CARBON CAPTURE COALITION

June 28, 2019

CC:PA:LPD:PR (Notice 2019-32)
Room 5203
Internal Revenue Service
P.O. Box 7604
Ben Franklin Station
Washington, D.C., 20044

Re: Request for Comments on Section 45Q Credit for Carbon Oxide Sequestration (Notice 2019-32)

These comments are submitted to the Department of the Treasury (Treasury) and the Internal Revenue Service (IRS) on behalf of participants in the Carbon Capture Coalition, which brings together over 60 energy, industrial and technology companies, labor unions and environmental, clean energy and agricultural organizations (see Attachment 1). The Coalition submits these comments in response to the request for comments and to represent the views of its diverse stakeholders regarding effective implementation of the reformed section 45Q credit for carbon oxide sequestration.

Enacted as part of the Bipartisan Budget Act of 2018, the reformed 45Q tax credit aims to unleash private capital to invest in the deployment of carbon capture technology across a range of key industries, including electric power generation, ethanol and fertilizer production, natural gas processing, chemicals production, refining, the manufacture of steel and cement, and direct air capture. The Coalition, several industry stakeholders and Members of Congress have urged Treasury and IRS to proceed promptly to issue guidance for the reformed 45Q tax credit that provides the flexibility and financial certainty for carbon capture project developers and investors sought by congressional sponsors.

Over the past 13 months, Carbon Capture Coalition participants have engaged intensively in a collaborative effort to develop consensus recommendations and model guidance to inform and assist Treasury/IRS officials in their development of vitally important interim guidance and a final rule to implement the tax credit. Our previous submissions to Treasury/IRS and our current comments, recommendations and model guidance are described below.

Coalition Letter to Treasury Identifying Guidance Priorities (May 2018)

The Coalition submitted a letter to Treasury on May 14, 2018 outlining key priorities in developing guidance for the reformed 45Q tax credit. The Coalition recommended focusing on the election to assign the 45Q tax credit, recapture of the credit, the lifecycle analysis requirement for carbon utilization, and defining the beginning of construction.

Coalition Submission of Consensus Model Guidance to Treasury (November 2018)

Next, the Coalition undertook six months of research, analysis and discussion to develop consensus model guidance and a supplementary narrative on geologic storage. A cover letter, model guidance and the supplementary narrative were submitted to Treasury on November 21, 2018 (see Attachment 3 to this submission). The model guidance addresses several implementation issues identified by the Coalition:

Credit Transferability: Many carbon capture project developers lack the tax appetite to monetize the 45Q tax credit themselves. Project developers may be tax-exempt cooperatives or municipal utilities, or they may not have sufficient tax liability offset by the credit to take full financial advantage of the credit. The ability for a project developer to effectively transfer the tax credit to investors or project partners with the ability to fully monetize the tax credit under certain conditions will be essential to attracting investment and financing many carbon capture projects. The statute provides flexibility to transfer the credit, but guidance is needed to fully clarify the transfer rules.

The Coalition recommends that Treasury/IRS provide for the full flexibility regarding credit transferability permitted under the statute, including annual elections of the 45Q tax credit (not just one election for the life of the project) and for partial election of the credit (a portion or portions of credits being claimed for a project, not just the entire amount).

***Contractual Assurance*:** Both the prior 45Q program and the amendments made in the Bipartisan Budget Act of 2018 expressly contemplate that a project claiming a section 45Q credit need not physically dispose of, use, or utilize qualified carbon oxide if the taxpayer "contractually ensures" that the qualified carbon oxide is disposed of, used, or utilized by another party. In implementing the changes to section 45Q under the Act, Treasury and the IRS should clarify that an entity claiming the tax credit need not physically carry out the specified activities (disposal, use, or utilization) in order to claim the credit, as long as such person contractually ensures that the specified activity is carried out by another party.

In addition, the Coalition's model guidance submitted to Treasury would treat a carbon capture project as contractually ensuring that a specified activity is carried out if both: (i) if the owner of the carbon capture equipment enters into a contract with another entity, which requires that entity to either (A) carry out such an activity directly, or (B) contract with a third party to carry out such an activity; and (ii) contracts include commercially reasonable terms to enforce such other party's obligation to carry out required activities. The purpose of this flexible approach to contractual assurance is to facilitate utilization and injection projects on an appropriate risk-reward commercial basis, which will enable new investment in carbon capture projects.

***Credit Recapture*:** The statutory provision for recapture of 45Q credits (in the event of loss of carbon oxide for which credits were claimed) has the potential to create a significant barrier to obtaining financing for carbon capture and storage projects. Because of the anticipated increase in demand for the credit following the amendments made by the Bipartisan Budget Act, prompt guidance is needed. The Coalition recommends in its model guidance a safe harbor for credit claimants to clarify and manage the risk of credit recapture.

***Beginning of Construction*:** To qualify for the 45Q tax credit under the current congressional authorization, a carbon capture project must begin construction by the end of 2023. Identifying what activities are sufficient to adequately demonstrate that construction has begun is important. The Coalition recommends in its model guidance that Treasury/IRS adopt precedents for defining beginning construction from wind and solar energy tax credits that are already widely understood and accepted by industry and investors, with certain modifications appropriate to the carbon capture industry.

Additional Comments, Recommendations and Model Guidance (June 2019)

Following completion of the model guidance in November 2018, Coalition participants turned to priorities that were unaddressed or only partially addressed by the November 2018 submission. This latest submission of consensus comments, recommendations, and model guidance described below includes:

- Responses to questions in Section 3 of Notice 2019-32 requesting public comment (Attachment 2);
- Model guidance on beginning of construction (Attachment 4);
- Proposed approach to implementing the greenhouse gas lifecycle analysis requirement for carbon utilization projects (Attachment 5);

- Model guidance for an equivalent ISO-based program, in addition to the existing Subpart RR federal Greenhouse Gas Reporting Program, to demonstrate secure geologic storage associated with CO_2-enhanced oil recovery to claim the 45Q tax credit (Attachment 6); and
- Additional comments on partnership and leasing transaction structures (Attachment 7).

Responses to Section 3 of IRS Notice 2019-32. Attachment 2 provides summary responses to questions posed by IRS for public comment. For more detail, these responses refer to the Coalition's previous model guidance from November and the new comments, recommendations and model guidance included in the attachments to this letter.

Model guidance on beginning of construction. Attachment 4 expands on the Coalition's recommendations in its November submission, providing much greater detail in the form of model guidance that addresses issues such as methods for establishing beginning of construction, defining the physical work and five percent safe harbor tests, the continuity requirement, transfers and other issues. The model guidance adapts established wind and solar precedents to the particular needs and circumstances of carbon capture, transport, utilization and storage, including greater timeframes for new-build and retrofit carbon capture projects than currently provided for wind and solar projects. Given the longer lead times to design, engineer, permit, finance and construct carbon capture, utilization and storage projects and associated CO_2 transport infrastructure, clarity and flexibility on beginning of construction and continuity of construction in IRS guidance will be imperative to provide certainty and confidence to developers and investors contemplating projects to claim the 45Q credit.

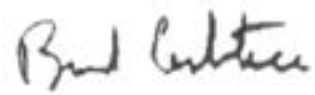
Proposed approach to implementing the greenhouse gas lifecycle analysis requirement. Attachment 5 recommends a methodology for calculating the statutory greenhouse gas (GHG) lifecycle emissions analysis (LCA) requirement for carbon utilization projects to claim the 45Q tax credit based on emissions captured and permanently isolated from the atmosphere or displaced from being emitted. The Coalition suggests guiding principles to inform an LCA methodology and proposes a safe harbor approach that emphasizes measured performance over establishing pathways for particular technologies and processes in order to provide transparency and directly reward incremental improvements in lifecycle emissions reductions. The reformed 45Q tax credit holds enormous potential to incentivize the development and commercial deployment of technologies that enable new and beneficial economic uses of carbon (such as utilizing carbon oxide to make fuels, chemicals, materials and other useful products) in addition to long-standing utilization of CO_2 in enhanced oil recovery, but only if the 45Q tax credit's potential value for relevant projects can be readily ascertained prospectively. Guidance from Treasury/IRS on the LCA methodology is urgently needed to enable project developers and investors to determine whether to proceed with particular carbon utilization processes and projects to meet the beginning construction window by the end of 2023.

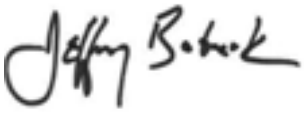
Model guidance for an equivalent ISO-based program to demonstrate secure geologic storage. Attachment 6 provides model guidance to allow for an equivalent program based on the International Standardization Organization (ISO) recently finalized Standard 27916, in addition to the existing Subpart RR federal Greenhouse Gas Reporting Program, for demonstrating secure geologic storage associated with CO_2-enhanced oil recovery to claim the 45Q tax credit. The model guidance specifies necessary additional public transparency, reporting and oversight provisions that Coalition participants recommend be combined with ISO Standard 27916 in order to establish an equivalent program for the purposes of demonstrating secure geologic storage. The Coalition also acknowledges that, along with ISO and Subpart RR, there may be additional pathways or standards for determining "adequate security measures for secure geologic storage" that IRS, in consultation with EPA, Department of Energy (DOE), and Department of Interior (DOI), should consider. Coalition participants developed this model guidance to provide owners of carbon capture projects and EOR operators with an additional option for demonstrating secure geologic storage, while preserving the policy objectives and integrity of the 45Q tax credit through public transparency and accountability.

Additional Comments Related to Partnership and Leasing Transaction Structures. Attachment 7 provides more detailed comments in response to question 9 in Section 3 of IRS Notice 2019-32. The Coalition's comments identify important considerations as Treasury/IRS develops guidance relating to partnerships and leasing structures and suggest precedents to inform development of guidance tailored to the particular business models and financing needs of projects involving carbon capture, transport, utilization and storage. The Coalition requests guidance in this area as expeditiously as possible. Essential financing transactions could be delayed or frustrated without clear guidance that affords maximum certainty in financing transactions.

Proper implementation of the 45Q tax credit is crucial to realizing the significant emissions reduction, domestic energy and industrial production, and jobs benefits that will come from economywide deployment of carbon capture technology. The Carbon Capture Coalition looks forward to working with Treasury and IRS officials to ensure timely and thoughtful implementation of this important and innovative federal policy.

Sincerely,





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Attachments:

1. Carbon Capture Coalition Participants and Observers (pg. 5)
2. Responses to Ten Specific Issues in Section 3 of IRS Notice 2019-32 (pgs. 6-9)
3. November 21, 2018 Letter, Model Guidance and Supplementary Narrative to Treasury from the Carbon Capture Coalition (pgs. 10-38)
4. Model Guidance on Beginning of Construction (pgs. 39-50)
5. Proposed Approach to Implementing the Greenhouse Gas Lifecycle Analysis Requirement for Carbon Utilization Projects (pgs. 51-58)
6. Model Guidance for an Equivalent ISO-Based Program to Demonstrate Secure Geologic Storage Associated with CO_2-Enhanced Oil Recovery to Claim the 45Q Tax Credit (pgs. 59-62)
7. Additional Comments Related to Partnership and Leasing Transaction Structures (pgs. 63-64)

Attachment 1

Carbon Capture Coalition Participants and Observers

Participants

AFL-CIO
Air Liquide
Air Products
AK Steel
American Carbon Registry
ArcelorMittal
Arch Coal
Archer Daniels Midland Co.
Baker Hughes, a GE Company
Bipartisan Policy Center
Carbon Wrangler LLC
Center for Carbon Removal
Clean Air Task Force
ClearPath Foundation
Cloud Peak Energy
Conestoga Energy Partners
Core Energy LLC
EBR Development LLC
EnergyBlue Project
Energy Innovation Reform Project
Glenrock Petroleum
Great River Energy
Greene Street Capital
Impact Natural Resources LLC
ION Engineering LLC
International Brotherhood of Boilermakers
International Brotherhood of Electrical Workers
Jackson Hole Center for Global Affairs
Jupiter Oxygen Corporation
Lake Charles Methanol
LanzaTech
Linde LLC
Mitsubishi Heavy Industries America, Inc.
National Audubon Society
National Farmers Union
National Wildlife Federation
NET Power
New Steel International, Inc.
NRG Energy
Occidental Petroleum Corporation
Peabody Energy
Prairie State Generating Company
Praxair, Inc.
Renewable Fuels Association
Shell
SMART Transportation Division (of Sheet Metal, Air, Rail and Transportation Workers)
Summit Power Group
Tenaska Energy
The Nature Conservancy
Third Way
Thunderbolt Clean Energy, LLC
United Mine Workers of America
United Steel Workers
Utility Workers Union of America
White Energy
Wyoming Outdoor Council

Observers

Algae Biomass Organization
Carbon Engineering
Carbon Utilization Research Council
Cornerpost CO_2, LLC
Enhanced Oil Recovery Institute, University of Wyoming
Institute for Clean Air Companies
Melzer Consulting
Tellus Operating Group
World Resources Institute

Conveners

Center for Climate & Energy Solutions
Great Plains Institute

Attachment 2

Responses to Ten Specific Issues in Section 3 of IRS Notice 2019-32

Below are summary responses of the Carbon Capture Coalition to the ten specific issues raised by the IRS in Section 3 of Notice 2019-32. For context, the text of Notice 2019-32 is provided in *italics* and the comments of the Carbon Capture Coalition follow each issue. The responses reference more detailed comments, recommendations and model guidance found in other attachments.

SECTION 3. REQUEST FOR COMMENTS

The Treasury Department and the IRS request comments on issues arising from the BBA amendments to § 45Q that should be addressed in regulations and other guidance. In addition to general comments, the Treasury Department and the IRS request comments that address the following specific issues:

.01 IRS Form 8933, Carbon Oxide Sequestration Credit, defines "Secure Geological Storage" as requiring approval by the EPA of a Monitoring, Reporting and Verification Plan (MRV Plan) submitted by the operator of the storage facility or tertiary injection project. Thus, meeting the Form 8933 conditions would be achieved by either receiving a Class II UIC permit plus an approved MRV Plan, or receiving a Class VI UIC permit plus an approved MRV Plan. UIC permits are required for all injection well operators. Class VI UIC operators must also get an EPA-approved MRV plan as required under the Greenhouse Gas Reporting Program (GHGRP), set forth in 40 CFR Part 98. However, IRS Form 8933 adds regulatory requirements for Class II UIC permit holders (enhanced oil recovery operations) who are not currently required to get an EPA-approved MRV plan. As noted below, IRS is seeking comment on whether there are alternatives to this approach. IRS Form 8933 also clarifies that the annual amount of carbon oxide claimed for the credit must be reconciled with amounts reported to the EPA under its GHGRP, subpart RR. See the EPA website at www.epa.gov and Notice 2009-83, 2009-44 I.R.B. 588, for more information on secure geological storage.

- *Are there technical criteria different from or in addition to those provided in the EPA's GHGRP that should be used to demonstrate secure geological storage? Are there existing guidelines, standards, or regulations that could be used to demonstrate secure geological storage such as those developed by the International Organization for Standardization (ISO)?*
- *Should EPA's GHGRP rules continue to be the reporting requirements for purposes of § 45Q, and should an approved MRV Plan from the EPA be received before any § 45Q credit can be claimed? Are there any viable alternatives to the subpart RR reporting requirements, such as third party, Department of Energy, or State certification?*

COMMENT: The Carbon Capture Coalition's letter of November 21, 2018 to the Treasury and IRS specifically addressed the issue of an equivalent program for demonstrating secure geologic storage. In section II.C. of the Coalition's letter, and in Section 7 of the Coalition's Appendix A Model Interim 45Q Guidance, the Coalition participants proposed a safe harbor for taxpayers that claim credits with respect to qualified carbon oxide that was injected into secure geologic storage in compliance with Subpart RR of the federal Greenhouse Gas Reporting Program (GHGRP) or an equivalent program. The equivalent program was defined as a program that demonstrates secure geologic storage and quantifies the amount of carbon oxide that is sequestered. Since November 2018, the Coalition has refined its approach to the proposed equivalent program, especially in light of the ISO standard. We propose that the IRS recognize the ISO standard 27916:2019(E), modified to include additional public transparency, reporting

and oversight provisions detailed in the model guidance in Attachment 6, as an equivalent program for determining secure geologic storage (Attachment 6 includes proposed model guidance to implement the ISO standard). More details regarding the specific response of the Carbon Capture Coalition regarding an equivalent program for demonstrating secure geologic storage can be found in Attachment 3 (section II.C. of the Coalition's letter, and in Section 7 of the Coalition's Appendix A Model Interim 45Q Guidance), as modified by Attachment 6.

***.**02 Pursuant to § 45Q(f)(4), taxpayers must recapture the benefit of any credit allowable under § 45Q(a) with respect to any qualified carbon oxide that ceases to be captured, disposed of, or used as a tertiary injectant in a manner consistent with the requirements of § 45Q. What should the standard be for triggering and measuring recapture? How should the recapture of the benefit of the credits relate to the requirements of § 45Q and the issues contemplated in this request for comments, in particular the rules for secure geological storage involving the disposal or use of carbon oxide as a tertiary injectant?*

COMMENT: The Carbon Capture Coalition's letter of November 21, 2018 to the Treasury and IRS specifically addressed the issue of recapture. Section 45Q(f)(4) requires the Secretary to adopt regulations to provide for the recapture of credits with respect to qualified carbon oxide that ceases to be stored underground. In section II.C. of the Coalition's letter, and in Section 7 of the Coalition's Appendix A Model Interim 45Q Guidance, the Coalition participants proposed a safe harbor for taxpayers that claim credits with respect to qualified carbon oxide that was injected into secure geologic storage in compliance with an MRV Plan or an equivalent program. In general, the safe harbor would limit recapture to the amount of qualified carbon oxide injected in the taxable year and the immediately prior taxable year and, in the event the EPA approves cessation of reporting under an approved MRV Plan for a particular geologic location, then the lookback to the immediate prior taxable year would no longer apply. Since November 2018, the Coalition has worked to propose implementation of the ISO standard as an equivalent program in the manner described in Attachment 6, and we believe the recapture safe harbor proposed in November 2018 should be expanded to also apply to the ISO-based equivalent program. More details regarding the specific response of the Carbon Capture Coalition regarding recapture can be found in Attachment 3 (section II.C. of the Coalition's letter; in Section 7 of the Coalition's Appendix A Model Interim 45Q Guidance; and in supplementary technical background on geologic storage provided in Appendix B: Characterizing Retention and Loss of CO_2 from Geologic Carbon Storage Projects), as supplemented by Attachment 6.

.03 Is guidance needed to further clarify terms and definitions appearing in § 45Q, such as carbon capture equipment, qualified carbon oxide, direct air capture facility, qualified facility, tertiary injectant utilization, or lifecycle greenhouse gas emissions?

COMMENT: The Carbon Capture Coalition's letter of November 21, 2018 to the Treasury and IRS specifically proposed definitions for many of the terms listed in the question. Specifically, in the Coalition's Appendix A Model Interim 45Q Guidance, many definitions of terms are suggested, including definitions for the following terms: § 3.04 direct air capture facility, § 3.05 qualified carbon oxide, § 3.07 qualified facility, § 3.09 tertiary injectant, § 3.09(e) utilization, and § 6.01 lifecycle greenhouse gas emissions. The referenced definitions can be found in Attachment 3 (Sections 3 and 6 of the Coalition's Appendix A Model Interim 45Q Guidance).

.04 Is guidance required in defining what types of utilization qualify as "fixation of qualified carbon oxide through photosynthesis or chemosysnthesis, such as through the growing of algae or bacteria" as described in § 45Q(f)(5)(A)?

COMMENT: The Carbon Capture Coalition's letter of November 21, 2018 to the Treasury and IRS addresses the definition of utilization. The referenced definition can be found in Attachment 3 (Sections 3.09(e) of the Coalition's Appendix A Model Interim 45Q Guidance). In addition, the Coalition has prepared a proposed approach to calculating the greenhouse gas lifecycle analysis requirement for utilization that addresses the definition of utilization, and that can be found in Attachment 5.

.05 Is guidance required to establish the boundaries for lifecycle emissions for carbon oxide utilization to determine the amount of qualified carbon oxide that is "displaced from being emitted into the atmosphere" as described in in § 45Q(f)(5)(B)?

COMMENT: The Carbon Capture Coalition's letter of November 21, 2018 to the Treasury and IRS addresses the utilization displacement issue. In addition, the Coalition has prepared a list of Principles and Guidelines for Utilization Measurement that addresses displacement concepts extensively, and those Principles and Guidelines can be found in Attachment 5.

.06 Under § 45Q(f)(3)(A), the credit is attributable to the person that captures and physically or contractually ensures the disposal, utilization, or use of the qualified carbon oxide as a tertiary injectant. The Treasury Department and the IRS seek comments on the types of contractual arrangements that investors anticipate with parties who capture or dispose or utilize qualified CO. What are common terms of contracts ensuring the disposal, utilization, or use of qualified CO as a tertiary injectant? What should result if such terms are determined to be insufficient?

COMMENT: The Carbon Capture Coalition's letter of November 21, 2018 to the Treasury and IRS specifically addressed the issue of contractual assurance. In sections II.A. and II.B. of the Coalition's letter, and in Section 3.09(b) of the Coalition's Appendix A Model Interim 45Q Guidance, the Coalition participants explain the types of contractual arrangements that are anticipated and propose specific guidance language on the subject. The Coalition supports a flexible approach to contractual assurance issues, and suggests commercially reasonable contractual terms as minimal requirements. These details can be found in Attachment 3 (sections II.A. and II.B. of the Coalition's letter, and in Section 3.09(b) of the Coalition's Appendix A Model Interim 45Q Guidance).

.07 What factors should be considered in determining the time and manner of the election under § 45Q(f)(3)(B) to transfer the § 45Q credit to a person that disposes of the qualified carbon oxide, utilizes the qualified carbon oxide, or uses the qualified carbon oxide as a tertiary injectant? If such an election is made, what issues should be considered regarding the transfer of the § 45Q credit?

COMMENT: The Carbon Capture Coalition's letter of November 21, 2018 to the Treasury and IRS specifically addressed the issue of the § 45Q(f)(3)(B) election. In section II.B. of the Coalition's letter, and in Section 5.02 of the Coalition's Appendix A Model Interim 45Q Guidance, the Coalition participants explained how and when the election should be made. Specifically, the Coalition supports annual elections, and supports a flexible approach that allows for partial elections so that multiple parties can receive pro rata shares of the credits based on specific

criteria so that various opportunities for investment can be accommodated and encouraged. The Coalition also proposed specific guidance language on the subject. Section II.B. of the letter includes an example to illustrate how the proposed guidance language would be applied in a particular situation. These details can be found in Attachment 3 (section II.B. of the Coalition's letter, and in Section 5.02 of the Coalition's Appendix A Model Interim 45Q Guidance).

.08 What constitutes the beginning of construction for purposes of § 45Q(d)?

COMMENT: The Carbon Capture Coalition proposes model guidance language for the beginning of construction requirements. That model guidance language is contained in Attachment 4, and is based in large part on IRS guidance issued for wind energy and solar energy tax credits which have similar beginning of construction requirements.

.09 Is guidance needed concerning structures in which project developers and participating investors would be respected as partners in a partnership generating a § 45Q credit? Further, is guidance needed on allocating the credit and recapture of the credit among the partners in a partnership?

COMMENT: The Carbon Capture Coalition believes that guidance is needed regarding a number of issues related to partnership and leasing transaction structures, including but not limited to structures in which developers and investors would be respected as partners, and allocation of the credit among investors. Details regarding the Coalition's requested comments can be found in Attachment 7. Guidance on these topics is requested as expeditiously as possible, because the carbon capture industry is rapidly evolving technologically and commercially, and would like to utilize the newly revised tax incentives provided by Congress in so doing. Transactions could be delayed or frustrated without clear guidance that will afford maximum certainty in financing transactions.

.10 What issues may arise when determining the amount of metric tons of qualified carbon oxide utilized by the taxpayer under § 45Q(a)(2)(B)(ii) or § 45Q(a)(4)(B)(ii), based upon an analysis of lifecycle greenhouse emissions and subject to such requirements as the Secretary, in consultation with the Secretary of Energy and Administrator of the EPA, determines appropriate, were (i) captured and permanently isolated from the atmosphere, or (ii) displaced from being emitted into the atmosphere, through use of a process described in § 45Q(f)(5)(A)?

COMMENT: The Carbon Capture Coalition's letter of November 21, 2018 to the Treasury and IRS addresses utilization measurement and displacement issues. In addition, the Coalition has prepared a list of Principles and Guidelines for Utilization Measurement that addresses the definition of utilization, and those Principles and Guidelines can be found in Attachment 5.

Attachment 3

November 21, 2018 Letter, Model Guidance and Supplementary Narrative to Treasury from the Carbon Capture Coalition

November 21, 2018

Honorable David Kautter
Assistant Secretary (Tax Policy)
Department of the Treasury
1500 Pennsylvania Ave., N.W.
Washington, DC 20220

William M. Paul
Acting Chief Counsel
Internal Revenue Service
1111 Constitution Ave., NW
Washington, DC 20024

Re: Section 45Q Carbon Sequestration Credit

Dear Messrs. Kautter and Paul:

Section 41119 of the Bipartisan Budget Act of 2018, P.L. 115-123 (the "Act"), provided for enhancement of the carbon sequestration credit under section 45Q of the Internal Revenue Code of 1986, as amended (the "Code").[1] This letter considers the changes to section 45Q under the Act and makes suggestions for the Department of Treasury ("Treasury") and the Internal Revenue Service (the "IRS") to consider in issuing guidance. An example of interim guidance is enclosed as Appendix A.

We submit this letter on behalf of participants in the Carbon Capture Coalition, which brings together over 50 energy, industrial and technology companies, labor unions and environmental, clean energy and agricultural organizations.[2] The Coalition submits this model guidance to represent the views of its diverse stakeholders regarding the effective implementation of the enhanced section 45Q credits.

[1] Except as otherwise indicated, all references to sections are to sections of the Code.
[2] A list of Coalition participants is enclosed with this letter. Glenrock Petroleum abstains from this submission.

I. Background

Section 45Q was originally enacted by section 115 of the Energy Improvement and Extension Act of 2008, Pub. L. No. 110-343, 122 Stat. 3829 (October 3, 2008), and amended by section 1131 of the American Recovery and Reinvestment Tax Act of 2009, Division B of Pub. L. 111-5, 123 Stat. 115 (Feb. 17, 2009) ("prior section 45Q"). Prior section 45Q(a) provided a credit for carbon dioxide ("CO_2") sequestration that was generally available to a taxpayer that captured qualified CO_2 at a qualified facility and disposed of the CO_2 in secure geological storage within the United States. Notice 2009-83, 2009-44 I.R.B. 588, modified by Notice 2011-25, 2011-14 I.R.B. 604, provided guidance to taxpayers on the application of prior section 45Q. Prior section 45Q(e) provided that, at such time as the IRS certified, in consultation with the EPA, that 75,000,000 metric tons of qualified CO_2 had been taken into account for purposes of section 45Q credit, the IRS would publicly announce that the section 45Q credit would cease to be available for the calendar year following such announcement (the "credit termination provision").

Congress expanded and extended the section 45Q credit in section 41119(a) of the Bipartisan Budget Act of 2018, P.L. 115-123 (Feb. 9, 2018) ("new section 45Q").[3] The 2018 amendments apply to taxable years beginning after December 31, 2017. *See* P.L. 115-123 section 41119(b). New section 45Q generally provides for a tax credit in an amount equal to a dollar value per metric ton of qualified carbon oxide captured by the taxpayer and disposed of in secure geological storage, used as a tertiary injectant in a qualified enhanced oil or natural gas recovery (EOR) project and disposed of in secure geological storage, or utilized in certain ways described in section 45Q(f)(5). In general, the credit termination provision no longer applies to carbon capture equipment placed in service on or after February 9, 2018. Instead, section 45Q credits are allowed during the 12-year period beginning on the date such carbon capture equipment was originally placed in service.

Section 45Q(f)(3) provides that, except as provided in regulations prescribed by the Secretary, the section 45Q credit is generally attributable as follows: (i) in the case of carbon capture equipment originally placed in service before February 9, 2018, to the person that captures and physically or contractually ensures the disposal, utilization, or use as a tertiary injectant of the qualified carbon oxide, and (ii) in the case of carbon capture equipment originally placed in service on or after February 9, 2018, to the person that owns the carbon capture equipment and physically or contractually ensures the capture and disposal, utilization, or use as a tertiary injectant of the qualified carbon oxide. In addition, new section 45Q added section 45Q(f)(3)(B), which provides that the taxpayer to whom the credit is attributable (as described in section 45Q(f)(3)(A)) may elect, in the time and manner as the Secretary may prescribe by regulations, to have the person that disposes of the qualified carbon oxide, utilizes the carbon oxide, or uses the carbon oxide as a tertiary injectant, claim the credit in lieu of having the owner of the carbon capture equipment claim the credit.

[3] This letter references "new section 45Q" and "prior section 45Q" when necessary to distinguish between statutory provisions before and after the enactment of the Bipartisan Budget Act of 2018. Where such distinction is unnecessary, this notice references "section 45Q."

Section 45Q(h) provides that the Secretary of the Treasury (the "Secretary") may prescribe regulations and other guidance as may be necessary or appropriate to carry out section 45Q, including regulations or other guidance—(i) to ensure proper allocation under section 45Q(a) for qualified carbon oxide captured by a taxpayer during the taxable year ending after enactment (*i.e.*, February 9, 2018), and (ii) to determine whether a facility is a qualified facility during such year. Section 45Q(f)(2) provides that the Secretary, in consultation with the Administrator of the Environmental Protection Agency ("EPA"), the Secretary of the Department of Energy ("DOE"), and the Secretary of the Department of Interior ("DOI"), shall establish regulations for determining adequate security measures for the geological storage of qualified carbon oxide such that the carbon oxide does not escape into the atmosphere. Section 45Q(f)(4) provides that the Secretary shall, by regulations, provide for recapturing the benefit of any credit allowable under section 45Q(a) with respect to any qualified carbon oxide that ceases to be captured, disposed of, or used as a tertiary injectant in a manner consistent with the requirements of section 45Q.

II. Issues for Which Immediate Guidance is Needed

This part describes certain issues with respect to which immediate guidance is needed by taxpayers so that they may properly structure the carbon sequestration activities intended to be encouraged by the section 45Q credits and obtain financing for such activities. These issues are incorporated into the model guidance included in Appendix A. The Coalition has provided this model guidance in a form intended to facilitate the prompt issuance of interim guidance. The model guidance also includes a number of other housekeeping matters of importance to the Coalition that are not highlighted in this letter.

A. Persons Who Contractually Ensure Disposal, Use, or Utilization of Qualified Carbon Oxide

Paragraphs (1) through (4) of section 45Q(a), as amended by the Act, require that qualified carbon oxide be "disposed of by the taxpayer," "used by the taxpayer," or "utilized by the taxpayer" in order for a section 45Q credit to be claimed. This language, viewed in isolation, could be read as requiring that the taxpayer *physically* dispose of, use, or utilize carbon oxide. However, both prior section 45Q and the amendments made to new section 45Q clearly and expressly contemplate that a taxpayer claiming a section 45Q credit need not physically dispose of, use, or utilize qualified carbon oxide if the taxpayer "contractually ensures" that the qualified carbon oxide is disposed of, used, or utilized.

Under prior section 45Q(a), the amount of the section 45Q credit was equal to the sum of:

(1) $20 per metric ton of qualified carbon dioxide which is—

(A) captured by the taxpayer at a qualified facility, and

(B) *disposed of by the taxpayer* in secure geological storage and not used by the taxpayer as described in paragraph (2)(B), and

(2) $10 per metric ton of qualified carbon dioxide which is—

(A) captured by the taxpayer at a qualified facility,

(B) *used by the taxpayer* as a tertiary injectant in a qualified enhanced oil or natural gas recovery project, and

(C) *disposed of by the taxpayer* in secure geological storage. (emphasis added).

Nevertheless, prior section 45Q(d)(5) provided that any section 45Q credit "shall be attributable to the person that captures and *physically or contractually ensures* the disposal of or the use as a tertiary injectant of the qualified carbon dioxide, except to the extent provided in regulations prescribed by the Secretary." (emphasis added). Prior section 45Q(d)(5) clearly contemplated that a taxpayer who claimed section 45Q credits might not physically dispose of or use qualified CO_2, but instead might contractually ensure that another person physically disposed of or used the qualified CO_2. As a result, the phrases "disposed of by the taxpayer" and "used by the taxpayer" in prior section 45Q(a) must mean "physically or contractually disposed of by the taxpayer" and "physically or contractually used by the taxpayer," respectively (instead of "physically disposed of by the taxpayer" and "physically used by the taxpayer," respectively).

New section 45Q(f)(3)(A), as amended by the Act, similarly provides that a section 45Q credit is (in the absence of an election under section 45Q(f)(3)(B), discussed below) attributable to:

(i) in the case of qualified carbon oxide captured using carbon capture equipment which is originally placed in service at a qualified facility before the date of the enactment of the Bipartisan Budget Act of 2018, the person that captures and *physically or contractually ensures* the disposal, utilization, or use as a tertiary injectant of such qualified carbon oxide, and

(ii) in the case of qualified carbon oxide captured using carbon capture equipment which is originally placed in service at a qualified facility on or after the date of the enactment of the Bipartisan Budget Act of 2018, the person that owns the carbon capture equipment and *physically or contractually ensures* the capture and disposal, utilization, or use as a tertiary injectant of such qualified carbon oxide. (Emphasis added.)

In implementing the changes to section 45Q under the Act, Treasury and the IRS should clarify that a person need not physically carry out the specified activities (disposal, use, or utilization) in order to claim the credit, as long as such person contractually ensures that the specified activity is carried out.

Treasury and the IRS also could provide guidance regarding the meaning of the term "contractually ensure." For example, the guidance could provide a person is treated as contractually ensuring that a specified activity is carried out if: (i) such person enters into a contract with another person that requires either (A) such other person to carry out such activity, or (B) such other person to require a third person to carry out such activity; and (ii) such contract

includes commercially reasonable terms to permit enforcement of such other party's obligation to carry out such activity. We recommend the use of "commercially reasonable terms" for enforcement, rather than a specified enforcement mechanism (e.g., specific enforcement or liquidated damages), because the enforcement provisions that are reasonable may vary from contract to contract.

B. Election under Section 45Q(f)(3)(B)

New section 45Q(f)(3)(B), as enacted by the Act, provides:

> If the person described in [section 45Q(f)(3)(A)] makes an election under this subparagraph in such time and manner as the Secretary may prescribe by regulations, the credit under this section—
>
> > (i) shall be allowable to the person that disposes of the qualified carbon oxide, utilizes the qualified carbon oxide, or uses the qualified carbon oxide as a tertiary injectant, and
> >
> > (ii) shall not be allowable to the person described in [section 45Q(f)(3)(A)].

This election represents a key new feature of the enhanced section 45Q credit. The election is critical in ensuring that taxpayers will have sufficient flexibility in structuring carbon capture and sequestration projects so that the tax credits will have the intended effect of providing an incentive for additional carbon sequestration. To this end, the election should be implemented in a manner that facilitates this enhanced flexibility for taxpayers.

Treasury and the IRS should provide guidance regarding the method by which a taxpayer may make this election. In particular, we recommend that the taxpayer may make this election with respect to a taxable year by attaching a statement to a timely filed (including extensions) income tax return for such taxable year.

In addition, guidance should clarify that the standards for a person who "contractually ensures" disposal, utilization, or use of qualified carbon oxide, described above, also apply to a person described in section 45Q(f)(3)(B)(i). As described above with section 45Q(a), when read in isolation, the phrase "the person that disposes of the qualified carbon oxide, utilizes the qualified carbon oxide, or uses the qualified carbon oxide as a tertiary injectant" could be read as requiring the person claiming the credit to physically dispose of, utilize, or use the qualified carbon oxide. However, the words "dispose of," "use," and "utilize" should be read consistently wherever they appear throughout section 45Q. Just as qualified carbon oxide should be treated as "disposed of by the taxpayer," "used by the taxpayer," or "utilized by the taxpayer" when the taxpayer physically or contractually disposes of, uses, or utilizes the qualified carbon oxide, so too should a person be treated as someone who "disposes of the qualified carbon oxide, utilizes the qualified carbon oxide, or uses the qualified carbon oxide as a tertiary injectant" when they physically or contractually perform the specified activities.

It is unclear whether the owner of carbon capture equipment described in section 45Q(f)(3)(A) is permitted to transfer only a portion of any section 45Q credit while retaining the remainder. Section 45Q does not explicitly contemplate this possibility, unlike section 45J (also amended by the Bipartisan Budget Act), which expressly permits a taxpayer to make a transfer election "with respect to all (or any portion specified in such election) of [the section 45J] credit." Nevertheless, section 45Q does not explicitly prohibit a partial transfer and Treasury should have the authority to permit a partial transfer as "necessary or appropriate" guidance under section 45Q(h); under section 45Q(f)(3)(B), the election is to be made "in such time and *manner* as the Secretary may prescribe" (emphasis added). Finally, a partial transfer is consistent with the increased flexibility of the section 45Q credit provided for by section 45Q(f)(3)(B). For this reason, we believe that Treasury and the IRS have the authority to provide for a partial transfer. We recommend that a taxpayer described in section 45Q(f)(3)(A) be permitted to elect to transfer a portion of the section 45Q credit to a person described section 45Q(f)(3)(B). The portion would be specified in the taxpayer's annual election, made on the tax return for the taxable year of the credit, as a percentage of the total credit claimed.

To illustrate these features, the guidance also could include the following example:

> Corporation A owns carbon capture equipment which is originally placed in service at a qualified facility on or after the date of the enactment of the Bipartisan Budget Act of 2018. Corporation A enters into an enforceable contract with Corporation B under which Corporation B will purchase qualified carbon oxide from Corporation A. The contract between Corporation A and Corporation B requires Corporation B to ensure that qualified carbon oxide purchased under the contract will be used as a tertiary injectant for enhanced oil or natural gas recovery. Corporation B, in turn, enters into an enforceable contract with Corporation C under which Corporation B sells qualified carbon oxide to Corporation C and requires Corporation C to use such qualified carbon oxide as a tertiary injectant for enhanced oil or natural gas recovery at a well owned by Corporation C.
>
> In accordance with the terms of the contracts, Corporation C uses qualified carbon oxide as a tertiary injectant for enhanced oil or natural gas recovery and disposes of such qualified carbon oxide in secure geological storage in each of Years 1, 2, and 3.
>
> In Year 1, Corporation A does not make any election under section 45Q(f)(3)(B). Because Corporation A contractually ensures that the qualified carbon oxide is used as a tertiary injectant, Corporation A is treated as using such qualified carbon oxide as a tertiary injectant for purposes of section 45Q. As a result, Corporation A may claim section 45Q credits in Year 1.
>
> In Year 2, Corporation A makes an election under section 45Q(f)(3)(B) to allow Corporation B to claim section 45Q credits. Because Corporation B contractually ensures that the qualified carbon oxide is used as a tertiary injectant, Corporation B is treated as using such qualified carbon oxide as a tertiary injectant for purposes of section

45Q. As a result, Corporation A's election under section 45Q(f)(3)(B) is valid, and Corporation B may claim section 45Q credits in Year 2.

In Year 3, Corporation A makes an election under section 45Q(f)(3)(B) to allow Corporation C to claim section 45Q credits. Because Corporation C uses the qualified carbon oxide as a tertiary injectant, Corporation A's election under section 45Q(f)(3)(B) is valid, and Corporation C may claim section 45Q credits in Year 3.

C. Recapture

Section 45Q(f)(4) provides that the Secretary shall, by regulations, provide for recapturing the benefit of any credit allowable under section 45Q(a) with respect to any qualified carbon oxide that ceases to be captured, disposed of, or used as a tertiary injectant in a manner consistent with the requirements of section 45Q. Treasury and the IRS have not yet issued detailed guidance describing the circumstances under which a section 45Q credit may be recaptured.

The section 45Q recapture provision can raise a number of complex issues which may require consultation with the EPA. Nevertheless, the potential uncertainty created by the provision can be a significant barrier to obtaining financing for carbon capture and sequestration projects. Because of the anticipated increase in demand for the credit following the amendments made by the Bipartisan Budget Act, prompt guidance is needed.

To reduce the scope of uncertainty, while still allowing guidance to be provided in a timely fashion, we recommend that Treasury and the IRS adopt a safe harbor for credit claimants that physically or contractually ensure disposal of qualified carbon oxide through projects that comply with Subpart RR of Greenhouse Gas Reporting Program or an "Equivalent Program."

In order to satisfy the proposed safe harbor: (i) a credit claimant must either itself comply with Subpart RR or an Equivalent Program (a "Reporting Claimant") or, alternatively, contractually ensure that an owner or operator of a well or group of wells that injects CO_2 (a "Reporting Counterparty") complies with subpart RR or an Equivalent Program; (ii) the section 45Q credits claimed must be computed based on the total annual CO_2 mass sequestered in subsurface geologic formations, calculated in accordance with the procedure specified in Equation RR-11 or Equation RR-12 of 40 CFR 98.443, as applicable (or the corresponding provisions of an Equivalent Program), i.e., on a mass balance basis; and (iii) if a Reporting Counterparty receives carbon dioxide from multiple sources, including a credit claimant, then the credit claimant must contractually ensure that the Reporting Counterparty will meet certain allocation and reporting requirements. In general, the safe harbor would apply regardless of whether a Reporting Claimant or Reporting Counterparty injects carbon dioxide as a tertiary injectant for EOR at a Class II well that has opted into Subpart RR or injects carbon dioxide into a Class VI well that is required to comply with Subpart RR.

If a credit claimant satisfies the safe harbor, then recapture would be limited to certain circumstances. If the net amount of sequestered carbon dioxide calculated for a taxable year is negative, such amount would be subject to recapture, but only from the immediately prior taxable year of the credit claimant. Amounts subject to the safe harbor from years before the immediately prior taxable year would not be subject to recapture. Such period takes into account the general security of carbon sequestered through EOR over the past several decades and the process required by the EPA to approve a monitoring, reporting and verification (MRV) plan under Subpart RR. In addition, in the event that the EPA (or the administrator of an Equivalent Program) approves the cessation of MRV at the relevant facility, section 45Q credits subject to the safe harbor that were previously claimed with respect to such facility would no longer be subject to recapture (the lookback to the immediate prior taxable year would no longer apply). Finally, qualified carbon oxide that is reported by a Reporting Claimant as sequestered in subsurface geologic formations in accordance with Subpart RR (or an Equivalent Program) or allocated to the credit claimant by a Reporting Counterparty in accordance with the rules described above will be treated as disposed of in secure geological storage.

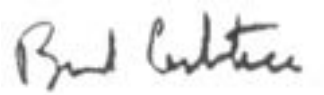
The proposed guidance allows a claimant to satisfy the safe harbor provision through compliance with Subpart RR of EPA's greenhouse gas reporting rule or an Equivalent Program that demonstrates secure geologic storage and quantifies the amount of carbon oxide sequestered. The Coalition did not reach consensus on standards to define an Equivalent Program. All Coalition members agree that the goal of any minimum criteria should be to maintain the integrity of the purpose of the section 45Q credit: ensuring that the claimant of the credit is, in fact, storing carbon oxide and assessing losses. Some Coalition members maintain that an Equivalent Program that demonstrates secure geologic storage and verifies credit integrity must be done through a mass-balance approach that includes sufficient site characterization and monitoring, reporting and verification methods, such as in Subpart RR of EPA's Greenhouse Gas Monitoring Rule. Though specific criteria for an Equivalent Program are not defined in the model guidance, this broad-based bipartisan coalition is working toward a set of recommendations that ensure environmental safeguards, preserve taxpayer integrity, and encourage commercial development of carbon capture technologies.

Appendix B provides additional information supporting our conclusion that this recapture period should be sufficient to fulfill the purposes of the recapture provision.[4] The appendix explains how, taken together, physics and flow mechanics, experience with and tools for subsurface management of buoyant fluids, combined with regulatory requirements suggest that: (i) cases of loss of volumes of CO_2 that would approach the commercial volumes sequestered during a two-year period are highly improbable; and (ii) potential CO_2 losses occur principally during injection and/or early in a project, while a field is being actively monitored for injection

[4] Dr. Bruce Hill, Chief Geoscientist, Clean Air Task Force was the principal author of Appendix B, which was also reviewed by several other leading experts in subsurface geologic storage of CO_2.

pressures and conformance. The appendix also includes a detailed bibliography with citations to relevant technical literature.

Sincerely,



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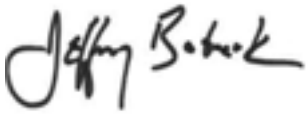

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Appendix A: Model Interim 45Q Guidance Prepared by the Carbon Capture Coalition for Submission to the U.S. Department of the Treasury - 11/21/2018

Notice 2018-[ ]

SECTION 1. PURPOSE

This notice sets forth interim guidance, pending the issuance of regulations, relating to the credit for carbon oxide sequestration under section 45Q of the Internal Revenue Code. Specifically, this notice provides guidance on determining eligibility for the credit, the amount of the credit, certain elections related to the credit, the beginning of construction of carbon capture equipment, and the recapture of the credits. This notice also sets forth a separate reporting requirement. The Internal Revenue Service (Service) and Treasury Department (Treasury) expect that the regulations will incorporate the rules set forth in this notice.

SECTION 2. BACKGROUND

.01. Section 45Q was originally enacted by § 115 of the Energy Improvement and Extension Act of 2008, Pub. L. No. 110-343, 122 Stat. 3829 (October 3, 2008), and amended by § 1131 of the American Recovery and Reinvestment Tax Act of 2009, Division B of Pub. L. 111-5, 123 Stat. 115 (Feb. 17, 2009) (prior § 45Q). Prior § 45Q(a) provided a credit for carbon dioxide (CO_2) sequestration that was generally available to a taxpayer that captured qualified CO_2 at a qualified facility and disposed of the CO_2 in secure geological storage within the United States. Notice 2009-83, 2009-44 I.R.B. 588, modified by Notice 2011-25, 2011-14 I.R.B. 604, provided interim guidance to taxpayers on the application of prior § 45Q. Prior § 45Q(e) provided that, at such time as the Service certified, in consultation with the EPA, that 75,000,000 metric tons of qualified CO_2 had been taken into account for purposes of § 45Q credit, the Service would publicly announce that the § 45Q credit would cease to be available for the calendar year following such announcement (the credit termination provision).

.02. Congress expanded and extended the § 45Q credit in § 41119(a) of the Bipartisan Budget Act of 2018, P.L. 115-123 (Feb. 9, 2018) (new § 45Q).[5] The 2018 amendments apply to taxable years beginning after December 31, 2017. *See* P.L. 115-123 § 41119(b). New § 45Q generally provides for a tax credit in an amount equal to a dollar value per metric ton of qualified carbon oxide where a taxpayer physically or contractually ensures the capture of qualified carbon oxide and its disposal, use as a tertiary injectant in a qualified enhanced oil or natural gas recovery (EOR) project and disposal of in secure geological storage, or utilization in certain ways described in § 45Q(f)(5). Under new § 45Q, credits are allowed during the 12-year period beginning on the date such carbon capture equipment was originally placed in service, with certain limitations.

[5] This notice references "new § 45Q" and "prior § 45Q" when necessary to distinguish between statutory provisions before and after the enactment of the Bipartisan Budget Act of 2018. Where such distinction is unnecessary, this notice references "§ 45Q."

.03. Section 45Q(h) provides that the Secretary of the Treasury (Secretary) may prescribe regulations and other guidance as may be necessary or appropriate to carry out § 45Q, including regulations or other guidance to—(i) ensure proper allocation under § 45Q(a) for qualified carbon oxide captured by a taxpayer during the taxable year ending after enactment (*i.e.*, February 9, 2018), and (ii) determine whether a facility is a qualified facility during such year.

.04. Section 45Q(f)(2) provides that the Secretary, in consultation with the Administrator of the Environmental Protection Agency (EPA), the Secretary of the Department of Energy (DOE), and the Secretary of the Department of Interior (DOI), shall establish regulations for determining adequate security measures for the geological storage of qualified carbon oxide such that the carbon oxide does not escape into the atmosphere.

.05. Section 45Q(f)(3) provides that, except as provided in regulations prescribed by the Secretary, the § 45Q credit is generally attributable as follows: (i) in the case of carbon capture equipment originally placed in service before February 9, 2018, to the person that captures and physically or contractually ensures the disposal, utilization, or use as a tertiary injectant of the qualified carbon oxide, and (ii) in the case of carbon capture equipment originally placed in service on or after February 9, 2018, to the person that owns the carbon capture equipment and physically or contractually ensures the capture and disposal, utilization, or use as a tertiary injectant of the qualified carbon oxide. In addition, § 45Q(f)(3)(B) provides that the taxpayer to whom the credit is attributable (as described in § 45Q(f)(3)(A) and section 5.01 of this notice) may elect, in the time and manner as the Secretary may prescribe by regulations, to have the person that disposes of the qualified carbon oxide, utilizes the carbon oxide, or uses the carbon oxide as a tertiary injectant, claim the credit in lieu of having the owner of the carbon capture equipment claim the credit.

.06. Section 45Q(f)(4) provides that the Secretary shall, by regulations, provide for recapturing the benefit of any credit allowable under § 45Q(a) with respect to any qualified carbon oxide that ceases to be captured, disposed of, or used as a tertiary injectant in a manner consistent with the requirements of § 45Q.

SECTION 3. TERMS AND DEFINITIONS

.01. Terms. For purposes of this notice,

(a) The term carbon oxide includes carbon dioxide (CO_2) and other carbon oxide,

(b) The terms disposal, storage, and sequestration are used interchangeably,

(c) The term credit refers to a tax credit and shall not be interpreted or construed as a carbon oxide allowance, permit, or any other carbon oxide emissions property right, and

(d) The term leakage refers to carbon oxide that ceases to be sequestered via escape or release to the atmosphere or ocean.

.02. Applicable Dollar Amount.

(a) Section 45Q(a)(3). Section 45Q(a)(3) generally provides a credit for qualified carbon oxide captured by the taxpayer using carbon capture equipment that is originally placed in service at a qualified facility on or after February 9, 2018, and disposed of by the taxpayer in secure geological storage but that is neither (i) used by the taxpayer as a tertiary injectant in a qualified EOR project and disposed of by the taxpayer in secure geological storage, nor (ii) utilized by the taxpayer in a manner described § 45Q(f)(5). For purposes of § 45Q(a)(3), applicable dollar amount means (i) for any taxable year beginning in a calendar year after 2016 and before 2027, the dollar amount established by linear interpolation between $22.66 for 2017 and $50 for 2026 for each calendar year during such period, and (ii) for any taxable year beginning in a calendar year after 2026, an amount equal to the product of $50 and the inflation adjustment factor for such calendar year determined under § 43(b)(3)(B) for such calendar year, determined by substituting 2025 for 1990.

(b) Section 45Q(a)(4). Section 45Q(a)(4) generally provides a credit for qualified carbon oxide captured by the taxpayer using carbon capture equipment that is originally placed in service at a qualified facility on or after February 9, 2018, and is either (i) used by the taxpayer as a tertiary injectant in a qualified EOR project and disposed of by the taxpayer in secure geological storage, or (ii) utilized by the taxpayer in a manner described § 45Q(f)(5). For purposes of § 45Q(a)(4), applicable dollar amount means (i) for any taxable year beginning in a calendar year after 2016 and before 2027, the dollar amount established by linear interpolation between $12.83 for 2017 and $35 for 2026 for each calendar year during such period, and (ii) for any taxable year beginning in a calendar year after 2026, an amount equal to the product of $35 and the inflation adjustment factor for such calendar year determined under § 43(b)(3)(B) for such calendar year, determined by substituting 2025 for 1990.

.03. Industrial Facility.

(a) Industrial facility refers to a facility that produces a carbon oxide stream from a fuel combustion source, a manufacturing process, or a fugitive carbon oxide emission source that, absent capture, injection and disposal or utilization, would otherwise be released into the atmosphere as industrial emission of greenhouse gas (GHG) or lead to such release.

(b) An industrial facility does not include a facility that produces carbon oxide from carbon oxide production wells at natural carbon-oxide-bearing formations.

.04. Direct Air Capture Facility. Direct air capture facility means any facility that uses carbon capture equipment to capture CO_2 directly from the ambient air, but not including any facility that captures CO_2 (i) that is deliberately released from naturally occurring subsurface springs or (ii) using natural photosynthesis.

.05. Qualified Carbon Oxide. Qualified carbon oxide means:

(a) For carbon capture equipment placed in service before February 9, 2018, CO_2 that is (i) captured from an industrial facility by such carbon capture equipment,

(ii) would otherwise be released into the atmosphere as an industrial emission of GHG or lead to such release, and (iii) is measured at the source of capture and verified at the point of disposal, injection, or utilization;

(b) For carbon capture equipment placed in service on or after February 9, 2018, any carbon oxide that is (i) captured from an industrial facility by such carbon capture equipment, (ii) would otherwise be released into the atmosphere as an industrial emission of GHG or lead to such release, and (iii) is measured at the source of capture and verified at the point of disposal, injection, or utilization; or

(c) in the case of a direct air capture facility, any CO_2 that is (i) captured directly from the ambient air, and (ii) is measured at the source of capture and verified at the point of disposal, injection, or utilization.

Qualified carbon oxide includes the initial deposit of captured carbon oxide used as a tertiary injectant, but it does not include carbon oxide that is recaptured, recycled, and re-injected as part of the qualified EOR process.

.06. Qualified EOR Project. Qualified EOR project has the same meaning given the term "qualified enhanced oil recovery project" under § 43(c)(2) by substituting "crude oil or natural gas" for "crude oil" in § 43(c)(2)(A)(i).

.07. Qualified Facility.

(a) Qualified facility means an industrial facility or direct air capture facility:

(i) the construction of which begins before January 1, 2024, and

(A) construction of carbon capture equipment begins before such date, or

(B) the original planning and design for such facility includes installation of carbon capture equipment; and

(ii) which

(A) in the case of a facility which emits not more than 500,000 metric tons of carbon oxide into the atmosphere during the taxable year, captures not less than 25,000 metric tons of qualified carbon oxide during the taxable year which is utilized through fixation or chemical conversion and measured as described in section 6 of this notice,

(B) in the case of an electricity generating facility not described in paragraph (A), above, captures not less than 500,000 metric tons of qualified carbon oxide during the taxable year, or

(C) in the case of a direct air capture facility, or any facility not described in paragraph (A) or (B), above, captures not less than 100,000 metric tons

of qualified carbon oxide during the taxable year. *See* § 45Q(f)(5)(A) and (B).

(b) Beginning of Construction. For purposes of § 45Q(d)(1) and section 3.07(a)(i) of this notice, a taxpayer may establish the beginning of construction by starting physical work of a significant nature (Physical Work Test). Alternatively, a taxpayer may establish the beginning of construction by meeting a safe harbor based on having paid or incurred five percent or more of the total cost of the industrial facility or direct air capture facility (Five Percent Safe Harbor). Both methods require that a taxpayer make continuous progress towards completion once construction has begun (Continuity Requirement). *See* Notice 2017-4, 2017-4 I.R.B. 541; Notice 2018-59, 2018-28 I.R.B. 196.

(c) Under new § 45Q(d), a qualified facility need not be owned by the taxpayer claiming the credit. *See* § 45Q(a) and (d) and (f)(3).

.08. Tertiary Injectant. Tertiary injectant has the same meaning as when used within § 193(b) and Treas. Reg. § 1.193-1(b).

.09. Disposal, Utilization, and Use.

(a) In General. As described in section 5 of this notice, in general, the § 45Q credit is attributable to a person who captures qualified carbon oxide and physically or contractually ensures its disposal, utilization, or use as a tertiary injectant. A person need not physically carry out these specified activities in order to claim the credit, as long as such person contractually ensures that the specified activity is carried out.

(b) Contractual Assurance. A person is treated as contractually ensuring that a specified activity is carried out if: (i) such person enters into a contract with another person that requires either (A) such other person to carry out such activity, or (B) such other person to require a third person to carry out such activity; and (ii) such contract includes commercially reasonable terms to enforce such other party's obligation to carry out such activity. For a description of information that must be retained and made available for inspection by each contractual counterparty, see section 9.02 of this notice.

(c) Capture. A person captures qualified carbon oxide when such person physically or contractually ensures the capture of such qualified carbon oxide that would otherwise be released into the atmosphere, or would lead to such release.

(d) Disposal. A person disposes of qualified carbon oxide in secure geological storage when such person physically or contractually disposes of such qualified carbon oxide in secure geological storage using adequate security measures under the provisions of section 5 of Notice 2009-83 (with the term "CO_2" replaced by "carbon oxide" throughout) or under such standards as may be set forth in future published guidance.

(e) Utilization. A person utilizes qualified carbon oxide when such person physically or contractually (i) fixes such qualified carbon oxide through photosynthesis or chemosynthesis, such as through the growing of algae or bacteria, (ii) chemically converts such qualified carbon

oxide to a material or chemical compound in which such qualified carbon oxide is securely stored, or (iii) uses such qualified carbon oxide for any other purpose for which a commercial market exists (with the exception of use as a tertiary injectant in a qualified EOR project), as prescribed in future published guidance.

(f) Use. A person uses qualified carbon oxide as a tertiary injectant in a qualified EOR project and disposes of such qualified carbon oxide in secure geological storage when such person physically or contractually ensures the use of such qualified carbon oxide as a tertiary injectant in a qualified EOR project and physically or contractually disposes of such qualified carbon oxide in secure geological storage.

.10. Applicable Facility. Applicable facility under § 45Q(f)(6)(B) means a qualified facility (i) which was placed in service before February 9, 2018, and (ii) for which no taxpayer claimed a § 45Q credit for any taxable year ending before February 9, 2018.

SECTION 4. APPLICATION OF SECTION 45Q CREDIT

.01. In General. For facilities placed in service prior to February 9, 2018, taxpayers who capture qualified carbon oxide from a qualified facility in a taxable year beginning after October 3, 2008, and meet all of the other requirements of § 45Q are eligible to claim the credit. For qualified facilities placed in service after February 8, 2018, the credit is available to the persons who own the carbon capture equipment and meet all of the other requirements of § 45Q.

.02. Section 45Q Credit Amount. The scope and amount of the new § 45Q credit depends on when carbon capture equipment is placed in service, the method of use, and the method of disposal of the qualified carbon oxide.

(a) For carbon capture equipment originally placed in service at a qualified facility before February 9, 2018,

(i) the credit amount is either,

(A) $20 per metric ton of qualified carbon oxide that is CO_2 and is captured by the taxpayer, disposed of by the taxpayer in secure geological storage, and neither (1) used by the taxpayer as a tertiary injectant in a qualified EOR project and disposed of in secure geological storage, nor (2) utilized by the taxpayer in a manner described in § 45Q(f)(5), or

(B) $10 per metric ton of qualified carbon oxide that is CO_2 and is captured by the taxpayer, used by the taxpayer as a tertiary injectant in a qualified EOR project, and either (1) used as a tertiary injectant in a qualified EOR project and disposed of in secure geological storage, or (2) utilized by the taxpayer in a manner described in § 45Q(f)(5); and

(ii) For any taxable year beginning in a calendar year after 2009, § 45Q(f)(7) provides for an amount equal to the product of credit amount stated in section 4.02(a)(i) of this notice and the inflation adjustment factor for such calendar year determined under § 43(b)(3)(B) for such calendar year, determined by substituting 2008 for 1990. *See, e.g.*, Notice 2018-40 § 3, 2018-20 I.R.B. 583 (May 11, 2018) (announcing inflation adjustment factor for 2017), *clarified by* Announcement 2018-9 2018-24 I.R.B. 752.

(b) For carbon capture equipment originally placed in service at a qualified facility on or after February 9, 2018,

(i) § 45Q(a)(3) allows a credit of the applicable dollar amount per metric ton of qualified carbon oxide captured by the taxpayer, disposed of in secure geological storage, and neither (A) used as a tertiary injectant in a qualified EOR project and disposed of in secure geological storage, nor (B) utilized by the taxpayer in a manner described in § 45Q(f)(5). For purposes of § 45Q(a)(3), applicable dollar amount means (A) for any taxable year beginning in a calendar year after 2016 and before 2027,

Calendar year beginning in	Applicable dollar amount for year
2017	$22.66
2018	$25.70
2019	$28.74
2020	$31.77
2021	$34.81
2022	$37.85
2023	$40.89
2024	$43.92
2025	$46.96
2026	$50.00

and (B) for any taxable year beginning in a calendar year after 2026, an amount equal to the product of $50 and the inflation adjustment factor for such calendar year determined under section 43(b)(3)(B) for such calendar year, determined by substituting 2025 for 1990.

(ii) § 45Q(a)(4) allows a credit of the applicable dollar amount per metric ton of qualified carbon oxide captured by the taxpayer, disposed of in secure geological storage, and either (A) used as a tertiary injectant in a qualified EOR project and disposed of in secure geological storage, or (B) utilized by the taxpayer in a manner described in § 45Q(f)(5). For purposes of § 45Q(a)(4), applicable dollar amount means (A) for any taxable year beginning in a calendar year after 2016 and before 2027,

Calendar year beginning in	Applicable dollar amount for year
2017	$12.83
2018	$15.29
2019	$17.76
2020	$20.22
2021	$22.68
2022	$25.15
2023	$27.61
2024	$30.07
2025	$32.54
2026	$35.00

and (B) for any taxable year beginning in a calendar year after 2026, an amount equal to the product of $35 and the inflation adjustment factor for such calendar year determined under section 43(b)(3)(B) for such calendar year, determined by substituting 2025 for 1990.

.03. Election to Use Alternative Credit Amount. Under § 45Q(b)(3), a taxpayer may elect to have the dollar amounts applicable under § 45Q(a)(1) or (2) apply in lieu of the dollar amounts applicable under § 45Q(a)(3) or (4), respectively, for each metric ton of qualified carbon oxide that is captured by the taxpayer using carbon capture equipment that is originally placed in service at a qualified facility on or after February 9, 2018. An eligible taxpayer may make such election by including a statement that the taxpayer is making an election under § 45Q(b)(3) on the income tax return of such taxpayer on which the § 45Q credits are claimed.

.04. Election for Applicable Facilities.

(a) Under § 45Q(f)(6), in the case of an applicable facility (as defined in section 3.10 of this notice), for any taxable year in which such facility captures not less than 500,000 metric tons of qualified carbon oxide during the taxable year, the person that owns the carbon capture equipment and physically or contractually ensures the capture and disposal, utilization, or use as a tertiary injectant of the qualified carbon oxide may elect to have such facility, and any carbon capture equipment placed in service at such facility, deemed as having been placed in service on February 9, 2018. If so elected, the credit amount under § 45Q(a)(3) or (4) would apply to such facility.

(b) An eligible person may make such election:

(i) In the case of a person who claims the § 45Q credits attributable to the applicable facility, by including a statement that the person is making an election under § 45Q(f)(6) on the income tax return of such person on which the § 45Q credits are claimed.

(ii) In any other case, by providing a certification, under penalties of perjury, to each taxpayer that is allowed to claim all or a portion of any § 45Q credits attributable to the applicable facility that such person is making an election under § 45Q(f)(6). Any person claiming all or a portion of any § 45Q credits attributable to the applicable facility shall include a statement that an election under § 45Q(f)(6) has been made on the income tax return of such person on which the § 45Q credits are claimed.

(c) An election under § 45Q(f)(6), once made, shall apply for the taxable year for which it is made and for all subsequent taxable years and may be revoked only with the consent of the Secretary.

.05. Credit Termination; Credit Period.

(a) For carbon capture equipment placed in service before February 9, 2018, § 45Q(g) provides that the § 45Q credit shall apply with respect to qualified carbon oxide that is CO_2 and is captured using such equipment before the end of the calendar year in which the Secretary, in consultation with the EPA, certifies that, during the period beginning after October 3, 2008, a total of 75,000,000 metric tons of such CO_2 have been taken into account in accordance with (i) § 45Q(a), as in effect on February 8, 2018, and (ii) § 45Q(a)(1) and (2). The Service provides annual updates on the amount of qualified carbon oxide taken into account under this provision. *See, e.g.*, Notice 2018-40 § 4 (update on tax credit utilization). At the time of such certification, the Service will publicly announce that the credit available under prior § 45Q will cease to be available for the calendar year following such announcement. Where § 45Q credits are disallowed by the Service, they shall not be taken into account for purposes of the 75,000,000 metric ton limit.

(b) For carbon capture equipment placed in service on or after February 9, 2018, § 45Q(a)(3) and (4) provide that the § 45Q credit shall be available with respect to qualified carbon oxide captured by the taxpayer during the 12-year period beginning on the date the equipment was originally placed in service.

(c) In the event that:

(i) there is an interruption of the capture, disposal, use as a tertiary injectant, or utilization of qualified carbon dioxide attributable to carbon capture equipment;

(ii) such interruption results from an event of force majeure (including an act of God, war, strike, or other similar event beyond the control of the taxpayer);

(iii) the taxpayer makes commercially reasonable efforts to cause the capture, disposal, use as a tertiary injectant, or utilization of such qualified carbon oxide to resume; and

(iv) such interruption persists for at least twenty-one calendar days,

then the 12-year credit period, described in section 4.05(b) of this notice, with respect to such carbon capture equipment shall be tolled until such time as one of the conditions described in clauses (i) through (iii) above is no longer met. In addition, the 25,000, 100,000, and 500,000 metric ton thresholds described in section 3.07 of this notice shall be adjusted, on a pro rata basis, to account for any period during which the 12-year credit period is tolled under this section 4.05(c).

.06. Carbon Oxide Measured by Mass.

(a) Under § 45Q(c)(1), to claim a § 45Q credit, the mass (weight) of qualified carbon oxide must be measured at the source of capture and must be verified at the point of disposal in secure geological storage, at the point of use as a tertiary injectant in a qualified EOR project and disposed of in secure geological storage, or point of utilization. The amount of qualified carbon oxide for purposes of the § 45Q credit is presumed to be the lesser of the mass measured at the point of capture and the mass verified at the point of disposal, injection, or utilization, unless the taxpayer can establish to the satisfaction of the Service that the greater amount is the correct amount.

(b) For the purpose of calculating the § 45Q credit, a metric ton of carbon oxide includes only the contained mass of carbon oxide. The mass of any other substance, such as water or impurities, is not included in the calculation. For example, if a metric ton of a substance that is bought and sold as "carbon oxide" is 95 percent pure carbon oxide by mass, for purposes of the § 45Q credit, 1.0526 tons (equivalent to 1 divided by 0.95) of the 95 percent pure substance is considered to be one metric ton of carbon oxide.

.07. Captured and Disposed of or Used within the United States. The § 45Q credit applies only to qualified carbon oxide the capture and disposal, use, or utilization of which is within the United States (as defined in § 638(1)) or a possession of the United States (as defined in § 638(2)).

.08. Allocation of § 45Q Credit Among Qualified Facility Owners. Eligibility for the § 45Q credit is based on the total amount of qualified carbon oxide captured at a qualified facility and disposed of in secure geological storage, used as a tertiary injectant in a qualified

EOR project and disposed of in secure geological storage, or utilized during a taxable year subject to the following:

(a) If the qualified facility is owned by a partnership that has not made a valid election under § 761(a), the partnership will be considered the taxpayer for purposes of this notice. In such cases, the § 45Q credit must be allocated in accordance with § 1.704-1(b)(4)(ii).

(b) If the qualified facility is owned by a partnership that has made a valid § 761(a) election, then each partner in the partnership will be considered the taxpayer for purposes of this notice. In such case, the taxpayer may claim the § 45Q credit in accordance with its portion of the total amount of qualified carbon oxide that is commensurate with its undivided ownership of the qualified facility.

SECTION 5. CREDIT ATTRIBUTABLE TO TAXPAYER

.01. In General. Under § 45Q(f)(3), and except as provided in section 5.02 of this notice, any § 45Q credit shall be attributable to—

(a) in the case of qualified carbon oxide captured using carbon capture equipment which is originally placed in service at a qualified facility before February 9, 2018, the person that captures and physically or contractually ensures the disposal, utilization, or use of the qualified carbon oxide, within the meaning of section 3.09 of this notice, and

(b) in the case of qualified carbon oxide captured using carbon capture equipment which is originally placed in service at a qualified facility on or after February 9, 2018, the person that (i) owns the carbon capture equipment, (ii) physically or contractually ensures the capture of qualified carbon dioxide, and (iii) physically or contractually ensures the disposal, utilization, or use of the qualified carbon oxide, within the meaning of section 3.09 of this notice (in either case, a Default Claimant).

.02. Election.

(a) Effect of Election. If a Default Claimant makes an election under this section 5.02 for a taxable year, then the § 45Q credit for such taxable year (or a portion thereof as specified in the statement described in section 5.02(b) of this notice)—(i) shall be allowable to a person that physically or contractually ensures the capture of or disposes, utilizes, or uses the qualified carbon oxide, within the meaning of section 3.09 of this notice (an Alternative Claimant), and (ii) shall not be allowable to the Default Claimant.

(b) Manner of Making Election. A Default Claimant may make an election under this section 5.02 for a taxable year by attaching a statement to such Default Claimant's timely filed (including extensions) federal income tax return for such taxable year that includes the following information:

(i) the name, address, and taxpayer identification number of the Default Claimant;

(ii) the name, address, and taxpayer identification number of the Alternative Claimant who will claim § 45Q credits under section 5.02(a) of this notice;

(iii) the mass (in metric tons) of qualified carbon oxide captured and disposed of, used, or utilized, within the meaning of section 3.09 of this notice, in the taxable year by the Default Claimant; and

(iv) the portion of the qualified carbon oxide described in clause (iii), above, to which the election under this section 5.02 will apply.

(c) Other Requirements. The election described in this section 5.02 for a taxable year shall only be effective if the following requirements are met:

(i) the Alternative Claimant must provide a statement, under penalties of perjury, to the Default Claimant, certifying that the Alternative Claimant has physically or contractually ensured the capture of or disposed of, used, or utilized (within the meaning of section 3.09 of this notice) an amount of qualified carbon oxide in the taxable year that is not less than the portion of qualified carbon oxide described in section 5.02(b)(iv) of this notice; and

(ii) the Alternative Claimant must attach a statement to the Alternative Claimant's timely filed (including extensions) federal income tax return for the taxable year that includes the information described in section 5.02(b) of this notice.

SECTION 6. UTILIZATION OF CARBON OXIDE

.01. Measurement.

(a) In General. For purposes of § 45Q(a)(2)(B)(ii) or (4)(B)(ii), the amount of qualified carbon oxide utilized by the taxpayer in the taxable year shall be equal to the mass of qualified carbon oxide which the taxpayer demonstrates, based upon an analysis of lifecycle greenhouse gas emissions and subject to such requirements as the Secretary, in consultation with DOE and EPA, determines appropriate, were—(i) captured and permanently isolated from the atmosphere, or (ii) displaced from being emitted into the atmosphere, through use of fixation, chemical conversion, or another process as described in section 3.09(e) of this notice.

(b) Lifecycle Greenhouse Gas Emissions. For purposes of section 6.02(a) of this notice, the term "lifecycle greenhouse gas emissions" has the same meaning given such term under subparagraph (H) of section 211(o)(1) of the Clean Air Act (42 U.S.C. § 7545(o)(1)), as in effect on February 9, 2018, except that "product" shall be substituted for "fuel" each place it appears in such subparagraph.

SECTION 7. RECAPTURE

.01. In General. When qualified carbon oxide for which a credit has been allowed under § 45Q(a) ceases to be disposed of in secure geological storage, or used as a tertiary injectant and disposed of in secure geological storage, in a manner consistent with the requirements of § 45Q,

the credit is subject to recapture under § 45Q(f)(4). Recapture of the credit is limited, and may only arise in the year of the leakage or other event that causes the qualified carbon oxide no longer to be disposed of in secure geological storage, or used as a tertiary injectant and disposed of in secure geological storage, in a manner consistent with the requirements of § 45Q.

.02. Safe Harbor.

(a) In General. This section 7.02 provides a safe harbor for certain carbon oxide sequestered in compliance with subpart RR of the EPA Mandatory Greenhouse Gas Reporting Standards (40 C.F.R. pt. 98) ("Subpart RR") or a program that has been approved by the EPA that demonstrates secure geologic storage and quantifies the amount of carbon oxide that is sequestered (an "Equivalent Program").

(b) Requirements to Satisfy Safe Harbor. To meet the requirements of the safe harbor described in this section 7.02:

(i) Either (A) the credit claimant (whether a Default Claimant or Alternative Claimant) must comply with Subpart RR or an Equivalent Program (a "Reporting Claimant"), or (B) the credit claimant must contractually ensure that an owner or operator of a well or group of wells that injects CO_2 complies with Subpart RR or an Equivalent Program (a "Reporting Counterparty");

(ii) The § 45Q credits claimed by the credit claimant must be computed based on the total annual CO_2 mass sequestered in subsurface geologic formations, calculated in accordance with the procedure specified in Equation RR-11 or Equation RR-12 of 40 C.F.R. § 98.443, as applicable (or the corresponding provisions of an Equivalent Program that compute CO_2 mass sequestered on a net mass-balance basis);

(iii) If a Reporting Counterparty receives CO_2 from multiple sources, including from the credit claimant, then the credit claimant must contractually ensure that:

(A) The Reporting Counterparty will allocate the CO_2 mass sequestered in subsurface geologic formations at the facility of the Reporting Counterparty in a reporting year in proportion to the mass of CO_2 received from the credit claimant. This may be expressed as a formula:

$$CO_{2S,t} = CO_{2R,t} / CO_{2R} * CO_{2S}.$$

Where:

- $CO_{2S,t}$ is the mass of sequestered CO_2 allocated to the credit claimant for the reporting year,

- $CO_{2R,t}$ is the total mass of CO_2 received from the credit claimant in the reporting year,

- CO_{2R} is the total mass of CO_2 received by the Reporting Counterparty in the reporting year (calculated using Equations RR-1 to RR-3 of 40 C.F.R. § 98.443 or the corresponding amounts calculated under an Equivalent Program) from the credit claimant and all other sources,

- CO_{2S} is the total annual CO_2 mass treated as sequestered in subsurface geologic formations at the facility of the Reporting Counterparty in the reporting year (calculated using Equation RR-11 or RR-12 of 40 C.F.R. § 98.443 or the corresponding amounts calculated under an Equivalent Program).

(B) The Reporting Counterparty will maintain records supporting this allocation.

(C) The Reporting Counterparty will provide the credit claimant with a certification of the amount of such credit claimant's allocation of the CO_2 mass sequestered in subsurface geologic formations at the facility of the Reporting Counterparty.

(c) Effect of Safe Harbor. If a person claiming § 45Q credits satisfies the requirements described in section 7.02(b) of this notice, then:

(i) Qualified carbon oxide that is reported by a Reporting Claimant as sequestered in subsurface geologic formations in accordance with Subpart RR (or an Equivalent Program) or allocated to the credit claimant by a Reporting Counterparty in accordance with the rules described in section 7.02(b)(iii)(A) of this notice shall be treated as disposed of in secure geological storage.

(ii) If the net amount of sequestered CO_2 calculated for a given taxable year is negative, such amount shall be subject to recapture, but only from the immediately prior taxable year. Amounts of sequestered CO_2 that met the requirements of the safe harbor in any taxable years before the immediately prior taxable year shall not be subject to recapture.

(iii) In the event that the EPA (or the administrator of an Equivalent Program) approves the cessation of monitoring, verification, and reporting at the facility at which CO_2 that met the requirements of the safe harbor was sequestered, the § 45Q credits that were previously claimed with respect to such facility and met the requirements of the safe harbor shall no longer be subject to recapture.

SECTION 8. REPORTING REQUIREMENTS

.01. Annual Reports. A taxpayer that has claimed the § 45Q credit on a tax return must submit an annual report to the Service containing the following information:

(a) The name, address, and taxpayer identification number of the reporting taxpayer, and any parties with which the taxpayer contractually ensures the capture, disposal, utilization, or use of the qualified carbon oxide, within the meaning of section 3.09 of this notice;

(b) The name and location of the qualified facilities at which the carbon oxide was captured;

(c) The mass (in metric tons) of qualified carbon oxide for the taxable year that has been taken into account for purposes of claiming the § 45Q credit, as measured at the source of capture and verified at the point of disposal, injection, or utilization;

(d) Any changes in the information included in prior annual reports submitted under section 8.01 of this notice, including adjustments to the mass (in metric tons) of qualified carbon oxide taken into account for purposes of the § 45Q credit in prior taxable years;

(e) The mass of any qualified carbon oxide previously taken into account for purposes of § 45Q(a) which leaked or ceased to be disposed of in secure geological storage, utilized, or used as a tertiary injectant in a qualified EOR project and disposed of in secure geological storage during the taxable year; and

(f) A declaration, applicable to the report and any accompanying documents, signed by a person currently authorized to bind the taxpayer in these matters, in the following form:

> Under penalties of perjury, I declare that I have examined this report, including accompanying documents, and to the best of my knowledge and belief, the facts presented in support of this report are true, correct, and complete.

.02. Time for Filing Reports. The annual report described in section 8.01 of this notice must be filed with the Service at the following address not later than the last day of the second calendar month following the month during which the tax return on which the § 45Q credit is claimed was due (including extensions):

> Internal Revenue Service
> Attn: CC:PSI:6, Room 5116
> P.O. Box 14095
> Benjamin Franklin Station
> Washington, D.C. 20044

SECTION 9. RECORDKEEPING REQUIREMENT

.01. In General. A taxpayer is not required to attach documentation to the return on which the credit is claimed. However, § 6001 provides that every person liable for any tax imposed by the Code, or for the collection thereof, must keep such records, render such statements, make such returns, and comply with such rules and regulations as the Secretary may from time to time prescribe. *See* Treas. Reg. § 1.6001-1(e).

.02. Information Must Be Available for Inspection. The taxpayer must retain in its records documentation establishing that the taxpayer qualifies for the § 45Q credit. The taxpayer must, upon request, make such documentation available for inspection by the Service regardless of whether the taxpayer physically or contractually ensures capture, disposal in secure geological storage, utilization, or use as a tertiary injectant followed by disposal in secure geological storage. Such necessary documentation includes, but is not limited to, the following:

(a) Methodology, inputs, and equations used to measure the amount of carbon oxide at the source of capture and verify the amount at the point of disposal or injection.

(b) Evidence of disposal, utilization, or use of qualified carbon oxide, within the meaning of section 3.09 of this notice.

(c) Methodology, inputs, and equations used to calculate the amount of carbon oxide that was once but has ceased to be disposed of in secure geological storage, utilized, or used as a tertiary injectant in a qualified EOR project and disposed of in secure geological storage.

(d) All contracts entered into by the taxpayer and any contracting party that contractually ensures the capture, disposal, utilization, or use of qualified carbon oxide, within the meaning of section 3.09 of this notice.

A taxpayer that contractually ensures the capture, disposal, utilization, or use of qualified carbon oxide, within the meaning of section 3.09 of this notice, must also contractually ensure that their counterparty will: (i) retain in its records documentation establishing such capture, disposal, utilization, or use of qualified carbon oxide, including, but not limited to, the documents specified in this section 9.02; and (ii) upon request, make such documentation available for inspection by the Service.

Appendix B: Characterizing Retention and Loss of CO_2 from Geologic Carbon Storage Projects

This document was prepared to accompany the Coalition's model guidance in order to provide technical background for the proposed safe harbor in the guidance to address the financial risk of credit recapture.

Inherent characteristics of deep geologic carbon storage, accompanied by regulatory requirements for injected and stored CO_2, suggest that the probability of the leakage of CO_2 to the atmosphere, in volumes significant relative to the large commercial volumes injected, is low. Evidence that large CO_2 losses from unexpected project leakage would be limited comes from: 1) physics of geologic trapping of injected CO_2, 2) decades of experience with injection of CO_2 and other buoyant gas analogs and 3) existing regulatory requirements for selecting and operating CO_2 injection and storage sites, including requirements for injection well construction and mechanical integrity.

1. Physics of trapping injected CO_2

We know from oil and gas experience that accidental production (i.e., release) or loss of CO_2 is limited by physics. A blowout with its self-sustaining production will also be self-limited by progressive formation pressure decrease and by CO_2 trapping in rock pores such that the flow to the surface diminishes quickly. In CO_2 EOR production this means that continued production from a depleted reservoir must commonly be augmented by pumping because reservoir driving forces are reduced over time by: 1) pressure depletion, and 2) reduced CO_2 saturation near the well. As reservoir fluids are produced, pressure is decreased in the reservoir and flow will naturally diminish over time to the point where reservoir pressure plus CO_2 buoyancy drive are not sufficient to push fluids from the subsurface to the top of the well, at which point artificial lift (e.g., pumping) is required. This means that in a leakage scenario, the forces driving the CO_2 loss will progressively diminish to zero. Moreover, CO_2 has lower viscosity than the formation water and will flow more easily and be produced faster than brine, such that the CO_2 near the well that could escape will likely do so only over a limited time. As a result, any self-sustaining leakage of CO_2 will be limited. Another mechanism that works to limit CO_2 flow to the surface during this process is the trapping of bubbles of CO_2 that are not able to overcome capillary forces as needed for them to flow from pore to pore through the reservoir and out to the surface. Other factors such as dissolution of CO_2 into brine and in some settings, mineral trapping can also decrease the possibility of accidental losses.

2. Experience with injection of CO_2 and other buoyant gas analogs

The 50-plus-year track record of the EOR industry is informative for geologic storage and provides strong evidence of the low probability of significant losses of CO_2 from leakage events.[i,ii] Approximately 65 million tons of CO_2 are currently transported through about 4,500 miles of pipelines linking sources and projects and EOR projects in the U.S. today.[iii] Today's EOR operators treat CO_2 as a valuable commodity by working to eliminate loss of CO_2 through leak prevention, by recapture and recycle processes, by tracking CO_2 flooding in the subsurface, and by employing telemetry that immediately alerts central operations of injection and production problems so that they can be immediately remedied. In saline storage, surface facilities such as these are unnecessary and therefore CO_2 handling is minimal and as a result leakage pathways are even fewer.

Historical data on well blowouts from EOR projects are informative relative to the potential for large volume leakage from geologic carbon storage sites. In practice, well blowouts in EOR have been small in number relative to the total numbers of existing active and inactive wells. Note that in most

cases, despite the vivid images of black geysers, a blow-out represents a very rare instance of well failure--not to diminish the direct environmental damage that may ensue from such an event. Porse et. al. (2014) describe a frequency in Texas oil and gas (including CO_2 EOR) of about 0.1%—one in one thousand wells.[iv,v] Wells actively undergoing steam injection recovery in California between 1991 and 2004 had a frequency of one in ten thousand. Moreover, the authors of the California study report that the rate of blowouts declined substantially over the study period—most likely as a result of increasing experience, technology, or safety culture, and noted only one poorly located (legacy) well that indicated blow-out over a century of oil drilling and production. A follow-up to the California study suggested that blowouts were most likely early in flooding as the plume edge reaches abandoned legacy wells.[vi] As a result, any leakage from abandoned legacy wells is likely to be detected—and resolved—long before the end of the section 45Q credit period or the monitoring, reporting and verification period. Several significant abandoned (legacy) well failures have been reported in the press over the past decade, e.g., Mississippi (2007, 2011), and Texas (2015).[vii,viii] Although significant environmental damage resulted from the eruption of CO_2-carrying oil brines to the ground surface, no large volumetric losses of CO_2 were publicly reported. These reported incidents have led to increased industry awareness of poorly plugged legacy wells, and of those that were stripped of their casing to meet World War II demands for scrap iron. One important conclusion from these studies is that blowouts and attendant potential CO_2 losses are greatest and occur principally during injection and/or early in a project, while a field is being actively monitored for injection pressures and conformance.[ix]

Natural gas storage safety has been studied extensively and also informs blowout risk. While a partial analog for carbon storage, natural gas storage is different in that the natural gas is commonly injected in the gaseous phase into a cavern or a dry formation—one that does not contain a brine.[x] Typically, CO_2 is easier to extract from a dry formation than from water and the working gas flowing up the well during natural gas withdrawal is not hindered by slow process of desorption from the reservoir or ebullition. Furthermore, many natural gas storage wells were constructed prior to 1980 and were allowed in many regulatory jurisdictions to inject and produce with risky single point loss protection and well construction without redundant gas loss barriers. As a result, injection and storage of CO_2 under UIC Class II or UIC Class VI and using current techniques is substantially less risky than natural gas storage. Furthermore, although the natural gas is not dissolved in the reservoir formation water like CO_2 and the gas may flow much more easily, not all of the previously injected and stored gas can be recovered. It is also important to note that natural gas has intrinsic gaseous properties that make it easier to extract from reservoir rock than supercritical dense phase CO_2, which expands if it is depressurized. Natural gas storage incidents with large volume product loss are very rare.[xi] Estimates of well failure probability found in the literature suggest they as uncommon as 10 in a million.[xii] In one study, the statistical probability for a major incident from a well failure was found to be 2 in 100,000 per well per year, or once every 49,000 years of well site operation.[xiii] Only one U.S. incidence since 2009 was found to represent a high level of severity in depleted gas field (Aliso Canyon).[xiv] A 2017 study modeled the potential loss of CO_2, based on the 2015 Aliso Canyon incident, one of the worst recorded natural gas storage blow-outs in U.S. history, which took 111 days to contain. When modeled as a CO_2 blowout, 57,000 tons of CO_2 would have been lost--less than one-half of one percent of the stored gas. (For context, this is about 5 percent of a 1 million-ton annual injection for a small commercial scale carbon storage project.)[xv]

3. Regulatory requirements for selecting and operating a CO_2 injection and storage site

Federal and some state regulatory requirements (e.g., Texas, California, North Dakota)[xvi,xvii,xviii] govern injection of CO_2. Under the Safe Drinking Water Act's Underground Injection and Control

Rules, Class II (EOR) and Class VI (saline), injected fluids must be isolated from an underground source of drinking water (USDW) (and therefore isolated from reaching the surface) by a demonstrated geologic confining system.[xix] Confining systems are typically made up of thick rock sequences characterized by low-permeability mudrock and shale, salt deposits, or low-permeability carbonate rocks. Confining systems are multi-layered, often with multiple non-transmissive zones. The integrity of the confining system in the area of elevated pressure or buoyant CO_2 must be proven by assessment of any potential leakage paths, such as flawed existing "legacy" wells (where storage is in depleted oil fields) or natural conduits such as transmissive fractures or faults.

Monitoring and verification requirements for projects opting in to storage under the Greenhouse Gas Reporting Program (GHGRP) subpart RR, provide additional assurance that CO2 injected for storage is secure in the subsurface. Current CO_2 utilization and storage projects (suppliers, injectors, and geologic storage operators) reporting under the GHGRP, may be found at: https://www.epa.gov/ghgreporting/capture-supply-and-underground-injection-carbon-dioxide.

In EOR projects, injected CO_2 is produced with oil, captured at a separation and recycle plant and re-injected. Subsurface pressure and CO_2 plume areas are managed by fluid withdrawal during production. Injection wells are surrounded with multiple production wells (e.g., a "five-spot" is an injector well surrounded by four producers at the corners of a square). This means that the "drive" in the subsurface is typically artificially induced and can be shut off by the EOR operator when a pressure drop in the system is reported by the field monitoring system, thereby allowing for well reentry and repair and therefore limiting CO_2 loss and damage to resources. However, heterogeneity in the subsurface formation rock properties can result in transgression of CO_2 outside of the injection and production pattern. Such out-of-pattern migration can result in production of CO_2 by wells in conventional production and lead to loss of CO_2. Out-of-pattern migration may represent an upper bound for loss in EOR geologic storage, because wells are being actively pumped and pressure maintained by continuous injection. Documentation of such accidental production is not usually available but are well–known and aggressively managed by operators. Several management strategies are used: 1) all the wells in a reservoir are co-operated as a unit, so that no losses will go undetected, and 2) water curtains, a row of water injection wells at project boundaries will limit the movement of the injected CO_2 to within the unit.

Taken together, physics and flow mechanics, experience with and tools for subsurface management of buoyant fluids, combined with regulatory requirements suggest that cases of loss of volumes of CO_2 that would approach the commercial volumes sequestered during a two-year period are highly improbable.

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[1] Porse, S., Wade, S., Hovorka, S. (2014). Can we treat CO2 well blowouts like routine plumbing problems? A study of the incidence, impact and perception of loss of well control. Energy Procedia 63 7149-7161.
[1] Jordan, P., and Benson, S., (2008). Well blowout rates and consequences in California Oil and Gas District 4 from 1991 to 2005: Implications for geological storage of carbon dioxide. Lawrence Berkeley National Laboratory Publication. Available at: https://link.springer.com/article/10.1007%2Fs00254-008-1403-0.
[1] NETL (20150) A review of CO2 pipeline infrastruture in the US. See: https://www.energy.gov/sites/prod/files/2015/04/f22/QER%20Analysis%20-%20A%20Review%20of%20the%20CO2%20Pipeline%20Infrastructure%20in%20the%20U.S_0.pdf
[1] Op. Cit., Porse et al (2014)
[1] A database of well failures in Texas may be found at: http://www.rrc.state.tx.us/oil-gas/compliance-enforcement/blowouts-and-well-control-problems/

[1] Jordan, P. and Carey, W.(2016) Steam blowouts in California oil and gas District 4: Comparison of the roles of initial defects versus well aging and implications for well blowouts in geologic carbon storage projects.
[1] See, e.g., Denbury paying one of the largest fines ever to MDEQ for blowout. Mississippi Business Journal, July 26, 2013. Available at: http://msbusiness.com/2013/07/denbury-paying-one-of-largest-fines-ever-to-mdeq-for-blowout/
[1] https://dfw.cbslocal.com/2015/12/08/hydrogen-sulfide-concerns-in-west-texas-oil-well-blowout/
[1] See, e.g. https://petrowiki.org/Glossary:Conformance
[1] Ensuring safe and reliable underground natural gas storage. Final report of the Interagency Task Force on Natural Gas Safety. October 2016.
[1] Evans, D. J., & Schultz, R. A. (2017, August 28). Analysis of Occurrences at Underground Fuel Storage Facilities and Assessment of the Main Mechanisms Leading to Loss of Storage Integrity. American Rock Mechanics Association.
[1] Keeley, D. (2008) Failure rates for underground gas storage. Significance for land use planning assessments. U.K. Heath and Safety Laboratory research report RR671.
[1] PAPANIKOLAU, N., LAU, B. M. L., HOBBS, W. A. & GALE, J. 2006. Safe storage of CO2: experience from the natural gas storage industry. In: RØKKE, N. A., BOLLAND, O., O'BRIEN, D. ET AL. (eds) The 8th International Conference on Greenhouse Gas Control Technologies, Abstracts volume, 19–22 June, Trondheim, Norway. Elsevier.
[1] Op. Cit.: Evans, D. J., & Schultz, R. A. (2017, August 28). Analysis of Occurrences at Underground Fuel Storage Facilities and Assessment of the Main Mechanisms Leading to Loss of Storage Integrity. American Rock Mechanics Association.
[1] Lindberg, E., Bergmo, P., Torsaeter, M., and Grimstad, A. (2017). Aliso Canyon leakage as an analogue for worst-case CO2 leakage and quantification of acceptable loss. Energy Procedia 114, 4279-4286.
[1] See CA at: https://www.arb.ca.gov/cc/ccs/ccs.htm
[1] See ND at: https://www.dmr.nd.gov/oilgas/GeoStorageofCO2.asp
[1] See TX at: http://txrules.elaws.us/rule/title16_chapter5
[1] See: https://www.epa.gov/uic/underground-injection-control-regulations-and-safe-drinking-water-act-provisions

Attachment 4

Model Guidance on Beginning of Construction

Beginning of Construction for the Carbon Oxide Sequestration Tax Credit under Section 45Q
Notice 2019-xx

SECTION 1. PURPOSE

On February 9, 2018, the Bipartisan Budget Act of 2018, Pub. L. No. 115-123, § 41119, 132 Stat. 162 (BBA 2018), extended and modified the carbon oxide sequestration tax credit (COSTC) under § 45Q of the Internal Revenue Code (Code). Prior to the BBA 2018, § 45Q did not require a qualified facility or carbon capture equipment to commence construction before, or be placed in service before, any particular date. BBA 2018 modified the definition of a qualified facility and carbon capture equipment under § 45Q by establishing a beginning of construction requirement. As modified, § 45Q includes requirements that the construction of a qualified facility must begin before January 1, 2024, and that either (a) the original planning and design for the qualified facility includes installation of carbon capture equipment or (b) the construction of the carbon capture equipment begins before January 1, 2024.

This notice provides guidance to determine when construction has begun on a qualified facility and carbon capture equipment that is eligible for the § 45Q credit. It provides two methods for taxpayers to establish the beginning of construction (Physical Work Test and Five Percent Safe Harbor), a Continuity Requirement for both methods, rules for transferring a qualified facility and carbon capture equipment, and additional rules applicable to the beginning of construction requirement of § 45Q.

SECTION 2. BACKGROUND

.01 In general. Section 45Q provides that the COSTC for any taxable year is based on the volume of qualified carbon oxide captured during such taxable year by a qualified facility. Prior to BBA 2018, § 45Q credits would no longer be available the calendar year following the date that the Service announced that it had certified, in consultation with the EPA, that 75,000,000 metric tons of qualified CO_2 had been taken into account for purposes of § 45Q credit. Under the BBA 2018, that credit termination provision does not apply to certain qualified facilities and carbon capture equipment placed into service on or after February 9, 2018 (the date of enactment of the BBA 2018), and instead § 45Q credits are allowed for those qualified facilities and carbon capture equipment during the 12-year period beginning on the date such carbon capture equipment was originally placed in service. In addition, the value of the COSTC is dependent on whether the carbon capture equipment was originally placed in service at a qualified facility before February 9, 2018 (the date of enactment of the BBA 2018), or on or after that date.

For qualified carbon oxide captured by carbon capture equipment originally placed in service at a qualified facility on or after February 9, 2018, eligibility for the COSTC is dependent upon meeting certain deadlines for beginning construction on the qualified facility and carbon capture equipment and placing the qualified facility and carbon capture equipment in service. The construction of a qualified facility must begin before January 1, 2024. In addition, if the original planning and design for the qualified facility does not include installation of carbon capture equipment, then the construction of the carbon capture equipment that is part of the qualified facility must also begin before January 1, 2024.

SECTION 3. METHODS FOR ESTABLISHING BEGINNING OF CONSTRUCTION

.01 In general. This notice provides two methods for a taxpayer to establish that construction of a qualified facility or carbon capture equipment has begun for purposes of the COSTC under § 45Q. A taxpayer may establish the beginning of construction by starting physical work of a significant nature as set forth in section 4 of this notice (Physical Work Test). Alternatively, a taxpayer may establish the beginning of construction by meeting a safe harbor based on having paid or incurred five percent or more of the total cost of the qualified facility or carbon capture equipment as set forth in section 5 of this notice (Five Percent Safe Harbor).

Both methods require that a taxpayer make continuous progress towards completion once construction has begun (Continuity Requirement). Section 6 of this notice discusses the Continuity Requirement and provides a safe harbor for satisfying this requirement (Continuity Safe Harbor).

.02 Combination of methods. Although a taxpayer may satisfy both methods of establishing the beginning of construction, construction will be deemed to have begun on the date the taxpayer first satisfies one of the two methods. For example, if a taxpayer performs physical work of a significant nature on a qualified facility or carbon capture equipment in 2019, and then pays or incurs five percent or more of the total cost of the qualified facility or carbon capture equipment in 2020, construction will be deemed to begin in 2019 under the Physical Work Test, not in 2020 under the Five Percent Safe Harbor. Thus, the Continuity Safe Harbor will be applied beginning in 2019, not in 2020. This section 3.02 applies to a qualified facility or carbon capture equipment the construction of which begins, as determined under the earlier of either the Physical Work Test or the Five Percent Safe Harbor, after December 31, 2018.

SECTION 4. PHYSICAL WORK TEST

.01 In general. Construction of a qualified facility or carbon capture equipment begins when physical work of a significant nature begins. Work performed by the taxpayer and work performed for the taxpayer by other persons under a binding written contract that is entered into prior to the manufacture, construction, or production of the qualified facility or carbon capture equipment, or components of qualified facility or carbon capture equipment for use by the taxpayer in the taxpayer's trade or business (or for the taxpayer's production of income), is taken into account to determine whether construction has begun. Whether and when a taxpayer has begun construction of a qualified facility or carbon capture equipment will depend on the relevant facts and circumstances. The Service will closely scrutinize a qualified facility or carbon capture equipment and may determine that construction has not begun on that facility or equipment if a taxpayer does not maintain a continuous program of construction (as determined under section 6.01 of this notice).

.02 Physical Work of a Significant Nature. The Physical Work Test requires that a taxpayer begin physical work of a significant nature. This test focuses on the nature of the work performed, not the amount or the cost. Assuming that physical work performed is of a significant nature, there is no fixed minimum amount of work or monetary or percentage threshold required to satisfy the Physical Work Test. Both off-site and on-site work may be taken into account for purposes of demonstrating that physical work of a significant nature has begun (see section 7.04 of this notice).

(1) Off-Site Physical Work of a Significant Nature. Generally, off-site physical work of a significant nature may include the manufacture of components, mounting equipment, support structures such as racks, skids and rails, scrubbers, compressors, motors, regenerators, turbines, engines, vessels, piping, pumps, heat exchangers, and gas separation, liquification, or processing equipment.

(2) On-Site Physical Work of a Significant Nature. This non-exclusive list of examples is intended to illustrate on-site physical work of a significant nature for different types of qualified facilities or carbon capture equipment:

(a) Beginning of the excavation for the foundation, the setting of anchor bolts into the ground, or the pouring of the concrete pads of the foundation

(b) Drilling of a well, or installation of piping, turbines, generators, flash tanks, heat exchangers, scrubbers, compressors, motors, regenerators, absorbers, turbines, engines, foundations and pads, vessels, piping, pumps, cooling tower, fans, and gas separation, liquification, or processing equipment.

.03 Preliminary Activities. Physical work of a significant nature does not include preliminary activities, even if the cost of those preliminary activities is properly included in the depreciable basis of the qualified facility or carbon capture equipment. Generally, preliminary activities are limited to:

(a) planning or designing;
(b) securing financing;
(c) exploring;
(d) researching;
(e) obtaining permits and licenses;
(f) conducting environmental and engineering studies;
(g) clearing a site;
(h) conducting test drilling to determine soil condition (including to test the strength of a foundation);
(i) excavating to change the contour of the land (as distinguished from excavation for a foundation); and
(j) removing existing foundations and any components that will no longer be part of the qualified facility or carbon capture equipment (including those on or attached to building structures).

.04 Inventory. Physical work of a significant nature does not include work (performed either by the taxpayer or by another person under a binding written contract) to produce components of qualified facility or carbon capture equipment that are either in existing inventory or are normally held in inventory by a vendor.

SECTION 5. FIVE PERCENT SAFE HARBOR

.01 In general. Construction of qualified facility or carbon capture equipment will be considered as having begun if:

(1) a taxpayer pays or incurs (within the meaning of Treas. Reg. § 1.461-1(a)(1) and (2)) five percent or more of the total cost of the qualified facility or carbon capture equipment, and

(2) thereafter, the taxpayer makes continuous efforts to advance towards completion of the qualified facility or carbon capture equipment (as determined under section 6.02 of this notice).

.02 Total Cost of Energy Property. The total cost of the qualified facility or carbon capture equipment shall be the capital cost estimate of the qualified facility or carbon capture equipment, on the date the owner or developer of the qualified facility or carbon capture equipment making a final investment decision to proceed with design and construction of the qualified facility or carbon capture equipment. All costs properly included in the depreciable basis of the qualified facility or carbon capture equipment are taken into account to determine the capital cost estimate. The capital cost estimate of the qualified facility or carbon capture equipment does not include the cost of land or any property not integral to the qualified facility or carbon capture equipment, as described in section 7.02 of this notice.

SECTION 6. CONTINUITY REQUIREMENT

.01 Physical Work Test: Continuous Construction Test. A continuous program of construction involves continuing physical work of a significant nature (as described in section 4.02 of this notice). Whether a taxpayer maintains a continuous program of construction to satisfy the Continuity Requirement will be determined by the relevant facts and circumstances.

.02 Five Percent Safe Harbor: Continuous Efforts Test. Whether a taxpayer makes continuous efforts to advance towards completion of a qualified facility or carbon capture equipment to satisfy the Continuity Requirement will be determined by the relevant facts and circumstances. Facts and circumstances indicating continuous efforts to advance towards completion of a qualified facility or carbon capture equipment may include, but are not limited to:

(a) paying or incurring additional amounts included in the total cost of the qualified facility or carbon capture equipment;

(b) entering into binding written contracts for the manufacture, construction, or production of components of property or for future work to construct the qualified facility or carbon capture equipment;

(c) obtaining necessary permits; and

(d) performing physical work of a significant nature (as described in section 4.02 of this notice).

.03 Excusable Disruptions to Continuous Construction and Continuous Efforts Tests. Certain disruptions in a taxpayer's continuous construction or continuous efforts to advance towards completion of a qualified facility or carbon capture equipment that are beyond the taxpayer's control will not be considered as indicating that a taxpayer has failed to satisfy the Continuity Requirement. However, these disruptions will not extend the Continuity Safe Harbor Deadline as provided in section 6.05 of this notice.

The following is a non-exclusive list of construction disruptions that will not be considered as indicating that a taxpayer has failed to satisfy the Continuity Requirement:

(a) delays due to severe weather conditions;

(b) delays due to natural disasters;

(c) delays in obtaining permits or licenses from federal, state, local, or Indian tribal governments;

(d) delays at the written request of a federal, state, local, or Indian tribal government regarding matters of public safety, security, or similar concerns;

(e) interconnection-related delays, such as those relating to the completion of construction on a new carbon oxide pipeline or a new line or necessary upgrades to resolve capacity or congestion issues that may be associated with a project’s planned interconnection;

(f) delays in the manufacture of custom components;

(g) delays due to labor stoppages;

(h) delays due to the inability to obtain specialized equipment of limited availability;

(i) delays due to the presence of endangered species;

(j) financing delays; and

(k) delays due to supply shortages.

.04 Timing of Excusable Disruption Determination. In the case of a single project comprised of a single qualified facility or carbon capture equipment, whether an excusable disruption has occurred for purposes of the beginning of construction requirement of § 48 must be determined in the calendar year

during which the qualified facility or carbon capture equipment is placed in service. In the case of a single project comprised of multiple qualified facilities, or multiple pieces of carbon capture equipment, whether an excusable disruption has occurred for purposes of the beginning of construction requirement of § 45Q must be determined in the calendar year during which the last of multiple qualified facilities, or multiple pieces of carbon capture equipment, is placed in service.

.05 Continuity Safe Harbor: Deemed Satisfaction of Continuity Requirement. Except as provided in this section, if a taxpayer places a qualified facility or carbon capture equipment in service by the end of a calendar year that is no more than six calendar years after the calendar year during which construction of the qualified facility or carbon capture equipment began (the Continuity Safe Harbor Deadline), the qualified facility or carbon capture equipment will be considered to satisfy the Continuity Safe Harbor. The excusable disruption rules in section 6.03 do not apply for purposes of applying the Continuity Safe Harbor. However, if a qualified facility or carbon capture equipment is not placed in service before the end of the sixth calendar year after the calendar year during which construction of the qualified facility or carbon capture equipment began, whether the qualified facility or carbon capture equipment satisfies the Continuity Requirement under either the Physical Work Test or the Five Percent Safe Harbor will be determined by the relevant facts and circumstances.

For example, if construction begins on a qualified facility on January 15, 2023, and the qualified facility is placed in service by December 31, 2028, the qualified facility will be considered to satisfy the Continuity Safe Harbor. If the qualified facility is not placed in service before January 1, 2029, whether the Continuity Requirement was satisfied will be determined by the relevant facts and circumstances.

SECTION 7. OTHER RULES APPLICABLE TO PHYSICAL WORK TEST AND FIVE PERCENT SAFE HARBOR

.01 Qualified Facilities and Carbon Capture Equipment.

(1) Qualified Facility. Solely for the purpose of determining whether construction of a qualified facility has begun for purposes of section 45Q, a qualified facility generally includes all components of property that are functionally interdependent. Components of property are functionally interdependent if the placing in service of each component is dependent upon the placing in service of each of the other components in order to produce the primary product for which the qualified facility is designed (i.e. to produce fertilizer, if the qualified facility is a fertilizer production facility). Functionally-interdependent components of property, that can be operated and either measured or metered together and can begin producing the primary product (for which the qualified facility is designed) separately from other components of property within a larger project, will be considered a qualified facility. See Rev. Rul. 94-31, 1994-1 C.B. 16. For this purpose, the primary product for which a direct air capture facility is designed shall be considered to be carbon dioxide that came directly from the ambient air.

For example, a qualified facility that is an electricity generating facility is comprised of all components of property necessary to generate electricity. This may include turbines, engines, boilers, mounting equipment, support structures, tracking equipment, monitoring equipment, transformers (used in electrical generation that step up the voltage to less than 69 kilovolts) and other power conditioning equipment.

(2) Carbon Capture Equipment. Solely for the purpose of determining whether construction of carbon capture equipment has begun for purposes of section 45Q, carbon capture equipment generally includes all components of property that are functionally interdependent. Components of property are functionally interdependent if the placing in service of each component is dependent upon the placing in service of each of the other components in order to capture qualified carbon oxide. Functionally-interdependent

components of property that can be operated and measured together and can begin capturing qualified carbon oxide separately from other components of property within a larger project will be considered carbon capture equipment. See Rev. Rul. 94-31, 1994-1 C.B. 16.

Generally, carbon capture equipment is comprised of all components of property necessary to capture qualified carbon oxide. Carbon capture equipment may or may not include components of property necessary to compress, treat, process, liquify, pump or perform some other physical action to cause the captured qualified carbon oxide to move from the capture point towards a location where it is used, stored, sequestered, disposed of or utilized. This may or may not include scrubbers, compressors, regenerators, absorbers, treating equipment, processing equipment, liquefaction equipment, dehydration equipment, pumps, separation vessels, heat exchangers, mounting equipment, support structures, tracking equipment, monitoring equipment and other carbon oxide related equipment. For this purpose, carbon capture equipment may or may not include any injection well into which the qualified carbon oxide is injected for secure geologic storage, and may or may not include any property through which the qualified carbon oxide may pass such as a pipeline or a line.

(3) Single project. Solely for purposes of determining whether construction of qualified facility or carbon capture equipment has begun for purposes of the § 45Q credit, multiple qualified facilities, and multiple pieces of carbon capture equipment, that are operated as part of a single project (along with any components of property, such as a computer control system, that serves some or all such multiple properties) will be treated as a single qualified facility or carbon capture equipment. Whether multiple qualified facilities, or multiple pieces of carbon capture equipment, are operated as part of a single project will depend on the relevant facts and circumstances.

(a) Factors of Single Project Determination. Factors indicating that multiple qualified facilities, or multiple pieces of carbon capture equipment, are operated as part of a single project may include:

(i) the qualified facilities, or multiple pieces of carbon capture equipment, are owned by a single legal entity;

(ii) the qualified facilities, or multiple pieces of carbon capture equipment, are constructed on contiguous pieces of land;

(iii) the qualified facilities, or multiple pieces of carbon capture equipment, are described in a common purchase and sale agreement for the primary product generated or produced by the qualified facility or carbon capture equipment, such as a power purchase agreement or agreements;

(iv) the qualified facilities, or multiple pieces of carbon capture equipment, have a common intertie to the power grid or other power source;

(v) the qualified facilities, or multiple pieces of carbon capture equipment, share a common transformer or substation;

(vi) the qualified facilities, or multiple pieces of carbon capture equipment, are described in one or more common environmental or other regulatory permits;

(vii) the qualified facilities, or multiple pieces of carbon capture equipment, were constructed pursuant to a single master construction contract; or

(viii) the construction of the energy properties was financed pursuant to the same loan agreement.

(b) Example. A taxpayer is developing Project C, a qualified facility that is an electricity generating facility, that will consist of eight trains of equipment, engines, boilers, heat exchangers, pollution control equipment, a computer system that monitors and controls the equipment, and associated power-related equipment. Project C will connect to the power grid through a single intertie, and power generated by Project C will be sold to a local utility through a single power purchase agreement. In 2020, the taxpayer installs two of the eight trains and related equipment. Thereafter, the taxpayer completes the construction of all eight trains and related equipment pursuant to a continuous program of construction. For purposes of the § 45Q credit, Project C is a single project that will be treated as a single qualified facility, and the taxpayer performed physical work of a significant nature that constitutes the beginning of construction of Project C in 2020.

(c) Example. A taxpayer is developing Project D, a qualified facility that is an industrial facility, that will consist of 4 trains of natural gas processing equipment to produce pipeline quality natural gas. In 2021, for one of the four trains of industrial facility equipment, the taxpayer installs supporting structures to affix components of the natural gas processing plant trains to the foundation. Thereafter, the taxpayer completes the construction of all four trains of equipment pursuant to a continuous program of construction. For purposes of the § 45Q credit, Project D is a single project that will be treated as a single qualified facility, and the taxpayer performed physical work of a significant nature that constitutes the beginning of construction of Project D in 2021.

(d) Example. A taxpayer is developing Project E, a qualified facility that is a direct air capture facility, that will consist of 40 fans to collect the carbon dioxide. In 2022, for 10 of the 40 fans, the taxpayer installs supporting structures to affix components of the direct air capture facility to the foundation. Thereafter, the taxpayer completes the construction of all 40 fans and related equipment pursuant to a continuous program of construction. For purposes of the § 45Q credit, Project E is a single project that will be treated as a single qualified facility, and the taxpayer performed physical work of a significant nature that constitutes the beginning of construction of Project E in 2022.

(e) Example. A taxpayer is developing Project F, carbon capture equipment that will consist of 10 compressors to compress the qualified carbon oxide, as well as dehydration equipment and a pump to transport the qualified carbon oxide as a supercritical fluid through a pipe. In 2023, for three of the 10 compressors, the taxpayer installs pads, interconnecting pipe, electrical connections, and associated equipment. The entire carbon capture equipment will be connected to the power grid through a single intertie. Thereafter, the taxpayer completes the construction of all 10 compressors and related equipment pursuant to a continuous program of construction. For purposes of the § 45Q credit, Project E is a single project that will be treated as a single qualified facility, and the taxpayer performed physical work of a significant nature that constitutes the beginning of construction of Project F in 2023.

(4) Timing of Single Project Determination. The determination of whether multiple qualified facilities, or multiple pieces of carbon capture equipment, are operated as part of a single project and are therefore treated as a single qualified facility or carbon capture equipment for purposes of the beginning of construction requirement of § 45Q must be

determined in the calendar year during which the last of the multiple qualified facilities, or multiple pieces of carbon capture equipment, is placed in service.

(5) Disaggregation. Multiple qualified facilities, or multiple pieces of carbon capture equipment, that are operated as part of a single project and treated as a single qualified facility, or carbon capture equipment, under section 7.01(2) of this notice for purposes of determining whether construction of a qualified facility or carbon capture equipment has begun may be disaggregated and treated as multiple separate qualified facilities, or multiple pieces of carbon capture equipment, for purposes of determining whether a separate qualified facility, or carbon capture equipment, satisfies the Continuity Safe Harbor. Those disaggregated separate qualified facilities, or pieces of carbon capture equipment, that are placed in service prior to the Continuity Safe Harbor Deadline will be eligible for the Continuity Safe Harbor. The remaining disaggregated separate qualified facilities, or pieces of carbon capture equipment, may satisfy the Continuity Requirement under a facts and circumstances determination.

(a) Example. A taxpayer is developing Project G, carbon capture equipment that will consist of 10 compressors to compress the qualified carbon oxide, as well as dehydration equipment and a pump to transport the qualified carbon oxide as a supercritical fluid through a pipe. Under the single project rule in section 7.01(2) of this notice, Project G is a single project that will be treated as a single carbon capture equipment. In 2023, for three of the 10 separate pieces of carbon capture equipment, the taxpayer installs pads, interconnecting pipe, electrical connections, and associated equipment. Accordingly, the taxpayer has performed physical work of a significant nature that constitutes the beginning of construction of Project G for purposes of § 45Q.

Thereafter, the taxpayer places in service only eight of the 10 separate pieces of carbon capture equipment in 2024. The taxpayer disaggregates Project G under section 7.01(4) of this notice; eight of the 10 separate pieces of carbon capture equipment satisfy the Continuity Safe Harbor. For the remaining two pieces of carbon capture equipment, the taxpayer may demonstrate that it satisfies the Continuous Construction Test described in section 6.01 of this notice based on the facts and circumstances.

.02 Property Integral to Qualified Facility or Carbon Capture Equipment.

(1) Qualified Facility. Only physical work of a significant nature on tangible personal property and other tangible property used as an integral part of the activity performed by a qualified facility will be considered for purposes of determining whether a taxpayer has begun construction of the qualified facility. This includes property integral to the production of the primary product for which the qualified facility is designed, but does not include property used for the transmission of such product unless that product is qualified carbon oxide. For purposes of the Five Percent Safe Harbor, the cost of any property not integral to qualified facility is not included in the total cost of the qualified facility under section 5.02 of this notice.

(2) Carbon Capture Equipment. Only physical work of a significant nature on tangible personal property and other tangible property used as an integral part of the activity performed by the carbon capture equipment will be considered for purposes of determining whether a taxpayer has begun construction of the carbon capture equipment. This includes property integral to the capture of qualified carbon oxide, but does not necessarily include property integral to physically moving the captured qualified carbon oxide towards a location where it is used, stored, sequestered, disposed of or utilized or property integral to using, storing, sequestering, disposing of or utilizing the qualified carbon oxide. For purposes of the Five Percent Safe Harbor, the cost of any property not integral to the carbon capture equipment is not included in the total cost of the carbon capture equipment under section 5.02 of this notice.

.03 Construction by Contract. For a qualified facility and carbon capture equipment, or components of either, that are manufactured, constructed, or produced for the taxpayer by another person under a binding written contract (as described in section 7.03(1) of this notice), the work performed and amounts paid or incurred under the contract are taken into account in determining when construction begins, provided the contract is entered into prior to the work taking place or the amounts paid or incurred.

(1) Binding Written Contract. A written contract is binding only if it is enforceable under local law against the taxpayer or a predecessor and does not limit damages to a specified amount (for example, by use of a liquidated damages provision). For this purpose, a contractual provision that limits damages to an amount equal to at least five percent of the total contract price will not be treated as limiting damages to a specified amount. For additional guidance regarding the definition of a binding written contract, see Treas. Reg. § 1.168(k)-1(b)(4)(ii)(A)-(D).

(2) Master Contract. If a taxpayer enters into a binding written contract for a specific number of components of property to be manufactured, constructed, or produced for the taxpayer by another person under a binding written contract (master contract), and then through a new binding written contract (project contract) the taxpayer assigns its rights to certain components of property to an affiliated special purpose vehicle that will own the qualified facility or carbon capture equipment for which such components of property are to be used, work performed or amounts paid or incurred with respect to the master contract may be taken into account in determining when construction begins with respect to the qualified facility or carbon capture equipment.

.04 Look-through Rule.

(1) Physical Work Test. Both on-site and off-site work (performed either by the taxpayer or by another person under a binding written contract) may be taken into account for purposes of demonstrating that physical work of a significant nature has begun with respect to a qualified facility or carbon capture equipment.

(a) Example. In the case of a qualified facility, on-site physical work of a significant nature may begin with the beginning of the installation of pads or other structures to affix components of the qualified to the foundation. If the qualified facility's structures are to be assembled on-site from components of property manufactured off-site by a person other than the taxpayer and delivered to the site, physical work of a significant nature begins when the manufacture of the components of property begins at the off-site location, but only if (i) the manufacturer's work is done pursuant to a binding written contract and (ii) these components of property are not held in the manufacturer's inventory. If a manufacturer produces components of property for multiple qualified facilities, a reasonable method must be used to associate individual components of property with a particular purchaser.

(2) Five Percent Safe Harbor. For a qualified facility or carbon capture equipment, or components of qualified facility or carbon capture equipment, that are manufactured, constructed, or produced for the taxpayer by another person under a binding written contract with the taxpayer, amounts paid or incurred with respect to the qualified facility or carbon capture equipment by the other person before the qualified facility or carbon capture equipment is provided to the taxpayer are deemed paid or incurred by the taxpayer when the amounts are paid or incurred by the other person under the principles of § 461.

(a) Example. In 2019, an accrual-method taxpayer, H, enters into a binding written contract with I pursuant to which H will provide components of carbon capture

equipment to I in June 2021. In 2019, H pays J pursuant to a contract for J to provide parts to H (in March 2020) for use in the components of energy property. H's employees provide H with services necessary to design and plan for the production of the components of carbon capture equipment in 2019 and with services to manufacture (assemble) the components of carbon capture equipment in 2021. H incurs the cost to design and plan for the production of the components of carbon capture equipment in 2019, incurs the costs for the components of carbon capture equipment in March 2020 when J delivers the components of carbon capture equipment to H (even though the components of carbon capture equipment were paid for in 2019), and incurs the costs for H's employees to manufacture the components of carbon capture equipment in 2021. See Treas. Reg. §§ 1.461-4(d) and 1.446-1(c)(1)(h). The costs H incurred in 2019 for its employees' performance of design and planning activities with respect to the components of carbon capture equipment are costs deemed incurred by I in 2019 for purposes of the Five Percent Safe Harbor. The other costs in this example were incurred by H in 2020 and 2021 and are costs that I includes in the total cost of the carbon capture equipment.

.05 Application of 80/20 Rule to Retrofitted Qualified Facility or Carbon Capture Equipment.

(1) In general. A qualified facility or carbon capture equipment may qualify as originally placed in service on or after February 9, 2018 even though it contains some used components of property, provided the fair market value of the used components of property is not more than 20 percent of the qualified facility's or carbon capture equipment's total value (the cost of the new components of property plus the value of the used components of property) (80/20 Rule). In the case of a single project comprised of multiple qualified facilities or multiple pieces of carbon capture equipment, the 80/20 Rule is applied to each qualified facility or carbon capture equipment comprising the single project. For purposes of the 80/20 Rule, the cost of a new qualified facility or carbon capture equipment includes all costs of the new qualified facility or carbon capture equipment. The 80/20 Rule applies regardless of whether the used components of property were contained in carbon capture equipment that captured qualified carbon oxide for which credits under § 45Q(a)(1) or (2) were claimed.

(2) Beginning of Construction. To satisfy the beginning of construction requirement of § 45Q, the Physical Work Test or the Five Percent Safe Harbor is applied only with respect to the work performed on, or amounts paid or incurred for, new components of property used to retrofit or replace used components of property or an existing qualified facility or carbon capture equipment. For the Five Percent Safe Harbor, all costs properly capitalized in the basis of the qualified facility or carbon capture equipment are taken into account. The total cost of the qualified facility or carbon capture equipment does not include the cost of land (including lease payments) or any property not integral to the qualified facility or carbon capture equipment, as described in section 7.02 of this notice.

(a) Example. Taxpayer owns existing carbon capture equipment (including six compressor skids) constructed prior to February 9, 2018 and which captures less than 500,000 metric tons per year. The carbon capture equipment has a fair market value of $15 million, and each compressor skid has a fair market value of $2 million. After February 9, 2018, Taxpayer replaces all six of the compressor skids with three larger compressors skids at a cost of $4.5 million for each compressor skid. The fair market value of the remaining original components of the carbon capture equipment is $3 million. The total expenditures to retrofit the carbon capture equipment are

$13.5 million ($4.5 million x 3). Taxpayer applies the single project rule provided in section 5.04(2).

The fair market value of the remaining original components of the carbon capture equipment ($3 million) is not more than 20% of the carbon capture equipment's total value of $16.5 million (the cost of the new compressor skids ($13.5 million) + the value of the remaining original carbon capture equipment ($3 million)). Thus, the carbon capture equipment will be considered carbon capture equipment placed in service on or after February 9, 2018 for purposes of § 45Q. Accordingly, if the taxpayer pays or incurs at least $675,000 (5% of $13.5 million) of qualified expenditures in 2022, construction of the single facility will be considered to have begun in 2022, and if the taxpayer also satisfies the Continuous Efforts Test, the carbon capture equipment will be carbon capture equipment placed in service on or after February 9, 2018 within the meaning of § 45Q.

SECTION 8. TRANSFER OF QUALIFIED PROPERTY OR CARBON CAPTURE EQUIPMENT

.01 In general. Section 45Q requires only that construction of a qualified facility or carbon capture equipment begin before January 1, 2024. It does not require the construction to be begun by the taxpayer claiming the credit. A taxpayer that owns a qualified facility or carbon capture equipment may elect to claim the § 45Q credit with respect to the qualified facility or carbon capture equipment even if the taxpayer did not own the qualified facility or carbon capture equipment at the time construction began. Any § 45Q credit claimed with respect to a qualified facility or carbon capture equipment will be limited to the taxpayer's basis in the property. Accordingly, except as provided in section 8.03 of this notice, a fully or partially developed qualified facility or carbon capture equipment may be transferred without losing its qualification under the Physical Work Test, the Five Percent Safe Harbor, the Continuity Requirement, the Continuity Safe Harbor, and the 80/20 Rule for purposes of the § 45Q credit. However, for each qualified facility or carbon capture equipment, the § 45Q tax credit shall only be available for a maximum of 12 years, regardless of the length of time a particular taxpayer owns the qualified facility or carbon capture equipment.

(1) Example. In August 2022, a developer acquires a parcel of land on which it intends to build and operate Project K, a qualified facility. The developer contributes the land to its wholly-owned limited liability company (LLC), which is disregarded as an entity separate from its owner for federal tax purposes, to hold and develop the energy property. In November 2022, the developer incurs 5 percent of the total cost of Project K and thereafter maintains continuous efforts to advance towards the completion of Project K. In April 2023, to finance the development of Project K, the developer sells 95 percent of the interests in LLC to a group of investors who are not related to the developer, and the developer does not contribute sales proceeds to LLC.

Under Rev. Rul. 99-5, 1999-1 C.B. 434, the developer is treated as selling 95 percent of each of the assets of LLC to the investors, and immediately thereafter the developer and investors are treated as contributing their respective 5 percent and 95 percent interests in those assets to LLC, which is now a partnership and the owner of Project K for federal tax purposes. In October 2023, LLC places Project K in service. Because Project K satisfies the Five Percent Safe Harbor in November 2023 and assuming Project K otherwise satisfies the requirements of the § 45Q credit, the LLC is eligible to claim the § 45Q credit with respect to Project K.

(2) Example. A taxpayer acquires carbon capture equipment (that consists of land and components of carbon capture equipment) from an unrelated developer that had begun construction of the carbon capture equipment, and thereafter the taxpayer completes the

development of that carbon capture equipment and places it in service. The work performed or the amounts paid or incurred by the unrelated developer prior to the taxpayer's acquisition of the carbon capture equipment may be taken into account by the taxpayer for purposes of determining when the carbon capture equipment satisfies the Physical Work Test or the Five Percent Safe Harbor.

.02 Relocation of Equipment by a Taxpayer. A taxpayer may begin construction of a qualified facility or carbon capture equipment with the intent to develop the qualified facility or carbon capture equipment at a certain site, and thereafter transfer components of the qualified facility or carbon capture equipment to a different site, complete its development, and place it in service. The work performed or the amounts paid or incurred prior to the site transfer by such a taxpayer may be taken into account for purposes of determining whether and when the qualified facility or carbon capture equipment satisfies the Physical Work Test or the Five Percent Safe Harbor.

.03 Transfers of Equipment Between Unrelated Parties.

(1) In general. In the case of a transfer consisting solely of tangible personal property (including contractual rights to such property under a binding written contract) to a transferee not related (within the meaning of § 197(f)(9)(C) and Treas. Reg. § 1.197-2(h)(6)) to the transferor, any work performed or amounts paid or incurred by the transferor with respect to such transferred property will not be taken into account with respect to the transferee for purposes of the Physical Work Test or the Five Percent Safe Harbor.

(2) Example. A developer, X, intends to develop and operate Project L at a location to be determined. In 2019, X pays or incurs $60,000 to have tangible personal property integral to Project L manufactured off-site pursuant to a binding written contract. Thereafter X incurs no further development costs and engages in no further development activity with respect to Project L. In January 2020, X sells the tangible personal property to another developer, Y, a party unrelated to X. Y is developing and intends to operate Project M, a qualified facility located on a parcel of land owned by Y. Y incorporates the tangible personal property acquired from X into Project M. In October 2020, Y places Project M in service on the parcel of land. The total cost of Project M is $1,000,000.

Amounts paid or incurred by X in 2018 for the tangible personal property cannot be taken into account by Y for purposes of satisfying the Five Percent Safe Harbor with respect to Project M because X and Y are not related persons as described in section 8.03(1) of this notice. However, if without regard to these components of property, Y has otherwise satisfied the Physical Work Test or the Five Percent Safe Harbor with respect to Project M in 2019, Y will be considered to have begun construction in 2019.

Attachment 5

Proposed Approach to Implementing the Greenhouse Gas Lifecycle Analysis Requirement for Carbon Utilization Projects

I. BACKGROUND

Section 45Q was originally enacted by §115 of the Energy Improvement and Extension Act of 2008, Pub. L. No. 110-343, 122 Stat. 3829 (October 3, 2008), and amended by §1131 of the American Recovery and Reinvestment Tax Act of 2009, Division B of Pub. L. 111-5, 123 Stat. 115 (Feb. 17, 2009) ("prior Section 45Q"). Prior Section 45Q(a) provided a credit for carbon dioxide ("CO_2") sequestration that was generally available to a taxpayer that captured qualified CO_2 at a qualified facility and disposed of it in secure geological storage within the United States.

Congress expanded and extended the Section 45Q credit in § 41119(a) of the Bipartisan Budget Act of 2018, P.L. 115-123 (Feb. 9, 2018) ("new Section 45Q"). The 2018 amendments apply to taxable years beginning after December 31, 2017. *See* P.L. 115-123 section 41119(b).

New Section 45Q generally provides for a tax credit in an amount equal to a dollar value per metric ton of qualified carbon oxide captured by the taxpayer and disposed of in secure geological storage, used as a tertiary injectant in a qualified enhanced oil or natural gas recovery (EOR) project and disposed of in secure geological storage, or *utilized in certain ways described in §45Q(f)(5).* [emphasis added] These comments specifically address carbon oxides, denoted CO_x, (generally, CO_2 and CO) utilized as above.

The Act further defines at §45Q(f)(5)(B) how the qualified carbon oxide shall be measured for purposes of claiming the credit. It requires an analysis of lifecycle greenhouse gas (GHG) emissions that can be measured to have been either

(I) captured and permanently isolated from the atmosphere, or
(II) displaced from being emitted into the atmosphere.

II. PUBLIC INTEREST AND PURPOSE

The inclusion of beneficial usage of carbon oxides was an important and deliberate motivation for Congress to enact the new 45Q tax credit. In addition to expanding the volume of GHG carbon oxides that are geologically stored, Congress intended the Act to serve as an incentive to catalyze new uses of carbon oxides in a variety of products and processes including (but not limited to) building materials, fuels, plastics, algae biofuels and bioproducts. At the time of the new Section 45Q's enactment, these and other types of utilization were considered nascent but valuable to encouraging a lower-carbon economy.

The inclusion of the LCA requirement in the statute serves two roles: First, it allows the government to calculate the GHG impact of the particular activity; second, it helps the developer calculate the potential value of the credit based on the volume of GHG utilized as defined by the statute. Other government agencies already utilize LCA methodologies to meet specific needs of those agencies' programs. For instance, the National Energy Technology Laboratory (NETL) uses a particular LCA to evaluate proposed projects it may fund, while the U.S. Environmental Protection Agency (EPA) uses a different LCA to

assess GHG emissions under the Renewable Fuel Standard (RFS). The RFS is the only other federal regulation that requires an LCA. Other LCA methodologies have been developed in academic settings. A GHG LCA should be specifically tailored to each application as each application is different.

Congress intended the new 45Q tax credit to encourage a wider variety of products and processes utilizing carbon oxides. In that spirit, the Coalition recommends that the IRS seek to issue guidance for the GHG LCA provision that the taxpayer will be able to comprehend and apply, to encourage the development of products and processes that could qualify for the tax credit.

III. SUGGESTED PRINCIPLES AND PROPOSED "SAFE HARBOR" FRAMEWORK FOR APPLYING THE GHG LCA PROVISION

The Coalition suggests that, as the IRS seeks to establish a GHG lifecycle analysis, it takes the following principles under consideration:

First, the IRS should consider a lifecycle analysis that begins with the acquisition of the carbon oxide molecules to be used in a product or process.

Second, the IRS should endeavor to apply LCA methodologies that consider the different products and processes described above, acknowledging that Congress did not intend to favor one type of utilization over another.

Third, it is the Coalition's perspective that the law's aim will be served if the LCA methodology is transparent and straightforward. If taxpayers can readily grasp the credit's potential value, it will allow them and their potential investors to consider that value prospectively in planning a relevant project or process.

The Coalition notes that procedures for the RFS rely on 'pathways' to award credits. In that system, a new process is modeled based on data from a limited operating period. The carbon attributes from that limited period are assumed to be representative of all operations and applied to all products derived from the particular process. While the ongoing development of individual pathways is valuable to adding to knowledge of lifecycle analysis generally, applying the pathways approach to new CO_2 utilization processes may prove difficult. As an alternative, the Coalition proposes the consideration of a "safe harbor" LCA methodology based on measured performance, which would provide immediate transparency and reward all incremental improvements that displace additional carbon oxides.

The "safe harbor" LCA framework proposed here is designed to be simple and robust, and aimed at ensuring tax credits claimed under the Act represent the relative sum of carbon oxides permanently isolated or displaced. In the case studies below, we have sought to ensure accounting for carbon oxides that is proper and transparent, and straightforward to implement for the diverse industrial stakeholders who are expected to take advantage of the 45Q tax credit for carbon oxides utilization.

LCAs often focus on quantifying total emissions, however, the 45Q statute calls for an LCA of the emissions that are being "displaced from being emitted into the atmosphere." In this context, the difference between the base cases and the case with 45Q that includes carbon utilization is expected to provide a good measurement of the GHG reduction to be realized from the activity in question.

Accordingly, in order to create an LCA standard that can apply to varied products that might qualify under the utilization portion of the tax credit, our recommended framework makes use of the statute's focus on displaced emissions. By only focusing on t*he differences between the incumbent process and the carbon oxides utilization process,* the recommended LCA simplifies to the expression below:

Displaced emissions for 45Q tax credit = F + (B + C) - (G + H), where

- **F = carbon oxides into the carbon utilization process**
- **B + C = process and embodied emissions from the incumbent process**
- **G = directly measured emissions from the carbon utilization process**
- **H = emissions from embodied carbon from process inputs**

NOTE: All units are in metric tons of carbon oxides

IV. WORKED EXAMPLES FOR ILLUSTRATION

Below are two worked examples:

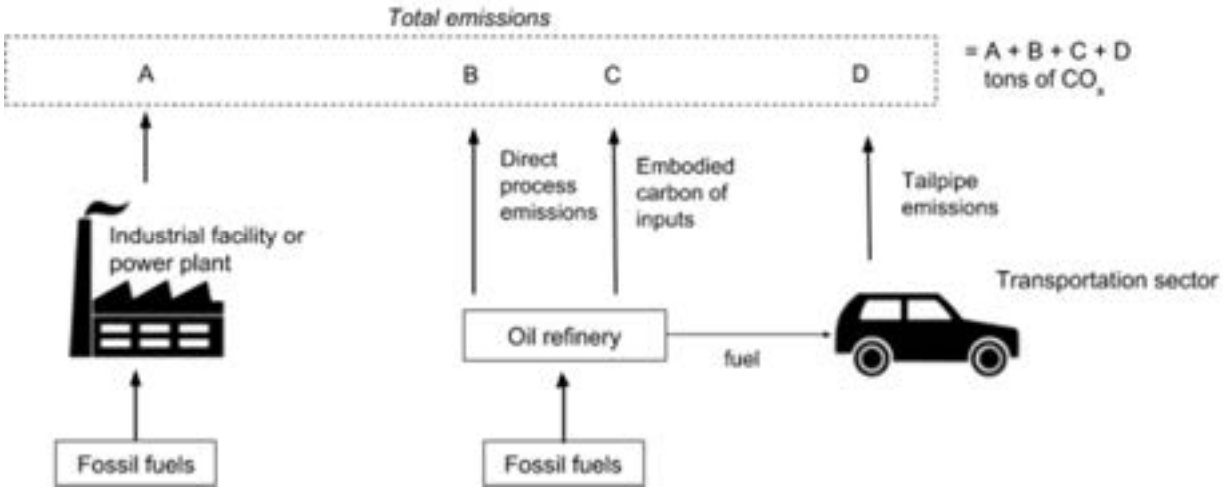
Example 1, two de-coupled industrial processes serve as a baseline for carbon utilization where the product of utilization is a transportation fuel. This example is illustrative of those where the product of carbon utilization **does not store the carbon** over long durations.

Example 2, two de-coupled industrial processes serve as a baseline for carbon utilization where the product of utilization **does store the carbon for a long time**, such as concrete.

The key finding is that the formula for the LCA **is the same in both cases**.

The LCA formulas are identical because the emissions after the "factory gate"—which can be defined as either where the CO_2 is captured or where it is utilized—are the same for both the incumbent product and its replacement made with carbon utilization. In the context of 45Q where only the displaced emissions are of interest, this means that the emissions after the "factory gate" may be neglected.

Example #1a:
LCA for two de-coupled industrial processes that serves as a baseline for Example 1b



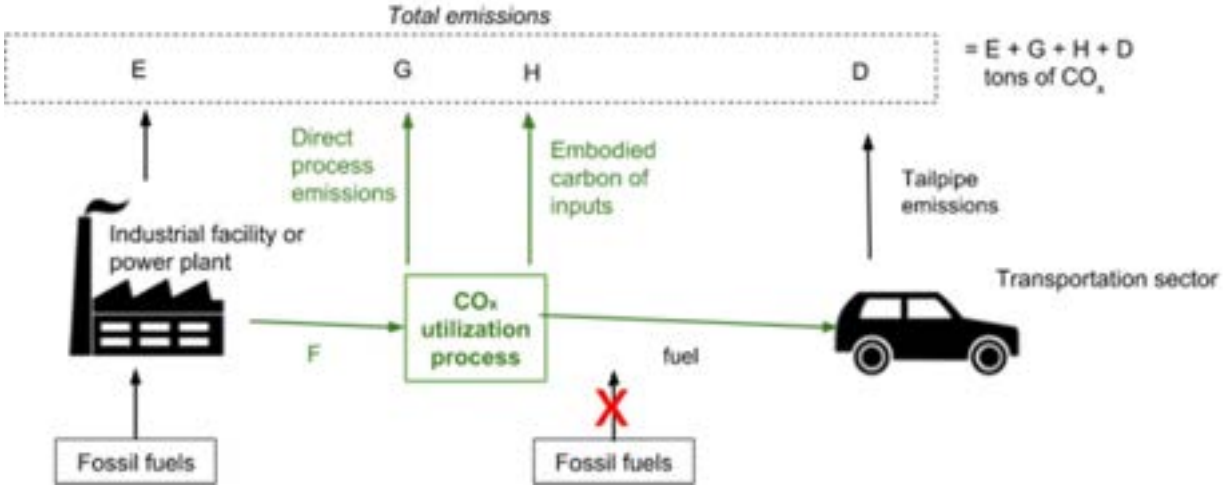
In Example #1a, there are two de-coupled industrial processes. At left is a power plant that is consuming fossil fuels and emitting carbon oxides in the amount of 'A' tons of carbon oxides per year. For illustrative purposes, this may be a coal power plant that is producing electricity.

At right is a separate industrial process. For instance, it might be an oil refinery that takes in fossil fuels and emits carbon oxides in the amount of 'B' tons of carbon oxides per year through direct process emissions. Examples of such emissions include a flare at the refinery or release of emissions from "blowdown" of equipment when the facility is taken offline for normal maintenance.

There are also emissions of 'C' tons of carbon oxides per year through the embodied carbon of inputs. Illustrative examples of such emissions include the carbon emissions attributable to the production of electricity or hydrogen consumption at the oil refinery, where the electricity and hydrogen are produced off-site. Lastly, there are emissions from the end-of-life of the product, which here is a motor vehicle fuel, in the form of tailpipe emissions. These are in the amount of 'D'.

The total emissions of these two processes are then summed ('A + B + C + D') and serve as a baseline case.

Example #1b:
LCA for two coupled industrial processes including utilization of carbon oxides



Example 1b illustrates a possible alternative to Example 1a where carbon oxides are utilized to produce a marketable product. The emissions from the coal power plant ('A') have been reduced or eliminated using carbon capture technology and are now equal to 'E'. The captured carbon oxides, which is the difference between 'A' and 'E', is transferred ('F') to the carbon oxides utilization process ('CO_x utilization process'). Like the oil refinery in Example 1a, the utilization process will have direct process emissions ('G') and embodied carbon emission from inputs ('H'). However, those emissions are expected to be different than those from the oil refinery in Example 1a, so emissions 'G' (Example 1b) are not the same as 'B' (Example 1a). Similarly, emissions 'H' (Example 1b) are not the same as 'C' (Example 1a). The CO_x utilization process illustrated here is assumed to produce a motor vehicle fuel, which then goes to the car and results in the same tailpipe emissions ('D') as in Example 1a.

45Q specifies the qualified carbon oxides is that "displaced from being emitted into the atmosphere." Therefore, the difference in emissions between the base case (Example 1a) and the case with carbon oxides utilization (Example 1b) must be accounted for to quantify the amount of displaced emissions:
= (A + B + C + D) - (E + G + H + D)
= (A - E) + (B + C) - (G + H)
Note that the tailpipe emissions ('D') canceled out. Furthermore, the quantity 'A - E' is equal to 'F', the carbon oxides that are input into the CO_x utilization process. This further simplifies the expression to:

= F + (B + C) - (G + H), where

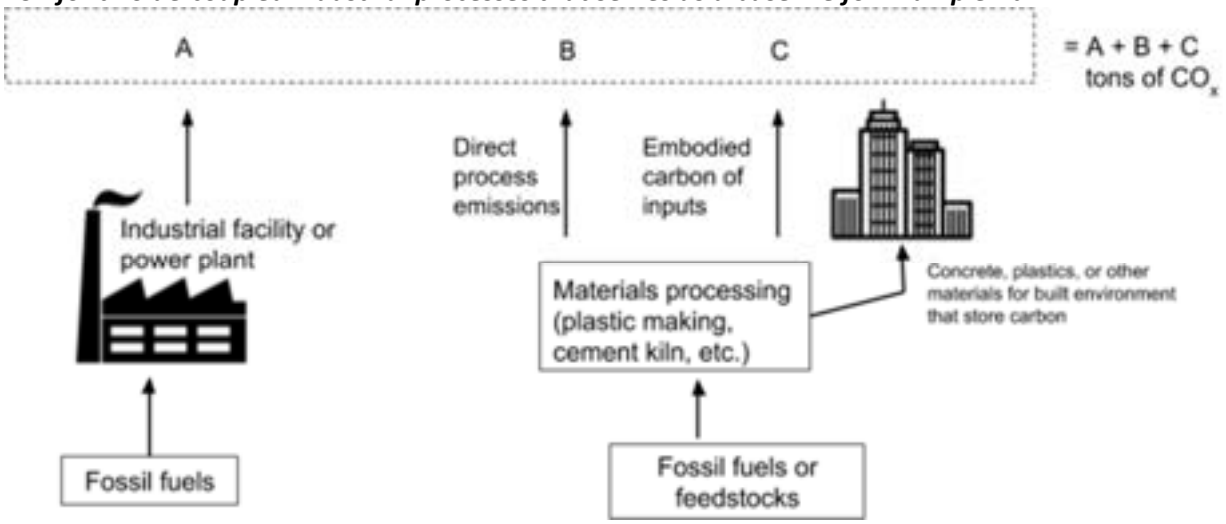
- **F = carbon oxides into the carbon utilization process**
- **B + C = process and embodied emissions from the incumbent process**
- **G = directly measured emissions from the carbon utilization process**
- **H = emissions from embodied carbon from process inputs**

'B + C' are emissions from the incumbent process. These are tabulated for existing processes as reference cases. There is a regulatory precedent for establishing these reference cases. For examples, EPA uses reference cases in the Renewable Fuels Standard, which provides an emissions intensity against which alternative fuels are compared.

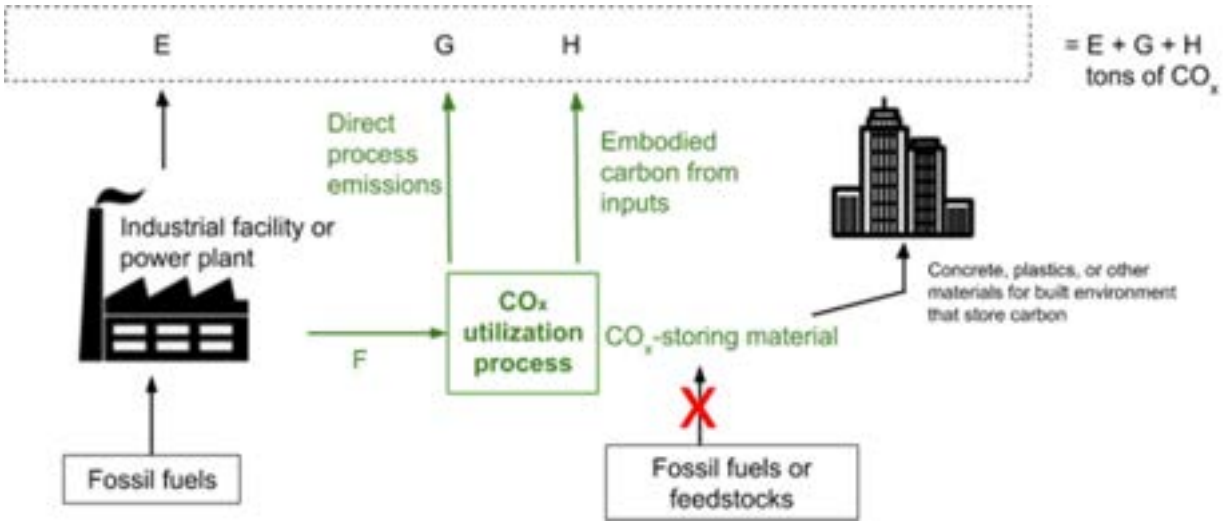
Process emissions ('G') from the CO_x process can be directly measured. This is similar to the measurement and reporting required for geologic sequestration under Subpart RR in that the carbon oxides credits are based on measured performance rather than any sort of modeling.

Lastly, embodied carbon from inputs ('H') can be derived from tabulated values in the GREET model. GREET is a standard LCA model that EPA uses for administering the Renewable Fuel Standard. It includes geography-dependent carbon emissions values for common inputs such as electricity.

Example #2a:
LCA for two de-coupled industrial processes that serves as a baseline for Example 2b



Examples 2a mirrors Example 1a except that there is not emissions from the end-of-life ('D' in Examples 1a).



In Examples 2b, the incumbent process illustrated in Example 2a is replaced with a CO_x utilization process. Importantly, the formula for the displaced emissions is the same:
= (A + B + C) - (E + G + H)

= (A - E) + (B + C) - (G + H)
= F + (B + C) - (G + H)
where

- **F = carbon oxides into the carbon utilization process**
- **B + C = process and embodied emissions from the incumbent process**
- **G = directly measured emissions from the carbon utilization process**
- **H = emissions from embodied carbon from process inputs**

V. KEY IMPLICATIONS

1. *The LCA math is both straightforward and appropriately applicable by the taxpayer in the spirit of the law*

There is a robust academic literature and practice on how to prepare detailed LCAs. While members of the Coalition respect these practitioners, we wish to emphasize the practical and industrial importance of having a methodology that

a) fits the specific intents of the 45Q law,
b) is easily generalizable to the wide variety of industrial processes that could claim the 45Q tax credit for carbon utilization, and
c) provides clarity and certainty to project developers and investors.

The Coalition suggests that the methodology described herein meets those intents without compromising significant accuracy. This law will be applicable to new projects that begin construction by 2024, so it is crucial that the calculation of the LCA for purposes of calculating the 45Q tax credit not unduly consume time needed to get these projects underway, as intended by Congress.

2. *The methodology limits the scope of the LCA without compromising accuracy*

The methodology recommended by the Coalition constrains the data that the party claiming 45Q is required to submit. The required information is either within their facility or tabulated by a regulator. This methodology removes uncertainty involved in upstream processes outside the carbon oxides utilization process, such as carbon capture, as well as downstream and end-of-life emissions outside the "factory gate," however that term is to be defined.

3. *Measured performance is emphasized over a "pathways" approach*

For several reasons, the Coalition prefers a methodology that provides credits for measured performance over a "pathways" approach like those in the RFS. First, the data necessary to make pathway guidelines reliable will fall beyond the limited time frame of the 45Q law and the need for operating data to establish a pathway delays the facility's ability to start producing credits, which has financial implications. Second, the cost of revising a pathway disincentivizes incremental improvements in carbon performance. Third, pathways have the potential to hide operational lapses where the facility underperformed from a carbon perspective.

By contrast, the methodology recommended by the Coalition is better suited for this LCA. The Coalition is recommending that the award of credits be based on measured data, which creates transparency and ensures credits are only awarded for the desired carbon displacement. Furthermore, a methodology that provides credits based on measured data would not have such an initial lag while the pathway is being reviewed. Finally, credits based on measured performance rewards all incremental improvements which displace additional carbon oxides.

4. *Equivalent end-of-life simplifies the LCA*

When the incumbent process and the alternative carbon utilization process produce comparable products, those products can be assumed to have comparable emissions during their use and at their end-of-life. For instance, in the case of Example #1 both scenarios produced motor vehicle fuel. The fuels are expected to have similar emissions related to their transportation and logistics as well as tailpipe emissions. Since 45Q is focused on 'displaced emissions' these emissions after the fuel levels the factory gate cancel out. This in turn allows the scope of the LCA to end at the factory gate, which helps simplify the analysis.

Attachment 6

Principles and Guidelines for an Equivalent ISO-Based Program to Demonstrate Secure Geologic Storage Associated with CO_2-Enhanced Oil Recovery to Claim the 45Q Tax Credit

If combined with the additional public transparency, reporting and oversight provisions detailed in the model guidance below, the standard developed by the International Organization for Standardization (ISO) entitled *Carbon dioxide capture, transportation and geological storage — Carbon dioxide storage using enhanced oil recovery (CO_2-EOR)* can be used by taxpayers to demonstrate secure geological storage. The ISO standard, supplemented by these recommended provisions, would provide equivalent reporting requirements to demonstrate secure geologic storage associated with CO_2-EOR for the purposes of the claiming the 45Q tax credit. Similar to the U.S. Environmental Protection Agency's (EPA) existing Greenhouse Gas Reporting Program (GHGRP) Subpart RR, any ISO-based demonstration must have sufficient oversight by competent governmental authorities, transparency and a meaningful opportunity for public input. These attributes are imperative for maintaining public confidence in the 45Q tax credit.

Along with the adoption of ISO and Subpart RR, there may be additional pathways or standards for determining "adequate security measures for secure geologic storage" that the Internal Revenue Service (IRS), in consultation with EPA, Department of Energy (DOE), and Department of Interior (DOI), should consider. If IRS adopts additional pathways, it should do so through a transparent and public review process and ensure such pathways provide sufficient oversight, transparency and a meaningful opportunity for public input.

Principles

Guidance provided on the implementation of the Section 45Q tax credit should adhere to the following principles for demonstrating secure geological storage of carbon dioxide (CO_2) associated with CO_2-enhanced oil recovery (EOR):

A. Storage of CO_2 should be quantified using a mass-balance approach, such as the approaches provided for in the EPA GHGRP Subpart RR or in the ISO 27916.
B. A governmental entity approved by IRS in consultation with the US EPA, DOE, and DOI should implement oversight of the monitoring, reporting, and verification of secure geologic storage of CO_2 associated with CO_2-EOR.
C. Public transparency should be provided that is balanced with protection of confidential business information.
D. Credits should not be recaptured for which the established requirements have been met.
E. The IRS, in consultation with the Administrator of the EPA, Secretary of Energy, and Secretary of Interior, should establish criteria based on these principles for the purposes of determining adequate security measures for the geological storage of carbon oxide.

F. Beyond those already established pathways through subpart RR and ISO, IRS should develop a framework for considering additional pathways, which could be proposed to IRS and certified through a public process to determine that the secure geologic storage criteria are satisfied, including sufficient oversight, transparency and a meaningful opportunity for public input.

Model Guidance Language

Taxpayers that seek to demonstrate secure geological storage for the purposes of claiming the 45Q tax credit for CO_2 storage associated with EOR can qualify by reporting under the US EPA GHGRP Subpart RR. This notice sets forth an equivalent pathway and criteria for such taxpayers to demonstrate secure geological storage with procedures as outlined in the ISO 27916 Standard.

Along with the adoption of ISO and Subpart RR, there may be additional equivalent pathways and criteria that IRS, in consultation with EPA, DOE, and DOI, should consider whether they meet the "adequate security measures for geologic storage." If IRS adopts additional pathways, it should do so through a transparent and public review process and ensure such pathways provide sufficient oversight, transparency and meaningful opportunity for public input.

I. Sequestration site rules for taxpayers injecting CO_2 with a Class II permit

International Organization of Standardization. In order for geological storage to be considered adequately secure for purposes of the § 45Q credit such that the injected CO_2 does not escape into the atmosphere, a taxpayer operating with a Class II Underground Injection Control permit must follow the requirements of the applicable EPA regional or state Underground Injection Control programs and conduct the following procedures as outlined in the ISO 27916:2019(E) standard entitled, *Carbon dioxide capture, transportation and geological storage – Carbon dioxide storage using enhanced oil recovery (CO_2-EOR)* and additional requirements for implementation within the US regulatory framework as provided in the following:

(A) As described in ISO 27916 (4.3), provide as initial documentation a description of the EOR complex project reservoir, trap, and such additional surrounding volume in the subsurface as defined by the operator within which injected CO_2 will remain in safe, long-term containment and engineered systems, the initial containment assurance, the monitoring program, the quantification method to be used; and, the total mass of previously injected CO_2 within the EOR complex at the start of quantification period.

i. Initial documentation must be provided to the US EPA.
ii. The US EPA will establish procedures for publishing the initial documentation on a publicly available website and providing for public input.
iii. The EPA will establish procedures for conducting a technical evaluation of the initial documentation's compliance with the ISO standard and for publishing the EPA's evaluation on a publicly accessible website.

iv. The initial documentation must be revised and provided to the EPA for evaluation and public input as described in (A)(i) through (A)(iii) if any of the following in paragraphs (iv)(a) through (iv)(c) applies.

a. If changes occur that have the potential to adversely affect containment, as described in ISO 27916 6.1.3, which would require a revised operational and reservoir management plan:

b. Revision of the initial documentation or monitoring plan as indicated in ISO 27916 6.1.3 and 6.2.3.

c. A change in the permit class of the Underground Injection Control permit.

(B) As described in ISO 27916 (4.4), prepare periodic documentation at least annually that provides the following information: the quantity of associated storage in specified units of CO_2 mass, or volumetric units convertible to mass, during the period covered by the documentation; the cumulative quantity of associated storage in specified units of CO_2 mass, or volumetric units convertible to mass, since the beginning of the quantification period; the formula and data used to quantify the mass of associated storage, including the mass of CO_2 delivered to the CO_2-EOR project and losses during the period covered by the documentation; the methods used to estimate missing data and the amounts estimated; the approach and method for quantification utilized by the operator, including accuracy, precision and uncertainties; a statement describing the nature of validation or verification of the statement including the date of review, process, findings, and responsible person or entity; and source of each CO_2 stream quantified as associated storage. Quantification and periodic documentation must follow requirements as described in ISO 27916 and any successor ISO standard(s) that may apply to CO_2-EOR projects.

i. The periodic statement must be submitted to the US EPA GHGRP with the electronic Greenhouse Gas Reporting Tool, using submission procedures to be established by the US EPA GHGRP.

ii. The taxpayer must verify data in the periodic statement and declare the type of verification used. The types of verification include: first-party verification (undertaken by the operator), second-party verification (undertaken by the taxpayer claiming the credit), and third-party verification (undertaken by an independent, external organization competent to perform a verification).

(C) As described in ISO 27916 (8), conduct the quantification of secure geological storage associated with EOR operations following the ISO principles, including the calculation of loss, at least annually, and by quantifying and documenting all factors and variables required.

(D) As described in ISO 27916 (9.1), retain records for the duration of the operator's involvement. These records must be offered to the US EPA after termination of the lease/permit pertaining to the project.

(E) As described in ISO 27916 (9.2), specify the procedures used to estimate monitoring, sampling and testing data for periods during which actual data are unavailable, such as periods of maintenance, equipment failure, or power outages. These procedures should avoid overestimations of the amounts of CO_2 stored.

(F) Follow ISO 27916 (10) requirements for the termination and documentation of a CO_2-EOR project that are in addition to the existing permitting, regulatory, and contractual framework that generally defines the rules for safe and secure termination of hydrocarbon recovery projects. Compliance shall be demonstrated as part of the termination process through documentation provided or in the final periodic documentation. Projects must continue to provide at least an annual periodic statement to the U.S. EPA GHGRP with the electronic Greenhouse Gas Reporting Tool, using submission procedures to be established by the US EPA GHGRP, until the requirements for termination described in ISO 27916 (10) are met.

Attachment 7

Additional Comments Related to Partnership and Leasing Transaction Structures

These comments are additional to the summary response provided for question 9 in Attachment 2.

IRS Notice 2019-32

SECTION 3. REQUEST FOR COMMENTS

.09 Is guidance needed concerning structures in which project developers and participating investors would be respected as partners in a partnership generating a § 45Q credit? Further, is guidance needed on allocating the credit and recapture of the credit among the partners in a partnership?

Need for Certainty in Transactions Seeking to Benefit from § 45Q credit. Yes, guidance is needed regarding the structures in which developers and investors would be respected as partners. Guidance is also needed relating to the allocation of the credit among partners. Further, because developers and investors may in some cases find leasing transaction structures to be more commercially practical or economically advantageous than partnerships, guidance will be needed on what types of fixed and variable payments between lessor and lessee may occur without the lease being re-characterized by the Service. Thus, although Question 9 specifically references partnerships, we think it is appropriate to address partnership and lease issues in any guidance since the same business and economic issues that may raise partnership allocation issues may also raise issues requiring consideration in leases as well. The highly capital-intensive nature of the carbon capture industry makes it likely that transactions such as leases or sale-leasebacks will be utilized, with an owner/lessor financing some or all of the carbon capture project's capital cost. Finally, developers and investors in both partnership and lease transactions need guidance on recapture of the credits.

We request guidance as expeditiously as possible, because the carbon capture industry is rapidly evolving technologically and commercially and would like to utilize the newly revised tax incentives provided by Congress in so doing. Transactions could be delayed or frustrated without clear guidance that will afford maximum certainty in financing transactions.

Structures. Certainty regarding which partnership and lease structures for investments in projects eligible for section 45Q credits that would be respected would increase the efficiency of such investments. In the absence of such guidance, the administrative costs of establishing such investments would be increased to account for legal expenses and the potential cost—and time required—to receive a private ruling letter from the Internal Revenue Service.

General legal advice memorandum AM2018-002, release date March 9, 2018, has provided useful guidance regarding the treatment of certain, specific structures frequently used in connection with the refined coal credit under section 45. AM2018-002 provides an example of the type of advice that could be issued in the section 45Q context, but there are many key differences in the factual and legal underpinnings between investments in refined coal projects and carbon capture projects. For example, the owner of the carbon capture equipment generally is, in the first instance, entitled to claim the section 45Q tax credit, as opposed to the operator of a qualified facility in the case of the refined coal section 45 tax credit. In addition, the identity and business of the person who disposes of, uses, or utilizes captured carbon oxide may need to change during the section 45Q credit period, as opposed to the relatively simple case of sale of refined coal under a long-term contract to a single utility.

Revenue Procedure 2007-65 and Revenue Procedure 2014-12, which provide safe harbors for allocations of section 45 production tax credits and section 47 historic rehabilitation credits, respectively, might also serve as a useful model for guidance. However, because structures for partnerships generating section 45Q credits are still being developed, more flexible guidance that provides an "analytic framework" as in AM2018-002 may be more useful than a more rigid safe harbor at this stage. Similar flexible guidance should also be provided for leasing structures as well.

Following this public comment period, stakeholders would welcome the opportunity to work with the government to craft a safe harbor around common structures that evolve. Such engagement would be critical because of the significant differences between carbon capture industry and the industries covered by Rev. Procs. 2007-65 and 2014-12, which would need to be recognized in guidance.

Allocation. Section 45Q has certain unique provisions that require guidance for topics not adequately dealt with in the statute or legislative history.

The guidance should take into account the additional flexibility that Congress has provided under section 45Q. AM2018-002 notes that "Congress could enact a transferable tax credit, as some states have done, and in that situation a purchaser of credits may be engaging, in form and substance, in activity that Congress intended to encourage." Under section 45Q(f)(3), the credit with respect to carbon oxide captured using carbon capture equipment placed in service after the date of enactment of the Bipartisan Budget Act of 2018 is generally available to the person that owns the carbon capture equipment and physically or contractually ensures the capture and disposal, utilization or use as a tertiary injectant, that section explicitly permits an election to have the credit allowable to the person that disposes of the carbon oxide, utilizes it, or uses it as a tertiary injectant. Furthermore, as described in the Coalition's November 2018 submission, both prior section 45Q and the amendments made to new section 45Q clearly and expressly contemplate that a taxpayer claiming a section 45Q credit need not physically dispose of, use, or utilize qualified carbon oxide if the taxpayer "contractually ensures" that the qualified carbon oxide is disposed of, used, or utilized. Accordingly, the underlying activity that gives rise to the section 45Q credit should be seen as obtaining contractual assurance of the disposal, use, or utilization of qualified carbon oxide, rather than physically disposing of, using, or utilizing qualified carbon oxide. As a result, the guidance described above should provide that the scope of entrepreneurial risks that an investor is required to take on in order to be recognized as bona fide partner may be limited to the risks inherent in being a counterparty to a contract for disposal, utilization, or use of qualified carbon oxide.

Recapture. The statute requires regulations to provide for recapture of any credit for carbon oxide "which ceases to captured, disposed of, or used as tertiary injectant in a manner consistent with the requirements" of section 45Q. In Sections 7.01 and 7.02 of Appendix A Model Interim Guidance submitted in its letter of November 21 to the Treasury, the Coalition has already recommended a safe harbor to limit the investor risk of credit recapture. However, because the credit may be available to different persons for different taxable years, guidance is also needed as to which persons may be liable for any recapture. Further, unlike a number of credits, such as those computed by basis, that require recapture, the statute does not provide a schedule such as that in section 50(a). Given the changes to the audit of partnership rules in the Bipartisan Budget Act of 2015, guidance is needed as to which persons may be liable for credits claimed in any particular year and the conditions under which recapture may be required.