12 years totaling:
  - ~$198 million, if Injected or Utilized
  - ~$287 million, if Disposed

Projected 45Q Credit Values



Assumes 1.5% inflation

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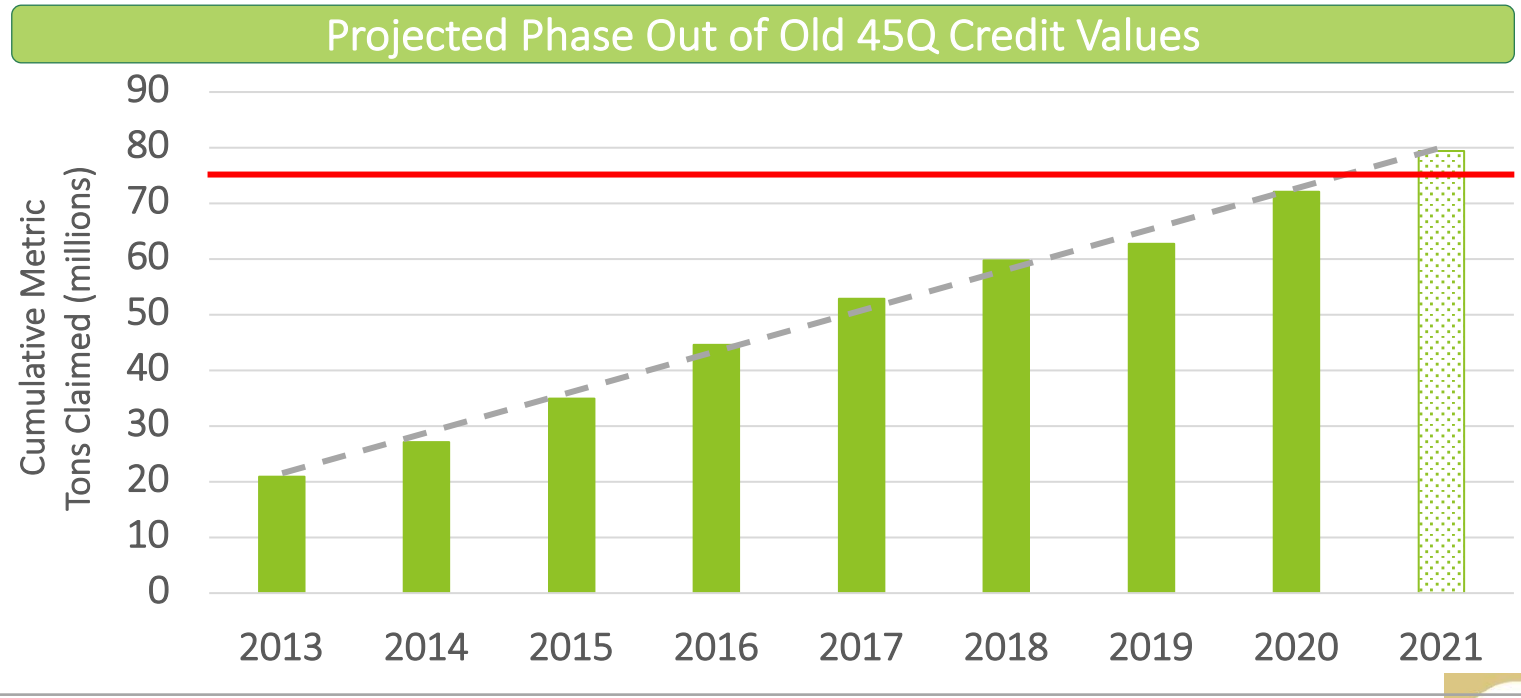
Older Facilities

At an older facility, if additional Carbon Capture Equipment is installed on or after Feb 9, 2018:

- The newer values apply ($35/50), but only to the extent the total amount of Qualified CO_2 exceeds the CO_2 capture capacity of the older Carbon Capture Equipment
- 80/20 Rule applies to a retrofit of the older Carbon Capture Equipment
  - Retrofit qualifies if Fair Market Value of used components does not exceed 20% of the total value

Credits for Carbon Capture Equipment placed in service before Feb 9, 2018 are at lower values ($10/20)

- Credits will phase out when a total of 75 million metric tons of Qualified CO_2 have been taken into account
- Current projection: phase out at end of 2021



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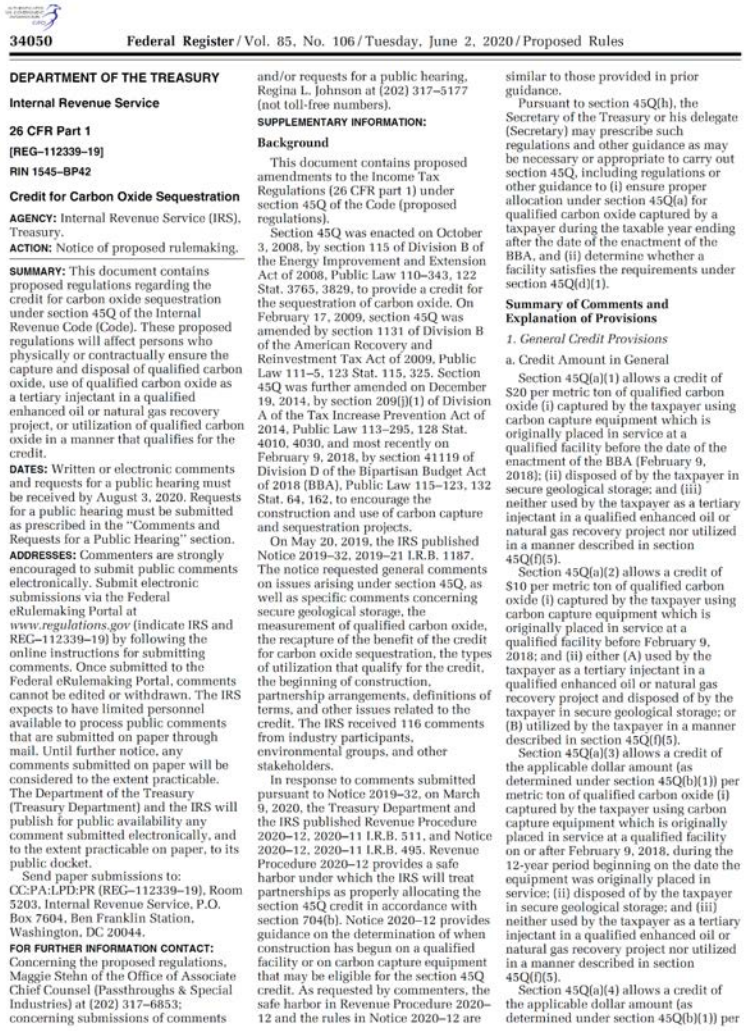
Reporting Requirements

Proposed Regulations contain numerous reporting requirements. Examples include:

- The taxpayer who claims the 45Q credit must report the name and location of each Qualified Facility at which the Qualified CO_2 was captured
- Each party to a binding written contract must report the existence of the contract, the names and tax ID numbers of the parties involved, the amount of Qualified CO_2 involved with each party, EPA GHGRP e-GGRT ID number of the storage site, etc.
- Credit Claimant, and electing taxpayer who transfers credit to Credit Claimant, must both report significant details of their actions to allow IRS to trace the transfers
- Any taxpayer who claims the 45Q credit must report a recapture event that occurs during a project's recapture period, along with the recapture amount, the quantity of leaked Qualified CO_2, the credit rates involved and a statement providing details regarding the leak

45Q credits will not be allowed to a taxpayer that fails to timely provide all required information, documentation and certifications

45Q Proposed Regulations



34050 Federal Register / Vol. 85, No. 106 / Tuesday, June 2, 2020 / Proposed Rules

DEPARTMENT OF THE TREASURY

Internal Revenue Service

26 CFR Part 1

[REG–112339–19]

RIN 1545–BP42

Credit for Carbon Oxide Sequestration

AGENCY: Internal Revenue Service (IRS), Treasury.

ACTION: Notice of proposed rulemaking.

SUMMARY: This document contains proposed regulations regarding the credit for carbon oxide sequestration under section 45Q of the Internal Revenue Code (Code). These proposed regulations will affect persons who physically or contractually ensure the capture and disposal of qualified carbon oxide, use of qualified carbon oxide as a tertiary injectant in a qualified enhanced oil or natural gas recovery project, or utilization of qualified carbon oxide in a manner that qualifies for the credit.

DATES: Written or electronic comments and requests for a public hearing must be received by August 3, 2020. Requests for a public hearing must be submitted as prescribed in the "Comments and Requests for a Public Hearing" section.

ADDRESSES: Commenters are strongly encouraged to submit public comments electronically. Submit electronic submissions via the Federal eRulemaking Portal at *www.regulations.gov* (indicate IRS and REG–112339–19) by following the online instructions for submitting comments. Once submitted to the Federal eRulemaking Portal, comments cannot be edited or withdrawn. The IRS expects to have limited personnel available to process public comments that are submitted on paper through mail. Until further notice, any comments submitted on paper will be considered to the extent practicable. The Department of the Treasury (Treasury Department) and the IRS will publish for public availability any comment submitted electronically, and to the extent practicable on paper, to its public docket.

Send paper submissions to: CC:PA:LPD:PR (REG–112339–19), Room 5203, Internal Revenue Service, P.O. Box 7604, Ben Franklin Station, Washington, DC 20044.

FOR FURTHER INFORMATION CONTACT: Concerning the proposed regulations, Maggie Stehn of the Office of Associate Chief Counsel (Passthroughs & Special Industries) at (202) 317–6853; concerning submissions of comments and/or requests for a public hearing, Regina L. Johnson at (202) 317–5177 (not toll-free numbers).

SUPPLEMENTARY INFORMATION:

Background

This document contains proposed amendments to the Income Tax Regulations (26 CFR part 1) under section 45Q of the Code (proposed regulations).

Section 45Q was enacted on October 3, 2008, by section 115 of Division B of the Energy Improvement and Extension Act of 2008, Public Law 110–343, 122 Stat. 3765, 3829, to provide a credit for the sequestration of carbon oxide. On February 17, 2009, section 45Q was amended by section 1131 of Division B of the American Recovery and Reinvestment Tax Act of 2009, Public Law 111–5, 123 Stat. 115, 325. Section 45Q was further amended on December 19, 2014, by section 209(j)(1) of Division A of the Tax Increase Prevention Act of 2014, Public Law 113–295, 128 Stat. 4010, 4030, and most recently on February 9, 2018, by section 41119 of Division D of the Bipartisan Budget Act of 2018 (BBA), Public Law 115–123, 132 Stat. 64, 162, to encourage the construction and use of carbon capture and sequestration projects.

On May 20, 2019, the IRS published Notice 2019–32, 2019–21 I.R.B. 1187. The notice requested general comments on issues arising under section 45Q, as well as specific comments concerning secure geological storage, the measurement of qualified carbon oxide, the recapture of the benefit of the credit for carbon oxide sequestration, the types of utilization that qualify for the credit, the beginning of construction, partnership arrangements, definitions of terms, and other issues related to the credit. The IRS received 116 comments from industry participants, environmental groups, and other stakeholders.

In response to comments submitted pursuant to Notice 2019–32, on March 9, 2020, the Treasury Department and the IRS published Revenue Procedure 2020–12, 2020–11 I.R.B. 511, and Notice 2020–12, 2020–11 I.R.B. 495. Revenue Procedure 2020–12 provides a safe harbor under which the IRS will treat partnerships as properly allocating the section 45Q credit in accordance with section 704(b). Notice 2020–12 provides guidance on the determination of when construction has begun on a qualified facility or on carbon capture equipment that may be eligible for the section 45Q credit. As requested by commenters, the safe harbor in Revenue Procedure 2020–12 and the rules in Notice 2020–12 are similar to those provided in prior guidance.

Pursuant to section 45Q(h), the Secretary of the Treasury or his delegate (Secretary) may prescribe such regulations and other guidance as may be necessary or appropriate to carry out section 45Q, including regulations or other guidance to (i) ensure proper allocation under section 45Q(a) for qualified carbon oxide captured by a taxpayer during the taxable year ending after the date of the enactment of the BBA, and (ii) determine whether a facility satisfies the requirements under section 45Q(d)(1).

Summary of Comments and Explanation of Provisions

1. General Credit Provisions

a. Credit Amount in General

Section 45Q(a)(1) allows a credit of $20 per metric ton of qualified carbon oxide (i) captured by the taxpayer using carbon capture equipment which is originally placed in service at a qualified facility before the date of the enactment of the BBA (February 9, 2018); (ii) disposed of by the taxpayer in secure geological storage; and (iii) neither used by the taxpayer as a tertiary injectant in a qualified enhanced oil or natural gas recovery project nor utilized in a manner described in section 45Q(f)(5).

Section 45Q(a)(2) allows a credit of $10 per metric ton of qualified carbon oxide (i) captured by the taxpayer using carbon capture equipment which is originally placed in service at a qualified facility before February 9, 2018; and (ii) either (A) used by the taxpayer as a tertiary injectant in a qualified enhanced oil or natural gas recovery project and disposed of by the taxpayer in secure geological storage; or (B) utilized by the taxpayer in a manner described in section 45Q(f)(5).

Section 45Q(a)(3) allows a credit of the applicable dollar amount (as determined under section 45Q(b)(1)) per metric ton of qualified carbon oxide (i) captured by the taxpayer using carbon capture equipment which is originally placed in service at a qualified facility on or after February 9, 2018, during the 12-year period beginning on the date the equipment was originally placed in service; (ii) disposed of by the taxpayer in secure geological storage; and (iii) neither used by the taxpayer as a tertiary injectant in a qualified enhanced oil or natural gas recovery project nor utilized in a manner described in section 45Q(f)(5).

Section 45Q(a)(4) allows a credit of the applicable dollar amount (as determined under section 45Q(b)(1)) per

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Potential Business Relationships Needed for Carbon Capture Projects

- Equity investor and debt
- Tax equity investor
- Law Firm
  - Tax Opinion
  - Transaction documents
  - Environmental permitting
- EPC Contractor
- O&M Provider
- CO_2 Transporter
- CO_2 Offtaker (for Utilization, Injection or Disposal)
- Secure Geologic Storage Consultant
  - For MRV Plan development and EPA approval process
  - For ISO Standard certifications
- Insurance for 45Q qualification, recapture insurance, etc
- Developer to put the whole carbon capture project together
- Possibly others

45Q Legislative History

- Originally enacted on October 3, 2008:
  - $10/metric ton for EOR (now increased)
  - $20/metric ton for non-EOR (now increased)
  - Had to capture at least 500,000 metric tons/year (now reduced)
  - Expired once 75 mm metric tons of CO_2 were stored
  - Effective for CO_2 captured after October 3, 2008
- Amended on February 17, 2009:
  - CO_2 injected for EOR must go into "secure geologic storage"
  - Effective for CO_2 captured after February 17, 2009
- Amended on February 9, 2018:
  - "FUTURE Act" amendments were in Bipartisan Budget Act of 2018
  - Increased credit values, reduced minimum volume threshold, expanded to include CO and "utilization", eliminated nationwide aggregate limit of tax credits available going forward, etc
  - Effective to tax years beginning after December 31, 2017

Table of Contents of 45Q statute, IRS regulations, and IRS guidance

Significant 45Q-Related Topics	45Q statute section	IRS regulation section (or guidance)
Qualified Carbon Oxide	45Q(c)	1.45Q-2(a) and (b)
Carbon Capture Equipment	45Q(b)(2)	1.45Q-2(c) and 1.45Q-1(g)
Qualified Facility	45Q(d) and (f)(6)	1.45Q-2(d), (e), (f), and (g)
Beginning of Construction		See IRS Notice 2020-12
Utilization	45Q(f)(5)	1.45Q-4
Secure Geologic Storage	45Q(f)(2)	1.45Q-3
Tertiary Injectant and Qualified EOR/EGR Project	45Q(e)	1.45Q-2(h)
Who can claim the credit	45Q(f)(3)	1.45Q-1(h)
Tax Equity Partnership safe harbor		See IRS Rev. Proc. 2020-12
Recapture	45Q(f)(4)	1.45Q-5
Amount of Credit	45Q(a), (b)(1), and (f)(7)	1.45Q-1(a), (b), (c), (d), and (e)
Phase out of old credits	45Q(g)	1.45Q-1(f)

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